Shire

The rare disease champion

Annual Report 2017

Shire is the global leader in serving patients with rare diseases. Our vision is to be an innovation-driven biotech company applying our core scientific platforms to develop and deliver best-in-class therapies across our franchises in Immunology, Hematology, Neuroscience, Internal Medicine, Genetic Diseases, Oncology and Ophthalmics. We focus on diseases and patient populations with the highest unmet needs and use our global infrastructure to reach people in more than 100 countries who are struggling to live their lives to the fullest.

Pipeline spotlight:
SHP643 for Hereditary Angioedema (HAE)
See page 26

Commercial spotlight:
Launch excellence
See page 28

Technology spotlight:
Intersection of health and technology to enable patient-centric care
See page 30

Franchise spotlight:
Immunology
See page 32

Lynsey
Living with HAE

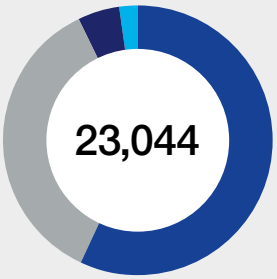
Read more
on page 27

At a glance

The leader in rare diseases

Global reach

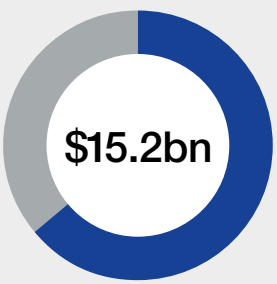
40+	14	100	100+
Marketed products	Manufacturing sites	Plasma collection centers	Relationships with patient advocacy organizations



Employment by region

- **57%** North America
- **36%** Europe
- **5%** Asia
- **2%** Latin America

100+	60+
Countries where our therapies are available	Commercial presence in 60+ countries



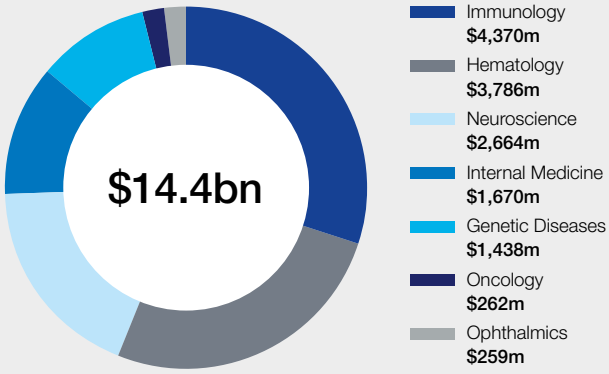
Revenue by region

- **64%** United States
- **36%** International

Our portfolio covers seven therapeutic areas

Immunology
Hematology
Neuroscience
Internal Medicine
Genetic Diseases
Oncology
Ophthalmics

Product sales



We have 40 programs in our clinical R&D pipeline

Financial highlights

	2017	2016[1]	Growth[1]
Product sales	$14,449 million	$10,886 million	33%
Total revenues	$15,161 million	$11,397 million	33%
Non GAAP Total revenues[2]	$15,086 million	$11,397 million	32%
Operating income from continuing operations	$2,455 million	$963 million	155%
Non GAAP operating income[3]	$5,997 million	$4,417 million	36%
Net income margin[4,5]	28%	3%	25ppc
Non GAAP EBITDA margin[5,6]	43%	41%	2ppc
Net income	$4,272 million	$327 million	1,205%
Non GAAP Net income[7]	$4,604 million	$3,391 million	36%
Diluted earnings per ADS[8]	$14.05	$1.27	1,006%
Non GAAP diluted earnings per ADS[8,9]	$15.15	$13.10	16%
Net cash provided by operating activities	$4,257 million	$2,659 million	60%
Non GAAP free cash flow[10]	$3,431 million	$2,103 million	63%

1 Results include Baxalta Inc. (Baxalta) (from the date of acquisition on June 3, 2016) and Dyax Corp. (Dyax) (from the date of acquisition on January 22, 2016).
2 This is a Non GAAP financial measure. The most directly comparable measure under U.S. GAAP is Total revenues (FY 2017: $15,161m).
3 This is a Non GAAP financial measure. The most directly comparable measure under U.S. GAAP is Operating Income from continuing operations (FY 2017: $2,455m).
4 U.S. GAAP Net income as a percentage of total revenues.
5 Percentage point change (ppc).
6 This is a Non GAAP financial measure. Non GAAP EBITDA margin calculated using Non GAAP EBITDA as a percentage of Non GAAP Total revenues. The most directly comparable measure under U.S. GAAP is Net income margin (FY 2017: 28%).
7 This is a Non GAAP financial measure. The most directly comparable measure under U.S. GAAP is Net income (FY 2017: $4,272m).
8 Diluted weighted average number of ordinary shares of 912 million.
9 This is a Non GAAP financial measure. The most directly comparable measure under U.S. GAAP is Diluted earnings per ADS.
10 This is a Non GAAP financial measure. The most directly comparable measure under U.S. GAAP is Net cash provided by operating activities (FY 2017: $4,257m).

For a reconciliation of Non GAAP financial measures to the most directly comparable measure under U.S. GAAP, see pages 179 to 183.

Focusing innovation on patients and customers

> I am proud of the contributions of our more than 23,000 employees and am grateful to our patient communities for their partnership. And importantly, I remain excited and optimistic about the future of our Company.

In 2017, Shire started its first full financial year as a transformed company: the undisputed global leader in treating rare diseases.

As we began the year, the integration of Baxalta was well under way. A company that had commercial operating units in 22 countries in 2013 is now in more than 60 countries. A clinical pipeline with 20 programs in 2013, ended 2017 with 40 such active programs. And our therapeutic footprint had expanded into three new dynamic areas: immunology, hematology, and oncology.

Shire has transformed itself, but with this transformation came obvious challenges. We had a global manufacturing portfolio that required careful pruning and disciplined, efficient management. In many countries we had to consolidate two offices into one, moving and reassigning experienced staff, while maintaining commercial momentum. And we set aggressive targets for our teams, pushing ourselves to meet the highest possible financial goals, some of which were clearly aspirational.

At the end of 2017, the people of Shire could look back with pride. The implementation of our Network Manufacturing Study laid the foundation for efficient and effective supply operations. And at the same time, Shire exceeded its challenging integration synergy targets for the year, saving money and managing its global procurement systems in the most cost-effective and efficient manner.

Despite these many achievements, Shire's share price performance was disappointing. For a Board, management team, and company focused on improving shareholder value, the challenge is clear and we have strengthened our resolve to improve and succeed in 2018.

For Shire, success means delivering more innovative solutions to the patients who depend on us. We know that if patients, physicians, and caregivers appreciate and value our products, then shareholders will also benefit. In this way 2017 was not just a year of integration, but also one of preparation for the future.

In 2017, we launched 50 products in 25 countries with therapies to treat diseases such as short bowel syndrome, hypoparathyroidism and attention deficit hyperactivity disorder (ADHD). We significantly advanced our Research and Development (R&D) pipeline with 54 major market filings around the world and continued to invest in areas where we see great need and opportunity such as immunology.

We maintained our dedication to our environment and the communities in which we serve. In 2017, Shire developed our new Responsibility strategy with commitments and long-term goals to be achieved by 2025. We also held our third annual Global Day of Service, during which more than 7,300 Shire employees from around the world dedicated more than 29,000 hours of their time to volunteering in their communities. A detailed description of Shire's commitment to Responsibility can be found on page 35.

The accomplishments — focused squarely on delivering benefits to patients in need and the communities in which we live — came during a year of substantial external regulatory and macroeconomic challenge. The hemophilia market landscape shifted, and continues to change rapidly. The global political, tax, and regulatory environment in which we operate is constantly in motion. And the pharmaceutical industry must still manage societal challenges in funding, pricing, and identifying ways to support future innovation.

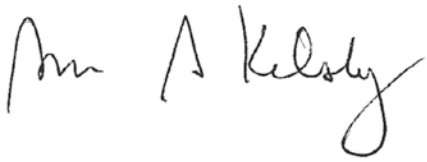
These challenges will continue in 2018, making it essential that Shire maintains its efficient and nimble business strategy. Towards that end, we continue to evaluate the strategic and operational direction of the Company, including an assessment of our neuroscience business. While this review continues, we are creating two distinct business divisions within Shire: one focused on rare disease and the other focused on neuroscience. This will enable sharper management focus, greater strategic clarity, and distinct investment opportunities for both parts of the business. We expect the conclusion of our strategic review of these two business segments in the second half of 2018. Additional details on the divisions can be found on page 12.

For our employees, 2017 was a period of challenge and change. But it was also a year in which they all showed their grit, resolve, and unwavering dedication to the patients we serve. The Board and I would like to thank everyone at Shire, not just for their hard work, but also for their drive, focus, and commitment during a period of transformation. We would also like to thank our CEO, Dr. Flemming Ornskov, who has led the Shire team through this integration with great skill and has kept everyone focused on the goal of building a more resilient Shire for the long-term.

Finally, I'd like to express my sincere appreciation to Bill Burns, Senior Independent Director; Anne Minto, the previous Chairman of our Remuneration Committee; and Dominic Blakemore, previous chair of the Audit, Compliance & Risk Committee, all of whom will be retiring from the Board after the 2018 AGM.

Thank you also to former Shire CFO Jeff Poulton who left the Company at the end of 2017. The contributions of Bill, Anne, Dominic, and Jeff cannot be overstated. Shire is a better company because of their work; we are grateful for their dedication and wish them all the best in the future.

In closing, I am proud of the contributions of our more than 23,000 employees and our Board, and I am grateful to our patient communities for their partnership. And importantly, I remain excited and optimistic about the future of our Company. It is our privilege to continue working on behalf of the patients who inspire us every day.



Susan Kilsby
Chairman

The leading global biotech company focused on rare diseases

> The main reason I believe our Company has performed so well is because the Shire team is driven by a clear mission, a shared purpose, and strong values — all of which put the patient at the center of all that we do.

2017 is the year Shire solidified its position as the global leader in rare diseases. With approximately 70 percent of revenues coming from rare disease products, and the most robust pipeline in Shire's history — 60 percent of which are biologic therapies — we continue to make significant progress in the Company's evolution.

As we evolved, we also put the Company on solid financial footing. Key to Shire's performance has been the ability to achieve strong financial results while managing our largest integration. We grew by approximately 17,000 employees and consolidated 28 country sites globally — and remain on track to deliver on our Baxalta cost synergy goal of $700 million by the third year post-close. We achieved sales growth of 33 percent and delivered a strong operating cash flow of $4.3 billion — enabling us to realize our 2017 leverage ratio target.

We are proud that we now have five of our seven franchises contributing more than $1 billion in revenue annually. Immunology delivered outstanding performance in 2017, driven by the success of our sub-cutaneous immunoglobulin products and growth in International markets. Ophthalmics, our newest franchise, generated sales of $259 million in 2017 as XIIDRA, the only therapy approved in the U.S. to treat the signs and

symptoms of dry eye disease (DED), reached more than one million prescriptions written since launch in late 2016. I am greatly appreciative of what our talented and focused team has delivered, in many cases, exceeding our performance expectations in 2017.

Two distinct market-leading businesses

Since I arrived at Shire five years ago, we have grown from an ADHD-focused company to a global biotech with two distinct market-leading businesses — rare disease and neuroscience. To enable these two businesses to reach their full potential, in early 2018 we announced that the neuroscience business warranted additional sharpened focus and increased investment and that there was a strong strategic rationale for creating separate Rare Disease and Neuroscience divisions. For more information about the two divisions, please see page 12.

Innovation at the heart of our vision and culture

Our long-term vision is to be an innovation-driven biotech company focused on rare diseases and specialized conditions across our core scientific platforms and therapeutic areas. Shire has an excellent record of accessing external innovation and delivering late-stage products to market. Going forward, we plan to build on these capabilities by taking our internal research to a new level. To accelerate this goal, we have appointed a new Head of Research and Development and Chief Scientific Officer, Andreas Busch, PhD, an accomplished scientist with an extensive background and impressive track record in research.

At the same time, we continue to complement our R&D innovation with new advances in health information technologies and precision medicine. Shire is utilizing artificial intelligence (AI) as well as pursuing wearables and sensor technology, particularly in clinical trials. We are partnering with new, cutting-edge companies to improve the time it takes for rare disease patients to find a diagnosis, tailor our treatment options for smaller patient groups, and help us identify hard to find patients for clinical trials. More information about these efforts can be found on page 30.

We are also working to enhance our manufacturing network with an eye towards optimizing our reliability and growth. We're making important changes to our internal and external networks to reduce redundancy while also ensuring supply continuity. Among the benefits of these changes, we anticipate savings of $100 million annually beginning in 2019 and $300 million annually by 2023. Additionally, we are modernizing the manufacturing network with new facilities in Georgia (U.S.) and Dublin (Ireland). Our Georgia plant will expand manufacturing capacity for our plasma-derived products by approximately 30 percent, while our Dublin facility will focus on production of antibody-based therapies.

An industry-leading pipeline

Our R&D organization continues to fuel our robust pipeline with innovative therapies. In 2017, our R&D team completed 54 major market regulatory filings around the world. In addition, Shire received two U.S. FDA Fast Track Designations, two Orphan Drug Designations, and one Breakthrough Therapy Designation. We completed nine Phase 3 clinical trials, and received 126 product approvals globally. These accomplishments are major strides forward on behalf of our patients. Additional details about our pipeline can be found on page 24.

New product launches fueled growth

As we advanced programs through the pipeline, we also developed a team that excels at product launches and ensures patients have access to these important therapies. We executed 50 product launches globally in 2017, including the initial launch of MYDAYIS in the U.S. and expanded into multiple new geographies for products such as CUVITRU, NATPARA/

A year in review

Q1

Ian Clark is appointed as a Non-Executive Director

–

Receipt of New Drug Application for SHP465 for ADHD is acknowledged by U.S. FDA

–

EU Conditional Marketing Authorization is recommended for NATPAR for patients with chronic hypoparathyroidism by CHMP

–

European approval is received for label extension of CINRYZE to prevent and treat attacks in pediatric patients with HAE

–

New data from Shire that aim to help close the diagnosis and treatment gap for people with hemophilia are presented

Seventh annual scholarship for individuals with ADHD is announced

–

U.S. FDA Fast Track Designation is received for SHP655 for treatment of congenital thrombotic thrombocytopenic purpura

–

INTUNIV, a non-stimulant for the treatment of ADHD, is approved in Japan

–

"Rare Count" campaign to personalize the global impact of Rare Diseases is launched

–

Data are released showing improved treatment satisfaction for patients on CUVITRU relative to previous immunoglobulin therapy

Q2

#PIPostsThanks Social Campaign is launched to raise awareness of primary immunodeficiency

–

VYVANSE is made available in a new chewable tablet formulation

–

Lanadelumab is shown to reduce HAE monthly attack rate by 87% versus placebo in Phase 3 26-week pivotal trial

–

EU Conditional Marketing Authorization is received for NATPAR for treatment of patients with chronic hypoparathyroidism

Collaborative license agreement is entered into with Parion Sciences, Inc., to advance SHP659 for ophthalmic indications

–

New headquarters office is opened in Dublin City Center

–

EMA validation of VEYVONDI Marketing Authorization Application is received for treatment of von Willebrand disease

–

U.S. FDA approval is received for MYDAYIS (formerly SHP465), a new once-daily option for ADHD symptom control in patients 13 years and older

NATPAR, and GATTEX/REVESTIVE. In total, Shire generated $1.6 billion in sales in 2017 from products launched since 2013. Our products are now available in more than 100 countries enabling us to reach more patients than ever before. For more details about Shire's launch excellence, please see page 28.

Patient and customer focus

The main reason I believe our Company has performed so well is because the Shire team is driven by a clear mission, a shared purpose, and strong values—all of which put the patient at the center of all that we do. We know we are most successful when we have patients front of mind, inspiring our thinking, and guiding our work every single day.

Central to our mission at Shire is being close to our patients and our partners, which allows us to not only serve them better, but also to innovate based on their insights. We are often with patients for the long-term, given that half of rare diseases are diagnosed in childhood. From diagnosis to finding appropriate treatment options, securing access, and supporting patients on treatment, we are committed to the wellbeing of our patients for life. The inspiration they provide to our team is second-to-none. I'd like to take this opportunity to thank our patients, their families, and their healthcare providers for allowing us to be part of their journey.

Navigating challenges

While I am extremely proud of Shire's accomplishments in 2017, the year was not without its challenges. We faced generic competition for LIALDA (for the treatment of ulcerative colitis) for the first time. We also faced a supply interruption during the summer for CINRYZE (for the treatment of hereditary angioedema (HAE)) related to issues with a third-party manufacturer. We thank HAE patients and the HAE community for their patience while we worked diligently to address this issue and have taken steps to mitigate this risk in the future, including bringing additional manufacturing of drug product in-house beginning in 2018.

We also experienced increased competition in the Hematology franchise, but continue to be confident in our leadership position. Shire is committed to innovating and building for the future — as it can be seen with ADYNOVI receiving a positive opinion and, early this year, the marketing authorization from the European Medicines Agency (EMA) and with the recent approval of myPKFiT, a registered software-based medical device for personalized hemophilia A dosing in the U.S. And, we continue to invest in and expand our pipeline of innovative Hematology programs.

While we are proud of our accomplishments in 2017, we also acknowledge that we need to work even harder on improving shareholder value throughout 2018.

Despite these challenges, Shire performed very well financially in 2017 — delivering 8% pro forma product sales growth to $14.4 billion, an increase of over $1 billion. We also improved our operating margin and operating cash flow of $4.3 billion which enabled us to reach our debt target.

Employees and culture

I would like to thank Shire employees and the Board of Directors who has provided invaluable guidance for the organization. We've grown from fewer than 6,000 employees to more than 23,000, and everyone continues to focus on our mission to serve the needs of patients. The accomplishments achieved in 2017 are incredible and I look forward to an equally impressive 2018.

Q3

Investigational New Drug Application is submitted to U.S. FDA for gene therapy candidate SHP654 for treatment of hemophilia A

–

Licensing agreement is entered into with Novimmune S.A. for bi-specific antibody to expand Shire's monoclonal antibody research platform

–

It is announced that Jeff Poulton will step down as CFO at end of 2017

–

Joanne Cordeiro is appointed Chief Human Resources Officer and a member of the Executive Committee

–

Collaboration with MicroHealth is launched to address unique needs of hemophilia patients with inhibitors

MYDAYIS is launched in the U.S.

–

Lifitegrast Marketing Authorization Application for treatment of dry eye disease is submitted in Europe

–

Positive topline results for INTUNIV in Phase 3 clinical trial in adults with ADHD are released

–

SHP616 is shown to significantly reduce HAE monthly attack rate versus placebo in a Phase 3 pivotal trial

–

U.S. FDA Fast Track Designation is received for SHP607 for prevention of chronic lung disease in extremely premature infants

Q4

The appointments of Thomas Dittrich as CFO and Andreas Busch, PhD as Head of R&D and CSO are announced

–

European approval for label extension of FIRAZYR for symptomatic treatment of acute HAE attacks in paediatric patients is received

–

U.S. FDA Orphan Drug Designation is received for gene therapy candidate SHP654 for treatment of hemophilia A

–

Topline results for SHP609 are announced showing Phase 2/3 clinical trial in children with Hunter syndrome and cognitive impairment did not meet its primary endpoint

OnePath patient portal and mobile application are launched

–

EU Marketing Authorization is recommended by CHMP for ADYNOVI for adults and adolescents with hemophilia A

–

U.S. FDA clearance is received for myPKFiT for ADVATE to help personalize care for hemophilia A

–

Positive CHMP opinion is received in Europe for new formulation of ONCASPAR for patients with acute lymphoblastic leukemia (ALL)

–

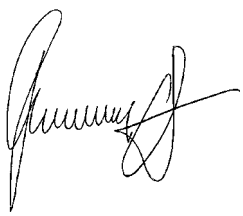
Submission is filed with U.S. FDA for approval of new plasma manufacturing facility near Covington, Georgia

Outlook and summary

We left 2017 stronger than we've ever been before with leadership positions in many of the therapeutic areas in which we compete. In particular, we now have a leading high-growth Immunology franchise, which will be the foundation of our rare disease business as we move into 2018. Our neuroscience business will soon benefit from increased investment and focus as we look to broaden our expertise beyond ADHD.

2018 will be a year of continued focus on commercial execution and targeted investment in our manufacturing infrastructure, new product launches, and pipeline to drive future growth. We expect to deliver mid-single digit product sales growth in 2018 after absorbing the anticipated impact of generics. Based on current assumptions, we also expect margins to be impacted by the start-up of our new U.S. plasma manufacturing site, intensifying genericization, and lower royalties. But, I remain confident that Shire will continue to build on our leadership position in both rare disease and neuroscience and we are committed to achieving our 2020 goal of $17-$18 billion in revenues and mid-forties Non GAAP EBITDA margin.

I am energized and excited about Shire's future as we look forward to growing our franchises, especially Immunology; executing on our many launches; leveraging our robust international footprint in key markets such as China to expand access to our 40+ marketed products; and, building an innovative, results-oriented, patient-centric culture. I am confident that our team and our partners will continue to execute on our priorities and serve as champions for our patients.



Flemming Ornskov, MD, MPH
Chief Executive Officer

Pipeline spotlight: SHP643 for hereditary angioedema

Read more on page 26

Commercial spotlight: Launch Excellence

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Technology spotlight: Intersection of health and technology to enable patient-centric care

Read more on page 30

Franchise spotlight: Immunology

Read more on page 32

More focused expertise

Across the biopharmaceutical industry, there is an increasing emphasis on more focused scientific, clinical, and commercial expertise and capabilities. This is largely in response to the unique set of opportunities and challenges that companies in the sector are facing.

Trends at the macro level

Innovation

We are in an era of unprecedented innovation, driven by new scientific discoveries and supporting technologies. Academic institutions, start-ups, teaching hospitals, technology companies, and biopharmaceutical companies are collaborating in new ways. Advances in our knowledge of human biology and the molecular basis of disease are generating an increasingly diverse range of potential therapeutic treatments, including gene therapy and cell therapy. Technological advances are amplifying our ability to capitalize on this emerging science. In particular, the amount of accessible medical information has grown significantly in the past few years and many companies have begun to take advantage of this resource using data to support the diagnosis and treatment of patients. For example, advanced analytical techniques are being applied to extract new insights from genetic and clinical data. Similarly, new devices, ranging from companion diagnostics to mobile health apps to wearable monitors, will be increasingly prominent in the next wave of therapeutic advances. Please see pages 30 and 31 for information on Shire's efforts as they relate to advances in health technologies.

Demographics

There continues to be a demographic shift in developed markets, such as the U.S., the European Union and Japan, where people are aging and, as a result, require more prescription medicines. In the rest of the world too, access to, and spending on, healthcare is growing. By 2021, total global pharmaceutical spend is anticipated to reach $1.5 trillion (a growth rate of 4 to 7 percent from 2016), with more than 30 percent coming from emerging and developing markets.[1]

Rising expectations and competition

Patient groups, regulators, and payers are assessing the clinical and economic value medicines offer with increasing rigor, looking for real-world evidence to demonstrate clinical benefit and cost-effectiveness. The expectation of excellence is also heightened by the intensifying competition from high-quality in-market products as well as expected launches of innovative new therapies in many disease areas. Given the availability of data and the ease of accessing information about new medications, patients are more informed than ever. Moreover, the scope of clinical trials is expanding with greater emphasis on patient-focused endpoints such as quality of life measures. As a result, new therapies must compete to demonstrate improvements against ever-rising standards. In tandem, competition from lower-cost alternatives, such as generics and biosimilars, will erode market share and drive down prices.

Evolving customer landscape

Globally, health systems continue to evolve toward increasingly sophisticated and frequently more centralized models for providing high-quality, coordinated care. In the U.S. in particular, the physician practice landscape has rapidly shifted from the traditional individual or small group practice model to large group and employment-based models. These changes have introduced new commercial dynamics for biopharmaceutical manufacturers, including an increasing role for institutional bodies in shaping treatment protocols and buying decisions. In addition, the payer, pharmacy benefit manager, and distributor landscape is undergoing major changes with, for example, the integration of OptumRx with Catamaran, and the proposed merger of pharmacy group CVS Health with insurer Aetna. The recent announcement of the partnership between Amazon, Berkshire Hathaway, and JPMorgan Chase may also have an impact on this space. As alluded to above, patients continue to take an increasingly hands-on role in managing their health and medical care, supported by new capabilities emerging from the convergence of healthcare and technology. Healthcare apps and wearable sensors, for example, are playing a more prominent role, leading technology companies (e.g., Apple, Google, Amazon) to increase their healthcare investments. As a result of these changes in the customer landscape, biopharmaceutical companies today require new capabilities to address a broader range of stakeholders.

Political volatility

The current political environment, in particular the evolving policy dynamics in the U.S. and the uncertainty associated with Brexit in the UK, has increased ambiguity regarding the direction of the pharmaceutical market. This potentially impacts a range of business factors including talent acquisition, regulatory frameworks, and supply chain considerations. Additionally, unfavorable press coverage on topics such as drug pricing and marketing practices continues to attract scrutiny from regulators, and has negatively impacted public sentiment towards the industry.

The industry's response

Biopharmaceutical companies are responding to these challenges by focusing on specific categories, and developing high-impact therapies for high-need patient segments, where new therapies can demonstrate significant value.

Focused business models

Biopharmaceutical companies are looking to streamline their operations and portfolios through divestments or asset swaps to focus on targeted areas where they have, or can build, unique expertise. The emphasis is now on category leadership, and the advantages it brings, including being the hub in a network of innovation expertise in that category. This increases the ability of biopharmaceutical companies to develop market-changing therapies by combining their extensive know-how in regulatory affairs, clinical trial execution and lifecycle management with the cutting-edge science from innovative early-stage companies.

1 Source: Outlook for Global Medicines through 2021. Report by the QuintilesIMS Institute. December 2016

High-impact, high-need

Therapeutic focus is important not only for developing expertise, for example in oncology or specialty care, but also for ensuring a focus on patients with the highest need, for whom new therapies can have the most impact. Products can have a particularly high impact on the lives of patients when they not only demonstrate improvements in safety and efficacy, but also in measures such as quality of life, including the ability to maintain independence. The increasing volume and availability of medical data is also enabling a shift toward more individualized care, with new therapies increasingly targeting clearly defined sub-segments of a patient population, rather than attempting to be a broad solution for all patients with a particular disease. This focus requires the ability to understand the range of pathologies and biological pathways present within a disease category, group patient populations through diagnostics, demonstrate the benefits in specific patient types, and educate the market on newly emerging treatment paradigms.

Shire is well-positioned to address these trends

Shire strategic positions

1. Our long-term vision and commitment to rare diseases

In 2013, we laid out our vision to become a leader in rare diseases. Since then we have achieved high, sustained growth and profitability through investments in internal R&D, external innovation, and business development. Through strategic investments in our portfolio and global capabilities, including the acquisition of Baxalta, we have established an unmatched platform to accelerate the development and commercialization of rare disease therapeutics, maximizing our ability to reach patients in need. Our unique and valuable leadership position in this attractive sector provides a foundation for continued leadership in delivering innovative therapies to previously overlooked or underserved rare disease patient populations.

2. Our relentless focus on patients

Across our disease areas, we are committed to supporting and collaborating with patients, caregivers, healthcare providers and advocacy groups to accelerate diagnosis and ensure access to appropriate, tailored therapy. The deep relationships we build help us more effectively understand and respond to patient needs in many areas, ranging from providing reimbursement support to developing the next generation of biopharmaceutical products and devices. We also continue to generate evidence that demonstrates the efficacy and safety of our products, as well as the impact on patient-centric measures such as quality of life. Through innovation we continually seek opportunities to bring therapies to patients with significant unmet needs.

3. Our commitment to internal and external innovation

We focus on the impact we can have for patients, rather than where innovations originate. We have established deep internal expertise in key research areas, including recent investments focusing on immunology and antibody technologies. In addition, we have acquired, licensed, and formed partnerships to gain access to external assets at various stages of development; this approach has allowed us to lever our deep clinical development and regulatory expertise to advance a larger number of potential therapies through the pipeline. As a consequence, our leading pipeline comprises a blend of both internally-generated and externally-sourced programs.

4. Our strong brands and franchises that enable leadership

Our philosophy is to establish leadership in the therapeutic areas where we compete, and we have a rich history of using our leadership positions to develop, expand, and shape these markets, while delivering high-value therapies to patients. This has resulted in a robust portfolio anchored by products that are largely either first-in-class or best-in-class. We target our investment to maintain these leadership positions, focusing resources on activities such as differentiating our products with post-marketing data, developing advanced delivery devices, and identifying next-generation products. Across therapeutic areas, we partner with providers, governments, patient groups and other institutions to raise awareness, accelerate diagnosis and advance standards of care.

70%
of clinical programs focused on rare diseases

100+
relationships with patient advocacy organizations

50%+
of pipeline programs involve external collaboration

7
franchises with market-leading products

How we create value for our stakeholders

In August 2017, Shire announced that it was conducting a strategic review of its neuroscience business. Following the first stage of this review, the Board concluded that the neuroscience business warranted additional focus and investment and that there was a strong business rationale for creating two distinct business divisions within Shire: a Rare Disease division and a Neuroscience division. Each division will benefit from sharper management focus, greater strategic clarity, and an increased ability to deploy resources to key growth priorities. This divisional structure will be an important first step in enabling Shire to maximize mid- to long-term product sales, cash generation, and innovation for both businesses. The second stage of the review will include continuing to evaluate all strategic alternatives for the Neuroscience division, including the merits of an independent listing. Shire will give an update on the second stage of the review in the second half of 2018.

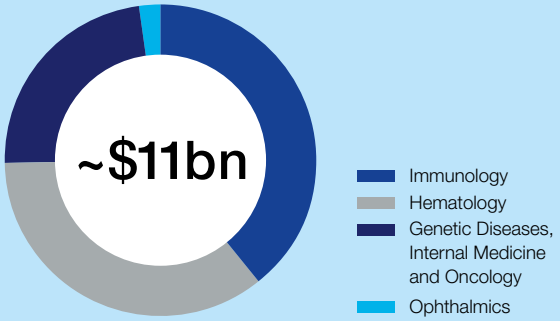
A rapidly changing environment

- Era of unprecedented innovation
- Shifting demographics
- Rising expectations and competition
- Evolving customer landscape
- Political and regulatory volatility
- Increasingly targeted business models
- Focus on high impact therapies for high-need patients

Read more in the key industry trends on page 10

The resources we employ

- Talented employees and Shire culture
- Strong collaborations and partnerships
- Financial capital
- Plant and equipment
- Intellectual property
- Suppliers

How we create value	Rare Disease division Global biotech leader in rare diseases
2017 revenue	
Commercial model	• Personalized, high-touch model • Small field forces focused on centers of excellence • Global focus with direct commercial presence in 60+ countries • Strong relationships with patient groups and key opinion leaders
R&D	• Emphasis on first-in-class, breakthrough innovations, especially biologics • Healthy innovation pipeline with more than 35 clinical programs • Preferred partner for rare disease drug development, with multiple successful external collaborations
Operations	• Global manufacturing footprint across 14 sites with a focus on biologics • Infrastructure includes plasma donation centers, a plasma processing and fractionation network, and antibody development facilities

What makes us different

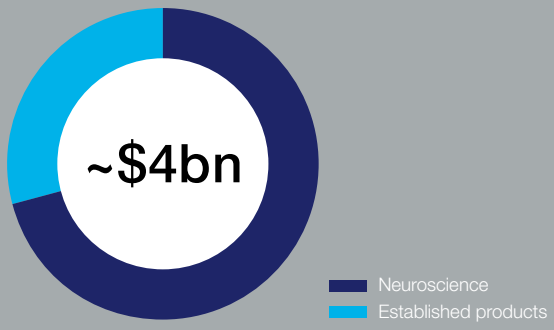
As the global leader in rare diseases with a thriving neuroscience business, Shire is a champion for those patients most in need, and is well positioned to address market trends through:

- Our long-term vision and commitment to rare diseases
- Our relentless focus on patients
- Our commitment to internal and external innovation
- Our strong brands and franchises that enable leadership

Read more on page 11

Neuroscience division

Established market leader in neuropsychiatry



- Broad-based promotion, including direct-to-consumer
- Larger sales forces covering primary care and specialists
- Focused on U.S. and key international markets
- Specialized expertise in market development and market access
- Close relationships with key opinion leaders and providers

- R&D strategy focused on differentiated treatment options to meet diverse patient needs; emphasis on small molecules and lifecycle management
- Several programs under development for new indications, such as SHP680, and geographic expansion of existing brands, such as BUCCOLAM in the U.S.

- Lean manufacturing model extensively levering contract manufacturing partnerships

Creating value for all our stakeholders

High patient impact

By focusing on diseases and patient populations with high unmet need, Shire strives to achieve the greatest positive impact among the patients who need it the most.

Sustained growth

By bringing our capabilities and expertise to underserved patient communities, we deliver sustained value for patients, employees, partners, and shareholders on a global scale.

High societal value

Working alongside partners, doctors, advocates, governments, and payers, Shire achieves meaningful outcomes that help ease the long-term burden of rare diseases and specialized conditions.

Read more on page 35

Focusing on four strategic drivers

Growth

We aim to continuously improve the commercial performance of our marketed products to maximize revenue growth and cash flow.

Progress in 2017

- Increased Product sales to $14.4 billion, while executing 50 launches globally
- Received approval for, and launched, MYDAYIS in the U.S. (for patients 13 years and older with ADHD)
- Entered into licensing agreements with Novimmune SA, Parion Sciences, Inc., and Rani Therapeutics, LLC
- Launched into new indications, regions, or patient populations with ADYNOVATE, NATPARA, VYVANSE, CINRYZE and INTUNIV
- Continued expansion of Cambridge, MA, operations as a rare disease innovation hub, and continued development of manufacturing plant near Covington, GA

Priorities for 2018

- Expand therapeutic area leadership by continuing to drive commercial execution, increase our global footprint, and broaden our portfolio of best-in-class products
- Focus on new product launches, including continued uptake of MYDAYIS and geographical expansion to build global brands across franchises
- Bring manufacturing plant near Covington, GA, online to expand plasma production capabilities
- Execute our late-stage clinical development pipeline to support future growth
- Expand business through lifecycle management, including innovation in devices

Key performance indicators

- Product sales, Non GAAP free cash flow

Read more on page 16

Efficiency

We operate a lean and agile integrated organization and reinvest for growth.

Progress in 2017

- Completed manufacturing network optimization program; anticipate cumulative savings of $2 billion through 2027
- Exceeded internal goals and external benchmarks for synergies from the integration of Baxalta
- Achieved 2017 target Non GAAP Net debt to EBITDA ratio of <3x
- Announced divestment of MRT platform to Translate Bio (formerly known as RANA Therapeutics) as part of effort to streamline portfolio investments

Priorities for 2018

- Maintain capital allocation discipline and reduce leverage
- Establish and begin operating as two divisions: Rare Disease division and Neuroscience division
- Continue to capture synergies and maintain a lean general and administrative (G&A) model
- Continue streamlining manufacturing network following the roadmap set out in our network study
- Evaluate options to further optimize the portfolio

Key performance indicators

- Non GAAP EBITDA margin, Non GAAP adjusted ROIC, Non GAAP Net debt / Non GAAP EBITDA ratio

Read more on page 16

Innovation

We build our pipeline through R&D and business development with a focus on innovation and value for patients.

Progress in 2017

- Executed on our pipeline of 40 clinical development programs, completing nine Phase 3 studies and securing 126 global product approvals
- Received two U.S. FDA Fast Track Designations for SHP607 (U.S.; chronic lung disease in extremely premature infants) and recombinant ADAMTS13/SHP655 (U.S.; congenital thrombotic thrombocytopenic purpura)
- Granted two U.S. FDA Orphan Drug Designations for SHP654 (U.S.; hemophilia A) and anti-MAdCAM antibody SHP647 (U.S.; pediatric ulcerative colitis) and one U.S. FDA Breakthrough Therapy Designation for maribavir/SHP620 (U.S.; cytomegalovirus infection and disease in transplant patients)
- Strengthened Ophthalmics pipeline with in-licensing of SHP659, a Phase 2 asset for DED, from Parion Sciences, Inc.
- Expanded antibody research by licensing preclinical bi-specific antibody for hemophilia A from Novimmune SA

Priorities for 2018

- Execute on the regulatory review process for SHP643 (U.S.; HAE) and other key program filings
- Advance our late-stage clinical development portfolio in rare diseases as well as SHP680 and BUCCOLAM to support growth of both the Rare Disease and Neuroscience divisions
- Supplement our early-stage pipeline through in-licensing or product acquisitions and invest in key research capabilities to support sustained innovation and growth
- Continue to deepen our expertise in immunology and strengthen our antibody development capabilities
- Pursue advances in medical devices to enhance marketed and pipeline products

Key performance indicators

- Number of programs in clinical development pipeline

Read more on page 17

People

We foster a high-performance, patient-focused culture where we attract, retain, and develop the best talent.

Progress in 2017

- Solidified presence in prime locations and consolidated into hubs, such as an Innovation Hub in Cambridge, MA, to attract the best talent and foster a high-performance culture
- Served our patients and communities through events such as Shire's Global Day of Service, where more than 7,300 Shire employees volunteered over 29,000 hours in 300 locations around the world

Priorities for 2018

- Continue to support and enhance a results-oriented culture with a focus on action and strong commitment to patients
- Develop and retain the best talent by accelerating the development of all employees at Shire, and enhancing employee engagement

Key performance indicators

- Number of employees, demographic composition, and geographic distribution of employees

See the Responsibility section for additional details on employee diversity at Shire.

Read more on page 17

Key performance indicators

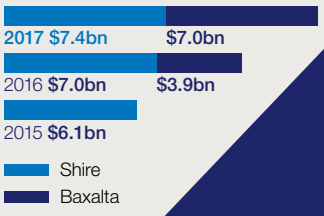
Growth

We aim to continuously improve the commercial performance of our marketed products to maximize revenue growth and cash flow.

$14.4bn

Product sales

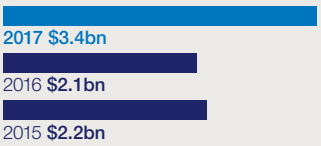
Total Product sales increased 33 percent in 2017 to $14.4 billion, primarily driven by the inclusion of a full year of Baxalta product sales of $7.0 billion, with strong sales from our immunoglobulin therapies and bio therapeutics. Product sales, excluding legacy Baxalta, increased 7 percent as growth from our HAE therapies and Neuroscience franchise, up 9 and 7 percent respectively, were partially offset by the launch of generic competition for LIALDA which negatively impacted our Internal Medicine franchise. Our Ophthalmics franchise generated sales of $259 million in 2017 (2016: $54 million) which contributed to our overall sales growth.



$3.4bn

Non GAAP free cash flow[1]

Non GAAP free cash flow increased 63 percent to $3.4 billion (2016: $2.1 billion) primarily due to the inclusion of a full year of legacy Baxalta operating cash flows and strong cash receipts from higher legacy Shire sales and operating profitability, partially offset by a payment associated with the settlement of the DERMAGRAFT litigation and higher interest payments.



Read more on pages 44 to 55

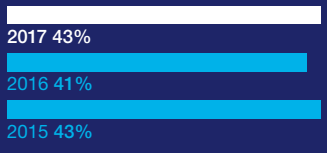
Efficiency

We operate a lean and agile integrated organization and reinvest for growth.

43%

Non GAAP EBITDA margin[1]

We achieved a 43 percent Non GAAP EBITDA margin for 2017, up 2 percent from 2016, primarily due to higher Non GAAP total revenues and lower Non GAAP R&D and SG&A expenditures as a percentage of Non GAAP Total revenues, partially offset by a lower Non GAAP gross margin, driven by the inclusion of a full year of lower margin products acquired with Baxalta. Non GAAP EBITDA for 2017 was approximately $6.5 billion, an increase of 38 percent from 2016.

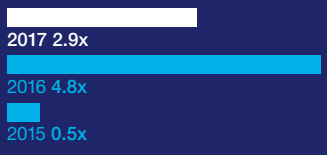


2.9x

Non GAAP Net debt/ Non GAAP EBITDA[2]

We achieved our target of reducing the ratio of Non GAAP Net debt to Non GAAP EBITDA to between 2-3x by the end of 2017. As of December 31, 2017, our net debt has been reduced to $19.1 billion, demonstrating our ability to repay the debt incurred from the Baxalta and Dyax acquisitions.

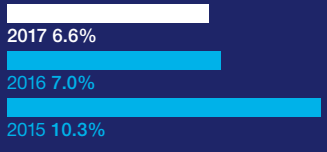
As we continue to focus on execution and integration, our 2018 capital allocation priorities include debt reduction to a level to maintain an investment grade credit profile.



6.6%

Non GAAP adjusted ROIC[3]

Non GAAP adjusted ROIC was 6.6 percent in 2017, a decline of 0.4 percent primarily due to the impact of a full year of Baxalta capital, partially offset by higher returns. We continued to invest in our core franchises while executing our business development strategies.



Read more on pages 44 to 55

Innovation

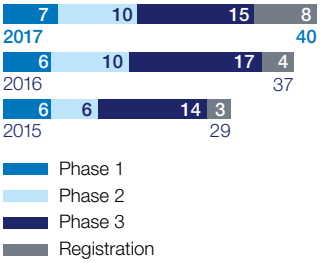
We build our pipeline through R&D and business development with a focus on innovation and value for patients.

40

Number of programs in clinical pipeline (excluding preclinical assets)

During 2017, Shire continued to focus on its R&D efforts with an investment of $1.8 billion. In 2017, we had 40 clinical development programs in our pipeline, the largest in Shire's history.

- Seven products gained regulatory approval including European approval of FIRAZYR for the symptomatic treatment of HAE attacks in pediatric patients, Japanese approval of INTUNIV for the treatment of ADHD and ADYNOVATE for the treatment of pediatric hemophilia, U.S. approval of MYDAYIS for the treatment of ADHD, and European approval of NATPAR for the treatment of patients with chronic hypoparathyroidism.
- Advanced late-stage pipeline with milestone achievements across our core therapeutics. In 2017, Shire had 15 programs in Phase 3, the most robust pipeline in Shire's history.



Read more on pages 24 and 25

1 This is a Non GAAP financial measure. For a reconciliation of Non GAAP financial measures to the most directly comparable measure under U.S. GAAP, see pages 179 to 183.
2 This is a Non GAAP financial measure. Non GAAP Net debt represents cash and cash equivalents less short and long term borrowings, capital leases and other debt. The most directly comparable measure for EBITDA under U.S. GAAP is Net income (FY 2017: $4,272m).
3 This is a Non GAAP financial measure. Refer to Non GAAP financial measures on pages 179 to 183.

People

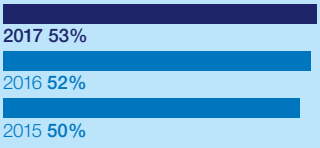
We foster a high-performance, patient-focused culture where we attract, retain and develop the best talent.

53%

Global Employees Gender Split (Female)

Shire recognizes the inherent value of diversity at all levels within the organization and strives to foster an inclusive and respectful professional culture. In doing so, Shire promotes its core belief that a diverse workforce brings a wealth of ideas, innovation and drive that in turn contributes to the Company's ability to anticipate, and adapt to, ongoing changes in its operating environment.

Percentage of female employees

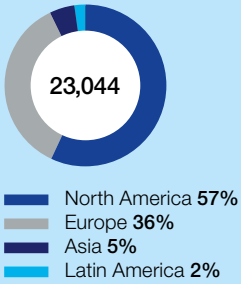


43%

International Employees Footprint

Our success continues to be driven by our diverse employee talent around the world with more than 23,000 employees in over 60 countries across the globe. Our growing global reach gives us the opportunity to bring to our business, for the benefit of our patients, greater depth of experience and capabilities.

Employee population by region as of December 31, 2017



See the Responsibility section for additional details on employee diversity at Shire.

Read more on pages 38 and 39

Principal risks and uncertainties

Shire's risk management strategy is to identify, assess, manage, and monitor significant risks that it faces.

Risk management framework

Board of Directors

Ensures comprehensive risk management and internal control systems are in place and operating effectively. Determines the Company's risk appetite and reviews its principal risks.

Audit, Compliance & Risk Committee

Oversees the effectiveness of risk management and internal control systems. Reviews and monitors the Company's principal risks.

Executive Committee

Oversees the implementation and operation of risk management and internal control systems. Reviews and monitors the Company's principal risks and other risk areas.

Chief Compliance and Risk Officer

Responsible for the Global Compliance and Risk Management Department, oversees relevant risk and compliance systems across the Company, and leads the Enterprise Risk Management Team.

Global Compliance and Risk Management Department

Supports the development, implementation, and maintenance of compliance and risk management systems.

Enterprise Risk Management (ERM) Team

Facilitates the ERM system including the enterprise risk assessment process. Supports the Executive Committee, Audit, Compliance & Risk Committee and Board of Directors.

Business units, corporate functions, and franchises

Identify and assess risks during the enterprise risk assessment process. Implement risk management processes, procedures, controls, and reporting.

Internal Audit

Provides independent assurance that risk management, governance, and internal control processes are designed and operating effectively.

Global Issues and Crisis Management

Responsible for operating a Global Issues and Crisis Management Framework.

Risk management

As a highly regulated biopharmaceutical company focused on serving people with rare diseases, Shire has implemented policies, processes and procedures intended to manage risk and ensure appropriate and lawful conduct in the countries in which the Company operates. Successful risk management is of benefit to shareholders and other stakeholders alike. Shire's risk management strategy is to identify, assess, manage, and monitor significant risks that it faces. Despite this, no risk management strategy can provide absolute assurance against loss or unfavorable results.

Stakeholders in risk management, which is overseen by the Board of Directors and designed to enable the effective identification, assessment, management, and monitoring of the Group's risks, are detailed below.

Board of Directors

The Board of Directors is responsible for ensuring the development and maintenance of sound systems of risk management and internal control. In fulfilling this responsibility, the Board oversees Enterprise Risk Management (ERM), determines the Company's risk appetite, and ensures that an appropriate risk culture is embedded throughout the Company. The Board also interacts with key risk and internal control stakeholders on a frequent basis, enabling it to monitor and review the Company's principal risks and the effectiveness of its risk management and internal control systems. During the past year the Board conducted a robust assessment of the principal risks facing the Company, including those that could threaten its business model, future performance, solvency, or liquidity.

Audit, Compliance & Risk Committee
The Audit, Compliance & Risk Committee supports the Board by overseeing and reviewing risk management, compliance, and internal control programs through its interaction with key stakeholders and periodic updates from management. The Committee reviews and monitors the principal risks facing the Company, with each risk assessed on the likelihood of materialization, potential financial and non-financial impacts, and overall risk mitigation effectiveness.

Executive Committee
The Executive Committee oversees the implementation and operation of risk management and internal control systems across the Company. The Committee reviews and monitors principal risks identified during the enterprise risk assessment process, before they are presented to the Audit, Compliance & Risk Committee. Committee members also receive regular risk updates from functional and business unit stakeholders. Along with both the Chief Compliance and Risk Officer and the Head of Internal Audit, Committee members are also responsible for escalating matters of risk management and internal control to the Audit, Compliance & Risk Committee and/or the Board of Directors, as appropriate.

Chief Compliance and Risk Officer
The Chief Compliance and Risk Officer leads the Global Compliance and Risk Management Department, and is responsible for overseeing compliance and risk management systems and programs, including ERM across the Company, and providing the Executive Committee, the Audit, Compliance & Risk Committee, and the Board with updates on risk management and compliance.

Global Compliance and Risk Management Department
The Global Compliance and Risk Management Department, led by the Chief Compliance and Risk Officer, is made up of compliance, assurance, monitoring, privacy, and risk management competencies. It is responsible for supporting the development, implementation, and maintenance of relevant risk management and compliance systems and programs across the Company. This is achieved through governance, policy, and procedures; awareness, training, and communications; as well as, audits, monitoring, and investigations. These activities provide for risk identification, assessment, management, and monitoring, as well as the escalation of relevant matters to the Executive Committee, Audit, Compliance & Risk Committee, and the Board of Directors as appropriate.

Enterprise Risk Management Team
The ERM Team, led by the Chief Compliance and Risk Officer, includes the Head of Global Risk and Compliance Assurance, and the Head of Risk Management and Business Continuity, and is supported by external consultants as appropriate. The Team is charged with implementing and operating the ERM system. This consists of maintaining the enterprise risk universe and risk assessment methodology, identifying functional and executive risk owners, facilitating the enterprise risk assessment process, providing risk training and awareness to stakeholders across the Company, assisting with risk reporting, and supporting the Executive Committee and Audit, Compliance & Risk Committee as appropriate.

Internal Audit
Internal Audit provides independent assurance to the Audit, Compliance & Risk Committee that Shire's risk management, governance, and internal control processes are designed and operating effectively.

Business units, corporate functions, and franchises
Business units, corporate functions, and franchises participate in the enterprise risk assessment process by identifying and assessing their relevant risks. They are responsible for managing their risks; implementing controls, and monitoring, escalating, and reporting risk.

Global Issues and Crisis Management
Shire operates a Global Issues and Crisis Management framework, which assists in planning for, and responding to, disruptive events that could potentially jeopardize the Company's reputation and business operations, The guiding principles emphasize the health and safety of patients, customers, employees, and the community at large; safeguarding the Company's integrity, executing strategy, and supporting business continuity.

Principal areas of risk
The Company is subject to varying degrees of risk and uncertainty. The table below details the principal areas of risk that were identified and assessed through the Company's ERM system in 2017.

These principal areas of risk are listed in no particular order and, along with the detailed risk factors set out on pages 187 to 198 of this Annual Report (the "Risk Factors"), should be carefully considered before any investment is made in Shire. In addition, risks not presently known to the Company may also adversely affect its business. If any of these aforementioned risks were to materialize, the business, financial condition, results of operations, or prospects of the Company could be materially harmed. In such circumstances, the value of the Company's securities could decline and an investor could lose part or all of his or her investment. In addition, forward-looking statements that are contained in this Annual Report or in the Company's other reports, filings, or statements may be subject to the principal areas of risk described below and the Risk Factors.

Principal area of risk	Context	Trend[1]
Competition/exclusivity The market entry of competitor products, and increasing competition due to the loss of patent exclusivity and product genericization, could lead to reduced revenue.	The Company's products face competition in the markets in which we operate. Our products are subject to patent or regulatory expiration and emerging competition from generics or biosimilars. Shire continues to conduct relevant market research, analysis, and product risk assessments. We monitor the regulatory, legal, and industry environment to proactively anticipate and identify competitor products and plan accordingly.	
Environment, health and safety (EHS) material compliance Failure to adhere to relevant laws, regulations, and policies, including Shire's Environment, Health & Safety Policy and Supplier Code of Conduct, may result in fines, business disruptions, increased operating costs, reduced revenue, interruption/postponement in research, delays of new product launches, and/or other environmental and reputational consequences.	The manufacture and distribution of the Company's products are subject to extensive laws, regulations and policies. Shire has established a cross-functional Product Stewardship Working Group that meets quarterly to review any changes to the various material compliance regulations and requirements as well as changes to the Company, products, and processes. Shire has implemented processes and supporting technology to provide a framework for oversight and governance.	
Anti-corruption/anti-bribery Failure to comply with anti-corruption/ anti-bribery laws, regulations, policies and standards governing the manufacturing, sales, and marketing of Shire products, could negatively impact the Company and/or its officers, Directors and employees, resulting in enforcement activity, civil and/or criminal liability, fines, penalties, imprisonment, business restrictions, or damage to our reputation.	We operate in numerous countries across the globe, with emergent markets having differing levels of infrastructure and legislative/regulatory frameworks. Our industry is also highly regulated. These circumstances increase our exposure to potential bribery or corruption risks. Shire has a well-defined Code of Ethics, a clear set of values, and pertinent policies/ procedures that guide our approach to Anti-Corruption/Anti-Bribery compliance, all of which are available Group-wide. Shire continues to review, audit, and monitor compliance with relevant policies, procedures, systems, and controls. We deploy global anti-corruption/ anti-bribery measures including training and awareness initiatives and a third-party due diligence program.	
Cyber security In today's complex and ever-changing environment, failure to safeguard information, systems, applications, databases, and networks could result in cyber breaches and violations of privacy/consumer protection laws, business disruption, loss of intellectual property, damage to our reputation, fines, penalties and/or compromise of operations or financial condition.	The Company is dependent on the availability and integrity of our information and supporting technology platforms including systems, applications, databases, and networks. We have developed an internal cyber security capability, that provides information and assistance to the Company concerning compliance with Shire cybersecurity policies, guidance on cybersecurity standards, and recommendations on potential vulnerabilities. We provide training, awareness and monitoring of cybersecurity activities. We invest in cyber threat intelligence, security operations, and incidence response services to proactively predict, prevent, detect and respond to cyber risks.	
Data protection and privacy Failure to effectively identify, collect, and store, personal (sensitive) information in compliance with federal, state, and regional laws, contractual obligations, and policies, could result in regulator-imposed fines/ enforcement actions, damage to our reputation, and/or civil or criminal liability.	The Company is required to protect natural persons when processing their personal data, including maintaining the confidentially, integrity and availability of personal data relating to physicians, patients, employees and other individuals whose personal data is being processed by the Company. Shire continues to implement a data protection and privacy management program, including governance, policies, and procedures, to address global data protection and privacy requirements. Our mitigation strategies are evolving to meet a dynamic regulatory environment. We monitor regulatory, environmental, and innovation key risk indicators, utilize data analytics, and promote employee awareness of data protection requirements.	
Pharmaceutical industry reform Failure to proactively identify and comply with industry laws and pharmaceutical regulatory changes across our value chain (including government mandated pricing), could result in fines, penalties, business disruption, reduced revenue, and/or potential exclusion from government programs.	The Company has a large portfolio of products in multiple countries across various therapeutic areas. We operate in a highly regulated industry, with the research and development, manufacturing, marketing, and sale of these products subject to regulatory oversight in various jurisdictions across the globe. The successful development, manufacturing, distribution, and sale of these products are highly uncertain due to the changing regulatory landscape. Shire continues to monitor the regulatory environment at large, and proactively plans for potential regulatory changes within our industry. We collaborate internally across global functions and business units, and externally with outside counsel and advisors, to understand potential industry reform, and its impact on our strategy, operations and performance.	

1 Illustrates overall risk exposure direction, based on an assessment of potential risk impact, likelihood of materialization, and risk mitigation effectiveness

Principal area of risk	Context	Trend[1]
Clinical trial research, safety and efficacy Failure to demonstrate safety and efficacy in planned and ongoing clinical trials, unsuccessful clinical research, and failure to complete clinical research in a timely fashion, could result in penalties, fines, reduced revenue, and/or damage to our reputation.	The Company has a portfolio of products in various stages of research and development. The successful development of these products requires significant investment, with no guarantee that these products will receive regulatory approval. We continue to emphasize patient safety and a disciplined approach to research and development. We have governance structures in place to monitor and evaluate our risk exposure in this area, and which also allow for engagement in external reviews with thought-leaders, key opinion leaders and other stakeholders. Our combined portfolio is subject to review by Shire's Quality Assurance and Control function for inspection readiness. We conduct various operational reviews of the programs ensuring targeted reviews of safety and efficacy profiles, including identification of programs where there is limited or no mechanistic, clinical or regulatory precedent.	
Intellectual property (IP) and patents Failure to obtain, maintain, enforce or defend our patents, regulatory data, or other IP may lead to the compromise of exclusivity periods and reduced revenue.	As a global biopharmaceutical company, our significant investments in research and development, and related intellectual property and patents, are extremely valuable corporate assets, and need to be protected. We face intense competition from manufacturers of branded and generic therapies who may challenge our patent protections in certain markets. We may be subject to adverse outcomes in legal matters and other disputes, including the Company's ability to enforce and defend patents and other intellectual property rights required for our business. Shire works with internal and external counsel to monitor threats, defend our patents and IP and prosecute violations.	
Public and private partnerships (PPP)/joint ventures (JV) Failure to effectively manage third-party alliances, geopolitical uncertainty, technology expropriation, foreign exchange exposure, payment/collections, and other risk areas could result in reduced revenue, damage to our reputation, and/or loss of "license to operate" in certain jurisdictions.	We operate a number of collaborative agreements and external alliances with various third-parties across the globe to expand our product portfolio and market share. Shire carefully evaluates new PPP/JV opportunities before entering into agreements. We focus on support and alignment between our patients, healthcare professionals, and each PPP/JV. We oversee, monitor, audit, and report on these PPP/JV relationships on a regular basis. We review macroeconomic factors, manage relevant government relations, and enforce contractual terms.	
Tenders Failure to effectively execute and win major tenders in key markets could result in reduced revenue.	Procurement through tenders is standard practice in the majority of our international markets and we have developed capabilities to effectively manage tenders. We strive to shape tenders to include criteria beyond price so that the value of the therapy is recognized. We also encourage payers to partner with us on alternative, value-based models to move beyond tenders, where appropriate. We continue to manage tender relationships and monitor the tender landscape around the world, adjusting our approach as needed.	
Global drug safety tracking of patient support programs (PSP) Risk of non-compliance in safety reporting and interpretation, and incomplete safety information and documentation relative to Patient Support Programs (PSPs), could result in potential compromise of patient safety, loss of confidential data, fines, penalties, business disruptions, and/or damage to our reputation.	We manage an increasing number and variety of PSPs globally and aim to accurately and efficiently track and report their respective safety information. Shire has implemented a safety reporting policy, registration programs, personnel training, and detailed procedures for PSPs. We continue to improve and refine our system to ensure central approval and oversight of all global PSPs.	
Acquired product/company integration and strategic initiatives Failure to effectively integrate acquired products/companies, and achieve projected value from other strategic initiatives, could result in lost synergies, diversion of management focus, time and resources, operational inefficiencies, increased costs, reduced revenue, and/or damage to our reputation.	The integration of new products/companies and the implementation of other strategic initiatives can be complex, costly, and time-consuming. Important considerations include culture, personnel, product line synergy, operations, platform alignment, compliance, and systems, while maintaining focus on patient safety, supply chain execution, customer service, sales, and business relationships. The Board has established a governance framework to enable the integration of Baxalta and the ongoing strategic review of the organization. These initiatives are being led by senior, experienced leaders. We continue to audit and monitor Baxalta integration activities in all functions, franchises, and business units, with the Board maintaining oversight. As of December 31, 2017, certain Baxalta integration activities, particularly in IT and Technical Operations, continue to progress, with the majority of integration work having been completed or being in the final phases of implementation. We continue to invest time, attention, and resources in the ongoing strategic review of the business.	

1 Illustrates overall risk exposure direction, based on an assessment of potential risk impact, likelihood of materialization, and risk mitigation effectiveness

A robust portfolio of leading brands

Global leadership and expertise in high-need therapeutic areas

Immunology

The Immunology franchise includes immunoglobulin (IG) therapies which are used to treat a number of conditions including primary immunodeficiencies (PI), a group of more than 300 genetic disorders in which part of the body's immune system is missing or failing, as well as certain autoimmune conditions. We have also incorporated our therapies for HAE, a rare genetic condition characterized by episodic, potentially life-threatening swelling attacks, into the Immunology franchise in order to benefit from the significant overlap in treating physicians and researchers.

- Immunoglobulin sales growth in 2017 was driven by strong performance of GAMMAGARD liquid (our flagship IG brand) and also by our recently launched subcutaneous IG products — HYQVIA and CUVITRU
- HAE sales also continued to grow, driven by increased patients on therapy for both CINRYZE and FIRAZYR, despite a temporary supply chain disruption for CINRYZE in Q3

Hematology

Shire's in-line Hematology portfolio is primarily focused on hemophilia, a rare bleeding disorder that results from reduced activity or lack of clotting factor VIII (FVIII; hemophilia A) or IX (FIX; hemophilia B).

- Growth in hemophilia and inhibitor therapy products, primarily driven by increased demand for our rFVIII products, in particular our recently launched extended half-life product, ADYNOVATE

Neuroscience

Shire's in-line Neuroscience portfolio is focused on ADHD, a neurodevelopmental disorder that manifests as a persistent pattern of inattention and/or hyperactivity-impulsivity that interferes with functioning or development.

Immunology

Sales

$4,370m

- HyQvia
- Cuvitru
- GAMMAGARD LIQUID
- Glassia
- Flexbumin
- CINRYZE
- firazyr

Hematology

Sales

$3,786m

- ADVATE
- my PK FiT
- ADYNOVATE
- FEIBA
- vonvendi
- Obizur
- RIXUBIS

Neuroscience

Sales

$2,664m

- Vyvanse
- ADDERALL XR
- Mydayis
- intuniv
- BUCCOLAM

- VYVANSE continues to perform strongly, with growth driven by increased penetration into the growing U.S. adult segment, as well as contributions from U.S. pricing and continued market growth internationally
- Positive uptake of MYDAYIS following U.S. launch

Internal Medicine

Our Internal Medicine (IM) franchise is focused on rare and specialized conditions such as short bowel syndrome (SBS), a rare and potentially fatal condition in which patients struggle to maintain adequate nutrition and hydration, and hypoparathyroidism, a rare disorder of the endocrine system responsible for regulating electrolyte levels, especially calcium.

- Key growth drivers in 2017 included continued market penetration and consequent increase in patients on therapy for both GATTEX and NATPARA
- Growth offset by LIALDA sales decline due to new generic competition in 2017

Genetic Diseases

Our in-line portfolio in Genetic Diseases includes enzyme replacement therapies for three lysosomal storage disorders (LSDs): Hunter syndrome (mucopolysaccharidosis II), Gaucher disease (glucocerebrosidase enzyme deficiency), and Fabry disease (alpha-galactosidase A enzyme deficiency). These are rare, genetic diseases that mainly affect children, and have potential to severely impact quality of life and reduce life expectancy if not controlled.

- Growth driven primarily by an increase in the number of patients diagnosed and treated

Oncology

Our in-line Oncology portfolio includes treatments for rare and difficult-to-treat cancers including acute lymphoblastic leukemia and metastatic pancreatic cancer.

- ONCASPAR continues to perform well in the U.S.; further growth continues internationally, as European approval of lyophilized ONCASPAR was granted at the end of 2017
- Successful launch of ONIVYDE through Europe in 2017

Ophthalmics

XIIDRA, the only product approved in the U.S to treat the signs and symptoms of dry eye disease (DED), is the foundational product for our Ophthalmics franchise. DED is a highly prevalent condition in which the eye does not produce an adequate volume of tears or when the tears are not of the correct consistency, leading to irritation, blurry vision, and potentially corneal damage.

- While XIIDRA continued to demonstrate growth in commercial insurance, lack of access to Medicare Part D market has tempered performance
- International expansion is under way with Canadian approval granted in 2017 and regulatory submissions in process in Israel, Europe and other international markets

Internal Medicine

Sales

$1,670m

Gattex

Natpar

Lialda

PENTASA

Genetic Diseases

Sales

$1,438m

elaprase

REPLAGAL

VPRIV

Ophthalmics

Sales

$259m

xiidra

Oncology

Sales

$262m

oncaspar

onivyde

Innovation at all stages of development

Innovation is the lifeblood of our current and future success. We now have 40 programs in the clinic with 23 in the later stages of development, with a significant focus on areas of high unmet medical need and rare disease patient populations.

7

Phase 1

This stage is typically the first time a medicine is tested in humans. The emphasis is on examining effectiveness, side effects and safety. We currently have seven programs in Phase 1 of our pipeline.

- • **SHP611**
  Metachromatic Leukodystrophy
- • **SHP631**
  Hunter CNS
- • **SHP634 (NATPARA*) — Japan**
  Hypoparathyroidism
- ◊ **SHP639**
  Glaucoma
- • **SHP654**
  Hemophilia A, Gene therapy
- • **SHP673 (ONIVYDE*)**
  Small Cell Lung Cancer, 2nd Line
- ◊ **SHP680**
  N Neurological conditions

10

Phase 2

In Phase 2 we carry out further clinical trials, continuing to investigate efficacy and safety and deepening our understanding, for example of dosage levels. We currently have 10 programs in Phase 2.

- • **SHP607**[1]
  Complications of Prematurity
- ◊ **SHP615 (BUCCOLAM*) — U.S.**
  N Seizures
- • **SHP625**
  Alagille syndrome
- • **SHP625**[2]
  Progressive Familial Intrahepatic Cholestasis
- ◊ **SHP626**
  Nonalcoholic Steatohepatitis
- ◊ **SHP647**
  Crohn's Disease
- • **SHP652**[3]
  Systemic Lupus Erythematosus
- ◊ **SHP659**
  Dry Eye Disease
- • **SHP673 (ONIVYDE*)**
  Pancreatic Cancer, 1st line
- • **SHP673 (ONIVYDE*) — Japan**
  Pancreatic Cancer, Post Gemcitabine

15

Phase 3

This is the final stage of clinical trials before registration. It focuses on confirming the effectiveness and safety of the product compared to a placebo or another treatment. We currently have 15 Phase 3 programs in our pipeline.

- • **SHP609**[4]
  Hunter IT Ph 2/3
- ◊ **SHP615 (BUCCOLAM*) — Japan**
  N Seizures
- • **SHP616 (CINRYZE*)**
  Antibody Mediated Rejection
- • **SHP616 (CINRYZE*) — Japan**
  Hereditary Angioedema prophylaxis
- • **SHP616 (CINRYZE*) — Subcutaneous**
  Hereditary Angioedema prophylaxis
- • **SHP620**[2]
  Cytomegalovirus infection in transplant patients
- • **SHP621**[2]
  Eosinophilic Esophagitis
- • **SHP633 (GATTEX*) — Japan**
  Adult Short Bowel Syndrome
- • **SHP633 (GATTEX*)**
  Pediatric Short Bowel Syndrome
- ◊ **SHP640**
  Infectious Conjunctivitis
- ◊ **SHP647**
  Ulcerative Colitis
- • **SHP655**
  Congenital Thrombotic Thrombocytopenic Purpura
- • **SHP671 (HYQVIA*)** Chronic Inflammatory Demyelinating Polyradiculoneuropathy
- • **SHP671 (HYQVIA*)**
  Pediatric Primary Immunodeficiency
- • **SHP672 (OBIZUR*)**
  Congenital Hemophilia A with Inhibitors (surgery)

Key

- • Rare indication
- ◊ Non-rare indication
- N Neuroscience Division

* While this product is approved for certain indications, it is under investigation for other indications and subject to regulatory approval.

1 SHP607 originally developed for retinopathy of prematurity.

2 Granted breakthrough designation by the U.S. FDA.

3 Working closely with the U.S. FDA to resolve their questions.

4 Failed primary and secondary endpoints, Shire is currently conducting an analysis of the full data set.

5 Programs have completed Phase 3/pivotal trials and are awaiting further regulatory action.

6 Received EU approval on January 15, 2018.

35+

Preclinical

At this initial stage, the focus is on researching the feasibility and safety of a potential new product. This lays the foundation for clinical trials. We currently have 35+ preclinical research programs under way.

- Internally developed and via partnership
- Both rare disease and specialty conditions
- Multiple modalities including New Chemical Entities, MAbs, proteins and gene therapy

8

Registration

Building on the data and understanding gained during the earlier phases, the focus here is on filing for regulatory approval from the relevant authorities. We currently have eight programs at this stage of our pipeline.

- ◊ **SHP489 (VYVANSE*) — Japan**
  N Attention Deficit Hyperactivity Disorder
- ◊ **SHP555[5] — U.S.**
  Chronic Idiopathic Constipation
- ◊ **SHP606 (XIIDRA*) — EU**
  Dry Eye Disease
- • **SHP643[2,5]**
  Hereditary Angioedema prophylaxis
- • **SHP660 (ADYNOVI*) — EU**
  Hemophilia A
- • **SHP663[5]**
  Acute Lymphoblastic Leukemia
- • **SHP667 (FIRAZYR*) — Japan**
  Hereditary Angioedema
- • **SHP677 (VONVENDI*) — EU**
  von Willebrand disease

7

2017 approvals

- ◊ **MYDAYIS — U.S.**
  N Attention Deficit Hyperactivity Disorder
- ◊ **INTUNIV — Japan**
  N Attention Deficit Hyperactivity Disorder
- • **CINRYZE — EU**
  Pediatric HAE prophylaxis
- • **NATPAR — EU**
  Hypoparathyroidism
- • **ADYNOVATE — Japan**
  Pediatric Hemophilia A
- • **FIRAZYR — EU**
  Pediatric Hereditary Angioedema
- • **ONCASPAR — EU**
  Acute Lymphoblastic Leukemia

Select upcoming 2018 milestones

- • **SHP660[5,6] (ADYNOVI*) — Hemophilia A**
  Anticipated EU approval
- • **SHP663 — Acute Lymphoblastic Leukemia** U.S. FDA filing
- • **SHP643 — HAE prophylaxis**
  U.S. FDA filing
- • **SHP654 — Hemophilia A, Gene Therapy**
  First patient screened for Phase 1/2 study
- • **SHP643[5] — HAE prophylaxis**
  EU filing
- • **SHP660 (ADYNOVATE*) — Hemophilia A myPKFiT** U.S. FDA Filing
- ◊ **SHP647 — Crohn's Disease**
  First patient enrolled in Phase 3 study
- ◊ **SHP489 (VYVANSE*) — ADHD pediatric**
  N Anticipated Japanese Approval*
- • **SHP677 (VONVENDI*) — von Willebrand Disease** Anticipated EU Approval*
- ◊ **SHP606 (XIIDRA*) — Dry Eye Disease**
  Anticipated EU approval*
- • **SHP643 — HAE**
  Anticipated U.S. FDA approval*
- • **SHP643 — HAE pediatric**
  Phase 3 first patient first visit
- • **SHP616 (CINRYZE*) — HAE pediatric**
  Anticipated U.S. FDA approval*
- • **SHP621 — Eosinophilic Esophagitis**
  Phase 3 top-line data
- ◊ **SHP555[5] — Chronic Idiopathic Constipation** U.S. FDA Filing

Pipeline spotlight:

SHP643 for Hereditary Angioedema

One program in particular that saw great progress in 2017 is SHP643 (lanadelumab) for the prevention of hereditary angioedema attacks in patients with HAE. This program was awarded breakthrough therapy designation in 2015 by the U.S. FDA.

HAE is a rare, genetic disorder estimated to affect about 1 in 10,000 to 1 in 50,000 people worldwide. The condition results in recurrent, localized edema (swelling). The areas of the body most commonly affected are the extremities, gastrointestinal tract, and upper airways. The swelling can be debilitating and painful, potentially impacting both work and education for people living with HAE. Swelling of the throat can be life-threatening due to asphyxiation.

Over the past several years, Shire has developed a broad portfolio of products for HAE, including acute and prophylactic treatments FIRAZYR and CINRYZE, and sought out this latest compound through our acquisition of Dyax in early 2016. While the decision to acquire Dyax was based on a relatively small amount of preclinical and clinical data, the team was convinced that lanadelumab had the potential to be a meaningful advance in the treatment of patients with HAE.

Efficiency approaching attack free

87%

Reduction over 26 weeks

We are hopeful about the possibility of approaching attack-free efficacy with this product.

Lynsey
Living with HAE
Lynsey advocates for being an active participant in your treatment plan with your physician. Through this relationship she has been able to manage her HAE and participate in fitness training and become a massage therapist.

Shire developed the Phase 3 program in conjunction with legacy Dyax and recruited the largest HAE study in the fastest time ever (125 patients recruited in approximately six months).

Shire announced the Phase 3 topline trial results in May 2017, which showed that patients taking lanadelumab every two weeks achieved an 87 percent reduction in the mean attack rate over 26 weeks. A deeper look into the data showed that once patients that took lanadelumab once every two weeks achieved steady state (days 70-182 of the trial), they experienced greater than 90 percent attack reduction and 77 percent of those patients were attack-free. For patients that had attacks, the severity of attacks was significantly reduced. Based on this data, and pending FDA approval, we are hopeful about the possibility of approaching attack-free efficacy with lanadelumab.

We expect to launch SHP643 in the U.S. this year, subject to regulatory approval.

Lanadelumab has the potential to significantly improve patients' treatment experience. Currently-marketed prophylactic treatments require multiple injections every week. Lanadelumab, on the other hand, is expected to require only two low-volume, self-administered subcutaneous injections per month. We anticipate that this will significantly reduce the treatment burden on HAE patients, and hope that this will lead to improved therapeutic outcomes.

Commercial spotlight:
Launch excellence

With a strong pipeline of 40 programs in clinical development, launch excellence is a critical driver of Shire's growth. In 2017, $1.6 billion of Shire's sales came from products launched since 2013 across the portfolio. With the strategic acquisition of Baxalta which came with a strong global infrastructure, particularly in emerging markets, Shire has expanded its geographic footprint and now has therapies available in more than 100 countries worldwide. The rapid country-level integration of the two companies throughout 2016 and 2017 allowed us to consolidate 28 country sites and launch 50 products at the country level in 2017 alone. Here is a closer look at two recent launches, MYDAYIS and XIIDRA.

MYDAYIS

Approximately 50 to 66 percent of children with ADHD continue to have symptoms of the disorder as adults, resulting in an estimated 4.4 percent of U.S. adults living with a diagnosis of ADHD. As individual's needs are different, it has become increasingly important to have new treatment approaches available, like MYDAYIS, to help patients manage their symptoms throughout their day.

MYDAYIS is a once-daily, extended-release treatment comprised of three types of drug-releasing beads. It was approved by the FDA on June 20, 2017 for prescription in the U.S. for the treatment of ADHD in patients 13 years and older. MYDAYIS is not for use in children 12 years and younger.

Shire's strategy with MYDAYIS was to launch very quickly, focusing on the adult ADHD population who were looking for a long duration therapy with once-daily dosing to manage their ADHD symptoms. Currently, in the U.S., 56 percent of adult patients are prescribed more than one pill per day, in many cases to extend the duration of symptom control. Shire was in the position to help address this patient need with MYDAYIS.

The strong market demand for this new therapy is evident in the nearly 60,000 prescriptions written within the first six months of approval, with 25,000 unique new patients and 8,000 unique prescribers — more than any other ADHD product launched in the U.S. since 2010. Over time MYDAYIS has the potential to become a very meaningful therapeutic option for patients 13 years and older with ADHD.

50

Product launches at the country level in 2017

XIIDRA

Shire has established a presence in ophthalmics with the launch of XIIDRA, which was approved for use in the U.S. in July 2016.

XIIDRA is a twice-daily eye drop solution for dry eye disease (DED), one of the most prevalent conditions diagnosed by eye care professionals. DED may affect up to an estimated 16 million adults in the U.S. The condition may significantly affect vision-related quality of life, often impacting activities such as reading, using computers, driving and watching television. XIIDRA provides patients with an effective treatment option as the first and only treatment approved in the U.S. to treat the signs and symptoms of DED.

In the U.S., Shire has generated over 1 million XIIDRA prescriptions since launch, and catalyzed total DED market growth of 23 percent from August 2016 to August 2017. With DED market growth in the low single digits prior to Shire's entry into the market, our disease education efforts, namely the eyelove® campaign, significantly influenced expansion of the market.

We expect greater U.S. uptake for XIIDRA once broader reimbursement access for Medicare patients is available and as we launch XIIDRA internationally. As part of our geographic expansion, XIIDRA gained its first international approval in Canada in late 2017 with launch planned for the first quarter of 2018. Additional regulatory submissions are progressing in key international markets around the world including Europe, the Gulf Countries and Asia Pacific.

We understand the importance of all parts of our business — particularly R&D, manufacturing, and commercial — working together seamlessly to ensure that our innovative new products get to patients in need. We are proud of our recent launch successes, and with our robust pipeline, anticipate many more in the years to come.

Melissa

Living with Dry Eye Disease

Before being diagnosed with DED two years ago, Melissa felt limited by her symptoms and not being able to wear contact lenses or enjoy activities such as scuba diving.

Technology spotlight:

Intersection of health and technology to enable patient-centric care

Although each rare disease affects a relatively small number of people, together they are one of the largest underserved patient populations in the world — and a population that is uniquely positioned to benefit from technological innovation in healthcare. At Shire, we believe that the technologies that will be most impactful in the future will be those that empower patients to be active participants in their own treatment and we are working diligently to incorporate these technologies into all that we do.

One of the ways we embrace technological advances to benefit patients is by seeking the best complementary minds in technology to enhance our digital capabilities. Through these partnerships, we push the boundaries of what is possible and improve outcomes for patients. For instance, Shire has formed partnerships with digital incubators to scan the market for disruptive innovations that can help accelerate diagnostic capabilities, create efficiencies within clinical trials, and improve patient efficacy and safety outcomes. In addition to our partnerships with smaller companies, Shire collaborates with some of the leading technology organizations in the world to help us develop ground-breaking solutions to support patients struggling with a rare disease. Shire's breadth of experience, coupled with the technology, market reach, and global resources of these organizations, creates a powerful force on behalf of patients and caregivers. Whether large or small, all of our partnerships fuel our mission to create a digitized Shire that supports patients through every step of their journey.

OnePath Virtual Assitant
Today, Shire is moving towards a patient-centric connected care model, utilizing virtual assistants powered by artificial intelligence (AI) as part of our OnePath environment for patients living with type 1 Gaucher, HAE, Hunter syndrome, hypoparathyroidism and short bowel syndrome. The OnePath Virtual Assistant, the result of collaboration between Shire, Accenture and Microsoft, makes it easy for patients to get common questions answered at a time and place that's convenient for them, without the need to interact directly with a Shire patient services representative if no one is available at the exact time of need.

myPKFiT
We also emphasize individualized care for patients. For example, for our hemophilia patients, a one-size-fits-all treatment approach does not meet their unique needs, so we developed myPKFiT, a validated software medical device that provides personalized pharmacokinetic (PK) estimates and supports the development of personalized dosing regimens for use with ADVATE, the most prescribed FVIII therapy in the world. In December 2017, myPKFiT was granted clearance in the U.S. by the FDA and is currently used

Graeme
Living with hemophilia
Reflecting on growing up with hemophilia, Graeme is now able to have a more positive outlook on life and his treatment options.

myPKFiT currently used by

24
Countries outside the U.S.

by more than 400 healthcare providers in 24 countries outside the United States. In the future, Shire plans to extend the utility of myPKFiT to another one of our hemophilia therapies, ADYNOVATE. As science progresses, we are becoming more aware of the benefits of precision medicine and devices for achieving the best outcomes for patients. As a result, we are investigating opportunities to provide more customized experiences in other therapeutic areas using quantitative pharmacology and machine learning to enable data driven healthcare.

Shire strives to be a data-driven organization in everything we do. Last year, Shire launched a suite of intelligence tools that enhances our understanding of how patients access our therapies. The suite is powered by advanced analytics and a robust dashboard tool that analyzes current data for better real-time decision making, while creating predictive data models to guide future efforts. This is already one of the most advanced analytics stacks in the industry and our plan is to continue to expand our capabilities to include cognitive and deep learning services so that additional patients can benefit from Shire's therapies, as appropriate.

Technology will continue to revolutionize the ways in which we support the understanding of rare diseases within the medical community. In 2018 we will launch an augmented reality experience to help educate physicians on rare disease progression and impact.

By focusing on all phases of the patient journey, from symptom identification to diagnosis, treatment initiation, and living with the disease, Shire is employing the right technologies at the right time to serve our patients.

One of the areas where technology can potentially have a tremendous impact is in diagnosis. In the UK and the U.S. for example, the average time to obtain a correct diagnosis for a rare disease patient is five to seven years. Patients see an average of 7.3 physicians during this journey. In an effort to improve this process, healthcare providers are using new technologies and tapping large data sets to better identify symptoms and expedite diagnoses. They are also using this information to develop treatments that are personalized to the individual or small patient sub-groups.

At Shire, we believe these new technologies will play a key role in the work of the Global Commission to End the Diagnostic Odyssey for Children with a Rare Disease. Co-chaired by our CEO, along with Microsoft and EURORDIS-Rare Diseases Europe, this new Global Commission will harness the power of technology as they consider how to shorten the often multiple year journey for patients and families to arrive at an accurate diagnosis. Working with a multi-sector group of rare disease experts from patient advocacy groups, academic/research institutions, hospitals and health systems, policy organizations, technology and biotechnology companies, together they are creating an actionable roadmap to break down barriers to diagnosis and expect to publish their report early in 2019.

Franchise spotlight: Immunology

When it comes to rare and immune-mediated conditions, we serve individuals with these diseases and the physicians who treat them by providing therapies and services that can be tailored to each person's unique needs — even as these needs change across the patient journey.

Shire's strength in immunology is built on deep expertise in delivering complex therapies for a variety of conditions. To deliver on our promise as a rare champion, Shire's goal is to provide:

- **Personalized solutions**
  Intelligent, adaptable treatments that help manage and prevent serious conditions, supported by services that support these individuals in using the best therapy for them, and adjusting their approach as needs change.
- **Meaningful advances**
  Ongoing progress that delivers new treatments and explores new ways of receiving them to continually advance the standard of care from symptom management to preventive therapies as we work toward the ultimate goal of a cure.
- **Expertise in complex manufacturing**
  Manufacturing expertise to confidently manage the end-to-end challenges of developing complex therapies, including those created from human plasma, from securing donations to delivering treatment.

Shire Immunology delivers in all of these areas for each condition that we treat, from today's work with immunoglobulins across a variety of diseases, hereditary angioedema and replacement therapies, to tomorrow's advances in immune-mediated conditions. For more than 30 years, patients have trusted us for help even on the most difficult days. In the years ahead, patients and physicians know they can rely on Shire to continue delivering personalized immunology that can transform those difficult days into better tomorrows.

Shire's support for those living with rare and immune-mediated conditions includes a suite of personalized therapies and thoughtfully designed support services that help patients manage the complexities of long-term therapy. Shire's current offerings include treatments used for a variety of conditions, including hereditary angioedema (HAE) and primary immunodeficiency (PI), and rare autoimmune and neurological conditions, among others:

HAE:
Shire provides a portfolio that both treats and prevents attacks, giving patients the freedom to live their lives, aided by patient services and next-generation therapies that improve the patient treatment experience.

– CINRYZE: the first C1 esterase inhibitor approved to help prevent swelling attacks in patients with HAE.

– FIRAZYR: a subcutaneous injection available to treat acute HAE attacks.

Shire is also looking to expand its HAE portfolio, pending regulatory approval:

– Lanadelumab, an investigational fully human monoclonal antibody administered by subcutaneous injection that is a potent and specific inhibitor of plasma kallikrein, which is chronically uncontrolled in patients with HAE — even between attacks.

Intelligent immunoglobulin (IG) solutions
Shire offers the world's broadest IG portfolio. We aspire to provide an intelligent set of flexible options to meet each patient's need for effective care that fits their lives and improves the overall patient treatment experience.

- GAMMAGARD Liquid / GAMMAGARD S/D / KIOVIG (ex-U.S.): A standard of care for PI therapy, GAMMAGARD Liquid, or GAMMAGARD S/D for those who cannot tolerate IgA, provides immunoglobulin G via either intravenous or subcutaneous injection administration. In addition, GAMMAGARD/KIOVIG helps patients with multifocal motor neuropathy (MMN) (IV administration only), secondary immunodeficiency (ex-U.S.) and is being evaluated for use in chronic inflammatory demyelinating polyneuropathy.
- CUVITRU: A highly purified and concentrated IG solution, CUVITRU dosing can be customized to allow for less infusion time.
- HYQVIA: The only once-a-month subcutaneous treatment for adults with PI.

Shire is also looking to expand its IG portfolio with new devices and delivery methods, pending regulatory approval:

- We are developing innovations that may help improve how patients receive treatment — from subcutaneous administration to auto-injectors to wearables — we are hopeful that these advances may provide patients with greater freedom from their disease.

Other bio therapeutics
Shire offers a broad portfolio of products including Alpha-1, Albumin, Protein C and pdFVIII, designed to meet the needs of patients in both the hospital and at-home setting.

Shire's strength in immunology is built on deep expertise in delivering complex therapies for a variety of conditions.

Hunter
Diagnosed with PI at age two, Hunter is now managing this disease and is an energetic ten year old. He enjoys video games, basketball, board games, reading as a family and spending time around the kitchen island.

Complex manufacturing
Shire has the manufacturing expertise to confidently manage the challenges of developing complex therapies, including those created from donated human plasma which benefit from an end-to-end approach from securing donation to delivering treatment. Beginning with its 100 BioLife plasma donation centers, to its state-of-the-art fractionation and manufacturing facilities, Shire is working to optimize plasma-based manufacturing to meet the needs of current and emerging markets in ways that don't exist today.

To support the growing demand for plasma-derived therapies, Shire filed its first submission to the U.S. FDA for a new plasma manufacturing facility near Covington, Georgia at the end of 2017. The facility is expected to add approximately 30 percent capacity to the Company's internal plasma fractionation network once fully operational. Commercial production is expected to begin in 2018. Shire also expects to continue expansion of its plasma collection network in Georgia and throughout the U.S.

30%

Additional plasma fractionation capacity to the Company's internal manufacturing network

Championing Responsibility

Responsibility is a core value that has long been embedded across the Company and runs through every aspect of our business, ultimately to better serve patients.

Kim Stratton
Head of International Commercial & Executive Sponsor, Responsibility Sponsor Network

Responsibility strategic framework

> Responsibility is an integral part of our business. Our Responsibility strategy and commitments provide a roadmap to make a significant contribution to our patients, employees and our communities.

As the leading global biotech company in rare diseases, we seek to address significant unmet needs and transform people's lives through the breakthrough medicines we develop. Everything we do across our organization — from engaging our people to operating in a responsible and sustainable way — is to serve as a champion for patients and those who care for them.

Responsibility helps the Company have the greatest positive impact on the lives of patients, employees, and local and global communities. It is a commitment that is supported by Shire's Board of Directors, championed by the CEO, driven forward by Shire's senior leaders and shared by our employees. It is at the heart of how we lead and deliver high patient impact, sustained growth, and societal value.

A focused strategy

In 2017, Shire developed its new Responsibility strategy with commitments and long-term goals to be achieved by 2025 aimed at enhancing the Company's Responsibility ambition and performance. The strategy is based on the findings of Shire's Responsibility materiality assessment, conducted in 2016, that identified and prioritized key Responsibility issues of greatest significance to Shire and its key stakeholders (including patient groups, investors, suppliers, nongovernmental organizations and employees). Kim Stratton and members of Shire's Board of Directors provided oversight during the strategy development. The strategy was ultimately reviewed and endorsed by Shire's Executive Committee and the Board.

Shire's Responsibility strategy of nine commitments is aligned to three strategic Responsibility pillars: Supporting Patients, People and Culture, and Sustainable Operations. The Responsibility strategy is focused on patients and those who care for them, and is explicitly linked to Shire's strategic drivers, with ethics and integrity permeating throughout. Shire considered how our Responsibility commitments could further the United Nations' Sustainable Development Goals, which cover a broad range of social and economic development issues.

This framework will help us focus strategically on what is most important to Shire and its stakeholders. We continually focus to make sure we organize and apply ourselves for maximum long-term positive impact.

Additional information on the Responsibility strategy, commitments and long-term goals can be found in Shire's Annual Responsibility Review available at www.shire.com/who-we-are/responsibility.

Responsibility and risk management

Shire's risk management strategy is to identify, assess, mitigate and monitor significant risks that it faces, including those relevant to its Responsibility strategy and commitments. This Responsibility section includes details of such risks, summary responses and further relevant documentation in each area. Two of the key risk areas related to Responsibility at Shire, Environment Health and Safety (EHS) Material Compliance and Anti-corruption/ anti-bribery, are recognized as Company Principal Risks in this reporting cycle. See the Principal Risks and Uncertainties section starting on page 18 for further information.

In 2017, Shire remained in the FTSE4Good Index Series, a leading responsibility investment index that recognizes positive environmental, social and governance practices.

Supporting patients

Supporting patients is core to what we do. We are dedicated to supporting patients and those who care for them throughout their entire journey.

Accelerating rare disease diagnosis

We are committed to dramatically shortening the time to diagnosis and improving access to treatment. We aim to support patients and those who care for them along the entire patient journey, from involvement in clinical trials to managing their care through the use of digital innovation and beyond. We are champions for early diagnosis. As part of our new Responsibility strategy, we are spearheading efforts to significantly shorten the time to diagnosis for rare diseases and are helping to lead the Global Commission to End the Diagnostic Odyssey for Children with a Rare Disease, co-chaired by Shire's CEO, to develop an actionable roadmap. Working with physicians, patients, their families and caregivers, we raise awareness of the signs of many rare diseases and provide the extra support often required with this type of diagnosis. These efforts include an increasing focus on expanding diagnostic testing.

Improving access to existing treatments and patient support

We work to improve access to our existing treatments by reducing barriers, such as affordability and access to therapies. We have several programs to assist patients in the U.S., including OnePath®, Shire Cares®, Hematology Support Center and MyIgSource. Outside the U.S., we have numerous programs to increase access, while helping build capacity and support for patients. For example, through an agreement with the World Federation of Hemophilia, Shire provides annual donations of clotting factor to support patients in various countries. Shire donated nearly eight million units in 2017. We have long-running charitable access programs partnering with the NGOs Direct Relief and Project HOPE, donating enzyme replacement therapies for patients with LSDs in 16 countries. Working with these organizations, as well as with patient advocacy organizations and medical experts, we also partner to raise awareness for rare diseases and build treatment capabilities for LSDs in several less developed countries. We are aiming to create specific Responsibility goals focused on Access for recommendation in 2018 as part of our Responsibility strategy.

Increasing disease awareness

We aim to share our expertise and provide balanced, reliable and scientifically sound information to help improve understanding and appreciation of rare diseases. This happens across multiple therapeutic areas in a variety of programs developed for patients, caregivers, healthcare providers and the general public.

We also continue to encourage responsible use of our ADHD products through a coalition of medical, mental health, higher education, students and industry experts.

Investing in the future

Addressing the need for more physicians trained in disciplines associated with the diagnosis and treatment of rare diseases is one of the ways we prepare for the future. Shire's partnership with the ACMG Foundation for Genetic and Genomic Medicine is funding 10 much-needed genetic fellowships to support the next generation of medical geneticists. In 2017, the first recipients of the Shire/ACMG Foundation Medical Genetics Training Awards were awarded.

Ensuring clinical trial transparency

Safeguarding the human rights and privacy of those taking part in our clinical trials while maintaining our ongoing dedication to maximum clinical trial transparency is of paramount importance to Shire. We achieve this through compliance with evolving transparency laws, regulations, practices and full alignment of our policies with the responsible sharing of clinical trial data.

Shire adheres to the International Conference on Harmonization (ICH) Good Clinical Practice (GCP) Guidelines. We recognize the importance of transparency in clinical studies and are committed to sharing clinical data and results responsibly with physicians, researchers and patients, while mitigating any risk of personal data identification. Through www.shiretrials.com, we provide a single portal to access easy-to-understand information on our current and past clinical trials.

Collaborating to improve care

In 2017, Shire joined Access Accelerated, a collective of more than 20 pharmaceutical companies and partners such as the World Bank and the Union for International Cancer Control, which collaborates with stakeholders to reduce barriers to non-communicable disease care in low- and middle-income countries. Shire has launched its pioneering hemophilia homecare program in India as an Access Accelerated initiative. This program aims to bring the hemophilia standard of care in developed economies to persons with hemophilia in India. Through Access Accelerated, we aim to share our learnings in bleed reduction and seek future collaborations to advance access to diagnosis and treatment for rare disorders in emerging economies.

Risk management

Details of the key risks, Shire's response and related policies concerning patient support and wider social matters are as follows:

Risk exposure	Summary response	Key Shire reference materials
Local and patient communities Failure to support, engage, and assist our patient communities may result in Shire losing its social license to operate in these communities. Additionally, Shire needs to continue to demonstrate a robust, equitable, and safe compassionate use program in local and patient communities.	We understand that our impact and reach extends beyond Shire into the therapeutic communities and groups that represent our patients and their families. Shire's Patient Advocacy team works to build and sustain mutually beneficial, trusting relationships with patient advocacy organizations around the globe. Our team manages relationships with more than 100 patient advocacy organizations and supports Shire colleagues in local operating countries working with patient advocacy organizations. Shire's Global Policy on Interactions with the Healthcare Community and Government Officials defines the global standards for interactions with patients and patient organizations. The Patient Advocacy and Global Compliance and Risk Management teams provide guidance and oversight. Additionally, Shire believes that participating in clinical trials is the best way for patients to access therapies prior to approval. In some extreme circumstances when this is not possible, patients with life-threatening diseases or conditions may seek special access to investigational medicines outside of a clinical trial setting. These situations are typically referred to as compassionate use, but can also be known as expanded access, early access, pre-approval access and emergency use. Shire has policies available on www.shire.com related to clinical trials and compassionate use.	– Global Policy on Interactions with the Healthcare Community and Government Officials – Community Engagement and Responsibility Policies – Compassionate Use Position – Conduct of Clinical Trials Policy – Corporate Giving Global Standards and Mandatory Requirements Read more about Risk on page 18

Valuing our people and culture

We are proud of our people and of the entrepreneurial culture at the heart of our Company.

Investing in our people

Equipping our employees for success is vital to serving our patients and communities. We focus on recruiting, developing and supporting highly trained, collaborative, engaged, high-performing employees who can continuously learn and grow while doing their best work. These are people who thrive in our transparent, entrepreneurial, patient-focused culture and who live our leadership behaviors.

Fostering a company culture of development and inclusion

We focus on professional and leadership development, organizational effectiveness and performance management in line with our ongoing commitment to help employees perform and progress throughout Shire. In 2017, we launched the WeLearn portal that offers easily accessible professional learning opportunities to support all employees in achieving their development goals. We also have expanded our mentoring programs and leadership effectiveness toolkits for new and current leaders.

Our success continues to be driven by our diverse employee talent around the world. We value all genders, ethnicities, ages, cultures, experiences and backgrounds as we build and grow our global organization. The benefit of our diverse workforce comes from respecting, considering and including different views in our work every day as described in our Code of Ethics. Our growing global reach gives us the opportunity to bring to our business, for the benefit of our patients, greater depth of experiences and capabilities. Shire is committed to diversity and inclusion and has a commitment to foster a company culture of development and inclusion as part of its new Responsibility strategy. Shire's Business Resource Groups (BRGs) are a valued part of the Shire infrastructure and important to our Company's success, as they contribute to building diverse and inspired teams by leading initiatives that help us attract, develop, and retain talent; engage with the world around us through meaningful community outreach; and bring a diverse set of ideas and experiences to spawn ideation, creativity, and energy. Each of our eight employee-organized BRGs is focused on a unique community of our employees: B-Equal (LGBT+), Black Leadership Council, Building Asian Leaders, Early Career Professionals, EnAbles (Disability/Caregivers), Impacto (Latino), Veterans, and Women@Shire.

Providing equal opportunities

Shire is committed to maintaining an environment that offers equal opportunities in employment and advancement, encourages inclusive conduct among all employees globally, and fosters respect for individual characteristics and values. As a global organization, our employees, patients, business and society benefit when we show respect, consideration and inclusion of different perspectives in our work every day. Shire's diverse talent around the world drives our success. As an employer, Shire welcomes the opportunity to affirm its continuing commitment to provide equal employment or advancement opportunity, and to dedicate ourselves to establishing a work environment that is free from discrimination. This means that, as an employer, Shire will not tolerate discrimination against any worker or job applicant on the basis of race, color, religion, gender, national origin, ancestry, age, sexual orientation, marital status, pregnancy, non-job related mental or physical disability, genetic information, veteran status, or military service. We are committed to the fair treatment and reasonable accommodation of applicants or employees' disabilities in accordance with all applicable laws in the respective locations of all Shire facilities.

Recognizing and rewarding

Our pay for performance philosophy provides managers with a variety of programs to recognize and reward employee contributions. Our employee share purchase plans enable employees to have a vested interest in Shire's success. We focus on communicating to drive performance at every level of the business, for example through one-on-one performance discussions between managers and employees and all-employee meetings held at our major sites. We regularly communicate with all employees via all-company meetings, the intranet, all-employee emails from the CEO and other executives, social networking platforms, and leadership briefings and cascading communications through emails and meetings.

Engaging our employees in our purpose and priorities

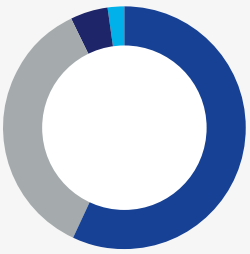
Ensuring that we provide a sense of purpose for our employees is important to us, and we provide opportunities for employees to feel they are making a meaningful impact on patients and in their communities. For example, we encourage our employees to support patient advocacy organizations by recognizing disease awareness days and months by hosting and participating in internal and external events and awareness campaigns such as walks and runs. Also, we held our third Global Day of Service with more than 7,300 employees dedicating more than 29,000 hours of their time to community projects across more than 300 locations around the world. For everyone involved, it was a very satisfying way to give back to local communities by making a lasting and meaningful difference.

2017 marked the second year of partnership with SeriousFun Children's Network, a global community of 30 camps and programs around the world that provides transformative camp experiences to children living with serious illnesses and their families. Shire's $3 million commitment, $1 million annually for three years, enables nearly 1,000 children to attend these life-changing camps. In addition, this year Shire employees dedicated more than 5,000 hours to volunteering with SeriousFun. Through our volunteer program, 28 employees volunteered as camp counselors at 12 different camps. Additionally, during our Global Day of Service, more than 250 employees volunteered their time to work on enhancing the sites of seven SeriousFun camps. And we were proud to sponsor two family weekends, allowing 38 families to spend quality time together at camp.

Risk management

Details of the key risks, Shire's response and related policies concerning the Company's employees are as follows:

Risk exposure	Summary response	Key Shire reference materials
Working conditions Failure to provide safe, fair, productive working conditions for employees around the globe could lead to legal, quality, and reputational impacts.	Shire values our employees and provides effective, safe working conditions, including health and safety, security and working hours in compliance with U.S. national and international labor laws and prevailing practices. Shire has programs and policies in place to safeguard against employee discrimination, including Code of Ethics training and continued monitoring of employee relations matters. Shire's Board Diversity Policy is described on page 65. Shire has established policies, employment practices and consistent processes with the purpose of mitigating employment risk and to assure the appropriate practices and processes are followed so that employees are managed without bias and discrimination and that all candidates and employees are given fair and equal consideration for employment opportunities and rewards and recognition.	– Code of Ethics – Human Rights Policy – Environment, Health and Safety Policy – Global Standards of Conduct Policy – Global Non-Discrimination and Anti-Harassment Policy – Employee trainings – Board Diversity Policy Read more about Risk on page 18



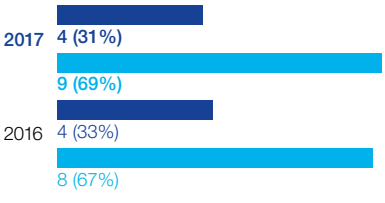
Employee Population by region
as of December 31, 2017

- **57%** North America
- **36%** Europe
- **5%** Asia
- **2%** Latin America

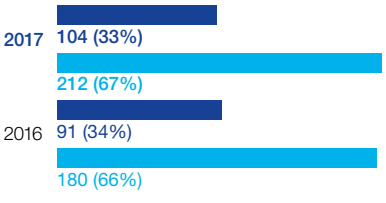
U.S. employment ethnic minorities
as of December 31, 2017

- **67%** Non-minority
- **32%** Minority
- **1%** Unstated

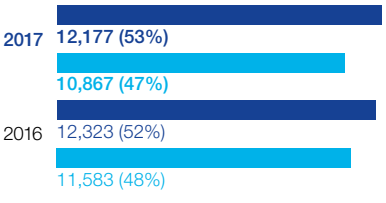
13
Shire plc Directors gender split



316
Shire senior managers gender split



23,044
Shire global employees gender split



Female
Male

Managing sustainable operations

Managing sustainable operations — from sourcing and manufacturing responsibly, to delivering safe and effective medicines, to using our natural resources carefully — helps ensure our patients receive the treatments they need to lead healthier lives.

Global approach, local focus

We strive to operate a sustainable organization that protects our employees, the environment, our partners and the communities in which we live and work, as well as one that helps ensure that our patients receive the treatments they need to lead healthier lives. We are committed to establishing a culture of best-in-class safety and wellbeing for all employees globally.

Shire's Responsibility strategy commits to sustainable and efficient use of natural resources and energy efficiency, including greenhouse gas emissions reduction goals, water conservation and waste management goals. The strategy also commits to responsible product stewardship and evaluating the social and environmental performance of Shire's strategic suppliers. As a world-class organization, we work to minimize adverse environmental impacts and risks that may be associated with our products, facilities and operations.

Our global Environment, Health, and Safety (EHS) policy outlines our commitments, within our operations and across the entire value chain. Shire's Environment, Health & Safety Management Program is designed to identify, manage and reduce EHS risks associated with our operations, assure compliance and support continual performance improvement.

We apply the same approach and policies to all our facilities worldwide, and we are working to develop cross functional programs, policies and governance structures that will help support progress towards achieving our new commitments and goals. Nearly all of our manufacturing and research and development sites are certified to the ISO 14001 Environmental Management System Standard and the Occupational Health and Safety Assessment Series (OHSAS) 18001 Standard, with additional sites pursuing certification in 2018. Adhering to these standards helps ensure that effective processes are in place to reduce impact on our operations with priority consideration for the health and safety of employees and contractors; ensure compliance with applicable laws, regulations and other EHS related requirements; and create a culture of continuous improvement related to the management of EHS in our operations.

Looking after our planet

We have initiatives in place to reduce our environmental impact through activities such as site-specific recycling and energy reduction programs. To reduce greenhouse gas (GHG) emissions, several sites use green energy power purchasing agreements including our operations in Orth and Vienna, Austria; Neuchatel, Switzerland; Lessines, Belgium; and Rieti and Pisa, Italy. To promote green building and healthier work spaces, we have incorporated green building design principles and have achieved U.S. Green Building Council Leadership in Energy and Environmental Design (LEED) certification within several sites, including locations in Los Angeles, California; Cambridge and Lexington, Massachusetts; Exton, Pennsylvania; Vienna, Austria; and Rieti, Italy.

Shire has established a cross-functional Global Energy Program that is charged with providing a systematic approach to measurably reduce energy and water consumption and cost, increase use of renewable energy, and reduce greenhouse gas emissions.

Promoting health and safety

We provide a safe work environment, as well as promote healthy lifestyles and behavior. We have implemented a goal as part of our Responsibility strategy to drive safety excellence by eliminating serious injury, impact, or fatality events at all Shire facilities. We train, empower and require our employees to take individual responsibility for health and safety, and launched safety leadership training for all leaders in 2017. We engage and consult with our employees when developing and improving our processes, and encourage them to integrate health and safety considerations into their everyday activities. As part of our Responsibility strategy, we are creating a comprehensive health and wellbeing program that supports all Shire employees to better serve our patients.

Responsible manufacturing and supplier diversity

We're committed to working closely with our suppliers and making positive changes along our value chain by encouraging our business partners, suppliers, and contractors to adopt responsible and sustainable practices. To that end, our new Responsibility strategy includes a focus on ensuring supplier commitment to responsibility by evaluating the social and environmental performance of Shire's strategic suppliers and working with strategic suppliers to influence performance. Shire also has launched a new Supplier Code of Conduct that describes Shire's expectations of its suppliers. Our approach to responsible supply chain management also includes supplier diversity. We actively seek and select qualified suppliers from all segments of the business community, in all markets where we operate. In the U.S., we employ our Supplier Diversity Program to ensure that Minority-Owned, Women-Owned, Veteran-Owned, Service-Disabled Veteran-Owned Small Businesses, businesses located in Historically Underutilized Business Zones (HUBZone) and Small Disadvantaged Businesses are afforded a fair and equal opportunity to participate in the awarding of contracts. In 2017, we exceeded our annual goal of 9 percent by spending 13 percent of our U.S. spend with these small businesses.

Sustainable performance

We received a score of A- for our 2017 climate performance and a B for our water performance in the CDP, improvements from Shire's previous scores. The CDP is a global non-profit organization working on behalf of investors to encourage companies to disclose and manage their environmental impacts. In 2017, over 5,600 corporations disclosed environmental data through CDP, with an average climate performance score among all participants of C and average water score of B.

Risk management

Details of the key risks, Shire's response and related policies concerning environmental matters are as follows:

Risk exposure	Summary response	Key Shire reference materials
Climate change and EHS material compliance Failure to manage the possible risks associated with climate change including new regulations, extreme weather events and natural resource scarcity may impact Shire's operations and reputation. Additionally, failure to adhere to relevant laws, regulations, and policies, including Shire's EHS Policy and Supplier Code of Conduct, may result in fines, business disruptions, increased operating costs, reduced revenue, interruption/postponement in research, delays of new product launches, and/or other environmental and reputational consequences. Note: EHS material compliance has been recognized as a principal risk in this reporting cycle. See page 20.	Shire is committed to operating in an environmentally responsible and sustainable manner and managing environmental risks. Shire tracks and monitors environmental regulatory and policy developments globally that may have a broad impact on Shire's operations and business strategy. The Company has established several governance mechanisms and programs. Shire has established a cross-functional Product Stewardship Working Group that meets quarterly to review any changes to the various material compliance regulations and requirements as well as changes to the Company, products, and processes. Shire has implemented processes and supporting technology to provide a framework for oversight and governance.	– Environment, Health and Safety Policy – Code of Ethics – Responsibility strategy Read more about Risk on page 18

Greenhouse Gas Emissions

Assessment parameters

Baseline Year[1]	January 1, 2016 to December 31, 2016 (FY2016)
Consolidation approach	Operational Control
Boundary summary	Emissions data includes all Shire plc consolidated entities. All manufacturing and plasma collection facilities are included in Scope 1 and 2 reporting of emissions from natural gas, fuel oil and electricity. Scope 1 emissions from global fleet fuel usage are included. Scope 2 emissions from commercial offices are included and approximated based on occupied square footage when primary consumption data was not available. Scope 3 includes emissions from business travel, employee commuting and waste generated in operations.
Consistency with the Financial Statements	By following the operational control approach, our GHG disclosures include data from leased assets that are not included in the consolidated financial statements.
Assessment methodology	Greenhouse Gas Protocol (updated 2015)
Intensity ratio	GHG Emissions per unit revenue (metric tonnes of carbon dioxide equivalents per million U.S. dollars of revenue)

1 Due to significant structural changes in Shire's operational boundary as a result of the Baxalta Inc. acquisition in 2016, Shire reset its baseline year to FY2016 to better reflect the newly combined organization.

	2017		2016[2]	
Greenhouse Gas Emission source[1]	(tCO_2e)[3]	(tCO_2e/$m)[3]	(tCO_2e)[3]	(tCO_2e/$m)[3]
Scope 1[4]	**149,000**		148,000	
Scope 2[5]				
Location-Based	**131,000**		134,000	
Market-Based	**111,000**		117,000	
Total (Scope 1 & 2)[6]	**260,000**	**17.1**	265,000	23.3
Scope 3[7]	**64,000**		80,000	
Total Emissions	**324,000**	**21.4**	345,000	30.4

1 Emissions factors were sourced from the UK's DEFRA database, the WRI GHG Protocol, and the U.S. EPA.
2 GHG emissions were revised to reflect acquisitions and divestments as well as changes in emissions factors and comments from data verifiers.
3 GHG emissions reported in metric tonnes of carbon dioxide equivalents. GHG intensity emissions reported in metric tonnes of carbon dioxide equivalents per million U.S. dollars of revenue.
4 For Scope 1 fleet usage, an annual mileage of 20,000 kilometers per vehicle was used to approximate fleet emissions for vehicles without annual mileage data available.
5 For Shire occupied commercial office locations where electricity consumption data was not available, electricity consumption was approximated using U.S. Energy Information Administration 2012 intensity factors.
6 Total Scope 1 and Scope 2 emissions reported using the market-based Scope 2 total.
7 Scope 3 emissions include emissions from disposal of waste, business travel and employee commuting. Other Scope 3 emissions are currently excluded.

Ethics and transparency

We are committed to leading the way in adopting and applying the highest standards of good governance, ethics and transparency in our industry.

Organized to lead

Shire's cross-functional, global Responsibility Sponsor Network consists of senior leaders who play a fundamental role in creating, reviewing and implementing Shire's Responsibility strategy, goals and policies, including our efforts on environmental sustainability, to ensure the Company is aligned to maintain high standards and high impact. The Network ultimately reports to the Board of Directors and Executive Committee, with Kim Stratton, Head of International Commercial, serving as the Network's Executive Sponsor. Members of the network also serve as Responsibility champions throughout the organization and with external stakeholders. They meet as a group at least three times per year to monitor progress and more frequently in smaller working groups. Shire's Responsibility team facilitates the working groups, partners with sponsors, and drives communications and reporting efforts.

Upholding human rights

We support the UN Universal Declaration of Human Rights and recognize the obligation to promote universal respect for and observance of human rights and fundamental freedoms for all, without distinction to sex, age, race, religion, or other characteristics protected by law.

We are committed to protecting the human rights of our employees in our offices and manufacturing facilities around the world. We recognize that commercial success depends on the full commitment of all our employees. We commit to respect their human rights, to provide them with safe and favorable working conditions that are free from unnecessary risk, and to maintain fair and competitive terms and conditions of service at all times. We seek to comply fully with all relevant laws, rules and regulations governing labor, employment, and the employment relationship in all of the countries where Shire does business.

We commit to the principles articulated in the International Labor Organization's (ILO) "Declaration on Fundamental Principles and Rights at Work." We also commit to the protection of human rights of our partners and suppliers, and in turn, expect them to do the same in their operations and to their employees around the world. We do this through our Supplier Code of Conduct that explicitly states our expectations of suppliers to uphold the ILO principles. This policy can be found on our website, www.shire.com.

Shire's Board of Directors has approved our 2017 Modern Slavery Act Statement that is available on our website. It outlines Shire's policies and efforts to mitigate the risks of modern slavery throughout our business and supply chain. For more information, go to: www.shire.com/who-we-are/how-we-operate/policies-and-positions.

Engaging with our stakeholders

We communicate widely and regularly on Responsibility with all our stakeholders, such as through our website. We're always interested to hear feedback and suggestions on how we can be an even more responsible organization.

Find out more

You can find out more about our enduring commitment to Responsibility and read our Annual Responsibility Review here:

www.shire.com/who-we-are/responsibility

You can also find copies of our policies and position statements here:

www.shire.com/who-we-are/how-we-operate/policies-and-positions

Transparency disclosures

We publish details on our website about our medical educational grants as well as contributions to U.S. healthcare-related charitable organizations. For more information, go to: www.shire.com/who-we-are/how-we-operate/transparency-disclosures.

Risk management

Details of the key risks, Shire's response and related policies concerning human rights and anti-corruption and anti-bribery matters are as follows:

Risk exposure	Summary response	Key Shire reference materials
Human rights Failure to identify, assess and mitigate against human rights abuses across the supply chain may have legal, reputational and business impact on Shire. These may include workplace rights violations and child labor.	We are committed to the protection of the human rights of our employees in our offices and manufacturing facilities around the world. We seek to comply fully with all relevant laws, rules and regulations governing labor, employment and the employment relationship in all of the countries where we operate. We recognize our responsibility to identify and address potential and actual human rights violations that are directly linked to our business activities around the world. We have a set of strict policies and processes in place related to Human Rights and a statement in response to the Modern Slavery Act.	– Code of Ethics – Human Rights Policy – Modern Slavery Act Statement Read more about Risk on page 18
Anti-corruption/anti-bribery Failure to comply with anti-corruption/anti-bribery laws, regulations, policies and standards, and other laws/regulations governing the manufacturing, sales, and marketing of Shire products, could negatively impact the Company and/or its officers, Directors and employees, resulting in enforcement activity, civil and/or criminal liability, fines, penalties, imprisonment, business restrictions or damage to our reputation. Note: Anti-corruption/anti-bribery has been identified as a principal risk in this reporting cycle. See page 20.	We operate in numerous countries across the globe, with emergent markets having differing levels of infrastructure and legislative/regulatory frameworks. Our industry is also highly regulated. These circumstances increase our exposure to potential bribery or corruption risks. Shire has a well-defined Code of Ethics, a clear set of values, and pertinent policies/procedures which guide our approach to Anti-corruption/ anti-bribery compliance, all of which are available Group-wide. Shire's Global Anti-corruption/ anti-bribery policy applies to all Shire and Shire subsidiaries' officers, directors, and employees, as well as to all third-parties in their work with and on behalf of Shire. Shire continues to review, audit, and monitor compliance with relevant policies, procedures, systems, and controls. We deploy global anti-corruption/anti-bribery measures including training and awareness initiatives and a third-party due diligence program, which requires that our third-parties comply with all applicable laws, including the anti-corruption laws of all countries in which we or the third-party operates.	– Global Anti-Corruption/Anti-Bribery Policy – Employee trainings – Code of Ethics – Third-Party Due Diligence program Read more about Risk on page 18

Review of the business

> Shire delivers strong revenue and earnings growth resulting in record operating cash flow for full year 2017.

John Miller
Interim Chief Financial Officer

Overview

The Company has grown both organically and through acquisition, completing a series of major transactions that have brought therapeutic, geographic and pipeline growth and diversification. The Company will continue to conduct its own research and development, focused on rare diseases and specialized conditions, as well as evaluate companies, products and pipeline opportunities that offer a strategic fit and have the potential to deliver value to all of the Company's stakeholders: patients, physicians, policy makers, payers, partners, investors and employees.

The Company's purpose is to enable people with life altering conditions to lead better lives. The Company will execute on its purpose through its strategy and business model. For further details of Shire's strategy and business model, refer to pages 12 and 14.

Through deep understanding of patients' needs, the Company is able to:

- serve patients with high unmet needs in specialty therapeutic areas;
- drive optimum performance of its marketed products — to serve patients today; and
- build its pipeline of innovative specialist treatments through both R&D and Corporate Development activities to enable the Company to serve patients in the future.

Shire's in-licensing and acquisition efforts are focused on products in specialist markets with strong intellectual property protection or other forms of market exclusivity and global rights. Shire believes that a carefully selected and balanced portfolio of products with strategically aligned and relatively small-scale sales forces will deliver strong results.

Company revenues, expenditures and net assets are attributable to the R&D, manufacture, sale and distribution of pharmaceutical products within one reportable segment. The Company also earns royalties and other revenues (where Shire has out-licensed products to third parties) that are recorded as royalty and other revenues.

Revenues are derived primarily from two sources — sales of the Company's own products and royalties and other revenues:

- 95.3% (2016: 95.5%) of total revenues are derived from Product sales; and
- 4.7% (2016: 4.5%) of total revenues are derived from royalties and other revenues, including upfront payments from out-license arrangements.

The markets where the Company conducts its business are intensely competitive and highly regulated.

The healthcare industry is also experiencing:

- pressure from governments and healthcare providers to keep prices low while increasing access to drugs;
- increased discounts, which reduce revenue, due to the population of "baby boomers" covered under Medicare, specifically those beneficiaries receiving drug cost offset through the Medicare Part D Coverage Gap;
- increasing challenges from third party payers for products to have demonstrable clinical benefit, with pricing and reimbursement approval becoming increasingly linked to a product's clinical effectiveness and impact on overall costs of patient care;
- increased R&D costs, because development programs are typically larger and take longer to get approval from regulators;
- challenges to existing patents from generic manufacturers;
- governments and health-care systems favoring earlier entry of low cost generic drugs; and
- higher marketing costs, due to increased competition for market share.

Shire's strategy has been developed to address these industry-wide competitive pressures. This strategy has resulted in a series of initiatives in the following areas:

Markets

Shire's current portfolio of approved products spans seven key therapeutic areas (TA): Immunology, Hematology, Neuroscience, Internal Medicine, Genetic Diseases, Oncology and Ophthalmics. In 2017, the contribution of each TA to overall Product sales was as follows:

	Product sales $'M	Percentage %
Immunology	4,370.3	30.2
Hematology	3,785.6	26.2
Neuroscience	2,664.1	18.4
Internal Medicine	1,670.3	11.6
Genetic Diseases	1,437.7	10.0
Oncology	261.7	1.8
Ophthalmics	259.2	1.8
	14,448.9	**100.0**

Shire has grown in part through acquisition which has brought therapeutic, geographic and pipeline growth and diversification.

The acquisition of Baxalta in June 2016 added the Hematology, Immunology and Oncology franchises and enabled Shire to become the global leader in rare diseases and highly specialized conditions.

The acquisition of Dyax in January 2016, with its lead pipeline product, SHP643, and marketed product KALBITOR, expanded and extended Shire's industry-leading HAE portfolio (FIRAZYR and CINRYZE).

In July 2016, Shire licensed the global rights to all indications for SHP647 from Pfizer Inc. SHP647 is an investigational biologic being evaluated for the treatment of moderate-to-severe inflammatory bowel disease.

In 2015, Shire acquired NPS Pharma, Meritage Pharma, Inc. (Meritage Pharma) and Foresight Biotherapeutics Inc. (Foresight).

The acquisition of NPS Pharma added global rights to an innovative product portfolio with multiple growth catalysts, including GATTEX/REVESTIVE and NATPARA/NATPAR. The acquisition of Meritage Pharma provided global rights to SHP621, a Phase 3 ready asset for the treatment of adolescents and adults with EoE, a rare, chronic inflammatory GI disease. This builds upon the Company's rare disease and GI commercial infrastructure and expertise. With the acquisition of Foresight, Shire acquired the global rights to SHP640 (topical ophthalmic drops combining 0.6% povidone iodine (PVP-I) and 0.1% dexamethasone), a therapy in late-stage development for the treatment of infectious conjunctivitis, an ocular surface condition commonly referred to as pink eye. This acquisition has a clear strategic fit with XIIDRA, which is approved in the U.S. for the treatment of the signs and symptoms of dry eye disease, and further demonstrates Shire's commitment to building a leadership position in ophthalmics.

In 2017, Shire derived 34% (2016: 32%) of Product sales from outside of the U.S. Shire has ongoing commercialization and late-stage development activities, which are expected to further supplement the diversification of revenues in the future, including the following:

- the launch of MYDAYIS in the U.S.;
- continued launch of INTUNIV, REVESTIVE and ONIVYDE across Europe;
- the approvals of NATPAR and ADYNOVI in the EU;
- submission of SHP643 in the U.S.;
- submission of CALPEG NDA for ALL in the U.S.;
- submission of VONVENDI MAA in Europe; and
- geographic expansion of XIIDRA with the recent approval in Canada and submissions in other key markets.

R&D

Shire's R&D efforts are focused on core therapeutic areas including Immunology, Hematology, Neuroscience, Internal Medicine, Genetic Diseases, Oncology and Ophthalmics. Shire concentrates its resources on obtaining regulatory approval for later stage pipeline products within these therapeutic areas and focuses its early-stage research activities in rare diseases.

Evidence of the successful progression of the late stage pipeline can be seen in the granting of approval and associated launches of the Company's products over the last three years. In this time, several products have received regulatory approval including: in the U.S., MYDAYIS in 2017, XIIDRA and CUVITRU in 2016, NATPARA and VYVANSE for BED in 2015; in the EU, ONIVYDE and CUVITRU in 2016, ELVANSE/TYVENSE for adults, INTUNIV for children and adolescents in 2015.

Shire's management reviews direct costs for all R&D projects by development phase.

Shire's R&D expenses in 2017 and 2016 include costs on programs in all stages of development. The following table summarizes the Company's direct R&D spend categorized by development stage, based upon the development stage of each program for the years ended December 31, 2017 and 2016:

For the years ended December 31	**2017 $'M**	2016 $'M
Early stage programs	**275.3**	325.7
Late stage programs	**507.5**	291.1
Currently marketed products	**275.0**	238.1
Total	**1,057.8**	854.9

Early stage programs also include pre-clinical and research programs. In addition to the above, the Company recorded R&D employee costs of $506.9 million in 2017 (2016: $431.9 million) and other indirect R&D costs of $198.6 million (2016: $153.0 million), comprising mainly of depreciation and up-front and milestone payments for in-licensed development projects.

For a discussion of the Company's current development projects see pages 24 and 25.

Patents and Market Exclusivity

The loss or expiration of patent protection or regulatory exclusivity with respect to any of the Company's major products could have a material adverse effect on the Company's revenues, financial condition and results of operations, as generic or biosimilar products may enter the market. Companies selling generic products often do not need to complete extensive clinical studies when they seek registration of a generic or biosimilar product and accordingly, are generally able to sell a generic version of the Company's products at a much lower price.

In 2017, a generic version of the Company's LIALDA product was launched, which led to lower sales of Shire's LIALDA product compared to the period before loss of exclusivity. In 2017, a generic version of the Company's FOSRENOL product was launched, which led to lower sales of FOSRENOL compared to the period before loss of exclusivity.

Shire is engaged in various legal proceedings with generic manufacturers. For information regarding current patent litigation, refer to Note 25, Legal and Other Proceedings, to the consolidated financial statements.

Corporate Development

Shire focuses its corporate development activity on the acquisition and in-licensing of businesses, products or compounds that offer a strategic fit and have the potential to deliver demonstrable value to all of the Company's stakeholders.

Results of operations for the years ended December 31, 2017 and 2016

Financial highlights for the year ended December 31, 2017 are as follows:

Revenues

- Product sales increased 33% to $14,448.9 million (2016: $10,885.8 million), primarily driven by the inclusion of a full year of legacy Baxalta product sales, with strong sales from immunoglobulin therapies and bio therapeutics.
- Royalties and other revenues increased 39% to $711.7 million (2016: $510.8 million), primarily due to the receipt of an upfront license fee and a full year of contract manufacturing revenue acquired with Baxalta.

Operating results

- Operating income increased 155% to $2,455.2 million (2016: $962.9 million), primarily due to the inclusion of a full year of legacy Baxalta operating income and lower expense related to the unwind of inventory fair value adjustments, partially offset by higher amortization of acquired intangible assets.

Earnings per share (EPS)

- Diluted earnings per American Depositary Share (ADS) increased to $14.05 (2016: $1.27). The increase is primarily due to a tax benefit in 2017 driven by U.S. tax reform, higher operating income, combined with lower discontinued operations losses related to the divested DERMAGRAFT business.

Cash flows

- Net cash provided by operating activities increased 60% to $4,256.7 million (2016: $2,658.9 million), primarily due to the inclusion of a full year of legacy Baxalta operating cash flows and strong cash receipts from higher legacy Shire sales and operating profitability, partially offset by a payment associated with the settlement of the DERMAGRAFT litigation and higher interest payments. Also, 2016 net cash provided by operating activities was negatively impacted by a payment associated with the termination of a biosimilar collaboration acquired with Baxalta.

Total revenues

The following table provides an analysis of the Company's total revenues by source. In 2017, Immunology includes HAE from Genetic Diseases; prior year amounts have been reclassified to conform with the current year presentation.

Years ended December 31	2017 $'M	2016 $'M	Product sales growth %
Product sales by franchise			
IMMUNOGLOBULIN THERAPIES	**2,236.6**	1,143.9	N/M
HEREDITARY ANGIOEDEMA	**1,429.6**	1,310.9	9
BIO THERAPEUTICS	**704.1**	372.2	N/M
Immunology	**4,370.3**	2,827.0	N/M
HEMOPHILIA	**2,957.3**	1,789.0	N/M
INHIBITOR THERAPIES	**828.3**	451.8	N/M
Hematology	**3,785.6**	2,240.8	N/M
VYVANSE	**2,161.1**	2,013.9	7
ADDERALL XR	**348.0**	363.8	(4)
MYDAYIS	**21.6**	—	N/M
Other Neuroscience	**133.4**	112.8	18
Neuroscience	**2,664.1**	2,490.5	7
LIALDA/MEZAVANT	**569.4**	792.1	(28)
GATTEX/REVESTIVE	**335.5**	219.4	53
PENTASA	**313.2**	309.4	1
NATPARA/NATPAR	**147.4**	85.3	73
Other Internal Medicine	**304.8**	349.3	(13)
Internal Medicine	**1,670.3**	1,755.5	(5)
ELAPRASE	**615.7**	589.0	5
REPLAGAL	**472.1**	452.4	4
VPRIV	**349.9**	345.7	1
Genetic Diseases	**1,437.7**	1,387.1	4
Oncology	**261.7**	130.5	N/M
Ophthalmics	**259.2**	54.4	N/M
Total Product sales	**14,448.9**	10,885.8	33
Royalties and other revenues			
Royalties	**448.4**	382.6	17
Other revenues	**263.3**	128.2	105
Total royalties and other revenues	**711.7**	510.8	39
Total revenues	**15,160.6**	11,396.6	33

N/M: Consolidated results include Baxalta sales as of June 3, 2016, the date of acquisition, or partial year product launches; therefore, Product sales growth as a percentage is not meaningful.

Immunology

Immunology product sales, which now include HAE product sales, were $4,370.3 million in 2017 compared to $2,827.0 million in 2016, primarily driven by the inclusion of a full year of immunoglobulin therapies and bio therapeutics product sales following the acquisition of Baxalta in June 2016. Immunoglobulin and bio therapeutics reported total product sales of $2,940.7 million.

HAE product sales for the year ended December 31, 2017 increased to $1,429.6 million or 9% from $1,310.9 million in 2016, primarily driven by FIRAZYR, up 15% to $663.0 and CINRYZE up 3% to $699.3 million. During the third quarter of 2017, CINRYZE had a supply constraint caused by a manufacturing interruption at a third-party supplier. The issue was addressed and production resumed in the fourth quarter of 2017. On January 24, 2018, FDA granted approval for the technology transfer of CINRYZE drug product manufacturing process to the Vienna, Austria manufacturing site. The Company expects to start manufacturing CINRYZE drug product in-house in Vienna in the first quarter of 2018, providing an additional supply source to meet patient demand.

Hematology

Hematology, acquired with Baxalta in June 2016, included sales of recombinant and plasma-derived hemophilia products (primarily Factor VIII and Factor IX) and inhibitor therapies. Hematology product sales were $3,785.6 million in 2017 compared to $2,240.8 million in 2016, primarily driven by the inclusion of a full year of Hematology product sales following the acquisition of Baxalta.

Neuroscience

Neuroscience product sales for the year ended December 31, 2017 increased to $2,664.1 million, or 7%, from $2,490.5 million in 2016, with growth primarily driven by VYVANSE and the inclusion of MYDAYIS.

VYVANSE product sales for the year ended December 31, 2017 increased to $2,161.1 million, or 7%, from $2,013.9 million in 2016, due to the benefit of a price increase[1] taken since 2016, increased demand resulting from growth in the U.S. ADHD market and strong performance in the Company's international markets, partially offset by lower U.S. stocking.

MYDAYIS, which was made available to patients on August 28, 2017, contributed $21.6 million of product sales in 2017.

Information about litigation related to MYDAYIS can be found in Note 25, Legal and Other Proceedings, to the consolidated financial statements.

Internal Medicine

Internal Medicine product sales for the year ended December 31, 2017 decreased to $1,670.3 million, or 5%, from $1,755.5 million in 2016, primarily driven by the impact of LIALDA generic competition, partially offset by growth from GATTEX/REVESTIVE and NATPARA.

LIALDA/MEZAVANT product sales decreased to $569.4 million, or 28%, for the year ended December 31, 2017 from $792.1 million in 2016, due to the impact of generic competition in 2017.

Information about litigation related to LIALDA can be found in ITEM 3: Legal Proceedings and Note 25, Legal and Other Proceedings, to the consolidated financial statements.

GATTEX/REVESTIVE and NATPARA/NATPAR product sales increased to $335.5 million, or 53%, and $147.4 million or 73%, respectively, for 2017, compared to product sales in 2016 primarily due to an increase in the numbers of patients on therapy and to a lesser extent, the benefit of price increases taken since 2016[1].

Genetic Diseases

Genetic Diseases product sales, which now excludes HAE product sales, for the year ended December 31, 2017 increased to $1,437.7 million, or 4%, from $1,387.1 million in 2016, primarily due to ELAPRASE and REPLAGAL, as both products benefited from an increase in the number of patients on therapy.

Oncology

Oncology, acquired with Baxalta in June 2016, reported product sales of $261.7 million for the year ended December 31, 2017 compared to $130.5 million for the year ended December 31, 2016. Oncology includes sales of ONCASPAR and ONIVYDE. ONIVYDE was approved in the EU on October 18, 2016.

Ophthalmics

Ophthalmic product sales relate to XIIDRA, which was made available to patients on August 29, 2016. XIIDRA product sales were $259.2 million for the year ended December 31, 2017 compared to $54.4 million for the year ended December 31, 2016.

Royalties and other revenues

Royalties and other revenues increased to $711.7 million or 39% for the year ended December 31, 2017 from $510.8 million in 2016, primarily due to an upfront license fee received, a full year of contract manufacturing revenue acquired with Baxalta, increase in SENSIPAR royalties and an increase in royalty streams acquired with Dyax.

Cost of sales

Cost of sales increased by $884.3 million to $4,700.8 million for the year ended December 31, 2017 (31% of Total revenues) from $3,816.5 million in 2016 (33% of Total revenues), due to the inclusion of a full year of legacy Baxalta costs. The decrease in Cost of sales as a percentage of Total revenues for the year ended December 31, 2016 to December 31, 2017 is primarily due to the impact of lower expense related to the unwind of inventory fair value adjustments, partially offset by the inclusion of a full year of lower margin product franchises acquired with Baxalta.

For the year ended December 31, 2017, Cost of product sales included additional depreciation totaling $276.1 million (2016: $160.8 million), primarily due to the acquisition of Baxalta.

R&D

R&D expense increased by $323.5 million, or 22%, to $1,763.3 million for the year ended December 31, 2017 (12% of Total revenues) from $1,439.8 million in 2016 (13% of Total revenues), primarily due to the inclusion of a full year of legacy Baxalta costs.

R&D expense for the year ended December 31, 2017 included depreciation of $47.2 million (2016: $34.1 million).

SG&A

SG&A expense increased by $515.7 million, or 17%, to $3,530.9 million for the year ended December 31, 2017 (23% of Total revenues) from $3,015.2 million in 2016 (26% of Total revenues), primarily due to the inclusion of a full year of legacy Baxalta costs.

For the year ended December 31, 2017, SG&A expense included depreciation of $172.5 million (2016: $98.0 million).

1 The actual net effect of price increases on current period net sales compared to the comparative period is difficult to quantify due to the various managed care rebates, Medicaid discounts, other discount programs in which the Company participates and fee for service agreements with wholesale customers.

Amortization of acquired intangible assets

For the year ended December 31, 2017, Shire recorded Amortization of acquired intangible assets of $1,768.4 million compared to $1,173.4 million in 2016. The increase of $595.0 million was primarily related to a full year of amortization of intangible assets acquired with Baxalta and the acceleration of CINRYZE amortization following positive SHP643 Phase 3 results.

Integration and acquisition costs

For the year ended December 31, 2017, Shire recorded Integration and acquisition costs of $894.5 million, primarily relating to the Baxalta acquisition. Costs included asset impairment charges, employee severance and expenses associated with facility consolidations.

For the year ended December 31, 2016, Shire recorded Integration and acquisition costs of $883.9 million, primarily relating to the Baxalta and Dyax acquisitions. Costs included employee severance, acceleration of stock compensation, third-party professional fees, contract terminations and other transaction-related fees.

Reorganization costs

For the year ended December 31, 2017, Shire recorded Reorganization costs of $47.9 million, primarily related to the closure of the Basingstoke, U.K. office.

For the year ended December 31, 2016, Shire recorded Reorganization costs of $121.4 million, primarily related to the closure of a facility at the Los Angeles, U.S. manufacturing site.

Other expense, net

Other expense, net increased by $85.0 million to $561.8 million for the year ended December 31, 2017 from $476.8 million in 2016, primarily due to a full year of interest expense incurred on borrowings used to fund the acquisition of Baxalta, reduced by repayments of borrowings and partially offset by lower amortization of one-time upfront borrowing costs for Baxalta and Dyax in 2017.

Taxation

The effective tax rate in 2017 was a tax credit of 125% (2016: tax credit of 26%). The effective tax rate in 2017 was lower due to the enactment of the U.S. Tax Cuts and Jobs Act (P.L. 115-97) (Tax Act), which was signed into law on December 22, 2017. Among the changes is a permanent reduction in the federal U.S. corporate income tax rate from 35% to 21% effective January 1, 2018.

As a result of the reduction in the U.S. corporate income tax rate, Shire revalued its net deferred tax positions for the year ending December 31, 2017.

This resulted in a decrease to the net deferred tax liability of approximately $2.5 billion, which was recorded as reduction to income tax expense for the fourth quarter of 2017. In addition, Shire has estimated an income tax liability of $621.7 million related to the transition tax which is applicable to certain non U.S. earnings previously untaxed in the U.S. The Company recorded a $90.1 million income tax expense related to the transition tax and reclassified a deferred tax liability which had been accrued for prior years' unremitted earnings to income tax payable for the remaining amount. Shire continues to analyze the Tax Act to determine the full effects the new law will have on its financial statements and all amounts recorded in the 2017 financial statements are provisional in nature.

Discontinued operations

The gain from discontinued operations for the year ended December 31, 2017 was $18.0 million, net of taxes, primarily the return of funds previously held in escrow related to the acquisition of the DERMAGRAFT business. The loss from discontinued operations for the year ended December 31, 2016 was $276.1 million, net of tax benefit of $98.9 million, primarily due to the establishment of legal contingencies related to the divested DERMAGRAFT business.

Liquidity and Capital Resources

General

The Company's funding requirements depend on a number of factors, including the timing and extent of its development programs; corporate, business and product acquisitions; the level of resources required for the expansion of certain manufacturing and marketing capabilities as the product base expands; increases in accounts receivable and inventory which may arise with any increase in Product sales; competitive and technological developments; the timing and cost of obtaining required regulatory approvals for new products; the timing and quantum of milestone payments on business combinations, in-licenses and collaborative projects; the timing and quantum of tax and dividend payments; the timing and quantum of purchases by the Employee Benefit Trust (EBT) of Shire shares in the market to satisfy awards granted under Shire's employee share plans; the timing and qualification of its refinancing obligations; and the amount of cash generated from sales of Shire's products and royalty receipts.

An important part of Shire's business strategy is to protect its products and technologies through the use of patents, proprietary technologies and trademarks, to the extent available. The Company intends to defend its intellectual property and as a result may need cash for funding the cost of litigation.

The Company finances its activities through cash generated from operating activities; credit facilities; private and public offerings of equity and debt securities; and the proceeds of asset or investment disposals.

Shire's Consolidated Balance Sheets included $472.4 million of Cash and cash equivalents as of December 31, 2017.

Shire has a revolving credit facility (RCF) of $2.1 billion which matures in 2021, $810.0 million of which was utilized as of December 31, 2017. The RCF incorporates a $250 million U.S. dollar and Euro swingline facility operating as a sub-limit thereof.

In connection with the acquisition of Dyax, Shire entered into a $5.6 billion amortizing term loan facility in November 2015. As of December 31, 2017, $1.2 billion of this term loan facility was outstanding. The facility matures on November 2, 2018.

In connection with the acquisition of Baxalta, Shire assumed $5.0 billion of unsecured senior notes previously issued by Baxalta, of which $750.0 million is due within the next twelve months and issued $12.1 billion of unsecured senior notes in September 2016, of which none are due for repayment in the next twelve months.

The details of these debt agreements are described below and in Note 18, Borrowings and Capital Leases, to the consolidated financial statements.

In addition, Shire also has access to certain short-term uncommitted lines of credit which are available to utilize from time to time to provide short-term cash management flexibility. As of December 31, 2017, these lines of credit were not utilized.

The Company may also engage in financing activities from time to time, including accessing the debt or equity capital markets.

Senior Notes Issuance

On September 23, 2016, SAIIDAC, issued senior notes with a total aggregate principal value of $12.1 billion (SAIIDAC Notes), guaranteed by Shire plc and by Baxalta. SAIIDAC used the net proceeds to fully repay amounts outstanding under the January 2016 Facilities Agreement (discussed below), which was used to finance the cash consideration payable related to the Company's acquisition of Baxalta. Below is a summary of the SAIIDAC Notes as of December 31, 2017:

	Aggregate amount $'M	Coupon rate %	Effective interest rate in 2017 %	Carrying amount as of December 31, 2017 $'M
Fixed-rate notes due 2019	3,300.0	1.900	2.05	3,291.9
Fixed-rate notes due 2021	3,300.0	2.400	2.53	3,286.4
Fixed-rate notes due 2023	2,500.0	2.875	2.97	2,489.5
Fixed-rate notes due 2026	3,000.0	3.200	3.30	2,982.4
	12,100.0			12,050.2

The costs and discount associated with this offering of $49.8 million have been recorded as a reduction to the carrying amount of the debt on the Consolidated Balance Sheets. These costs will be amortized as additional interest expense using the effective interest rate method over the period from issuance through maturity.

Baxalta Notes

Shire plc guaranteed senior notes issued by Baxalta with a total aggregate principal amount of $5.0 billion in connection with the Baxalta acquisition (Baxalta Notes). Below is a summary of the Baxalta Notes as of December 31, 2017:

	Aggregate amount $'M	Coupon rate %	Effective interest rate in 2017 %	Carrying amount as of December 31, 2017 $'M
Variable-rate notes due 2018	375.0	LIBOR plus 0.78	2.60	373.9
Fixed-rate notes due 2018	375.0	2.000	2.00	374.9
Fixed-rate notes due 2020	1,000.0	2.875	2.80	1,001.3
Fixed-rate notes due 2022	500.0	3.600	3.30	506.8
Fixed-rate notes due 2025	1,750.0	4.000	3.90	1,770.2
Fixed-rate notes due 2045	1,000.0	5.250	5.10	1,030.6
Total Baxalta Notes	5,000.0			5,057.7

The effective interest rates above exclude the effect of any related interest rate swaps. The book values above include any premiums and adjustments related to hedging instruments. For further details related to the interest rate derivative contracts, please see Note 16, Financial Instruments, to the consolidated financial statements.

Revolving Credit Facilities Agreement

On December 12, 2014, Shire entered into a $2.1 billion revolving credit facilities agreement with a number of financial institutions. Shire plc and SAIIDAC are able to borrow under the RCF; Shire plc, SAIIDAC and Baxalta are guarantors under the RCF. As of December 31, 2017 SAIIDAC utilized $810.0 million of the RCF.

The RCF, which terminates on December 12, 2021, may be applied towards financing the general corporate purposes of Shire. The RCF incorporates a $250 million U.S. dollar and Euro swingline facility operating as a sub-limit thereof.

Interest on any loans made under the RCF is payable on the last day of each interest period, which may be one week or one, two, three or six months at the election of Shire, or as otherwise agreed with the lenders. The interest rate for the RCF is: LIBOR (or, in relation to any revolving loan in Euro, EURIBOR); plus 0.30% per annum subject to change depending upon (i) the prevailing ratio of Net Debt to EBITDA (each as defined in the RCF) in respect of the most recently completed financial year or financial half year and (ii) the occurrence and continuation of an event of default in respect of the financial covenants or the failure to provide a compliance certificate.

Shire also will pay (i) a commitment fee equal to 35% of the applicable margin on available commitments under the RCF for the availability period applicable thereto and (ii) a utilization fee equal to (a) 0.10% per year of the aggregate of all outstanding loans up to an aggregate base currency amount equal to $700.0 million, (b) 0.15% per year of the amount by which the aggregate base currency amount of all outstanding loans exceeds $700.0 million but is equal to or less than $1,400.0 million and (c) 0.30% per year of the amount by which the aggregate base currency amount of all outstanding loans exceeds $1,400.0 million.

The RCF includes customary representations and warranties, covenants and events of default, including requirements that Shire's (i) ratio of Net Debt to EBITDA in respect of the most recently-ended 12-month relevant period (each as defined in the RCF) must not, at any time, exceed 3.5:1 except that, following an acquisition fulfilling certain criteria, Shire may elect to increase this ratio to (a) 5.5:1 for the relevant period in which the acquisition was completed (b) 5.0:1 in respect of the first relevant period following the relevant period in which the acquisition was completed and (c) 4.5:1 in respect of the second relevant period following the relevant period in which the acquisition was completed and (ii) ratio of EBITDA to Net Interest for the most recently-ended 12-month relevant period (each as defined in the RCF) must not be less than 4.0:1. Shire elected to increase the Net Debt to EBITDA ratio in connection with the period ending June 30, 2016, following the completion of the acquisition of Baxalta during the period. The final relevant period ended June 2017.

The RCF restricts, subject to certain exceptions, Shire's ability to incur additional financial indebtedness, grant security over its assets or provide loans/grant credit. Further, any lender may require mandatory prepayment of its participation if there is a change of control of Shire, subject to certain exceptions for schemes of arrangement and analogous schemes.

Events of default under the RCF include, subject to customary grace periods and materiality thresholds: (i) non-payment of any amounts due under the finance documents (as defined in the RCF), (ii) failure to satisfy any financial covenants, (iii) material misrepresentation in any of the finance documents, (iv) failure to pay, or certain other defaults, under other financial indebtedness, (v) certain insolvency events or proceedings, (vi) material adverse changes in the business, operations, assets or financial condition of Shire as a whole, (vii) if it becomes unlawful for Shire (or any successor parent company) or any of their respective subsidiaries that are parties to the RCF to perform their obligations thereunder or (viii) if Shire (or any successor parent company) or any subsidiary thereof which is a party to the RCF repudiates such agreement or other finance document, among others.

Term Loan Facilities Agreement

November 2015 Facilities Agreement

On November 2, 2015, Shire entered into a $5.6 billion facilities agreement with various financial institutions (November 2015 Facilities Agreement). Shire plc, SAIIDAC and Baxalta are guarantors under the November 2015 Facilities Agreement. SAIIDAC is the borrower under the November 2015 Facilities Agreement. The November 2015 Facilities Agreement comprises three credit facilities: (i) a $1.0 billion term loan facility of which, following the exercise of the one year extension option in the amount of $400.0 million, $600.0 million matured and was repaid on November 2, 2016 and $400.0 million was repaid on July 31, 2017 (November 2015 Facility A), (ii) a $2.2 billion amortizing term loan facility which was fully paid during 2017 (November 2015 Facility B) and (iii) a $2.4 billion amortizing term loan facility which matures on November 2, 2018 (November 2015 Facility C), of which $1.2 billion remains outstanding as of December 31, 2017.

Interest on any loans made under the November 2015 Facilities Agreement is payable on the last day of each interest period, which may be one week or one, two, three or six months, or as otherwise agreed with the lenders. The interest rate applicable is LIBOR plus, in the case of the November 2015 Facility A, 0.55% per annum, in the case of the November 2015 Facility B, 0.65% per annum and, in the case of the November 2015 Facility C, 0.75% per annum, in each case subject to change depending on (i) the prevailing ratio of Net Debt to EBITDA (each as defined in the November 2015 Facilities Agreement) in respect of the most recently completed financial year or financial half year and (ii) the occurrence and continuation of an event of default in respect of the financial covenants or failure to provide a compliance certificate.

The November 2015 Facilities Agreement includes customary representations and warranties, covenants and events of default, including requirements that Shire's (i) ratio of Net Debt to EBITDA in respect of the most recently ended 12-month relevant period, (each as defined in the November 2015 Facilities Agreement), must not, at any time, exceed 3.5:1, except that following an acquisition fulfilling certain criteria, Shire may elect to increase this ratio to (a) 5.5:1 for the relevant period in which the acquisition was completed, (b) 5.0:1 in respect of the first relevant period following the relevant period in which the acquisition was completed, and (c) 4.5:1 in respect of the second relevant period following the relevant period in which the acquisition was completed and (ii) ratio of EBITDA to Net Interest in respect of the most recently ended 12 month relevant period, (each as defined in the November 2015 Facilities Agreement), must not be less than 4.0:1. Shire elected to increase the Net Debt to EBITDA ratio in connection with the period ending June 30, 2016, following the completion of the acquisition of Baxalta during the period. The final relevant period ended June 2017.

The November 2015 Facilities Agreement restricts, subject to certain exceptions, Shire's ability to incur additional financial indebtedness, grant security over its assets or provide loans/grant credit. Further, any lender may require mandatory prepayment of its participation if there is a change of control of Shire, subject to certain exceptions for schemes of arrangement and analogous schemes.

Events of default under the November 2015 Facilities Agreement include, subject to customary grace periods and materiality thresholds: (i) non-payment of any amounts due under the finance documents (as defined in the November 2015 Facilities Agreement), (ii) failure to satisfy any financial covenants, (iii) material misrepresentation in any of the finance documents, (iv) failure to pay, or certain other defaults, under other financial indebtedness, (v) certain insolvency events or proceedings, (vi) material adverse changes in the business, operations, assets or financial condition of Shire as a whole, (vii) if it becomes unlawful for Shire (or any successor parent company) or any of their respective subsidiaries that are parties to the November 2015 Facilities Agreement to perform their obligations thereunder or (viii) if Shire (or any successor parent company) or any subsidiary thereof which is a party to the November 2015 Facilities Agreement repudiates the November 2015 Facilities Agreement or any other finance document, among others.

January 2016 Facilities Agreement

On January 11, 2016, Shire (as original guarantor and original borrower), entered into an $18.0 billion bridge facilities agreement with various financial institutions (the January 2016 Facilities Agreement). The January 2016 Facilities Agreement comprised two credit facilities: (i) a $13.0 billion term loan facility originally maturing on January 11, 2017 (January 2016 Facility A) and (ii) a $5.0 billion revolving loan facility originally maturing on January 11, 2017 (January 2016 Facility B). On April 1, 2016, SAIIDAC became an additional borrower and additional guarantor under the January 2016 Facilities Agreement. The January 2016 Facility A was fully repaid in September 2016. The January 2016 Facility B was canceled effective July 11, 2016, in accordance with its terms.

Short-term uncommitted lines of credit (Credit lines)

Shire has access to various Credit lines from a number of banks which are available to be utilized from time to time to provide short-term cash management flexibility. These Credit lines can be withdrawn by the banks at any time. The Credit lines are not relied upon for core liquidity. As of December 31, 2017, these Credit lines were not utilized.

Financing

Shire anticipates that its operating cash flow together with available cash, cash equivalents, and the RCF will be sufficient to meet its anticipated future operating expenses, capital expenditures, tax and interest payments, lease obligations, debt repayments and milestone payments as they become due over the next twelve months.

If the Company decides to acquire other businesses, it expects to fund these acquisitions from cash resources, the RCF and through new borrowings (including issuances of debt securities) or the issuance of new equity, if necessary.

Sources and uses of cash

The following table provides an analysis of the Company's gross and net cash (excluding restricted cash):

As of December 31	2017 $'M	2016 $'M
Cash and cash equivalents	**472.4**	528.8
Long term borrowings (excluding capital leases)	**(16,410.7)**	(19,552.6)
Short term borrowings (excluding capital leases)	**(2,781.2)**	(3,061.6)
Capital leases	**(349.2)**	(353.6)
Total debt	**(19,541.1)**	(22,967.8)
Net debt	**(19,068.7)**	(22,439.0)

- Substantially all of the Company's Cash and cash equivalents are held by foreign subsidiaries (i.e. those subsidiaries incorporated outside of Jersey, Channel Islands, the jurisdiction of incorporation of Shire plc). The amount of Cash and cash equivalents held by foreign subsidiaries has not had, and is not expected to have, a material impact on the Company's liquidity and capital resources.
- Net debt is a Non GAAP measure. The Company believes that Net Debt is a useful measure as it indicates the level of net cash/borrowings after taking account of the Cash and cash equivalents that could be utilized to pay down the outstanding borrowings.

Cash flow activity

Net cash provided by operating activities for the year ended December 31, 2017 increased 60% to $4,256.7 million (2016: $2,658.9 million), primarily due to inclusion of a full year of Baxalta operating cash flows, increased cash receipts from higher sales and operating profitability, partially offset by a payment of $351.6 million associated with the settlement of the DERMAGRAFT litigation and higher interest payments.

Net cash provided by operating activities for the year ended December 31, 2016 increased 14% to $2,658.9 million (2015: $2,337.0 million), primarily due to increased cash receipts from higher sales, partially offset by higher tax and interest payments, costs related to the Baxalta integration and a payment associated with the termination of a biosimilar collaboration acquired with Baxalta.

Net cash used in investing activities was $700.9 million for the year ended December 31, 2017, primarily related to purchase of $798.8 million of PP&E due to continued investments in manufacturing operations, offset by $88.6 million of proceeds from the sale of investments.

Net cash used in investing activities was $18,092.2 million for the year ended December 31, 2016, primarily related to the cash paid for the acquisitions of Baxalta ($12,366.7 million, less cash acquired of $583.2 million) and Dyax ($5,934.0 million, less cash acquired of $241.2 million). The Company's investing activities also included the purchase of $648.7 million of PP&E due to the continued investment in manufacturing operations.

Net cash used in financing activities was $3,619.3 million for the year ended December 31, 2017, principally due to repayments of November Facilities of $3,800.0 million and dividend payments of $281.3 million, offset by monies borrowed under the RCF of $360.0 million and proceeds from the issuance of stock and share-based compensation arrangements of $134.1 million.

Net cash provided by financing activities was $15,825.8 million for the year ended December 31, 2016, principally due to monies borrowed under the January 2016 Facilities Agreement to partially fund the acquisition of Baxalta (repaid using the proceeds of the issuance of the SAIIDAC Notes) and drawings made under the RCF and the November 2015 Facilities Agreement to fund the acquisition of Dyax (net of subsequent repayments). In addition, the Company made dividend payments of $171.3 million.

Outstanding Letters of credit

As of December 31, 2017, the Company had irrevocable standby letters of credit and guarantees with various banks totaling $224.8 million, providing security for the Company's performance of various obligations. These obligations are primarily in respect of the recoverability of insurance claims, lease obligations and supply commitments.

Cash Requirements

As of December 31, 2017, the Company's cash requirements for current and non-current liabilities reflected on the Consolidated Balance Sheets and other contractual obligations were as follows:

Payments due by period	Total $'M	Less than 1 year $'M	1-3 years $'M	3-5 years $'M	More than 5 years $'M
Borrowings and capital lease obligations	**23,626.5**	3,330.5	5,294.7	4,555.0	10,446.3
Operating leases obligations	**1,579.7**	188.5	320.0	275.4	795.8
Purchase obligations	**3,946.6**	2,113.4	1,501.4	281.1	50.7
Other non-current liabilities	**1,077.6**	—	473.9	323.9	279.8
Total	**30,230.4**	5,632.4	7,590.0	5,435.4	11,572.6

- Calculations of expected interest payments incorporate current period assumptions for interest rates, foreign currency translation rates and hedging strategies (refer to Note 16, Financial Instruments to these consolidated financial statements), and assume that interest is accrued through the maturity date or expiration of the related instrument.
- The Company leases certain land, facilities, motor vehicles and certain equipment under operating leases expiring through 2033.
- Purchase obligations include agreements to purchase goods, investments or services (including clinical trials, contract manufacturing and capital equipment), and open purchase orders, that are enforceable and legally binding and that specify all significant terms. Shire expects to fund these commitments with cash flows from operating activities.
- Unrecognized tax benefits and associated interest and penalties of $143.8 million are included within payments due in one to three years.

The following items have been excluded from the table above:

- Cash outflows related to the assumed pension and other post-employment benefit plans, in which timing of funding is uncertain and dependent on future movements in interest rates and investment returns, changes in laws and regulations and other variables.
- In connection with the Company's acquisitions, the Company recorded contingent consideration liabilities related to development, regulatory and commercial milestones and royalty payments. These liabilities were recorded at fair value on the respective acquisition dates and revalued each reporting period. The Company may pay up to approximately $2.7 billion, which excludes royalty related payments, upon achieving clinical, regulatory and commercialization milestones. For additional information, see Note 14, Fair Value Measurement.

- Milestone payments to third parties upon the achievement of development, regulatory and commercial milestones, as well as potential royalty payments, associated with in-licensing and collaboration agreements. Potential future milestone payments associated with these arrangements was approximately $5.5 billion, which excludes potential royalty payments. For additional information, see Note 4. Collaborative and Other Licensing Arrangements.
- Milestone payments related with collaboration agreements that become payable only if the Company chooses to exercise one or more of its options and potential contingent payments associated with R&D costs that may be funded by collaboration partners in the future.
- An unfunded commitment of $48.9 million as a limited partner in multiple investment companies, in which the timing of future payments is uncertain.

Off-balance sheet arrangements

There are no off-balance sheet arrangements, aside from those outlined above, that have, or are reasonably likely to have, a current or future material effect on the Company's financial condition, revenues or expenses, results of operations, liquidity, capital expenditures or capital resources.

Foreign currency fluctuations

A number of the Company's subsidiaries have a functional currency other than the U.S. dollar. As such, the consolidated financial results are subject to fluctuations in exchange rates, particularly in the Euro, Swiss franc, Japanese yen and Pound sterling against the U.S. dollar.

Accumulated foreign currency translation differences of $1,279.6 million are reported within Accumulated other comprehensive income as of December 31, 2017. Foreign exchange losses for the year ended December 31, 2017 of $97.3 million are reported in the Consolidated Statements of Operations.

As of December 31, 2017, the Company had outstanding foreign exchange swap and forward contracts that manage the currency risk associated with intercompany transactions. As of December 31, 2017 the fair value of these contracts was a net asset of $11.4 million. For the year ended December 31, 2017, net gains on foreign exchange swaps and forwards of $93.6 million are reported in the Consolidated Statements of Operations.

Inflation

Although at reduced levels in recent years, inflation continues to apply upward pressure on the cost of goods and services which are used in the business. However, the Company believes that the net effect of inflation on its revenues and operations has been minimal during the past three years.

Treasury policies and organization

The Company's principal treasury operations are coordinated by its corporate treasury function. All treasury operations are conducted within a framework of policies and procedures approved annually by the Board of Directors. As a matter of policy, the Company does not undertake speculative transactions that would increase its credit, currency or interest rate exposure.

Interest rate risk

The Company is exposed to the risk that its earnings and cash flows could be adversely impacted by fluctuations in benchmark interest rates relating to its debt obligations on which interest is set at floating rates. The Company's policy is to manage this risk to an acceptable level. The Company is principally exposed to interest rate risk on any borrowings under the Company's various debt facilities and on part of the senior notes assumed in connection with the acquisition of Baxalta. Interest on each of these debt obligations is set at floating rates, to the extent utilized. Shire's exposure under these facilities is to changes in U.S. dollar interest rates. For details refer to Note 16, Financial Instruments, to the consolidated financial statements.

The Company is also exposed to interest rate risk on its restricted cash, cash and cash equivalents and on foreign exchange contracts on which interest is set at floating rates. As the Company maintains all of its cash, liquid investments and foreign exchange contracts on a short-term basis for liquidity purposes, this risk is not actively managed. For the year ended December 31, 2017, the average interest rate received on cash and liquid investments was less than 1.0% per annum. These cash and liquid investments were primarily invested in U.S. dollar term deposits with banks and money market and liquidity funds or held as cash on account.

As of December 31, 2017, Shire estimates that a hypothetical increase and decrease of 100 basis points in interest rates would increase and decrease net interest costs on borrowings by approximately $30.0 million during 2018, and decrease and increase the fair value of long term interest rate sensitive instruments by approximately $870.7 million and $956.4 million, respectively, during the same period.

Foreign exchange risk

The Company operates in numerous countries and as a consequence has foreign exchange exposure. The main operating currencies of the Company are the U.S. dollar, Pounds sterling, Swiss franc, Canadian dollar, Japanese yen and the Euro. It is the Company's policy that these exposures are minimized to the extent practicable by denominating transactions in the subsidiary's functional currency.

Where significant exposures remain, the Company uses foreign exchange contracts (spot, forward and swap contracts) to manage the exposure for balance sheet assets and liabilities that are denominated in currencies different to the functional currency of the relevant subsidiary. These assets and liabilities relate predominantly to inter-company financing. The Company has not elected hedge accounting for these transactions. Cash flows from derivative instruments are presented within net cash provided by operating activities in the Consolidated Statements of Cash Flows, unless the derivative instruments are economically hedging specific investing or financing activities.

Translational foreign exchange exposure arises on the translation into U.S. dollars of the financial statements of non-U.S. dollar functional subsidiaries. For details refer to Note 16, Financial Instruments, to the consolidated financial statements.

Foreign exchange risk sensitivity
The following exchange rate sensitivity analysis summarizes the sensitivity of the Company's reported revenues and net income to hypothetical changes in the average annual exchange rates of the Euro, Pound sterling and Swiss franc against the U.S. dollar, (assuming a hypothetical 10% strengthening of the U.S. dollar against each of the aforementioned currencies in the year ended December 31, 2017):

	Reduction in revenues $'M	Reduction in net income $'M
Euro	(221.3)	(38.7)
Pound sterling	(31.0)	(7.5)
Swiss franc	(8.3)	(2.1)

A 10% weakening of the U.S. dollar against the aforementioned currencies would have an equal and opposite effect.

For more detail of foreign exchange forward contracts, refer to Note 16, Financial Instruments, to the consolidated financial statements.

Concentration of credit risk

Financial instruments that potentially expose Shire to concentrations of credit risk consist primarily of short-term cash investments, derivative contracts and trade accounts receivable from Product sales and from third parties from which the Company receives royalties. Cash is invested in short-term money market instruments, including money market and liquidity funds and bank term deposits or held on account. The money market and liquidity funds where Shire invests are all triple A rated by both Standard and Poor's and by Moody's credit rating agencies.

The Company is exposed to the credit risk of the counterparties with which it enters into bank term deposit arrangements and derivative instruments. The Company limits this exposure through a system of internal credit limits which vary according to ratings assigned to the counterparties by the major rating agencies. The internal credit limits are approved by Shire's Board of Directors and exposure against these limits is monitored by the Company's corporate treasury function. The counterparties to these derivatives contracts are major international financial institutions.

The Company's revenues from Product sales in the U.S. are mainly governed by agreements with major pharmaceutical wholesalers and relationships with other pharmaceutical distributors and retail pharmacy chains. For the year ended December 31, 2017, there were three customers in the U.S. that accounted for 26% of the Company's Product sales. Such customers typically have significant cash resources and as such the risk from concentration of credit is considered acceptable. The Company has taken positive steps to manage any credit risk associated with these transactions and operates clearly defined credit evaluation procedures. However, an inability of one or more of these wholesalers to honor their debts to the Company could have an adverse effect on the Company's financial condition and results of operations.

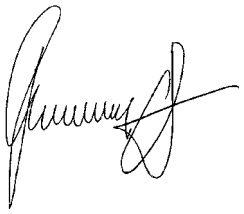
A substantial portion of the Company's accounts receivable in countries outside of the U.S. is derived from Product sales to government-owned or government-supported healthcare providers. The Company's recovery of these accounts receivable is therefore dependent upon the financial stability and creditworthiness of the relevant governments. In recent years global and national economic conditions have negatively affected the growth, creditworthiness and general economic condition of certain markets in which the Company operates. As a result, in some countries outside of the U.S., specifically, Argentina, Brazil, Greece, Italy, Portugal and Spain, the Company is experiencing delays in the remittance of receivables due from government-owned or government-supported healthcare providers. Of those, the only significant accounts receivable as of December 31, 2017 is $91.5 million from Brazil.

The Company will continue to evaluate all its accounts receivable for potential collection risks and has made provision for amounts where collection is considered to be doubtful. Any such loss could have an adverse effect on the Company's financial condition and results of operations. The Company does not consider it is currently exposed to significant credit risk outside of the countries listed above.

Strategic report

The Strategic report comprises pages 2 to 55 of this Annual Report.

Approved by the Board of Directors and signed on its behalf by:



Flemming Ornskov, MD, MPH
Chief Executive Officer
February 16, 2018

Board of Directors

Susan Kilsby (59)
Chairman
Appointed: September 1, 2011

Susan served as an independent Non-Executive Director prior to her appointment as Chairman on April 29, 2014.

Skills & experience: Susan brings to her role extensive M&A and finance experience having enjoyed a distinguished global career in investment banking. She held senior positions with The First Boston Corporation, Bankers Trust, Barclays de Zoete Wedd and most recently Credit Suisse where she was Chairman of the EMEA Mergers & Acquisitions team until 2009, and a part-time senior advisor until 2014. Susan is also a former Director of Keurig Green Mountain, Inc., L'Occitane International S.A. and Coca-Cola HBC AG. She holds a BA in Economics and a MBA.

Key appointments: BBA Aviation plc (Non-Executive Director), Goldman Sachs International (Non-Executive Director) and Fortune Brands Home & Security, Inc. (Non-Executive Director).

Flemming Ornskov, MD, MPH (60)
Chief Executive Officer
Appointed: January 2, 2013

Flemming served as Chief Executive Officer Designate prior to his appointment as Chief Executive Officer on April 30, 2013.

Skills & experience: Flemming brings to his role his operational and medical knowledge and his extensive international, strategic and operational experience in the pharmaceutical sector. He formerly held the positions of Non-Executive Chairman of Evotec AG and Non-Executive Director of PCI Biotech Holding ASA. From 2010 to 2012 he was Chief Marketing Officer and Global Head, Strategic Marketing for General and Specialty Medicine at Bayer. From 2008 to 2010 Flemming served as Global President, Pharmaceuticals and OTC at Bausch & Lomb, Inc. He also served as Chairman, and later as President and Chief Executive Officer, of Life-Cycle Pharma A/S from 2006 to 2008, and as President and Chief Executive Officer of Ikaria, Inc. from 2005 to 2006. Earlier in his pharmaceutical career Flemming held roles of increasing responsibility at Merck & Co., Inc. and Novartis AG, following a distinguished period spent in hospitals and academic medicine. Flemming received his MD from the University of Copenhagen, his MBA from INSEAD and his Master of Public Health from Harvard University.

Key appointments: Swiss-American Chamber of Commerce (Non-Executive Director) and Waters Corporation (Non-Executive Director).

Thomas Dittrich (54)
Chief Financial Officer
Anticipated appointment: March 19, 2018

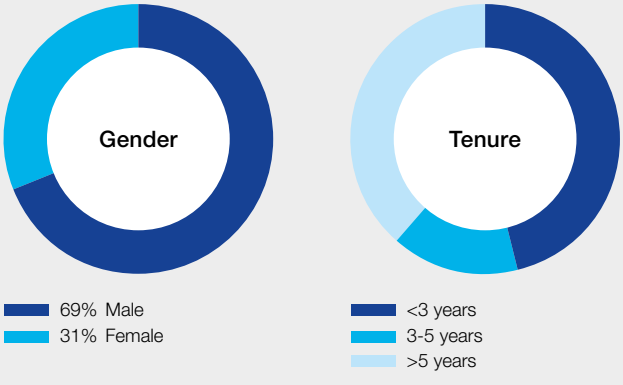
Skills & experience: Thomas will bring to his role his finance and leadership experience. He previously served as Chief Financial Officer and a member of the Executive Committee at Sulzer Ltd. Thomas joined Sulzer in August 2014, serving as Chief Executive Officer ad interim between August 2015 and December 2015. Prior to joining Sulzer, he served as Vice President, Finance Corporate Planning and Chief Accounting Officer of Amgen Inc. between 2010 and 2014. Between 2006 and 2010, Thomas was Vice President, Finance and Chief Financial Officer of Amgen International. He also spent eight years with Dell where he held various finance and general manager roles. Earlier in his career, Thomas worked at Booz & Co and Helbing Management Consulting AG in operational and merger and acquisition roles, respectively. He holds a Master of Science in Finance, Accounting and Business Administration from the University of St. Gallen and a Master of Science in Mechanical Engineering from the Technical University Munich.

Board committee appointments

- (A) Audit, Compliance & Risk Committee
- (R) Remuneration Committee
- (N) Nomination & Governance Committee
- (S) Science & Technology Committee

- Chairmanship
- Membership

Board diversity at December 31, 2017



William Burns (70)
Senior Independent Director
Appointed: March 15, 2010

Skills & experience: William "Bill" brings to the Board extensive international R&D, commercial, business development and operational experience in the pharmaceutical sector. Bill will retire from the Board with effect from the conclusion of the 2018 Annual General Meeting. He worked for Roche from 1986 until 2009; most recently holding the position of CEO of its pharmaceuticals division and serving as a member of the Roche Group Corporate Executive Committee. Bill is a former Non-Executive Director of Roche Holding AG and Chugai Pharmaceutical Co, Ltd, and former Chairman of Biotie Therapies Corp. Bill holds a BA (Hons) in Business Economics from the University of Strathclyde.

Key appointments: Mesoblast Limited (Vice Chairman), Vestergaard Frandsen (Vice Chairman), Molecular Partners (Vice Chairman and Director), Wellcome Trust (Governor and Trustee), Institute of Cancer Research (Trustee) and University of Cologne/Bonn Center for Integrated Oncology (Scientific Advisory Board Member).

Dominic Blakemore (48)
Non-Executive Director
Appointed: January 1, 2014

Skills & experience: Dominic brings to the Board his strategic and financial experience. Dominic will retire from the Board with effect from the conclusion of the 2018 Annual General Meeting. He holds the position of Executive Director and Chief Executive Officer at Compass Group plc, having previously served as Deputy Chief Executive Officer, Chief Operating Officer and Chief Financial Officer. He has also held the positions of Chief Financial Officer at Iglo Foods Group and European Finance & Strategy Director, Corporate Finance Director, and Group Financial Controller at Cadbury plc. Earlier in his career, Dominic worked at PricewaterhouseCoopers where he advised pharmaceutical sector clients.

Key appointments: Compass Group plc (Chief Executive Officer) and Academic Council of University College London (Member).

Olivier Bohuon (59)
Non-Executive Director
Appointed: July 1, 2015

Skills & experience: Olivier brings to the Board his extensive international business and leadership experience gained through roles held in pharmaceutical and healthcare companies across Europe, the Middle East and the U.S. He is to be appointed Senior Independent Director with effect from the conclusion of the 2018 Annual General Meeting. He currently holds the position of Chief Executive Officer at Smith & Nephew plc, having previously served as Chief Executive Officer and President of Pierre Fabre Group and as President of Abbott Pharmaceuticals; a division of U.S.-based Abbott Laboratories. Olivier also held diverse commercial leadership positions at GlaxoSmithKline and its predecessor companies in France. He holds an MBA from HEC Paris School of Management and a doctorate in Pharmacy from the University of Paris.

Key appointments: Smith & Nephew plc (Chief Executive Officer), Biotech Promise (Non-Executive Director) and Virbac SA (Non-Executive Director).

Ian Clark (57)
Non-Executive Director
Appointed: January 3, 2017

Skills & experience: Ian brings to the Board his extensive leadership and biotechnology sector experience. Ian served as Chief Executive Officer and Director of Genentech Inc. (part of the Roche Group) and Head of North American Commercial Operations for Roche until 2016. From 2003 to 2010 he held the positions of Head of Global Product Strategy and Chief Marketing Officer, Executive Vice President — Commercial Operations and Senior Vice President and General Manager — BioOncology at Genentech. Prior to this Ian was appointed President of Novartis Canada, having previously served as Chief Operating Officer for Novartis United Kingdom. He also held various sales and marketing roles at Sanofi and Ivax. Ian is a former Non-Executive Director of TerraVia Holdings Inc. and Kite Pharma, Inc. Ian holds a Bachelor's degree in Biological Sciences from the University of Southampton.

Key appointments: Agios Pharmaceuticals, Inc. (Non-Executive Director), Corvus Pharmaceuticals, Inc. (Non-Executive Director) and Gladstone Institute (Member).

Gail Fosler (70)
Non-Executive Director
Appointed: June 3, 2016

Skills & experience: Gail brings to the Board her commercial, public policy and economics experience. She is President of The GailFosler Group LLC, a strategic advisory service for global business leaders and public policy makers, which she has led since 2010. Prior to this, Gail spent over 20 years at The Conference Board where she served as President and Trustee, Executive Vice President and Chief Economist. Gail is a former Director of Baxter International, Inc., Baxalta, Inc., Swiss Reinsurance America Corporation and Caterpillar, Inc. She holds a Master of Business Administration degree in Finance from New York University and a Bachelor of Arts Degree in Economics from the University of Southern California.

Key appointments: The GailFosler Group LLC (President) and Deschner Corporation (Non-Executive Director and Chair).

Steven Gillis, PhD (64)
Non-Executive Director
Appointed: October 1, 2012

Skills & experience: Steven brings to the Board his extensive technical and scientific knowledge and commercial experience. He is currently a Managing Director at ARCH Venture Partners; a provider of venture capital for technology firms. Prior to this Steven was a founder and Director of Corixa Corporation, acquired by GlaxoSmithKline in 2005, and before that a founder and Director of Immunex Corporation. An immunologist by training, Steven has authored more than 300 peer-reviewed publications in the areas of molecular and tumor immunology. He is credited as being a pioneer in the field of cytokines and cytokine receptors, directing the development of multiple marketed products including Leukine, (GM-CSF), Prokine (IL-2) and Enbrel (soluble TNF receptor-Fc fusion protein) as well as the regulatory approval of Bexxar (radiolabeled anti-CD20) and the novel vaccine adjuvant, MPL. Steven received his BA from Williams College and his PhD from Dartmouth College.

Key appointments: ARCH Venture Partners (Managing Director), Pulmatrix, Inc. (Non-Executive Director), PhaseRx Inc. (Chairman and Non-Executive Director) and VBI Vaccines Inc. (Chairman and Non-Executive Director).

David Ginsburg, MD (65)
Non-Executive Director
Appointed: June 16, 2010

Skills & experience: David brings to the Board his clinical medical experience in internal medicine, hematology-oncology and medical genetics, as well as his extensive basic biomedical laboratory research expertise. David received his BA at Yale University, MD at Duke University and completed his medical and research training at Harvard Medical School. David is the recipient of numerous honors and awards, including election to membership at the National Academy of Sciences, the National Academy of Medicine and the American Academy of Arts and Sciences.

Key appointments: University of Michigan (James V. Neel Distinguished University Professor of Internal Medicine, Human Genetics and Pediatrics) and Howard Hughes Medical Institute (Investigator).

Sara Mathew (62)
Non-Executive Director
Appointed: September 1, 2015

Skills & experience: Sara brings to the Board her financial, strategic and technological experience, having held various corporate leadership roles. She served as Chairman, President and Chief Executive Officer of Dun & Bradstreet, Inc. until 2013, having spent 12 years at the company. Prior to this, Sara worked for 18 years at Procter & Gamble where she held a variety of global finance and management positions including Vice President, Finance — Australia, Asia and India. She is also a former Non-Executive Director of Avon Products, Inc. Sara received her MBA from Xavier University, her Accounting degree from the Institute of Cost & Works Accountants and her Bachelor's degree in Physics, Mathematics and Chemistry from the University of Madras.

Key appointments: Campbell Soup Company (Non-Executive Director) and Freddie Mac (Non-Executive Director).

Anne Minto OBE (64)
Non-Executive Director
Appointed: June 16, 2010

Skills & experience: Anne brings to the Board her extensive legal, commercial and remuneration experience. Anne will retire from the Board with effect from the conclusion of the 2018 Annual General Meeting. She held the position of Group Director, Human Resources at Centrica plc from 2002 to 2011 and was a member of the Centrica Executive Committee. Her extensive business career includes senior management roles at Shell UK, the position of Deputy Director-General of the Engineering Employers' Federation and the position of Group Director Human Resources at Smiths Group plc. She is also a former Director of Northumbrian Water plc and SITA UK. Anne holds a Law degree, a postgraduate diploma in Human Resources and is a qualified lawyer. She is also a Fellow of the Chartered Institute of Personnel & Development, the Royal Society of Arts and the London City and Guilds, and is a member of the Law Society of Scotland.

Key appointments: Tate & Lyle PLC (Non-Executive Director), ExlService Holdings, Inc. (Non-Executive Director), University of Aberdeen Court (Non-Executive Director) and University of Aberdeen Development Trust (Chairman and Trustee).

Albert Stroucken (70)
Non-Executive Director
Appointed: June 3, 2016

Skills & experience: Albert "Al" brings to the Board his manufacturing, commercial and international experience. He served as Executive Chairman of Owens-Illinois, Inc. until 2016, having served as Chairman, President and Chief Executive Officer from 2006 until 2015. From 1998 to 2006 Al held the position of President and Chief Executive Officer of H.B. Fuller Company, adding the role of Chairman in 1999. He served as General Manager of the Inorganics division of Bayer AG from 1997 to 1998, serving as Executive Vice President and President of the Industrial Chemicals division of Bayer Corporation from 1992 to 1997. Al served as a Non-Executive Director of Baxalta Incorporated until 2016.

Key appointments: Baxter International, Inc. (Non-Executive Director).

Jeffrey Poulton (50)
Former Chief Financial Officer
Appointed: April 29, 2015 — December 31, 2017

Jeffrey "Jeff" served as Interim Chief Financial Officer from January 1, 2015, prior to his appointment as Chief Financial Officer.

Skills & experience: Jeff brought to the Board his financial, commercial and strategic acumen. Following joining Shire in 2003, he held leadership positions in finance supporting the Neuroscience, Gastrointestinal and Rare Diseases business units as well as the positions of Interim Chief Financial Officer and Head of Investor Relations. In addition, Jeff oversaw the operations of the Rare Diseases business unit in North America, Latin America and Asia Pacific, as well as leading the integration of the legacy Viropharma rare disease products into the Shire portfolio. Prior to joining Shire, Jeff worked at Cinergy Corp. and PPG Industries in a variety of corporate finance and business development roles, in addition to serving as a commissioned officer in the U.S. Navy. He received a Bachelor of Arts in Economics from Duke University and a Master of Business Administration in Finance from the Kelly School of Business at Indiana University.

Executive Committee

Flemming Ornskov, MD, MPH (60)
Chief Executive Officer
Appointed: January 2, 2013

For biographical details, see page 56.

Thomas Dittrich (54)
Chief Financial Officer
Anticipated appointment: March 19, 2018

For biographical details, see page 56.

Andreas Busch, PhD (54)
Head of Research and Development and Chief Scientific Officer
Appointed: January 1, 2018

Andreas joined Shire in 2018 and serves as Head of Research and Development and Chief Scientific Officer. He previously served as Head of Drug Discovery and a member of the Executive Committee at Bayer. Prior to that, Andreas was Global Head of Cardiovascular Research at Hoechst and Sanofi-Aventis. He received his PhD in Pharmacology from the Johann Wolfgang Goethe-University Frankfurt.

Joanne Cordeiro (60)
Chief Human Resources Officer
Appointed: August 21, 2017

Joanne joined Shire in 2011 and serves as Chief Human Resources Officer. She previously held various Human Resources management and executive search roles at Teradyne Inc., Covansys Corporation, Avid Technology, Inc. and Sybase Inc. Joanne holds a Bachelor's degree in Marketing from Northeastern University.

Bill Mordan (48)
General Counsel and Company Secretary
Appointed: October 1, 2015

Bill joined Shire in 2015 and serves as General Counsel and Company Secretary. He previously served as General Counsel and Company Secretary at Reckitt Benckiser Group plc in the UK, prior to which he held various roles at Procter & Gamble in the U.S., Mexico and Brazil. Earlier in his career, Bill served as a clerk in the U.S. Court of Appeals for the Sixth Circuit. He holds a Juris Doctor degree from the University of North Carolina.

Perry Sternberg (49)
Head of U.S. Commercial
Appointed: June 3, 2016

Perry joined Shire in 2013 and is Head of U.S. Commercial. He was previously Vice President & General Manager, U.S. & Canada Pharmaceuticals at Bausch & Lomb. Prior to that, Perry held various roles at Novartis Ophthalmics, Novartis Pharmaceuticals and Merck & Co., Inc. He holds a Bachelor's degree in Animal Bioscience from Pennsylvania State University.

Kim Stratton (55)
Head of International Commercial
Appointed: July 1, 2016

Kim joined Shire in 2013 and is Head of International Commercial. She was previously Global Head of Group Country Management & External Affairs for Novartis. Prior to that, Kim held various roles of increasing responsibility at Novartis, Bristol Myers Squibb and AstraZeneca. She qualified as a State Registered Nurse at the Royal North Shore Hospital, Australia.

Matt Walker (54)
Head of Technical Operations
Appointed: June 3, 2016

Matt joined Shire in 2016 and is Head of Technical Operations. Previously he worked at Pfizer for over 20 years in engineering and operations roles within the supply organization — his last two positions being Operations Lead for Sterile Injectables and Operations Lead for Biologics/Vaccines. Prior to Pfizer, Matt worked as a Project Director for John Brown Engineering and Construction. He holds a Bachelor's degree in Chemical Engineering from Tufts University.

Chairman's governance statement

Index to the Governance section

This section sets out Shire's governance framework and seeks to demonstrate how the main principles of the UK Corporate Governance Code (the "Governance Code") were applied throughout the financial year ended December 31, 2017. The Board is of the opinion that, during this period, the Company complied with the provisions of the Governance Code. Published by the Financial Reporting Council, the Governance Code is publicly available at www.frc.org.uk

This section is comprised of the following sub-sections:

> "In a year of growth, innovation, and execution, maintaining Shire's high standard of corporate governance remains critically important to the Board."

In 2017, my fellow Directors and I have overseen the continued transformation of Shire: the integration of Baxalta, multiple new product launches, the expansion of our pipeline, and a detailed strategic review of the business. We have also refined the Company's governance framework, improving a system of policies and procedures that utilize the best of our talent and resources, enabling Shire to operate as a lean, nimble, and ethical organization. This model of governance reflects our culture of performance, compliance, and accountability, and supports Shire's core strategic drivers of growth, innovation, efficiency, and people. Further details on the Board's key governance considerations during the year can be found on the opposite page.

In accordance with the Board's commitment to continued improvement, all Directors participated in an internal performance evaluation in 2017. Key considerations of this exercise included effective governance, the review and communication of strategy, Board and committee composition, as well as information delivery and support. All members of the Board have committed to apply the learnings from this process as we strive to enhance our role as stewards of Shire. Further details on the evaluation process, including identified strengths and areas of focus, can be found on pages 66 to 67.

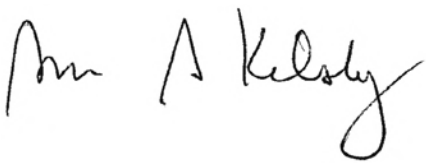
Shire's resilience and adaptability has made it a leader in an evolving and competitive global market. This same resilience and adaptability applies to Shire's governance, where our focus on effective succession planning and personal development ensures that the Board remains well-positioned to deliver guidance and support during times of change. In August, we announced that Jeff Poulton, Chief Financial Officer, would leave Shire at the end of 2017, having provided many years of valued service to the Company. Thomas Dittrich was identified as his successor and is expected to join the Company as Chief Financial Officer on March 19, 2018, serving as an executive member of the Board and as a member of the Executive Committee. Thomas' wealth of experience within and outside the pharmaceutical sector, and in leading finance teams at numerous multinational companies, will be a tremendous asset for the Board and Shire alike.

In addition, reflecting our commitment to the Governance Code, the Board announced in August 2017 that Bill Burns, Senior Independent Director, and Anne Minto, the previous Chairman of our Remuneration Committee, would retire as Directors following the 2018 AGM, each having dedicated more than seven years to Shire. Al Stroucken, an existing Non-Executive Director and member of the Remuneration Committee, replaced Anne as Committee Chairman in August 2017. In October, we appointed Sara Mathew Chairman of the Audit, Compliance & Risk Committee, replacing Dominic Blakemore. Both Dominic and Anne continue to serve as members of their respective Committees, to provide a smooth transition until their retirement from the Board. In February 2018, we announced that Dominic would retire as a Director following the 2018 AGM to allow him to focus on his new role as Chief Executive of Compass Group plc, and that a search for a new Board member with comparable knowledge, insight, and experience was under way. We also announced that Olivier Bohuon, an existing Non-Executive Director, was to be appointed Senior

Independent Director following the 2018 AGM. On behalf of the Board, I express our gratitude to Bill, Anne and Dominic, whose contributions to Shire and leadership on the Board have been instrumental parts of our growth and success.

In August, we also announced that David Ginsburg, Chairman of the Science & Technology Committee, would retire following the 2018 AGM. The Board, however, has agreed that David will remain in service while we continue our search for a new Non-Executive Director, specifically with scientific and/or medical experience.

Looking ahead to 2018, the Board and I will continue to work closely with management, shareholders, and other stakeholders as we pursue our strategy for growth while evaluating all strategic options available to Shire. As we transition to a company with two distinct divisions, we are mindful of the importance of effective corporate governance to Shire's future success. We will therefore continue to position ourselves to best serve the needs of the business, to support management in the delivery of our strategy, and ultimately to promote the development of effective therapies for the patients we serve, all while creating shareholder value.



Susan Kilsby
Chairman

Key considerations

The Board's principal considerations and activities during the year were:

Strategy

- The integration of Baxalta and realization of related synergies
- The ongoing neuroscience strategic review, including the decision to operate standalone Rare Disease and Neuroscience divisions, key growth drivers for each and the potential for creating two separately listed companies
- Achievement of the Company's target to rapidly pay down debt
- Capital allocation, the Company's Long Range Plan and key drivers for growth
- Ongoing investor feedback, with a high level of engagement related to the Company's key strategic initiatives and executive remuneration
- Launch activity for key products (including MYDAYIS) and ongoing commercial development
- Developments to the global operating environment including regulatory and tax reform, pricing pressures and other macro events
- Updates on the clinical development pipeline and the research and non-clinical portfolio, including portfolio productivity and prioritization

Operations

- The appraisal of the Company's Technical Operations network, ensuring that it continues to appropriately support business operations and the delivery of strategy
- The resolution of a manufacturing interruption concerning CINRYZE
- Performance against the Company's Environment, Health and Safety targets, and ongoing program development
- Ongoing commercial and manufacturing investments, including the development of a new, state-of-the-art biologics manufacturing facility in Ireland
- Performance updates against Quality Assurance initiatives
- The Company's involvement in ongoing litigation

Governance

- Board performance and effectiveness, including induction and training initiatives
- Board and committee composition, including the anticipated reduction in Board membership following the previous expansion linked to the Baxalta acquisition, and changes to committee chairmanship/membership
- Succession planning for Executive and Non-Executive Directors, including internal and external capability mapping for the role of CEO
- Senior management talent assessment, development and succession, including recruitment for the roles of Chief Financial Officer, Head of Research & Development and Chief Human Resources Officer
- The reappointment of Deloitte LLP as the Company's auditor
- Proposed changes to the Company's Articles of Association, which were approved by shareholders at the 2017 AGM
- Updates from Board committees concerning matters falling within their remit, including amendments to their Terms of Reference

Risk management and compliance, culture and responsibility

- The ongoing monitoring and review of the Company's risk management and internal control systems
- The assessment of the Company's principal risks and determination of its risk appetite
- Employee survey results, morale and personal development programs, as well as other culture-related strategies
- Key policies including the Board Diversity Policy and Code of Ethics
- The Company's approach to environmental protection and sustainable operations
- Compliance updates including assessments of the Company's anti-bribery and anti-corruption program
- The fulfilment of obligations under the Company's Corporate Integrity Agreement

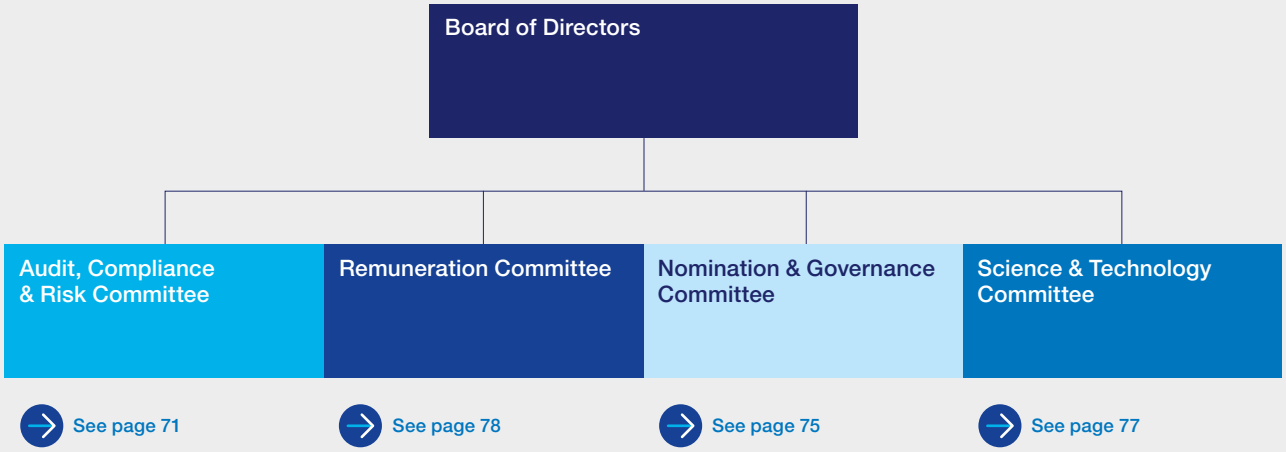
Financial performance and reporting

- The Company's ongoing performance against budget
- The performance of key marketed products (including XIIDRA) and related competition
- Generic competition to marketed products (including LIALDA)
- The Company's full-year and half-year results, quarterly earnings releases and related guidance
- The Company's Annual and Half-yearly Reports, Form 10-K and Form 10-Q filings
- The declaration of dividends and the Company's stated dividend policy
- The Company's continued adoption of the going concern basis of accounting
- The assessment of the Company's long-term viability

Board and committee governance

Governance framework

The Board has established the following governance framework in order to ensure effective oversight and control over the Group's operations:



Board of Directors

The principal purpose of the Board is to provide leadership to the Company in a manner that promotes its long-term success, creating sustainable value for the benefit of shareholders and other stakeholders.

The Board is responsible for setting the Company's strategy and overseeing its implementation by management. In doing so, the Board works closely with management to ensure that a culture of integrity, responsibility and patient focus exists throughout the organization. In addition, the Board has oversight of all material matters impacting the Company and its operations, including key policies, significant financial matters and M&A activity, risk management and succession planning.

Audit, Compliance & Risk Committee

The Committee oversees Shire's accounting and financial reporting processes, the audits of its financial statements and the effectiveness of the Company's risk management, internal control and compliance framework, making recommendations to the Board as required.

Remuneration Committee

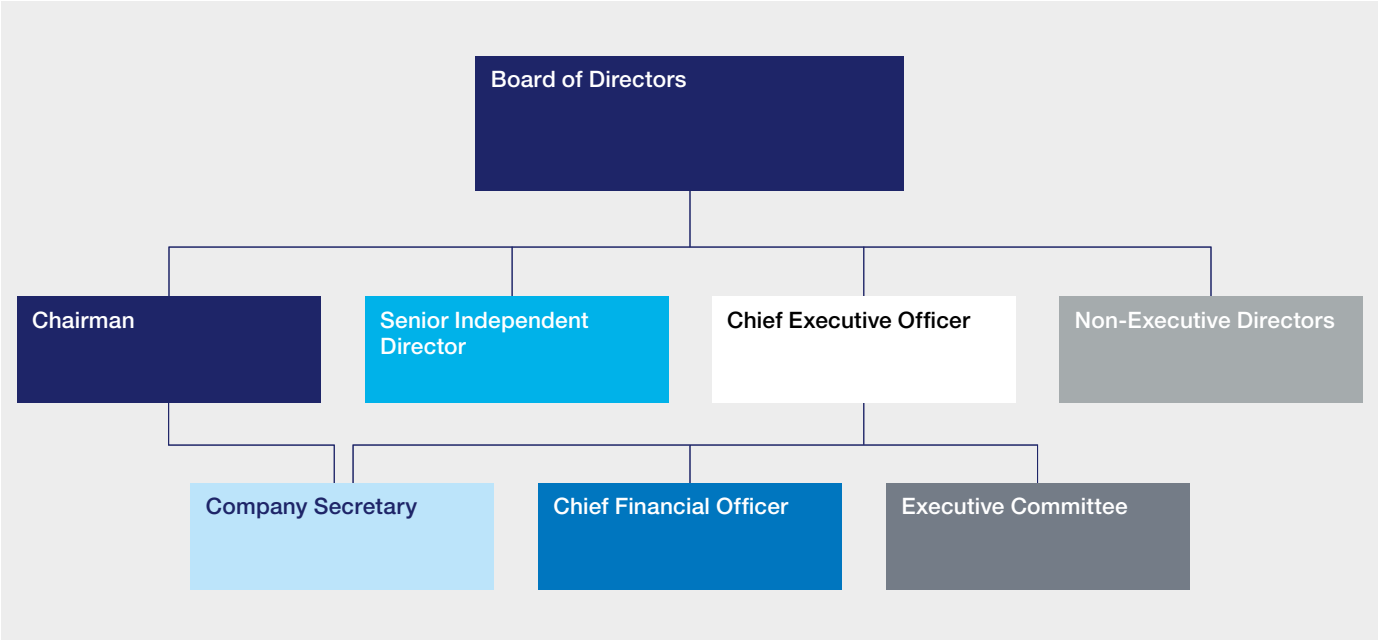
The Committee oversees remuneration matters affecting the Company's Chairman, Executive Directors, Executive Committee members and wider employees, including annual and long-term incentive arrangements and related performance targets.

Nomination & Governance Committee

The Committee is responsible for reviewing the structure and composition of the Board and for overseeing succession planning for members of the Board and, in consultation with the Chief Executive Officer, the Executive Committee. In addition, the Committee reviews and makes recommendations to the Board on cultural, reputational, political and governance matters affecting the Group.

Science & Technology Committee

The Committee's principal responsibilities are to regularly review and advise the Board on the Company's investment in research, development and technology, the quality of the R&D pipeline and that of R&D talent within the Group.



Chairman
The Chairman's primary responsibility is to provide leadership to the Board, ensuring its effective operation. This is achieved in part through the promotion of an open and engaged culture that facilitates constructive dialogue both with management and in executive sessions of the Board. The Chairman is also responsible for ensuring effective communications between the Board and shareholders.

Senior Independent Director
The Senior Independent Director is responsible for providing a sounding board for the Chairman and for serving as a trusted intermediary for the other Directors. In addition, the Senior Independent Director is responsible for leading meetings of the Non-Executive Directors in the absence of the Chairman, leading the Non-Executive Directors in evaluating the performance of the Chairman, and for consulting with shareholders when communication with the Chairman or Chief Executive Officer would be inappropriate.

Chief Executive Officer
The principal responsibility of the Chief Executive Officer is to manage Shire's day-to-day business. The Chief Executive Officer is accountable to the Board for the development of the Company's strategy and operations, having regard to the risk profile, objectives and policies set forth by the Board and its committees.

Non-Executive Directors
The Non-Executive Directors are charged with exercising independent judgment during Board deliberations, and ensuring effective performance and delivery of strategy by management.

Company Secretary
The Company Secretary ensures the efficient flow of information between the Board, its committees and members of management to enable effective decision making. The Company Secretary is responsible for advising the Board on matters of governance and for facilitating induction and training initiatives for Directors.

Chief Financial Officer
The Chief Financial Officer is responsible for developing strategies to enable the fulfilment of Shire's short and long-term strategic and financial goals, and for collaborating with the Chief Executive Officer in support of ongoing business operations and the development of new opportunities. In doing so, the Chief Financial Officer oversees all financial matters affecting the Company.

Executive Committee
The Committee assists the Chief Executive Officer in managing Shire's operations, ensuring that the Group is run within the governance framework agreed by the Board. In doing so, the Executive Committee supports the development and implementation of the Company's strategy and deliberates matters that are material from a risk, financial, reputational and/or strategic perspective.

The Board Reserve Powers, Board committee terms of reference and formal division of responsibilities of the Chairman, Senior Independent Director, Chief Executive Officer, Non-Executive Directors, and Company Secretary are available on the Company's website: www.shire.com

Membership and meetings

Board member	Board appointment date	Board and committee meeting attendance: Board (scheduled)	Board (ad hoc)[1]	Audit, Compliance & Risk[2]	Remuneration[2]	Nomination & Governance[2]	Science & Technology[2]
Susan Kilsby[3]	September 1, 2011	5(5)	5(5)			6(6)	
Flemming Ornskov	January 2, 2013	5(5)	3(3)				
William Burns[4]	March 15, 2010	5(5)	3(3)		9(10)	6(6)	5(5)
Dominic Blakemore[5, 6]	January 1, 2014	4(5)	3(3)	5(5)	6(8)		
Olivier Bohuon[7]	July 1, 2015	5(5)	3(3)		10(10)	5(5)	0(1)
Ian Clark	January 3, 2017	5(5)	3(3)		8(8)		4(4)
Gail Fosler	June 3, 2016	5(5)	3(3)	5(5)			
Steven Gillis	October 1, 2012	5(5)	4(5)	5(5)	9(10)		5(5)
David Ginsburg	June 16, 2010	5(5)	2(3)			6(6)	5(5)
Sara Mathew[6]	September 1, 2015	5(5)	5(5)	5(5)	2(2)	5(5)	
Anne Minto[8]	June 16, 2010	5(5)	3(3)		10(10)	6(6)	
Albert Stroucken[8]	June 3, 2016	5(5)	5(5)	5(5)	10(10)		
Jeffrey Poulton	April 29, 2015 — December 31, 2017	5(5)	3(3)				

Notes:
The number in brackets denotes the number of meetings that Board and committee members were eligible to attend.
Numbers in blue indicate Board and committee chairmanship.

1 Ad hoc Board meetings include those that fell outside the usual Board calendar, which were timed to facilitate maximum possible attendance, and those of a sub-committee of the Board comprising a select group of Directors.
2 Each Board committee held five scheduled meetings during the year, with additional ad hoc meetings held to meet the requirements of the business and timed to facilitate maximum possible attendance.
3 Susan Kilsby served as an independent Non-Executive Director prior to her appointment as Chairman on April 29, 2014.
4 William Burns served as a Non-Executive Director prior to his appointment as Senior Independent Director on April 28, 2016.
5 Dominic Blakemore was absent from one scheduled Board meeting due to personal bereavement.
6 Dominic Blakemore was succeeded by Sara Mathew as Chairman of the Audit, Compliance & Risk Committee on October 27, 2017. Mr. Blakemore continues to serve as a member of the Committee.
7 In anticipation of changes to Board committee composition, with the approval of the Board, Olivier Bohuon was excused from attending one Science & Technology Committee meeting.
8 Anne Minto was succeeded by Albert Stroucken as Chairman of the Remuneration Committee on August 3, 2017. Ms. Minto continues to serve as a member of the Committee.

During the year the Board met frequently in order to discharge its duties. Five scheduled Board meetings were held, typically alongside Board committee meetings. In addition, five ad hoc Board meetings took place to consider the strategic review of the Company's neuroscience business and other matters of significance.

During scheduled Board meetings it is customary for the Non-Executive Directors to meet without Executive Directors or management present, following which a meeting of the Non-Executive Directors led by the Senior Independent Director is held in the absence of the Chairman.

Only members of the Board are entitled to attend Board meetings, however, during the year members from the following internal functions attended by invitation:

- Finance
- Legal and Company Secretariat
- Corporate Development
- Human Resources
- Research and Development
- Global Compliance and Risk Management
- Communications and Public Affairs
- Investor Relations
- International Commercial
- U.S. Commercial
- Technical Operations

External professional advisors also attended meetings when necessary.

Effectiveness

Effective stewardship is central to the development and promotion of the Company's purpose, culture, and values, and therefore to the execution of its strategy. The Board is committed to ensuring that the Company operates in accordance with the highest standards of governance in order to promote its success for the benefit of all stakeholders.

Planning and operation
At the start of the year the Chairman and her fellow Directors, supported by the Company Secretary, agree on a forward-looking schedule of matters to be considered by the Board and its committees, with specific updates made throughout the year as required. In addition, the Chairman, assisted by the Company Secretary, ensures appropriate time-allocation at meetings and encourages open and balanced discussion with a view to achieving resolution by consensus. If consensus is not possible, decisions are to be taken by majority vote, with the Chairman having the deciding vote in the case of an equality of votes.

Information and support
The Chairman, supported by the Company Secretary, ensures that effective channels of communication exist between the Board, its committees and members of management, and that Board members are provided with the information necessary for them to discharge their duties and responsibilities. Before decisions are taken at Board and committee meetings, consideration is given to the adequacy of the information made available, enabling the deferral of decision-making if necessary. Directors may seek clarification, additional information or professional advice necessary to the fulfilment of their duties and responsibilities from across the business, from the Company Secretary or from independent sources at the Company's expense.

Appointments
The Board may appoint any individual as a Director either to fill a vacancy or as an additional member of the Board, subject to subsequent election and annual re-election by the Company's shareholders. The process for new appointments is led by the Nomination & Governance Committee (procedural details are available on page 76) which ultimately makes a recommendation to the Board.

With the exception of Dominic Blakemore, William Burns, and Anne Minto, all Directors are seeking election or re-election at the Annual General Meeting to be held on April 24, 2018. At this meeting, Non-Executive Director terms of appointment and Executive Director service contracts will be made available for inspection by shareholders.

Diversity
The Board recognizes the inherent value of diversity at all levels within the organization, and strives to foster an inclusive and respectful professional culture. In doing so, the Board promotes its core belief that a diverse workforce brings a wealth of ideas, innovation and drive that in turn contribute to the Company's ability to anticipate, and adapt to, ongoing changes in its operating environment.

During the year the Board reviewed its Diversity Policy and considered related external publications, including the Hampton-Alexander Review concerning gender diversity and the Parker Review concerning ethnic diversity. The Policy acknowledges that the Company, its shareholders and other stakeholders are best served by a Board diverse in skill, experience, background, gender and ethnicity. The principles of the policy are taken into account by both the Board and the Nomination & Governance Committee in their consideration of potential Board members, consistent with the Group's focus on diversity. Additional disclosure relating to diversity within Shire is made on pages 38 and 39.

Independence and competencies
The Board has reviewed the independence of the Non-Executive Directors, other than the Chairman, in accordance with the factors set forth for consideration in the Governance Code, and determined that each Non-Executive Director seeking election or re-election continues to be independent in character and judgment. In addition, the Board regards each of its members as possessing the skills, knowledge and experience necessary for it to function effectively. Board members' biographical information can be found on pages 56 to 58. Details of the 2017 Board performance evaluation can be found on pages 66 to 67.

Commitment
Prior to appointment, Non-Executive Directors are required to disclose to the Board their existing significant commitments. This enables an assessment of their capacity to commit sufficient time to effectively discharge their anticipated duties and responsibilities. Each Non-Executive Director keeps the Board informed of any changes to their significant commitments. As part of the 2017 Board performance evaluation, it was determined that each of the Directors had committed sufficient time to their role.

Conflicts of interest
Directors are required to notify the Board before accepting any appointment, or taking any action, which may give rise to a conflict of interest or a potential conflict of interest (together a "conflict"), or on becoming aware of a conflict. Upon notification, the Board will consider whether to authorize the conflict and, if so, set any related terms and conditions. These may include the relevant Director being requested to abstain from the related decision and/or discussion.
In the event of a material change to the circumstances relating to an authorized conflict, the Director concerned is required to inform the Nomination & Governance Committee and the Chairman of the Board. Authorized conflicts are reviewed annually and at such other times as is necessary by the Nomination & Governance Committee, which reports on its findings to the Board. Details on Directors' interests in transactions can be found on page 109.

Induction, development and evaluation

Upon appointment to the Board, all Directors undergo a formal induction program that is tailored to their individual skills, knowledge and experience:

Board induction program

Objectives:
To facilitate each Director's familiarization with the Company's business, strategy, and governance framework, as well as their own duties and responsibilities.

Core program	Induction meetings	Bespoke program
• Directors' duties and responsibilities • Strategy and technical operations • Research and development • Corporate governance and reputation • Risk management, compliance and internal control	• Members of the Board • Company Secretary • Members of the Executive Committee • Members of management and subject-matter specialists • Corporate brokers and external advisors	• Board committee responsibilities • Site visits • Executive remuneration • Global taxation • Commercial operations • Investor relations • Financial reporting

In addition to undergoing an initial induction, as part of the annual Board performance evaluation each Director discusses with the Chairman their individual development requirements with a view to ensuring that their skills, knowledge, and experience are regularly refreshed, and that their familiarity with the Company's business is maintained. A standing schedule of training topics enables Directors to undertake, as required, detailed development initiatives focused on matters specific to the Company and its operating environment.

The 2017 Board performance evaluation was undertaken internally, led by the Chairman with the support of the Company Secretary, and covered the performance of the Board, its committees and members, and was aligned with the principles of the Governance Code.

Board performance evaluation

Key areas of focus
- **Information and support**
- **Time management**
- **Effective governance**
- **Independence, diversity and succession planning**
- **Collective skill and experience**
- **Delivery and communication of strategy**

Individual meetings	Chairman's performance	Evaluation and review	Board committees
The Chairman discussed with each Non-Executive Director their individual performance, training needs, and overall Board effectiveness	The Senior Independent Director solicited the views of fellow Directors with respect to the performance of the Chairman, and provided her with constructive feedback	The Chairman led a performance evaluation and effectiveness review with the Board based on the Directors' feedback	The Chairman of each Board committee held performance and effectiveness discussions with their committee members

Key strengths, and areas of focus for 2018, were identified as follows:

Strengths	2018 areas of focus
• Culture of positive engagement and constructive debate • Appropriate Board committee structure and composition, with each committee possessing the necessary skills and experience to perform effectively • Appropriate balance of support and challenge between the Board and members of management	• Develop collective Board awareness of corporate governance matters prevalent in the UK • Streamline the flow of information from management to the Board and its committees, including the manner in which support is provided at meetings • Continue to improve the flow of information between Board committees • Enhance communication of strategy to investors and other stakeholders

Areas of focus for 2017, identified during the 2016 internal Board performance evaluation, and related progress are as follows:

2017 areas of focus	Progress
• The Board's approach to reviewing corporate strategy • Succession planning for management and Non-Executive Directors	• The Board has refined the way it considers matters of strategy, including broadening its deliberations and allocating more time for dedicated discussion • The Board oversaw an independent talent assessment of members of management, prioritizing their ongoing development and refining succession plans for second and third-tier management and the skills required at executive level. The Board also sought to broaden its awareness of suitable candidates for potential appointment as Non-Executive Directors through dedicated interactions with external search consultancies and networking initiatives

Accountability

Risk management and internal control

The Board is responsible for Shire's risk management and internal control systems, which include the processes for identifying, evaluating, mitigating, and monitoring the principal risks faced by the Group. These systems are developed in furtherance of the Company's strategy and in accordance with applicable regulatory guidelines including the Internal Control — Integrated Framework 2013, issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO Framework), and the Financial Reporting Council's Guidance on Risk Management, Internal Control and Related Financial and Business Reporting. Shire's risk management and internal control framework has been in place for the duration of the financial year covered by, and to the date of the approval of, this Annual Report.

Risk management and internal controls relating to financial reporting

The Group's internal control program related to financial reporting (ICFR) is aligned with the COSO Framework. It comprises a combination of manual, automated, preventative and detective controls, as well as underlying IT controls for key financial systems, which are documented, tested, and reported on throughout the year. The ICFR takes into account key policies such as the Controller's Accounting Manual and the Delegation of Authority matrix, as well as pervasive entity level controls including those relating to integrity and ethical values, adherence to codes of conduct, and the Board's oversight of internal control and organizational structure. In addition, on an annual basis the Internal Audit function develops and executes a risk-based audit plan covering areas of financial, compliance, and operational risk across the various Group functions and geographic locations. Results of these audits, together with results of ICFR testing, are regularly reviewed by the Audit, Compliance & Risk (ACR) Committee which, along with management, assesses the ongoing effectiveness of the ICFR against the COSO Framework. Furthermore, an established process of escalation enables the ACR Committee and the Board to review material matters on a timely basis as they arise.

Monitoring and review

The Board, supported by the ACR Committee, is responsible for the ongoing monitoring and review of the Group's risk management and internal control systems. In doing so, the Board:

- agrees, on an annual basis, a scheduled monitoring program and identifies those aspects that will be overseen, on its behalf, by the ACR Committee
- ensures that considerations of risk feature within its wider discussions, including those concerning the Company's business model and strategy
- reflects on the determination, identification, assessment, and mitigation of the Company's principal risks, enabling the Board to continually evaluate whether the risk management and internal control systems remain appropriate

Following completion of the Baxalta acquisition, specific audit and assurance activities were undertaken with respect to the legacy Baxalta organization, with its principal business risks and risk management systems factored into Shire's Enterprise Risk Management program and biannual enterprise risk assessment. In addition, the Board has taken into consideration risk management and internal controls implementation, effectiveness, and integration as part of its wider post-transaction strategic review.

In addition to its ongoing appraisal, the Board is responsible for undertaking an annual review of the effectiveness of the Company's risk management and internal control systems. This is achieved through:

- dedicated discussion concerning key aspects of the Company's risk management and internal control regime, including its operation and integration, management's oversight and related reporting, risk appetite, culture, and other aspects pertinent to the affairs of the Company
- reflection on key matters that have arisen during the year and the Company's ability to respond appropriately to internal and external developments as they arise, drawing on the Board's more-regular discussions and feedback from the ACR Committee
- evaluation of the principal features of the risk management and internal control systems, their composition relative to Shire's strategic direction and conclusions as to their overall effectiveness

Following its review in respect of the 2017 financial year and the period up to the approval of this Annual Report, the Board neither identified, nor was advised of, any failings or weaknesses within the Company's risk management and internal control systems that were considered material to the Group as a whole. Further details on Shire's risk management framework can be found on pages 18 and 19.

Going concern

The Directors' Report (covering pages 2 to 113 and 184 to 198) includes the following information relating to the Group:

- financial position, including cash flows, liquidity position and borrowing facilities
- business activities together with factors likely to affect future development, performance and financial position
- objectives, policies and processes for managing capital
- financial risk management objectives
- details of hedging activity and exposures to credit and liquidity risk

Details of the Group's financial instruments are disclosed in Note 16 to the consolidated financial statements. The Directors have a reasonable expectation that the Group has adequate resources to continue in operational existence for the foreseeable future. Thus, they consider it appropriate to adopt the going concern basis of accounting in preparing the annual financial statements.

Viability statement

For the purpose of assessing ongoing viability, the Board considered the Company's prospects over a four-year period. This period is consistent with the relative focus within the Company's Long Range Plan (the "LRP"), which underpins the Group's investment and planning processes, supports the implementation of the Company's strategy and enables the prioritization of our key strategic drivers: growth, innovation, efficiency, and people. The LRP includes the evaluation of key sensitivities that relate to certain of the Company's principal risks and uncertainties (as outlined on pages 18 to 21), including the realistic availability and effectiveness of mitigating actions, with a view to determining their potential impact on the Company's financial position, ability to deliver on strategy and, ultimately, its viability. The sensitivity analysis considers the Company's future cash flows and funding requirements, including the ability to repay outstanding debt and other obligations, the contingent value rights held by the former shareholders of Dyax, maintaining compliance with ongoing loan covenants, the sustainability of the Company's dividend policy, and its strategy for reinvesting in long-term growth. The sensitivity analysis assumes that debt maturing within the four-year period will be repaid from operating cash flows. Specific scenarios considered during the year included increased pricing pressure in the U.S. and Europe, competition pressure on our Hematology franchise, lower market share for strategic products, general demand decrease and the failure of strategic pipeline programs, such as SHP643 (lanadelumab).

In addition to evaluating the LRP, as part of its wider assessment of ongoing viability the Board considered:

- its assessment of the Company's principal risks and uncertainties (as outlined on pages 18 to 21)
- its monitoring and review of the Company's risk management and internal control systems (as outlined on page 68)
- reporting and assurance that it receives from its committees, members of management and the Group's external auditor
- the impact of significant projects, strategic developments and other significant commitments on the Company's risk profile, including the acquisition of Baxalta in 2016, and the establishment of separate Rare Disease and Neuroscience divisions in 2018

Having regard to each of these considerations, the Board has a reasonable expectation that the Company will be able to continue in operation and meet its liabilities as they fall due over the four-year period of its assessment. In drawing this conclusion, the Board's assessment did not include the impact of undertaking other strategic initiatives, including the possible separation and independent listing of each of the Rare Disease and Neuroscience divisions.

Relations with shareholders

The Board is committed to maintaining open and constructive dialogue with shareholders, helping to ensure a common understanding of strategic objectives, matters of governance and of the Company's performance. The principal points of contact for major shareholders are the Chairman, Chief Executive Officer, Chief Financial Officer and the Company's Investor Relations team, with the views of investors communicated to the Board as a whole. During the year the Group engaged with shareholders through the media below:

Meetings with shareholders
The Chairman, Chief Executive Officer, Chief Financial Officer, the Chairmen of the Board committees and members of management engaged with many of Shire's major shareholders and their representative bodies to receive views on matters material to the Company and its operations. Such matters included the ongoing integration of Baxalta, the Company's strategy and financial targets, and the proposed 2018 Directors' Remuneration Policy. In addition, a meeting with members of the Investor Forum was held at the Company's London office, with topics of discussion including capital allocation; Board composition, responsibilities and its role in business development; and succession planning.

Digital application
The Shire IR Briefcase app is regularly updated with news and presentations and provides access to the Company's latest Annual Report.

Website
The Company's website (www.shire.com) provides information about the Group and is regularly updated with corporate and regulatory news, IR events and other information related to the Company's operations.

Annual General Meeting
The Company's Annual General Meeting was held in Dublin on April 25, 2017. Shareholders were invited to attend and vote on resolutions and also to meet with members of the Board.

Corporate responsibility reports and engagement
The Company's website has a dedicated "Responsibility" section where Shire's Annual Responsibility Review is posted along with regular updates on programs, policies, and activities.

Healthcare conferences
Representatives of the Company engaged with shareholders and potential investors at many conferences held throughout the year at which presentations and other reference materials were made available.

Investor Relations department
The Group's Investor Relations department regularly engages with shareholders and potential investors, including through its dedicated mailbox: InvestorRelations@shire.com

Results announcements and presentations
The Company communicated its performance to shareholders and analysts through quarterly financial results announcements, each accompanied by an explanatory webcast and Q&A session provided by the Chief Executive Officer, the Chief Financial Officer and other members of management.

Financial reporting
The Group published half and full-year reports and filed quarterly Form 10-Qs and an annual Form 10-K in accordance with obligations arising from its equity listings on the London Stock Exchange and the NASDAQ Global Select Market, and its debt listing on the New York Stock Exchange.

Audit, Compliance & Risk Committee

> Ensuring a robust and integrated system of compliance, risk management, and internal control has been a key priority of the Committee.

Sara Mathew
Committee Chairman

Membership and meetings

As of the year end, the Audit, Compliance & Risk Committee comprised five independent Non-Executive Directors, each chosen for their knowledge and experience of matters of finance, risk management, compliance and internal control. The Board is satisfied that at least one member of the Committee has recent and relevant financial experience in accordance with the requirements of the Governance Code.

Committee member	Date of Committee appointment
Sara Mathew[1]	Sept 1, 2015
Dominic Blakemore[2]	Jan 1, 2014
Gail Fosler	Jun 7, 2016
Steven Gillis[3]	Dec 3, 2014
Albert Stroucken	Jun 7, 2016

1 Sara Mathew served as a member of the Committee prior to her appointment as Committee Chairman on October 27, 2017.
2 Dominic Blakemore served as Committee Chairman between April 29, 2014, and October 27, 2017.
3 Steven Gillis served as an interim member of the Committee prior to his appointment on December 3, 2015.

Committee meetings held during the year typically coincided with key dates in the Group's financial reporting cycle (details of Committee members' attendance can be found on page 64). At the invitation of the Committee Chairman, regular additional meeting attendees included the Chairman of the Board and other Non-Executive Directors, the Chief Executive Officer, Chief Financial Officer, external auditor, and members from the following internal Group functions:

- Finance
- Global Compliance and Risk Management
- Legal and Company Secretariat

To facilitate open and unreserved discussion, it is the Committee's practice to set aside time for its private deliberation, with time also reserved for private discussions with the Group's external audit partner, Head of Internal Audit, and Chief Compliance and Risk Officer.

Role of the Committee

The purpose of the Committee is to oversee Shire's accounting and financial reporting processes, the audits of its financial statements and the effectiveness of the Company's risk management and internal control framework. In doing so, the Committee's principal duties are to:

- monitor the integrity of the financial reports and statements of the Group and, where requested by the Board, advise on whether, taken as a whole, the Annual Report and Accounts is fair, balanced and understandable
- make recommendations to the Board on matters relating to the appointment of the external auditor, to determine and agree the scope of the external audit engagement and to consider findings and recommendations arising from the external audit process
- monitor and review the integrity and effectiveness of the Group's internal financial controls and wider internal control and risk management systems
- review the Group's strategy for the management of key corporate and financial risks
- review the status of the Group's compliance program to ensure adherence to applicable legal and regulatory standards and to the Group's internal policies

In addition, the Committee is authorized to investigate any activity included within its terms of reference and is responsible for the resolution of any disagreement between management and the Group's external auditor regarding financial reporting matters. The Committee is also permitted to seek any information it requires from any employee of the Group, and any external professional advice at the Company's expense, necessary to the fulfilment of its duties.

Key considerations related to the financial statements
The preparation of financial statements requires management to make estimates, judgments and assumptions that affect the reported amounts of assets, liabilities and equity at the date of the financial statements, and reported amounts of revenues and expenses during the reporting period. On an ongoing basis, the Committee reviews and critiques the critical accounting estimates, judgments and methodologies applied by management. The Committee's review considers reports and discussions with management and Deloitte LLP, the Company's external auditor, with the objective of confirming that the estimates, judgments and assumptions of management were reasonable and appropriately applied.

The significant issues considered by the Committee during the year in relation to the financial statements were:

Finalizing purchase accounting related to the acquisition of Baxalta
- the valuation of acquired intangible assets and goodwill
- the subsequent adjustments to preliminary acquisition fair values related to our unit of account judgments and allocation of cost of goods sold for intangible assets, refinements to the estimated selling price for inventory, and the corresponding impact of these matters on goodwill and deferred tax liabilities

Further information is available in Note 4 to the consolidated financial statements.

Long-lived Assets, including Property, Plant and Equipment, and Intangible Assets
- the carrying value of long-lived intangible assets, including currently marketed products, and those assets' ability to generate sufficient cash flows
- the assessment of events and circumstances that may indicate that the carrying value of a long-lived asset has been impaired. Specifically, the Committee assessed the positive scientific and marketing results of competing products for CINYRZE and FEIBA, and the temporary stock-out of CINRYZE in the U.S.
- determining when facilities in Shire's manufacturing footprint should be impaired or classified as held for sale pursuant to the Company's Network Study
- ensuring the depreciation and amortization method appropriately reflects the pattern of economic benefit

Further information is available in Notes 12 and 14 to the consolidated financial statements.

Revenue recognition
- the amount of sales deductions and rebates recorded as liabilities on the balance sheet
- the assumptions related to the return rates for products with newly launched generic competition, most notably those related to LIALDA
- the impact of implementing the new revenue recognition accounting standard and the conclusion that it would not have a material impact on the Company's financial position or operations

Further information is available in Note 3 to the consolidated financial statements.

Tax-related matters
- the amount and timing of tax provisions related to ongoing operations
- the amount and timing of deferred tax accounting matters related to the purchase accounting for Baxalta
- the nature of tax exposures related to the Baxalta acquisition
- the impact of tax reform in the United States

Further information is available in Notes 3, 22 and 24 to the consolidated financial statements.

After due challenge and debate, the Committee concluded that, in all of the aforementioned areas, the estimates, judgments, and assumptions of management were reasonable and appropriately applied.

Committee activities

In addition to the key considerations previously noted, the Committee's activities during the year included:

Financial reporting
- reviewing the Company's full-year and half-year results, quarterly earnings releases, key financial reports and earnings guidance
- reviewing the Company's response to a comment letter from the U.S. Securities and Exchange Commission on its 2016 Form 10-K
- reviewing and assessing the Group's quarterly application of its Non GAAP policy, including those costs incurred as part of its continuing integration activities relating to the Baxalta acquisition
- reviewing tax matters impacting the Group
- reviewing the impact of Baxalta-related integration activities, such as the establishment of a shared corporate services centre and the respective alignment of the consolidation processes and Information Technology systems, on the financial reporting process

External audit
- reviewing quarterly updates provided by the external auditor encompassing key areas of judgment and risk, audit planning, governance updates, and other business-related matters
- reviewing periodic updates on the status of the external auditor's testing of the control environment following the integration of the internal control environment of Baxalta into the Company's SOX compliance program
- conducting an assessment of the external audit process, including a review of management's evaluation of the performance and effectiveness of the external auditor
- reviewing and approving the 2017 Audit Plan and audit fee
- assessing the objectivity and independence of the external auditor

Compliance and risk management
- reviewing periodic updates from the Chief Compliance and Risk Officer and the Head of Internal Audit, encompassing key areas such as the Company's overall compliance program, the internal audit plan status and results, the Company's compliance with its Corporate Integrity Agreement, the Company's Enterprise Risk Management program, and the Company's Internal Investigations program
- assessing the Group's principal risks and the associated mitigation strategy

Additional matters

- assessing the continued impact of the integration of the legacy Baxalta business and the strategic review of the neuroscience business on management's ability to undertake ongoing duties in a timely and effective manner
- reviewing the Group's treasury policies and ongoing treasury activities
- assessing the effectiveness of the Group's internal audit program

External audit

Independence and objectivity

The Committee recognizes both the need for an objective and independent external auditor, and how such objectivity and independence might be, or appear, compromized through the provision of non-audit services. Accordingly, the Committee oversees an established policy on the provision of non-audit services by the external auditor with a view to safeguarding these core attributes.

Amongst other things, this policy:

prohibits the auditor from providing a service that:

- creates a mutuality of interest
- places the auditor in a position where they would audit their own work
- results in the auditor acting as a manager or employee of the Company
- positions the auditor in the role of advocate for the Company

prescribes services that:

- the external auditor is explicitly prohibited from providing
- have been pre-approved by the Committee subject to individual and aggregate monetary limits

requires:

- the Chief Accounting Officer's review of all service assignments prior to the initiation of any related non-audit service by the external auditor

All proposed services falling outside of the scope of the policy, or the monetary limits contained therein, must receive pre-approval from the Committee, or from its Chairman subject to Committee approval at its next scheduled meeting.

Fees relating to non-audit services provided by the external auditor to the Company are as follows:

Non-audit services fee; percentage of total audit services fee	Context
2017 $7.2 million; 49%	A majority of these fees ($5.6 million) relate to the completion of projects already under way at Baxalta prior to its combination with the Company in 2016. Also included in this amount are fees related to audit work that only the Independent Registered Public Accountant can reasonably be expected to perform, such as quarterly review procedures, statutory audits or procedures relating to regulatory filings.
2016 $20.2 million; 137%	Fees principally related to the continuation of projects already under way at Baxalta prior to its combination with the Company, and the reporting accountant's services provided to the Company in connection with the combination with Baxalta.

Further details on the breakdown of non-audit fees paid or due to the external auditor as a result of services provided during 2017 can be found in Note 29 to the consolidated financial statements. Information regarding non-audit services performed during 2016 and the procedures performed by the Committee to ensure the objectivity and independence of Deloitte LLP can be found on pages 77, 78 and 175 of the Company's 2016 Annual Report.

The Committee was satisfied throughout the year that the objectivity and independence of Deloitte LLP was not impaired. Factors identified as contributing to Deloitte LLP's objectivity and independence as external auditor include:

- its impartial and questioning approach, particularly with respect to issues of heightened sensitivity
- the firm's prudent attitude to the consideration and undertaking of non-audit services
- Shire's own policy of not recruiting staff directly from the external audit engagement team

During the year the Committee met with the external auditor to consider independence and objectivity, ensuring that the relationship between the external auditor and members of management had not resulted, or appeared to result, in a lack of independence or objectivity. The Committee considers that, during 2017, the external auditor was sufficiently robust in dealings with members of management, and was transparent and decisive in dealings with the Committee.

Effectiveness

The Committee recognizes the importance of having a high-caliber audit and, as such, undertakes an annual assessment of the effectiveness of the external audit process. As part of its evaluation the Committee drew upon a survey of members of financial management that measured the external auditor's performance against predetermined "critical success factors" that were designed to facilitate continuing and measurable improvement in the effectiveness of the external audit process.

The Committee concluded that:

- the "critical success factors" had been substantially met
- there existed a constructive working relationship between the external auditor and members of management
- the audit process was sufficiently robust, with the external auditor demonstrating continued commitment to the performance of high-quality audit work

Areas of development were identified and communicated to the external audit firm, which in turn has committed to working with management and the Committee to address these in 2018.

Appointment and tendering

Deloitte LLP has served as Shire's external auditor since 2002, with the current audit partner, John Adam, commencing his appointment in 2016. Following the review of Deloitte LLP's continued objectivity, independence and performance relating to the 2017 financial year, and having received an expression of willingness to continue in office as external auditor, the Committee recommended to the Board the re-appointment of Deloitte LLP as the Company's external auditor for the 2018 financial year. There existed no contractual obligations that inhibited or influenced the Committee's recommendation.

In accordance with European and national regulation, it is the Company's policy that the external audit contract be put to tender at least once in every ten-year period, with the external audit partner rotating on a five-yearly basis. Notwithstanding such policy, having regard to transitional arrangements regarding external audit tendering and rotation provided by the relevant regulatory authorities, it is the Committee's current intention to put the external audit contract out to tender at a time that would see the process complete in 2020. This would result with the preferred external audit firm being appointed for the 2021 financial year. The Committee believes that the proposed timing of audit tender is in the best interests of shareholders as it stands to afford the Company continuity during the forthcoming years, particularly given the ongoing integration of the legacy Baxalta business and the continued strategic review of the Company's neuroscience business. It should be noted that, despite the Committee's current intention regarding the timing of tender, the external auditor is subject to ongoing effectiveness review and therefore the Committee may choose to put the external audit contract out to tender at any time it considers appropriate. In accordance with best practice, the Committee confirms voluntary compliance with the provisions of the Statutory Audit Services for Large Companies Market Investigation (Mandatory Use of Competitive Tender Processes and Audit Committee Responsibilities) Order 2014, as published by the UK Competition and Markets Authority.

Additional matters

Internal audit

Internal audit effectiveness is monitored and reviewed on an ongoing basis by the Committee. The Internal Audit Plan is approved annually by the Committee, progression against which is reviewed quarterly. In addition, periodically the Company's internal audit procedures and capabilities undergo an independent external assessment against global standards, with the ensuing report reviewed by the Committee Chairman.

Whistleblowing

Shire's compliance effort is focused on the prevention and detection of misconduct through policy development, training, communications, monitoring, and audit. As part of this effort, Shire employees are encouraged to report suspected cases of misconduct, confidentially and without fear of retaliation, through management or through Shire's Global Compliance Helpline. The helpline, which is overseen by the Chief Compliance and Risk Officer, is managed by an independent third-party in order to preserve anonymity as appropriate. Concerns and allegations are investigated with disciplinary action taken where necessary. Periodically, the Chief Compliance and Risk Officer provides the Committee with a summary of matters raised through management and the helpline as well as details of any resultant investigations.

Nomination & Governance Committee

> The Committee is resolute in its mission to drive robust governance and strategic leadership of the Company, underpinned by rigorous succession planning.

Susan Kilsby
Committee Chairman

Membership and meetings

As of the year end, the Nomination & Governance Committee comprised five independent Non-Executive Directors and the Chairman of the Board.

Committee member	Date of Committee appointment
Susan Kilsby[1]	Feb 1, 2014
Olivier Bohuon	Feb 15, 2017
William Burns	Jun 27, 2011
David Ginsburg	Dec 3, 2015
Sara Mathew	Feb 15, 2017
Anne Minto	Feb 8, 2012

1 Susan Kilsby served as a member of the Committee prior to her appointment as Committee Chairman on April 28, 2016.

Committee meetings are typically held before scheduled meetings of the Board, with additional meetings convened as required (details of Committee members' attendance can be found on page 64). At the invitation of the Committee Chairman, regular additional meeting attendees included the Chief Executive Officer and members from the Company's Human Resources, Legal and Company Secretariat functions.

Role of the Committee

The Committee's responsibilities include:

- reviewing the size and composition of the Board and its committees and making recommendations to the Board with respect to any changes
- identifying, and nominating for the approval of the Board, candidates for new Board appointments and making recommendations with respect to the re-election and reappointment of existing Directors
- reviewing succession planning for Executive and Non-Executive Directors with a view to ensuring the long-term success of the Group
- making recommendations to the Board on matters of governance, reputation, culture and political activity affecting the Company
- maintaining the policy concerning Directors' conflicts of interest and monitoring adherence to that policy

Key considerations and activities

During the year and up to the date of this report, the Committee's principal considerations and activities were:

Chief Financial Officer succession

In August 2017, Shire announced that Jeff Poulton, Chief Financial Officer, would leave his position at the end of 2017, having provided many years of valued service to the Company. Russell Reynolds Associates, an executive search consultancy with no other connection to the Company, was retained to lead the search for a successor. The Committee considered internal and external candidates before making a recommendation to the Board. In November 2017, Shire announced that Thomas Dittrich would be appointed Chief Financial Officer, serving as an executive member of the Board and as a member of the Company's Executive Committee. Mr. Dittrich is expected to commence his role on March 19, 2018. The Board appointed John Miller, Shire's Senior Vice President of Finance, as Interim Chief Financial Officer, to serve until Mr. Dittrich's appointment becomes effective.

Non-Executive Director succession

In accordance with the anticipated reduction in Board membership following its previous expansion linked to the Baxalta acquisition, and reflective of the Board's commitment to the orderly refreshment of its collective skill and experience, in August 2017, Shire announced that William Burns, Senior Independent Director, and Anne Minto, prior Chairman of the Remuneration Committee, would retire from the Board following the 2018 AGM. The Board also announced that David Ginsburg, Chairman of the Science & Technology Committee, would simultaneously retire, however, the Board has agreed that Dr. Ginsburg will continue in service while it progresses its

search for a new Non-Executive Director, specifically with scientific and/or medical experience. In addition, the Board announced in February 2018 that Dominic Blakemore, having been appointed Chief Executive of Compass Group plc on January 1, 2018, had decided to step down following the 2018 AGM, and that a search for a new Non-Executive Director with comparable knowledge, insight, and experience was under way. We also announced that Olivier Bohuon, an existing Non-Executive Director, was to be appointed Senior Independent Director following the 2018 AGM.

Board Committee changes

As part of its ongoing review of Board and committee composition, and in light of the appointment of Ian Clark to the Board in January 2017, the Committee recommended to the Board various changes to committee composition, that were approved and became effective in February 2017 (current Board committee composition is set out on pages 56 to 58). In addition, in August 2017, Al Stroucken, an existing Non-Executive Director and member of the Remuneration Committee, replaced Anne Minto as Remuneration Committee Chairman. Ms. Minto continues to serve as a member of the Remuneration Committee to enable a period of transition until her retirement from the Board. Furthermore, in October 2017, the Board approved the appointment of Sara Mathew as Chairman of the Audit, Compliance & Risk Committee, replacing Dominic Blakemore who continues to serve as a member of that committee.

Executive Committee succession

During the year the Committee reviewed ongoing succession planning for the CEO, CFO and other members of the Company's Executive Committee, with skills, knowledge, and experience mapping undertaken for each role. With the positions of Head of Research & Development and Chief Human Resources Officer becoming vacant, potential successors were considered with recommendations made to the Board. An internal candidate, Joanne Cordeiro was appointed Chief Human Resources Officer in August 2017, having joined Shire in 2011. Andreas Busch was appointed Head of Research and Development and Chief Scientific Officer in January 2018, joining from Bayer AG where he worked for 13 years.

Governance and culture

The Committee reviewed various matters concerning the development of governance and culture, including the Company's Code of Ethics, proposed changes to the Company's Articles of Association (as approved by shareholders at the 2017 AGM), the Company's ongoing compliance with the UK Corporate Governance Code and papers dedicated to corporate culture. As part of its considerations, and in light of the ongoing development of the business, the Committee recommended to the Board that its responsibilities be expanded to encompass the oversight of culture-related strategic initiatives. The Committee's Terms of Reference were subsequently updated to reflect this additional responsibility.

Board Diversity Policy

In the context a continued external focus on diversity, Committee members participated in the wider Board review of Shire's Board Diversity Policy. Further details on the review, including a description of the policy, can be found on page 65. In undertaking the review, the Committee and the Board reaffirmed their commitment to the promotion of diversity, both in executive and non-executive appointments and in recruitment practice throughout the Group. Further details on diversity within Shire can be found on pages 38 and 39.

Board appointments procedure

Board composition is central to the effective leadership of the Group:

- prior to commencing any search for prospective Board members, the Committee reflects on the Board's balance of skills and experiences and those that would be conducive to the delivery of the Company's strategy
- a recommendation is then made to the Board in respect of the core attributes sought
- an appropriately qualified search firm is engaged and informed of, amongst other things, the experience, technical skills and other capabilities sought, of the time commitment required of any appointee and of Shire's Board Diversity Policy
- short-listed candidates are interviewed by as many of the Committee members as is feasible, following which any preferred candidate meets with other Directors
- the Board determines whether to appoint a new Director

Science & Technology Committee

> We have overseen the strengthening of Shire's pipeline through R&D and business development, with a focus on innovation and value for patients.

Dr. David Ginsburg
Committee Chairman

Membership and meetings

As of the year end, the Science & Technology Committee comprised four independent Non-Executive Directors. In accordance with the Committee's terms of reference, the Board is satisfied that at least one Committee member has scientific expertise relevant to pharmaceutical research and development.

Committee member	Date of Committee appointment
David Ginsburg	Jun 16, 2010
William Burns	Feb 8, 2012
Steven Gillis	Oct 1, 2012
Ian Clark	Feb 15, 2017
Olivier Bohuon	Jul 1, 2015 — Feb 15, 2017

The Committee typically meets before scheduled meetings of the Board (details of Committee members' attendance can be found on page 64). At the invitation of the Committee Chairman, regular additional meeting attendees during the year included the Chairman of the Board and other Non-Executive Directors, the Chief Executive Officer and members of the following internal Group functions:

- Research and Development
- Corporate Development
- Legal and Company Secretariat

Role of the Committee

The Committee's principal responsibilities are to periodically review and advise the Board on the Company's investment in research, development, and technology, the quality of the R&D pipeline, and the quality of R&D talent within the Group. In doing so, the Committee assesses and advises the Board in respect of:

- the Company's R&D strategy relating to strategically important therapeutic areas
- emerging science and technology issues, trends, and academic partnerships
- the overall quality and expertise of medical and scientific talent within the R&D organization
- the quality and competitiveness of the Company's R&D programs and technology initiatives from a scientific perspective, including the associated risk profile
- the scientific, technical and medical merits of any potential significant R&D investments

Key considerations

The Committee's principal areas of review during the year included:

- the clinical development pipeline and the research and non-clinical portfolio, including key program updates
- "deep dives" into key therapeutic areas, including hematology, neuroscience, hereditary angioedema, gastroenterology, and ophthalmics
- portfolio productivity and prioritization
- key clinical trial/study data including SHP465 (MYDAYIS), SHP680 and SHP643 (lanadelumab)
- R&D budget, organizational structure, and governance, including expertise within the function

Directors' Remuneration Report
Part 1: Annual Statement

> Since our last Remuneration Policy was approved, Shire has transformed itself into the leading global biotech company focused on rare diseases.

Membership and meetings

As at December 31, 2017, the Remuneration Committee comprised seven independent Non-Executive Directors, each appointed on the basis of their knowledge and experience of matters relating to compensation.

Committee member	Date of appointment
Albert Stroucken[1]	Jun 7, 2016
Dominic Blakemore	Feb 15, 2017
Olivier Bohuon	Apr 28, 2016
William Burns	Mar 15, 2010
Ian Clark	Feb 15, 2017
Steven Gillis	Oct 1, 2012
Anne Minto[2]	Jun 16, 2010
Sara Mathew	Dec 3, 2015 — Feb 15, 2017

1 Mr. Stroucken was appointed as Chairman of the Committee on August 3, 2017, having previously served as a member of the Committee.
2 Ms. Minto stepped down as Chairman of the Committee on August 3, 2017, and continues to serve as a member of the Committee.

Details of Committee meeting attendance can be found on page 64. At the invitation of the Committee Chairman, additional meeting attendees during the year included the Chairman of the Board and other Non-Executive Directors, the Chief Executive Officer and members of the following group functions:

- Human Resources
- Legal and Company Secretarial
- Finance

Dear shareholder,

I am pleased to present the Directors' Remuneration Report (DRR) for the financial year ending December 31, 2017. Since becoming the new Chairman of Shire's Remuneration Committee on August 3, 2017, I have been working closely with Anne Minto, its former Chairman, to ensure a smooth succession, and to gain a clear understanding of Shire's shareholder views. I would like to thank Anne for her help in enabling a successful transition and for sharing the deep institutional knowledge she has gained over her tenure as Chairman.

This has been another year of significant growth and continued change for Shire. As such, I would like to provide you with an overview of the major decisions the Committee took during 2017, the context in which these decisions were made, and the changes to the Executive Directors' remuneration arrangements.

Since our last Remuneration Policy was approved, Shire has transformed itself into the leading global biotech company focused on rare diseases by employing a strategy of organic and inorganic growth. Acquisitions such as Baxalta, Dyax, NPS and ViroPharma have reshaped the Company dramatically in terms of size, global footprint, pipeline diversity and progress, employee headcount and talent profile. As a result, 2017 was Shire's first full financial year as a transformed company: the undisputed global leader in treating rare diseases.

With this transformation, Shire addressed several challenges, including streamlining our business model, office consolidations and a strategic review of our neuroscience business and manufacturing locations. As we commenced 2017, we set aggressive targets for our teams, pushing ourselves to meet the highest possible financial goals during this time of transformation, some of which were clearly aspirational. While we are proud of our accomplishments in 2017 and believe that we have continued to champion our patients, we acknowledge that this success is not fully reflected in our share price.

Our business model continues to evolve as we invest in our infrastructure in order to continue to grow. For 2018, we anticipate gross margin will be impacted by a few factors, including start-up costs related to our Covington, Georgia, manufacturing facility, a significant strategic investment in immunology. This evolution has also formed part of our presentation to investors at the 2018 JP Morgan Healthcare conference, where we provided a revised outlook for sales and our anticipated tax rate under U.S. Tax Reform by 2020, reflecting this change in our business model.

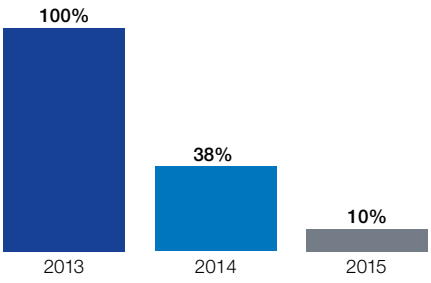
This revised outlook for sales, in combination with the wider changes in our business model, also has implications for our earnings and returns trajectories for the next three years. These implications are reflected in the disclosed targets for Net Product Sales, Non GAAP diluted Earnings Per ADS (Non GAAP diluted EPS) and Non GAAP adjusted Return on Invested Capital (ROIC) which are proposed under the 2018 Long-Term Incentive Plan (LTIP). The Committee has considered these carefully and is satisfied that the performance ranges set for 2018 remain very stretching in the context of the revised business expectations.

It is very important for the Committee to ensure that the awards and actual realized remuneration under the Executive Annual Incentive (EAI) and LTIP are reflective of

corporate performance, the Company's strategy and the shareholder experience. For the 2017 EAI outcomes, it was determined that the CEO's and CFO's awards would be 123 percent of target in line with the overall EAI corporate funding score, and that no personal multiplier would be applied. The 2015 LTIP award vested at 38 percent of maximum, reflecting actual performance over the past three years against the Net Product Sales and Non GAAP EBITDA performance metrics and the Non GAAP adjusted ROIC underpin.

In the chart below, we have listed the CEO's LTIP awards that have vested over the past three years and the current values of these awards as a percentage of their original face value at grant. These three years represent the performance period, which also has an additional two-year post-vest holding period for awards granted under our 2015 Policy, resulting in a five-year time horizon. As you can see from the chart below, the actual compensation delivered to the Executive Directors does show alignment with the shareholder experience, in that the current value of the 2014 and 2015 awards is less than 50 percent of the face value at grant.

Current valuation of CEO's LTIP awards vesting over the past three years (as a percentage of value at grant)[1,2]



1 Represents awards granted in 2013, 2014, and 2015 and vesting in 2016, 2017, and 2018 respectively. Awards comprise Stock Appreciation Rights (SARs) and Performance Share Units (PSUs) subject to relevant performance conditions. In the case of the 2013 and 2014 awards, no vested PSUs have been sold and no vested SARs have been exercised.
2 Current value is based on the Q4 2017 average closing ADS price of $148.21.

As Shire has transformed as a business, our Executive Committee has also changed. We are pleased to announce the expected appointment of a new Executive Director and Chief Financial Officer (CFO), Thomas Dittrich, who is due to commence his role on March 19, 2018, as well as a new pre-eminent Head of Research and Development and Chief Scientific Officer, Dr. Andreas Busch. These critical roles will help Shire continue to chart its course, both in the financial discipline and expertise needed to navigate our business strategy, and in successful drug discovery and development.

As communicated to shareholders in last year's DRR, the Committee has undertaken a comprehensive review of our Remuneration Policy within this context of transformation. As we considered the strategic drivers at Shire, coupled with feedback we have received from many of our shareholders, the Committee's principles that guided its decisions impacting the policy were:

Simplicity

Seek transparency in design and communication.

Alignment

Ensure pay outcomes mirror the shareholder experience.

Prioritize strategic corporate performance

Link individual pay outcomes clearly with company performance.

Integrated global business

Recognize Shire's international business footprint and market for talent.

Flexibility

Enable the policy to support potential business changes over time.

By taking the time to consider all elements of the Policy carefully through this lens, the Committee has taken the opportunity to ensure that the Remuneration Policy for Executive Directors outlined in this report, supports the Company's strategic direction and continues to drive growth and create shareholder value. As a result of this review, we are presenting a new Remuneration Policy for shareholder approval at the 2018 Annual General Meeting (AGM).

Index to the Directors' Remuneration Report

This report has been prepared in compliance with Schedule 8 of the Large and Medium-sized Companies and Groups (Accounts and Reports Regulations 2008 (as amended by the 2013 Regulations) (the 'Schedule 8 Regulations'), as well as the Companies Act 2006 and other related regulations. This report is set out in the following key sections:

The Directors' Remuneration Policy (Part 2) will be subject to a binding shareholder vote at the 2018 AGM to obtain approval for a period of three years effective following the AGM. The remainder of this report will be subject to an advisory shareholder vote at the 2018 AGM.

Context for the Remuneration Policy review

As Shire executes its strategic plan, it is critical that the remuneration structure supports Shire's goals over the next Remuneration Policy period. The imperatives for the business over this period include:

Leverage rare disease platform

Performance improvement and product sales growth

Establish & begin operating as two divisions: Rare disease division and Neuroscience division

Pipeline progression

Expand leadership position in core therapeutic areas

Drive further cost efficiencies and margin improvement

Debt pay-down

The Board believes the achievement of these strategic pillars will enable Shire to continue to deliver long-term sustainable growth and shareholder value.

As we move into the detailed policy changes outlined below, we would like to thank the shareholders who engaged in consultation in late 2017. During this time, we met with more than 30 of our largest shareholders and proxy advisory bodies. Overall, shareholders recognized that Shire was evolving to the next stage as an organization, and positively indicated that the new design was best positioned to support Shire's strategic agenda. The feedback we received was valuable and influenced the development of the new Remuneration Policy.

New Remuneration Policy: Summary of key changes from current policy

The key elements of the new Remuneration Policy that differ from the current arrangements are:

1. Simplification of LTIP vehicles by discontinuing the use of performance-based Stock Appreciation Rights (SARs) and consolidating LTIP delivery into one single vehicle — Performance Share Units (PSUs)

Shire has previously granted a blend of performance-based SARs and PSUs under the LTIP. While this mix was historically appropriate for the business based on Shire's size and development stage, the Committee has determined that future awards under the LTIP should be made exclusively in PSUs to ensure alignment with key financial metrics. The consolidation of performance-based SARs into PSUs significantly simplifies the LTIP for both participants and shareholders. This change also responds to concerns that performance-based SARs are overly complex and lack transparency.

The performance cycle of the proposed PSU program will continue to be measured over a three-year period followed by a two-year post-vest holding period. This means shares will only be released to participants five years after grant.

2. Alignment of performance measures within the EAI and LTIP to Shire's strategic imperatives

Given our sharp focus on product sales growth, cost efficiencies and debt pay-down, the Committee has realigned the performance metrics that our Executive Directors' incentives will be measured under in both the EAI and LTIP.

EAI — performance measures

- Underscoring the importance of our financial performance, we have increased the weightings of our financial metrics to 80 percent; non-financial metrics will be weighted 20 percent.
- Recognizing the dynamic nature of Shire's business, and to provide flexibility in the near-term, the Committee retains discretion to vary the metrics of the performance measures as the business may require over the next three years.

The proposed EAI performance measures and the rationale for their selection are set out in the table below.

Financials (80 percent)	Rationale
Net Product Sales (1/3rd)	• Aligned with growth strategy • Drives focus on balance of top-line and bottom-line performance outcomes • Encompasses growth commitment made under Baxalta deal • Use of Non GAAP diluted EPS reflects current leverage and capital intensive nature of the business
Non GAAP diluted EPS (1/3rd)	
Non GAAP Free Cash Flow (1/3rd)	• Drives focus on debt management • Over the longer term, provides liquidity for future acquisitions and strategic investments in our product portfolio

Non-Financials (20 percent)	Rationale
 Growth	• Focus on up to five equally weighted key corporate objectives and pipeline milestones aligned with Shire's strategic pillars
 Innovation	
 Efficiency	
 People	

LTIP — performance measures
We have listened to shareholder views, raised during the consultation process, about the importance of retaining ROIC as a metric within our LTIP, alongside the originally proposed relative Total Shareholder Return (TSR) measure. We remain committed to ensuring Shire's investments in the business enhance value for our shareholders over the long-term, and believe the combination of these metrics is directly aligned with the shareholder experience. The inclusion of a relative TSR metric in the LTIP will better reflect near-term feedback on the execution of our M&A strategy, while ROIC will reward continued development of our returns trajectory over time.

The proposed 2018 LTIP performance measures are:

- Net Product Sales
- Non GAAP diluted EPS
- Non GAAP adjusted ROIC
- Relative TSR

Measure and weighting	Rationale
Net Product Sales (20 percent)	• Aligned with growth strategy • Drives focus on balance of top-line and bottom-line performance outcomes • Encompasses growth commitment made under Baxalta deal
Non GAAP diluted EPS (20 percent)	
Non GAAP adjusted ROIC (20 percent)	• Reflects long-term returns on strategic and M&A decisions • Alignment with shareholder value creation and delivery of returns over the longer term
Relative TSR (40 percent)	• Direct alignment with creating shareholder value and the importance of delivering returns to shareholders over time • Reflects market perspective on success of M&A strategy • Stock price performance against investor peers reflects real-time feedback of business results • Relative TSR is a more transparent market-based metric to measure performance against without the need to adjust for significant events when transactions occur

A custom peer group of global life sciences companies will form the constituents of the relative TSR peer group. The use of an industry-specific peer group means the Executive Directors are rewarded only for strong performance relative to those peer companies Shire is competing against for investment capital. To create this focused list, we selected peer companies based on closeness of comparison to Shire in size, complexity and operations. Selection to these criteria resulted in a group of 20 peer companies (please see page 97 in Part 3(a) for the proposed TSR peer group).

3. Improvement of the link between strategic corporate performance and Executive Directors' pay outcomes under the EAI

Under the previous Remuneration Policy, we calculated the EAI for the Executive Directors in two parts: we determined corporate funding of the EAI based on financial performance at 75 percent weighting, and non-financial performance at 25 percent weighting. This score could be modified down to 0 percent or up to 200 percent based on individual Executive Director performance. Given shareholder feedback regarding the complexity of how we determined Executive Directors' bonuses under this model, we are proposing to simplify the plan, so that we will determine the Executive Directors' EAI based solely on the outcome of corporate performance, with 80 percent weighted on financial performance and 20 percent weighted on non-financial performance. We believe this approach ties the EAI award more directly to overall corporate performance, and provides greater transparency to shareholders by placing more weighting on empirical financial data.

4. Decrease in the maximum LTIP face value annual award in light of shareholder feedback, while recognizing the global talent market within which Shire competes

The maximum annual award under the proposed new LTIP is 600 percent face value of salary, a significant reduction from the previous maximum award of 840 percent. This reduced award level reflects the exchange from performance-based SARs into PSUs, and also recognizes the feedback received from a number of shareholders on the maximum award opportunity under the previous LTIP.

In setting the revised LTIP award level, the Committee has considered carefully the very real tension Shire experiences between our listing in the UK and our headquarters in the U.S., where most of our employees are located and where the majority of Shire's operations are based. We believe that we are unique as a UK-listed business, insofar as key Executive Committee members are based in the U.S. The need to compete for talent in the U.S. biotech market is therefore a material reality for the Shire business, which is very different from the majority of FTSE-listed organizations. In this context, the Committee has determined the maximum LTIP award level recognizing the historic opportunity under the previous policy, the upper quartile of the FTSE 50 market and the lower quartile of our biopharmaceutical competitors (the majority of whom are based in the U.S.). The proposed amount is intended to balance the competitive tension across these two markets.

The Committee is, however, very conscious of shareholder sensitivity to levels awarded to Executive Directors and will continue to consider the actual level of award to be made each year depending on the performance of the business and associated factors. For 2018, the Committee agreed upon an LTIP award for the CEO with a face value of 425 percent of base salary.

5. Increase in the shareholding guidelines to U.S. aligned levels
Under the new Remuneration Policy the shareholding requirements will be increased to 500 percent of base salary for the CEO and 300 percent for the CFO, from 200 percent and 150 percent respectively. It should be noted that our CEO's current shareholding is equal to 788 percent of salary (as at December 31, 2017).

The Committee firmly believes Shire's Executive Directors should have a significant portion of their wealth in Company shares, as this aligns them with the shareholder experience over the long-term. Given that shareholder requirements in the U.S. are generally more demanding than those in the UK, we are increasing our Executive Directors' shareholding requirements to be set at U.S. competitive levels, to recognize the U.S. / UK balance we have tried to engender within our LTIP design, both in terms of quantum and structure.

Departure of CFO
Jeff Poulton, the Company's former CFO, left the Company on December 31, 2017. Full details of the treatment of his remuneration on departure are set out in Part 3(e) of this report, and I can confirm that the decisions the Committee took were within the terms of the current Remuneration Policy.

Joining arrangements for new CFO
The Committee considered in detail the remuneration arrangements for Mr. Dittrich, to ensure they were in the best interests of the Company and its shareholders, and appropriate to secure his appointment to Shire. These are set out below ahead of his expected appointment on March 19, 2018.

- **Base salary** — On appointment to Chief Financial Officer, Mr. Dittrich's remuneration will comprise an annual base salary of CHF 750,000, reflecting the deep wealth of knowledge and experience he brings to the role. This is below the lower quartile for comparable roles in the FTSE 50 (excluding financial services) and below the median of the Company's global industry peer group.
- **EAI opportunity** — Mr. Dittrich's annual bonus opportunity for the 2018 performance year will be 160 percent of base salary at maximum and 80 percent of base salary at target, in line with the previous CFO's level.
- **LTIP awards** — Mr. Dittrich will be granted a 2018 LTIP award with a face value of 357 percent of base salary.
- **Retirement and other benefits** — Mr. Dittrich will also be eligible for retirement and other benefits consistent with his role and location. On joining Shire, he will be based in Zug, Switzerland, before relocating to the U.S. During his time in Switzerland, he will receive retirement and other benefits aligned with other Swiss Executive Committee members. This will include a retirement benefits contribution of 14 percent of base salary. Upon his relocation to the U.S., Mr. Dittrich will receive retirement and other benefits aligned with other U.S. Executive Committee members, which will comprise a retirement benefits contribution of 20 percent of base salary, representing a decrease from the previous CFO's retirement benefits contribution of 25 percent of base salary.
- **Replacement awards** — Mr. Dittrich will be entitled to the following cash and equity grants to reflect the awards forfeited by him on his departure from his previous employment. In determining the amount and structure of these commitments, the Committee sought to replicate the fair values and timing of the compensation foregone, in line with best practice and the approved Remuneration Policy.
  - To replace his 2017 annual bonus foregone, he will receive a replacement award equal to the value of the bonus he would have received from his previous employer (based on the financial performance disclosed in their 2017 compensation report multiplied by Mr. Dittrich's 2017 target bonus (less the value of any payment received)). The forfeited bonus would have been delivered fully in cash by his previous employer, but the Committee considered it would be appropriate to deliver the value using the same mechanism as Shire's EAI, with 75 percent payable in cash and 25 percent deferred into Shire shares which would not be released for three years (together with shares representing accumulated dividends).
  - To replace his forfeited 2015 LTIP award, he will be eligible to receive a replacement award of Shire shares upon joining based on the maximum opportunity / face value that can be delivered under his 2015 LTIP award from his previous employer. The award will have a face value of CHF 1,320,000 upon grant, and will vest after one year (2019) based on the actual disclosed performance in his previous employer's 2018 compensation report (published in February 2019).
  - To replace his forfeited 2016 LTIP award, he will be eligible to receive a replacement award of Shire PSUs granted upon joining based on the maximum opportunity / face value that can be delivered under his 2016 LTIP award, as disclosed in his previous employer's 2016 compensation report. This award will have a face value of CHF 1,000,000 and will vest after three years (2021), subject to the achievement of Shire's 2018 LTIP performance measures.
- **Relocation assistance** — Mr. Dittrich will also be eligible for relocation assistance in connection with his permanent relocation to the U.S., in line with the policy that applies to all employees across the organization. The details of the relocation assistance provided will be reported within the remuneration reports as appropriate, for the year to which it relates.

Concluding remarks
I would like to thank my fellow members of the Remuneration Committee for their commitment and engagement in what has been an intensive year for the Committee, necessitating many additional meetings. I would also like to thank Anne Minto for her tremendous leadership of the Committee over the past eight years. Anne will retire from the Board with effect from the conclusion of the 2018 AGM. In addition, I would like to thank both the Shire and PwC teams for their continued hard work and support. I welcome the opportunity to serve as the Chairman of the Remuneration Committee and look forward to continued dialog and engagement.

Albert Stroucken
Chairman of the Remuneration Committee

Our remuneration at a glance

Remuneration Policy guiding principles

The Executive Directors' Remuneration Policy has been developed in light of the following guiding principles (depicted below) which act as a framework for the remuneration decisions across the whole Company.

Simplicity	Alignment	Strategic corporate performance	Integrated global business	Flexibility
Seek transparency in both design and communication to internal and external stakeholders	Ensure pay outcomes mirror the shareholder experience	Link individual pay outcomes clearly with Company performance	Recognize Shire's international business footprint and market for talent	Support potential changes in business priorities over time

These act as a framework for remuneration decisions across the Company.

Overall remuneration

The structure and quantum of individual remuneration packages varies by geography, role and level of responsibility. In general, the proportion of variable remuneration in the total remuneration packages increases with the level of responsibility within the Company.

Fixed elements (base salary & benefits)

Employees' base salaries are benchmarked against the external market, taking into account the geographic location and relevant size of the companies with whom we are competing with for talent.

For example, market data for the most senior leadership roles, in particular the Executive Committee, reflects both the geographies in which we operate (with more than two thirds of employees as well as the majority of senior management based in the U.S.) and companies of a comparable size in the pharmaceutical and biotechnology sectors.

Base salary increases across the Company are determined in light of similar factors as described for the Executive Directors.

Retirement and other benefit arrangements are provided to employees with appropriate consideration of market practice and geographical differences.

Short-term incentives

For Executive Directors' short-term incentives, assessment is made against a corporate scorecard of key performance measures built around Shire's key financial goals and other strategic priorities for the relevant year.

This same scorecard is appropriately used by each business and corporate function to ensure alignment with corporate goals, and also funds short-term incentives across the Company.

Scorecard targets are further used as a basis for determination of each employee's performance objectives, with annual incentive awards payable in cash, strongly differentiated based on individual performance through linkages with the performance management system.

Long-term incentives

Discretionary long-term equity awards are made on an annual basis dependent on an employee's level of responsibility within the Company and individual performance and potential.

For Executive Directors and Executive Committee members, all awards vest at the end of a three-year period.

For the rest of the employee population, phased vesting of awards occurs over a period of three years with the majority vesting at the end of the three-year period (except for PSU awards which vest at the end of a three-year period subject to the satisfaction of performance conditions).

Summary of pay and performance for 2017

2017

Business performance

Key strategic highlights

- Increased product sales to $14.4 billion, while executing 50 launches globally
- Completed manufacturing network optimization program; anticipate cumulative savings of $2 billion through 2027
- Exceeded internal goals and external benchmarks for synergies from the integration of Baxalta
- Continued to execute on our pipeline of 40 clinical development programs, completing nine Phase 3 studies and securing 126 product approvals

Performance outcomes

Short-term incentives — EAI

Description	Weighting	Metric	Target	Outcome	Overall funding score[1]
Financial	75 percent	Net Products Sales	$14,640m	**$14,449m**	**22%**
		Non GAAP EBITA	$5,937m	**$6,052m**	**36%**
		Non GAAP adjusted ROIC[2]	6.49%	**6.57%**	**22%**
Pipeline & Pre-commercial (Non-Financial)	15 percent	Growth	100%	**110%**	**28%**
		Innovation		**107%**	
Organizational Effectiveness (Non-Financial)	10 percent	Efficiency		**109%**	**16%**
		People		**103%**	
Overall bonus funding					**123%**

Note: Results and bonus funding scores have been rounded to the nearest whole percentage and therefore individual totals may not add up to the overall bonus funding score of 123 percent.

1 Every one percent change in the outcome achieved results in a 10 percent increase/decrease in funding.

2 The disclosed Non GAAP adjusted ROIC target range incorporates the impact of an accounting change made in respect of depreciation during the 2017 financial year. The Non GAAP adjusted ROIC outcome of 6.57% also reflects this accounting treatment.

We delivered solid financial results in 2017 despite significant challenges from aggressive generic competition for LIALDA and short-term supply shortages for CINRYZE. These financial results, along with exceptional achievement against our non-financial strategic goals, including advances in our research pipeline and key commercial launches, resulted in a corporate funding level of 123 percent for the Company's bonus pool. Consistent with the proposed Policy, the Remuneration Committee determined that the Executive Directors' annual incentive outcomes should be aligned with overall corporate funding of the Company's bonus pool. To that end, it was determined that the CEO's and CFO's 2017 EAI awards would be 123 percent of target, in line with the overall corporate funding score and with no personal multiplier applied.

Long-term incentives — LTIP

The final outcome under the 2015 LTIP resulted in a vesting level of 38 percent of maximum, reflecting actual performance over the past three years against the Net Product Sales and Non GAAP EBITDA performance metrics and the Non GAAP adjusted ROIC underpin. This outcome results in a projected vesting value of $1,126,544 for the CEO, based on the Q4 2017 average closing ADS price of $148.21. The CEO's 2015 SAR awards are currently underwater, given their strike price of $245.48 and are therefore valued at $0.

		Targets		Outcome		
Description	Weighting	Threshold	Maximum	Actuals	Percentage of maximum achieved	Percentage of award eligible for vesting
Net Product Sales	50 percent	$13,953m	$15,389m	$14,449m	48%	38%
Non GAAP EBITDA	50 percent	$6,414m	$7,143m	$6,493m	29%	
Non GAAP adjusted ROIC	Underpin	7.75%	n/a	8.10%	n/a	

Remuneration outcomes

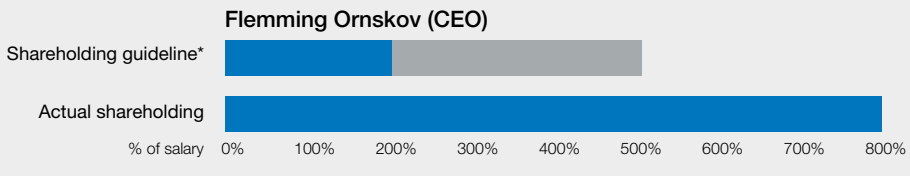
2017 single total figure of remuneration for Executive Directors

Executive Director	Base salary	Retirement benefits	Other benefits	EAI — cash	EAI -shares	Long-term incentives	2017 Total	2016 Total
Flemming Ornskov	$1,688,000	$506,400	$72,330	$1,401,462	$467,154	$1,126,544	**$5,261,891**	$10,571,125
Jeff Poulton[1]	$604,296	$150,268	$65,157	$450,003	$150,001	$-	**$1,419,723**	$1,754,157

1 Mr. Poulton left the Company on December 31, 2017.

Share ownership

As at December 31, 2017, the CEO had holdings in Shire which significantly exceeded the proposed increased shareholding requirement of 500 percent of salary under the new Remuneration Policy.



* Gray shading represents the proposed increase in shareholding guidelines to 500 percent of base salary for the CEO under the new Remuneration Policy.

Summary of Remuneration Policy and approach for 2018

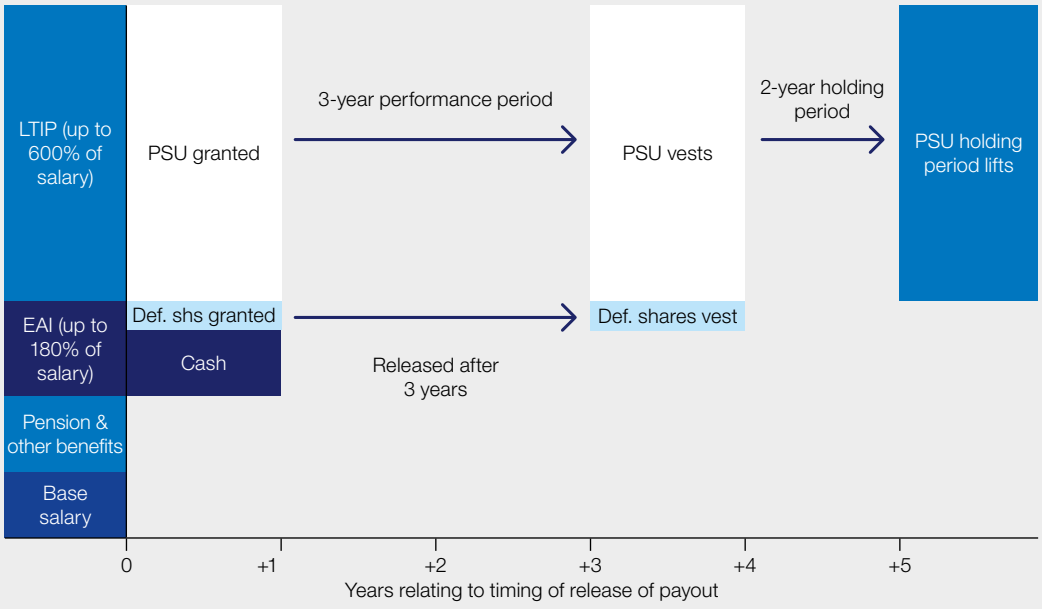
2018

Area	Policy and operation for 2018
Base salary	• The salary for the CEO will remain at $1,688,000 for 2018. Dr. Ornskov has not received a salary increase since July 2015 • The salary for the incoming CFO will be set at CHF 750,000 upon appointment • Any increases typically take effect on April 1 each year
Retirement and other benefits	• Current legacy Company contributions for the CEO remain at 30 percent of base salary • Retirement benefit contributions for the incoming CFO will be aligned with members of the Executive Committee • Maximum retirement benefits provisions for any new Executive Director position will be fixed at 25 percent of base salary • Other core benefits remain unchanged — this may consist of car allowance, long-term disability and life cover, private medical insurance, executive physical program and financial and tax advisory support

Short-term incentives — EAI
 	
Up to 180 percent of base salary
	• Awards determined solely on 80 percent financial performance and 20 percent non-financial performance
	• Actual payouts range from 0 percent to 200 percent of target
	• 25 percent of any bonus earned continue to be deferred into shares which are normally released after three years
	• For 2018 awards, performance judged on:
	  • 80 percent financial performance:
	  – Net Product Sales (1/3rd)
	  – Non GAAP diluted EPS (1/3rd)
	  – Non GAAP Free Cash Flow (1/3rd)
	  • 20 percent non-financial performance:
	  – Growth
	  – Innovation
	  – Efficiency
	  – People

Long-term incentives
 	
Up to a maximum of 600 percent of base salary (to be used in exceptional circumstances)
	• Removal of SARs to comprise awards consisting wholly of PSUs
	• Three-year performance period, with further two-year post-vest holding period
	• Measures aligned to long-term strategy and shareholders' interests
	• Awards continue to be subject to clawback and malus provisions
	• For 2018 awards, performance judged on four key areas:
	  – Net Product Sales (20 percent)
	  – Non GAAP diluted EPS (20 percent)
	  – Non GAAP adjusted ROIC (20 percent)
	  – Relative TSR against industry comparator group (40 percent)
	• For 2018, the maximum opportunity for the CEO and CFO will be an award with a face value of 425 percent and 357 percent of base salary respectively

Shareholding guidelines	• Increase in the shareholding guidelines to:
	  – 500 percent of base salary for the CEO
	  – 300 percent of base salary for the CFO
	• Guidelines to be met within a five-year period following appointment
	• All shares beneficially owned or deferred under the EAI count towards achieving these guidelines

Overall remuneration structure and timing of payments in respect of a financial year	

Part 2: Directors' Remuneration Policy

a) Executive Director Remuneration Policy

The purpose of the Remuneration Policy is to recruit and retain high-caliber executives and encourage them to enhance the Company's performance responsibly and in line with the Company's strategy and shareholder interests. The proposed Policy is broadly consistent with the policy approved in 2015, with the most significant change being the operation of the LTIP. A summary of the changes is set out after the main Policy table.

The Policy will be presented to shareholders for approval in a binding vote at the 2018 AGM, and, if approved, will be effective on April 24, 2018, the date of the AGM, for a period of three years. While there is currently no intention to revise the Policy more frequently than every three years, the Committee will review the Policy on an annual basis to ensure it remains strategically aligned and appropriately positioned against the market. Where any change to the Policy is considered, the Committee will consult with major shareholders prior to submitting a revised policy for shareholder approval.

The Directors' Remuneration Policy has been developed taking into account the principles of the UK Corporate Governance Code. The overall remuneration package for the Executive Directors is designed to provide an appropriate balance between fixed and variable, performance-related components, with a significant element of long-term variable pay given the long-term nature of the business. The Committee is satisfied that the composition and structure of the remuneration package is appropriate and does not incentivize undue risk-taking.

Fixed elements — Base salary

Purpose & link to strategy	Operation & Performance Assessment	Opportunity
To recognize the market value of the role, an individual's skills, experience and performance and an individual's leadership and contribution to Company strategy.	• Base salary is paid in cash and is pensionable. • A variety of factors, including individual and corporate performance and competitive market positioning are considered during the annual base salary review process. Any increases typically take effect on April 1 each year. • Any significant salary increases, such as in cases where Executive Directors are relatively new in role, have changes in responsibilities or significant variances to the market, will be appropriately explained.	• Base salary is positioned with reference to a global industry peer group. Companies in the FTSE 50 are used as a secondary reference point. • While there is no prescribed maximum, where appropriate, base salary increases may be made in line with the average of employees' salary increases, unless the Committee determines otherwise based on the factors described adjacent.

Fixed elements — Retirement and other benefits

Purpose & link to strategy	Operation & Performance Assessment	Opportunity
To ensure that benefits are competitive in the markets in which the Company operates.	• Executive retirement benefit provisions are provided in line with market practice in the country in which an Executive is based. • The Company provides a range of other benefits which may include a car allowance, long-term disability and life cover, private medical insurance, executive physical program and financial and tax advisory support. These benefits are not pensionable. Other benefits may be offered and the tax thereon if considered appropriate by the Committee. • The Company may also meet certain mobility costs, such as relocation support, expatriate allowances, temporary living and transportation expenses, in line with the prevailing mobility policy and practice for other employees.	• The maximum retirement benefit provision for any new Executive Director position is a fixed contribution of 25 percent of base salary. For an external recruit any retirement benefit contributions will be aligned with members of the Executive Committee, but in any event will not exceed 25 percent of base salary. • Current legacy Company contributions for Dr. Ornskov are 30 percent of base salary. • The cost to the Company of providing other benefits may vary year on year depending on market practice and the cost of insuring certain benefits. The maximum potential value is the cost of the provision of these benefits.

Short-term incentives — EAI

Purpose & link to strategy	Operation & Performance Assessment	Opportunity
To reward individuals with an award based on achievement of pre-defined, Committee approved corporate objectives (the corporate scorecard). Key performance measures are set by the Committee in the context of annual performance and ensuring progress towards the Company's strategy — to grow and create long-term value by being the leading global biotech company focused on rare diseases.	• EAI awards are determined solely based on the outcome of corporate performance with a combination of financial, operational and strategic objectives (no individual performance is taken into account). • Financial and non-financial measures will be based on other corporate strategic priorities for the relevant financial year. • At least 80 percent of the award will be based on financial performance. • The precise allocation between financial and non-financial measures (as well as the weightings), will depend on the strategic focus of the Company in any given year. • The Committee reserves the right to make adjustments to the measures to reflect significant one-off items that occur during the performance period. • Executive Directors are required to defer 25 percent of any bonus earned into shares which are normally released after a period of three years. The release of deferred shares includes dividend shares representing accumulated dividends. • Malus (up to vesting) and clawback (two years post vesting) provisions operate in line with best practice corporate governance.	• Up to 90 percent of base salary is payable for target performance for Executive Directors and up to 180 percent is payable for maximum performance. • Actual payouts can range from 0 percent to 200 percent of target.

Long-term incentives — LTIP

Purpose & link to strategy	Operation & Performance Assessment	Opportunity
To incentivize individuals to achieve sustained growth through superior long-term performance and to create alignment with shareholders. The LTIP measures, Net Product Sales, Non GAAP diluted EPS, Non GAAP adjusted ROIC and relative TSR, were selected by the Committee as they will help drive the strategic objective to grow and create long-term value for shareholders. The Committee reviews annually whether the performance measures and calibration of targets remain appropriate and sufficiently challenging taking into account the Company's strategic objectives and shareholder interests.	• LTIP grants consist of PSUs awarded annually. • PSU awards vest three years from the date of grant subject to the satisfaction of performance measures. A two-year holding period then applies to provide further alignment with shareholders. • PSU awards vest based on financial and/or share-price related metrics. Financial measures could include earnings measures, sales measures, cash flow, debt reduction and returns measures. • The exact selection and weighting of measures to be used each year will be determined by the Committee to ensure alignment with the business's strategic plan and priorities. • For 2018 PSU awards, the performance measures will be: – Net Product Sales: 20 percent – Non GAAP diluted EPS: 20 percent – Non GAAP adjusted ROIC: 20 percent – Relative TSR against industry comparator group: 40 percent • Should the Committee determine that these performance conditions are not appropriate for future awards during the Policy period, for example due to the strategic and operational priorities of the business at that time, the Committee will consult with shareholders on any proposed changes. • The Committee reserves the right to make adjustments to the measures and/or performance targets to reflect significant one off items that occur during the vesting period. • The award may include dividend shares representing accumulated dividends on the portion of the award that vests. Shares may be sold in order to satisfy tax or other relevant liabilities as a result of vesting. • Malus (up to vesting) and clawback (two years post vesting) provisions operate in line with best practice corporate governance.	• The maximum annual award for Executive Directors in face value terms is 600 percent of salary. • Award levels are set to reflect an individual's role, responsibilities and experience. • Threshold vesting is equal to 20 percent of any award granted, target vesting is equal to 50 percent of any award granted and maximum vesting is equal to 100 percent of any award granted. • Vesting is on a straight-line basis between each of these three points.

All Employee Share Plan		
Purpose & link to strategy	**Operation & Performance Assessment**	**Opportunity**
To encourage long-term shareholding in the Company by all employees.	• The Company operates tax-efficient all-employee share saving plans in various jurisdictions. The current Executive Directors are eligible to participate in the Global Employee Stock Purchase Plan (GESPP). • Under the terms of the GESPP, employees save over a one-year period and use the contributions to purchase shares at the end of the period at a maximum discount of 15 percent. Where required by local tax authorities, these terms may differ. • There are no performance measures attached to these awards.	• Limits for all employee share plans are set by reference to local tax authorities in each jurisdiction. The Company may choose to set its own lower limits.

Shareholding guidelines

Executive Directors are encouraged to own shares in the Company equivalent to 500 percent (for the CEO) and 300 percent (for the CFO) of base salary within a five-year period following their appointment. All shares beneficially owned by an executive or deferred under the EAI count towards achieving these guidelines.

Notes to the remuneration policy table

Policy Element	Changes to policy	Rationale for change
Fixed elements — base salary	• Base salary is positioned with reference to a global industry peer group and companies in the FTSE 50 as a secondary reference point. • Previous peer groups comprised global biotech and U.S. biopharmaceutical companies. A FTSE 50 peer group was also used as a secondary reference point.	• Creates a single primary reference point of relevant companies that reflect the commercial and international focus of Shire. The secondary reference point reflects the size and UK primary listing of Shire.
Fixed elements — Retirement and other benefits	• For an external recruit any retirement benefit contributions will be aligned with members of the Executive Committee, but in any event for any new Executive Director promoted from within, will not exceed 25 percent of base salary.	• The maximum has been reduced to move the contribution levels towards that of the broader employee population while maintaining a competitive rate of contribution.
Short-term incentives — EAI	• Removal of the individual performance multiplier from the bonus assessment so the incentive is assessed based solely on corporate, financial and non-financial performance only.	• The revised structure simplifies the approach to bonus assessment for shareholders and participants. • EAI awards are more directly tied to overall corporate performance and provide greater transparency to shareholders through placing more weighting on empirical financial data.
Long-term incentives — LTIP	• Under the new policy, awards will be made as PSUs only and therefore the use of performance-based SARs will be discontinued. • As a result, the maximum opportunity level has been reduced to 600 percent of salary from 840 percent. • Revised performance measures for the 2018 LTIP awards will include: Net Product Sales, Non GAAP diluted EPS, Non GAAP adjusted ROIC and relative TSR.	• The discontinuation of performance-based SARs simplifies the LTIP structure for shareholders and participants. • The revised performance measures reflect the evolving strategic priorities of the Company and are aligned with the key corporate KPIs on which Company performance is assessed.
Shareholding guidelines	• Increase in shareholding requirement to 500 percent for the CEO and 300 percent for the CFO, from 200 percent and 150 percent respectively.	• The increase represents a market-leading shareholding requirement which drives and demonstrates a strong alignment between shareholders and management.

Discretion

The Remuneration Policy provides the Remuneration Committee with certain discretions in the administration and operation of current and legacy EAI and LTIP awards (as set out in the corresponding plan rules) including, but not limited to:

- Any adjustments to performance conditions or awards required as a result of a corporate event such as a transaction, change in control, restructuring, share buybacks, special dividend or rights issue (Significant Adjusting Events (SAEs));
- Any adjustment to the outcomes to ensure that payments are representative of the underlying corporate performance; and
- Minor administrative matters to improve the efficiency of the operation of the plans or to comply with local tax law or regulation.

Potential SAEs are reviewed by the Committee against the guidelines as set out below and will make full and clear disclosure of any such adjustments in the DRR at the end of the performance period.

The Significant Adjusting Events guidelines consist of the following:

- The event results from a strategic action that has a short-term impact on the performance of the Company, but is in the long-term interest of shareholders or the event was external and results in a significant change to the Company's operating environment;
- The event is a one-off (as opposed to recurring) in nature;
- The event is 'significant' which is defined by reference to its impact on the financial performance of the Company relative to a materiality threshold; and
- The event was not taken into account when the performance targets were set.

Performance measures and targets

The table below sets out the rationale for performance measures chosen in respect of the EAI and LTIP.

Performance measures	Rationale	How targets are set
EAI Performance measures are determined on an annual basis with at least 80 percent always linked to financial performance	• The combination of solely financial, operational and strategic measures provide a balanced assessment that is strongly aligned with corporate performance and allows the Company to focus annually on targets that drive towards the Company's strategy.	• The performance targets are determined annually by the Committee taking into account the Company's business plan, market conditions and internal and external forecasts. • Targets are calibrated to reflect the Committee's assessment of good to exceptional performance. • The Committee is of the opinion that disclosing precise targets for the EAI in advance would not be in shareholders' interests. Except in circumstances where elements remain commercially sensitive, actual targets, performance achieved and awards made will be published at the end of the performance periods so shareholders can fully assess the basis for any payouts.
LTIP • Net Product Sales (20 percent) • Non GAAP diluted EPS (20 percent) • Non GAAP adjusted ROIC (20 percent) • Relative TSR (40 percent)	Net Product Sales[1] and Non GAAP diluted EPS[2] performance: • support our growth strategy • drive focus on balance of top line and bottom line performance • assess the growth commitment made under the Baxalta deal Non GAAP adjusted ROIC[3]: • reflects long-term returns on strategic and M&A decisions • alignment with shareholder value creation and delivery of returns over the longer term Relative TSR: • has a direct alignment with value creation for our shareholders • will reflect the market's view of the success of the business • is straightforward for participants and shareholders to understand	• Net Product Sales, Non GAAP diluted EPS and Non GAAP adjusted ROIC targets are determined annually by the Committee taking into account the Company's business plan, market conditions and internal and external forecasts. • Relative TSR is assessed in line with UK best practice with threshold payout occurring for performance at the median of the peer group, increasing on a straight line to maximum payout for upper quartile performance versus the peer group. • The Committee has determined that a global peer group of life sciences companies will form the constituents of the relative TSR group. • The use of an industry specific peer group means that the Executive Directors are only rewarded for strong performance relative to peer companies for which Shire is competing for investor capital. To create this focused list, peer companies were selected based on closeness of comparison to Shire in terms of size, complexity and operations. The precise constituents of the TSR peer group for each annual LTIP grant may change year on year as companies are taken over or their characteristics fundamentally change, but the intention is to retain as far as possible a consistent peer group year on year. • The relative TSR results are measured on a common currency basis.

1 Product Sales is defined as product sales from continuing operations.

2 Non GAAP diluted EPS is based upon Non GAAP net income attributable to the Company divided by the weighted average number of ordinary share equivalents outstanding during the period, adjusted for the dilutive effect of all potential ordinary shares equivalents that were outstanding during the year, in which one ADS is equal to three Ordinary Shares. The Non GAAP measures exclude the impact of certain specified items that are highly variable, difficult to predict, and of a size that may substantially impact Shire's operations.

3 Non GAAP adjusted ROIC aims to measure the true underlying economic performance of the Company, and considers a number of adjustments to ROIC as derived from the Company's Non GAAP financial results including:
- — Adding back to Non GAAP operating income all R&D expenses and operating lease costs incurred in the period
- — Capitalizing on the Group's balance sheet historical, cumulative R&D, in-process R&D and intangible asset impairment charges and operating lease costs which previously have been expensed
- — Deducting from Non GAAP operating income and an amortization charge for the above capitalized costs based on the estimated commercial lives of the relevant products
- — Excluding the income statement and balance sheet impact of non-operating assets (such as surplus cash and non-strategic investments)
- — Taxing the resulting adjusted operating income at the underlying Non GAAP effective tax rate

Legacy matters in relation to Executive Director remuneration
The Committee will honor remuneration and related commitments to current and former directors (including the exercise of any discretions available to the Committee in relation to such commitments) where the terms were agreed prior to the approval and implementation of the Remuneration Policy detailed in this report.

Elements of the policy that continue to apply
The following existing arrangements will continue to operate on the terms and conditions set out in the relevant Portfolio Share Plan (PSP) and LTIP rules.

No further grants will be made under the LTIP on this basis. The final grant (2017 LTIP award) will vest in respect of the performance period ending in 2019 (with vesting in February 2020).

LTIP

Purpose & link to strategy	Operation & Performance Assessment	Opportunity
To incentivize individuals to achieve sustained growth through superior long-term performance and to create alignment with shareholders. The LTIP measures, Product Sales and Non GAAP EBITDA, were selected by the Committee as it believes that they represent meaningful and relevant measurements of performance and are an important measure of the Company's ability to meet the strategic objective to grow value for all our stakeholders. The Committee reviews annually whether the performance measures and calibration of targets remain appropriate and sufficiently challenging taking into account the Company's strategic objectives and shareholder interests.	• LTIP grants for the Executive Directors comprised two types of award: – SAR awards. A SAR is the right to receive Ordinary Shares or ADSs linked to the increase in value of Ordinary Shares or ADSs from grant to exercise. – PSU awards. A PSU is the right to receive a specified number of Ordinary Shares or ADSs. • SAR and PSU awards granted to Executive Directors vest three years from the date of grant, subject to the satisfaction of performance measures and are governed by the LTIP rules. SAR awards can be exercised up to the seventh anniversary of the date of grant. • Vesting of awards requires the achievement of two independent measures: – Product Sales targets (50 percent weighting); and – Non GAAP EBITDA targets (50 percent weighting). • The Committee will also use a Non GAAP adjusted ROIC underpin at the end of the three-year performance period to assess the underlying performance of the Company before determining final vesting levels. • The award may include dividend shares representing accumulated dividends on the portion of the award that vests. • The Committee reserves the right to make adjustments to the measures to reflect significant one off items that occur during the vesting period (SAEs). Potential SAEs are reviewed by the Committee against pre-existing guidelines. The Committee will make full and clear disclosure of any such adjustments in the DRR at the end of the performance period. • A two-year holding period will apply following the three-year vesting period for both PSUs and SARs. Shares may be sold in order to satisfy tax or other relevant liabilities as a result of the award vesting. • Malus and clawback arrangements are in place. These are compliant with the Code and in line with best practice in this area.	• Maximum annual awards for Executive Directors in face value terms were 840 percent of salary for grants under the LTIP, consisting of: – 480 percent of base salary for SAR awards; and – 360 percent of base salary for PSU awards • Award levels were set to reflect an individual's role, responsibilities and experience. • Threshold vesting is equal to 20 percent of any award made, with maximum vesting being equal to 100 percent of any award made.

b) Chairman and Non-Executive Director remuneration policy

Overall remuneration		
Purpose & link to strategy	**Operation**	**Opportunity**
To attract and retain high-caliber individuals by offering market competitive fee levels.	• The Chairman is paid a single fee for all of his/her responsibilities. The Non-Executive Directors are paid a basic fee. The members and Chairmen of the main Board committees and the Senior Independent Director are paid a committee fee to reflect their extra responsibilities. • The Chairman and Non-Executive Directors receive 25 percent of their total fees in the form of shares. • Additional fees may be paid to Non-Executive Directors (excluding the Chairman) on a per-meeting basis for any non-scheduled Board or Committee meetings required in exceptional or unforeseen circumstances, up to the relevant fee cap as set out in the Company's Articles. • The Company reimburses reasonably incurred expenses (and tax thereon) and the Chairman and Non-Executive Directors are also paid an additional fee in respect of each transatlantic trip made for Board meetings. In addition the Company may pay for tax support for the Chairman and Non-Executive Directors (and tax thereon). • The fees paid to the Chairman and the Non-Executive Directors are not performance-related. The Non-Executive Directors do not participate in any of the Group share plans, pension plans or other employee benefit schemes.	• The Chairman's and Non Executive Directors' fees are reviewed on an annual basis. • Fees are determined by the Executive Directors and the Chairman, with the exception of the Chairman's fee, which is determined by the Committee. • Fee levels, including any increases, are set taking into account the anticipated time commitment for the role, experience of the incumbent and competitive market levels among UK and global industry comparators. • Total fees will not exceed £3 million per the Company's Articles of Association.

c) Recruitment remuneration policy

The following table sets out the various components which would be considered for inclusion in the remuneration package for the appointment of an Executive Director and the approach to be adopted by the Committee in respect of each component.

Area	Policy and operation
Overall	• The Committee's approach when considering the overall remuneration arrangements in the recruitment of a member of the Board from an external party is to take account of the Executive Director's remuneration package in their prior role, the market positioning of the remuneration package, and to not pay more than necessary to facilitate the recruitment of the individual in question.
Fixed elements (Base salary, retirement and other benefits)	• Base salary is positioned with reference to a global industry peer group and companies within the FTSE 50 used as a secondary reference point. • The Executive Director shall be eligible to participate in Shire's employee benefit plans, including coverage under all executive and employee pension and benefit programs in accordance with the terms and conditions of such plans, as may be amended by the Company in its sole discretion from time to time. • The Company may meet certain mobility costs, including, but not limited to, relocation support, expatriate allowances, temporary living and transportation expenses in line with the prevailing mobility policy and practice for senior executives.
Short-term incentives — EAI	• The appointed Executive Director will be eligible to earn a discretionary annual incentive award in accordance with the rules and terms of Shire's Deferred Bonus Plan (under which the EAI operates). • The level of opportunity will be consistent with that stated in section (a) of this Policy.
Long-term incentives	• The Executive Director will be eligible for performance-based equity awards in accordance with the rules and terms of Shire's LTIP. • The award levels will be consistent with that stated in section (a) of this Policy.
Maximum variable remuneration	• The maximum variable remuneration for a new Executive Director (excluding any replacement awards) will be 600 percent under the LTIP and 180 percent under the EAI, in line with section (a) of this Policy.
Replacement awards	• The Committee will consider what replacement awards (if any) are reasonably necessary to facilitate the recruitment of a new Executive Director in all circumstances. This includes an assessment of the awards and any other compensation or benefits item that would be forfeited on leaving their current employer. • The Committee will seek to structure any replacement awards such that overall they are no more generous in terms of quantum or vesting period than the awards due to be forfeited. • In determining quantum and structure of these commitments, the Committee will seek to provide broadly equivalent value and replicate, as far as practicable, the timing and performance requirements of remuneration forgone. • The Committee will seek to ensure that a meaningful proportion of the replacement awards that are not attributable to long-term incentives forgone will be delivered in Shire deferred shares, released at a later date and subject to continued employment. • If the Executive Director's prior employer pays any portion of the remuneration that was deemed forgone, the replacement payments shall be reduced by an equivalent amount. • Replacement share awards, if used, will be granted using the Company's existing long-term incentive plan to the extent possible, although awards may also be granted outside of this plan if necessary and as permitted under the Listing Rules. • In the case of an internal hire, any outstanding awards made in relation to the previous role will be allowed to pay out according to their original terms. If promotion is part way through the year, an additional top-up award may be made to bring the Executive Director's opportunity to a level that is appropriate in the circumstances.

d) Service contracts and termination arrangements

Executive Directors

The Committee's policy on service contracts and termination arrangements for Executive Directors is set out below. As an overriding principle, it is the Committee's policy that there should be no element of reward for failure. The Committee's approach when considering payments in the event of termination is to take account of the individual circumstances, including the reason for termination, performance, contractual obligations of both parties as well as share plan and pension scheme rules.

Notice period	• The Committee's policy is that Executive Directors' service contracts should provide for a notice period of up to 12 months from the Company and the Executive Director. • The Committee believes this policy provides an appropriate balance between the need to retain the services of key individuals for the benefit of the business and the need to limit the potential liabilities of the Company in the event of termination.
Contractual payments	• Executive Directors' contracts allow for termination with contractual notice from the Company or termination by way of payment in lieu of notice, at the Company's discretion. Neither notice nor a payment in lieu of notice will be given in the event of gross misconduct. • Payments in lieu of notice could potentially include up to 12 months' base salary and the cash equivalent of up to 12 months' pension contributions, car allowance and other contractual benefits. There is no contractual entitlement to annual incentive payments in respect of the notice period — any award is at the Committee's absolute discretion, performance-related and capped at the contractual target level. • Payment in lieu of notice would be made where circumstances dictate that the Executive Directors' services are not required for the full duration of their notice period. Contracts also allow for phased payments on termination, which allow for further reduction in payments if the individual finds alternative employment outside the Company during the notice period.
Retirement benefits	• Normal treatment to apply, as governed by the rules of the relevant pension plan; no enhancement for leavers will be made.
Short-term incentives	• Where an Executive Director's employment is terminated after the end of a performance year but before the payment is made, the executive will remain eligible for an annual incentive award for that performance year, subject to an assessment based on performance achieved over the period. Where an award is made the payment may be delivered fully in cash. No award will be made in the event of gross misconduct. • Where an Executive Director's employment is terminated during a performance year, a pro-rata annual incentive award for the period worked in that performance year may be payable subject to an assessment based on performance achieved over the period. • The Committee's policy is not to award an annual incentive for any portion of the notice period not served. • The relevant plan rules provide that any outstanding deferred shares will vest in accordance with the regular vesting period, except for where an Executive Director's employment is terminated for cause in which case they will lapse. • In the event of a variation in the equity share capital of the Company, demerger, a special dividend or distribution, or any corporate event which might affect the value of an award, the Committee may make adjustments to the number or class of stock or securities subject to the award.
Long-term incentives	• The treatment of unvested long-term incentive awards is governed by the rules of the relevant incentive plan, as approved by shareholders. • Where an individual's employment terminates, the LTIP rules provide for unvested long-term incentive awards to lapse except as set out below. • Under the LTIP rules, where an individual is determined to be a 'good' leaver, unvested long-term incentive awards will vest at the normal vesting date subject to performance against applicable performance conditions and, unless the Committee determines otherwise, pro-rating for time. Any Committee determination will take into account a number of considerations, in particular performance and other circumstances relating to their termination of employment. • Good leaver reasons include retirement in accordance with the Company's retirement policy, ill health, injury or disability, and redundancy or in other circumstances that the Committee determines. • Pro-rating for time will be calculated on the basis of the number of complete weeks in the relevant period during which the executive was employed as a proportion of the number of complete weeks in the relevant period. Where an executive does not work during their notice period, the Committee may apply pro-rating by reference to the date the notice period would have expired. • Where an Executive Director's employment is terminated or an Executive Director is under notice of termination for any reason at the date of award of any long-term incentive awards, no long-term incentive awards will be made. • In the event of a variation in the equity share capital of the Company, demerger, a special dividend or distribution, or any corporate event that might affect the value of an award, the Committee may make adjustments to the number or class of stocks or securities subject to the award and, in the case of an option, the option price.
Change in control	• In relation to unvested deferred annual bonus awards, the Deferred Bonus Plan rules provide that unvested awards will normally vest on a change in control. • In relation to unvested long-term incentive awards, the LTIP rules provide that unvested awards will normally only vest on a change in control to the extent that any performance condition has been satisfied and would be reduced where more than a year remains until the relevant vesting date, unless the Committee determines otherwise. • The Committee's policy is that contracts of employment should not provide additional compensation on severance as a result of change in control.

Service contracts for Executive Directors

The service agreements of the Executive Directors are not fixed-term and are terminable by either the Company or the Director on the following bases:

Director	Date of current service contract	Notice period
Flemming Ornskov	October 24, 2012	12 months
Jeffrey Poulton[1]	April 29, 2015	12 months
Thomas Dittrich[2]	November 19, 2017	12 months

1 Mr. Poulton left the Company on December 31, 2017.
2 Mr. Dittrich is expected to be appointed as CFO on March 19, 2018.

When setting notice periods, the Committee has regard to market practice and corporate governance best practice. All service contracts are available for viewing at the Company's registered office and at the General Meeting.

Chairman and Non-Executive Directors

Non-Executive Directors have letters of appointment and are appointed by the Board ordinarily for a term of two years. Their initial appointment and any subsequent re-appointment are subject to election, and thereafter annual re-election by shareholders. Non-Executive Directors are not entitled to compensation for loss of office. All Non-Executive Directors are subject to a three-month notice period. In addition, David Ginsburg's letter of appointment also contains specific provisions acknowledging his principal employer's rights in respect of its property and proprietary information, and its policies as applicable to Dr. Ginsburg.

All service contracts and letters of appointments are available for viewing at the Company's registered office and at the General Meeting.

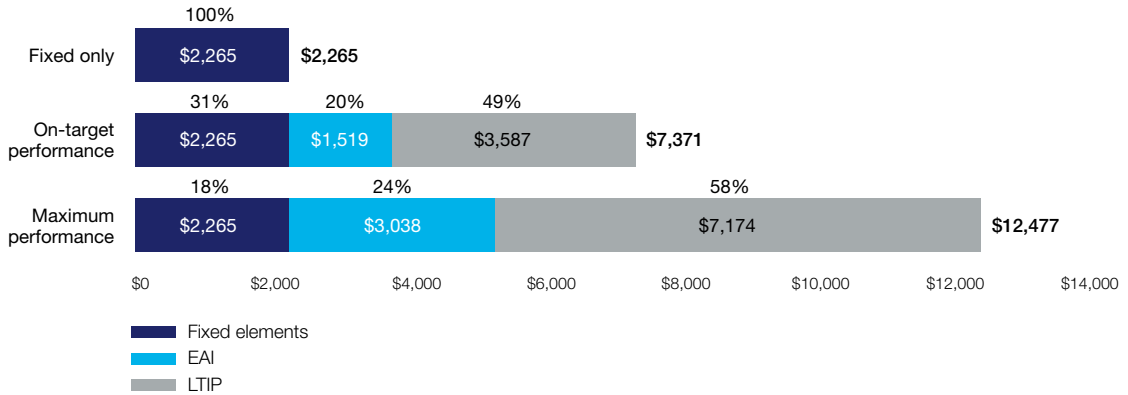
External appointments

Executive Directors are permitted to hold one fee-paying external Non-Executive Directorship, subject to prior approval by the Board. Any fees received from such appointments are retained by the Executive Director. Dr. Ornskov was appointed to the Board of Directors of Waters Corporation effective June 22, 2017. During 2017, he received fees comprised of $32,000 and 594 shares, and was granted 3,042 stock options which are exercisable on June 22, 2018.

e) Remuneration scenarios

The composition and value of the CEO's remuneration package in three performance scenarios is set out in the charts below. The level of remuneration is in accordance with the Executive Director remuneration policy set out in Part 2(a) of this report. These show that the proportion of the package delivered through long-term incentives supports the long-term nature of the business and changes significantly across the performance scenarios.

Flemming Ornskov (CEO) — value of package in $'000



Remuneration element	CEO
Fixed elements comprises: • Base salary representing the CEO's 2018 annualized base salary. • Retirement benefits including the cash value of the total Company contributions to the Company plans. • Other benefits representing the value of annualized benefits included in the summary of 2017 remuneration table in Part 3(b) of this report (excluding any one-off items).	$1,688,000 (0 percent increase) 30 percent of salary
Executive Annual Incentive (EAI)	On-target = 90 percent of salary Maximum = 180 percent of salary
Long-Term Incentive Plan (LTIP) • Represents the CEO's 2018 LTIP award of 425 percent of salary (PSUs only) to be granted under the new Remuneration Policy.	On-target = 50 percent vesting Maximum = 425 percent of base salary

f) Shareholder engagement

The Committee takes the views of shareholders very seriously and is committed to ongoing dialog with the Company's shareholder base, which has a significant transatlantic element. This can take a variety of forms, including meetings with major shareholders to consider significant potential changes to policy or specific issues of interest to particular shareholder groups, other dialogue to update shareholders and receive their feedback on planned refinements to arrangements, and annual voting on the DRR.

Al Stroucken discussed the proposed changes to the Remuneration Policy with more than 30 of our largest shareholders and proxy advisory bodies in late 2017. The comments and suggestions made by shareholders during this engagement exercise were presented back to the Remuneration Committee at the October and December 2017 Remuneration Committee meetings and were instrumental in determining the final details of the new Remuneration Policy. Further information is set out in 'Part One: Annual Statement' on page 78.

g) Remuneration of other employees

The Committee recognizes that remuneration has an important role to play in supporting the implementation and achievement of the Company's strategy and ongoing performance. When making remuneration decisions in respect of the Executive Directors, the Committee is sensitive to pay and employment conditions across the Company, in particular in relation to base salary decisions where the Committee considers the broader employee salary increase budget. The Committee approves the overall annual bonus funding for the Company each year and has oversight over the grant of all LTIP awards across the Company. In addition, annual incentive performance for the Executive Directors is measured against the backdrop of the same corporate scorecard that is appropriately used to assess performance across the organization.

The Committee has not expressly sought the views of employees and no remuneration comparison measurements were used when drawing up the Directors' Remuneration Policy. However, many of the Company's employees are shareholders through the Company's all-employee share plans, and are therefore able to express their views on director remuneration at each general meeting.

Shire has a diverse employee base, employing more than 23,000 people in more than 60 countries. To the extent possible, our remuneration philosophy is cascaded throughout the organization taking into account local practices where appropriate. All employees receive salary and benefits benchmarked to the local markets and countries in which they work. These are reviewed annually. The majority of employees participate in a bonus plan. The maximum opportunity available is based on role, responsibility and location, with the amount that can be earned based on the same corporate scorecard that is used for the Executive Directors.

Employees who hold key strategic positions or are deemed critical to the business through their performance are also offered the opportunity to participate in the LTIP, with approximately 4,700 employees granted annual awards in 2017. Similar to the discretionary bonus plan, the maximum opportunity available is based on role, responsibility and location. Awards are assessed on the same performance measures as those used in the executive LTIP being Net Product Sales, Non GAAP diluted EPS, Non GAAP adjusted ROIC and relative TSR.

Shire operates all-employee share plans in 17 countries which allow employees to become shareholders and share in the success of the Company. More than 4,500 employees participate with average annual contributions of $7,000.

Part 3 — Annual Report on Remuneration

a) Implementation of Directors' Remuneration Policy in 2018

In 2018, the Executive Director and Non-Executive Director Remuneration Policies will be implemented as follows:

Executive Director Remuneration Policy

Base salary

Implementation in 2018 — Base salaries effective April 1, 2018	
CEO	$1,688,000 (0 percent increase on prior year)
CFO	CHF 750,000

CEO: Following the 25 percent salary increase awarded to Dr. Ornskov during 2015, the Committee has committed to freezing his salary at this level for the next three years.

CFO: Upon his expected appointment on March 19, 2018, Mr. Dittrich will receive an annual base salary of CHF 750,000.

Retirement and other benefits

Implementation in 2018 — Retirement benefit contributions	
CEO	30 percent
CFO	14 percent (while based in Switzerland, increasing to 20 percent upon relocation to the U.S.)

The implementation of policy in relation to retirement and other benefits is unchanged and in line with the Remuneration Policy in Part 2(a) of this report.

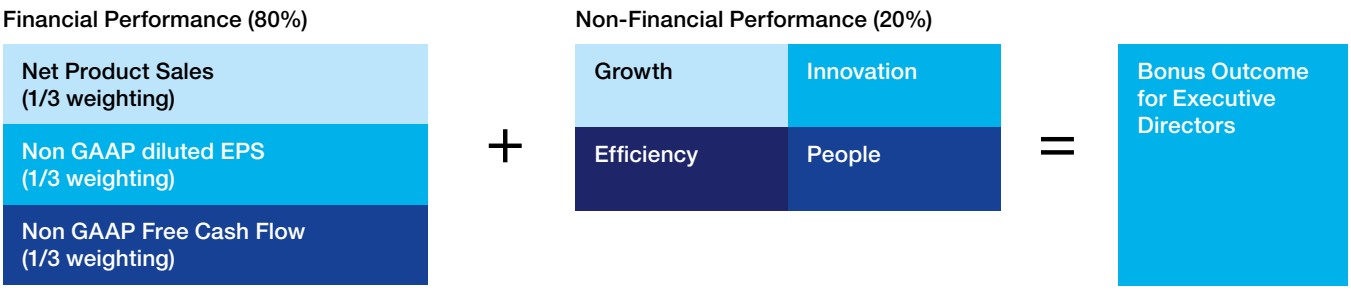
Executive Annual Incentive

Implementation in 2018 — EAI opportunity	
CEO	180 percent of base salary (no change from prior year)
CFO	160 percent of base salary (no change from prior year)

A scorecard approach will continue to be used for the 2018 EAI and will be comprised of 80 percent financial and 20 percent non-financial performance measures (representing an increase in the financial component from 75 percent in prior years). This weighting recognizes the critical importance of financial results to our shareholders and bonus affordability as well as the important role that non-financial performance plays in the success and growth of the Company. These measures are aligned with and support our four key strategic drivers for 2018 of Growth, Innovation, Efficiency and People. The individual performance element in the EAI has been removed such that awards are determined solely based on the achievement of corporate performance.

The targets themselves are considered to be commercially sensitive on the grounds that disclosure could damage the Company's commercial interests. However, retrospective disclosure of the targets and performance against them will be provided in next year's Annual Report on Remuneration to the extent that they do not remain commercially sensitive at that time. Financial and non-financial targets are set at the start of the performance year and are approved by the Committee. The Committee believes the 2018 targets are suitably challenging, relevant and measurable.

The 2018 corporate scorecard and the calculation of the bonus outcome for Executive Directors is set out below:



Long-Term Incentives

Following the year-end review, the Committee made the following 2018 LTIP award decisions, which are in line with the disclosed Policy in Part 2(a) of this report. These awards will be made following shareholder approval of the revised Policy at the 2018 AGM:

2018 LTIP award	Award type	Face value of threshold vesting (percentage of 2018 salary)	Face value of maximum vesting (percentage of 2018 salary)	Face value of maximum vesting (000's)
Flemming Ornskov	PSU	85%	425%	$7,174
Thomas Dittrich	PSU	71%	357%	CHF 2,679

No 2018 LTIP award will be granted to Mr. Poulton given his departure from the Company on December 31, 2017.

Threshold vesting is equal to 20 percent of any award granted, target vesting is equal to 50 percent of any award granted and maximum vesting is equal to 100 percent of any award granted. Vesting is on a straight-line basis between each of these three points. In all cases, awards will only vest if the Committee determines that the underlying performance of the Company is sufficient to justify the vesting of the award.

For the 2018 grant, the Committee has determined that LTIP awards will be tested against four independent measures at the end of a three-year performance period: Net Product Sales, Non GAAP diluted EPS, Non GAAP adjusted ROIC and relative TSR.

As set out on page 78, the Company's revised outlook for sales in combination with the wider changes in our business model has implications for earnings and returns trajectories for the next three years. These are reflected in the performance ranges for Net Product Sales, Non GAAP diluted EPS and Non GAAP adjusted ROIC. The Committee has considered this carefully and is satisfied that the performance ranges set for 2018 remain very stretching in the context of the revised business expectations. The weightings, threshold and maximum target figures are provided in the table below.

2018 LTIP targets	Weighting	Threshold (20 percent)	Target (50 percent)	Maximum (100 percent)
Net Product Sales	20 percent	$16,000m	$16,600m	$18,000m
Non GAAP diluted EPS	20 percent	$17.10	$18.20	$20.00
Non GAAP adjusted ROIC	20 percent	7.5%	8.0%	8.5%

Relative TSR (40 percent weighting)

Relative TSR will be measured against a custom peer group of global life sciences companies. To create this focused list, peer companies were selected based on closeness of comparison to Shire in terms of size, complexity and operations. Selection against these criteria resulted in the following group of 20 peer companies for the 2018 LTIP award.

AbbVie Inc.	Eli Lilly and Co
Alexion Pharmaceuticals Inc.	Gilead Sciences Inc.
Allergan plc	GlaxoSmithKline PLC
Amgen Inc.	Merck & Co Inc.
AstraZeneca PLC	Novo Nordisk A/S
Biogen Inc.	Pfizer Inc.
Biomarin Pharmaceutical Inc.	Regeneron Pharmaceuticals Inc.
Bristol-Myers Squibb Co	Sanofi SA
Celgene Corp	UCB SA
CSL Ltd	Vertex Pharmaceuticals Inc.

Assessment against the peer group will be calibrated so that threshold payout is achieved for meeting the median TSR performance of the peer group, increasing to a maximum payout for meeting upper quartile TSR performance of the peer group. Any changes to the peer group as a result of corporate activity (e.g. a company delisting), will be reported as part of the disclosure of the LTIP vest.

A two-year holding period will apply following the three-year vesting period. Clawback and malus arrangements are in place for awards to cover situations where results are materially misstated or in the event of serious misconduct.

New joiner replacement awards

Details of the replacement awards due to be made to Thomas Dittrich following his expected appointment as CFO are set out below.

	2017 annual bonus	2015 LTIP award	2016 LTIP award
Value	Equal to the value of the actual bonus that Mr. Dittrich would have received from his previous employer less the value of any payment received	CHF 1,320,000	CHF 1,000,000
Vehicle	75 percent cash and 25 percent deferred Shire shares	Shire shares	Shire shares
Performance conditions	Financial performance disclosed in previous employer's 2017 compensation report (published in February 2018)	Actual disclosed performance in previous employer's 2018 compensation report (published in February 2019)	Shire 2018 LTIP performance measures
Vesting date	Deferred shares will vest in March 2021	March 2019	March 2021

The forfeited 2017 annual bonus would have been delivered fully in cash by Mr. Dittrich's previous employer, however, the Committee considered it would be appropriate to deliver the value using the same mechanism as Shire's EAI with 75 percent payable in cash and 25 percent deferred into Shire shares which would not be released for three years (together with shares representing accumulated dividends).

For the long-term incentive awards, the Committee considered the forfeited awards in detail and sought to structure these replacement awards such that overall they were no more generous in terms of quantum or vesting period than the long-term incentives due to be forfeited, with particular reference to the performance conditions applied to the award. The Committee aimed to ensure that they were in the best interests of shareholders and appropriate to secure Mr. Dittrich's appointment to Shire. All payments are in line with the approved Remuneration Policy.

Chairman and Non-Executive Director remuneration policy

2018 fee levels for the Chairman and Non-Executive Directors remain unchanged for the fourth year since 2015.

Basic fees (effective January 1, 2018)	2018
Chairman (inclusive of all committee appointments)	£450,000
Senior Independent Director	£98,000
Non-Executive Director	£93,000

The Chairman and Non-Executive Directors will continue to receive 25 percent of their total fees in the form of shares.

In addition to the basic fee, a committee fee will be paid to the members and Chairman of the Audit, Compliance & Risk, Remuneration, Science & Technology and Nomination & Governance Committees.

Committee fees (effective January 1, 2018)	Chairman	2018
Audit, Compliance & Risk	£25,000	£12,500
Remuneration	£25,000	£12,500
Science & Technology	£20,000	£10,000
Nomination & Governance	£17,500	£8,750

Non-Executive Directors (excluding the Chairman) will also receive the following additional fees for attending Board and Committee meetings in addition to those scheduled as part of the normal course of business:

- Board meeting — additional £2,000 per meeting
- Committee meeting — additional £1,000 per meeting

The Chairman and Non-Executive Directors will continue to receive an additional fee of £5,000 where transatlantic travel is required to attend Board meetings.

b) 2017 single total figure of remuneration for Executive Directors (subject to audit)

The summary table of 2017 remuneration for the Executive Directors comprises a number of key components that are set out in further detail in the relevant sections that follow.

		Fixed elements				Variable elements				
						Short-term incentives — EAI				
		Base salary	Retirement benefits	Other benefits	Total fixed pay	Cash element	Deferred share element	Long-term incentives[2]	Total variable pay	Total
Flemming Ornskov	**2017**	**1,688,000**	**506,400**	**72,330**	**2,266,731**	**1,401,462**	**467,154**	**1,126,544**	**2,995,160**	**5,261,891**
	2016	1,688,000	506,400	582,221	2,776,621	1,993,950	664,650	5,135,904	7,794,504	10,571,125
Jeff Poulton[1]	**2017**	**604,296**	**150,268**	**65,157**	**819,720**	**450,003**	**150,001**	**0**	**600,004**	**1,419,723**
	2016	587,423	146,938	55,003	789,364	621,600	207,200	135,993	964,793	1,754,157

Note: Dr. Ornskov's and Mr. Poulton's remuneration, which is paid through the U.S. payroll, is reported in U.S. Dollars.

1 Mr. Poulton left the Company on December 31, 2017.

2 In the 2016 DRR, the value of LTIP awards vesting in respect of 2016 (vesting at 100 percent of maximum) was calculated using the average share price over the last quarter of 2016 of $177.25. These figures have been restated to reflect the actual share price at the vesting date on February 28, 2017 of $181.32. For Dr. Ornskov, the value of his LTIP awards vesting in 2017 represents his 2015 PSU award only (vesting at 38 percent of maximum) and has been valued using the average share price over the last quarter of 2017 of $148.21. His 2015 SAR award is currently underwater, given the strike price of $245.48 and is therefore valued at $0.

Base salary

- Dr. Ornskov's base salary of $1,688,000 remains unchanged from 2015, following the Committee's decision to freeze his salary for a period of three years effective July 1, 2015.
- Mr. Poulton's base salary was increased by 3 percent from $592,000 to $609,760 effective April 1, 2017.

Retirement benefits

- Dr. Ornskov received a contribution at a rate of 30 percent of his base salary through a combination of contributions to the Company's 401(k) Plan and credits to his SERP account.
- Mr. Poulton received a contribution at a rate of 25 percent of his base salary through a combination of contributions to the Company's 401(k) Plan and credits to his SERP account.

Other benefits

- The 2017 figures for Dr. Ornskov and Mr. Poulton principally include car allowance, financial and tax advisory support, long-term disability and life insurance and private medical, dental and vision cover.
- The 2016 figure for Dr. Ornskov includes costs of $521,464 associated with the relocation of Dr. Ornskov's family to join him in Boston. The amount includes the grossed-up cost of tax paid by the Company on behalf of the CEO.

Short-term incentives

		2017 EAI outcome			
Name	Total	Cash element	Deferred shares element[1]	(as a percentage of target)	(as a percentage of maximum)
Flemming Ornskov	$1,868,616 (111 percent of salary)	$1,401,462	$467,154	123 percent	62 percent
Jeff Poulton	$600,004 (98 percent of salary)	$450,003	$150,001	123 percent	62 percent

1 25 percent of the EAI outcome is deferred into shares for three years.

The Corporate Scorecard outcome is calculated by way of a weighted average of the outcomes of the financial and non-financial performance measures. For each performance measure, outperformance or underperformance is measured as a percentage achievement against the target. Performance at target results in 100 percent of the target bonus with up to a maximum of 200 percent of the target bonus for maximum performance. Maximum performance is set 10 percent above target and threshold performance at 10 percent below target, so the Committee considers the target ranges to be very challenging. The Corporate Scorecard outcome determines the bonus funding for all individuals within the plan.

For 2017, the Committee approved the Corporate Scorecard outcome of 123 percent set out in the table on the following page. Consistent with the proposed Policy, the Remuneration Committee determined that the Executive Directors' annual incentive outcomes should be aligned with the overall corporate funding of the Company's bonus pool with no additional application of any personal multiplier.

2017 Corporate Scorecard

Financials	Weight (a)	Threshold	Target	Max	Actual	Actual as a percentage of Target	Funding Score[3] (b)	Overall Score (a*b)
Net Product Sales	25%	$13,176m	$14,640m	$16,104m	$14,449m	99%	87%	22%
Non GAAP EBITA[1]	30%	$5,343m	$5,937m	$6,531m	$6,052m	102%	119%	36%
Non GAAP adjusted ROIC[1, 2]	20%	5.84%	6.49%	7.14%	6.57%	101%	112%	22%
Financials Total	**75%**					**101%**	**107%**	**80%**
Non-Financials								
Growth	15%	90%-100%	100%	100%-110%	110%	108%	183%	28%
Innovation					107%			
Efficiency	10%				109%	106%	156%	16%
People					103%			
Non-Financials Total	**25%**					**107%**	**173%**	**43%**
Scorecard Total	**100%**					**102%**		**123%**

Note: Actuals and bonus funding scores have been rounded to the nearest whole percentage and therefore individual totals may not add up to the overall bonus funding score of 123 percent.

1 For the purposes of the Corporate Scorecard multiplier calculation, Non GAAP EBITA and Non GAAP adjusted ROIC have been adjusted to exclude the cost of the annual bonus corporate multiplier on the full-year results.

2 The disclosed Non GAAP adjusted ROIC target range incorporates the impact of an accounting change made in respect of depreciation during the 2017 financial year. The Non GAAP adjusted ROIC outcome of 6.57% also reflects this accounting treatment.

3 Every one percent change in the outcome achieved results in a 10 percent increase/decrease in funding.

Additional details of the non-financial performance outcomes are set out in the table below.

Non-financial performance measures	Strategic driver	Key achievements
Pipeline and pre-commercial	Growth	• Executed 50 product launches globally, including 18 across targeted products (HYQVIA, CUVITRU, VYVANSE, INTUNIV, ONCASPAR, ONIVYDE) • U.S. market approval and subsequent launch of MYDAYIS • International submission for XIIDRA (LIFITEGRAST) and approval in Canada • Conditional EU approval for NATPAR • Entered into agreements with Novimmune, MicroHealth and Rani Therapeutics focused on advancing innovation for patients suffering from hemophilia and with Parion Sciences focused on Dry Eye Disease and with AB Biosciences focused on autoimmune disorders
	Innovation	• Achieved high-quality topline Phase 3 data for SHP643 ahead of target • Successfully initiated seven new Phase 3 programs, including SHP640 for patients with bacterial and adenoviral conjunctivitis and SHP620 for patients with cytomegalovirus infection • Submission of four IND applications from the early pipeline • Alignment with the FDA on registrational path forward for SHP647
Organizational effectiveness	Efficiency	• Executed on pre-established metrics for ongoing integration of Baxalta, including being ahead of schedule to achieve $700m run-rate synergies by year three post-close • Delivered $491m (8 percent of external spend) in procurement savings • Delivered Network Study recommendations for improved supply chain efficiency ahead of target • Completed immunoglobulin (IG) conformance lots for Covington ahead of target and filed the PAS for Covington site
	People	• More than 95 percent of employees completed mandatory corporate compliance training by year-end • Implemented Workday / AON Self Service Model on time and on budget • Conducted multiple employee engagement surveys in 2017, and developed action plans for optimizing future engagement in critical functions / locations • Implemented global strategy for talent development and succession planning

Long-term incentives
Vesting of 2015 LTIP awards

2015 LTIP outcome

Flemming Ornskov — 38 percent of maximum opportunity (2014 award: 100 percent)

The table below sets out a summary of the number of shares vesting and the resulting gross estimated vesting value for the 2015 LTIP award for Dr. Ornskov. The 2015 LTIP award for Mr. Poulton lapsed in full upon termination as he left the Company prior to the vesting date on April 30, 2018. This estimate is on the basis of an average share price over the final quarter of 2017 of $148.21, given that the 2015 LTIP award vests following the date of this report.

Name	Award type	Date of grant	Number of shares under original award[1]	Percentage of total award vesting[2]	Number of shares vesting[1]	Number of dividend shares[3]	Total number of shares vesting	Share Price at vesting[4]	Value at vesting[4]
Flemming Ornskov	PSU	April 30, 2015	19,799	38%	7,523	78	7,601	$148.21	$1,126,544
	SAR		26,398	38%	10,031	0	10,031	$148.21	$0

1 Awards were granted on April 30, 2015 and will vest on April 30, 2018 over ADSs.
2 The figures represent the number of shares vesting taking into account performance against applicable performance conditions (see performance outcome below).
3 The vesting of PSUs includes dividend shares representing any accrued dividends, in accordance with the relevant plan rules.
4 Based on the average share price over the last quarter of 2017 of $148.21. The 2015 SAR awards are currently underwater given their strike price of $245.48 and are therefore valued at $0.

2015 LTIP performance measures outcome — performance period ended on December 31, 2017

	Targets		Outcome		
	Threshold	Maximum	Actuals	Percentage of maximum achieved	Percentage of award eligible for vesting
Net Product Sales	$13,953m	$15,389m	$14,449m	48%	
Non GAAP EBITDA	$6,414m	$7,143m	$6,493m	29%	38%
Non GAAP adjusted ROIC	7.75%		8.10%	–	

The Non GAAP adjusted ROIC underpin of 7.75 percent has to be met in full for awards to be eligible for vesting. To the extent that the Net Product Sales and Non GAAP EBITDA measures are achieved, 20 percent of the award is payable for threshold performance and 100 percent payable for maximum vesting, with straight-line vesting within this performance range.

c) Other audited disclosures
Scheme interests awarded during 2017 (subject to audit)

2017 LTIP awards

The following table set out details of the SAR and PSU awards granted to the Executive Directors under the LTIP during 2017.

Vesting of the 2017 LTIP awards will be determined by the Committee taking into account performance over the performance period (January 1, 2017 to December 31, 2019). In addition, any Significant Adjusting Events that are relevant will be taken into consideration, as well as an overall assessment of the underlying performance of the Company.

Name	Award type (ADS)	Number of ADSs awarded	Share price on grant / Exercise price	Percentage of award vesting for threshold performance	Percentage of award vesting for maximum performance	Face value of threshold vesting (percentage of 2017 salary)	Face value of maximum vesting (percentage of 2017 salary)	Face value of maximum vesting (000's)
Flemming Ornskov	SAR	30,536	$181.63	20%	100%	66%	329%	$5,546
	PSU	22,902				49%	246%	$4,160
Jeff Poulton	SAR	10,709				66%	329%	$1,945
	PSU	8,032				49%	246%	$1,459

The maximum SAR and PSU awards are granted and, subject to the achievement of performance conditions, are adjusted at the date of vesting. The number of SARs and PSUs as well as the exercise price for SAR awards is calculated using an approach based on the average three-day closing mid-market share price at the date of grant of February 28, 2017.

EAI deferred shares granted in 2017 (in respect of 2016 EAI outcome)

25 percent of any outcome under the EAI is deferred into shares. To satisfy these, awards of Restricted Stock Units were granted in March 2017 under the Deferred Bonus Plan (DBP) (a sub-plan of the LTIP) as follows to Executive Directors as part of their 2016 EAI award and will vest three years from the point of deferral subject to the terms of the plan rules.

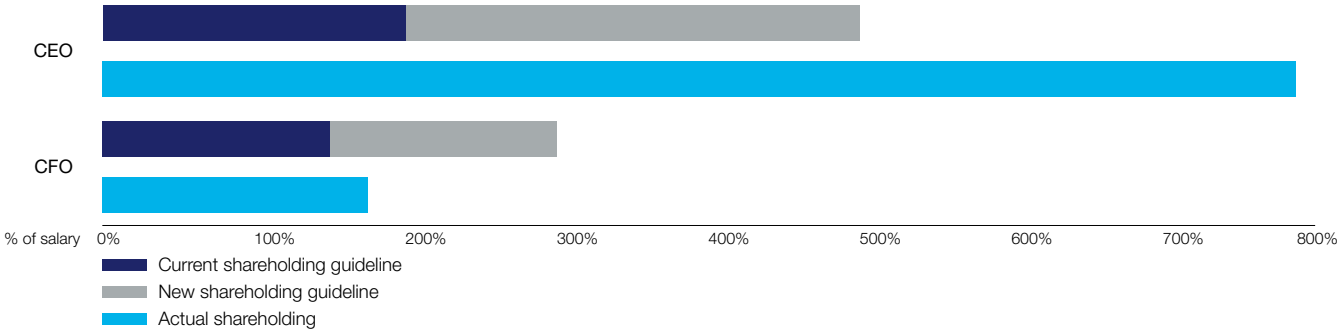
	Number of ADSs awarded	Share price at grant[1]	Face value of award[2]	Vesting date
Flemming Ornskov	3,721	$178.58	$664,496	March 10, 2020
Jeff Poulton	1,160		$207,153	March 10, 2020

1 The share price is based on the average three-day closing mid-market share price up to and including the date of grant.
2 Based on the share prices on the date of grant of March 10, 2017.

Directors' shareholdings and scheme interests (subject to audit)

Under the new Remuneration Policy, the CEO, CFO and other members of the Executive Committee are required to own shares in the Company equivalent to 500 percent and 300 percent (previously 200 percent and 150 percent) of base salary, respectively, within a five-year period following their appointment. All shares beneficially owned by an executive or deferred under the EAI count towards achieving these guidelines. The Committee reviews share ownership levels annually for this group. Current shareholding levels for Directors are set out in the table below and show that the new shareholding guideline for the CEO has been significantly exceeded, thus demonstrating his alignment with shareholder interests.

Executive Directors' shareholdings relative to guidelines



Summary of Executive Directors' shareholdings and scheme interests

			Scheme interests as at Dec 31, 2017[2]					
				Subject to the achievement of performance conditions[4]				
	Security type[1]	Shareholding as at Dec 31, 2017 or date of resignation[2]	Total RS / RSUs awarded under the EAI[3]	Total PSUs/RSUs unvested	Total SARs unvested	Total SARs vested but unexercised[5]	Total interests	Total shares held that count towards the shareholding guidelines (as a % of salary as at Dec 31, 2017)
Flemming Ornskov	ADS	55,546	10,467	75,198	100,263	98,759	340,233	788%
	Ord Shares	45,900	–	–	–	–	45,900	
Jeff Poulton[6]	ADS	4,796	1,720	24,939	33,252	15,046	79,753	175%

1 One ADS is equal to three Ordinary Shares.
2 With the exception of the following transactions in shares, no change in Directors' interests has occurred during the period December 31, 2017 to February 16, 2018. On February 13, 2018, Restricted Stock (RS) in respect of ADSs awarded to Dr. Ornskov under the EAI vested. 2,546 ADSs were released, inclusive of an increase, pursuant to the terms of the EAI, equivalent to the value of dividends paid by the Company in respect of the ADSs from the award date to the date of vesting. Of the 2,546 ADSs released, 1,572 ADSs were sold at an average price of $132.01 per ADS to satisfy personal tax liabilities arising from the vesting.
3 This represents unvested RS and Restricted Stock Units (RSUs) awarded under the EAI which are not subject to performance conditions and are forfeited in the case of termination for cause.
4 All unvested awards are subject to the achievement of performance conditions, adjusted at the date of vesting, with the exception of RS and RSUs awarded under the EAI.
5 Vested but unexercised SARs are no longer subject to the achievement of performance conditions.
6 Mr. Poulton's shareholding has been rounded up to the nearest whole ADS, with his precise shareholding including a fractional entitlement to an ADS as a result of the operation of a dividend reinvestment plan.

Awards under the Company's long-term incentive plans and broad-based share plans are satisfied either by market-purchased shares held in an employee benefit trust or the issue of new shares within the limits agreed by shareholders when the plans were approved. These limits comply with the Investment Association's guidelines that require that no more than 10 percent of a company's issued share capital be issued in accordance with all-employee share plans in any 10-year period, with no more than 5 percent issued in accordance with discretionary employee share plans.

Executive Directors' scheme interests

Award type[1]	Date of award	As at Jan 1, 2017	Awarded	Dividend shares[2]	Lapsed	Exercised / released	As at Dec 31, 2017	Exercise price	Share price on exercise / release	Normal exercise period / vesting date
Flemming Ornskov										
SAR[3]	Feb 28, 2013	45,601					45,601	$95.04		Feb 28, 2016 to Feb 28, 2020
SAR[3]	May 2, 2013	18,984					18,984	$91.59		May 2, 2016 to May 2, 2020
SAR[3]	Feb 28, 2014	34,174					34,174	$168.54		Feb 28, 2017 to Feb 28, 2021
PSU[3]	Feb 28, 2014	25,631		284		25,915			$181.32	Feb 28, 2017
RS (EAI)[4]	Mar 31, 2014	2,703		32		2,735			$175.26	Mar 31, 2017
RS (EAI)[4]	Feb 13, 2015	2,501					2,501			Feb 13, 2018
SAR[3, 5]	Apr 30, 2015	26,398					26,398	$245.48		Apr 30, 2018 to Apr 30, 2022
PSU[3, 5]	Apr 30, 2015	19,799					19,799			Apr 30, 2018
SAR[3, 5]	Feb 26, 2016	43,329					43,329	$161.42		Feb 26, 2019 to Feb 26, 2023
PSU[3, 5]	Feb 26, 2016	32,497					32,497			Feb 26, 2019
RSU (EAI)[4]	Mar 11, 2016	4,245					4,245			Mar 11, 2019
SAR[3, 5]	Feb 28, 2017		30,536				30,536	$181.63		Feb 28, 2020 to Feb 28, 2024
PSU[3, 5]	Feb 28, 2017		22,902				22,902			Feb 28, 2020
RSU (EAI)[4]	Mar 10, 2017		3,721				3,721			Mar 10, 2020
Jeff Poulton										
SAR	Feb 28, 2012	4,376					4,376	$105.50		Feb 28, 2015 to Feb 28, 2019
SAR	Feb 28, 2013	2,708					2,708	$95.04		Feb 28, 2015 to Feb 28, 2020
SAR	Feb 28, 2013	5,419					5,419	$95.04		Feb 28, 2016 to Feb 28, 2020
SAR	Feb 28, 2014	635					635	$168.54		Feb 28, 2015 to Feb 28, 2021
SAR	Feb 28, 2014	635					635	$168.54		Feb 28, 2016 to Feb 28, 2021
SAR	Feb 28, 2014	1,273					1273	$168.54		Feb 28, 2017 to Feb 28, 2021
RSU	Feb 28, 2014	669		7		676			$181.32	Feb 28, 2017
PSU[3]	Feb 28, 2014	742		8		750			$181.32	Feb 28, 2017
SAR[3, 5]	Apr 30, 2015	8,862					8,862	$245.48		Apr 30, 2018 to Apr 30, 2022
PSU[3, 5]	Apr 30, 2015	6,646					6,646			Apr 30, 2018
SAR[3, 5]	Feb 26, 2016	13,681					13,681	$161.42		Feb 26, 2019 to Feb 26, 2023
PSU[3, 5]	Feb 26, 2016	10,261					10,261			Feb 26, 2019
RS (EAI)[4]	Mar 11, 2016	560					560			Mar 11, 2019
SAR[3, 5]	Feb 28, 2017		10,709				10,709	$181.63		Feb 28, 2020 to Feb 28, 2024
PSU[3, 5]	Feb 28, 2017		8,032				8,032			Feb 28, 2020
RSU (EAI)[4]	Mar 10, 2017		1,160				1,160			Mar 10, 2020

1 All awards are over ADSs. The number of ADSs for which PSU, RSU and SAR awards are granted is calculated using the average three-day closing mid-market ADS price at the time of grant. The number of ADSs in respect of which a RS award is granted is determined by the acquisition price per ADS at the time of grant. Unless otherwise indicated, all awards are granted under the Shire Long-Term Incentive Plan or its predecessor plan; the Shire Portfolio Share Plan.
2 In accordance with the rules of the respective share plans, the vested PSU, RSU and RS awards have been increased to reflect the dividends paid by Shire in the period from the date of grant to the date of vesting.
3 The maximum SAR and PSU awards are granted and, subject to the achievement of performance conditions, adjusted at the date of vesting. Performance conditions attached to SAR and PSU awards granted in 2013 and 2014 are Non GAAP adjusted ROIC and Non GAAP EBITDA targets within a performance matrix. Performance conditions attached to SAR and PSU awards granted from 2015 onwards are Product Sales and Non GAAP EBITDA targets with a Non GAAP adjusted ROIC underpin. In all cases, awards will only vest if the Committee determines that the underlying performance of the Company is sufficient to justify the vesting of the award.
4 25 percent of any outcome under the EAI is deferred into shares through the grant of Restricted Stock Units or Restricted Shares.
5 A two-year holding period will apply following the three-year vesting period for SAR and PSU awards granted from 2015 onwards.

On October 31, 2017, Dr. Ornskov and Mr. Poulton each exercised an option over 100 notional ADSs granted under the Shire Global Employee Stock Purchase Plan (GESPP) at an exercise price of $123.90 per ADS. On November 1, 2017, Dr. Ornskov was granted an option over notional ADSs pursuant to the GESPP; electing to save $480.76 per fortnight.

Non-Executive Directors' scheme interests

Board member	Security type[1]	Shareholding as at December 31, 2017[2]
Susan Kilsby	ADS	8,285
William Burns	Ord Shares	4,620
Dominic Blakemore	Ord Shares	2,141
Olivier Bohuon	Ord Shares	2,414
Ian Clark	ADS	188
Gail Fosler	ADS	8,083
Steven Gillis	ADS	1,595
David Ginsburg	ADS	1,019
Sara Mathew	ADS	2,817
Anne Minto	Ord Shares	5,876
Albert Stroucken[3]	ADS	20,085

1 One ADS is equal to three Ordinary Shares.
2 No change in Directors' interests has occurred during the period December 31, 2017 to February 16, 2018.
3 Mr. Stroucken's shareholding includes 14,000 ADSs held in a grantor retained annuity trust, in respect of which he is the sole trustee.

d) 2017 single total figure of remuneration for the Chairman and Non-Executive Directors (subject to audit)

	Board fees		Committee fees						
	Basic fee	Additional fees[1]	Audit, Compliance & Risk Committee	Remuneration Committee	Nomination & Governance Committee	Science & Technology Committee	Travel allowance[2]	Total 2017 fees	Total 2016 fees
Susan Kilsby	£450,000						£25,000	**£475,000**	£477,057
William Burns	£98,000	£11,000		£12,500	£8,750	£10,000	£10,000	**£150,250**	£162,672
Dominic Blakemore[3]	£93,000	£8,000	£22,868	£10,962			£10,000	**£144,830**	£143,000
Olivier Bohuon[4]	£93,000	£12,000		£12,500	£7,673	£1,231	£10,000	**£136,404**	£130,413
Ian Clark[5]	£92,642	£10,000		£10,962		£8,769	£15,000	**£137,373**	
Gail Fosler	£93,000	£6,000	£12,500				£20,000	**£131,500**	£71,694
Steven Gillis	£93,000	£10,000	£12,500	£12,500		£10,000	£20,000	**£158,000**	£161,057
David Ginsburg	£93,000	£5,000			£8,750	£20,000	£20,000	**£146,750**	£152,807
Sara Mathew[6]	£93,000	£10,000	£14,633	£1,538	£7,673		£25,000	**£151,845**	£147,000
Anne Minto[7]	£93,000	£12,000		£25,000	£8,750		£10,000	**£148,750**	£157,802
Albert Stroucken[8]	£93,000	£13,000	£12,500	£17,661			£25,000	**£161,161**	£80,734

1 For Board and Committee meetings attended in addition to those scheduled as part of the normal course of business.
2 The Non-Executive Directors receive an additional fee of £5,000 where transatlantic travel is required to attend Board meetings.
3 Dominic Blakemore was appointed to the Remuneration Committee on February 15, 2017. Mr. Blakemore stepped down as Chairman of the Audit, Compliance & Risk Committee on October 27, 2017, though continues to serve as a member of the Committee.
4 Olivier Bohuon was appointed to the Nomination & Governance Committee, and stepped down from the Science & Technology Committee, on February 15, 2017.
5 Ian Clark was appointed to the Board on January 3, 2017, and to the Remuneration Committee and Science & Technology Committee on February 15, 2017.
6 Sara Mathew was appointed to the Nomination & Governance Committee, and stepped down from the Remuneration Committee, on February 15, 2017. Ms. Mathew was appointed Chairman of the Audit, Compliance & Risk Committee on October 27, 2017, having previously served as a member of the Committee.
7 Anne Minto stepped down as Chairman of the Remuneration Committee on August 3, 2017, though continues to serve as a member of the Committee. Given the time commitment required of Ms. Minto to support the shareholder consultation on the new Remuneration Policy and transition to Mr. Stroucken as the new Remuneration Committee Chair, the Board approved to pay Ms. Minto an additional fee at a value equivalent to the Remuneration Committee Chair fee until she steps down as a Director of the Company at the AGM in April 2018.
8 Albert Stroucken was appointed Chairman of the Remuneration Committee on August 3, 2017, having previously served as a member of the Committee.

e) Departure Arrangements for Jeff Poulton (subject to audit)

Mr. Poulton stepped down from Shire's Board of Directors and his role as CFO on December 31, 2017. In line with the Committee's Policy, the Committee considered the overall circumstances of the departure, as well as performance, contractual obligations and plan rules. The Committee's determinations, which were consistent with the Executive Directors' termination policy, are set out below.

Remuneration element	Description
Salary, retirement and other benefits	In accordance with his employment contract and the Company's Directors' Remuneration Policy, Mr. Poulton will receive payments of salary, pension and benefits in lieu of his notice period (i.e. the period from January 1, 2018 to August 20, 2018) with a value of $494,997. The payments will be reduced by the value of his salary and pension benefits from his new employment during his notice period following his departure from Shire and the first payments will be delayed by six months to comply with U.S. tax regulations. The first payment will therefore not be made until the first payroll date in July 2018. Mr. Poulton will continue to be eligible to participate in the Company's medical and dental benefit plans for the remainder of his notice period following his departure with Shire. To the extent that he becomes entitled to health coverage from his new employment, this benefit will cease immediately.
EAI	Deferred shares granted under the EAI, will continue to vest at the normal date being the end of the respective three-year holding periods (further details are set out in the table below).

Date of grant	Number of ADSs	Release date
March 11, 2016	560	March 11, 2019
March 10, 2017	1,160	March 10, 2020

Mr. Poulton received an EAI award for the 2017 performance year, which was determined based on actual performance achieved against the 2017 Corporate Scorecard of 123 percent. 75 percent of this award will be paid in cash in March 2018 in line with the Directors' Remuneration Policy and 25 percent will be granted in Restricted Stock Units (to be released in March 2021). This award will be subject to malus and clawback provisions.

Mr. Poulton will not participate in the EAI for the 2018 performance year.

LTIP	All outstanding equity awards granted under the Company's LTIP lapsed in full upon termination (i.e. those granted in 2015, 2016 and 2017). Vested SAR awards, in accordance with the terms of the legacy Portfolio Share Plan (PSP), remain exercisable for a period of 12 months after the departure date, and if not exercised will lapse. Mr. Poulton will not be granted an LTIP award in 2018 or any subsequent year.

f) Payments to past Directors (subject to audit)

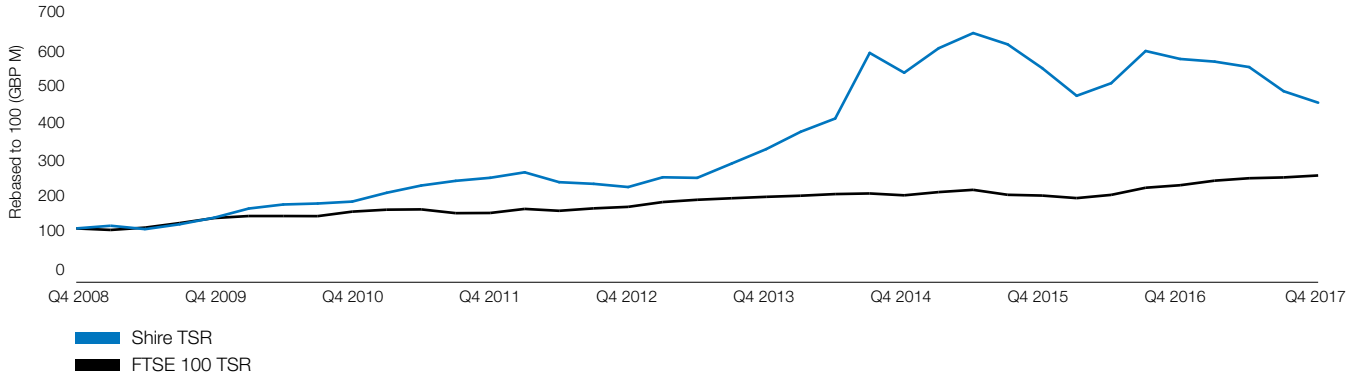
No payments (other than those made to Mr. Poulton set out above) have been made to past Directors for the relevant financial year.

g) Non-audited disclosures

TSR performance graph and CEO pay

The graph below shows the TSR for Shire and the FTSE 100 Index over a nine-year period. TSR is calculated as the change (indexed) between the fourth quarter TSR (average for the period) in the relevant year and the base year. The FTSE 100 Index reflects the 100 largest quoted companies by market capitalization in the UK and has been chosen because the FTSE 100 represents the broad market Index within which the Company's shares are traded. The graph illustrates the change in value of a hypothetical £100 holding over nine years commencing December 31, 2008 and ending December 31, 2017.

Total Shareholder Return — change in value of a hypothetical £100 holding over nine years



	2009	2010	2011	2012	2013	2014	2015	2016	2017
	Mr. Russell					Dr. Ornskov[2]			
Short-term incentive (percentage of maximum)	70%	65%	50%	48%	26%	81%	100%	100%	88%	**62%**
Long-term incentive[1] (percentage of maximum)	84%	88%	100%	100%	50%	–	–	100%	100%	**38%**
Total remuneration ($'000)	$4,781	$9,634	$17,506	$13,430	$5,759	$3,402	$4,137	$16,939	$10,571	**$5,261**

1 Long-term incentive figures relate to any awards that vest shortly after the end of the relevant financial year.
2 Dr. Ornskov did not have any long-term incentive awards vest until 2015.

Percentage change in CEO remuneration

The following table shows the percentage change in the base salary, taxable benefits and annual bonus of the CEO between the current and previous financial year compared to the average percentage change for all other employees.

	Percentage change between 2016 to 2017		
	Salary and fees	Taxable benefits	Short-term incentives[1]
CEO[2]	0%	-88%	-30%
All other employees[3]	7%	8%	6%

1 Due to timing of the 2017 year end process, the actual short-term incentive figures for all other employees had not been finalized by the date of this report. Therefore, the 2017 short-term incentive figures represent target figures multiplied by the 2017 Corporate Bonus Modifier score approved by the Committee in early February, which represents the Company's best estimate of actual bonus outcomes.
2 Reflects the 2016 and 2017 remuneration for Dr. Ornskov as reported in the single total figure of remuneration table in Part 2(b).
3 Reflects the average change in remuneration for all other legacy Shire employees that were eligible for annual bonuses under Shire's corporate bonus plan. To help minimize distortions in the underlying data, certain adjustments have been made. In particular, the figures have been prepared on the basis of permanent employees who have been employed with the Company for the two preceding calendar years to provide for a consistent employee comparator group (the figures therefore exclude legacy Baxalta employees). This approach is consistent with the disclosure presented in the 2016 Annual Report on Remuneration.

- The above disclosure shows a significant decrease in the CEO's taxable benefits of 88 percent from 2016 to 2017. This is due to the specific support that was provided to the CEO in 2016 to relocate his family from Switzerland to Boston. The benefit provision for 2016 is not typical and it is not intended that such support will be provided in future years.
- In addition, there has been a 30% decrease in short-term incentives for the CEO from 2016 to 2017 as a result of the Committee determining that the CEO's 2017 short-term incentive outcome should be aligned with overall corporate funding of the Company's bonus pool. As such, the CEO's 2017 award is equal to the corporate funding of 123 percent of target (versus 175 percent of target in 2016).

Relative importance of spend on pay

	2017	2016	Percentage change
Overall spend on pay[1] ($ million)	**1,208.00**	1,143.50	6%
Non GAAP EBITDA (from continuing operations) ($ billion)	**6.5**	4.7	38%
Shareholder dividends ($ million)	**281.3**	171.3	64%

1 Overall spend on pay figures are based on legacy Shire results for comparison purposes as 2016 data for legacy Baxalta is not readily available.

- Overall spend on pay increased by 6 percent in 2017 versus the prior year.
- Non GAAP EBITDA increased by 38 percent in 2017 mainly driven by the inclusion of 12 months of financial data for legacy Baxalta versus only 7 months in the prior year.
- Shareholder dividends increased by 64 percent in 2017 primarily due to the significantly increased number of shares in issue following the acquisition of Baxalta.

Remuneration Committee

Terms of reference

The Committee is responsible for establishing and monitoring the broad remuneration policy for the organization and the individual packages for the Chairman, Executive Directors and certain other senior leadership roles. Within the agreed policy, the Committee determines the terms and conditions to be included in service agreements, including termination payments and compensation commitments, where applicable. The Committee also determines performance targets applicable to the Company's annual bonus and long-term incentive plans, and has oversight of the Company's share incentive schemes. The Committee's terms of reference were reviewed in February 2017 and are available in full on the Company's website www.shire.com. Other information included on or accessible through our website does not constitute a part of this report and the reference to our website does not constitute incorporation by reference of such information, and should not be relied upon.

Remuneration Committee activities in 2017

In 2017, the Committee discussed the key agenda items set out in the following table.

Overall remuneration	Approved 2016 performance and remuneration decisions for the CEO, the CFO and the Executive Committee
	Reviewed market trends for the Chairman, CEO, CFO and Non-Executive Director remuneration
	Reviewed 2017 year-end compensation process and budgets for all employees
	Reviewed preliminary 2017 year-end performance and remuneration decisions for the CEO, CFO and the Executive Committee
	Reviewed proposed changes to Directors' Remuneration Policy and incentive designs
Short-term incentives	Assessed Company performance against the 2016 Corporate Scorecard and the resulting funding
	Approved 2017 Corporate Scorecard
	Reviewed proposed 2018 Corporate Scorecard
Long-term incentives	Approved 2017 performance measures for 2017 LTIP awards
	Approved annual offerings of Sharesave and GESPP awards
	Reviewed performance against outstanding LTIP performance cycles and consideration of potential SAEs
Governance	Approved 2017 DRR
	Received regular updates on legislative, regulatory and corporate governance changes
	Considered trends in executive remuneration and corporate governance developments
	Reviewed CEO, CFO and Executive Committee's shareholdings
	Reviewed Committee's effectiveness
	Reviewed Company's UK Gender Pay Gap disclosure
Shareholder consultation	Reviewed letter to shareholders in advance of the 2017 AGM
	Consulted with shareholders in advance of the 2017 AGM
	Approved approach to shareholder consultation exercise regarding Remuneration Policy renewal
	Sent letter to shareholders setting out proposed changes to Remuneration Policy
	Held initial consultations with shareholders on proposed changes to Remuneration Policy
	Reviewed feedback received from shareholder consultation exercise
	Conducted additional consultations with shareholders on proposed Remuneration Policy

Statement of shareholder voting

The table below shows how shareholders voted related to the advisory vote on the Remuneration Report at the AGM held on April 25, 2017 and to the binding vote on the Remuneration Policy at the April 28, 2015 AGM.

	For (including discretionary votes)	Percent	Against	Percent	Votes cast as a % of relevant shares in issue	Withheld[1]
Advisory vote (April 25, 2017)						
To approve the Directors' Remuneration Report	615,163,095	93.22	44,723,057	6.78	72.75	7,521,281
Binding vote (April 28, 2015)						
To approve the Directors' Remuneration Policy	414,168,513	93.99	26,500,604	6.01	74.49	3,027,344

1 Votes withheld are not a vote in law and are not counted in the calculation of the proportion of votes validly cast.

Advisers

In discharging its responsibilities in 2017, the Committee was assisted by Shire's Chief Human Resources Officer and Group Vice President, Total Rewards. In addition, PricewaterhouseCoopers LLP (PwC), appointed by the Committee, continued to serve as independent external adviser to the Committee. PwC also provided global consultancy services to the Company in 2017, primarily relating to tax matters. Fees paid to PwC for services provided to the Committee totaled £355,936 in 2017.

The Committee is satisfied that the advice received by PwC related to executive remuneration matters was independent. The Committee assessed the potential for conflicts of interest and concluded that there were appropriate safeguards. PwC is a member of the Remuneration Consultants' Group, which operates in accordance with a code of conduct related to executive remuneration consulting in the UK.

Approval

Approved by the Board of Directors and signed on its behalf by:

Albert Stroucken
Chairman of the Remuneration Committee
February 16, 2018

Additional governance information

Directors

Appointment and replacement

Directors may be appointed by the Company by ordinary resolution or by the Board, which may appoint any individual either to fill a vacancy or as an additional member of the Board, subject to subsequent election and annual re-election by the Company's shareholders. Non-Executive Directors are typically appointed for a term of two years. Re-appointment of Non-Executive Directors following the expiration of their term of appointment is subject to Board approval. The Board may appoint Directors for such period and on such terms as it may determine and may also revoke or terminate any such appointment.

The Company's Articles of Association (the "Articles") provide that at each Annual General Meeting (AGM) all those Directors who have been appointed by the Board since the last AGM, or who held office at the time of the two preceding AGMs and who did not retire at either of them, or who held office with the Company, other than executive office, for a continuous period of nine years or more at the date of the meeting, shall retire from office and may offer themselves for re-election by the members. Notwithstanding the provisions in the Articles, in accordance with the UK Corporate Governance Code, all Directors will be subject to annual re-election.

Powers

Subject to the provisions of the Companies (Jersey) Law 1991, as amended (the "Companies Act"), the Articles and directions given by the Company in general meeting by special resolution, the business of the Company is managed by the Board which may exercise all the powers of the Company whether relating to the management of the business of the Company or not. In particular, the Board may exercise all the powers of the Company to borrow money and to mortgage or charge all or any part of the undertaking, property and assets (present and future) and uncalled capital of the Company and, subject to the Companies Act, to issue debentures and other securities, whether outright or as collateral security, for a debt, liability or obligation of the Company or of a third-party.

Liability insurance and indemnification

In the year under review, the Group maintained an insurance policy for its Directors and Officers in respect of liabilities arising out of any act, error or omission whilst acting in their capacity as Directors or Officers. Qualifying third-party indemnity provisions were also in place during the year under review for the benefit of Directors in relation to certain losses and liabilities that they may potentially incur to third parties in the course of their duties. These remain in force at the date of this report.

Interests in material contracts

Other than the insurance and indemnity provisions disclosed under "Liability insurance and indemnification" above, and Dr. Ginsburg's stated interest below, none of the Directors had a material interest in any contract of significance to which the Company or any of its subsidiary undertakings was a party during the period under review.

David Ginsburg — royalty payments relating to co-invention of patents / merger agreement with Baxalta

Dr. Ginsburg, a Non-Executive Director of the Company, is the co-inventor of two patents: (i) no. US8597910 (relating to the von Willebrand Factor); and (ii) no. US8394373 (relating to ADAMTS13). As such, he is entitled to receive royalties for the use of those patents. Dr. Ginsburg assigned the von Willebrand Factor patent to the Boston Children's Hospital and the ADAMTS13 patent to the University of Michigan. These assignments are subject to ordinary course commercial terms. The assignee institutions on-licensed the patents to a subsidiary of Baxalta, prior to its acquisition by the Company, which in return paid royalties to both institutions. The institutions paid a proportion of those royalties to, among others, Dr. Ginsburg. Following Shire's acquisition of Baxalta, a subsidiary of the Company is now the originator of the royalty payments received by Dr. Ginsburg. Moreover, as a result of receiving the royalty payments, Dr. Ginsburg was considered to be interested in the merger agreement pursuant to which Shire acquired Baxalta on June 3, 2016. This interest was disclosed to shareholders prior to completion of the transaction.

Dividends

Subject to the provisions of the Companies Act, the Company may by ordinary resolution, from time to time, declare dividends not exceeding the amount recommended by the Board. Subject to the Companies Act, the Board may pay interim dividends, and also any fixed rate dividend, whenever the financial position of the Company, in the opinion of the Board, justifies its payment.

The Board may withhold payment of all or any part of any dividends or other monies payable in respect of the shares from a person with a 0.25 percent interest (as defined in the Articles) if such person has been served with a restriction notice (as defined in the Articles) after failure to provide the Company with information concerning interests in those shares required to be provided under the Articles.

Shire has put in place income access share arrangements that enable shareholders to elect to receive their dividends from a Group company resident for tax purposes in the UK. Further information is available in Note 26 to the consolidated financial statements.

In respect of the six months to December 31, 2017, the Board resolved to pay an interim dividend of 29.79 U.S. cents (2016: 25.70 U.S. cents) per Ordinary Share. Together with the first interim dividend payment of 5.09 U.S. cents (2016: 4.63 U.S. cents) per Ordinary Share, this represents total dividends of 34.88 U.S. cents (2016: 30.33 U.S. cents) per Ordinary Share for the year ended December 31, 2017.

ACS HR Solutions Share Plan Services (Guernsey) Limited (the "Trustee"), trustee of the Shire Employee Benefit Trust (the "Trust"), has waived its entitlement to any dividends that become due and payable, from time to time, in respect of shares or other securities which are registered in the name of the trustee or its nominee(s). Total dividends waived by the Trustee during the year amounted to £253,888.31.

Shares

Share capital

As at the year ended December 31, 2017, the Company's issued share capital comprised 917,140,094 Ordinary Shares of 5 pence each of which 7,357,283 Ordinary Shares were held in treasury.

Rights and obligations attaching to shares

The rights and obligations attaching to the Ordinary Shares are set out in the Articles, which are available on the Company's website: www.shire.com. The Articles may only be amended by special resolution of the members of the Company.

Variation of rights

Subject to the Companies Act, rights attached to any class of shares may be varied with written consent of the holders of not less than two-thirds in nominal value of the issued shares of that class (calculated excluding any shares held in treasury) or with the sanction of a special resolution passed at a separate meeting of the holders of those shares. At each such separate general meeting, except an adjourned meeting, the quorum shall be two persons holding or representing by proxy not less than one-third in nominal value of the issued shares of that class (calculated excluding any shares held in treasury).

Issuance of shares

Subject to applicable statutes and subject to and without prejudice to any rights attached to existing shares, shares may be issued with such rights and restrictions as the Company may by special resolution decide or, if no such resolution has been passed or so far as the resolution does not make specific provision, as the Board may decide. Subject to the Articles, the Companies Act and other shareholders' rights, unissued shares are at the disposal of the Board.

Restrictions on transfer of shares

There are no restrictions on the transfer of shares in the Company, except (i) that certain restrictions may, from time to time, be imposed by laws and regulations (for example insider trading laws); and (ii) pursuant to the Listing Rules of the UK Financial Conduct Authority whereby certain Directors and employees of the Company require the approval of the Company to deal in the Company's Ordinary Shares.

Voting

It is the Company's practice to hold a poll on every resolution at general meetings. Every member present in person or by proxy has, upon a poll, one vote for every share held by him. In the case of joint holders of a share the vote of the senior who tenders a vote, whether in person or by proxy, shall be accepted to the exclusion of the votes of the other joint holders and, for this purpose, seniority shall be determined by the order in which the names stand in the register of members in respect of the joint holding.

Restrictions on voting

No member shall, unless the Board otherwise decides, be entitled to attend or vote at any general or class meeting in respect of any shares held if any call or other sum payable by that member remains unpaid. Also, a member may not be entitled to attend or vote if served with a restriction notice (as defined in the Articles).

The Company is not aware of any agreements between holders of securities that may result in restrictions on voting rights.

The Company maintains an American Depositary Receipt (ADR) program in the U.S. Each American Depositary Share (ADS) represents three Ordinary Shares. An ADS is evidenced by an ADR issued by Citibank, N.A. as Depositary, and is listed on the NASDAQ Global Select Market. Each ADS holder is entitled to the financial rights attached to such shares although the ADR Depositary is the registered holder of the underlying Ordinary Shares.

As at December 31, 2017, the Trust held 0.11 percent of the issued share capital of the Company (excluding treasury shares) on trust for the benefit of participants in the Company's employee share plans. The voting rights in relation to these shares are exercised by the Trustee. The Trustee may vote or abstain from voting in any way it thinks fit and in doing so may take into account both financial and non-financial interests of the beneficiaries of the Trust or their dependents. Historically the Trustee has not exercised its right to vote.

Purchase of own shares

At its AGM held on April 25, 2017, the Company was authorized, until the earlier of July 24, 2018, or the conclusion of the 2018 AGM, to make market purchases of up to 90,625,090 of its own Ordinary Shares. Further details regarding purchases by the Company of its own shares can be found in Note 26 to the consolidated financial statements.

Substantial shareholdings

As at the year ended December 31, 2017, the Company had been notified of the following interests in its issued Ordinary Share capital pursuant to DTR 5 of the Disclosure Guidance and Transparency Rules:

	Number of Ordinary Shares	Percentage of issued share capital[1]
BlackRock, Inc.[2]	71,248,018	7.92%

1 Excluding treasury shares
2 On January 29, 2018, BlackRock, Inc. submitted a Schedule 13G filing confirming its beneficial ownership, as of December 31, 2017, of 71,984,405 Ordinary Shares.

No further interests have been disclosed to the Company as at the date of this Annual Report.

Change of control / takeover and contracts

As set out in the Directors' Remuneration Policy on page 93, it is the Company's policy that contracts of employment should not provide additional compensation or severance as a result of a takeover. However, provisions of the Company's share plans may cause unvested awards to vest in the event of a takeover.

The following significant agreements contain provisions entitling counterparties to exercise the following rights in the event of a change of control of the Company:

- Under the $2,100 million credit facility agreement dated December 12, 2014, between, amongst others, the Company and a number of its subsidiaries, Barclays Bank PLC (as the facility agent) and the banks and financial institutions named therein as lenders, upon a change of control any lender may, following not less than 30 days' notice, cancel its commitments and require prepayment of its participation in any outstanding loans. For these purposes, a change of control occurs if any person or group of persons acting in concert gains the ability to control more than half the votes at a general meeting of the Company or holds more than half the equity share capital of the Company. A waiver of the mandatory prepayment provision would require the consent of each lender under the agreement. As at February 16, 2018, an amount of $60 million was outstanding under the agreement.
- Under the $5,600 million term facilities agreement dated November 2, 2015, between, amongst others, the Company, Morgan Stanley Bank International Limited and Deutsche Bank AG, London Branch (acting as mandated lead arrangers and bookrunners), upon a change of control any lender may, following not less than 30 days' notice, cancel its commitments and require prepayment of its participation in any outstanding loans. For these purposes, a change of control occurs if any person or group of persons acting in concert gains the ability to control more than half the votes at a general meeting of the Company or holds more than half the equity share capital of the Company. A waiver of the mandatory prepayment provision would require the consent of each lender under the agreement. As at February 16, 2018, an amount of $1,200 million was outstanding under the agreement.
- The $5,000 million Baxalta Inc. notes are senior unsecured obligations and, with the exception of the $375 million Floating Rate Notes due 2018, may be redeemed at Baxalta Inc.'s option at the greater of (i) 100 percent of the principal amount plus accrued and unpaid interest or (ii) the sum of the present values of the remaining scheduled payments of interest and principal discounted to the date of redemption on a semi-annual basis at the applicable treasury rate (as defined) plus an incremental margin, plus, in either case, accrued and unpaid interest. The Baxalta Inc. notes also contain a change of control provision that may require that Baxalta Inc. offer to purchase the Baxalta Inc. notes at a price equal to 101 percent of the principal amount plus accrued and unpaid interest to the date of purchase under certain circumstances.
- On September 23, 2016, Shire Acquisitions Investments Ireland Designated Activity Company (SAIIDAC), issued senior notes with a total aggregate principal value of $12,100 million (SAIIDAC Notes), guaranteed by Shire plc and, as of December 1, 2016, by Baxalta. SAIIDAC used the net proceeds to fully repay amounts outstanding under the January 2016 Facilities Agreement which was used to finance the cash consideration payable related to the Company's acquisition of Baxalta. The SAIIDAC Notes are senior unsecured obligations and may be redeemed at SAIIDAC's option at the greater of (i) 100 percent of the principal amount plus accrued and unpaid interest or (ii) the sum of the present values of the remaining scheduled payments of interest and principal discounted to the date of redemption on a semi-annual basis at the applicable treasury rate (as defined) plus an incremental margin, plus, in either case, accrued and unpaid interest. The SAIIDAC Notes also contain a change of control provision that may require that SAIIDAC offer to purchase the SAIIDAC Notes at a price equal to 101 percent of the principal amount plus accrued and unpaid interest to the date of purchase under certain circumstances.

Earnings guidance

The following extracts were published by the Company during the year in its quarterly earnings releases:

- February 16, 2017 — The Non GAAP diluted earnings per ADS forecast assumes a weighted average number of 914 million fully diluted ordinary shares outstanding for 2017.

  Our U.S. GAAP diluted earnings per ADS outlook reflects anticipated amortization, integration and reorganization costs.

Full year 2017	U.S. GAAP Outlook	Non GAAP[1] Outlook
Diluted earnings per ADS	$6.95 — $7.55	$14.60 — $15.20

- May 2, 2017 — The Non GAAP diluted earnings per ADS forecast assumes a weighted average number of 914 million fully diluted ordinary shares outstanding for 2017.

  Our U.S. GAAP diluted earnings per ADS outlook reflects anticipated amortization, integration and reorganization costs.

Full year 2017	U.S. GAAP Outlook	Non GAAP[1] Outlook
Diluted earnings per ADS	$6.95 — $7.55	$14.60 — $15.20

- August 3, 2017 — Non GAAP EPS has been upgraded by raising the midpoint of our guidance range by 10 cents to $15.00, driven by cost discipline and accelerated synergy capture.

  The diluted earnings per ADS forecast assumes a weighted average number of 914 million fully diluted ordinary shares outstanding for 2017.

  Our U.S. GAAP diluted earnings per ADS outlook has been updated to reflect ongoing integration activities, which has accelerated the recognition of synergies, and the change in fair value of contingent consideration for SHP643 (lanadelumab) resulting from the positive topline Phase 3 results.

Full year 2017	U.S. GAAP Outlook	Non GAAP[1] Outlook
Diluted earnings per ADS	$5.65 — $6.05	$14.80 — $15.20

- October 27, 2017 — We are reiterating our guidance from Q2 2017.

  The diluted earnings per ADS forecast assumes a weighted average number of 914 million fully diluted ordinary shares outstanding for 2017.

Full year 2017	U.S. GAAP Outlook	Non GAAP[1] Outlook
Diluted earnings per ADS	$5.65 — $6.05	$14.80 — $15.20

The realized earnings in respect of the 2017 financial year were:

Full year 2017	U.S. GAAP	Non GAAP[1]
Diluted earnings per ADS	$14.05	$15.15
Growth against 2016 financial year	1,006%	16%

The U.S. GAAP diluted earnings per ADS was $8.00 or 132 percent higher than the most recently published guidance, with the variance primarily due to an unforecasted net credit to income taxes due to U.S. tax reform. The Non GAAP[1] diluted earnings per ADS was in line with the most recently published guidance. Further commentary on the performance of the Company during the year can be found starting on page 44.

1 For a reconciliation of Non GAAP financial measures to the most directly comparable measure under U.S. GAAP, see pages 179 to 183.

Post year-end events

The following important events affecting the Company or its subsidiaries occurred between December 31, 2017, and the date of this report:

Neuroscience strategic review

On January 8, 2018, Shire announced that the first stage of its strategic review of its neuroscience business was completed. The Board concluded that the neuroscience business warrants additional focus and investment and that there is a strong business rationale for creating two distinct business segments within Shire: a Rare Disease segment and a Neuroscience segment. The Company expects to report the operational performance metrics of each segment separately beginning with the first quarter of 2018.

AB Biosciences Inc licensing agreement

On January 25, 2018, Shire entered into a licensing agreement with AB Biosciences Inc (AB Biosciences). The license grants Shire exclusive worldwide rights to develop and commercialize a recombinant immunoglobulin product candidate. Under the terms of the agreement, AB Biosciences will grant Shire an exclusive, worldwide license to its intellectual property relating to its pan receptor interacting molecule program. AB Biosciences will receive an upfront license fee payment and is eligible to receive contingent research, development, and commercialization milestone as well as royalty payments.

Political donations

During the year ended December 31, 2017, Shire made political donations equal to an aggregate amount of $35,000 (2016: $34,250). These donations were made to the supporting associations of various political state candidates within the U.S. who had demonstrated support for improving patient access to medicines and other medical treatments. The donations were made pursuant to commitments and arrangements already in place at Baxalta prior to its acquisition by Shire. In accordance with Shire's policy concerning political donations and expenditure, it is anticipated that no further political donations will be made.

Capitalized interest

During the year ended December 31, 2017, the amount of interest capitalized by the Company amounted to $76.4m.

Branches

Details of branches of group subsidiaries can be found in Note 30 to the consolidated financial statements.

Information required under 9.8.4 R of the Listing Rules (LR)

Information Requirement	Location within Annual Report 2017
Details of information required by LR 9.2.18 R	Pages 111-112
Details of interest capitalized by the Company	Page 112
Details of any contract of significance in which a Director is, or was, materially interested	Page 109
Details of any arrangement under which a shareholder has waived, or agreed to waive, any dividends	Page 109
Where a shareholder has agreed to waive future dividends, details of such waiver together with those relating to dividends which are payable during the period under review	Page 109

Other information requirements set out in LR 9.8.4 R are not applicable to the Company.

Directors' responsibilities statements

The Directors are responsible for preparing the Annual Report and the financial statements in accordance with applicable law and regulations.

Company law requires the Directors to prepare financial statements for each financial year. Under that law the Directors are required to prepare the Group financial statements in accordance with accounting principles generally accepted in the United States of America. Under company law the Directors must not approve the accounts unless they are satisfied that they give a true and fair view of the state of affairs of the Group and of the profit or loss of the Group for that period.

In preparing the Group financial statements, the Directors are required to:

- properly select and apply accounting policies
- present information, including accounting policies, in a manner that provides relevant, reliable, comparable and understandable information
- provide additional disclosures when compliance with the specific requirements within accounting principles generally accepted in the United States of America are insufficient to enable users to understand the impact of particular transactions, other events and conditions on the Company's financial position and financial performance
- make an assessment of the Group's ability to continue as a going concern

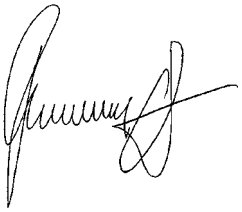
The Directors are responsible for keeping proper accounting records that are sufficient to show and explain the Group's transactions and disclose with reasonable accuracy at any time the financial position of the Group and enable them to ensure that the financial statements comply with the Companies (Jersey) Law 1991. They are also responsible for safeguarding the assets of the Group and hence for taking reasonable steps for the prevention and detection of fraud and other irregularities.

Responsibilities statements

Each of the Directors confirms that to the best of their knowledge:

- the financial statements, prepared in accordance with the accounting principles generally accepted in the United States of America, give a true and fair view of the assets, liabilities, financial position and profit or loss of the Group and the undertakings included in the consolidation taken as a whole
- the Strategic Report includes a fair review of the development and performance of the business and the position of the Group and the undertakings included in the consolidation taken as a whole, together with a description of the principal risks and uncertainties that they face
- the Annual Report and financial statements, taken as a whole, are fair, balanced and understandable and provide the information necessary for shareholders to assess the Group's performance, business model and strategy
- there is no relevant audit information of which the Company's auditor is unaware
- they have taken all the steps that they ought to have taken as Directors in order to make themselves aware of any relevant audit information and to establish that the Company's auditor is aware of that information

The Responsibilities Statements and the Directors' Report, which comprises pages 2 to 113 and pages 184 to 198 of this Annual Report, were approved by the Board of Directors and signed on its behalf by:



Flemming Ornskov, MD, MPH
Chief Executive Officer
February 16, 2018

Independent auditor's report to the members of Shire plc

Report on the audit of the financial statements

Opinion

In our opinion the consolidated financial statements of Shire plc (the "Company") and subsidiaries (together the "Group"):

- **give a true and fair view of the state of the Group's affairs as at December 31, 2017 and of the Group's profit for the year then ended;**
- **have been properly prepared in accordance with accounting principles generally accepted in the United States of America; and**
- **have been properly prepared in accordance with the requirements of the Companies (Jersey) Law 1991.**

The financial statements that we have audited comprise:

- the consolidated balance sheet;
- the consolidated statement of operations;
- the consolidated statement of comprehensive income;
- the consolidated statement of changes in equity;
- the consolidated statement of cash flows; and
- the related notes 1 to 30.

The financial reporting framework that has been applied in the preparation of the Group financial statements is applicable law and accounting principles generally accepted in the United States of America.

Basis for opinion

We conducted our audit in accordance with International Standards on Auditing (UK) (ISAs (UK)) and applicable law. Our responsibilities under those standards are further described in the auditor's responsibilities for the audit of the financial statements section of our report.

We are independent of the Group and the Company in accordance with the ethical requirements that are relevant to our audit of the financial statements in the UK, including the Financial Reporting Council's (FRC) Ethical Standard as applied to listed public interest entities, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We confirm that the non-audit services prohibited by the FRC's Ethical Standard were not provided to the Group or the Company.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Summary of our audit approach

Key audit matters	The key audit matters that we identified in the current year were: • The valuation of the CINRYZE intangible asset, specifically considering the potential impairment indicator associated with the new market entrants; • Management's estimation of rebates against revenue as a result of contractual and regulatory requirements for certain products in the United States; and • The pervasive risk associated with the large levels of change at Shire. Within this report, any new key audit matters are identified with ^ and any key audit matters which are the same as the prior year identified with ›.
Materiality	The materiality that we used in the current year was $250 million which was determined following the consideration of a number different benchmarks including normalised profit before tax.
Scoping	Our Group audit scope focused primarily on the U.S., European manufacturing sites, key European operating entities within the UK, Ireland, France, Germany and Italy, European royalty and research focused entities as well as key UK, U.S., Swiss and Jersey head office entities.
Significant changes in our approach	As a consequence of the acquisition of Baxalta in the prior year, and the resulting increase in revenues, the materiality has increased significantly in the current year and new components have been included in our audit scope for the first time. The key audit matters included in our audit report reflect the nature of the Group post acquisition, with two new reported key audit matters being the CINRYZE impairment risk and a pervasive risk of change identified in the current year. The key audit matter associated with gross-to-net revenue in the U.S. is consistent with that of the prior year and continues to be pertinent to the overall audit. Two key audit matters in the prior year related to Shire's acquisitions of Baxalta and Dyax. No such significant business combinations have occurred this year and accordingly they are not key audit matters in 2017.

Conclusions relating to going concern, principal risks and viability statement

Going concern

We have reviewed the directors' statement contained within the Corporate Governance Report on page 60 about whether they considered it appropriate to adopt the going concern basis of accounting in preparing them and their identification of any material uncertainties to the Group's ability to continue to do so over a period of at least twelve months from the date of approval of the financial statements.

We are required to state whether we have anything material to add or draw attention to in relation to that statement required by Listing Rule 9.8.6R(3) and report if the statement is materially inconsistent with our knowledge obtained in the audit.

We confirm that we have nothing material to report, add or draw attention to in respect of these matters.

Principal risks and viability statement

Based solely on reading the directors' statements and considering whether they were consistent with the knowledge we obtained in the course of the audit, including the knowledge obtained in the evaluation of the directors' assessment of the Group's ability to continue as a going concern, we are required to state whether we have anything material to add or draw attention to in relation to:

- the disclosures on pages 18 to 21 that describe the principal risks and explain how they are being managed or mitigated;
- the directors' confirmation on page 113 that they have carried out a robust assessment of the principal risks facing the Group, including those that would threaten its business model, future performance, solvency or liquidity; or
- the directors' explanation on page 69 as to how they have assessed the prospects of the Group, over what period they have done so and why they consider that period to be appropriate, and their statement as to whether they have a reasonable expectation that the Group will be able to continue in operation and meet its liabilities as they fall due over the period of their assessment, including any related disclosures drawing attention to any necessary qualifications or assumptions.

We are also required to report whether the directors' statement relating to the prospects of the Group required by Listing Rule 9.8.6R (3) is materially inconsistent with our knowledge obtained in the audit.

We confirm that we have nothing material to report, add or draw attention to in respect of these matters.

Key audit matters

Key audit matters are those matters that, in our professional judgment, were of most significance in our audit of the financial statements of the current period and include the most significant assessed risks of material misstatement (whether or not due to fraud) that we identified. These matters included those which had the greatest effect on the overall audit strategy, the allocation of resources in the audit and directing the efforts of the engagement team.

These matters were addressed in the context of our audit of the financial statements as a whole, and in forming our opinion thereon, and we do not provide a separate opinion on these matters.

Key audit matter description	How the scope of our audit responded to the key audit matter	Key observations
CINRYZE impairment indicator ▲		
A description of the significant accounting policy for impairment of intangible assets is included at Note 2 and the Group's critical accounting estimate for valuation of intangible assets, including IPR&D, is included at Note 3. Management identified an impairment trigger in Q2 2017 with respect to the CINRYZE intangible asset following the positive trial results related to Shire's own subcutaneous HAE product and the approval of HAEGARDA (a product launched by CSL Behring LLC), which are expected to impact CINRYZE's future market share and forecast cash flows. We identified a risk that forecasted cash flows associated with the asset may result in an unrecorded impairment. In particular, that inappropriate market share assumptions may result in a required impairment not being recorded. We consider the risk around market share changes to be a key audit matter due to the size of the CINRYZE intangible asset balance (December 31, 2017 net carrying value of $1.6bn), the headroom included in management's calculations and the subjectivity of judgments required when performing the impairment analysis. The Audit, Compliance & Risk Committee's (the "ACR Committee") consideration of this key audit matter is included on page 71.	In order to assess the valuation of the CINRYZE intangible asset, we have performed the following specific procedures: • Independently assessing the design and implementation, and testing the operating effectiveness, of the Group's relevant financial controls; • Obtaining and assessing third party data (such as market analyst reports) and other available evidence and using it to challenge management's judgments; • Assessing management's historical forecasting accuracy; and • Assessing the market experts engaged by management, including their expertise and competence, and challenging them in respect of management's assumed market share.	We found management's estimates and judgments to be reasonable and balanced. We did not identify an unrecorded impairment in respect of CINRYZE and found management's disclosures of the impairment indicators to be proportionate.

Key audit matter description	How the scope of our audit responded to the key audit matter	Key observations
The estimation of rebates against revenue as a result of contractual and regulatory requirements in the United States		
A description of the key accounting policy for sales deductions is included at Note 3 and the Group's critical accounting policy and estimate in relation to the level of rebates and other sales deductions is set out at Note 3. The directors are required to make certain judgments in respect of the level of rebates and other sales deductions that will be realised against the Group's sales. The largest of these judgments relate to rebates for Medicaid and Managed Care programs, for which the Group held accrued rebates as at December 31, 2017 of $1,613 million (2016: $1,431 million) in aggregate. Due to the nature of the Group's products the risk is primarily focused on the Neuroscience operations in the USA. The key elements of the judgments relating to Medicaid and Managed Care rebates include: • The proportion of the inventory pipeline that will attract specific rebates; and • The future value of rebate per unit expected to be applicable. We identified a risk that these judgments are not appropriate and, as a result, rebate liabilities and sales deductions are recorded at an incorrect level. There is a significant track record of actual rebate levels which informs our assessment of the level of risk of material misstatement. Nevertheless due to the manual nature and extent of the accounting process in this area it forms a significant part of our audit effort and requires a notable level of resource within the audit engagement and is thus a key audit matter. The ACR Committee's consideration of this key audit matter is included on page 71.	We have considered the Group's processes for making judgments in this area and performed the following procedures: • Assessed the appropriateness of the process, including tests of the design, implementation and operating effectiveness of controls adopted by management in determining the accounting for rebates and other sales deductions; • Challenged the information used by management in estimating gross to net accruals by vouching to external source data (such as wholesaler inventory levels and market demand surveys); • Conducted trend analysis and used this to challenge whether management's assumptions were appropriate; and • Recomputed key calculations within management's estimates. We also evaluated the presentation and disclosure of the transactions within the Group's financial statements.	Shire has a well established process for determining gross to net adjustments in the U.S. and have largely integrated the legacy Baxalta processes into it. Management monitor their historical accuracy with the largest variance in the last 12 quarters being $12.6 million. Management utilised a range of data to determine the key assumptions associated with the calculation including data from 3rd party partners, market survey information as well as historical results. Based on the procedures performed we found these assumptions to be balanced. We concluded that the accrual value has been appropriately recorded.

Key audit matter description	How the scope of our audit responded to the key audit matter	Key observations
Pervasive risk of change ▲		
Shire has undergone a significant period of organisational change driven in particular by the integration of the Baxalta business. Some of the key changes include: • Establishing the new Corporate Services accounting centre in Dublin, moving key financial processes from Shire's financial operations team in Basingstoke and from Baxter's shared service centre in Dublin, provided under TSA arrangements, to a newly established team; • Moving legacy Baxalta financial processes previously performed in Costa Rica under TSA agreements with Baxter into the Exton Corporate Services team; • The integration of the legacy Baxalta consolidation into the Shire consolidation process; • Changes in senior management including the CFO; • The ongoing integration of significant functions, including technical operations, resulting in, for example, the movement of key financial responsibilities to new individuals and the announced network study in relation to Shire's global manufacturing footprint; and • The integration of Shire and Baxala legal entities. These changes in 2017 follow previous years of significant change including major acquisitions and the One Shire program. The level of change in the current year, and cumulatively, creates a risk that key financial processes may fail to operate effectively. In addition to the risk described above, there is also a risk related to management being in a position to perpetrate fraud because of management's ability to manipulate accounting records and prepare fraudulent financial statements by overriding controls that otherwise appear to be operating effectively. The ACR Committee's consideration of this key audit matter is included on page 71.	We have considered management's response to the increased risk and performed the following specific procedures: • Assessed and tested management's change management process for each key area of change; • increased the testing of key internal controls in areas of particularly significant change; and • increased the level of our substantive testing in areas with the most significant levels of change. We also performed the following procedures to address management override of controls: • Tested the appropriateness of, and rationale for, journal entries that had potentially fraudulent characteristics; • Reviewed accounting estimates for bias including evaluating both individually and collectively the impact on the financial statements; and • Evaluated the business rationale for significant transactions outside the normal course of business or that otherwise appeared unusual.	We found management's response to the increased risk to be appropriate and no further findings have arisen as a result of our specific focus in this area.

Our application of materiality

We define materiality as the magnitude of misstatement in the financial statements that makes it probable that the economic decisions of a reasonably knowledgeable person would be changed or influenced. We use materiality both in planning the scope of our audit work and in evaluating the results of our work.

Based on our professional judgment, we determined materiality for the financial statements as a whole as follows:

Group materiality	$250 million (2016: $150 million)
Basis for determining materiality	The materiality was determined following the consideration of a number of different benchmarks, including revenue, Non GAAP EBITDA, Non GAAP net income, normalised profit before tax and total assets. Our selected materiality is based on a blend of these measures. Normalised profit before tax has been adjusted by removing the impact of non-recurring items such as the $733 million unwind of the fair value uplift associated with the Baxalta inventory acquired and the acquisition and integration costs of $764 million directly associated with the Baxalta acquisition. In 2016, materiality was determined on the basis of 6% of normalised pre-tax profit.
Rationale for the benchmark applied	We have considered a number of different benchmarks as highlighted below, in light of differing views of investors, analysts and other users of the accounts. In addition we have considered the impact of unusual one off events and the significant acquisitions in recent years on some of the metrics and thus determined a blended benchmark is most appropriate.

Benchmark	Materiality as a % of metric
Revenue — $15,161 million	1.7%
Non GAAP EBITDA* — $6,492 million	3.9%
Non GAAP Net Income* — $4,604 million	5.4%
Normalised PBT — $3,411 million	7.3%
Total assets — $67,757 million	0.4%

Our prior year benchmark of normalised profit before tax was no longer considered an appropriate benchmark on its own due to the significant ongoing impact on the Statement of Operations of the Baxalta acquisition, in particular the amortisation of acquired intangible assets. Accordingly we have chosen to supplement this benchmark with those set out above.

* These items represent Non GAAP financial measures a reconciliation of which to the most directly comparable measure under U.S. GAAP is provided on pages 179 to 183.

We agreed that we would report to the ACR Committee all audit differences in excess of $12.5 million (2016: $7.5 million), as well as differences below that threshold that, in our view, warranted reporting on qualitative grounds. We also report to the ACR Committee on disclosure matters that we identified when assessing the overall presentation of the financial statements.

An overview of the scope of our audit

Our group audit was scoped by obtaining an understanding of the Group and its environment, including group-wide controls, and assessing the risks of material misstatement at the group level.

Shire has one reporting unit, one segment and is managed on a functional basis. However the results are reported, and consolidated, on an entity by entity basis rather than within functional areas. We have determined that each entity is a separate component for scoping purposes.

In order to determine the significant components we quantitatively assessed the proportion of key balances including revenue, inventory and fixed assets included in different components as these are the key balances that drive significance of the components.

We also considered qualitative factors that would impact the level of risk in certain components.

From this assessment we focused our group audit scope primarily on the U.S., European manufacturing sites, key European operating entities within the UK, Ireland, France, Germany and Italy, European royalty and research focused entities as well as key UK, U.S., Swiss and Jersey head office entities.

These locations represent the principal operations and together with the group functions in scope account for 95% (2016: 96%) of the Group's total assets and 80% (2016: 86%) of the Group's revenues.

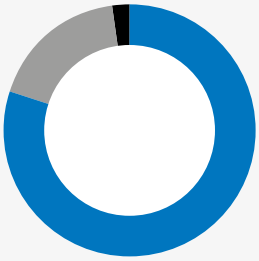
They were also selected to provide an appropriate basis for undertaking audit work to address the risks of material misstatement identified above. Our audit work at the individual locations was performed at component materiality levels which ranged from $50 million to $135 million (2016: $37.5 million to $95 million), which were determined by reference to a proportion of group materiality appropriate to the relative scale of the business concerned.

At group level we also audited the consolidation process and carried out analytical procedures to confirm our conclusion that there were no significant risks of material misstatement of the aggregated financial information of the remaining components not subject to audit or review procedures.

We consider the scope to be appropriate to address the risks of the audit.

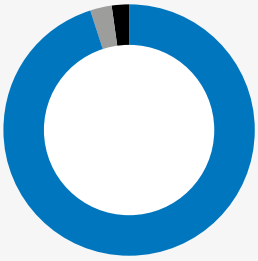
In executing our audit scope we performed testing at Shire's two corporate services functions in Ireland and the U.S. as well as in local operations, at global functions primarily based in the U.S., Ireland and the UK, and at a group level.

The group audit team directly supervises the work performed across all of the components, with comprehensive instructions issued to each component team, and follows a program of planned site visits and regular remote interactions that are designed to ensure that the Senior Statutory Auditor or other senior members of the audit team spend appropriate time with the component team and in each of the in scope locations throughout the year.



Revenue

- **80%** In scope
- **18%** Review scope
- **2%** Desktop scope



Total assets

- **95%** In scope
- **3%** Review scope
- **2%** Desktop scope

Other information

The directors are responsible for the other information. The other information comprises the information included in the annual report, other than the financial statements and our auditor's report thereon.

Our opinion on the financial statements does not cover the other information and, except to the extent otherwise explicitly stated in our report, we do not express any form of assurance conclusion thereon.

In connection with our audit of the financial statements, our responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the financial statements or our knowledge obtained in the audit or otherwise appears to be materially misstated.

If we identify such material inconsistencies or apparent material misstatements, we are required to determine whether there is a material misstatement in the financial statements or a material misstatement of the other information. If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact.

In this context, matters that we are specifically required to report to you as uncorrected material misstatements of the other information include where we conclude that:

- **Fair, balanced and understandable** — the statement given by the directors that they consider the annual report and financial statements taken as a whole is fair, balanced and understandable and provides the information necessary for shareholders to assess the Group's performance, business model and strategy, is materially inconsistent with our knowledge obtained in the audit; or
- **ACR Committee reporting** — the section describing the work of the ACR Committee does not appropriately address matters communicated by us to the ACR Committee; or
- **Directors' statement of compliance with the UK Corporate Governance Code** — the parts of the directors' statement required under the Listing Rules relating to the Company's compliance with the UK Corporate Governance Code containing provisions specified for review by the auditor in accordance with Listing Rule 9.8.10R (2) do not properly disclose a departure from a relevant provision of the UK Corporate Governance Code. provisions specified for review by the auditor in accordance with Listing Rule 9.8.10R (2) do not properly disclose a departure from a relevant provision of the UK Corporate Governance Code.

We have nothing to report in respect of these matters.

Responsibilities of directors

As explained more fully in the directors' responsibilities statement, the directors are responsible for the preparation of the financial statements and for being satisfied that they give a true and fair view, and for such internal control as the directors determine is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, the directors are responsible for assessing the Group's ability to continue as a going concern, disclosing as applicable, matters related to going concern and using the going concern basis of accounting unless the directors either intend to liquidate the Group or to cease operations, or have no realistic alternative but to do so.

Auditor's responsibilities for the audit of the financial statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with ISAs (UK) will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

A further description of our responsibilities for the audit of the financial statements is located on the Financial Reporting Council's website at: www.frc.org.uk/auditorsresponsibilities. This description forms part of our auditor's report.

Use of our report

This report is made solely to the Company's members, as a body, in accordance with Article 113A of the Companies (Jersey) Law 1991. Our audit work has been undertaken so that we might state to the Company's members those matters we are required to state to them in an auditor's report and for no other purpose. To the fullest extent permitted by law, we do not accept or assume responsibility to anyone other than the Company and the Company's members as a body, for our audit work, for this report, or for the opinions we have formed.

Report on other legal and regulatory requirements

Opinions on other matters prescribed by our engagement letter

In our opinion the part of the directors' remuneration report to be audited has been properly prepared in accordance with the provisions of the UK Companies Act 2006 as if that Act applied to the Company.

In our opinion, based on the work undertaken in the course of the audit:

- the information given in the strategic report and the directors' report for the financial year for which the financial statements are prepared is consistent with the financial statements; and
- the strategic report and the directors' report have been prepared in accordance with the applicable legal requirements that apply to UK companies.

In the light of the knowledge and understanding of the Group and the Company and their environment obtained in the course of the audit, we have not identified any material misstatements in the strategic report or the directors' report.

Matters on which we are required to report by exception

Adequacy of explanations received and accounting records

Under the Companies (Jersey) Law 1991 we are required to report to you if, in our opinion:

- we have not received all the information and explanations we require for our audit; or
- proper accounting records have not been kept by the Company, or proper returns adequate for our audit have not been received from branches not visited by us; or
- the financial statements are not in agreement with the accounting records and returns.

We have nothing to report in respect of these matters.

Other matters

Auditor tenure

Following the recommendation of the ACR Committee, we were appointed in 2002 to audit the financial statements for the year ended December 31, 2002 and subsequent financial periods. The period of total uninterrupted engagement including previous renewals and reappointments of the firm is 15 years, covering the years ended December 31, 2002 to December 31, 2017.

Consistency of the audit report with the additional report to the ACR Committee

Our audit opinion is consistent with the additional report to the ACR Committee we are required to provide in accordance with ISAs (UK).

John Adam
For and on behalf of Deloitte LLP
Recognised Auditor
London, United Kingdom
February 16, 2018

Consolidated balance sheets

Years ended December 31	Notes	2017 $'M	2016 $'M
Assets			
Current assets:			
Cash and cash equivalents		**472.4**	528.8
Restricted cash		**39.4**	25.6
Accounts receivable, net	9	**3,009.8**	2,616.5
Inventories	10	**3,291.5**	3,562.3
Prepaid expenses and other current assets	11	**795.3**	806.3
Total current assets		**7,608.4**	7,539.5
Investments		**241.1**	191.6
Property, plant and equipment (PP&E), net	12	**6,635.4**	6,469.6
Goodwill	13	**19,831.7**	17,888.2
Intangible assets, net	14	**33,046.1**	34,697.5
Deferred tax asset	22	**188.8**	96.7
Other non-current assets		**205.4**	152.3
Total assets		**67,756.9**	67,035.4
Liabilities and equity			
Current liabilities:			
Accounts payable and accrued expenses	17	**4,184.5**	4,312.4
Short term borrowings and capital leases	18	**2,788.7**	3,068.0
Other current liabilities		**908.8**	362.9
Total current liabilities		**7,882.0**	7,743.3
Long term borrowings and capital leases	18	**16,752.4**	19,899.8
Deferred tax liability	22	**4,748.2**	8,322.7
Other non-current liabilities		**2,197.9**	2,121.6
Total liabilities		**31,580.5**	38,087.4
Commitments and contingencies	24		
Equity:			
Common stock of 5p par value; 1,500 million shares authorized; and 917.1 million shares issued and outstanding (2016: 1,500 million shares authorized; and 912.2 million shares issued and outstanding)	26	**81.6**	81.3
Additional paid-in capital		**25,082.2**	24,740.9
Treasury stock: 8.4 million shares (2016: 9.1 million shares)	26	**(283.0)**	(301.9)
Accumulated other comprehensive income/(loss)	20	**1,375.0**	(1,497.6)
Retained earnings		**9,920.6**	5,925.3
Total equity		**36,176.4**	28,948.0
Total liabilities and equity		**67,756.9**	67,035.4

The accompanying notes are an integral part of these consolidated financial statements.

Approved by the Board of Directors and signed on its behalf by:

Flemming Ornskov, MD, MPH
Chief Executive Officer
February 16, 2018

Consolidated statements of operations

Years ended December 31	Notes	2017 $'M	2016 $'M	2015 $'M
Revenues:				
Product sales		**14,448.9**	10,885.8	6,099.9
Royalties and other revenues		**711.7**	510.8	316.8
Total revenues		**15,160.6**	11,396.6	6,416.7
Costs and expenses:				
Cost of sales		**4,700.8**	3,816.5	969.0
Research and development		**1,763.3**	1,439.8	1,564.0
Selling, general and administrative		**3,530.9**	3,015.2	1,842.5
Amortization of acquired intangible assets	14	**1,768.4**	1,173.4	498.7
Integration and acquisition costs	6	**894.5**	883.9	39.8
Reorganization costs	7	**47.9**	121.4	97.9
Gain on sale of product rights		**(0.4)**	(16.5)	(14.7)
Total operating expenses		**12,705.4**	10,433.7	4,997.2
Operating income from continuing operations		**2,455.2**	962.9	1,419.5
Interest income		**9.7**	18.4	4.2
Interest expense		**(578.9)**	(469.6)	(41.6)
Other income/(expense), net		**7.4**	(25.6)	3.7
Total other expense, net		**(561.8)**	(476.8)	(33.7)
Income from continuing operations before income taxes and equity in earnings/(losses) of equity method investees		**1,893.4**	486.1	1,385.8
Income taxes	22	**2,357.6**	126.1	(46.1)
Equity in earnings/(losses) of equity method investees, net of taxes		**2.5**	(8.7)	(2.2)
Income from continuing operations, net of taxes		**4,253.5**	603.5	1,337.5
Gain/(loss) from discontinued operations, net of taxes	8	**18.0**	(276.1)	(34.1)
Net income		**4,271.5**	327.4	1,303.4
Earnings per Ordinary Share — basic				
Earnings from continuing operations	21	**4.69**	0.78	2.27
Earnings/(loss) from discontinued operations	21	**0.02**	(0.35)	(0.06)
Earnings per Ordinary Share — basic		**4.71**	0.43	2.21
Earnings per Ordinary Share — diluted				
Earnings from continuing operations	21	**4.66**	0.77	2.26
Earnings/(loss) from discontinued operations	21	**0.02**	(0.35)	(0.06)
Earnings per Ordinary Share — diluted		**4.68**	0.42	2.20
Weighted average number of shares:				
Basic	21	**906.5**	770.1	590.4
Diluted	21	**912.0**	776.2	593.1

The accompanying notes are an integral part of these consolidated financial statements.

Consolidated statements of comprehensive income

Years ended December 31	2017 $'M	2016 $'M	2015 $'M
Net income	**4,271.5**	327.4	1,303.4
Other comprehensive income/(loss):			
Foreign currency translation adjustments	**2,785.0**	(1,323.3)	(156.4)
Pension and other employee benefits (net of tax expense of $11.2 million, $8.8 million and $nil for the years ended December 31, 2017, 2016 and 2015, respectively)	**32.7**	(5.2)	–
Unrealized gain on available-for-sale securities (net of tax benefit of $0.1 million the years ended December 31, 2017 and 2016 and $nil for the year ended December 31, 2015)	**61.3**	8.3	4.1
Hedging activities (net of tax benefit of $3.1 million, tax expense of $3.3 million and $nil for the years ended December 31, 2017, 2016 and 2015, respectively)	**(6.4)**	6.4	–
Comprehensive income/(loss)	**7,144.1**	(986.4)	1,151.1

The components of Accumulated other comprehensive income/(loss) as of December 31, 2017 and December 31, 2016 are as follows:

Years ended December 31	2017 $'M	2016 $'M
Foreign currency translation adjustments	**1,279.6**	(1,505.4)
Pension and other employee benefits, net of taxes	**27.5**	(5.2)
Unrealized holding gain on available-for-sale securities, net of taxes	**67.9**	6.6
Hedging activities, net of taxes	**–**	6.4
Accumulated other comprehensive income/(loss)	**1,375.0**	(1,497.6)

The accompanying notes are an integral part of these consolidated financial statements.

Consolidated statements of changes in equity

	Common stock number of shares M's	Common stock $'M	Additional paid-in capital $'M	Treasury stock $'M	Accumulated other comprehensive (loss) /income $'M	Retained earnings $'M	Total equity $'M
As of January 1, 2017	912.2	81.3	24,740.9	(301.9)	(1,497.6)	5,925.3	28,948.0
Net income	–	–	–	–	–	4,271.5	4,271.5
Other comprehensive income, net of tax	–	–	–	–	2,872.6	–	2,872.6
Shares issued under employee benefit plans and other	4.9	0.3	155.7	–	–	–	156.0
Cumulative-effect adjustment from adoption of ASU 2016-09	–	–	10.7	–	–	24.0	34.7
Share-based compensation	–	–	174.9	–	–	–	174.9
Shares released by employee benefit trust to satisfy exercise of stock options	–	–	–	18.9	–	(18.9)	–
Dividends	–	–	–	–	–	(281.3)	(281.3)
As of December 31, 2017	917.1	81.6	25,082.2	(283.0)	1,375.0	9,920.6	36,176.4

The accompanying notes are an integral part of these consolidated financial statements.

Dividends per share

During the year ended December 31, 2017, Shire plc declared and paid dividends of $0.3079 per ordinary share (equivalent to $0.9237 per ADS) totaling $281.3 million.

	Common stock number of shares M'S	Common stock $'M	Additional paid-in capital $'M	Treasury stock $'M	Accumulated other comprehensive (loss) /income $'M	Retained earnings $'M	Total equity $'M
As of January 1, 2016	601.1	58.9	4,486.3	(320.6)	(183.8)	5,788.3	9,829.1
Net income	–	–	–	–	–	327.4	327.4
Other comprehensive income, net of tax	–	–	–	–	(1,313.8)		(1,313.8)
Shares issued under employee benefit plans and other	5.9	0.4	138.4	–	–	–	138.8
Shares issued for the acquisition of Baxalta	305.2	22.0	19,788.9	–	–	–	19,810.9
Share-based compensation	–	–	318.5	–	–	–	318.5
Tax benefit associated with exercise of stock options	–	–	8.8	–	–	–	8.8
Shares released by employee benefit trust to satisfy exercise of stock options	–	–	–	18.7	–	(19.1)	(0.4)
Dividends	–	–	–	–	–	(171.3)	(171.3)
As of December 31, 2016	912.2	81.3	24,740.9	(301.9)	(1,497.6)	5,925.3	28,948.0

The accompanying notes are an integral part of these consolidated financial statements.

Dividends per share

During the year ended December 31, 2016, Shire plc declared and paid dividends of $0.2679 per ordinary share (equivalent to $0.8037 per ADS) totaling $171.3 million.

	Common stock number of shares M's	Common stock $'M	Additional paid-in capital $'M	Treasury stock $'M	Accumulated other comprehensive (loss) $'M	Retained earnings $'M	Total equity $'M
As of January 1, 2015	599.1	58.7	4,338.0	(345.9)	(31.5)	4,643.6	8,662.9
Net income	–	–	–	–	–	1,303.4	1,303.4
Other comprehensive loss, net of tax	–	–	–	–	(152.3)	–	(152.3)
Options exercised	2.0	0.2	16.4	–	–	–	16.6
Share-based compensation	–	–	100.3	–	–	–	100.3
Tax benefit associated with exercise of stock options	–	–	31.6	–	–	–	31.6
Shares released by employee benefit trust to satisfy exercise of stock options	–	–	–	25.3	–	(24.3)	1.0
Dividends	–	–	–	–	–	(134.4)	(134.4)
As of December 31, 2015	601.1	58.9	4,486.3	(320.6)	(183.8)	5,788.3	9,829.1

The accompanying notes are an integral part of these consolidated financial statements.

Dividends per share

During the year ended December 31, 2015, Shire plc declared and paid dividends of $0.233 per ordinary share (equivalent to $0.699 per ADS) totaling $134.4 million.

Consolidated statements of cash flows

Years ended December 31	2017 $'M	2016 $'M	2015 $'M
Cash flow from operating activities:			
Net income	**4,271.5**	327.4	1,303.4
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization	**2,264.2**	1,466.3	637.2
Share-based compensation	**174.9**	318.5	100.3
Amortization of deferred financing fees	**12.8**	125.5	–
Expense related to the unwind of inventory fair value adjustments	**747.8**	1,118.0	31.1
Change in deferred taxes	**(2,916.4)**	(594.6)	(198.2)
Change in fair value of contingent consideration	**120.7**	11.1	(149.9)
Impairment of PP&E and intangible assets	**289.9**	101.3	643.7
Other, net	**55.6**	31.4	–
Changes in operating assets and liabilities:			
Increase in accounts receivable	**(487.6)**	(701.7)	(211.4)
Increase in sales deduction accrual	**314.1**	288.3	97.6
Increase in inventory	**(145.1)**	(255.8)	(63.2)
Decrease/(increase) in prepayments and other assets	**81.1**	(198.4)	37.2
(Decrease)/increase in accounts payable and other liabilities	**(526.8)**	621.6	109.2
Net cash provided by operating activities	**4,256.7**	2,658.9	2,337.0
Cash flow from investing activities:			
Purchases of PP&E	**(798.8)**	(648.7)	(114.7)
Purchases of businesses, net of cash acquired	**–**	(17,476.2)	(5,553.4)
Proceeds from sale of investments	**88.6**	0.9	85.7
Movements in restricted cash	**(13.7)**	62.8	(32.0)
Other, net	**23.0**	(31.0)	(5.5)
Net cash used in investing activities	**(700.9)**	(18,092.2)	(5,619.9)

The accompanying notes are an integral part of these consolidated financial statements.

Years ended December 31	2017 $'M	2016 $'M	2015 $'M
Cash flow from financing activities:			
Proceeds from revolving line of credit, long term and short term borrowings	**4,236.7**	32,443.4	3,760.8
Repayment of revolving line of credit, long term and short term borrowings	**(7,681.4)**	(16,404.3)	(3,110.9)
Payment of dividend	**(281.3)**	(171.3)	(134.4)
Debt issuance costs	**–**	(172.3)	(24.1)
Proceeds from issuance of stock for share-based compensation arrangements	**134.1**	169.2	16.6
Other, net	**(27.4)**	(38.9)	(69.0)
Net cash (used in)/provided by financing activities	**(3,619.3)**	15,825.8	439.0
Effect of foreign exchange rate changes on cash and cash equivalents	**7.1**	0.8	(3.0)
Net (decrease)/increase in cash and cash equivalents	**(56.4)**	393.3	(2,846.9)
Cash and cash equivalents at beginning of period	**528.8**	135.5	2,982.4
Cash and cash equivalents at end of period	**472.4**	528.8	135.5
Supplemental information:			
Interest paid	**554.2**	284.0	20.0
Income taxes paid, net	**524.7**	431.0	69.0

For stock issued as purchase consideration for the acquisition of Baxalta related to non-cash investing activities, refer to Note 4, Business Combinations, to these consolidated financial statements.

The accompanying notes are an integral part of these consolidated financial statements.

Notes to the consolidated financial statements

1. Description of Operations

Shire plc and its subsidiaries (collectively referred to as either "Shire" or the "Company") is the leading global biotechnology company focused on serving people with rare diseases.

Some of the Company's marketed products include GAMMAGARD, HYQVIA and CINRYZE for Immunology, ADVATE/ADYNOVATE, VONVENDI and FEIBA for Hematology, VYVANSE and ADDERALL XR for Neuroscience, LIALDA/MEZAVANT and PENTASA for Internal Medicine, ELAPRASE and REPLAGAL for Genetic Diseases, ONCASPAR and ONYVIDE for Oncology and XIIDRA for Ophthalmics.

The Company has grown both organically and through acquisition, completing a series of major transactions that have brought therapeutic, geographic and pipeline growth and diversification. The Company will continue to conduct its own research and development (R&D) focused on rare diseases, as well as evaluate companies, products and pipeline opportunities that offer a strategic fit and have the potential to deliver value to all of the Company's stakeholders: patients, physicians, policy makers, payers, partners, investors and employees.

2. Summary of Significant Accounting Policies

Basis of Presentation

The accompanying consolidated financial statements include the accounts of Shire plc, all of its subsidiaries and the Income Access Share trust, after elimination of inter-company accounts and transactions. They have been prepared in accordance with generally accepted accounting principles in the United States of America (U.S. GAAP) and U.S. Securities and Exchange Commission (SEC) regulations for annual reporting.

On June 3, 2016, the Company completed its acquisition of Baxalta for $32.4 billion, representing the fair value of purchase consideration. The Company's consolidated financial statements include the results of Baxalta from the date of acquisition. For further details regarding the acquisition, refer to Note 4, Business Combinations, to the consolidated financial statements.

Use of Estimates in Consolidated Financial Statements

The preparation of Financial Statements, in conformity with U.S. GAAP and SEC regulations, requires management to make estimates, judgments and assumptions that affect the reported and disclosed amounts of assets, liabilities and equity at the date of the consolidated financial statements and reported amounts of revenues and expenses during the period. On an on-going basis, the Company evaluates its estimates, judgments and methodologies. Estimates are based on historical experience, current conditions and on various other assumptions that are reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets, liabilities and equity and the amounts of revenues and expenses. Actual results may differ from these estimates under different assumptions or conditions.

Consolidation

The consolidated financial statements reflect the financial statements of the Company and those of the Company's wholly-owned subsidiaries. For consolidated entities where the Company owns or is exposed to less than 100% of the economics, the Company records net income (loss) attributable to non-controlling interests in its Consolidated Statements of Operations equal to the percentage of the economic or ownership interest retained in such entities by the respective non-controlling parties. Intercompany balances and transactions are eliminated in consolidation.

The Company determines whether to consolidate subsidiaries based on either the variable interest entity (VIE) model or the voting interest model. The Company consolidates a VIE if it is determined that the Company is the primary beneficiary of the VIE. In determining whether the Company is the primary beneficiary of an entity, management applies a qualitative approach that determines whether the Company has both (1) the power to direct the economically significant activities of the entity and (2) the obligation to absorb losses of, or the right to receive benefits from, the entity that could potentially be significant to that entity. The Company consolidates entities that are not VIEs if it is determined that the Company holds a majority voting interest in the entity.

Consolidation of a subsidiary begins when the Company obtains control over the subsidiary and ceases when the Company loses control of the subsidiary. Intercompany balances and transactions are eliminated in consolidation.

Revenue recognition

The Company recognizes revenue when all of the following criteria are met:

- there is persuasive evidence an arrangement exists;
- delivery has occurred or services have been rendered;
- the price to the customer is fixed or determinable; and
- collectibility is reasonably assured.

Where applicable, all revenues are stated net of value added and similar taxes and trade discounts. The Company's principal revenue streams and their respective accounting treatments are discussed below:

Product sales

Revenues from Product sales are recognized when title and risk of loss have passed to the customer, which is typically upon delivery. Product sales are recorded net of applicable reserves for discounts and allowances.

Reserves for Discounts and Allowances

The Company establishes reserves for trade discounts, chargebacks, distribution service fees, Medicaid rebates, managed care rebates, incentive rebates, product returns and other governmental rebates or applicable allowances. These reserves are based on estimates of the amounts earned or to be claimed on the related sales. Management's estimates take into consideration historical experience, current contractual and statutory requirements, specific known market events and trends, industry data and forecasted customer buying and payment patterns. Actual amounts may ultimately differ from estimates. If actual results vary, management adjusts these estimates, which have an effect on earnings in the period of adjustment.

- Trade discounts are generally credits granted to wholesalers, specialty pharmacies and other customers for remitting payment on their purchases within established incentive periods and are classified as a reduction of accounts receivable.
- Chargebacks are credits or payments issued to wholesalers and distributors who provide products to qualified healthcare providers at prices lower than the list prices charged to the wholesaler or distributor. Reserves are estimated based on expected purchases by those qualified healthcare providers. Chargeback reserves are classified as a reduction of accounts receivable.

- Distribution service fees are credits or payments issued to wholesalers, distributors and specialty pharmacies for compliance with various contractually-defined inventory management practices or services provided to support patient access to a product. These fees are generally based on a percentage of gross purchases but can also be based on additional services these entities provide. Most of these costs are reflected as a reduction of gross sales; however, to the extent benefit from services can be separately identified and the fair value determined, costs are classified in Selling, general and administrative expense. Reserves are classified within accrued expenses.
- Medicaid rebates are payments to States under statutory and voluntary reimbursement arrangements. Reserves for these rebates are generally based on an estimate of expected product usage by Medicaid patients and expected rebate rates. Statutory rates are generally based on a percentage of selling price adjusted upwards for price increases in excess of published inflation indices. As a result, rebates generally increase as a percentage of the selling price over the life of the product (as prices increase). Medicaid rebate reserves are classified within accrued expenses.
- Managed care rebates are payments to third parties, primarily pharmacy benefit managers and other health insurance providers. The reserve for these rebates is based on an estimate of customer buying patterns and applicable contractual rebate rates to be earned over each period. Reserves are classified within accrued expenses.
- Incentive rebates are generally credits or payments issued to specialty pharmacies, distributors or Group Purchasing Organizations for qualified purchases of certain products. Reserves are estimated based on the terms of each individual contract and purchase volumes and are classified within accrued expenses.
- Return credits are issued to customers for return of product damaged in shipment and, for certain products, return due to lot expiry. The majority of returns are due to expiry, and reserves are estimated based on historical returns experience. The returns reserve is classified within accrued expenses.
- Other discounts and allowances include Medicare rebates, coupon and patient co-pay assistance. Medicare rebates are payments to certain health insurance providers of Medicare Part D coverage to qualified patients. Reserve estimates are based on customer buying patterns and applicable contractual rebate rates to be earned over each period. Coupon and co-pay assistance programs provide discounts to qualified patients. Reserve estimates are based on expected claim volumes under these programs and estimated cost per claim that the Company expects to pay. Reserves for Medicare and coupon and patient co-pay programs are classified within accrued expenses.

Royalties and Other Revenue

Royalty income relating to licensed technology is recognized when the licensee sells the underlying product, with the amount of royalty income recorded based on sales information received from the relevant licensee. The Company estimates sales amounts and related royalty income based on the historical product information for any period that the sales information is not available from the relevant licensee.

Other revenue includes revenues derived from product out-licensing arrangements, which may consist of an initial up-front payment on inception of the license and subsequent milestone payments upon achievement of certain clinical and sales milestones. To the extent the license requires Shire to provide services to the licensee; up-front payments are deferred and recognized over the service period.

Business combinations

Business combinations are accounted for using the acquisition method of accounting. Under the acquisition method, assets acquired, including in-process research and development (IPR&D) projects, and liabilities assumed are recorded at their respective fair values as of the acquisition date in the consolidated financial statements. The excess of the fair value of consideration transferred over the fair value of the net assets acquired is recorded as goodwill. Contingent consideration obligations incurred in connection with a business combination (including the assumption of an acquiree's liability arising from a business combination it completed prior to the acquisition) are recorded at their fair values on the acquisition date and remeasured at their fair values each subsequent reporting period until the related contingencies are resolved. The resulting changes in fair values are recorded in earnings.

Goodwill

Goodwill represents the difference between the purchase price and the fair value of the identifiable tangible and intangible net assets acquired in a business combination. Goodwill is not amortized, but instead is reviewed for impairment. Goodwill is reviewed annually, as of October 1, and whenever events or changes in circumstances indicate that the carrying value of goodwill may not be recoverable. Events or changes in circumstances which could trigger an impairment review include but are not limited to: unexpected adverse business conditions, economic factors, unanticipated technological changes or competitive activities and acts by governments and courts.

For the purpose of assessing the carrying value of goodwill for impairment, goodwill is allocated at the Company's reporting unit level. As described in Note 23, Segment Reporting, the Company operates in one operating segment which it considers to be its only reporting unit.

The Company reviews goodwill for impairment by firstly assessing qualitative factors, including comparing the market capitalization of the Company to the carrying value of its assets, to determine whether events or circumstances exist which indicate that it is more likely than not that the fair value of a reporting unit is less than its carrying amount. If, after assessing these qualitative factors, it is deemed more likely than not that the fair value of a reporting unit is less than its carrying value, a "two step" quantitative assessment is performed by comparing the carrying value of the reporting unit's net assets (including allocated goodwill) to the fair value of the reporting unit.

If the carrying value of the net assets assigned to the reporting unit exceeds the fair value of its reporting unit, then it determines the implied fair value of its reporting unit's goodwill. If the carrying value of the reporting unit's goodwill exceeds its implied fair value, then an impairment loss equal to the difference is recorded.

2. Summary of Significant Accounting Policies continued

Intangible Assets

Intangible assets primarily relate to commercially marketed products and IPR&D projects. Intangible assets are recorded at fair value at the time of their acquisition and are stated in the Consolidated Balance Sheets, net of accumulated amortization and impairments, if applicable.

Intangible assets related to commercially marketed products are amortized over their estimated useful lives. Remaining useful lives range from 1 year to 24 years (weighted average 19 years) and the Company amortizes its intangibles on an economic consumption method, or a straight-line basis when straight-line method approximates economic consumption method.

Milestone payments made to third parties on and subsequent to regulatory approval are capitalized as intangible assets, and amortized over the remaining useful life of the related product.

The following factors, where applicable, are considered in estimating the useful lives of intangible assets:

- expected use of the asset;
- regulatory, legal or contractual provisions, including the regulatory approval and review process, patent issues and actions by government agencies;
- the effects of obsolescence, changes in demand, competing products and other economic factors, including the stability of the market, known technological advances, development of competing drugs that are more effective clinically or economically;
- actions of competitors, suppliers, regulatory agencies or others that may eliminate current competitive advantages; and
- historical experience of renewing or extending similar arrangements.

Acquired IPR&D represents the fair value assigned to research and development assets that have not reached technological feasibility. The value assigned to acquired IPR&D is determined by estimating the costs to develop the acquired technology into commercially viable products, estimating the resulting revenue from the projects, and discounting the net cash flows to present value. The revenue and costs projections used to value acquired IPR&D are, as applicable, reduced based on the probability of success of developing a new drug. Additionally, the projections consider the relevant market sizes and growth factors, expected trends in technology, and the nature and expected timing of new product introductions by the Company and its competitors. The rates utilized to discount the net cash flows to their present value are commensurate with the stage of development of the projects and uncertainties in the economic estimates used in the projections.

Upon the acquisition of IPR&D, the Company completes an assessment of whether the acquisition constitutes the purchase of a single asset or a group of assets. The Company considers multiple factors in this assessment, including the nature of the technology acquired, the presence or absence of separate cash flows, the development process and stage of completion, quantitative significance and its rationale for entering into the transaction.

If the Company acquires a business as defined under applicable accounting standards, then the acquired IPR&D is capitalized as an intangible asset. If the Company acquires an asset or group of assets that do not meet the definition of a business, then the acquired IPR&D is expensed on its acquisition date. Future costs to develop these assets are recorded to research and development expense as they are incurred.

IPR&D projects are considered to be indefinite-lived until completion of the associated R&D efforts. If and when development is complete, which generally occurs when regulatory approval to market a product is obtained, the associated assets would be deemed finite-lived and would then be amortized based on their respective estimated useful lives at that point in time. Intangible assets related to IPR&D projects are reviewed for impairment at least annually, as of October 1st, until commercialization, after which time the IPR&D is amortized over its estimated useful life.

The Company evaluates the carrying value of long-lived assets, except for goodwill and indefinite lived intangible assets, whenever events or changes in circumstances indicate that the carrying amounts of the relevant assets may not be recoverable. When such a determination is made, management's estimate of undiscounted cash flows to be generated by the use and ultimate disposition of these assets is compared to the carrying value of the assets to determine whether the carrying value is recoverable. If the carrying value is deemed not to be recoverable, the amount of the impairment recognized in the consolidated financial statements is determined by estimating the fair value of the relevant assets and recording an impairment loss for the amount by which the carrying value exceeds the estimated fair value.

The Company calculates the fair value using significant estimates and assumptions including but not limited to: revenues and operating profits related to the products, existing competitive activities and acts by governments and courts. Changes in these estimates and assumptions could materially affect the determination of fair value. Should the fair value of long-lived assets decline, charges for impairment may be necessary.

Fair Value Measurements

The Company has certain financial assets and liabilities recorded at fair value which have been classified as Level 1, 2 or 3 within the fair value hierarchy as described in the accounting standards for fair value measurements:

- Level 1 — Fair values are determined utilizing quoted prices (unadjusted) in active markets for identical assets or liabilities that we have the ability to access;
- Level 2 — Fair values are determined by utilizing quoted prices for similar assets and liabilities in active markets or other market observable inputs such as interest rates, yield curves and foreign currency spot rates; and
- Level 3 — Prices or valuations that require inputs that are both significant to the fair value measurement and unobservable.

The majority of the Company's financial assets have been classified as Level 1 and 2. The Company's financial assets, which include cash equivalents, derivative contracts, marketable equity and debt securities, and plan assets for deferred compensation, have been initially valued at the transaction price and subsequently valued, at the end of each reporting period, utilizing third-party pricing services or other market observable data. The Company utilizes industry standard valuation models, including both income and market-based approaches and observable market inputs to determine value. These observable market inputs include reportable trades, benchmark yields, credit spreads, broker/dealer quotes, bids, offers, current spot rates and other industry and economic events.

Accounts receivable
The Company's accounts receivable arise from Product sales and represent amounts due from its customers. The Company monitors the financial performance and credit worthiness of its large customers so that it can assess and respond to changes in their credit profile. The Company provides reserves against accounts receivable for estimated losses, if any, that may result from a customer's inability to pay. Amounts determined to be uncollectible are written-off against the reserve.

Investments
The Company has certain investments in pharmaceutical and biotechnology companies whose securities are not publicly traded and where fair value is not readily available. These investments are recorded using either the cost method or the equity method of accounting, depending on its ownership percentage and other factors that suggest the Company has significant influence. Under the equity method of accounting, the Company records its investments in equity-method investees in the consolidated balance sheet under Investments and its share of the investees' earnings or losses together with other-than- temporary impairments in value under Equity in earnings/(losses) of equity method investees, net of taxes in the Consolidated Statements of Operations. The Company monitors these investments to evaluate whether any decline in their value has occurred that would be other-than-temporary, based on the implied value of recent company financings, public market prices of comparable companies, and general market conditions.

All other equity investments, which consist of investments for which the Company does not have the ability to exercise significant influence, are accounted for under the cost method or at fair value. Investments in private companies are carried at cost, less provisions for other-than-temporary impairment in value. For investments in equity investments that have readily determinable fair values, the Company classifies its equity investments as available-for-sale and, accordingly, records these investments at their fair values with unrealized holding gains and losses included in the Consolidated Statements of Comprehensive Income, net of any related tax effect. Realized gains and losses, and declines in value of available-for-sale securities judged to be other-than-temporary, are included in Other income/(expense), net in the Consolidated Statements of Operations. The cost of securities sold is based on the specific identification method. Interest on securities classified as available-for-sale is included as Interest income in the Consolidated Statements of Operations.

Inventories
Inventories are stated at the lower of cost, computed using the first-in, first-out method, and net realizable value. The inventory costs are classified as long term when the Company expects to utilize the inventory beyond the normal operating cycle and includes these costs in Other non-current assets in the Consolidated Balance Sheets.

Capitalization of Inventory Costs
The Company capitalizes inventory costs associated with its products prior to regulatory approval, when, based on management's judgment, future commercialization is considered highly probable and the future economic benefit is expected to be realized.

Obsolescence and Unmarketable Inventory
Inventories are written down for estimated obsolescence or unmarketable inventory equal to the difference between the cost of inventory and estimated net realizable value based upon assumptions about future demand and market conditions. Amounts written down due to obsolescence and unmarketable inventory are charged to Cost of sales.

Property, plant and equipment
Property, plant and equipment are carried at cost, net of accumulated depreciation and impairment losses. Property, plant and equipment are subject to review for impairment whenever events or changes in circumstances indicate that the carrying amount of the asset may not be recoverable. The cost of normal, recurring, or periodic repairs and maintenance activities related to property, plant and equipment are expensed as incurred. The cost for planned major maintenance activities, including the related acquisition or construction of assets, is capitalized if the repair will result in future economic benefits.

Interest costs incurred during the construction of major capital projects are capitalized until the underlying asset is ready for its intended use, at which point the interest costs are amortized as depreciation expense over the useful life of the underlying asset. The Company also capitalizes certain direct and incremental costs associated with the validation effort required for licensing by regulatory agencies of new manufacturing equipment for the production of a commercially approved drug. These costs primarily include direct labor and material and are incurred in preparing the equipment for its intended use. The validation costs are amortized over the useful life of the related equipment.

Depreciation of property, plant and equipment is calculated using the straight-line method over the estimated useful lives as follows:

Asset category	Estimated useful lives
Land	Not depreciated
Buildings and leasehold improvements	15 to 50 years
Office furniture, fittings and equipment	3 to 10 years
Machinery, equipment and other	3 to 15 years

At the time property, plant and equipment is retired or otherwise disposed of, the cost and accumulated depreciation are eliminated from the asset and accumulated depreciation accounts. The profit or loss on such disposition is reflected in operating income.

Assets Held for Sale
The Company classifies long-lived assets or disposal groups to be sold as held for sale in the period in which all of the following criteria are met:

- management, having the authority to approve the action, commits to a plan to sell the asset or disposal group;
- the asset or disposal group is available for immediate sale in its present condition;
- an active program to locate a buyer and other actions required to complete the plan to sell the asset or disposal group have been initiated;
- the sale of the asset or disposal group is probable, and transfer of the asset or disposal group is expected to qualify for recognition as a completed sale within one year, except if events or circumstances beyond our control extend the period of time required to sell the asset or disposal group beyond one year;
- the asset or disposal group is being actively marketed for sale at a price that is reasonable in relation to its current fair value; and
- actions required to complete the plan indicate that it is unlikely that significant changes to the plan will be made or that the plan will be withdrawn.

2. Summary of Significant Accounting Policies continued

The Company initially measures a long-lived asset or disposal group that is classified as held for sale at the lower of its carrying value or fair value less any costs to sell. Any loss resulting from this measurement is recognized in the period in which the held-for-sale criteria are met.

The Company assesses the fair value of a long-lived asset or disposal group less any costs to sell each reporting period it remains classified as held for sale and reports any subsequent changes as an adjustment to the carrying value of the asset or disposal group, as long as the new carrying value does not exceed the carrying value of the asset at the time it was initially classified as held for sale.

Upon determining that a long-lived asset or disposal group meets the criteria to be classified as held for sale, the Company ceases depreciation.

Discontinued operations

Discontinued operations comprise those activities that were disposed of during the period or which were classified as held for sale at the end of the period, and represent a separate major line of business or geographical area that can be clearly distinguished for operational and financial reporting purposes.

Contingent consideration payable

Contingent consideration payable represents future milestones and royalties the Company may be required to pay in conjunction with various business combinations. The amounts ultimately payable by the Company are dependent upon the successful achievement of the underlying scientific or commercial event and future net sales of the relevant products over applicable term. The Company records an obligation for such contingent payments at fair value on the acquisition date. The Company assesses the probability, and estimated timing, of these milestones being achieved and the present value of forecast future net sales of the relevant products and re-measures the related contingent consideration to fair value each balance sheet date. The amount of contingent consideration which may ultimately be payable by Shire in relation to future royalties is dependent upon future net sales of the relevant products over the life of the royalty term.

The fair value of the Company's contingent consideration payable, which is considered as Level 3 within the fair value hierarchy, could significantly increase or decrease due to changes in certain assumptions which underpin the fair value measurements. Each set of assumptions and milestones is specific to the individual contingent consideration payable. The assumptions include, among other things, the probability of, and period in which, the relevant milestone event is expected to be achieved; the amount of royalties that will be payable based on forecast net sales of the relevant products; and the discount rates to be applied in calculating the present values of the relevant milestone or royalty. The Company regularly reviews these assumptions, and makes adjustments to the fair value measurements as required by facts and circumstances.

Derivative financial instruments

The Company uses derivative financial instruments to manage its exposure to foreign exchange risk to earnings relating to forecasted transactions and recognized assets and liabilities. For each derivative instrument that is designated and effective as a cash flow hedge, the gain or loss on the derivative is recorded in Accumulated Other Comprehensive Income (AOCI) and then recognized in earnings consistent with the underlying hedged item. Cash flow hedges are classified in revenues and cost of sales and primarily relate to forecasted third-party sales denominated in foreign currencies and forecasted intercompany sales denominated in foreign currencies, respectively.

In its application of hedge accounting, the Company assesses, both at inception and on a prospective basis, whether the derivatives that are used in hedging transactions are highly effective in offsetting the changes in cash flows or fair values of the hedged items. The Company also assesses hedge effectiveness on a retrospective basis every quarter with any hedge ineffectiveness recorded to the Consolidated Statements of Operations.

The Company uses forward contracts to mitigate the effects of changes in foreign exchange relating to certain of the Company's intercompany and third-party receivables and payables. These derivative instruments generally are not formally designated as hedges and the terms of these instruments generally do not exceed three months. The fair values of these instruments are included in the Consolidated Balance Sheets in Current assets or Current liabilities, with changes in the fair value recognized in the Consolidated Statements of Operations. The cash flows relating to these instruments are presented within Net cash provided by operating activities in the Consolidated Statements of Cash Flows, unless the derivative instruments are economically hedging specific investing or financing activities.

Translation of foreign currency

The functional currency for most of the foreign subsidiaries is their local currency. For the non-U.S. subsidiaries that transact in a functional currency other than the U.S. dollar, assets and liabilities are translated at current rates of exchange at the balance sheet date. Income and expense items are translated at the average foreign exchange rates for the period. Adjustments resulting from the translation of the financial statements of the foreign operations into U.S. dollars are excluded from the determination of Net income and are recorded in AOCI, a separate component of equity. For subsidiaries where the functional currency of the assets and liabilities differ from the local currency, non-monetary assets and liabilities are translated at the rate of exchange in effect on the date assets were acquired while monetary assets and liabilities are translated at current rates of exchange as of the balance sheet date. Income and expense items are translated at the average foreign currency rates for the period. Translation adjustments of these subsidiaries are included in Other income/(expense), net.

Foreign currency exchange transaction (losses)/gains included in Consolidated Statements of Operations in the years ended December 31, 2017, 2016 and 2015 amounted to $(97.3) million, $17.7 million and $(26.5) million, respectively.

Cost of sales

Cost of sales includes the cost of purchasing finished product for sale, the cost of raw materials and costs of manufacturing those products including shipping and handling costs, depreciation and amortization of intangible assets in respect of favorable manufacturing contracts. Royalties payable to third party intellectual property owners related to the sold products are also included in Cost of sales.

Research and development (R&D) expense
Research and development expenses consist of compensation and benefits, facilities and overhead expenses, clinical trial expenses and fees paid to contract research organizations (CROs), clinical supply and manufacturing expenses and upfront fees and milestones paid to collaborators. R&D expense also includes the impairment charges related to the IPR&D intangible assets.

Research and development expenses are expensed as incurred. Payments that were made for research and development services prior to the services being rendered are recorded as Prepaid expenses and other current assets on the Consolidated Balance Sheets and are expensed as the services are provided. Management also accrues the costs of ongoing clinical trials associated with programs that have been terminated or discontinued for which there is no future economic benefit at the time the decision is made to terminate or discontinue the program.

Selling, general and administrative expenses
Selling, general and administrative expenses are primarily comprised of compensation and benefits associated with sales and marketing, finance, human resources, legal, information technology and other administrative personnel, outside marketing, advertising and legal expenses and other general and administrative costs.

Advertising costs are expensed as incurred. Advertising costs amounted to $210.3 million, $216.0 million and $56.1 million for the years ended December 31, 2017, 2016 and 2015, respectively.

Collaborative arrangements
The Company enters into collaborative arrangements to develop and commercialize drug candidates. These collaborative arrangements often require up-front, milestone, royalty or profit share payments, or a combination of these, with payments often contingent upon the success of the related development and commercialization efforts. Collaboration agreements entered into by the Company may also include expense reimbursements or other such payments to the collaborating partner. The Company records payments received from the collaborative partners for their share of the development costs as a reduction of research and development expense.

For collaborations with commercialized products, if the Company is the principal, it records revenue and the corresponding operating costs in their respective line items in the Consolidated Statements of Operations. If the Company is not the principal, it records operating costs as a reduction of revenue.

Leased assets
The costs of operating leases are charged to operations on a straight-line basis over the lease term, even if rental payments are not made on such a basis.

Assets acquired under capital leases are included in the Consolidated Balance Sheets as property, plant and equipment and are depreciated over the shorter of the period of the lease or their useful lives. The capital element of future lease payments is recorded as a liability, while the interest element is charged to operations over the period of the lease to produce a level yield on the balance of the capital lease obligation.

Finance costs of debt
Financing costs relating to debt issued are recorded against the corresponding debt and amortized to the Consolidated Statements of Operations over the period to the earliest redemption date of the debt, using the effective interest rate method. On extinguishment of the related debt, any unamortized deferred financing costs are written off and charged to Interest expense in the Consolidated Statements of Operations.

Income taxes
The provision for income taxes includes Irish corporation tax, U.S. federal, state, local and other foreign taxes. Income taxes are accounted for under the liability method.

Uncertain tax positions are recognized in the consolidated financial statements for positions which are considered more likely than not of being sustained, based on the technical merits of the position on audit by the tax authorities. The measurement of the tax benefit recognized in the consolidated financial statements is based upon the largest amount of tax benefit that, in management's judgment, is greater than 50% likely of being realized based on a cumulative probability assessment of the possible outcomes.

The Company recognizes interest and penalties relating to income taxes within Income taxes. Interest income on cash required to be deposited with the tax authorities is recognized within Interest income.

Deferred tax assets and liabilities are recognized for differences between the carrying amounts of assets and liabilities in the consolidated financial statements and the tax bases of assets and liabilities that will result in future taxable or deductible amounts. The deferred tax assets and liabilities are measured using the enacted tax laws and rates applicable to the periods in which the differences are expected to affect taxable income.

Deferred tax assets are reduced by a valuation allowance when, in the opinion of management, it is more likely than not that some portion or all of the deferred tax assets will not be realized.

Earnings per share
Basic earnings per share is based upon net income attributable to the Company divided by the weighted average number of ordinary shares outstanding during the period. Diluted earnings per share is based upon net income attributable to the Company divided by the weighted average number of ordinary share equivalents outstanding during the period, adjusted for the dilutive effect of all potential ordinary shares equivalents that were outstanding during the year. Such potentially dilutive shares are excluded when the effect would be to increase diluted earnings per share or reduce the diluted loss per share.

Share-based compensation
The share-based compensation programs grant awards that include stock-settled share appreciation rights (SARs), stock options, performance share awards (PSAs), restricted stock units (RSUs) and performance share units (PSUs). The Company also operates a Global Employee Stock Purchase Plan, and Sharesave Plans in the UK and Ireland.

Share-based compensation represents the cost of share-based awards granted to employees. The Company measures share-based compensation cost for awards classified as equity at the grant date, based on the estimated fair value of the award. Predominantly all of the Company's awards have service and/or performance conditions and the fair values of these awards are estimated using a Black-Scholes valuation model.

2. Summary of Significant Accounting Policies continued

For share-based compensation awards which cliff vest, the Company recognizes the cost of the relevant share-based payment award as an expense on a straight-line basis (net of estimated forfeitures) over the employee's requisite service period. For those share-based compensation awards with a graded vesting schedule, the Company recognizes the cost of the relevant share-based payment award as an expense on a straight-line basis (net of estimated forfeitures) over the requisite service period for the entire award (that is, over the requisite service period for the last separately vesting portion of the award). The share-based compensation expense is recorded in Cost of product sales, R&D, SG&A, Reorganization costs and Integration and Acquisition costs in the Consolidated Statements of Operations based on the employees' respective functions.

The Company records deferred tax assets for awards that result in deductions on the Company's income tax returns, based on the amount of compensation cost recognized and the Company's statutory tax rate in the jurisdiction in which it will receive a deduction. For the years ended December 31, 2016 and 2015, differences between the deferred tax assets recognized for financial reporting purposes and the actual tax deduction reported on the Company's income tax returns were recorded in additional paid-in capital (if the tax deduction exceeds the deferred tax asset) or in the Consolidated Statements of Operations (if the deferred tax asset exceeds the tax deduction and no additional paid-in capital exists from previous awards). Following the adoption of new accounting guidance effective January 1, 2017, for the year ended December 31, 2017, differences between the deferred tax assets and the actual tax deduction reported on the Company's income tax returns were recorded in the Consolidated Statements of Operations, including if the tax deduction exceeds the deferred tax asset. The Company's share-based compensation plans are described in more detail in Note 27, Share-based Compensation Plans.

New Accounting Pronouncements

From time to time, new accounting pronouncements are issued by the Financial Accounting Standards Board (FASB) or other standard setting bodies that the Company adopts as of the specified effective date. Unless otherwise discussed below, the Company does not believe that the impact of recently issued standards that are not yet effective will have a material impact on the Company's financial position or results of operations upon adoption.

Adopted during the current period

Inventory

In July 2015, the FASB issued new guidance which requires an entity to measure inventory at the lower of cost and net realizable value. Net realizable value is defined as the estimated selling prices in the ordinary course of business, less reasonably predictable costs of completion, disposal and transportation. The Company adopted this standard as of January 1, 2017, which did not impact the Company's financial position or results of operations.

Share-Based Payment Accounting

In March 2016, the FASB issued Accounting Standards Update (ASU) No. 2016-09, Compensation — Stock Compensation (Topic 718): Improvements to Employee Share-Based Payment Accounting. The new standard requires recognition of the income tax effects of vested or settled awards in the income statement and involves several other aspects of the accounting for share-based payment transactions, including the income tax consequences, classification of awards as either equity or liabilities and classification on the Statements of Cash Flows and allows a one-time accounting policy election to account for forfeitures as they occur. The new standard was effective January 1, 2017.

The Company adopted ASU 2016-09 in the first quarter of 2017. Before adoption, excess tax benefits or deficiencies from the Company's equity awards were recorded as Additional paid-in capital in its Consolidated Balance Sheets. Upon adoption, the Company recorded any excess tax benefits or deficiencies from its equity awards in its Consolidated Statements of Operations in the reporting periods in which vesting or settlement occurs.

Amendments related to accounting for excess tax benefits have been adopted prospectively, resulting in recognition of excess tax benefits against Income taxes rather than Additional paid-in capital of $11.5 million for the twelve months ended December 31, 2017.

As a result of the adoption, the Company recorded an adjustment to Retained earnings of $39.0 million to recognize net operating loss carryforwards attributable to excess tax benefits on stock compensation that had not been previously recognized to Additional paid-in capital.

Excess tax benefits for share-based payments are now included in Net cash provided by operating activities rather than Net cash provided by financing activities. The changes have been applied prospectively in accordance with the ASU and prior periods have not been adjusted.

Upon adoption of ASU 2016-09, the Company elected to account for forfeitures in relation to service conditions as they occur. The change was applied on a modified retrospective basis with a cumulative effect adjustment to Retained earnings of $10.7 million as of January 1, 2017.

Definition of a Business

In January 2017, the FASB issued ASU No. 2017-01, Business Combinations (Topic 805): Clarifying the Definition of a Business. This new standard clarifies the definition of a business and provides guidance to determine when an integrated set of assets and activities is not a business. The Company adopted this standard prospectively on January 1, 2017.

To be adopted in future periods

Simplifying the Test for Goodwill Impairment

In January 2017, the FASB issued ASU No. 2017-04, Intangibles — Goodwill and Other (Topic 350): Simplifying the Test of Goodwill Impairment. This new standard simplifies how an entity is required to test goodwill for impairment by eliminating Step 2 from the goodwill impairment test. Step 2 measures a goodwill impairment loss by comparing the implied fair value of a reporting unit's goodwill with the carrying amount of that goodwill. This standard will be effective for the Company as of January 1, 2020, with early adoption permitted for annual goodwill impairment tests performed after January 1, 2017. The Company does not expect the adoption of this standard to have a material impact on its financial position and results of operations.

Revenue from Contracts with Customers

In May 2014, the FASB issued ASU No. 2014-09, Revenue from Contracts with Customers (Topic 606), which supersedes all existing revenue recognition requirements, including most industry-specific guidance. The new standard requires a company to recognize revenue when it transfers goods or services to customers in an amount that reflects the consideration that the company expects to receive for those goods or services. The new standard also requires additional qualitative and quantitative disclosures.

In August 2015, the FASB issued ASU No. 2015-14, Revenue from Contracts with Customers (Topic 606): Deferral of the Effective Date, which delayed the effective date of the new standard from January 1, 2017 to January 1, 2018.

The FASB has subsequently issued five additional ASUs amending the guidance in Topic 606, each with the same effective date and transition date of January 1, 2018. This amended guidance has been considered in the Company's overall assessment of Topic 606.

Shire will adopt this standard on January 1, 2018, using the modified retrospective transition method. The Company has identified two primary revenue streams from contracts with customers as part of its assessment: 1) product sales and 2) licensing arrangements.

The Company completed its assessment of implementing the new standard. The adoption of the new standard will not have a material impact to revenue recognition related to product revenue or licensing arrangements. The impact of the adoption will be recorded as a cumulative effect adjustment in the Consolidated Statement of Changes in Equity upon adoption on January 1, 2018.

Financial Instrument Accounting

In January 2016, the FASB issued ASU No. 2016-01, Financial Instruments — Overall (Subtopic 825-10): Recognition and Measurement of Financial Assets and Financial Liabilities. The new standard amends certain aspects of accounting and disclosure requirements of financial instruments, including the requirement that equity investments with readily determinable fair values be measured at fair value with changes in fair value recognized in the results of operations. This standard will be effective for the Company as of January 1, 2018. The adoption of this guidance will not have a material impact on its financial position and results of operations.

Leases

In February 2016, the FASB issued ASU No. 2016-02, Leases (Topic 842). The new accounting guidance will require the recognition of all long-term lease assets and lease liabilities by lessees and sets forth new disclosure requirements for those lease assets and liabilities. The standard requires lessees to recognize right-of-use assets and lease liabilities on the balance sheet using a modified retrospective approach at the beginning of the earliest comparative period in the financial statements. This standard will be effective for the Company as of January 1, 2019. Early adoption is permitted. The Company is currently evaluating the potential impact on its financial position and results of operations of adopting this guidance.

Statement of Cash Flows

In August 2016, the FASB issued ASU No. 2016-15, Statement of Cash Flows (Topic 230): Classification of Certain Cash Receipts and Cash Payments. The new standard clarifies certain aspects of the statement of cash flows, and aims to reduce diversity in practice regarding how certain transactions are classified in the statement of cash flows. This standard will be effective for the Company as of January 1, 2018. Early adoption is permitted. The adoption of this guidance will not have a material impact on the Company's Consolidated Statements of Cash Flows.

In November 2016, the FASB issued ASU 2016-18, Statement of Cash Flows (Topic 230): Restricted Cash. The new guidance is intended to reduce diversity in the presentation of restricted cash and restricted cash equivalents in the statement. The guidance requires that restricted cash and restricted cash equivalents be included as components of total cash and cash equivalents as presented on the statement of cash flows. This standard will be effective for the Company as of January 1, 2018. The adoption of this guidance will not have a material impact on the Company's Consolidated Statements of Cash Flows.

Income Taxes

In October 2016, the FASB issued ASU No. 2016-16, Income Taxes (Topic 740): Intra-Entity Transfers Other than Inventory. This standard removes the current exception in U.S. GAAP prohibiting entities from recognizing current and deferred income tax expenses or benefits related to transfer of assets, other than inventory, within the consolidated entity. The current exception to defer the recognition of any tax impact on the transfer of inventory within the consolidated entity until it is sold to a third party remains unaffected. The Company will adopt the standard effective January 1, 2018 using a modified retrospective approach with a cumulative-effect adjustment to opening retained earnings in the first quarter of 2018. The adoption of this guidance will not have a material impact on its financial position and results of operations.

Retirement Benefits Income Statement Presentation

In March 2017, the FASB issued ASU 2017-07, Compensation — Retirement Benefits (Topic 715): Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost. The standard amends the income statement presentation of the components of net periodic benefit cost for defined benefit pension and other postretirement plans. The standard requires entities to (1) disaggregate the current-service-cost component from the other components of net benefit cost (the "other components") and present it with other current compensation costs for related employees in the income statement and (2) present the other components elsewhere in the income statement and outside of income from operations if such a subtotal is presented. The standard also requires entities to disclose the income statement lines that contain the other components if they are not presented on appropriately described separate lines. This standard will be effective for the Company as of January 1, 2018. The adoption of this guidance will not have a material impact on its financial position and results of operations.

Share-Based Payment Accounting

In May 2017, the FASB issued ASU No. 2017-09, Compensation — Stock Compensation (Topic 718): Scope Modification Accounting. The new standard clarifies when changes to the terms or conditions of a share-based payment award must be accounted for as modifications. This standard will be effective for the Company as of January 1, 2018. Early adoption is permitted. The adoption of this guidance is not expected to have a material impact on the Company's financial position and results of operations.

2. Summary of Significant Accounting Policies continued

Derivatives and Hedging

In August 2017, the FASB issued ASU No. 2017-12, Derivatives and Hedging (Topic 815): Targeted Improvements to Accounting for Hedging Activities. The standard amends its hedge accounting model to enable entities to better portray the economics of their risk management activities in the financial statements. The new guidance also expands an entity's ability to hedge non-financial and financial risk components and reduces complexity in fair value hedges of interest rate risk. Additionally, it eliminates the requirement to separately measure and report hedge ineffectiveness, eases certain assessment requirements and modifies the accounting for components excluded from the assessment of hedge effectiveness. This standard will be effective for the Company as of January 1, 2019. Early adoption is permitted. The Company is currently evaluating the method of adoption and the potential impact on its financial position and results of operations of adopting this guidance.

3. Critical accounting estimates

The preparation of Financial Statements, in conformity with U.S. GAAP and SEC regulations, requires management to make estimates, judgments and assumptions that affect the reported and disclosed amounts of assets, liabilities and equity at the date of the consolidated financial statements and reported amounts of revenues and expenses during the period. On an on-going basis, the Company evaluates its estimates, judgments and methodologies. Estimates are based on historical experience, current conditions and on various other assumptions that are reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets, liabilities and equity and the amounts of revenues and expenses. Actual results may differ from these estimates under different assumptions or conditions.

Valuation of intangible assets, including In-process Research and Development (IPR&D)

In conjunction with the accounting for business combinations, the Company recorded intangible assets primarily related to commercially marketed products and IPR&D projects. The Company has intangible assets of $33,046.1 million as of December 31, 2017 and $34,697.5 million as of December 31, 2016.

If the Company acquires an asset or group of assets that do not meet the definition of a business under applicable accounting standards, the acquired IPR&D is expensed on its acquisition date. Future costs to develop these assets are recorded to Research and development expense as they are incurred.

The identifiable intangible assets are measured at their respective fair values as of the acquisition date. When significant identifiable intangible assets are acquired, the Company engages an independent third-party valuation firm to assist in determining the fair values of these assets as of the acquisition date. Discounted cash flow models are typically used in these valuations and the models used in valuing these intangible assets require the use of significant estimates and assumptions including but not limited to:

- estimates of revenues and operating profits related to the products or product candidates;
- the probability of success for unapproved product candidates considering their stages of development;
- the time and resources needed to complete the development and approval of product candidates;
- projecting regulatory approvals; and
- developing appropriate discount rates and probability rates by project.

The Company believes the fair values used to record intangible assets acquired in connection with a business combination are based upon reasonable estimates and assumptions given the facts and circumstances as of the acquisition date.

Impairment and Amortization of Long-lived Assets, including intangible assets

Long-lived assets to be held and used include intangible assets and PP&E. PP&E and Intangible assets related to the Company's commercially marketed products are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of the assets may not be recoverable. Management reviews intangible assets related to IPR&D product rights for impairment annually, as of October 1, and whenever events or changes in circumstances indicate that the carrying value of an asset may not be recoverable. When performing the impairment assessment, management calculates the fair value of the intangible assets using the same methodology as described above under "Valuation of intangible assets, including In-process Research and Development (IPR&D)." For PP&E, the Company uses a variety of methodologies to determine the fair value, including appraisals and discounted cash flow models, which estimate the future cash flows expected to result from the use of the asset and its eventual disposition. If the carrying value of long lived assets exceeds its fair value, then the asset is written-down to its fair value.

Intangible assets related to commercially marketed products are amortized over their estimated useful lives on an economic consumption method, or a straight-line basis when straight-line method approximates economic consumption method. Intangible assets related to IPR&D product rights are treated as indefinite-lived intangible assets and not amortized until the product is approved for sale by regulatory authorities in specified markets. At that time, the Company will determine the useful life of the asset, reclassify the asset out of IPR&D and begin amortization.

If IPR&D projects are not successfully developed and/or the value of the commercially marketed products becomes impaired, fail during development, are abandoned or subject to significant delay or do not receive the relevant regulatory approvals, the Company may not realize the future cash flows that it has estimated nor recover the value of the initial or subsequent R&D investments made subsequent to acquisition of the asset project. If such circumstances occur, the Company's future operating results could be materially adversely impacted.

Goodwill

Goodwill represents the excess of the consideration transferred over the estimated fair value of assets acquired and liabilities assumed in a business combination. The Company has $19,831.7 million and $17,888.2 million of goodwill as of December 31, 2017 and 2016, respectively, as a result of accounting for business combinations using the acquisition method of accounting.

The Company assesses the goodwill balance within its single reporting unit annually, as of October 1, and whenever events or changes in circumstances indicate the carrying value of goodwill may not be recoverable to determine whether any impairment in this asset may exist and, if so, the extent of such impairment. The Company reviews goodwill for impairment by assessing qualitative and quantitative factors, including comparing the market capitalization of the Company to the carrying value of its assets. Events or circumstances that might require an interim evaluation include unexpected adverse business conditions, economic factors, unanticipated technological changes or competitive activities and acts by governments and courts.

The Company completed its annual impairment test in the fourth quarters of 2017, 2016 and 2015, respectively, and determined in each of those periods that the carrying value of goodwill was not impaired. In each year, the fair value of the reporting unit, which includes goodwill, was significantly in excess of the carrying value of the reporting unit.

Revenue Recognition and Related Allowances

a. Product Revenue

The Company recognizes revenues from Product sales when there is persuasive evidence that an arrangement exists, delivery has occurred, the price is fixed or determinable and collectability is reasonably assured. The Company records Product sales net of sales deductions.

b. Other Revenue

Royalty income relating to licensed technology is generally recognized when the licensee sells the underlying product. The Company estimates sales amounts and related royalty income based on the historical product information. Estimates are revised pursuant to receiving sales information from the relevant licensee. If the Company is unable to reliably estimate the amount based on past experiences, the amount of royalty income is recorded when sales information from the relevant licensee is received.

c. Sales Deductions

Sales deductions consist primarily of statutory rebates to State Medicaid and other government agencies; Medicare Part D rebates; commercial rebates and fees to Managed Care Organizations (MCOs), Group Purchasing Organizations (GPOs), distributors and specialty pharmacies; product returns; sales discounts (including trade discounts); distribution service fees; wholesaler chargebacks; and allowances for coupon and patient assistance programs. These deductions are recorded as reductions to revenue in the same period as the related sales are recognized. Reserves are based on estimates of the amounts earned or to be claimed on the related sales. Estimates are based on the Company's historical experience of existing or similar programs, current contractual and statutory requirements, specific known market events and trends, industry data and forecasted customer buying and payment patterns. Additionally, certain rebates are based on annual purchase volumes which are not known until completion of the annual period on which they are based. As a result, the Company estimates the accruals and related reserves required for amounts payable under these programs.

If actual results vary, the Company may need to adjust these estimates, which could have an effect on earnings in the period of the adjustment.

Aggregate reserves for Medicaid and MCO rebates as of December 31, 2017, 2016 and 2015 were $1,612.7 million, $1,431.3 million and $982.4 million or 11%, 13% and 16%, respectively, of Product sales. Historically, actual rebates have not varied significantly from the reserves provided.

d. Product Returns

The Company typically accepts customer product returns in the following circumstances: (a) expiration of shelf life on certain products; (b) product damaged while in the Company's possession; (c) under sales terms that allow for unconditional return (guaranteed sales); or (d) following product recalls or product withdrawals. Generally, returns for expired product are accepted three months before and up to one year after expiration date of the relevant product and the returned product is destroyed. Depending on the product and the Company's return policy with respect to that product, the Company may either refund the sales price paid by the customer by issuance of a credit, or exchange the returned product with replacement inventory. The Company typically does not provide cash refunds.

The Company estimates the proportion of recorded revenue that will result in a return by considering relevant factors, including but not limited to:

- past product returns activity;
- the duration of time taken for products to be returned;
- the estimated level of inventory in the distribution channel;
- product recalls and discontinuances;
- the shelf life of products;
- the launch of new drugs or new formulations; and
- the loss of patent protection, exclusivity or new competition.

The accrual estimation process for product returns involves, in each case, a number of interrelating assumptions, which vary for each combination of product and customer.

As of December 31, 2017, 2016 and 2015, reserves for product returns were $175.7 million, $118.4 million, and $128.3 million or 1.2%, 1.1% and 2.1%, respectively, of Product sales. Historically, actual returns have not varied significantly from the reserves provided.

Income Taxes

The Company accounts for income taxes under the asset and liability method. Provisions for federal, state and foreign income taxes are calculated on reported pre-tax earnings based on current laws. Deferred taxes are provided using enacted tax rates on the future tax consequences of temporary differences, which are the differences between the financial statement carrying amount of assets and liabilities and their respective tax bases and the tax benefits of carryforwards. In the normal course of business, the Company is audited by the Irish and foreign tax authorities, and it is periodically challenged regarding the amount of taxes due. These challenges primarily relate to the timing and amount of deductions and the transfer pricing in various tax jurisdictions. The Company believes its tax positions comply with applicable tax law and the Company intends to defend its positions.

In accounting for uncertainty in income taxes, management is required to develop estimates as to whether a tax benefit should be recognized in the consolidated financial statements, based on whether it is more likely than not that the technical merits of the position will be sustained based on audit by the tax authorities. In accounting for income tax uncertainties, management is required to make judgments in the determination of the unit of account, the evaluation of the facts, circumstances and information in respect of the tax position taken, together with the estimates of amounts that the Company may be required to pay in ultimate settlement with the tax authority.

Any outcome upon settlement that differs from the recorded provision for uncertain tax positions may result in a materially higher or lower tax expense in future periods, which could significantly impact the Company's results of operations or financial condition. However, the Company does not believe it is possible to reasonably estimate the potential impact of any such change in assumptions, estimates or judgments and the resultant change, if any, in the Company's provision for uncertain tax positions, as any such change is dependent on factors such as future changes in tax law or administrative practice, the amount and nature of additional taxes which may be asserted by the taxation authorities, and the willingness of the relevant tax authorities to negotiate a settlement for any such position.

3. Critical accounting estimates continued

The Company has significant deferred tax assets due to various tax attributes, including net operating losses (NOLs) and tax credits from Research and Development activities principally in the Republic of Ireland, the U.S., Switzerland, Belgium and Germany. The realization of these assets is not assured and is dependent on various factors. Management is required to exercise judgment in determining whether it is more likely than not that it would realize these deferred tax assets. In assessing the need for a valuation allowance, management weighs all available positive and negative evidence including cumulative losses in recent years, expectations of future taxable income, carry forward and carry back potential under relevant tax law, expiration period of tax attributes, taxable temporary differences, and prudent and feasible tax-planning strategies. A valuation allowance is established where there is an expectation that on the balance of probabilities management considers it is more likely than not that the relevant deferred tax assets will not be realized. If actual events differ from management's estimates, or to the extent that these estimates are adjusted in the future, any changes to the valuation allowance could significantly impact the Company's financial condition and results of operations.

Litigation and legal proceedings

The Company has a number of lawsuits pending. The Company recognizes loss contingency provisions for probable losses when management is able to reasonably estimate the loss. Estimates of losses may be developed substantially before the ultimate loss is known, and are therefore refined each accounting period as additional information becomes known. In instances where the Company is unable to develop a reasonable estimate of loss, no loss contingency provision is recorded at that time; however, disclosure would be made if the loss contingency is at least reasonably possible to occur. These estimates are reviewed quarterly and changed when expectations are revised. An outcome that deviates from the Company's estimate may result in an additional expense (or credit) in a future accounting period. As of December 31, 2017, provisions for litigation losses, insurance claims and other disputes totaled $76.2 million (2016: $415.0 million).

Contingent consideration payable

The fair value of the Company's contingent consideration payable as of December 31, 2017 was $1,168.2 million (2016: $1,058.0 million).

Contingent consideration payable represents future milestones and royalties the Company may be required to pay in conjunction with various business combinations. The amounts ultimately payable by the Company are dependent upon the successful achievement of the relevant milestones and future net sales of the relevant products over the life of the milestone or royalty term, respectively.

The Company estimates the fair value of contingent consideration payable using the income approach, based on a discounted cash flow method. The discounted cash flow method uses inputs with values that may not be observable in a public trading market, including, but not limited to: the probability of, and period in which, the relevant milestone event is expected to be achieved; the amount of royalties that will be payable based on forecast net sales of the relevant products; and the discount rates to be applied in calculating the present values of the relevant milestone or royalty. Significant judgment is employed by the Company in developing these estimates and assumptions. If actual events differ from management's estimates, or to the extent that these estimates are adjusted in the future, the Company's financial condition and results of operations could be materially affected in the period of any such change of estimate.

Pension and other postemployment benefit (OPEB) plans

The valuation of the funded status and net periodic benefit cost is calculated using actuarial assumptions. These significant assumptions include the following:

- interest rates used to discount pension and OPEB plan liabilities;
- the long-term rate of return on pension plan assets;
- rates of increases in employee compensation (used in estimating liabilities);
- anticipated future healthcare costs (used in estimating the OPEB plan liability); and
- other assumptions involving demographic factors such as retirement, mortality and turnover (used in estimating liabilities).

Selecting assumptions involves an analysis of both short-term and long-term historical trends and known economic and market conditions at the time of the measurement date. The use of different assumptions would result in different measures of the funded status and net cost. Actual results in the future could differ from expected results. A 50 basis points decrease in the discount rate would result in an annual increase in pension and other postretirement benefit expense of approximately $6.5 million and an increase in the benefit obligation of approximately $108.2 million. A 50 basis points increase in the discount rate would result in an annual decrease in pension and other postretirement benefit expense of approximately $7.3 million and an decrease in the benefit obligation of approximately $93.8 million The Company's key assumptions are listed in Note 19,Retirement and Other Benefit Programs, to the consolidated financial statements.

Share-based compensation

The Company makes certain assumptions in order to value and record expense associated with awards made under the share-based compensation arrangements. Changes in these assumptions may lead to variability with respect to the amount of expense recognized in connection with share-based payments.

The Company uses the Black-Scholes model to compute the estimated fair value of stock option awards. Using this model, fair value is calculated based on assumptions with respect to (i) expected volatility of stock price, (ii) the periods of time options are expected to be held prior to exercise (expected lives), (iii) expected dividend yield on common stock, and (iv) risk-free interest rates.

Restructuring costs

The Company has made estimates and judgments regarding the amount and timing of its restructuring expense and liability, including current and future period termination benefits and other exit costs to be incurred when related actions take place. Severance and other related costs are reflected in the Consolidated Statements of Operations as a component of Reorganization costs or Integration and acquisition costs. Actual results may differ from these estimates.

4. Business Combinations

Acquisition of Baxalta

On June 3, 2016, Shire acquired all of the outstanding common stock of Baxalta for $18.00 per share in cash and 0.1482 Shire American Depository Shares (ADSs) per Baxalta share, or if a former Baxalta shareholder properly elected, 0.4446 Shire ordinary shares per Baxalta share.

Baxalta was a global biopharmaceutical company that focused on developing, manufacturing and commercializing therapies for orphan diseases and underserved conditions in hematology, immunology and oncology.

The purchase price consideration for the acquisition of Baxalta was finalized in the second quarter of 2017. The fair value of the purchase price consideration consisted of the following:

	Fair value $'M
Cash paid to shareholders	12,366.7
Fair value of stock issued to shareholders	19,353.2
Fair value of partially vested stock options and RSUs assumed	508.8
Contingent consideration payable	165.0
Total purchase price consideration	32,393.7

The acquisition of Baxalta was accounted for as a business combination using the acquisition method of accounting. Shire issued 305.2 million shares to former Baxalta shareholders at the date of the acquisition. For a more detailed description of the fair value of the partially vested stock options and RSUs assumed, refer to Note 27, Share-based Compensation Plans, to the consolidated financial statements.

The assets acquired and the liabilities assumed from Baxalta have been recorded at their fair value as of June 3, 2016, the date of acquisition. The Company's consolidated financial statements included the results of Baxalta from the date of acquisition. The amount of Baxalta's post-acquisition revenues included in the Company's Consolidated Statements of Operations for the year ended December 31, 2016 was $4,011.6 million. After the closing of the acquisition, the Company began integrating Baxalta and as such the combined business is now sharing various research and development and selling, general and administrative functions. As a result, computing a separate measure of Baxalta's stand-alone profitability for periods after the acquisition date is not practical.

The purchase price allocation for the acquisition of Baxalta was finalized in the second quarter of 2017. The Company's allocation of the purchase price to the assets acquired and liabilities assumed as of the acquisition date, including measurement period adjustments, is outlined below.

	Preliminary value as of acquisition date (as previously reported as of December 31, 2016) $'M	Measurement period adjustments $'M	Fair value $'M
Assets			
Current assets:			
Cash and cash equivalents	583.2	–	583.2
Accounts receivable	1,069.7	(96.4)	973.3
Inventories	3,893.4	81.2	3,974.6
Other current assets	576.0	5.3	581.3
Total current assets	6,122.3	(9.9)	6,112.4
Property, plant and equipment	5,452.7	(46.5)	5,406.2
Investments	128.2	–	128.2
Goodwill	11,422.4	1,076.2	12,498.6
Intangible assets			
Currently marketed products	21,995.0	(830.0)	21,165.0
In-Process Research and Development (IPR&D)	730.0	(570.0)	160.0
Contract based arrangements	42.2	–	42.2
Other non-current assets	155.0	69.7	224.7
Total assets	46,047.8	(310.5)	45,737.3
Liabilities			
Current liabilities:			
Accounts payable and accrued expenses	1,321.9	(2.7)	1,319.2
Other current liabilities	354.4	9.0	363.4
Long term borrowings and capital leases	5,424.9	–	5,424.9
Deferred tax liability	5,445.3	(315.0)	5,130.3
Other non-current liabilities	1,103.6	2.2	1,105.8
Total liabilities	13,650.1	(306.5)	13,343.6
Fair value of identifiable assets acquired and liabilities assumed	32,397.7	(4.0)	32,393.7
Consideration			
Fair value of purchase consideration	32,397.7	(4.0)	32,393.7

4. Business Combinations continued

The measurement period adjustments for Intangible assets reflect changes in the estimated fair value of currently marketed products and IPR&D. Changes are mainly related to finalizing the unit of account judgments and other changes in estimates including Cost of sales allocation and royalty expense. The measurement period adjustments for Inventory primarily reflect refinements in the estimated selling price of inventory. The changes in the estimated fair values primarily are to more accurately reflect market participant assumptions about facts and circumstances existing as of the acquisition date. The measurement period adjustments did not result from intervening events subsequent to the acquisition date.

As a result of measurement period adjustments related to the change in fair value of currently marketed products and inventory, a charge of $85.2 million was recognized in Cost of sales and a benefit of $23.3 million was recognized in Amortization of acquired intangible assets, respectively, in the Company's Consolidated Statements of Operations. These adjustments would have been recorded during the year ended December 31, 2016 if these adjustments had been recognized as of the acquisition date.

Intangible assets

The fair value of the identifiable intangible assets has been estimated using an income approach, which is a valuation technique that provides an estimate of the fair value of an asset based on market participant expectations of the incremental after tax cash flows an asset would generate over its remaining useful life. The useful lives for currently marketed products were determined based upon the remaining useful economic lives of the assets that are expected to contribute to future cash flows.

Currently marketed products totaling $21,165.0 million relate to intellectual property (IP) rights acquired for Baxalta's currently marketed products. The estimated useful life of the intangible assets related to currently marketed products range from 6 to 23 years (weighted average 21 years), with amortization being recorded on a straight-line basis.

IPR&D intangible assets totaling $160.0 million represent the value assigned to R&D projects acquired. The IPR&D intangible assets are capitalized and accounted for as indefinite-lived intangible assets and will be subject to impairment testing until completion or abandonment of the projects. Upon successful completion of each project, the Company will make a separate determination of the estimated useful life of the IPR&D intangible asset and the related amortization will be recorded as an expense over the estimated useful life.

Some of the more significant assumptions inherent in the development of those asset valuations include the estimated net cash flows for each year for each asset or product (including net revenues, cost of sales, R&D costs, selling and marketing costs, working capital/asset contributory asset charges and other cash flow assumptions), the appropriate discount rate to select in order to measure the risk inherent in each future cash flow stream, the assessment of each asset's life cycle, the potential regulatory and commercial success risks, competitive trends impacting the asset and each cash flow stream as well as other factors.

The discount rate used to arrive at the present value at the acquisition date of the IPR&D intangible assets was 9.5% to reflect the internal rate of return and incremental commercial uncertainty in the cash flow projections. No assurances can be given that the underlying assumptions used to prepare the discounted cash flow analysis will not change. For these and other reasons, actual results may vary significantly from estimated results.

Goodwill

Goodwill of $12,498.6 million, which is not deductible for tax purposes, includes the expected synergies that will result from combining the operations of Baxalta with Shire, intangible assets that do not qualify for separate recognition at the time of the acquisition, the value of the assembled workforce, and impacted by establishing a deferred tax liability for the acquired identifiable intangible assets which have no tax basis.

Contingent consideration

The Company acquired certain contingent obligations classified as contingent consideration related to Baxalta's historical business combinations. Additional consideration is conditionally due upon the achievement of certain milestones related to the development, regulatory, first commercial sale and other sales milestones, which could total up to approximately $1.5 billion. The Company may also pay royalties based on certain product sales. The Company estimated the fair value of the assumed contingent consideration to be $165.0 million using a probability weighting approach that considered the possible outcomes based on assumptions related to the timing and probability of the product launch date, discount rates matched to the timing of first payment and probability of success rates and discount adjustments on the related cash flows.

Inventory

The estimated fair value of work-in-process and finished goods inventory was determined utilizing the net realizable value, based on the expected selling price of the inventory, adjusted for incremental costs to complete the manufacturing process and for direct selling efforts, as well as for a reasonable profit allowance. The estimated fair value of raw material inventory was valued at replacement cost, which is equal to the value a market participant would pay to acquire the inventory.

The fair value adjustment related to inventory is expensed based on the expected product-specific inventory utilization, which is reviewed on a periodic basis and is recorded within Cost of sales in the Company's Consolidated Statements of Operations.

Retirement plans

The Company assumed pension plans as part of the acquisition of Baxalta, including defined benefit and post-retirement benefit plans in the U.S. and foreign jurisdictions, which had a net liability balance of $610.4 million. As of June 3, 2016, the Baxalta defined benefit pension plans had assets with a fair value of $358.5 million.

Integration and acquisition costs

In the year ended December 31, 2017, the Company expensed $763.9 million relating to the acquisition and integration of Baxalta, which have been recorded within Integration and acquisition costs in the Company's Consolidated Statements of Operations. Refer to Note 6, Integration and Acquisition Costs, for further information regarding the Company's Integration and acquisition costs for the year ended December 31, 2017.

Supplemental disclosure of pro forma information

The following unaudited pro forma financial information presents the combined results of the operations of Shire and Baxalta as if the acquisition of Baxalta had occurred as of January 1, 2015. The unaudited pro forma financial information is not necessarily indicative of what the consolidated results of operations actually would have been had the respective acquisition been completed on January 1, 2015. In addition, the unaudited pro forma financial information does not purport to project the future results of operations of the combined Company.

	Year ended December 31, 2016 $'M
Revenues	13,999.6
Net income from continuing operations	2,213.6
Per share amounts:	
Net income from continuing operations per share — basic	2.87
Net income from continuing operations per share — diluted	2.85

The unaudited pro forma financial information above reflects the following pro forma adjustments:

(i) an adjustment to increase net income for the year ended December 31, 2016 by $678.9 million to eliminate integration and acquisition related costs incurred by Shire and Baxalta;

(ii) an adjustment to increase net income for the year ended December 31, 2016 by $847.9 million to reflect the expense related to the unwind of inventory fair value adjustments as inventory is sold;

(iii) an adjustment to increase amortization expense for the year ended ended December 31, 2016 by $304.0 million related to the identifiable intangible assets acquired; and

(iv) an adjustment to decrease net income for the year ended December 31, 2016 by $42.5 million, primarily related to the additional interest expense associated with the debt incurred to partially fund the acquisition of Baxalta and the amortization of related deferred debt issuance costs.

The adjustments above are stated net of their tax effects, where applicable.

Acquisition of Dyax

On January 22, 2016, Shire acquired all of the outstanding common stock of Dyax for $37.30 per share in cash. Under the terms of the merger agreement, former Dyax shareholders may receive additional value through a non-tradable contingent value right worth $4.00 per share, payable upon U.S. Food and Drug Administration (FDA) approval of SHP643 (formerly DX-2930) in Hereditary Angioedema (HAE).

Dyax was a publicly-traded, Massachusetts-based rare disease biopharmaceutical company primarily focused on the development of plasma kallikrein (pKal) inhibitors for the treatment of HAE. Dyax's most advanced clinical program was SHP643, a Phase 3 program with the potential for improved efficacy and convenience for HAE patients. SHP643 has received Fast Track, Breakthrough Therapy, and Orphan Drug Designations by the FDA and has also received Orphan Drug status in the EU. Dyax's sole marketed product, KALBITOR, is a pKal inhibitor for the treatment of acute attacks of HAE in patients 12 years of age and older.

The acquisition of Dyax was accounted for as a business combination using the acquisition method. The acquisition-date fair value consideration was $6,330.0 million, comprising cash paid on closing of $5,934.0 million and the fair value of the contingent value right of $396.0 million (maximum payable $646.0 million). The assets acquired and the liabilities assumed from Dyax have been recorded at their fair value as of January 22, 2016, the date of acquisition. The Company's consolidated financial statements include the results of Dyax as of January 22, 2016. The amount of Dyax's post-acquisition revenues included in the Company's Consolidated Statements of Operations for the year ended December 31, 2016 is $77.1 million. After the closing of the acquisition, the Company began integrating Dyax and as such the combined business is now sharing various research and development and selling, general and administrative functions. As a result, computing a separate measure of Dyax's stand-alone profitability for periods after the acquisition date is not practical.

The purchase price allocation for the acquisition of Dyax was finalized in the first quarter of 2017. The allocation of the total purchase price is outlined below.

	Fair value $'M
Assets	
Current assets:	
Cash and cash equivalents	241.2
Accounts receivable	22.5
Inventories	20.2
Other current assets	8.1
Total current assets	292.0
Property, plant and equipment	5.8
Goodwill	2,702.1
Intangible assets	
Currently marketed projects	135.0
IPR&D	4,100.0
Contract based royalty arrangements	425.0
Other non-current assets	28.6
Total assets	7,688.5
Liabilities	
Current liabilities:	
Accounts payable and accrued expenses	30.0
Other current liabilities	1.7
Deferred tax liability	1,325.4
Other non-current liabilities	1.4
Total liabilities	1,358.5
Fair value of identifiable assets acquired and liabilities assumed	6,330.0
Consideration	
Fair value of purchase consideration	6,330.0

Currently marketed products

Currently marketed products totaling $135.0 million relate to intellectual property rights acquired for KALBITOR. The fair value of the currently marketed product has been estimated using an income approach, based on the present value of incremental after tax cash flows attributable to KALBITOR.

The estimated useful life of the KALBITOR intangible asset is 18 years, with amortization being recorded on a straight-line basis.

IPR&D

The IPR&D asset of $4,100.0 million relates to Dyax's clinical program SHP643, a Phase 3 program with the potential for improved efficacy and convenience for HAE patients. The IPR&D intangible asset is capitalized and accounted for as indefinite-lived intangible assets and will be subject to impairment testing until completion or abandonment of the projects. The fair value of this IPR&D asset was estimated based on an income approach, using the present value of incremental after tax cash flows expected to be generated by this development project. The estimated cash flows have been probability adjusted to take into account the development stage of completion and the remaining risks and uncertainties surrounding the future development and commercialization.

4. Business Combinations continued

The estimated probability adjusted after tax cash flows used to estimate the fair value of intangible assets have been discounted at 9%.

Royalty rights

Intangible assets totaling $425.0 million relate to royalty rights arising from licensing agreements of a portfolio of product candidates. This portfolio includes two approved products, marketed by Eli Lilly & Company, and various development-stage products. Multiple product candidates with other pharmaceutical companies are in various stages of clinical development for which the Company is eligible to receive future royalties and/or milestone payments.

The fair value of these royalty rights has been estimated using an income approach, based on the present value of incremental after-tax cash flows attributable to each royalty right.

The estimated useful lives of these royalty rights range from seven to nine years (weighted average eight years), with amortization being recorded on a straight-line basis.

Goodwill

Goodwill of $2,702.1 million, which is not deductible for tax purposes, includes the expected synergies that will result from combining the operations of Dyax with Shire; intangible assets that do not qualify for separate recognition at the time of the acquisition; the value of the assembled workforce; and impacted by establishing a deferred tax liability for the acquired identifiable intangible assets which have no tax basis.

Supplemental disclosure of pro forma information

The following unaudited pro forma financial information presents the combined results of the operations of Shire and Dyax as if the acquisitions of Dyax had occurred as of January 1, 2015. The unaudited pro forma financial information is not necessarily indicative of what the consolidated results of operations actually would have been had the respective acquisition been completed at the date indicated. In addition, the unaudited pro forma financial information does not purport to project the future results of operations of the combined Company.

	Year ended December 31, 2016 $'M
Revenues	11,402.5
Net income from continuing operations	792.2
Per share amounts:	
Net income from continuing operations per share — basic	1.03
Net income from continuing operations per share — diluted	1.02

The unaudited pro forma financial information above reflects the following pro forma adjustments:

(i) an adjustment to increase net income for the year ended December 31, 2016 by $111.1 million to eliminate acquisition related costs incurred by Shire and Dyax and

(ii) an adjustment to increase amortization expense for the year ended December 31, 2016 by $1.3 million related to the identifiable intangible assets acquired.

The adjustments above are stated net of their tax effects, where applicable.

5. Collaborative and Other Licensing Arrangements

The Company is party to certain collaborative and licensing arrangements. In some of these arrangements, Shire and the licensee are both actively involved in the development and commercialization of the licensed product and have exposure to risks and rewards dependent on its commercial success.

Out-licensing arrangements

The Company has entered into various licensing arrangements where it has licensed certain product or intellectual property rights for consideration such as up-front payments, development milestones, sales milestones and/or royalty payments. Under the terms of these licensing arrangements, the Company may receive development milestone payments up to an aggregate amount of $10.3 million and sales milestones up to an aggregate amount of $91.0 million. The receipt of these substantive milestones is uncertain and contingent on the achievement of certain development milestones or the achievement of a specified level of annual net sales by the licensee. During the years ended 2017 and 2016, the Company received cash related to up-front and milestone payments of $9.1 million and $10.5 million, respectively. During the years ended 2017, 2016 and 2015, the Company recognized milestone income of $82.5 million, $17.4 million and $8.9 million, respectively, in other revenues, and $34.6 million, $63.0 million and $51.0 million, respectively, in product sales for shipment of product to the relevant licensee.

Collaboration and in-licensing arrangements

The Company is party to various collaborative and in-licensing arrangements. These agreements generally provide for commercialization rights to a product or products being developed by the counterparty, and in exchange often resulted in an upfront payment upon execution of the agreement and an obligation that the Company make future development, regulatory approval or commercial milestone payments as well as royalty payments. Under the terms of these licensing arrangements, the Company made an initial $47.5 million, $110.0 million and $nil upfront license payment and milestone payments during the years ended 2017, 2016 and 2015, respectively, which were included in Research and development expense in the Company's Consolidated Statements of Operations. As of the December 31, 2017, the Company had the potential to make future payments related to option fees and development, regulatory and commercialization milestones totaling up to $5.5 billion, excluding potential future royalty payments.

The following is a description of the Company's significant collaboration agreements, including those that were acquired by the Company. The acquisition-date fair value of the collaboration agreements acquired from Baxalta was included in the IPR&D.

Rani Therapeutics LLC

In December 2017, Shire entered into a collaboration agreement with Rani Therapeutics, LLC (Rani) to conduct research on the use of the RANI PILL technology for oral delivery of Factor VIII (FVIII) therapy for patients with hemophilia A. The collaboration agreement grants Shire an exclusive option to negotiate a license to develop and commercialize the technology for delivery of FVIII therapy following completion of feasibility studies. Shire also made an equity investment in Rani.

Novimmune S.A.

In July 2017, Shire entered into a licensing agreement with Novimmune S.A. (Novimmune). The license grants Shire exclusive worldwide rights to develop and commercialize a bi-specific antibody in preclinical development for the treatment of hemophilia A and hemophilia A patients with inhibitors. Under the terms of the agreement, Shire will develop, and if approved, commercialize the product. Shire made an initial upfront license payment. Novimmune will be entitled to receive additional potential milestone payments based on clinical, regulatory and commercial milestones and single-digit royalties.

Parion Sciences Inc.

In May 2017, Shire entered into an agreement to license the exclusive worldwide rights to SHP659 (formerly known as P-321) from Parion Sciences Inc. (Parion). SHP659 is a Phase 2 investigational epithelial sodium channel inhibitor for the potential treatment of dry eye disease in adults. Under the terms of the agreement, Shire will develop, and if approved, commercialize this compound. Shire made an initial upfront license payment. Parion will be entitled to receive additional potential milestone payments based on clinical, regulatory and commercial milestones and Parion has the option to co-fund through additional stages of development in exchange for enhanced tiered low double-digit royalties. In addition, Parion has the option to co-fund commercialization activities and participate in the financial outcome from those activities.

Pfizer Inc.

In July 2016, the Company licensed the global rights to all indications for SHP647 from Pfizer Inc. (Pfizer) SHP647 is an investigational biologic being evaluated for the treatment of moderate-to-severe inflammatory bowel disease. Under the terms of the agreement, Pfizer received an upfront payment and is eligible to receive milestone payments based on clinical, regulatory and commercialization milestones and low double-digit royalties on any potential sales if the product is approved.

Precision BioSciences Inc.

In June 2016, the Company acquired a strategic immuno-oncology collaboration with Precision BioSciences Inc. (Precision). The Company acquired the collaboration through the acquisition of Baxalta. Together, Shire and Precision will develop chimeric antigen receptor (CAR) T cell therapies for up to six unique targets. On a product-by-product basis, following successful completion of early-stage research activities up to and including Phase 2 clinical trials, Shire will have exclusive option rights to complete late-stage development and worldwide commercialization. Precision is responsible for development costs for each target prior to option exercise. Precision also has the right to participate in the development and commercialization of any licensed products resulting from the collaboration through a 50/50 co-development and co-promotion option in the United States. Precision is eligible to receive option fees and milestone payments based on development, regulatory and commercialization milestones, in addition to future royalty payments.

Symphogen

In June 2016, the Company acquired a research, option and commercial agreement with Symphogen. The Company acquired the agreement through the acquisition of Baxalta. Under the terms of the agreement, Shire and Symphogen plan to develop checkpoint inhibitor therapies for up to six unique targets. On a product-by-product basis, following successful completion of early-stage research activities up to and including Phase 1 clinical trials, Shire will have exclusive option rights to complete late-stage development and worldwide commercialization. Symphogen is responsible for development costs for each target prior to such option exercise. Symphogen is eligible to receive milestone payments based on development, regulatory and commercialization milestones achieved after option exercise for all six proteins and future royalty payments.

Ipsen Bioscience Inc.

In June 2016, the Company acquired an exclusive license agreement with Ipsen Bioscience Inc.'s predecessor, Merrimack Pharmaceuticals, Inc. (Merrimack) relating to the development and commercialization of ONIVYDE (nanoliposomal irinotecan injection) (nal-IRI). The Company acquired the agreement through the acquisition of Baxalta. The arrangement includes all potential indications for nal-IRI across all markets with the exception of the U.S. and Taiwan. The first indication being pursued is for the treatment of patients with metastatic pancreatic cancer who were previously treated with gemcitabine-based therapy. Ipsen is eligible to receive milestone payments related to development, regulatory and commercialization milestones.

6. Integration and Acquisition Costs

For the year ended December 31, 2017, Shire recorded Integration and acquisition costs of $894.5 million, primarily due to the acquisition and integration of Baxalta. A charge of $120.7 million relating to the change in fair value of contingent consideration payable is included in these costs.

The Company entered its second phase of integration activities during 2017. The costs associated with this phase primarily related to headcount reduction as the Company advanced and completed certain activities related to exiting transition services agreements (TSA) with Baxter, integrating legal entities and rationalization of the Company's manufacturing facilities. For further details on existing agreements with Baxter, refer to Note 28, Agreements and Transactions with Baxter, of these consolidated financial statements. The Company also drove savings through the continued prioritization of its research and development programs and continued consolidation of its commercial operations. The integration of Baxalta is estimated to be completed by mid to late 2019.

The Baxalta integration and acquisition costs include $211.6 million of employee severance and acceleration of stock compensation, $140.3 million of third-party professional fees, $89.9 million of expenses associated with facility consolidations and $231.7 million of asset impairments for the year ended December 31, 2017. The Company expects the majority of these expenses, except for certain costs related to facility consolidations, to be paid within 12 months from the date the related expenses were incurred.

6. Integration and Acquisition Costs continued

The following table summarizes the type and amount of costs recorded and the related reserve for the years ended December 31, 2017 and 2016:

	Severance and employee benefits $'M	Lease terminations $'M	Total $'M
As of January 1, 2016	–	–	–
Amount charged to integration costs	267.3	–	267.3
Paid/utilized	(193.3)	–	(193.3)
As of December 31, 2016	74.0	–	74.0
Amount charged to integration costs	175.2	72.7	247.9
Paid/utilized	(176.3)	(16.1)	(192.4)
As of December 31, 2017	**72.9**	**56.6**	**129.5**

For the year ended December 31, 2016, Shire recorded Integration and acquisition costs of $883.9 million primarily related to the acquisition and integration of Dyax and Baxalta. These costs primarily consist of $463.4 million of employee severance and acceleration of stock compensation, $378.7 million of third-party professional fees, $58.1 million of contract terminations and a credit of $11.1 million relating to the change in fair value of contingent consideration.

For the year ended December 31, 2015, Shire recorded net integration and acquisition costs of $39.8 million. The net integration and acquisition costs principally comprises costs related to the acquisition and integration of NPS Pharma, Viropharma, Dyax and Baxalta of $189.7 million, offset by a net credit relating to the change in the fair value of contingent consideration liabilities of $149.9 million. This net credit principally relates to the acquisition of Lumena, reflecting the agreement in the third quarter of 2015 to settle all future contingent milestones payable to former Lumena shareholders for a one-time cash payment of $90.0 million and the acquisition of Lotus Tissue Repair, Inc. reflecting a lower probability of success for the SHP608 asset (for the treatment of Dystrophic Epidermolysis Bullosa (DEB) as a result of certain preclinical toxicity findings.

7. Reorganization Costs

The Company incurred Reorganization costs totaling $47.9 million during the year ended December 31, 2017. The costs primarily related to the planned closure of certain facilities and associated costs of $28.1 million and employee termination and other costs of $10.6 million. As of December 31, 2017, cash payments associated with these costs were not significant. Other restructuring charges recorded, which were not significant, during the year ended December 31, 2017 relate to professional and consulting fees.

The Company incurred reorganization costs totaling $121.4 million during the year ended December 31, 2016. The costs primarily related to the planned closure of certain manufacturing facilities and associated asset impairments of $77.4 million and employee termination and other costs of $16.2 million. As of December 31, 2016, cash payments associated with these costs were not significant. Other restructuring charges recorded, which were not significant for the year ended December 31, 2016, relate to the closure of other offices and the related employee relocation.

In October 2014, the Company announced its plans to relocate positions to Lexington, Massachusetts from its Chesterbrook, Pennsylvania site and establish Lexington as the Company's U.S. operational headquarters in continuation of the One Shire efficiency program. During 2015, the Company incurred reorganization costs totaling $97.9 million, primarily related to employee involuntary termination benefits and other reorganization costs primarily related to the Company's One Shire business reorganization. The One Shire reorganization was substantially completed as of December 31, 2015.

8. Results of Discontinued Operations

Following the divestment of the Company's DERMAGRAFT business in January 2014, the operating results associated with the DERMAGRAFT business have been classified as discontinued operations in the Company's Consolidated Statements of Operations for all periods presented.

During the year ended December 31, 2017, the Company recorded a gain of $18.0 million (net of tax of $8.9 million), primarily related to legal contingencies related to the divested DERMAGRAFT business and the release of escrow to Shire.

In January 2017, Shire entered into a final settlement agreement with the Department of Justice (DOJ) in the amount of $350.0 million, plus interest which was accrued in 2016 and paid during 2017.

After the civil settlement with the DOJ was finalized, Shire and Advanced BioHealing Inc.'s (ABH) equity holders entered into a settlement agreement and ABH's equity holders released the $37.5 million escrow to Shire. Shire released the claims against ABH equity holders upon receiving the entire amount held in escrow.

During the year ended December 31, 2016, the Company recorded a loss of $276.1 million (net of tax benefit of $98.8 million), primarily related to legal contingencies related to the divested DERMAGRAFT business.

During the year ended December 31, 2015, the Company recorded a loss from discontinued operations of $34.1 million (net of tax benefit of $18.9 million), primarily relating to a change in estimate in relation to reserves for onerous leases retained by the Company.

9. Accounts Receivable, Net

Accounts receivable as of December 31, 2017 of $3,009.8 million (December 31, 2016: $2,616.5 million), are stated at the invoiced amount and net of reserve for discounts and doubtful accounts of $271.5 million (December 31, 2016: $169.6 million).

Reserve for discounts and doubtful accounts:

	2017 $'M	2016 $'M	2015 $'M
As of January 1	**169.6**	55.8	48.5
Provision charged to operations	**1,408.1**	838.1	424.2
Payments/credits	**(1,306.2)**	(724.3)	(416.9)
As of December 31	**271.5**	169.6	55.8

As of December 31, 2017, accounts receivable included $106.6 million (December 31, 2016: $102.2 million) related to royalties receivable.

10. Inventories

Inventories are stated at the lower of cost and net realizable value. Inventories comprise:

Years to December 31	2017 $'M	2016 $'M
Finished goods	**926.1**	1,380.0
Work-in-progress	**1,574.0**	1,491.0
Raw materials	**791.4**	691.3
	3,291.5	3,562.3

For a more detailed description of inventories acquired, refer to Note 4, Business Combinations, to these consolidated financial statements.

11. Prepaid Expenses and Other Current Assets

Components of prepaid expenses and other current assets are summarized as follows:

Years to December 31	2017 $'M	2016 $'M
Prepaid expenses	**242.6**	183.9
Income tax receivable	**179.9**	237.5
Value added taxes receivable	**59.8**	40.3
Other current assets	**313.0**	344.6
	795.3	806.3

12. Property, Plant and Equipment, Net

Property, plant and equipment are recorded at historical cost, net of accumulated depreciation. Components of Property, plant and equipment, net are summarized as follows:

Years to December 31	2017 $'M	2016 $'M
Land	**332.3**	337.9
Buildings and leasehold improvements	**1,940.7**	1,915.4
Machinery, equipment and other	**3,106.3**	2,547.2
Assets under construction	**2,568.2**	2,632.5
Total property, plant and equipment at cost	**7,947.5**	7,433.0
Less: Accumulated depreciation	**(1,312.1)**	(963.4)
Property, plant and equipment, net	**6,635.4**	6,469.6

Depreciation expense for the years ended December 31, 2017, 2016 and 2015 was $495.8 million, $292.9 million and $138.5 million, respectively.

During 2017, the Company determined it would divest certain facilities as part of its integration efforts. As of December 31, 2017, the Company classified $19.2 million of assets as held for sale, which were reported in Prepaid expenses and other current assets. The $19.2 million of held for sale assets was net of $27.7 million of impairment charges recorded during 2017 and consisted primarily of property, plant and equipment. The impairment charges were reported in Integration and acquisition costs.

The Company also completed the sales of certain assets during 2017 that were previously classified as held for sale for total cash proceeds of $34.6 million. Prior to the sales, the Company recorded held for sale impairment charges of $44.1 million on those assets in 2017, which were also reported in Integration and acquisition costs.

13. Goodwill

The following table provides a roll-forward of the Goodwill balance:

	2017 $'M	2016 $'M
As of January 1	**17,888.2**	4,147.8
Acquisitions	**1,076.2**	14,124.5
Foreign currency translation and other	**867.3**	(384.1)
As of December 31	**19,831.7**	17,888.2

The increase in Goodwill during the year ended December 31, 2017 related to the measurement period adjustments of the acquisition of Baxalta. For a more detailed description of measurement period adjustments, refer to Note 4, Business Combinations, to these consolidated financial statements.

14. Intangible assets

The following table summarizes the Company's intangible assets:

	Currently marketed products	IPR&D	Other intangible assets	Total
December 31, 2017				
Gross acquired intangible assets	**31,973.5**	**5,113.9**	**835.9**	**37,923.3**
Accumulated amortization	**(4,549.2)**	**–**	**(328.0)**	**(4,877.2)**
Intangible assets, net	**27,424.3**	**5,113.9**	**507.9**	**33,046.1**
December 31, 2016				
Gross acquired intangible assets	31,217.5	5,746.6	842.2	37,806.3
Accumulated amortization	(2,908.6)	–	(200.2)	(3,108.8)
Intangible assets, net	28,308.9	5,746.6	642.0	34,697.5

Other intangible assets are comprised primarily of royalty rights and other contract rights associated with Baxalta, Dyax and NPS.

The change in the net book value of intangible assets for the years ended December 31, 2017 and 2016 is shown in the table below:

Years to December 31	2017 $'M	2016 $'M
As of January 1	**34,697.5**	9,173.3
Acquisitions	**(1,385.0)**	27,462.8
Amortization charged	**(1,768.4)**	(1,173.4)
Impairment charges	**(20.0)**	(8.9)
Foreign currency translation	**1,522.0**	(756.3)
As of December 31	**33,046.1**	34,697.5

The decrease in Intangible assets, net during the year ended December 31, 2017 relates to the measurement period adjustments of the acquisition of Baxalta and amortization of intangible assets. For a more detailed description of measurement period adjustments, refer to Note 4, Business Combinations, to these consolidated financial statements.

In connection with the acquisition of Baxalta, the Company acquired IP rights related to currently marketed products of $21,165.0 million, IPR&D assets of $160.0 million and other contract rights of $42.2 million. For a more detailed description of this acquisition, refer to Note 4, Business Combinations, to these consolidated financial statements.

14. Intangible assets continued

In connection with the acquisition of Dyax on January 22, 2016, the Company acquired IP rights related to currently marketed products of $135.0 million, IPR&D assets of $4,100.0 million and royalty rights of $425.0 million. For a more detailed description of this acquisition, refer to Note 4, Business Combinations, to these consolidated financial statements.

Estimated amortization expense can be affected by various factors including future acquisitions, disposals of product rights, regulatory approval and subsequent amortization of acquired IPR&D projects, foreign exchange movements and the technological advancement and regulatory approval of competitor products. The estimated future amortization of acquired intangible assets for the next five years is expected to be as follows:

	Anticipated future amortization $'M
2018	1,891.6
2019	1,668.4
2020	1,570.3
2021	1,536.7
2022	1,511.0

15. Fair Value Measurement

Assets and liabilities that are measured at fair value on a recurring basis

As of December 31, 2017 and December 31, 2016, the following financial assets and liabilities are measured at fair value on a recurring basis using quoted prices in active markets for identical assets (Level 1); significant other observable inputs (Level 2); and significant unobservable inputs (Level 3).

	Fair value			
As of December 31, 2017	Total $'M	Level 1 $'M	Level 2 $'M	Level 3 $'M
Financial assets:				
Marketable equity securities	89.7	89.7	–	–
Marketable debt securities	17.9	3.8	14.1	–
Derivative instruments	17.9	–	17.9	–
Total assets	125.5	93.5	32.0	–
Financial liabilities:				
Joint venture net written option	40.0	–	–	40.0
Derivative instruments	14.2	–	14.2	–
Contingent consideration payable	1,168.2	–	–	1,168.2
Total liabilities	1,222.4	–	14.2	1,208.2

	Fair value			
As of December 31, 2016	Total $'M	Level 1 $'M	Level 2 $'M	Level 3 $'M
Financial assets:				
Marketable equity securities	65.8	65.8	–	–
Marketable debt securities	15.5	3.6	11.9	–
Derivative instruments	18.0	–	18.0	–
Total assets	99.3	69.4	29.9	–
Financial liabilities:				
Derivative instruments	8.3	–	8.3	–
Contingent consideration payable	1,058.0	–	–	1,058.0
Total liabilities	1,066.3	–	8.3	1,058.0

Marketable equity and debt securities are included within Investments in the Consolidated Balance Sheets. Contingent consideration payable is included within Other current liabilities and Other non-current liabilities in the Consolidated Balance Sheets. For information regarding the Company's derivative arrangements, refer to Note 16, Financial Instruments, to these consolidated financial statements.

Certain estimates and judgments were required to develop the fair value amounts. The estimated fair value amounts shown above are not necessarily indicative of the amounts that the Company would realize upon disposition, nor do they indicate the Company's intent or ability to dispose of the financial instrument.

The following methods and assumptions were used to estimate the fair value of each material class of financial instrument:

- Marketable equity securities: the fair values of marketable equity securities are estimated based on quoted market prices for those investments.
- Marketable debt securities: the fair values of debt securities are obtained from pricing services or broker/dealers who either use quoted prices in an active market or proprietary pricing applications, which include observable market information for like or same securities.
- Derivative instruments: the fair values of the swap and forward foreign exchange contracts have been determined using the month-end interest rate and foreign exchange rates, respectively.
- Joint venture net written option and contingent consideration payable: the fair value of the contingent consideration payable has been estimated using the income approach (using a probability weighted discounted cash flow method).

There were no changes in valuation techniques or inputs utilized or transfers between fair value measurement levels during the years ended December 31, 2017 and 2016.

Assets and Liabilities Measured at Fair Value on a Recurring Basis Using Significant Unobservable Inputs (Level 3)

Contingent consideration payable

	2017 $'M	2016 $'M
Balance as of January 1	**1,058.0**	475.9
Acquisitions	**(4.0)**	565.4
Change in fair value included in earnings	**120.7**	11.1
Other	**(6.5)**	5.6
Balance as of December 31	**1,168.2**	1,058.0

In 2017, the increase in contingent consideration payable was primarily related to the Company's change in fair value of contingent consideration resulting from positive topline data for SHP643. In 2016, the increase in contingent consideration payable was related to the Company's acquisition of Dyax and Baxalta. Other contingent consideration payable primarily relates to foreign currency adjustments.

Of the $1,168.2 million of contingent consideration payable as of December 31, 2017, $626.8 million is recorded within Other current liabilities and $541.4 million is recorded within Other non-current liabilities in the Company's Consolidated Balance Sheets.

Joint venture net written option

In March 2017, Shire executed option agreements related to a joint venture that provides Shire with a call option on the partner's investment in joint venture equity and the partner with a put option on its investment in joint venture equity. The Company had a liability of $40.0 million for the net written option based on the estimated fair value of these options as of December 31, 2017 and the Company re-measures the instrument to fair value through the Consolidated Statements of Operations.

Quantitative Information about Assets and Liabilities Measured at Fair Value on a Recurring Basis Using Significant Unobservable Inputs (Level 3)

	Fair value as of the measurement date			
Financial liabilities: As of December 31, 2017	**Fair value $'M**	**Valuation technique**	**Significant unobservable inputs**	**Range**
Contingent consideration payable	1,168.2	Income approach (probability weighted discounted cash flow)	Cumulative probability of milestones being achieved	21.9 to 90%
			Assumed market participant discount rate	1.8 to 8.7%
			Periods in which milestones are expected to be achieved	2018 to 2040
			Forecast quarterly royalties payable on net sales of relevant products	$0.1 to $6.5 million

Contingent consideration payable represents future milestones and royalties the Company may be required to pay in conjunction with various business combinations and license agreements. The fair value of the Company's contingent consideration payable could significantly increase or decrease due to changes in certain assumptions which underpin the fair value measurements. Each set of assumptions is specific to the individual contingent consideration payable.

	Fair value as of the measurement date			
Financial liabilities: As of December 31, 2017	**Fair value $'M**	**Valuation technique**	**Significant unobservable inputs**	**Range**
Joint venture net written option	40.0	Income approach (probability weighted discounted cash flow)	Cash flow scenario probability weighting	0 to 80%
			Assumed market participant discount rate	16%

Financial assets and liabilities that are disclosed at fair value

The carrying amounts and estimated fair values as of December 31, 2017 and December 31, 2016 of the Company's financial assets and liabilities that are not measured at fair value on a recurring basis are as follows:

	December 31, 2017		December 31, 2016	
	Carrying amount $'M	**Fair value $'M**	Carrying amount $'M	Fair value $'M
Financial liabilities:				
SAIIDAC notes	**12,050.2**	**11,913.7**	12,039.2	11,633.8
Baxalta notes	**5,057.7**	**5,229.9**	5,063.6	5,066.5
Capital lease obligation	**349.2**	**349.2**	353.6	353.6

The estimated fair values of long-term debt were based upon recent observable market prices and are considered Level 2 in the fair value hierarchy. The estimated fair value of capital lease obligations is based on Level 2 inputs.

The carrying amounts of other financial assets and liabilities approximate their estimated fair value due to their short-term nature, such as liquidity and maturity of these amounts, or because there have been no significant changes since the asset or liability was last re-measured to fair value on a non-recurring basis.

16. Financial Instruments

Foreign Currency Contracts

Due to the global nature of its operations, portions of the Company's revenues and operating expenses are recorded in currencies other than the U.S. dollar. The value of revenues and operating expenses measured in U.S. dollars is therefore subject to changes in foreign currency exchange rates. The main trading currencies of the Company are the U.S. dollar, Euro, British pound sterling, Swiss franc, Canadian dollar and Japanese yen.

Transactional exposure arises where transactions occur in currencies different to the functional currency of the relevant subsidiary. It is the Company's policy that these exposures are minimized to the extent practicable by denominating transactions in the subsidiary's functional currency. Where significant exposures remain, the Company uses foreign exchange contracts (spot, forward and swap contracts) to manage the exposure for balance sheet assets and liabilities that are denominated in currencies different to the functional currency of the relevant subsidiary.

The Company has master netting agreements with a number of counterparties to these foreign exchange contracts and on the occurrence of specified events, the Company has the ability to terminate contracts and settle them with a net payment by one party to the other. The Company has elected to present derivative assets and derivative liabilities on a gross basis in the Consolidated Balance Sheet. The Company does not have credit risk related contingent features or collateral linked to the derivatives.

Designated Foreign Currency Derivatives

Certain foreign currency forward contracts were designated as cash flow hedges and accordingly, to the extent effective, any unrealized gains or losses on these foreign currency forward contracts were reported in AOCI. Realized gains and losses for the effective portion of such contracts were recognized in revenue or cost of sales when the sale of product in the currency being hedged was recognized. To the extent ineffective, hedge transaction gains and losses were reported in Other income/(expense), net.

The Company did not have any designated foreign currency contracts as of December 31, 2017. As of December 31, 2016, the Company had designated foreign currency forward contracts with a total notional value of $78.7 million with a maximum duration of six months; the fair value of these contracts was a net asset of $4.2 million.

Undesignated Foreign Currency Derivatives

The Company uses forward contracts to mitigate the foreign currency risk related to certain balance sheet positions, including intercompany and third-party receivables and payables. The Company has not elected hedge accounting for these derivative instruments as the duration of these contracts is typically three months or less. The changes in fair value of these derivatives are reported in earnings.

The table below presents the notional amount, maximum duration and fair value for the undesignated foreign currency derivatives:

	December 31, 2017 $'M	December 31, 2016 $'M
Notional amount	**1,672.3**	1,309.1
Maximum duration (in months)	**3 months**	3 months
Fair value — net asset	**11.4**	6.7

The Company considers the impact of its and its counterparties' credit risk on the fair value of the contracts as well as the ability of each party to execute its contractual obligations. As of December 31, 2017, credit risk did not materially change the fair value of the Company's foreign currency contracts.

Interest Rate Contracts

The Company is exposed to the risk that its earnings and cash flows could be adversely impacted by fluctuations in benchmark interest rates relating to its debt obligations on which interest is set at floating rates. The Company's policy is to manage this risk to an acceptable level. The Company is principally exposed to interest rate risk on any borrowings under the Company's various debt facilities and on part of the senior notes assumed in connection with the acquisition of Baxalta. Interest on each of these debt obligations is set at floating rates, to the extent utilized. Shire's exposure under these facilities is to changes in U.S. dollar interest rates. For further details related to interest rates on the Company's various debt facilities, refer to Note 18, Borrowings and Capital Leases, to these consolidated financial statements.

Designated Interest Rate Derivatives

As of December 31, 2017, interest rate swap contracts designated as fair value hedges were outstanding. The effective portion of the changes in the fair value of interest rate swap contracts are recorded as a component of the underlying Baxalta Notes with the ineffective portion recorded in Interest expense. Any net interest payments made or received on the interest rate swap contracts are recognized as a component of Interest expense in the Consolidated Statements of Operations.

The table below presents the notional amount, maturity and fair value for the designated interest rate derivatives:

	December 31, 2017 $'M	December 31, 2016 $'M
Notional amount	**1,000.0**	1,000.0
Maturity	**June 2020 and June 2025**	June 2020 and June 2025
Fair value — net liability	**(7.7)**	(1.2)

For the years ended December 31, 2017 and 2016, the Company recognized losses of $4.3 million and $6.0 million, respectively, as ineffectiveness related to these contracts as a component of Interest expense.

Summary of Derivatives
The following tables summarize the income statement locations and gains and losses on the Company's designated and undesignated derivative instruments:

Years ended December 31	Gain/(loss) recognized in OCI 2017 $'M	Gain/(loss) recognized in OCI 2016 $'M	Income Statement location	Gain reclassified from AOCI into income 2017 $'M	Gain reclassified from AOCI into income 2016 $'M
Designated derivative instruments					
Cash flow hedges					
Foreign exchange contracts	**(0.9)**	14.6	Cost of sales	**8.8**	4.9

Years ended December 31	Income Statement location	Gain/(loss) recognized in income 2017 $'M	Gain/(loss) recognized in income 2016 $'M
Fair value hedges			
Interest rate contracts, net	Interest expense	**(4.3)**	(6.0)
Undesignated derivative instruments			
Foreign exchange contracts	Other income/ (expense), net	**84.8**	(40.2)
Interest rate swap contracts	Interest expense	**–**	(3.2)

Summary of Derivatives
The following table presents the classification and estimated fair value of derivative instruments:

	Asset position			Liability position		
		Fair value			Fair value	
	Balance Sheet location	December 31, 2017 $'M	December 31, 2016 $'M	Balance Sheet location	December 31, 2017 $'M	December 31, 2016 $'M
Designated derivative Instruments						
Foreign exchange contracts	Prepaid expenses and other current assets	**–**	4.3	Other current liabilities	**–**	0.1
Interest rate contracts	Long term borrowings	**–**	0.1	Long term borrowings	**7.7**	1.3
			4.4		**7.7**	1.4
Undesignated derivative instruments						
Foreign exchange contracts	Prepaid expense and other current assets	**17.9**	13.6	Other current liabilities	**6.5**	6.9
Total derivative fair value		**17.9**	18.0		**14.2**	8.3
Potential effect of rights to offset		**(2.7)**	(1.7)		**(2.7)**	(1.7)
Net derivative		**15.2**	16.3		**11.5**	6.6

17. Accounts Payable and Accrued Expenses

Components of Accounts payable and accrued expenses are summarized as follows:

Years ended December 31	2017 $'M	2016 $'M
Accounts payable and accrued purchases	**914.6**	911.9
Accrued employee compensation and benefits payable	**571.4**	574.8
Accrued rebates	**1,612.7**	1,431.3
Accrued sales returns	**175.7**	118.4
Other accrued expenses	**910.1**	1,276.0
	4,184.5	4,312.4

18. Borrowings and Capital Leases

Years ended December 31	2017 $'M	2016 $'M
Short term borrowings:		
Baxalta notes	**748.8**	–
Borrowings under the Revolving Credit Facilities Agreement	**810.0**	450.0
Borrowings under the November 2015 Facilities Agreement	**1,196.3**	2,594.8
Capital leases	**7.5**	6.4
Other borrowings	**26.1**	16.8
	2,788.7	3,068.0
Long term borrowings:		
SAIIDAC notes	**12,050.2**	12,039.2
Baxalta notes	**4,308.9**	5,063.6
Borrowings under the November 2015 Facilities Agreement	**–**	2,391.8
Capital leases	**341.7**	347.2
Other borrowings	**51.6**	58.0
	16,752.4	19,899.8
Total borrowings and capital leases	**19,541.1**	22,967.8

For a more detailed description of the Company's financing agreements, refer below.

The future payments related to short and long term borrowings and capital lease obligations, on maturities, as of December 31, 2017 are as follows:

	$'M
2018	2,804.7
2019	3,349.4
2020	1,040.9
2021	3,329.0
2022	519.5
Thereafter	8,591.9
Total obligations	19,635.4
Less: Debt issuance cost and discount	(94.3)
Total debt obligations	19,541.1

Senior Notes Issuance

On September 23, 2016, Shire Acquisitions Investments Ireland Designated Activity Company (SAIIDAC), a wholly owned subsidiary of Shire plc, issued unsecured senior notes with a total aggregate principal value of $12.1 billion (SAIIDAC Notes), guaranteed by Shire plc and, as of December 1, 2016, by Baxalta. Below is a summary of the SAIIDAC Notes as of December 31, 2017:

	Aggregate amount $'M	Coupon rate %	Effective interest rate in 2017 %	Carrying amount as of December 31, 2017 $'M
Fixed-rate notes due 2019	3,300.0	1.900	2.05	**3,291.9**
Fixed-rate notes due 2021	3,300.0	2.400	2.53	**3,286.4**
Fixed-rate notes due 2023	2,500.0	2.875	2.97	**2,489.5**
Fixed-rate notes due 2026	3,000.0	3.200	3.30	**2,982.4**
	12,100.0			**12,050.2**

As of December 31, 2017, there was $49.8 million of debt issuance costs and discount recorded as a reduction of the carrying amount of debt. These costs will be amortized as additional interest expense using the effective interest rate method over the period from issuance through maturity.

Baxalta Notes

Shire plc guaranteed senior notes issued by Baxalta with a total aggregate principal amount of $5.0 billion in connection with the acquisition of Baxalta (Baxalta Notes). Below is a summary of the Baxalta Notes as of December 31, 2017:

	Aggregate principal $'M	Coupon rate %	Effective interest rate in 2017 %	Carrying amount as of December 31, 2017 $'M
Variable-rate notes due 2018	375.0	LIBOR plus 0.78	2.60	**373.9**
Fixed-rate notes due 2018	375.0	2.000	2.00	**374.9**
Fixed-rate notes due 2020	1,000.0	2.875	2.80	**1,001.3**
Fixed-rate notes due 2022	500.0	3.600	3.30	**506.8**
Fixed-rate notes due 2025	1,750.0	4.000	3.90	**1,770.2**
Fixed-rate notes due 2045	1,000.0	5.250	5.10	**1,030.6**
Total assumed Senior Notes	5,000.0			**5,057.7**

The effective interest rates above exclude the effect of any related interest rate swaps. The book values above include any premiums and adjustments related to hedging instruments. For further details related to the interest rate derivative contracts, please see Note 16, Financial Instruments, to these consolidated financial statements.

Revolving Credit Facilities Agreement

On December 12, 2014, Shire entered into a $2.1 billion revolving credit facilities agreement (RCF) with a number of financial institutions. As of December 31, 2017, the Company utilized $810.0 million of the RCF. The RCF, which terminates on December 12, 2021, may be used for financing the general corporate purposes of Shire. The RCF incorporates a $250.0 million U.S. dollar and Euro swingline facility operating as a sub-limit thereof.

Term Loan Facilities Agreements

November 2015 Facilities Agreement

On November 2, 2015, Shire entered into a $5.6 billion facilities agreement (November 2015 Facilities Agreement), which is comprised of three amortizing credit facilities. The total amount outstanding under the November 2015 Facilities Agreement was $1.2 billion as of December 31, 2017. During the year ended December 31, 2017, the Company made $0.4 billion of advance repayments under November 2015 Facility A and $2.2 billion of scheduled and advance repayments under November 2015 Facility B. Both November 2015 Facility A and November 2015 Facility B were fully repaid during the year ended December 31, 2017. The Company also made $1.2 billion of advance repayments under November 2015 Facility C; consequently, the amount outstanding under November 2015 Facility C was $1.2 billion as of December 31, 2017 maturing on November 2, 2018.

Short-term uncommitted lines of credit (Credit lines)

Shire has access to various Credit lines from a number of banks which are available to be utilized from time to time to provide short-term cash management flexibility. These Credit lines can be withdrawn by the banks at any time. The Credit lines are not relied upon for core liquidity. As of December 31, 2017, these Credit lines were not utilized.

Capital Lease Obligations

The capital leases are primarily related to office and manufacturing facilities. As of December 31, 2017, the total capital lease obligations, including current portions, were $349.2 million.

19. Retirement and Other Benefit Programs

The Company sponsors various pension and other post-employment benefit (OPEB) plans in the U.S. and other countries.

Reconciliation of Pension and OPEB Plan Obligations and Funded Status

The following provides information about projected benefit obligations, plan assets, the funded status and weighted-average assumptions of the OPEB and pension plans:

	December 31, 2017			December 31, 2016		
	U.S. pensions $'M	International pensions $'M	OPEB (U.S.) $'M	U.S. pensions $'M	International pensions $'M	OPEB (U.S.) $'M
Benefit obligations						
Beginning of period	384.1	581.4	25.0	–	–	–
Assumption of benefit obligations	–	–	–	441.6	503.8	23.5
Service cost	14.6	39.4	1.5	13.0	18.6	0.8
Interest cost	15.6	4.9	1.0	11.1	3.2	0.6
Participant contributions	–	8.9	–	–	3.2	–
Actuarial loss/(gain)	34.4	(22.9)	(1.2)	(10.6)	(29.8)	0.1
Benefit payments	(5.1)	(19.8)	(0.2)	(1.6)	(9.1)	–
Plan amendments	–	–	(9.0)	–	–	–
Settlements	–	(10.4)	–	–	(3.2)	–
Curtailments	–	(4.0)	–	(73.4)	–	–
Foreign exchange	–	45.4	–	–	(18.3)	–
Other	–	(5.0)	–	4.0	113.0	–
End of Period	443.6	617.9	17.1	384.1	581.4	25.0
Fair value of plan assets						
Beginning of period	228.4	197.9	–	–	–	–
Assumption of plan assets	–	–	–	218.0	140.5	–
Actual return on plan assets	35.4	12.3	–	8.3	2.0	–
Employer contributions	0.9	32.2	0.2	0.4	12.3	–
Participant contributions	–	8.9	–	–	3.2	–
Benefit payments	(5.0)	(19.8)	(0.2)	(1.6)	(9.1)	–
Settlements	–	(10.4)	–	–	(3.2)	–
Foreign exchange	–	11.9	–	–	(3.8)	–
Other	–	4.2	–	3.3	56.0	–
End of Period	259.7	237.2	–	228.4	197.9	–
Funded status	(183.9)	(380.7)	(17.1)	(155.7)	(383.5)	(25.0)

19. Retirement and Other Benefit Programs continued

Amounts recognized in the Consolidated Balance Sheets

	December 31, 2017			December 31, 2016		
	U.S. pensions $'M	**International pensions $'M**	**OPEB (U.S.) $'M**	U.S. pensions $'M	International pensions $'M	OPEB (U.S.) $'M
Other current liabilities	**(0.8)**	**(15.7)**	**(0.4)**	(0.6)	(8.8)	(0.2)
Other non-current liabilities	**(183.1)**	**(365.0)**	**(16.7)**	(155.1)	(374.7)	(24.8)
Net liability recognized	**(183.9)**	**(380.7)**	**(17.1)**	(155.7)	(383.5)	(25.0)

The majority of the Company's pension and OPEB plans were assumed with the acquisition of Baxalta on June 3, 2016.

The Company amended the OPEB and adopted a plan freeze effective December 31, 2017. According to the amendment, employees who have not met certain criteria, may not qualify as an eligible retiree regardless of such employee's age or service at the employee's date of termination. As a result, a prior service credit was recorded during the year ended December 31, 2017.

On December 31, 2016, the Company amended the U.S. pension plan which eliminated the estimate of future compensation levels beyond December 31, 2017, the effective date. As a result, a curtailment gain of $69.4 million was recorded during 2016.

For the year ended December 31, 2016, Other primarily represents the recognition of additional defined benefit plan in Switzerland.

Accumulated Benefit Obligation Information

The pension obligation represents the projected benefit obligation (PBO) as of December 31, 2017 and 2016. The PBO incorporates assumptions relating to future compensation levels. The accumulated benefit obligation (ABO) is the same as the PBO except that it does not include assumptions relating to future compensation levels. The ABO as of December 31, 2017 for the U.S. pension plans was $443.6 million (December 31, 2016: $373.2 million). The ABO as of December 31, 2017 for the International pension plans was $494.2 million (December 31, 2016: $457.9 million).

The funded status figures and ABO disclosed above reflect all of the Company's pension plans. The following ABO and plan asset information includes only those individual plans that have an ABO in excess of plan assets.

Years ended December 31	**2017 $'M**	2016 $'M
U.S.		
ABO	**443.6**	373.2
Fair value of plan assets	**259.7**	228.4
International		
ABO	**469.0**	437.5
Fair value of plan assets	**209.6**	176.2

Expected Net Pension and OPEB Plan Payments for the Next 10 Years

	U.S. pensions $'M	International pensions $'M	OPEB (U.S.) $'M
2018	6.0	28.1	0.4
2019	7.7	20.7	0.5
2020	9.2	22.2	0.6
2021	10.7	24.3	0.8
2022	12.2	25.4	0.9
2023 through 2027	84.3	134.8	6.8

The expected net benefit payments reflect the Company's share of the total net benefits expected to be paid from the plans' assets (for funded plans) or from the Company's assets (for unfunded plans) as of December 31, 2017. The federal subsidies relating to the Medicare Prescription Drug, Improvement and Modernization Act are not expected to be significant.

Amounts Recognized in AOCI
The pension and OPEB plans' gains or losses not yet recognized in net periodic benefit cost are recognized in AOCI and amortized from AOCI to net periodic benefit cost in the future. The following is a summary of the pre-tax net gain/(losses) recorded in AOCI:

	December 31, 2017			December 31, 2016		
	U.S. pensions $'M	International pensions $'M	OPEB (U.S.) $'M	U.S. pensions $'M	International pensions $'M	OPEB (U.S.) $'M
(Loss)/gain arising during the year	(14.9)	41.2	10.1	83.4	(10.3)	0.1
Reclassification of gain to income statement	–	(1.3)	–	(69.4)	–	–
Pension and other employee benefit (loss)/gain, pre-tax	(14.9)	39.9	10.1	14.0	(10.3)	0.1

Refer to Note 20, Accumulated Other Comprehensive Income/(Loss), for the net of tax balances included in AOCI as of December 31, 2017 and 2016. The Company does not expect to amortize a significant amount of AOCI to net periodic benefit cost in 2018.

In 2016 the reclassification of gain to the income statement represents the recognition of the curtailment gain associated with the U.S. pension plans as further described above.

Net Periodic Benefit Cost
The net periodic benefit cost is as follows:

	December 31, 2017			December 31, 2016		
	U.S. pensions $'M	International pensions $'M	OPEB (U.S.) $'M	U.S. pensions $'M	International pensions $'M	OPEB (U.S.) $'M
Net periodic benefit cost						
Service cost	14.6	39.4	1.5	13.0	18.6	0.8
Interest cost	15.6	4.9	1.0	11.1	3.2	0.6
Expected return on plan assets	(15.9)	(7.4)	–	(8.9)	(3.9)	–
Curtailment and other	–	1.9	–	(69.4)	20.0	–
Net periodic benefit cost	14.3	38.8	2.5	(54.2)	37.9	1.4

In 2016, the net periodic benefit cost is from June 3, 2016, the date the Company assumed the obligations from Baxalta, through December 31, 2016.

In 2016 Curtailments and other relates to the recognition of a curtailment gain of $69.4 million associated with the U.S. pension plans as described above and a loss of $20.0 million for the recognition of a defined benefit plan in Switzerland.

Weighted-Average Assumptions Used in Determining Benefit Obligations at the Measurement Date
The following weighted-average assumptions were used in calculating measurement of benefit obligations:

	December 31, 2017			December 31, 2016		
	U.S. pensions %	International pensions %	OPEB (U.S.) %	U.S. pensions %	International pensions %	OPEB (U.S.) %
Discount rate	3.7	1.0	3.5	4.2	1.0	4.3
Rate of compensation increase	n/a	3.0	n/a	3.8	2.9	n/a
Healthcare cost trend rate	n/a	n/a	6.0	n/a	n/a	6.3
Rate decreased to	n/a	n/a	5.0	n/a	n/a	5.0
by the year end	n/a	n/a	2022	n/a	n/a	2022

19. Retirement and Other Benefit Programs continued

Weighted-Average Assumptions Used in Determining Net Periodic Benefit Cost

The following weighted-average assumptions were used in determining net periodic benefit cost:

	December 31, 2017			December 31, 2016		
	U.S. pensions %	International pensions %	OPEB (U.S.) %	U.S. pensions %	International pensions %	OPEB (U.S.) %
Discount rate	4.2	1.0	4.2	4.1	1.0	4.2
Expected return on plan assets	7.0	3.4	n/a	7.0	4.5	n/a
Rate of compensation increase	3.8	3.0	n/a	3.8	3.2	n/a
Healthcare cost trend rate	n/a	n/a	6.0	n/a	n/a	6.5
Rate decreased to	n/a	n/a	5.0	n/a	n/a	5.0
by the year end	n/a	n/a	2022	n/a	n/a	2022

The Company establishes the expected return on plan assets assumption based primarily on a review of historical compound average asset returns, both Company-specific and the broad market (and considering the Company's asset allocations), an analysis of current market and economic information and future expectations.

The effect of a one-percent change in the assumed healthcare cost trend rate would not have a significant impact on the OPEB plan benefit obligation as of December 31, 2017 or the plan's service and interest cost during 2017.

Pension Plan Assets

A committee of members of senior management is responsible for supervising, monitoring and evaluating the invested assets of the Company's funded pension plans. The committee abides by policies and procedures relating to investment goals, targeted asset allocations, risk management practices, allowable and prohibited investment holdings, diversification, use of derivatives, the relationship between plan assets and benefit obligations, and other relevant factors and considerations. In the United States, Goldman Sachs Asset Management acts as an outsourced chief investment officer (oCIO) to perform the day-to-day management of pension assets.

The policies and procedures include the following:

- Ability to pay all benefits when due;
- Targeted long-term performance expectations relative to applicable market indices, such as Standard & Poor's, Russell, MSCI EAFE, and other indices;
- Targeted asset allocation percentage ranges (summarized below), and periodic reviews of these allocations;
- Specified investment holding and transaction prohibitions (for example, private placements or other restricted securities, securities that are not traded in a sufficiently active market, short sales, certain derivatives, commodities and margin transactions);
- Specified portfolio percentage limits on foreign holdings; and
- Periodic monitoring of oCIO performance and adherence to policies.

Plan assets are invested using a total return investment approach whereby a mix of equity securities, debt securities and other investments are used to preserve asset values, diversify risk and exceed the planned benchmark investment return. Investment strategies and asset allocations are based on consideration of plan liabilities, the plans' funded status and other factors, such as the plans' demographics and liability durations. Investment performance is reviewed on a quarterly basis and asset allocations are reviewed at least annually.

Plan assets are managed in a balanced equity and fixed income portfolio. The target allocations for plan assets are 75% in an equity portfolio and 25% in a fixed income portfolio. The policy includes an allocation range based on each individual investment type within the major portfolios that allows for a variance from the target allocations of approximately 5%. The equity portfolio may include common stock of U.S. and international companies, common/collective trust funds, mutual funds, hedge funds and real asset investments. The fixed income portfolio may include cash, money market funds with an original maturity of three months or less, U.S. and foreign government and governmental agency issues, common/collective trust funds, corporate bonds, municipal securities, derivative contracts and asset-backed securities.

While the committee provides oversight over plan assets for U.S. and international plans, the summary above is specific to the plans in the U.S. The plan assets for international plans are managed and allocated by the entities in each country, with input and oversight provided by the committee.

The following pension assets are recorded at fair value on a recurring basis using quoted prices in active markets for identical assets (Level 1); significant other observable inputs (Level 2); and significant unobservable inputs (Level 3). Investments that are measured at fair value using the net asset value per share or its equivalent as a practical expedient are not classified in the fair value hierarchy. The fair value amounts presented in this table is intended to permit reconciliation of the fair value hierarchy and the fair value of plan assets.

U.S. pension plan assets

As of December 31, 2017	Fair value Level 1 $'M	Level 2 $'M	Level 3 $'M	Total $'M
Assets				
Mutual fund	17.9	–	–	17.9
Total investments at fair value	17.9	–	–	17.9
Fixed income				
Cash equivalents				6.2
Collective trust funds				52.4
Mutual fund				12.7
Equity				
Collective trust funds				116.6
Mutual funds				42.0
Hedge fund				11.9
Fair value of pension plan assets				259.7

As of December 31, 2016	Fair value Level 1 $'M	Level 2 $'M	Level 3 $'M	Total $'M
Assets				
Mutual fund	16.5	–	–	16.5
Total investments at fair value	16.5	–	–	16.5
Fixed income				
Cash equivalents				5.7
Collective trust funds				46.4
Mutual fund				11.4
Equity				
Collective trust funds				100.4
Mutual funds				36.9
Hedge fund				11.1
Fair value of pension plan assets				228.4

International pension plan assets

As of December 31, 2017	Fair value Level 1 $'M	Level 2 $'M	Level 3 $'M	Total $'M
Assets				
Fixed income				
Cash and cash equivalents	3.8	–	–	3.8
Government agency issues	1.7	–	–	1.7
Corporate bonds	14.4	–	–	14.4
Mutual funds	32.4	–	–	32.4
Equity				
Common stock — large cap	24.3	–	–	24.3
Mutual funds	50.3	–	–	50.3
Real estate funds	14.3	6.4	–	20.7
Other holdings	–	89.6	–	89.6
Fair value of pension plan assets	141.2	96.0	–	237.2

As of December 31, 2016	Fair value Level 1 $'M	Level 2 $'M	Level 3 $'M	Total $'M
Assets				
Fixed income				
Cash and cash equivalents	6.2	–	–	6.2
Government agency issues	0.6	–	–	0.6
Corporate bonds	21.1	–	–	21.1
Mutual funds	24.4	–	–	24.4
Equity				
Common Stock:				
Large cap	19.9	–	–	19.9
Mid cap	1.6	–	–	1.6
Total common stock	21.5	–	–	21.5
Mutual funds	40.6	–	–	40.6
Real estate funds	8.4	3.7	–	12.1
Other holdings	–	71.4	–	71.4
Fair value of pension plan assets	122.8	75.1	–	197.9

19. Retirement and Other Benefit Programs continued

The assets and liabilities of the Company's pension plans are valued using the following valuation methods:

Investment category	Valuation methodology
Cash and cash equivalents	These largely consist of a short-term investment fund, U.S. dollars and foreign currency. The fair value of the short-term investment fund is based on the net asset value
Government agency issues	Values are based on quoted prices in an active market
Corporate bonds	Values are based on the valuation date in an active market
Common stock	Values are based on the closing prices on the valuation date in an active market
Mutual funds	Values are based on the net asset value of the units held in the respective fund which are obtained from active markets or as reported by the fund managers
Collective trust funds and hedge funds	Values are based on the net asset value of the units held at year end
Real estate funds	The value of these assets are either determined by the net asset value of the units held in the respective fund which are obtained from active markets or based on the net asset value of the underlying assets of the fund provided by the fund manager
Other holdings	These primarily consist of insurance contracts whose value is based on the underlying assets and other holdings valued primarily based on reputable pricing vendors that typically use pricing matrices or models

Expected Pension and OPEB Plan Funding

The Company's funding policy for its pension plans is to contribute amounts sufficient to meet legal funding requirements, plus any additional amounts that the Company may determine to be appropriate considering the funded status of the plans, tax deductibility, the cash flows generated by the Company, and other factors. Volatility in the global financial markets could have an unfavorable impact on future funding requirements.

The Company had no obligation to fund its principal plans in the U.S. for the year ended December 31, 2017 and did not make any voluntary contributions for the year ended December 31, 2017 and 2016. The Company is expected to make cash contributions of at least $13.0 million during 2018. During 2017 and 2016, the Company contributed to its international plans $20.6 million and $7.1 million, respectively and expects to make cash contributions of at least $18.6 million during 2018. Cash outflows related to OPEB plan were less than $1.0 million during the year ended December 31, 2017 and the Company expects to have less than $1.0 million cash outflows during 2018.

The Company continually reassesses the amount and timing of any discretionary contributions, which could be significant in any period.

The table below details the funded status percentage of the Company's pension plans as of December 31, 2017 and 2016 including certain plans that are unfunded in accordance with the guidelines of the Company's funding policy outlined above.

	As of December 31, 2017				
	United States			International	
	Qualified plan $'M	Non-qualified plan $'M	Funded plans $'M	Unfunded plans $'M	Total $'M
Fair value of plan assets	259.7	n/a	237.2	n/a	496.9
PBO	412.1	31.5	430.8	187.1	1,061.5
Funded status percentage	63%	n/a	55%	n/a	47%

	As of December 31, 2016				
	United States			International	
	Qualified plan $'M	Non-qualified plan $'M	Funded plans $'M	Unfunded plans $'M	Total $'M
Fair value of plan assets	228.4	n/a	197.9	n/a	426.3
PBO	352.8	31.3	413.7	167.7	965.5
Funded status percentage	65%	n/a	48%	n/a	44%

U.S. Defined Contribution Plans

In addition to benefits provided under the pension and OPEB plans described above, the Company provides benefits under defined contribution plans. The Company's most significant defined contribution plans are in the United States. The Company recognized expenses related to U.S. defined contribution plans of $60.0 million, $68.1 million and $38.9 million during 2017, 2016 and 2015, respectively.

The changes in Accumulated other comprehensive income/(loss) (AOCI), net of their related tax effects, for the year ended December 31, 2017 are as follows:

	Foreign currency translation adjustment $'M	Pension and other employee benefits $'M	Unrealized holding gain/ (loss) on available-for-sale securities $'M	Hedging activities $'M	Accumulated other comprehensive (loss)/income $'M
As of January 1, 2017	(1,505.4)	(5.2)	6.6	6.4	(1,497.6)
Current period change:					
Other comprehensive income/(loss) before reclassifications	2,785.0	33.4	75.2	(0.6)	2,893.0
Amounts reclassified from AOCI	–	(0.7)	(13.9)	(5.8)	(20.4)
Net current period other comprehensive income/(loss)	2,785.0	32.7	61.3	(6.4)	2,872.6
As of December 31, 2017	1,279.6	27.5	67.9	–	1,375.0

The following is a summary of the amounts reclassified from AOCI to net income during the year ended December 31, 2017.

	Amounts reclassified from AOCI	
	2017 $'M	Location of impact in Statements of Operations
Pension and other employee benefits		
Amortization of actuarial loss	(1.8)	Net periodic benefit cost
Curtailment gain	3.1	Cost of sales
	1.3	Total before tax
	(0.6)	Tax expense
	0.7	Net of tax
Available-for-sale securities		
Gain on available-for-sale securities	13.9	Other (expense)/income, net
	13.9	Total before tax
	–	Tax expense
	13.9	Net of Tax
Hedging activities		
Foreign exchange contracts	8.8	Cost of sales
	8.8	Total before tax
	(3.0)	Tax expense
	5.8	Net of tax
Total reclassifications for the period	20.4	Total net of tax

The changes in AOCI, net of their related tax effects, for the year ended December 31, 2016 are as follows:

	Foreign currency translation adjustment $'M	Pension and other employee benefits $'M	Unrealized holding gain/ (loss) on available-for-sale securities $'M	Hedging activities $'M	Accumulated other comprehensive (loss)/income $'M
As of January 1, 2016	(182.1)	–	(1.7)	–	(183.8)
Current period change:					
Other comprehensive (loss)/income before reclassifications	(1,323.3)	38.3	8.3	9.9	(1,266.8)
Amounts reclassified from AOCI	–	(43.5)	–	(3.5)	(47.0)
Net current period other comprehensive (loss)/income	(1,323.3)	(5.2)	8.3	6.4	(1,313.8)
As of December 31, 2016	(1,505.4)	(5.2)	6.6	6.4	(1,497.6)

20. Accumulated Other Comprehensive Income/(Loss) continued

The following is a summary of the amounts reclassified from AOCI to net income during the year ended December 31, 2016.

	Amounts reclassified from AOCI	
	2016 $'M	Location of impact in Statements of Operations
Pension and other employee benefits		
Curtailment gain	69.4	Integration and acquisition costs
	69.4	Total before tax
	(25.9)	Tax expense
	43.5	Net of tax
Losses on hedging activities		
Foreign exchange contracts	4.9	Cost of sales
	4.9	Total before tax
	(1.4)	Tax expense
	3.5	Net of tax
Total reclassifications for the period	47.0	Total net of tax

21. Earnings Per Share

The following table reconciles net income and loss and the weighted average ordinary shares outstanding for basic and diluted earnings per share (EPS) for the periods presented:

Years ended December 31	**2017 $'M**	2016 $'M	2015 $'M
Income from continuing operations, net of taxes	**4,253.5**	603.5	1,337.5
Gain/(loss) from discontinued operations, net of taxes	**18.0**	(276.1)	(34.1)
Numerator for basic and diluted earnings per share	**4,271.5**	327.4	1,303.4
Weighted average number of shares:			
Basic	**906.5**	770.1	590.4
Effect of dilutive shares:			
Share-based awards to employees	**5.5**	6.1	2.7
Diluted	**912.0**	776.2	593.1
Earnings per Ordinary Share — basic			
Earnings from continuing operations	**4.69**	0.78	2.27
Earnings/(loss) from discontinued operations	**0.02**	(0.35)	(0.06)
Earnings per Ordinary Share — basic	**4.71**	0.43	2.21
Earnings per Ordinary Share — diluted			
Earnings from continuing operations	**4.66**	0.77	2.26
Earnings/(loss) from discontinued operations	**0.02**	(0.35)	(0.06)
Earnings per Ordinary Share — diluted	**4.68**	0.42	2.20

Weighted average number of basic shares excludes shares purchased by the Employee Benefit Trust and those under the shares buy-back program, which are both presented by Shire as treasury stock. Share-based awards to employees are calculated using the treasury method.

The share equivalents not included in the calculation of the diluted weighted average number of shares are shown below:

Years ended December 31	**2017 $'M**	2016 $'M	2015 $'M
Share-based awards to employees	**15.2**	4.1	3.4

Certain stock options have been excluded from the calculation of diluted EPS for the years ended December 31, 2017, 2016 and 2015 because either their exercise prices exceeded Shire's average share price during the calculation period, the required performance conditions were not satisfied as of the balance sheet date or their inclusion would have been antidilutive.

22. Taxation

The components of pre-tax income from continuing operations are as follows:

Years ended December 31	2017 $'M	2016 $'M	2015 $'M
Ireland	**350.8**	214.3	(11.4)
United States	**625.2**	(75.3)	975.8
Rest of the world	**917.4**	347.1	421.4
	1,893.4	486.1	1,385.8

The provision for income taxes on continuing operations by location of the taxing jurisdiction for the years ended December 31, 2017, 2016 and 2015 consisted of the following:

Years ended December 31	2017 $'M	2016 $'M	2015 $'M
Current income taxes:			
Ireland	**46.6**	5.2	0.8
U.S. federal tax	**373.8**	318.6	191.7
U.S. state and local taxes	**55.8**	30.2	17.3
Rest of the world	**90.4**	68.9	17.8
Total current taxes	**566.6**	422.9	227.6
Deferred taxes:			
Ireland	**22.3**	18.2	(38.8)
U.S. federal tax	**(3,050.3)**	(433.8)	(151.2)
U.S. state and local taxes	**260.1**	(74.1)	(1.7)
Rest of the world	**(156.3)**	(59.3)	10.2
Total deferred taxes	**(2,924.2)**	(549.0)	(181.5)
Total income taxes	**(2,357.6)**	(126.1)	46.1

On December 22, 2017, President Trump signed the Tax Cuts and Jobs Act (Tax Act) into legislation. We have recorded a tax benefit of $2.5 billion, related to the remeasurement of deferred tax assets and liabilities offset by a tax expense of $90.0 million relating to the impact of the transition tax on the deemed repatriation of foreign income. Due to enactment late in the Company's annual reporting period, the Company was unable to obtain all of the requisite information and perform computations for all consequences of the Tax Act. In addition, it is expected that significant guidance will be issued that may change how the Company has computed the provisional amounts included in its annual financial statements for the year ended December 31, 2017. The Company will continue to assess the impact of the Tax Act during the measurement period and will record any adjustments to its provisional estimates as needed during 2018.

The Company determines the amount of income tax expense or benefit allocable to continuing operations using the incremental approach. The amount of income tax attributed to discontinued operations is disclosed in Note 8, Results of Discontinued Operations, in these consolidated financial statements.

The reconciliation of income from continuing operations before income taxes and equity in earnings/(losses) of equity method investees at the statutory tax rate to the provision for income taxes is shown in the table below:

Years ended December 31	2017 $'M	2016 $'M	2015 $'M
Income from continuing operations before income taxes and equity in (losses)/ earnings of equity method investees	**1,893.4**	486.1	1,385.8
	2017 %	2016 %	2015 %
Statutory tax rate[1]	**25.0**	25.0	25.0
U.S. R&D credit	**(6.6)**	(25.9)	(7.7)
Intra-group items[2]	**(13.5)**	(44.4)	(18.6)
Other permanent items	**2.5**	4.5	1.1
U.S. Domestic Manufacturing Deduction	**(1.4)**	(4.0)	(1.6)
Acquisition Related Costs	**–**	8.5	1.1
Irish Treasury Operations	**(4.1)**	(8.6)	0.6
Change in valuation allowance	**(0.5)**	7.9	1.0
Difference in taxation rates[3]	**3.6**	13.0	7.3
Change in provisions for uncertain tax positions	**(2.7)**	(1.5)	(0.4)
Prior year adjustment	**(0.1)**	1.0	(1.6)
Change in fair value of contingent consideration	**–**	3.7	(3.8)
Change in tax rates	**(1.2)**	(5.1)	0.9
U.S. Tax Reform	**(130.3)**	–	–
U.S. Transition Tax	**4.8**	–	–
Provision for income taxes on continuing operations	**(124.5)**	(25.9)	3.3

1 In addition to being subject to the Irish corporation tax rate of 25.0% in 2017, the Company is also subject to income tax in other territories in which the Company operates, including: Canada (15.0%); France (33.3%); Germany (15.0%); Italy (24.0%); Japan (23.4%); Luxembourg (19.0%); the Netherlands (25.0%); Belgium (33.99%); Singapore (17.00%); Spain (25.0%); Sweden (22.0%); Switzerland (8.5%); United Kingdom (19.3%) and the U.S. (35.0%). The rates quoted represent the statutory federal income tax rates in each territory, and do not include any state taxes or equivalents or surtaxes or other taxes charged in individual territories, and do not purport to represent the effective tax rate for the Company in each territory.

2 Intra-group items principally relate to the effect of intra-territory eliminations, the pre-tax effect of which has been eliminated in arriving at the Company's consolidated income from continuing operations before income taxes, noncontrolling interests, and equity in earnings/(losses) of equity method investees. The Company's intra-group items primarily arise from its acquisition of third parties that result in income and expense being received and taxed in different jurisdictions at various tax rates.

3 The expense from the difference in taxation rates reflects the impact of the higher income tax rates in the United States offset by the impact of lower foreign jurisdiction income tax rates.

22. Taxation continued

As detailed in the income tax rate reconciliation above, the Company's effective tax rate differs from the Irish statutory rate each year due to foreign taxes that are different than the Irish statutory rate and certain operations that are subject to tax incentives. In addition, the effective tax rate can be impacted each period by certain discrete factors and events, which, in 2017, included items related to U.S. tax reform.

Provisions for uncertain tax positions

The Company files income tax returns in the Republic of Ireland, the U.S. (both federal and state) and various other jurisdictions (see footnote 1 to the table above for major jurisdictions). With few exceptions, the Company is no longer subject to income tax examinations by tax authorities for years before 2013. Tax authorities in various jurisdictions are in the process of auditing the Company's tax returns for fiscal periods primarily after 2012, with the earliest being 2007; these tax audits cover primarily transfer pricing, but may include other areas.

While tax audits remain open, the Company also considers it reasonably possible that issues may be raised by tax authorities resulting in increases to the balance of unrecognized tax benefits, however, an estimate of such an increase cannot be made.

A reconciliation of the beginning and ending amount of unrecognized tax benefits is as follows:

Years ended December 31	2017 $'M	2016 $'M	2015 $'M
Balance as of January 1	**236.3**	216.3	207.8
Increases based on tax positions related to the current year	**132.6**	34.3	27.0
Decreases based on tax positions taken in the current year	**(128.5)**	–	–
Increases for tax positions taken in prior years	**3.1**	0.5	3.9
Decreases for tax positions taken in prior years	**(43.7)**	(17.8)	(30.6)
Acquisition related items	**(1.8)**	29.5	17.9
Decreases resulting from settlements with the taxing authorities	**–**	(24.4)	(1.2)
Decreases as a result of expiration of the statute of limitations	**(8.2)**	(2.4)	(4.4)
Foreign currency translation adjustments[1]	**0.7**	0.3	(4.1)
Balance as of December 31[2]	**190.5**	236.3	216.3

1 Foreign currency translation adjustments are recognized within Other Comprehensive Income.
2 As of December 31, 2017, approximately $185.0 million (2016: $227.0 million, 2015: $207.0 million) of which would affect the effective rate if recognized.

There is no requirement to record any reserves or other contingencies related to the receipt of the break fee from AbbVie in 2014. The relevant tax return was submitted on September 23, 2015.

The Company does not anticipate any material changes in the next 12 months to the total amount of unrecognized tax benefits recorded as of December 31, 2017. As of the balance sheet date, the Company believes that its reserves for uncertain tax positions are adequate to cover the resolution of these audits. However, the resolution of these audits could have a significant impact on the financial statements if the settlement differs from the amount reserved.

The Company recognizes interest and penalties accrued related to unrecognized tax positions within income taxes. During the years ended December 31, 2017, 2016 and 2015, the Company recognized a charge/(credit) to income taxes of ($14.2 million), $4.2 million and $0.8 million in interest and penalties and the Company had a liability of $16.5 million, $30.8 million and $26.5 million for the payment of interest and penalties accrued as of December 31, 2017, 2016 and 2015, respectively.

Deferred taxes

The significant components of deferred tax assets and liabilities and their balance sheet classifications, as of December 31, are as follows:

Years ended December 31	2017 $'M	2016 $'M
Deferred tax assets:		
Deferred revenue	**3.5**	16.8
Inventory & warranty provisions	**64.2**	88.7
Losses carried forward (including tax credits)	**1,687.1**	1,907.3
Provisions for sales deductions and doubtful accounts	**119.4**	191.6
Intangible assets	**50.3**	79.7
Share-based compensation	**93.3**	137.5
Excess of tax value over book value of assets	**11.5**	14.2
Accruals and provisions	**249.4**	448.6
Other	**26.2**	78.5
Gross deferred tax assets	**2,304.9**	2,962.9
Less: valuation allowance	**(635.7)**	(569.4)
	1,669.2	2,393.5
Deferred tax liabilities:		
Intangible assets	**(5,501.2)**	(9,073.4)
Excess of book value over tax value in inventory	**(9.6)**	(150.3)
Excess of book value over tax value of assets and investments	**(650.0)**	(1,304.2)
Other	**(67.8)**	(91.6)
Net deferred tax liabilities	**(4,559.4)**	(8,226.0)
Balance sheet classifications:		
Deferred tax assets — non-current	**188.8**	96.7
Deferred tax liabilities — non-current	**(4,748.2)**	(8,322.7)
	(4,559.4)	(8,226.0)

As of December 31, 2017, the Company had a valuation allowance of $635.7 million (2016: $569.4 million; 2015: $416.1 million) to reduce its deferred tax assets to estimated realizable value. These valuation allowances related primarily to operating losses, capital losses, and tax-credit carry-forwards in Switzerland (2017: $200.0 million; 2016: $176.8 million; 2015: $131.5 million); U.S. (2017: $148.9 million; 2016: $155.1 million; 2015: $125.9 million); Ireland (2017: $22.3 million; 2016: $22.4 million; 2015: $22.2 million); and other foreign tax jurisdictions (2017: $264.5 million; 2016: $215.1 million; 2015: $136.5 million).

Management is required to exercise judgment in determining whether deferred tax assets will more likely than not be realized. A valuation allowance is established where there is an expectation that on the balance of probabilities management considers it is more likely than not that the relevant deferred tax assets will not be realized. In assessing the need for a valuation allowance, management weighs all available positive and negative evidence including cumulative losses in recent years, projections of future taxable income, carry forward and carry back potential under relevant tax law, expiration period of tax attributes, taxable temporary differences, and prudent and feasible tax-planning strategies.

The net increase in valuation allowances of $66.3 million includes (i) increases of $81.4 million relating to operating losses in various jurisdictions for which management considers that there is insufficient positive evidence related to the factors described above to overcome negative evidence, such as cumulative losses and expiration periods and therefore it is more likely than not that the relevant deferred tax assets will not be realized in full, and (ii) decreases of $15.1 million primarily related to U.S. state tax losses, which based on the assessment of factors described above now provides sufficient positive evidence to support the losses are more likely than not to be realized.

As of December 31, 2017, based upon a consideration of the factors described above management believes it is more likely than not that the Company will realize the benefits of these deductible differences, net of the valuation allowances. However, the amount of the deferred tax asset considered realizable could be adjusted in the future if these factors are revised in future periods.

The approximate tax effect of NOLs, capital losses and tax credit carry-forwards as of December 31, are as follows:

Years ended December 31	2017 $'M	2016 $'M
U.S. federal tax	**489.6**	687.1
U.S. state tax	**140.3**	170.7
Republic of Ireland	**29.4**	45.1
Foreign tax jurisdictions	**723.8**	614.9
R&D and other tax credits	**303.9**	389.5
	1,687.0	1,907.3

The approximate gross value of net operating losses (NOLs) and capital losses at December 31, 2017 is $11,137.5 million (2016: $10,843.1 million). The tax effected NOLs, capital losses and tax credit carry-forwards shown above have the following expiration dates:

	December 31, 2017 $'M
Within 1 year	**1.4**
Within 1 to 2 years	**34.4**
Within 2 to 3 years	**18.4**
Within 3 to 4 years	**44.3**
Within 4 to 5 years	**50.1**
Within 5 to 6 years	**31.8**
After 6 years	**919.5**
Indefinitely	**587.1**

The Company does not provide for deferred taxes on the excess of the financial reporting over the tax basis of investments in foreign subsidiaries that are essentially permanent in duration. As of December 31, 2017, that excess totaled $14.4 billion (2016: $16.6 billion). On December 22, 2017, President Trump signed tax reform legislation (HR 1) which includes a broad range of tax reform proposals affecting businesses, including the payment of a one-time tax or "toll charge" on previously unremitted earnings of certain non-U.S. subsidiaries. Accordingly, the Company will no longer assert that any of the earnings that will be taxed as part of the toll charge are indefinitely reinvested (approximately $7.6 billion).

23. Segment Reporting

Shire comprises one operating and reportable segment engaged in the research, development, licensing, manufacturing, marketing, distribution and sale of innovative specialist medicines to meet significant unmet patient needs. This is consistent with how the financial information is viewed for the purposes of evaluating performance, allocating resources, and planning and forecasting future periods and how the operations are managed by the Executive Committee (Shire's chief operating decision maker).

This segment is supported by several key functions: a Pipeline Committee, an In-Line Committee, a Technical Operations group and a Corporate group. The Pipeline Committee consists of R&D and Corporate Development and is responsible for prioritizing the activities towards progressing and acquiring development programs across a variety of therapeutic areas. The Technical Operations group is responsible for the Company's global supply chain. The In-line Committee focuses on commercializing marketed products and support of the development of the Company's pipeline candidates. The business is also supported by a simplified, centralized corporate function group. None of these functional groups meets all of the criteria to be considered an individual operating segment.

Geographic information

Revenues (based on the geographic location from which the sale originated):

Years ended December 31	2017 $'M	2016 $'M	2015 $'M
Ireland	**55.5**	41.6	14.1
United States	**9,642.1**	7,666.9	4,659.2
Rest of the world	**5,463.0**	3,688.1	1,743.4
Total revenues	**15,160.6**	11,396.6	6,416.7

Long-lived assets comprise all non-current assets, (excluding goodwill and intangible assets, deferred contingent consideration assets, deferred tax assets, investments and financial instruments) based on their relevant geographic location.

Years ended December 31	2017 $'M	2016 $'M
Ireland	**94.0**	41.2
United States	**4,603.0**	6,449.4
Austria	**737.3**	–
Rest of the world	**1,314.3**	–
Total revenues	**6,748.6**	6,574.6

23. Segment Reporting continued

Material customers

In the periods set out below, certain customers accounted for greater than 10% of the Company's Product sales:

Years ended December 31	2017 $'M	2017 Product sales %	2016 $'M	2016 Product sales %	2015 $'M	2015 Product sales %
AmerisourceBergen Corp	**1,408.1**	**10**	1,695.3	16	1,048.3	17
McKesson Corp.	**1,333.1**	**9**	1,336.7	12	1,044.1	17
Cardinal Health Inc.	**1,079.2**	**7**	1,052.2	10	796.9	13

Amounts outstanding in respect of these material customers were as follows:

Years ended December 31	2017 $'M	2016 $'M
AmerisourceBergen Corp	**469.9**	427.2
McKesson Corp.	**512.4**	312.9
Cardinal Health Inc.	**325.3**	278.4

In the periods set out below, Revenues by franchise were as follows. In 2017, Immunology includes HAE from Genetic Diseases; prior year amounts have been reclassified to conform with current year presentation.

Years ended December 31	2017 $'M	2016 $'M	2015 $'M
Product sales by franchise			
IMMUNOGLOBULIN THERAPIES	**2,236.6**	1,143.9	–
HEREDITARY ANGIOEDEMA	**1,429.6**	1,310.9	1,062.7
BIO THERAPEUTICS	**704.1**	372.2	–
Immunology	**4,370.3**	2,827.0	1,062.7
HEMOPHILIA	**2,957.3**	1,789.0	–
INHIBITOR THERAPIES	**828.3**	451.8	–
Hematology	**3,785.6**	2,240.8	–
VYVANSE	**2,161.1**	2,013.9	1,722.2
ADDERALL XR	**348.0**	363.8	362.8
MYDAYIS	**21.6**	–	–
Other Neuroscience	**133.4**	112.8	115.4
Neuroscience	**2,664.1**	2,490.5	2,200.4
LIALDA/MEZAVANT	**569.4**	792.1	684.4
GATTEX/REVESTIVE	**335.5**	219.4	141.7
PENTASA	**313.2**	309.4	305.8
NATPARA/NATPAR	**147.4**	85.3	24.4
Other Internal Medicine	**304.8**	349.3	344.3
Internal Medicine	**1,670.3**	1,755.5	1,500.6
ELAPRASE	**615.7**	589.0	552.6
REPLAGAL	**472.1**	452.4	441.2
VPRIV	**349.9**	345.7	342.4
Genetic Diseases	**1,437.7**	1,387.1	1,336.2
Oncology	**261.7**	130.5	–
Ophthalmics	**259.2**	54.4	–
Total Product sales	**14,448.9**	10,885.8	6,099.9
Royalties and other revenues			
Royalties	**448.4**	382.6	300.5
Other revenues	**263.3**	128.2	16.3
Total royalties and other revenues	**711.7**	510.8	316.8
Total revenues	**15,160.6**	11,396.6	6,416.7

24. Commitments and Contingencies

Leases

Future minimum lease payments under operating leases as of December 31, 2017 are presented below:

	Operating leases $'M
2018	188.5
2019	164.8
2020	155.2
2021	146.6
2022	128.8
Thereafter	795.8
	1,579.7

The Company leases land, facilities, motor vehicles and certain equipment under operating leases expiring through 2032. Lease and rental expense amounted to $167.6 million, $100.8 million and $40.7 million for the year ended December 31, 2017, 2016 and 2015, respectively, which is predominately included in Cost of sales and SG&A expenses in the Company's Consolidated Statement of Operations.

Letters of credit and guarantees

As of December 31, 2017 and December 31, 2016, the Company had irrevocable standby letters of credit and guarantees with various banks and insurance companies totaling $224.8 million and $139.7 million (being the contractual amounts), respectively, providing security for the Company's performance of various obligations. These obligations are primarily in respect of the recoverability of insurance claims, lease obligations and supply commitments.

Commitments

Clinical testing

As of December 31, 2017, the Company had committed to pay approximately $1,409.9 million (December 31, 2016: $1,037.4 million) to contract vendors for administering and executing clinical trials. The timing of these payments is dependent upon actual services performed by the organizations as determined by patient enrollment levels and related activities.

Contract manufacturing

As of December 31, 2017, the Company had committed to pay approximately $467.2 million (December 31, 2016: $528.9 million) in respect of contract manufacturing. The Company expects to pay $216.5 million of these commitments in 2018.

Other purchasing commitments

As of December 31, 2017, the Company had committed to pay approximately $1,692.5 million (December 31, 2016: $1,745.4 million) for future purchases of goods and services, predominantly relating to active pharmaceutical ingredients sourcing. The Company expects to pay $960.0 million of these commitments in 2018.

Investment commitments

As of December 31, 2017, the Company had outstanding commitments to purchase common stock and interests in companies and partnerships, respectively, for amounts totaling $153.5 million (December 31, 2016: $76.4 million) which may all be payable in 2018, depending on the timing of capital calls. The investment commitments include additional funding to certain variable interest entities (VIEs) for which Shire is not the primary beneficiary.

Capital commitments

As of December 31, 2017, the Company had committed to spend $328.2 million (December 31, 2016: $100.5 million) on capital projects.

Baxter related tax indemnification

Baxter International Inc. (Baxter) and Baxalta entered into a tax matters agreement, effective on the date of Baxalta's separation from Baxter, which employs a direct tracing approach, or where direct tracing approach is not feasible, an allocation methodology, to determine which company is liable for pre-separation income tax items for U.S. federal, state and foreign jurisdictions. With respect to tax liabilities that are directly traceable or allocated to Baxalta but for which Baxalta was not the primary obligor, Baxalta recorded a tax indemnification amount that would be due to Baxter upon Baxter discharging the associated tax liability to the taxing authority.

25. Legal and Other Proceedings

The Company expenses legal costs when incurred.

The Company recognizes loss contingency provisions for probable losses when management is able to reasonably estimate the loss. When the estimated loss lies within a range, the Company records a loss contingency provision based on its best estimate of the probable loss. If no particular amount within that range is a better estimate than any other amount, the minimum amount is recorded. Estimates of losses may be developed before the ultimate loss is known, and are therefore refined each accounting period as additional information becomes known. An outcome that deviates from the Company's estimate may result in an additional expense or release in a future accounting period. As of December 31, 2017, provision for litigation losses, insurance claims and other disputes totaled $76.2 million (December 31, 2016: $415.0 million).

The Company's principal pending legal and other proceedings are disclosed below. The outcomes of these proceedings are not always predictable and can be affected by various factors. For those legal and other proceedings for which it is considered at least reasonably possible that a loss has been incurred, the Company discloses the possible loss or range of possible loss in excess of the recorded loss contingency provision, if any, where such excess is both material and estimable.

MYDAYIS

On October 12, 2017, Shire was notified that Teva Pharmaceuticals USA, Inc. had submitted an abbreviated new drug application (ANDA) to the FDA seeking permission to market a generic version of MYDAYIS. Within the requisite 45-day period, Shire filed a lawsuit in the U.S. District Court for the District of Delaware against Teva Pharmaceuticals USA, Inc., Actavis Laboratories, Inc. and Teva Pharmaceutical Industries Limited (collectively the "Teva entities"). No dates for a Markman hearing or trial have been set.

Petitions to institute inter partes reviews (IPRs) against U.S. Patent numbers 8,846,100 and 9,173,857 were filed by KVK Tech. Both of these patents are listed in the Orange Book as covering MYDAYIS and are among the patents-in-suit in the infringement action brought against the Teva entities as noted above. A decision on whether to institute the IPRs is expected on or before July 10, 2018. If one or both IPRs are instituted, a decision on the merits is expected on or before July 10, 2019.

25. Legal and Other Proceedings continued

LIALDA

In May 2010, Shire was notified that Zydus Pharmaceuticals USA, Inc. (Zydus) had submitted an ANDA under the Hatch-Waxman Act seeking permission to market a generic version of LIALDA. Within the requisite 45-day period, Shire filed a lawsuit in the U.S. District Court for the District of Delaware against Zydus and Cadila Healthcare Limited, doing business as Zydus Cadila. A Markman hearing took place on January 29, 2015 and a Markman ruling was issued on July 28, 2015. A trial took place between March 28, 2016 and April 1, 2016. On September 16, 2016 the court issued its ruling finding that the proposed generic product would not infringe the asserted claims. Shire appealed the ruling to the Court of Appeals for the Federal Circuit (CAFC). On May 9, 2017, the CAFC affirmed the ruling of the district court. Zydus' ANDA has been approved and the generic product is now available in the U.S.

In February 2012, Shire was notified that Osmotica Pharmaceutical Corporation (Osmotica) had submitted an ANDA under the Hatch-Waxman Act seeking permission to market a generic version of LIALDA. Within the requisite 45-day period, Shire filed a lawsuit in the U.S. District Court for the Northern District of Georgia against Osmotica. A Markman hearing took place on August 22, 2013 and a Markman ruling was issued on September 25, 2014. The court issued an Order on February 27, 2015 in which all dates in the scheduling order were stayed. Osmotica's ANDA was withdrawn as of March 31, 2017 and the case was dismissed.

In March 2012, Shire was notified that Watson Laboratories Inc.-Florida had submitted an ANDA under the Hatch-Waxman Act seeking permission to market a generic version of LIALDA. Within the requisite 45-day period, Shire filed a lawsuit in the U.S. District Court for the Southern District of Florida against Watson Laboratories Inc.-Florida and Watson Pharmaceuticals, Inc., Watson Pharma, Inc. and Watson Laboratories, Inc. (collectively, "Watson") were subsequently added as defendants. A trial took place in April 2013 and on May 9, 2013 the trial court issued a decision finding that the proposed generic product infringes the patent-in-suit and that the patent is not invalid. Watson appealed the trial court's ruling to the CAFC and a hearing took place on December 2, 2013. The ruling of the CAFC was issued on March 28, 2014 overruling the trial court on the interpretation of two claim terms and remanding the case for further proceedings. Shire petitioned the Supreme Court for a writ of certiorari which was granted on January 26, 2015. The Supreme Court also vacated the CAFC decision and remanded the case to the CAFC for further consideration in light of the Supreme Court's recent decision in Teva v. Sandoz. On June 3, 2015, the CAFC reaffirmed their previous decision to reverse the District Court's claims construction and remanded the case to the U.S. District Court for the Southern District of Florida. A trial was held on January 25-27, 2016. A ruling was issued on March 28, 2016 upholding the validity of the patent and finding that Watson's proposed ANDA product infringes the patent-in-suit. Watson appealed the ruling to the CAFC and oral argument took place on October 5, 2016. The CAFC issued a ruling on February 10, 2017 reversing the trial court's ruling of infringement and remanding the case to the lower court for entry of a ruling of non-infringement. On May 18, 2017, the lower court entered judgment of non-infringement.

In April 2012, Shire was notified that Mylan had submitted an ANDA under the Hatch-Waxman Act seeking permission to market a generic version of LIALDA. Within the requisite 45-day period, Shire filed a lawsuit in the U.S. District Court for the Middle District of Florida against Mylan. A Markman hearing took place on December 22, 2014. A Markman ruling was issued on March 23, 2015. Following a four-day bench trial in September 2016 in the U.S. District Court for the Middle District of Florida, the court handed down a ruling that Mylan's proposed generic version of LIALDA infringes claims 1 and 3 of the Orange Book listed patent for LIALDA. In connection with this finding of infringement, the court also entered an injunction prohibiting Mylan from making, using, selling, offering for sale and/or importing their proposed ANDA product before the expiration of the patent (June 8, 2020) and requiring that the approval date for their ANDA be on or after the expiration of the patent. On June 14, 2017, the U.S. District Court for the Middle District of Florida granted Mylan's Motion for Reconsideration and entered judgment of non-infringement. Shire filed an appeal with the Court of Appeals of the Federal Circuit on July 7, 2017. No date for oral argument has been set.

In March 2015, Shire was notified that Amneal had submitted an ANDA under the Hatch-Waxman Act seeking permission to market a generic version of LIALDA. Within the requisite 45 day period, Shire filed a lawsuit in the U.S. District Court for the District of New Jersey against Amneal, Amneal Pharmaceuticals of New York, LLC and Amneal Pharmaceuticals Co. India Pvt. Ltd. A Markman hearing took place on July 25, 2016. A Markman ruling was issued on August 2, 2016. No trial date has been set.

In September 2015, Shire was notified that Lupin Ltd. had submitted an ANDA under the Hatch-Waxman Act seeking permission to market a generic version of LIALDA. Within the requisite 45 day period, Shire filed a lawsuit in the U.S. District Court for the District of Maryland against Lupin Ltd., Lupin Pharmaceuticals Inc., Lupin Inc. and Lupin Atlantis Holdings SA. A Markman hearing originally scheduled to take place on November 10, 2016, was cancelled and has not yet been rescheduled. No trial date has been set.

VANCOCIN

On April 6, 2012, ViroPharma Incorporated (ViroPharma) received a notification that the United States Federal Trade Commission (FTC) was conducting an investigation into whether ViroPharma had engaged in unfair methods of competition with respect to VANCOCIN which Shire acquired in January 2014. Following the divestiture of VANCOCIN in August 2014, Shire retained certain liabilities including any potential liabilities related to the VANCOCIN citizen petition.

On August 3, 2012, and September 8, 2014, ViroPharma and Shire respectively received Civil Investigative Demands from the FTC requesting additional information related to this matter. Shire has fully cooperated with the FTC's investigation.

On February 7, 2017, the FTC filed a Complaint against Shire alleging that ViroPharma engaged in conduct in violation of U.S. antitrust laws arising from a citizen petition ViroPharma filed in 2006 related to Food & Drug Administration's policy for evaluating bioequivalence for generic versions of VANCOCIN. The complaint seeks equitable relief, including an injunction and disgorgement. The Company filed a motion to dismiss on April 10, 2017.

At this time, Shire is unable to predict the outcome or duration of this case.

ELAPRASE
On September 24, 2014, Shire's Brazilian affiliate, Shire Farmaceutica Brasil Ltda, was served with a lawsuit brought by the State of Sao Paulo and in which the Brazilian Public Attorney's office has intervened alleging that Shire is obligated to provide certain medical care including ELAPRASE for an indefinite period at no cost to patients who participated in ELAPRASE clinical trials in Brazil, and seeking recoupment to the Brazilian government for amounts paid on behalf of these patients to date, and moral damages associated with these claims.

On May 6, 2016, the trial court judge ruled on the case and dismissed all the claims under the class action, which was appealed. On February 20, 2017, the Court of Appeals in Sao Paulo issued the final decision on merit in favor of Shire and dismissed all the claims under the class action. On July 12, 2017, the Public Prosecutor filed an appeal addressed to the Supreme Court. During the last quarter of 2017, the State of Sao Paulo filed appeals addressed to the Superior Court of Justice and to the Supreme Court.

26. Shareholders' Equity

Authorized common stock
The authorized stock of Shire plc as of December 31, 2017, was 1,500,000,000 ordinary shares and 2 subscriber ordinary shares.

Dividends
Under Jersey law, Shire plc is entitled to fund payments of dividends from any source (other than a capital redemption reserve or nominal capital account) subject to the Directors authorizing the distribution making a solvency statement in the prescribed statutory form. As of December 31, 2017, Shire plc's distributable reserves were approximately $4.2 billion.

Treasury stock
The Company records the purchase of its own shares by the EBT and under the share buy-back program as a reduction of shareholders' equity based on the price paid for the shares. As of December 31, 2017, the EBT held 0.5 million in ordinary shares (2016: 0.5 million; 2015: 0.6 million) and 0.2 million ADSs (2016: 0.2 million; 2015: 0.2 million) and shares held under the share buy-back program were 7.4 million ordinary shares (2016: 8.0 million; 2015: 8.5 million). During the years ended December 31, 2017 and 2016 the Company did not purchase any shares either through the EBT or under any share buy-back program.

Income Access Share Arrangements
Shire has put into place income access share arrangements which enable ordinary shareholders, other than ADS holders, to choose whether they receive their dividends from Shire plc, a company tax resident in the Republic of Ireland, or from Shire Biopharmaceuticals Holdings (Old Shire), a Shire group company tax resident in the UK.

Old Shire has issued one income access share to the Income Access Trust (IAS Trust), which is held by the trustee of the IAS Trust (Trustee). The mechanics of the arrangements are as follows:

(i) If a dividend is announced or declared by Shire plc on its ordinary shares, an amount is paid by Old Shire by way of a dividend on the income access share to the Trustee, and such amount is paid by the Trustee to ordinary shareholders who have elected to receive dividends under these arrangements. The dividend which would otherwise be payable by Shire plc to its ordinary shareholders will be reduced by an amount equal to the amount paid to its ordinary shareholders by the Trustee.

(ii) If the dividend paid on the income access share and on-paid by the Trustee to ordinary shareholders is less than the total amount of the dividend announced or declared by Shire plc on its ordinary shares, Shire plc will be obliged to pay a dividend on the relevant ordinary shares equivalent to the amount of the shortfall. In such a case, any dividend paid on the ordinary shares will generally be subject to Irish withholding tax at the rate of 20.0% or such lower rate as may be applicable under exemptions from withholding tax contained in Irish law.

(iii) An ordinary shareholder is entitled to make an income access share election such that he/she will receive his/her dividends (which would otherwise be payable by Shire plc) under these arrangements from Old Shire. This can be done by submitting an IAS arrangement election form containing information on the participating shareholders pursuant to Shire plc's Articles of Association.

The ADS Depositary has made an election on behalf of all holders of ADSs such that they will receive dividends from Old Shire under the income access share arrangements. Dividends paid by Old Shire under the income access share arrangements will not, under current legislation, be subject to any UK or Irish withholding taxes. If a holder of ADSs does not wish to receive dividends from Old Shire under the income access share arrangements, he/she must withdraw his/her ordinary shares from the ADS program prior to the dividend record date set by the ADS Depositary and request delivery of the Shire plc ordinary shares. This will enable him/her to receive dividends from Shire plc.

It is the expectation, although there can be no certainty, that Old Shire will distribute dividends on the income access share to the Trustee for the benefit of all ordinary shareholders who make an income access share election in an amount equal to what would have been such ordinary shareholders' entitlement to dividends from Shire plc in the absence of the income access share election. If any dividend paid on the income access share and or paid to the ordinary shareholders is less than such ordinary shareholders' entitlement to dividends from Shire plc in the absence of the income access share election, the dividend on the income access share will be allocated pro rata among the ordinary shareholders and Shire plc will pay the balance to these ordinary shareholders by way of dividend. In such circumstances, there will be no grossing up by Shire plc in respect of, and Old Shire and Shire plc will not compensate those ordinary shareholders for, any adverse consequences including any Irish withholding tax consequences.

26. Shareholders' Equity continued

Shire will be able to suspend or terminate these arrangements at any time, in which case the full Shire plc dividend will be paid directly by Shire plc to those ordinary shareholders (including the Depositary) who have made an income access share election. In such circumstances, there will be no grossing up by Shire plc in respect of, and Old Shire and Shire plc will not compensate those ordinary shareholders for, any adverse consequences including any Irish withholding tax consequences.

In the year ended December 31, 2017, Old Shire paid dividends totaling $245.6 million (2016: $150.6 million; 2015: $127.7 million) on the income access share to the Trustee in an amount equal to the dividend ordinary shareholders would have received from Shire plc.

27. Share-based Compensation Plans

Total share-based compensation recorded by the Company during the years ended December 31, 2017, 2016 and 2015 by line item is as follows:

Years ended December 31	**2017 $'M**	2016 $'M	2015 $'M
Cost of sales	**35.6**	23.3	7.6
Research and development	**27.3**	46.9	28.6
Selling, general and administrative	**97.2**	67.1	37.4
Integration and acquisition costs	**14.8**	181.2	–
Reorganization costs	**–**	–	26.7
Total	**174.9**	318.5	100.3
Less tax	**(43.4)**	(85.3)	(28.4)
	131.5	233.2	71.9

During the year ended December 31, 2017, the Company incurred total expense of $61.6 million (2016: $223.1 million, 2015: $nil) related to replacement awards held by Baxalta employees as further described below. This includes integration related expenses of $14.8 million during the year ended December 31, 2017 (2016: $171.0 million, 2015: $nil), primarily due to the acceleration of unrecognized expense associated with certain employees impacted by the integration.

There were no capitalized share-based compensation costs as of December 31, 2017, 2016 and 2015.

As of December 31, 2017, $218.3 million (2016: $244.2 million, 2015: $115.3 million) of total unrecognized compensation cost relating to non-vested awards is expected to be recognized over a period of three years.

Share-based compensation plans

Prior to February 28, 2015, the Company granted stock-settled share appreciation rights (SARs) and performance share awards (PSAs) over ordinary shares and ADSs to Executive Directors and employees under the Shire Portfolio Share Plan (PSP) (Parts A and B). The SARs and PSAs granted under the PSP (Parts A and B) to Executive Directors are exercisable subject to performance and service criteria. Substantially all SARs and PSAs granted to employees are exercisable subject only to service criteria.

The principal terms and conditions of SARs and PSAs under the PSP (Parts A and B) are as follows: (i) the contractual life of SARs is seven years, (ii) the vesting period of SARs and PSAs granted to employees below the level of Executive Vice President allows for graded vesting over three years, and (iii) awards granted to the level of Executive Director and Executive Vice President cliff vest after three years, of which awards to the level of Executive Director contain performance conditions based on growth in Non GAAP adjusted return on invested capital (Adjusted ROIC) and Non GAAP earnings before interest, taxation, depreciation and amortization (Non GAAP EBITDA). In 2014, the Company granted PSAs under the PSP to employees at Executive Vice President level and to a select group of senior employees, which are exercisable subject to performance and service criteria. These PSAs cliff vested after three years and contain performance conditions as explained above.

Since February 28, 2015, the Company has granted awards under the Shire Long Term Incentive Plan 2015 (LTIP). Under the LTIP, the Company grants stock-settled share appreciation rights (SARs), restricted stock units (RSUs) and performance share units (PSUs) over ordinary shares and ADSs to Executive Directors and employees. The PSUs granted under the LTIP and SARs granted to Executive Directors are exercisable subject to performance and service criteria. RSUs granted under the LTIP and SARs granted to all other employees are exercisable subject only to service criteria.

The principal terms and conditions of SARs, RSUs and PSUs granted under the LTIP are as follows: (i) the contractual life of SARs is seven years, (ii) the vesting period of SARs and RSUs granted to employees below the level of Executive Vice President allows for graded vesting, and (iii) all SARs granted to Executive Directors and employees at Executive Vice President level and all PSUs granted cliff vest after three years and, with the exception of SARs granted to employees at Executive Vice President level, contain performance conditions based on Product sales and Non GAAP EBITDA targets; a Non GAAP Adjusted ROIC underpin is also used at the end of the three year performance period to assess the underlying performance of the Company before determining the final vesting levels for awards with performance conditions. In addition, a further two year holding period will apply to all awards granted to Executive Directors post vesting.

The Company also operates a Global Employee Stock Purchase Plan and UK/Irish Sharesave Plans.

Replacement Awards Issued to Baxalta Employees

In connection with the acquisition of Baxalta and pursuant to the merger agreement associated with the acquisition, outstanding Baxalta equity awards held by Baxalta employees or employees of Baxter were cancelled and exchanged for Shire equity awards. The outstanding Baxalta equity awards consisted primarily of stock options and RSUs and hence were replaced with Shire's stock options and RSUs. The replacement Shire awards generally have the same terms and conditions (including vesting) as the former Baxalta awards for which they were exchanged.

The value of the replacement share-based awards granted was designed to generally preserve both the intrinsic value and the fair value of the award immediately prior to the acquisition. Following the acquisition, the Company records share-based compensation expense associated with the acquisition-date fair value of acquired Baxalta employees' replacement options and RSUs that is attributable to post-acquisition service requirements, as well as share-based compensation expense for post-acquisition service requirements associated with certain remaining unvested Baxter share-based awards held by the acquired Baxalta employees. The portions of the acquisition-date fair values of the awards that are attributable to post-combination service are recognized over the remaining service period of the awards.

The following awards were outstanding as of December 31, 2017:

	Compensation type	Number of awards	Expiration period from date of issue	Vesting period
Stock-settled SARs	SARs	15,693,527	7 years	3 years graded vesting and/or 3 years cliff vesting subject to performance criteria for Executive Directors only
UK/Irish Sharesave Plans	Stock options	184,647	6 months after vesting	3 or 5 years
Global Employee Stock Purchase Plan	Stock options	315,646	On vesting date	1 to 5 years
Baxalta Replacement Options	Stock options	9,425,001	10 years	3 years graded vesting
Stock-settled SARs and stock options		**25,618,821**		
RSUs, PSUs and PSAs	RSUs, PSUs and PSAs	3,258,380	3 years	3 years graded vesting, 3 years cliff vesting subject to performance criteria for Executive Directors and certain senior employees only
Baxalta Replacement RSUs	RSU	701,340	3 years	3 years graded vesting
RSUs/PSUs and PSAs		**3,959,720**		

Stock-settled SARs and stock options

SARs under LTIP and PSP (Part A)

Stock-settled share appreciation rights (SARs) granted to Executive Directors are exercisable subject to service and performance criteria.

In respect of any award made to Executive Directors under the LTIP, performance criteria are based on Product sales and Non GAAP EBITDA targets, with a Non GAAP Adjusted ROIC underpin. In respect of any award made to Executive Directors under the PSP (Part A), performance criteria are based on growth in Non GAAP Adjusted ROIC and Non GAAP EBITDA. These performance measures are an important measure of the Company's ability to meet the strategic objective to grow value for all of its stakeholders.

Awards granted to employees below Executive Director level are not subject to performance conditions and are only subject to service conditions.

Once awards have vested, participants will have until the seventh anniversary of the date of grant to exercise their awards.

UK/Irish Sharesave Plans (Sharesave Plans)

Options granted under the Sharesave Plans are granted with an exercise price equal to 80% and 75% of the mid-market price on the day before invitations are issued to UK and Ireland employees, respectively. Employees may enter into three or five year savings contracts. No performance conditions apply.

Shire Global Employee Stock Purchase Plan (Stock Purchase Plan)

Under the Stock Purchase Plan, options are granted with an exercise price equal to 85% of the fair market value of a share on the day before the enrollment date (the first day of the offering period) or the day before the exercise date (the last day of the offering period), whichever is the lower. Employees agree to save for a period up to 12 months. No performance conditions apply.

Baxalta Replacement Options

The replacement stock options were issued consistent with the vesting conditions of the replaced award (as explained above). Replacement stock options had contractual terms of 10 years from the initial grant date. The majority of stock options outstanding vested in one-third increments over a three year period, although certain awards cliff vest or have longer or shorter service periods. The fair value on the acquisition date attributable to post-combination service, adjusted for estimated forfeitures, is recognized as expense on a straight-line basis over the remaining vesting period.

27. Share-based Compensation Plans continued

A summary of the status of the Company's SARs and stock options including replacement awards as of December 31, 2017 and of the related activity during the period then ended is presented below:

Years ended December 31, 2017	Weighted average exercise price £	Number of shares	Intrinsic value £'M
Outstanding as of beginning of period	38.98	21,869,833	
Granted	45.11	9,865,956	
Exercised	34.99	(3,312,318)	
Forfeited	44.00	(2,804,650)	
Outstanding as of end of period	39.75	25,618,821	31.4
Exercisable as of end of period	35.11	13,329,159	29.3

Excluded from the table above are replacement stock options issued to Baxter employees as part of the acquisition of Baxalta. The Company issued 8.8 million stock options to Baxter employees on June 3, 2016, out of which 6.2 million and 6.2 million were outstanding and exercisable, respectively, as of December 31, 2017.

The weighted average grant date fair value of SARs and stock options granted in the year ended December 31, 2017 was £9.72 (2016: £8.25; 2015: £10.36).

SARs and stock options including Baxalta Replacement Options, outstanding as of December 31, 2017, have the following characteristics:

Number of awards outstanding	Exercise prices £	Weighted Average remaining contractual term (Years)	Weighted average exercise price of awards outstanding £	Number of awards exercisable	Weighted average exercise price of awards exercisable £
2,373,820	9.27-28.00	2.4	24.47	2,367,984	24.48
9,537,750	28.01-40.00	6.3	33.64	8,010,506	33.30
13,707,251	40.01-70.48	5.5	46.65	2,950,669	48.55
25,618,821				13,329,159	

RSUs, PSUs and PSAs

RSUs and PSUs under LTIP and PSAs under PSP (Part B)

PSUs and PSAs granted to Executive Directors and employees at Executive Vice President level are exercisable subject to certain performance and service criteria.

RSUs and PSAs granted to all other employees are not subject to performance criteria and are only subject to service conditions.

The performance criteria for PSUs granted under the LTIP is based on Product sales and Non GAAP EBITDA targets, typically with a Non GAAP Adjusted ROIC underpin. The performance criteria for PSAs under the PSP (Part B) is based on growth in Non GAAP Adjusted ROIC and Non GAAP EBITDA.

Baxalta Replacement RSUs

The replacement RSUs were issued consistent with the vesting conditions of the replaced award (as explained above) and generally continue to vest in one-third increments over a three-year period. The fair value on the acquisition date attributable to post-combination service, adjusted for estimated forfeitures, is recognized as expense on a straight-line basis over the remaining vesting period.

A summary of the status of the Company's RSUs, PSUs and PSAs as of December 31, 2017 and of the related activity during the period then ended is presented below:

RSUs, PSUs and PSAs	Number of shares	Weighted average grant date fair value	Weighted average remaining life
Outstanding as of beginning of period	3,976,657	41.31	
Granted	2,520,239	45.38	
Exercised	(1,779,205)	43.23	
Forfeited	(757,971)	44.99	
Outstanding as of end of period	3,959,720	42.33	4.9
Exercisable as of end of period	–	–	N/A

Excluded from the table above are replacement RSUs issued to Baxter employees as part of the acquisition of Baxalta. The Company issued 0.5 million RSUs to Baxter employees on June 3, 2016, out of which $nil were outstanding as of December 31, 2017.

Exercises of share-based awards

The total intrinsic values of share-based awards exercised, including those held by Baxter employees, for the years ended December 31, 2017, 2016 and 2015 were $147.1 million, $214.6 million and $198.8 million, respectively. The total cash received as a result of share option exercises for the period ended December 31, 2017, 2016 and 2015 was approximately $134.1 million, $169.2 million and $16.6 million, respectively. In connection with these exercises, the tax benefit credited to additional paid-in capital for the years ended December 31, 2017, 2016 and 2015 was $nil, $8.8 million and $31.6 million, respectively. With the adoption of a new accounting standard on accounting for stock-based compensation, effective January 1, 2017, excess tax benefits were recognized as a component of Income tax expense rather than Additional paid-in capital.

The Company will settle future awards with either newly listed ordinary shares or with shares held in the EBT. The number of shares that the EBT will purchase in 2018 is dependent on the number of awards granted and exercised during the year and Shire plc's share price. As of December 31, 2017, the EBT held 0.5 million ordinary shares and 0.2 million ADSs.

Valuation methodologies

The Company estimates the fair value of its share-based awards using a Black-Scholes valuation model. Key input assumptions used to estimate the fair value of share-based awards include the grant price of the award, the expected stock-based award term, volatility of the Company's share price, the risk-free rate and the Company's dividend yield. The Company believes that the valuation technique and the approach utilized to develop the underlying assumptions are appropriate in estimating the fair values of Shire's stock-based awards. Estimates of fair value are not intended to predict actual future events or the value ultimately realized by employees who receive equity awards, and subsequent events are not indicative of the reasonableness of the original estimates of fair value made by the Company.

The fair value of share awards granted was estimated using the following assumptions:

Years ended December 31	2017	Weighted average grant date fair value	Weighted average remaining life
Risk-free interest rate	**0.4-1.9%**	0.29-1.6%	0.6-1.8%
Expected dividend yield	**0.3-0.6%**	0.3-0.5%	0.2-0.4%
Expected life	**1-3.88 years**	1-4 years	1-4 years
Volatility	**25-29%**	26-29%	23-26%
Forfeiture rate	**0%**	5-7%	5-7%

The following assumptions were used to value share-based awards:

- risk-free interest rate — for awards granted over ADSs, the U.S. Federal Reserve treasury constant maturities rate with a term consistent with the expected life of the award is used. For awards granted over ordinary shares, the yield on UK government bonds with a term consistent with the expected life of the award is used;
- expected dividend yield — measured as the average annualized dividend estimated to be paid by the Company over the expected life of the award as a percentage of the share price at the grant date;
- expected life — estimated based on the contractual term of the awards and the effects of employees' expected exercise and post-vesting employment termination behavior;
- expected volatility — measured using historical daily price changes of the Company's share price over the respective expected life of the share-based awards at the date of the award; and
- forfeiture rate — estimated using historical trends of the number of awards forfeited prior to vesting. Upon the 2017 adoption of a new rule on accounting for stock-based compensation, the Company elected to account for forfeitures in relation to service conditions as they occur. As such, the estimated forfeiture rate was 0% starting in 2017.

28. Agreements and Transactions with Baxter

In connection with Baxalta's separation from Baxter on July 1, 2015, Baxalta and Baxter entered into several separation-related agreements that provided a framework for Baxalta's relationship with Baxter after the separation. These agreements, among others, included a manufacturing and supply agreement, a transition services agreement and a tax matters agreement.

Under the terms of the manufacturing and supply agreement, the Company manufactures certain products and materials and sells them to Baxter at an agreed-upon price reflecting the Company's cost plus a mark-up for certain products and materials. The Company reported revenues associated with the manufacturing and supply agreement with Baxter during the year ended December 31, 2017 and 2016 of approximately $137.3 million and $81.0 million, respectively. The 2016 reported revenues were for the period from June 3, 2016 acquisition date through December 31, 2016.

Under the terms of the transition services agreement, the Company and Baxter provide various services to each other on an interim, transitional basis. The services provided by Baxter to the Company include certain finance, information technology, human resources, quality, supply chain and other administrative services and functions, and are generally provided on a cost-plus basis. Certain of these services extend through June 30, 2018. The Company reported Selling, general and administrative expenses associated with the transition services agreement with Baxter during the year ended December 31, 2017 and 2016 of approximately $52.3 million and $54.0 million, respectively. The 2016 reported expenses were for the period from June 3, 2016 acquisition date through December 31, 2016.

For a certain portion of Baxalta's non U.S. operations, the legal transfer of net assets from Baxter had not occurred by the June 3, 2016 acquisition date due to the time required to transfer marketing authorizations and other regulatory requirements in each of these countries. Under the terms of the international commercial operations agreement with Baxter, the Company is responsible for the business activities conducted by Baxter on its behalf, and is subject to the risks and entitled to the benefits generated by these operations and assets. As a result, the related assets and liabilities and results of operations are reported in the Company's consolidated financial statements following the acquisition of Baxalta. The majority of these operations were transferred to the Company on December 31, 2016. Net sales related to these operations for the year ended December 31, 2017 were $nil (2016: $101.0 million). The outstanding balance of the assets and liabilities related to these operations was $nil as of December 31, 2017. As of December 31, 2016 the assets and liabilities of these operations consisted of $11.0 million of inventories, which were reported in Inventories on the Consolidated Balance Sheet, other assets of $50.0 million, which were reported as Prepaid expenses and other current assets, and liabilities of $3.0 million, which were reported in Other current liabilities.

The tax matters agreement governs Baxter and Baxalta's and now the Company's respective rights, responsibilities and obligations after the distribution with respect to taxes for any tax period ending on or before the distribution date, as well as tax periods beginning before and ending after the distribution date. In addition, the tax matters agreement addresses the allocation of liability for taxes that were incurred as a result of restructuring activities undertaken to effectuate the distribution and provides for Baxalta to indemnify Baxter against any tax liabilities resulting from Baxalta's action or inaction that causes the merger-related transactions to be taxable. Net tax-related indemnification liabilities as of December 31, 2017 associated with the tax matters agreement with Baxter are discussed in Note 24, Commitments and Contingencies, of these consolidated financial statements.

As of December 31, 2017, the Company had total amounts due from or to Baxter of $103.1 million (2016: $189.0 million) reported in Prepaid expenses and other current assets, $63.2 million (2016: $72.0 million) reported in Other current liabilities and $59.6 million (2016: $92.0 million) reported in Other non-current liabilities.

29. Auditor remuneration

The Audit, Compliance & Risk Committee reviews the scope and results of the audit and non-audit services, including tax advisory and compliance services, provided by the Company's Independent Registered Public Accountants, Deloitte LLP, and the cost effectiveness and the independence and objectivity of the Registered Public Accountants. In recognition of the importance of maintaining the independence of Deloitte LLP, a process for pre-approval has been in place since July 1, 2002 and has continued through to the end of the period covered by this Annual Report.

The following table provides an analysis of the amount paid to the Company's Independent Registered Public Accountants, Deloitte LLP, all fees having been pre-approved by the Audit, Compliance & Risk Committee.

Years ended December 31	**2017 $'M**	2016 $'M
Audit fees	**14.7**	14.7
Audit related fees[1]	**1.6**	1.0
Tax fees[2]	**–**	0.3
All other fees[3]	**5.6**	18.9
Total fees	**21.9**	34.9

1 Audit related fees consisted of audit work only the Independent Registered Public Accountant can reasonably be expected to perform, such as statutory audits or procedures relating to regulatory filings.
2 Tax fees consisted principally of assistance with matters related to compliance and advice in various tax jurisdictions.
3 All other fees in 2017 relate to the continuation and completion of projects already under way at Baxalta prior to its acquisition by the Company in June 2016. A comprehensive review and reorganization of these services was performed following the acquisition date to ensure the continued independence of Deloitte LLP as auditors for the Company.

30. List of subsidiaries

Name	Country	Share class and proportion of authorised nominal value represented (if not 100%)	Address
Shire Albania Sh.p.k.	Albania	Ordinary ALL100.00	Rr: Sami Frasheri, Kompleksi T.I.D, Shk. B, Floor 1, 10 000 Tirana, Albania
Baxalta Argentina S.A.U.	Argentina	AR$ 1.00 Ordinary	Entre Rios 1632, Olivos, Buenos Aires, Argentina
Shire Human Genetic Therapies S.A.	Argentina	ARS1.00 Ordinary	Calle Olga Cossettini 263 — 3º piso — UF 21, Dique IV — Puerto Madero — C1107CCF, Buenos Aires, Argentina
Baxalta Australia Pty. Ltd.	Australia	NPV Shares	Grosvenor Place, 225 George Street 39th floor, Sydney, NSW 2000, Australia
Farboud Pty Ltd	Australia	AUD1.00 Ordinary	Grosvenor Place, 225 George Street 39th floor, Sydney, NSW 2000, Australia
Fibrotech Therapeutics Pty Ltd	Australia	AUD Ordinary	Grosvenor Place, 225 George Street 39th floor, Sydney, NSW 2000, Australia
Shire Australia Pty Limited	Australia	AUD Ordinary — no par value	Grosvenor Place, 225 George Street 39th floor, Sydney, NSW 2000, Australia
Viropharma Pty Ltd	Australia	AUD Ordinary — no par value	Grosvenor Place, 225 George Street 39th floor, Sydney, NSW 2000, Australia
Baxalta Innovations GmbH	Austria	EUR €36,336,417.08	Industriestrasse 67, 1221 Vienna, Austria
Baxter AG	Austria	EUR €1	Industriestrasse 67, 1221 Vienna, Austria
Shire Austria GmbH	Austria	€35,000.00 Equity Interest	Industriestrasse 67, 1221 Vienna, Austria
Shire Intellectual Property 2 SRL	Barbados	US$1.00 Common	Chancery House, High Street, Bridgetown, Barbados
Shire Intellectual Property SRL	Barbados	US$1.00 Common	Chancery House, High Street, Bridgetown, Barbados
Baxalta Belgium Manufacturing S.A.	Belgium	EUR €2.43622	Boulevard René Branquart 80, 7860 Lessines, Belgium
Baxalta Belgium SPRL	Belgium	EUR €0.77173	Boulevard René Branquart 80, 7860 Lessines, Belgium
Baxalta Services Europe SPRL	Belgium	EUR €18.55	Boulevard René Branquart 80, 7860 Lessines, Belgium
Shire Belgium BVBA	Belgium	€1.00 Ordinary	Rue Montoyer 47, 1000 Brussels, Belgium
Shire Services BVBA	Belgium	€1.00 Ordinary	Rue Montoyer 47, 1000 Brussels, Belgium
Shire Holdings Limited	Bermuda	£1.00 Ordinary	H.P. House, 21 Laffan Street, Hamilton HM 09, Bermuda
Viropharma Holdings Limited	Bermuda	US$1.00 Ordinary	Canon's Court , 22 Victoria Street, Hamilton, 12, Bermuda
Shire Farmacêutica Brasil Ltda	Brazil	BRL1.00 Ordinary	Headquarters Rochaverá Corporate Towers, Avenida das Nações Unidas, 14.171 — Torre A, 5º andar — conj. 501, 502, 503 e 504, CEP, 04794-000 — São Paulo — SP, Brazil
Baxalta Bulgaria EOOD	Bulgaria	BGN лв375,001 Common	45 Bulgaria Blvd., Triaditza District, Stolichna Municipality, Sofia Region, 1404 Sofia, Bulgaria
Shire Bulgaria EOOD	Bulgaria	Ordinary BGL 1.00	51B Bulgaria blvd., floor 4, 1404 Sofia, Triaditza district, Stolichna Municipality, Sofia City Region, Bulgaria
Baxalta Canada Corporation	Canada	CAD Common — no par value	Bay Adelaide Centre, 22 Adelaide St W, Suite 3800, Toronto, Ontario M5H 4E3, Canada
NPS Holdings Company	Canada	CAD Common — no par value	1959 Upper Water Street, Suite 800 P.O. Box 997, Halifax NS B3J 2X2, Canada
NPS Pharma Canada Inc.	Canada	CAD Common — no par value	1959 Upper Water Street, Suite 800, P.O. Box 997, Halifax NS B3J 2X2, Canada
Shire IP Services Corporation	Canada	CAD Common — no par value	1959 Upper Water Street, Suite 900, P.O. Box 997, Halifax NS B3J 2X2, Canada
Shire Pharma Canada ULC	Canada	CAD Class A Common — no par value	1200 Waterfront Centre 200 Burrard Street P.O. Box 48600 Vancouver, BC V7X 1T2, Canada
Shire 2005 Investments Limited	Cayman Islands	£1.00 Ordinary	Maples Corporate Services Limited, PO Box 309G/T, Ugland House, South Church Street, George Town, Grand Cayman, KY1 1104, Cayman Islands
Shire Finance Limited	Cayman Islands	US$1.00 Founder	Maples Corporate Services Limited, PO Box 309G/T, Ugland House, South Church Street, George Town, Grand Cayman, KY1 1104, Cayman Islands
Shire Chile SpA	Chile	Chilean Peso Ordinary No Par Value	Miraflores 222, piso 28, comuna de Santiago, Chile
Shire BioScience (Shanghai) Co. Ltd.	China	Equity Interest	Room 1706, 17/F, Building 1, No. 18 Taigu Road, China (Shanghai) Pilot Free Trade Zone
Shire Hong Kong Limited	China	Ordinary Shares — no par value	1401 Hutchison House, 10 Harcourt Road, Hong Kong

30. List of subsidiaries continued

Name	Country	Share class and proportion of authorised nominal value represented (if not 100%)	Address
Shire (Shanghai) Pharmaceuticals Consultancy Co., Ltd.	China	€140,000.00 Equity Interest	Room 5120, 51st Floor, Raffles Centre, 268 XiZang Road, HuangPu District, Shanghai, China
Baxalta Colombia S.A.S.	Colombia	COP $1.000 Common	Transversal 23 No. 97-73 Piso 6, Bogota, Colombia
Shire Biotech Costa Rica, S.R.L.	Costa Rica	CRC100.00 Ordinary	3er piso, Centro Corporativo Internacional Paseo Colon San Jose, Costa Rica
Shire društvo s ograničenom odgovornošću za trgovinu i usluge	Croatia	HRK20,000.00 Ordinary	Hektoroviceva ulica 2, 10 000 Zagreb, Croatia
SG Biotech Limited*****	Cyprus	Class A shares EUR 1.00 — 51.00% Class B shares EUR 1.00 — 49.00%	Dimokritou, 15 Panaretos Eliana Complex, Flat/office 104, Potamos Gemasogeias, Limassol, 4041, Cyprus
Shire Czech s.r.o.	Czech Republic	CZK Kč1,000 capital	Karla Englise 3201/6, Smichov, 15000 Prague 5, Czech Republic
Shire Denmark A/S	Denmark	DKK kr1,000 Common	Larsbjørnstræde 3, 1454 København K, Denmark
Shire Biotech Denmark ApS	Denmark	DKK1,000.00 Ordinary	Havneholmen 29, 1561, Copenhagen V, Denmark
Baxalta-Ecuador S.A.	Ecuador	USD $1.00 Common	Av. Portugal y Cataline Aldaz, Quito, Ecuador
Baxalta Estonia OU	Republic of Estonia	EUR €2,501 Common	Kungla Str 2, Saue Town, Harju County 76505, Republic of Estonia
Shire Finland Oy	Finland	Ordinary no par value	Tammasaarenkatu 7, 00180 PL 119 Helsinki, Finland
Shire Biotech Finland Oy	Finland	€1.00 Ordinary	c/o BDO Oy, Vattuniemenranta 2, Helsinki, 00210, Finland
Shire France S.A.S	France	€15.00 Ordinary	112 avenue Kléber, 75116 Paris, France
Baxalta Deutschland GmbH	Germany	EUR €1,00	Friedrichstrasse 149, 10117, Berlin, Germany
Jerini Ophthalmic Holding GmbH	Germany	€ Ordinary	Friedrichstrasse 149, 10117, Berlin, Germany
Shire Central & Eastern Europe GmbH	Germany	€ Ordinary	Friedrichstrasse 149, 10117, Berlin, Germany
Shire Deutschland GmbH	Germany	€25,565.60 Common Stock	Friedrichstrasse 149, 10117, Berlin, Germany
Shire Deutschland Investments GmbH	Germany	€ Ordinary no par value	Friedrichstrasse 149, 10117, Berlin, Germany
Shire Orphan Therapies GmbH	Germany	€1.00 Ordinary	Friedrichstrasse 149, 10117, Berlin, Germany
SuppreMol GmbH	Germany	€1.00 Ordinary	Am Klopferspitz 19a, 82152 Martinsried, Germany
Baxalta BioScience Greece Single Member LLC	Greece	EUR €10.00 Common	47 M. Antypa Str., Irakleion, Greece
Shire Hellas Pharmaceuticals Import Export and Marketing S.A.	Greece	€100.00 Ordinary	38 Vasilleos Konstantinou Avenue and Aminta Street (1/F) , Athens, 116.35, Greece
Shire Guatemala, Sociedad Anónima	Guatemala	Quetzales Q100 Common	16 Calle 0-55, Zona 10 Edificio Torre Internacional Nivel 9 Guatemala, Guatemala
Baxalta Hungary Limited Liability Company	Hungary	Equity Interest	1138 Budapest, Népfürdő utca 22. Hungary
Shire Hungary Kft	Hungary	Equity Interest	Kőér utca 2/A. C. ép., Budapest, 1103, Hungary
Baxalta BioScience India Private Limited	India	INR 10 Equity shares	6th Floor, Tower-C, Building No.8, DLF CyberCity, DLF Phase — II, Gurgaon — 122 002, Haryana, India
Shire Biotech India Private Limited	India	Ordinary INR 10.00	6th Floor, Tower-C, Building No.8, DLF CyberCity, DLF Phase — II, Gurgaon — 122 002, Haryana, India
Baxalta Ireland Financing Limited	Ireland	€1.00 Ordinary	Block 2, Miesian Plaza, 50 — 58 Lower Baggot Street, Dublin 2, Ireland
Navillus Insurance Company Designated Activity Company	Ireland	USD$10.00 Ordinary	Third Floor, The Metropolitan Building, James Joyce Street, Dublin 1, Ireland
NPS Pharma Holdings Limited	Ireland	€1.00 Ordinary	Block 2, Miesian Plaza, 50 — 58 Baggot Street Lower, Dublin 2, Ireland
NPS Pharma International Limited	Ireland	€1.00 Ordinary	70 Sir John Rogerson's Quay, Dublin 2, Ireland
Pharma International Insurance Designated Activity Company	Ireland	US$1.00 Ordinary	The Third Floor, The Metropolitan Building, James Joyce Street, Dublin 1, Ireland
Shire Acquisitions Investments Ireland Designated Activity Company	Ireland	US$1.00 Ordinary	Block 2, Miesian Plaza, 50 — 58 Baggot Street Lower, Dublin 2, Ireland
Shire Biopharmaceuticals Ireland Limited	Ireland	US$1.00 Ordinary	Block 2, Miesian Plaza, 50 — 58 Baggot Street Lower, Dublin 2, Ireland
Shire Holdings Ireland Unlimited Company	Ireland	US$1.00 Ordinary	Block 2, Miesian Plaza, 50 — 58 Baggot Street Lower, Dublin 2, Ireland

Name	Country	Share class and proportion of authorised nominal value represented (if not 100%)	Address
Shire Holdings Ireland No.2 Limited	Ireland	US$1.00 Ordinary	Block 2, Miesian Plaza, 50 — 58 Baggot Street Lower, Dublin 2, Ireland
Shire Holdings Ireland No.3 Limited	Ireland	US$1.00 Ordinary	Block 2, Miesian Plaza, 50 — 58 Baggot Street Lower, Dublin 2, Ireland
Shire Intellectual Property Ireland Limited	Ireland	US$1.00 Ordinary	Block 2, Miesian Plaza, 50 — 58 Baggot Street Lower, Dublin 2, Ireland
Shire Ireland Finance Limited	Ireland	US$1.00 Ordinary	Block 2, Miesian Plaza, 50 — 58 Baggot Street Lower, Dublin 2, Ireland
Shire Ireland Finance Trading Limited	Ireland	US$1.00 Ordinary	Block 2, Miesian Plaza, 50 — 58 Baggot Street Lower, Dublin 2, Ireland
Shire Ireland Investment Limited	Ireland	US$1.00 Ordinary	Block 2, Miesian Plaza, 50 — 58 Baggot Street Lower, Dublin 2, Ireland
Shire Ireland Plasma Limited	Ireland	EUR€1.00 Ordinary	Block 2, Miesian Plaza, 50 — 58 Baggot Street Lower, Dublin 2, Ireland
Shire Ireland Premacure Investment Unlimited Company	Ireland	US$1.00 Ordinary	Block 2, Miesian Plaza, 50 — 58 Baggot Street Lower, Dublin 2, Ireland
Shire Pharmaceutical Holdings Ireland Limited*	Ireland	US$1.00 Ordinary	Block 2, Miesian Plaza, 50 — 58 Baggot Street Lower, Dublin 2, Ireland
Shire Pharmaceutical Investment Trading Ireland Unlimited Company	Ireland	US$1.00 Ordinary	Block 2, Miesian Plaza, 50 — 58 Baggot Street Lower, Dublin 2, Ireland
Shire Pharmaceutical Investments 2008 Unlimited Company	Ireland	US$0.0002 Ordinary	Block 2, Miesian Plaza, 50 — 58 Baggot Street Lower, Dublin 2, Ireland
Shire Pharmaceutical Services Ireland Limited	Ireland	EUR€1.00 Ordinary	Block 2, Miesian Plaza, 50 — 58 Baggot Street Lower, Dublin 2, Ireland
Shire Pharmaceuticals Finance Ireland Unlimited Company	Ireland	US$1.00 Ordinary	Block 2, Miesian Plaza, 50 — 58 Baggot Street Lower, Dublin 2, Ireland
Shire Pharmaceuticals International Unlimited Company	Ireland	US$1.00 A Ordinary — 20% US$1.00 B Ordinary — 20% US$1.00 C Ordinary — 20% US$1.00 D Ordinary — 20% US$1.00 Preferred — 20%	Block 2, Miesian Plaza, 50 — 58 Baggot Street Lower, Dublin 2, Ireland
Shire Pharmaceuticals Investments 2007 Unlimited Company	Ireland	US$1.00 Ordinary	Block 2, Miesian Plaza, 50 — 58 Baggot Street Lower, Dublin 2, Ireland
Shire Pharmaceuticals Ireland Limited	Ireland	€1.00 Ordinary	Block 2 & 3 Miesian Plaza, 50 — 58 Baggot Street Lower, Dublin 2, Ireland
Shire Pharmaceutical Israel Ltd	Israel	Ordinary ILS NPV	58 Harakevet, Tel Aviv, Israel
Baxalta Italy Holding S.r.l.	Italy	EUR €26,477,967.00	Piazzale dell'Industria No. 20, Roma, Italia
Baxalta Italy S.r.l.	Italy	EUR €1,668,778.00	Piazzale dell'Industria No. 20, Roma, Italia
Baxter Manufacturing S.p.A.	Italy	EUR €25.00 Common	Piazzale dell'Industria No. 20, Roma, Italia
		EUR €25.00 Treasury	
Shire Italia S.p.A.	Italy	€0.51 Ordinary	4th Floor, via Mike Bongiorno n.13, 20124 Milano, Italia
Baxalta Japan Limited	Japan	No par value Common	1-23-1 Toranomon, Minato-ku, Tokyo 105-6320, Japan
Shire Japan KK	Japan	JPY Ordinary	Tekko Building 21st Floor, 1-8-2 Marunouchi, Chiyoda-ku, Tokyo 100-0005, Japan
Shire Biopharmaceuticals Holdings Ireland Limited	Jersey	CHF1,000.00 Ordinary	22 Grenville Street, St Helier, JE4 8PX, Jersey
Shire Jersey Limited	Jersey	£1.00 Ordinary	22 Grenville Street, St Helier, JE4 8PX, Jersey
Baxalta Kazakhstan LLP	Republic of Kazakhstan	Members	Medeuskij District, 105 Dostyk Ave., 3rd floor, Office 300, Almaty, Republic of Kazakhstan 050051
Shire Pharma Korea Yuhan Hoesa	Republic of Korea	KRW10,000.00 Ordinary	Yeoksam-dong, 16th Floor, 134 Tehaeran-ro, Gangnam-gu, Seoul, Republic of Korea
Baxalta Lithuania UAB	Lithuania	EUR €100 Ordinary	Jogailos g. 9, Vilnius, LT-01116 Lithuania
Shire Holdings Europe No.2 S.à r.l.	Luxembourg	US$1.00 Ordinary	1, rue Hildegard von Bingen, L-1282, Grand-Duchy of Luxembourg, Luxembourg
Shire Holdings Luxembourg S.à r.l.	Luxembourg	US$1.00 Ordinary	1, rue Hildegard von Bingen, L-1282, Grand-Duchy of Luxembourg, Luxembourg

30. List of subsidiaries continued

Name	Country	Share class and proportion of authorised nominal value represented (if not 100%)	Address
Shire Luxembourg Finance S.à r.l.	Luxembourg	US$1.00 Mandatory Redeemable Preference — <0.01% US$1.00 Ordinary — >99.99%	1, rue Hildegard von Bingen, L-1282, Grand-Duchy of Luxembourg, Luxembourg
Shire Luxembourg Intellectual Property No.2 S.à r.l.	Luxembourg	US$1.00 Ordinary	1, rue Hildegard von Bingen, L-1282, Grand-Duchy of Luxembourg, Luxembourg
Shire Luxembourg Intellectual Property S.à r.l.	Luxembourg	US$1.00 Ordinary	1, rue Hildegard von Bingen, L-1282, Grand-Duchy of Luxembourg, Luxembourg
Shire Luxembourg S.à r.l.	Luxembourg	US$1.00 Ordinary	1, rue Hildegard von Bingen, L-1282, Grand-Duchy of Luxembourg, Luxembourg
Shire Pharmaceuticals International Finance S.à r.l.	Luxembourg	US$1.00 Ordinary	1, rue Hildegard von Bingen, L-1282, Grand-Duchy of Luxembourg, Luxembourg
Shire Sweden Holdings S.à r.l.	Luxembourg	US$1.00 Ordinary	1, rue Hildegard von Bingen, L-1282, Grand-Duchy of Luxembourg, Luxembourg
Baxalta Malaysia SDN. BHD.	Malaysia	RM1.00 Ordinary	Level 21, Suite 21.01, The Gardens South Tower, Mid Valley City, Lingkaran Syed Putra, 59200 Kuala Lumpur, Malaysia
Shire Pharmaceuticals Mexico S.A. de C.V.	Mexico	MXN1.00 Ordinary — 0.23% MXN1.00 Variable Capital — 99.77%	Paseo de Tamarindo # 90, Torre 1 Piso 7, Colonia Bosques de Las Lomas, Delegacion Cuajimalpa CP05120, Mexico DF
Baxalta Holding B.V.	Netherlands	EUR€ 0.01	Kobaltweg 49, 3542 CE Utrecht, The Netherlands
Baxalta Investments B.V.	Netherlands	EUR€ 0.01	Kobaltweg 49, 3542 CE Utrecht, The Netherlands
Baxalta Netherlands B.V.	Netherlands	EUR€ 0.01	Kobaltweg 49, 3542 CE Utrecht, The Netherlands
Baxalta Netherlands Holding B.V.	Netherlands	EUR€ 0.01	Kobaltweg 49, 3542 CE Utrecht, The Netherlands
Baxalta Netherlands Investment B.V.	Netherlands	EUR€ 0.01	Kobaltweg 49, 3542 CE Utrecht, The Netherlands
Shire Holdings Europe B.V.	Netherlands	€100.00 Ordinary	Block 2 Miesian Plaza, 50 — 58 Baggot Street Lower, Dublin 2, Ireland
Shire International Licensing BV	Netherlands	€100.00 Ordinary	Strawlinskylaan 481, 1077 XX, Amsterdam, Netherlands
Shire Licensing V.O.F.	Netherlands	Members not shares	Strawinskylaan 659, 1077XX Amsterdam, Netherlands
Tanaud International BV	Netherlands	€450.00 Ordinary	Prins Bernardplein 200, 1097 JB , Amsterdam, Netherlands
Baxalta New Zealand Limited	New Zealand	Ordinary no par value	33 Vestey Drive, Mount Wellington, Auckland, 1060, New Zealand
Shire New Zealand Limited	New Zealand	NZD1.00 Ordinary	Crowe Horwath, Level 29, 188 Quay Street, Auckland Central, Auckland, 1010, New Zealand
Shire Norway AS	Norway	NOK kr150 Ordinary	Haakon VII's gate 6, 0161 Oslo, Norway
Shire Biotech Norway AS	Norway	NOK1,000.00 Ordinary	c/o BDO AS, Munkedamsveien 45 , Oslo , N-0250, Norway
Shire Panama, S.A.	Panama	USD $1.00 Common	43 Floor, Oceania Business Plaza, Tower 2000, Urb. Punta Pacifica, Panama City, Panama
Shire Peru S.A.C.	Peru	S/ 1.00 Ordinary	Real Ocho San Isidro, 16th Floor Real Ocho Building, Centro Empresarial Real, Av. Victor A. Belaunde, Lima, Peru
Shire Polska Sp. z o. o.	Poland	PLN zł50 Common	Plac Europejski 1, 00-844 Warsaw, Poland
Shire Pharmaceuticals Portugal, Lda	Portugal	€ Ordinary	Avenida da República, 50, 10º, Nossa Senhora de Fátima, 1069 211, Lisboa , Portugal
Baxalta S.R.L.	Romania	Ordinary RON10.01	90 Calea 13 Septembrie, 7th floor, room no. 7.14, 5th District, Bucharest, Romania
Shire Romania SRL	Romania	Ordinary RON10.00	Bucure şti Sectorul 1, Calea Floreasca nr. 169A , CORP A, Etaj 4, BIROUL NR. 2090, Romania
SG Biotech Joint Stock Company*******	Russian Federation	Ordinary RUR1.00	Office 26, 18 Vladimirskaya Street, Volginsky Village, 601125, Petushinksky District, Vladimirsky Region, Russian Federation
Shire Biotech Rus Limited Liability Company	Russian Federation	Partnership Interest	Timura Frunze Street, 11, building 1, floor 6, premises I, r, 119021 Moscow, Russian Federation
Shire Rus Limited Liability Company	Russian Federation	Partnership Interest	Timura Frunze Street, 11, building 1, floor 6, premises I, r, 119021 Moscow, Russian Federation
Shire doo Beograd	Serbia	RSD1,111.99 Equity Interest	Uskočka 8/IV, 11 000 Belgrade, Serbia
Shire Singapore Pte. Ltd.	Singapore	Ordinary no par value	8 Marina Boulevard, #15-01, Marina Bay Finance Centre, Tower 1 Singapore 018981

Name	Country	Share class and proportion of authorised nominal value represented (if not 100%)	Address
Baxalta Slovakia s.r.o.	Slovak Republic	Participation Interest	Mýtna 48, Bratislava — mestská časť Staré Mesto 811 07, Slovakia Republic
Shire Slovakia s.r.o.	Slovak Republic	EUR€5,000 Equity Interest	Mýtna 48, Bratislava — mestská časť Staré Mesto 811 07, Slovakia Republic
Baxalta Biofarmacevtska druzba d.o.o	Slovenia	Capital contribution	Železna cesta 18, 1000 Ljubljana, Slovenia
Shire Pharmaceuticals South Africa (Pty) Ltd	South Africa	Ordinary ZAR NPV	Mazars House, 54 Glenhove Road, Melrose Estate, Johannesburg, 2196 — South Africa
Shire Pharmaceuticals Iberica S.L.U.	Spain	€10.00 Ordinary	4th Floor, Edificio Partenon, Avenida del Partenon 16-18, 28042, Madrid, Spain
DuoCort Pharma AB	Sweden	SEK100.00 Ordinary	Vasagatan 7, 6 tr, SE — 111 20 Stockholm, Sweden
Premacure AB	Sweden	SEK1.00 Ordinary	Vasagatan 7, 6 tr, SE — 111 20 Stockholm, Sweden
Premacure Uppsala AB	Sweden	SEK1.00 Ordinary	Vasagatan 7, 6 tr, SE — 111 20 Stockholm, Sweden
Shire Human Genetic Therapies AB	Sweden	SEK10.00 Common	Vasagatan 7, 6 tr, SE — 111 20 Stockholm, Sweden
Shire Sweden AB	Sweden	SEK100.00 Ordinary	Vasagatan 7, 6 tr, SE — 111 20 Stockholm, Sweden
ViroPharma AB	Sweden	SEK1.00 Ordinary	Vasagatan 7, 6 tr, SE — 111 20 Stockholm, Sweden
SG Biotech Sàrl***	Switzerland	CHF 100.00 Quota	Zahlerweg 10, CH-6300, Zug, Switzerland
Shire Export Services GmbH	Switzerland	CHF 100.00 Quota	Zahlerweg 4, CH-6300, Zug, Switzerland
Baxalta GmbH	Switzerland	CHF 20.00 Ordinary Quota	Zahlerweg 4, CH-6300, Zug, Switzerland
Baxalta Manufacturing S.à r.l.	Switzerland	CHF 2,000,000.00 Quota	Route de Pierre-à-Bot 111, 2000 Neuchâtel, Switzerland
Baxalta Recombinant S.à r.l.	Switzerland	CHF 100.00 Quota	Route de Pierre-à-Bot 111, 2000 Neuchâtel, Switzerland
Baxalta Schweiz AG	Switzerland	CHF 100.00 Quota	Zahlerweg 4, CH-6300, Zug, Switzerland
Shire International Finance GmbH	Switzerland	CHF100.00 Quota	Zahlerweg 10, CH-6300, Zug, Switzerland
Shire International GmbH	Switzerland	CHF1,000.00 Ordinary	Zahlerweg 10, CH-6300, Zug, Switzerland
Shire Switzerland GmbH	Switzerland	CHF100.00 Ordinary	Zahlerweg 4, CH-6300, Zug, Switzerland
Shire Biotech Taiwan Limited	Taiwan	NT $1000.00 Common	18F., No.460, Sec. 4, Xinyi Rd., Xinyi Dist., Taipei City 11052, Taiwan (R.O.C.)
Taiwan Shire Limited Company	Taiwan	TWD5,000,000.00 Equity Interest	18F, No.460, , Sec. 4 Xinyi Rd., Taipei City, Taiwan 110, Taiwan (R.O.C.)
Shire (Thailand) Limited	Thailand	THB ฿100 Ordinary	No. 33/4 The Ninth Tower Grand Rama 9, 35th Floor, Room No. TNA01-04, Rama 9 Road, Huaykwang Sub-District, Huaykwang District, Bangkok, Thailand
Baxalta Tunisia SARL	Tunisia	DT 100.00 Common	Rue de l'Euro, Imm Selim, Les Berges due Lac 2, Tunis, Tunisia
Eczacıbaşı Shire Sağlık Ürünleri Sanayi ve Ticaret A.Ş.****	Turkey	Group A sharesTL 1.00 — 50.00% Group B sharesTL 1.00 — 50.00%	Ayazağa Mah. Kemerburgaz Cad. No: 23 Sarıyer, Istanbul, Turkey
Shire Ilac Ticaret Limited Sirketi	Turkey	TRL25.00 Ordinary	Esentepe Mah. Bahar Sok. River Plaza 13 24 Şişli, İstanbul, Turkey
Baxalta Ukraine LLC	Ukraine	UAH Equity Interest	32/2-34 Riznytska/Moskovska Street, Kyiv, Ukraine
Shire Ukraine LLC	Ukraine	UAH Equity Interest	32/2 Moskovska Street, BC "Senator", Floor 11, Kyiv, 1010, Ukraine
Auralis Limited	United Kingdom	£0.01 Ordinary	1 Kingdom Street, London W2 6BD, United Kingdom
Baxalta UK Holdco Limited	United Kingdom	£1.00 Ordinary	1 Kingdom Street, London W2 6BD, United Kingdom
Baxalta UK Investments Limited	United Kingdom	£1.00 Ordinary	1 Kingdom Street, London W2 6BD, United Kingdom
Baxalta UK Limited	United Kingdom	£1.00 Ordinary	1 Kingdom Street, London W2 6BD, United Kingdom
Dyax Limited	United Kingdom	£1.00 Ordinary	1 Kingdom Street, London W2 6BD, United Kingdom
Lumena Pharma UK Limited	United Kingdom	£1.00 Ordinary	1 Kingdom Street, London W2 6BD, United Kingdom
Monmouth Pharmaceuticals Limited	United Kingdom	£1.00 Ordinary	1 Kingdom Street, London W2 6BD, United Kingdom
NPS Pharma UK Limited	United Kingdom	£1.00 Ordinary	1 Kingdom Street, London W2 6BD, United Kingdom
Rybar Laboratories Limited	United Kingdom	£1.00 Ordinary	1 Kingdom Street, London W2 6BD, United Kingdom
Shire Biopharmaceuticals Holdings	United Kingdom	£0.05 Income Access — <0.01% £0.05 Ordinary — >99.99% £0.05 Preferred Share — <0.01% £0.05 Voting Share — <0.01%	1 Kingdom Street, London W2 6BD, United Kingdom

30. List of subsidiaries continued

Name	Country	Share class and proportion of authorised nominal value represented (if not 100%)	Address
Shire Biotech UK Holdings Limited	United Kingdom	US$1.00 Ordinary	1 Kingdom Street, London W2 6BD, United Kingdom
Shire Corporate Services Limited	United Kingdom	£1.00 Ordinary	1 Kingdom Street, London W2 6BD, United Kingdom
Shire Europe Finance	United Kingdom	£1.00 Ordinary	1 Kingdom Street, London W2 6BD, United Kingdom
Shire Europe Limited	United Kingdom	US$1.00 Ordinary	1 Kingdom Street, London W2 6BD, United Kingdom
Shire Global Finance	United Kingdom	US$1.00 Ordinary	1 Kingdom Street, London W2 6BD, United Kingdom
Shire Holdings Europe Limited	United Kingdom	£1.00 Ordinary	1 Kingdom Street, London W2 6BD, United Kingdom
Shire Holdings UK Canada Limited	United Kingdom	£1.00 Ordinary	1 Kingdom Street, London W2 6BD, United Kingdom
Shire Holdings UK Limited	United Kingdom	£1.00 Ordinary	1 Kingdom Street, London W2 6BD, United Kingdom
Shire Human Genetic Therapies Limited	United Kingdom	£1.00 Ordinary	1 Kingdom Street, London W2 6BD, United Kingdom
Shire Human Genetic Therapies UK Limited	United Kingdom	£1.00 Ordinary	1 Kingdom Street, London W2 6BD, United Kingdom
Shire Investments & Finance (U.K.) Company	United Kingdom	£1.00 Ordinary	1 Kingdom Street, London W2 6BD, United Kingdom
Shire Pharmaceutical Contracts Limited	United Kingdom	£0.01 Ordinary	1 Kingdom Street, London W2 6BD, United Kingdom
Shire Pharmaceutical Development Limited	United Kingdom	£1.00 Ordinary	1 Kingdom Street, London W2 6BD, United Kingdom
Shire Pharmaceuticals Group	United Kingdom	£0.0001 Ordinary	1 Kingdom Street, London W2 6BD, United Kingdom
Shire Pharmaceuticals Limited	United Kingdom	£1.00 Ordinary	1 Kingdom Street, London W2 6BD, United Kingdom
Shire Pharmaceuticals Services Limited	United Kingdom	£1.00 Ordinary	1 Kingdom Street, London W2 6BD, United Kingdom
Shire UK Investments Limited	United Kingdom	£1.00 Ordinary	1 Kingdom Street, London W2 6BD, United Kingdom
Shire US Investments	United Kingdom	US$1.00 Ordinary	1 Kingdom Street, London W2 6BD, United Kingdom
Sigma-Tau Pharma Limited	United Kingdom	£1.00 Ordinary	1 Kingdom Street, London W2 6BD, United Kingdom
Sparkleflame Limited	United Kingdom	£1.00 Ordinary	1 Kingdom Street, London W2 6BD, United Kingdom
The Endocrine Centre Limited	United Kingdom	£1.00 Ordinary	1 Kingdom Street, London W2 6BD, United Kingdom
Viropharma Limited	United Kingdom	£1.00 Ordinary — 0.001% £1.00 Redeemable Preference — 99.999%	1 Kingdom Street, London W2 6BD, United Kingdom
AesRX, LLC	United States	US$ — no par value	1200 Lakeside Drive, Bannockburn, IL 60015, USA
Amsterdam Newco, Inc	United States	Common Stock US$0.01	300 Shire Way, Lexington, MA 02421, USA
Armagen Technologies, Inc******	United States	Series A preferred stock	26679 Agoura Rd #100, Calabasas, CA 91302, USA
Baxalta Export Corporation	United States	US$0.01 Ordinary	1209 Orange Street Wilmington, DE 19801, USA
Baxalta Holdings LLC	United States	US$ — no par value	1200 Lakeside Drive, Bannockburn, IL 60015, USA
Baxalta Incorporated	United States	US$0.01 Ordinary	1200 Lakeside Drive, Bannockburn, IL 60015, USA
Baxalta Mexico Holding LLC	United States	US$ — no par value	1200 Lakeside Drive, Bannockburn, IL 60015, USA
Baxalta Singapore Holding LLC	United States	US$ — no par value	1200 Lakeside Drive, Bannockburn, IL 60015, USA
Baxalta US Inc.	United States	US$0.01 Ordinary	1200 Lakeside Drive, Bannockburn, IL 60015, USA
Baxalta World Trade LLC	United States	US$ — no par value	1200 Lakeside Drive, Bannockburn, IL 60015, USA
Baxalta Worldwide LLC	United States	US$ — no par value	1200 Lakeside Drive, Bannockburn, IL 60015, USA
BearTracks, Inc.	United States	US$0.001 Ordinary	300 Shire Way, Lexington, MA 02421, USA
Bikam Pharmaceuticals, Inc.	United States	US$0.01 Ordinary	300 Shire Way, Lexington, MA 02421, USA
BioLife Plasma LLC	United States	US$ — no par value	1200 Lakeside Drive, Bannockburn, IL 60015, USA
BioLife Plasma Services LP	United States	Partnership Interest	1200 Lakeside Drive, Bannockburn, IL 60015, USA
Cinacalcet Royalty Sub LLC	United States	US$10.00 Equity Interest	300 Shire Way, Lexington, MA 02421, USA
Dyax Corp.	United States	Common Stock US$0.01	300 Shire Way, Lexington, MA 02421, USA
FerroKin BioSciences, Inc.	United States	US$0.01 Ordinary	300 Shire Way, Lexington, MA 02421, USA
Foresight Biotherapeutics, Inc.	United States	US$0.01 Common Stock	300 Shire Way, Lexington, MA 02421, USA
Jerini Ophthalmic, Inc**	United States	US$0.01 Common Stock 4% US$0.01 Series A Preferred Stock 18.581% US$0.01 Series Z Preferred Stock 77.419%	300 Shire Way, Lexington, MA 02421, USA
JPT Peptide Technologies Inc	United States	US$1.00 Common Stock	300 Shire Way, Lexington, MA 02421, USA
Knight Newco 1, Inc.	United States	US$0.01 Common	300 Shire Way, Lexington, MA 02421, USA

Name	Country	Share class and proportion of authorised nominal value represented (if not 100%)	Address
Laboratorios Baxalta S.A.	United States	US$0.01 Ordinary	1200 Lakeside Drive, Bannockburn, IL 60015, USA
Lotus Tissue Repair Inc	United States	US$0.001 Common — 29.641% US$0.001 Preferred — 70.359%	300 Shire Way, Lexington, MA 02421, USA
Lumena Pharmaceuticals LLC	United States	US$ Ordinary — no par value	300 Shire Way, Lexington, MA 02421, USA
Meritage Pharma, Inc.	United States	US$0.001 Common Stock	300 Shire Way, Lexington, MA 02421, USA
NPS Pharma Holdings U.S., Inc.	United States	US$0.0001 Common	300 Shire Way, Lexington, MA 02421, USA
NPS Services, L.C.	United States	Partnership Interest	300 Shire Way, Lexington, MA 02421, USA
Rare Disease Charitable Foundation	United States	Charitable Foundation	300 Shire Way, Lexington, MA 02421, USA
SARcode Bioscience Inc.	United States	US$0.01 Ordinary	300 Shire Way, Lexington, MA 02421, USA
Shire Brandywine LLC	United States	US$1.00 Ordinary	1103 Foulk Road, Suite 100, Wilmington, DE 19803, USA
Shire Development LLC	United States	US$ Common — no par value	300 Shire Way, Lexington, MA 02421, USA
Shire Executive Services LLC	United States	US$ — no par value	1200 Morris Drive, Wayne, PA 19087, USA
Shire Holdings US AG	United States	US$0.01 Common stock	9200 Brookfield Court, Suite 108, Florence, KY 41042, USA
Shire Human Genetic Therapies Securities Corporation	United States	US$0.01 Ordinary	300 Shire Way, Lexington, MA 02421, USA
Shire Human Genetic Therapies, Inc.	United States	US$0.01 Common Stock	300 Shire Way, Lexington, MA 02421, USA
Shire Incorporated	United States	US$ Common- no par value	1200 Morris Drive, Wayne, PA 19087, USA
Shire Invicta US Inc	United States	US$0.01 common stock	300 Shire Way, Lexington, MA 02421, USA
Shire LLC	United States	US$ No — par value	9200 Brookfield Court, Suite 108, Florence, KY 41042, USA
Shire North American Group Inc.	United States	US$0.01 Common Stock	9200 Brookfield Court, Suite 108, Florence, KY 41042, USA
Shire Orphan Therapies LLC	United States	US$0.001 Common Stock	300 Shire Way, Lexington, MA 02421, USA
Shire Pharmaceutical Development Inc	United States	US$0.01 Common Stock	1200 Morris Drive, Wayne, PA 19087, USA
Shire Pharmaceuticals LLC	United States	US$ Common- no par value	1200 Morris Drive, Wayne, PA 19087, USA
Shire Properties US	United States	Partnership Interest	9200 Brookfield Court, Suite 108, Florence, KY 41042, USA
Shire Regenerative Medicine LLC*	United States	US$0.01 Common	300 Shire Way, Lexington, MA 02421, USA
Shire Regulatory Inc	United States	US$ Common — no par value	300 Shire Way, Lexington, MA 02421, USA
Shire Supplies U.S. LLC	United States	Partnership Interest	9200 Brookfield Court, Suite 108, Florence, KY 41042, USA
Shire US Holdings LLC	United States	US$0.01 Ordinary	300 Shire Way, Lexington, MA 02421, USA
Shire US Inc	United States	US$ Common — no par value	300 Shire Way, Lexington, MA 02421, USA
Shire US Investment Inc	United States	US$1.00 Common	300 Shire Way, Lexington, MA 02421, USA
Shire US Manufacturing Inc	United States	US$1.00 Common	730 Stockton Drive, Exton, PA 19341, USA
Shire ViroPharma Incorporated	United States	US$0.01 Common	300 Shire Way, Lexington, MA 02421, USA
Shire-NPS Pharmaceuticals, Inc.	United States	US$0.01 Common Stock	300 Shire Way, Lexington, MA 02421, USA
VCO Incorporated	United States	US$0.01 Ordinary	300 Shire Way, Lexington, MA 02421, USA
Viropharma Biologics Inc	United States	US$0.01 Ordinary	300 Shire Way, Lexington, MA 02421, USA
Viropharma Holdings LLC	United States	Sole member	c/o The Corporation Trust Company, Corporation Trust Center, 1209 Orange Street, Wilmington, DE 19801, USA
VPDE Incorporated	United States	US$0.01 Ordinary	1105 N. Market Street, Suite 1300, Wilmington DE 19801, USA
VPINT Incorporated	United States	US$0.01 Ordinary	1105 N. Market Street, Suite 1300, Wilmington DE 19801, USA
Shire Pharmaceuticals Investments (British Virgin Islands) Limited	British Virgin Islands	US$1.00 Ordinary — 97.708% US$1.00 Preference — 2.292%	Romasco Place, Wickhams Cay 1, P. O. Box 3140, Road Town, Tortola, VG1110, British Virgin Islands

With the exception of those entities indicated, all subsidiary undertakings of Shire plc are 100% indirectly beneficially owned.
All subsidiary undertakings are consolidated in the consolidated financial statements of Shire plc.
*these entities are 100% directly beneficially owned
**this entity is 96% indirectly beneficially owned
***this entity is 51% indirectly beneficially owned
****this entity is 50.00% indirectly beneficially owned
*****this entity is 26.01% indirectly beneficially owned
******this entity is 22.13% indirectly beneficially owned
*******this entity is 13.26% indirectly beneficially owned

30. List of subsidiaries continued

Company Name	Location of Branch/Representative Office
Shire Export Services GmbH	Algeria
Shire (Shanghai) Pharmaceuticals Consultancy Co. Ltd.	China
Shire Export Services GmbH	Egypt
Baxalta UK Limited	Ireland
Shire Holdings Europe B.V.	Ireland
Shire Biopharmaceuticals Holdings Ireland Limited	Ireland
Shire plc	Ireland
Baxalta GmbH	Norway
Shire Pharmaceuticals Ireland Limited	Norway
Baxalta World Trade LLC	Puerto Rico
Shire društvo s ograničenom odgovornošću za trgovinu i usluge	Romania
Shire Pharmaceutical Contracts Limited	Russian Federation
Shire Export Services GmbH	Saudi Arabia
Baxalta Manufacturing S.à r.l.	Singapore
Shire Sweden Holdings S.à r.l.	Sweden
Shire Pharmaceuticals Ireland Limited	Switzerland
Shire Export Services GmbH	United Arab Emirates
Shire Services BVBA	United Kingdom
Shire Holdings Ireland Unlimited Company	United Kingdom
Shire Holdings Limited	United Kingdom
Shire Pharmaceuticals Investments 2007 Unlimited Company	United Kingdom
Shire Singapore Pte Ltd	Vietnam

Non GAAP Measures

This Annual Report contains financial measures not prepared in accordance with U.S. GAAP. These measures are referred to as "Non GAAP" measures and include: Non GAAP Total revenues; Non GAAP Operating income; Non GAAP income tax expense; Non GAAP Net income; Non GAAP diluted earnings per ADS; Non GAAP effective tax rate; Non GAAP CER; Non GAAP Cost of sales; Non GAAP gross margin; Non GAAP R&D; Non GAAP SG&A; Non GAAP other expense; Non GAAP free cash flow, Non GAAP Net debt, Non GAAP EBITDA and Non GAAP EBITDA margin.

The Non GAAP measures exclude the impact of certain specified items that are highly variable, difficult to predict and of a size that may substantially impact Shire's operations. Upfront and milestone payments related to in-licensing and acquired products that have been expensed as R&D are also excluded as specified items as they are generally uncertain and often result in a different payment and expense recognition pattern than ongoing internal R&D activities. Intangible asset amortization has been excluded from certain measures to facilitate an evaluation of current and past operating performance, particularly in terms of cash returns, and is similar to how management internally assesses performance. The Non GAAP financial measures are presented in this press release as Shire's management believes that they will provide investors with an additional analysis of Shire's results of operations, particularly in evaluating performance from one period to another.

Shire's management uses Non GAAP financial measures to make operating decisions as they facilitate additional internal comparisons of Shire's performance to historical results and to competitors' results, and provides them to investors as a supplement to Shire's reported results to provide additional insight into Shire's operating performance. Shire's Remuneration Committee uses certain key Non GAAP measures when assessing the performance and compensation of employees, including Shire's executive directors.

The Non GAAP financial measures used by Shire may be calculated differently from, and therefore may not be comparable to, similarly titled measures used by other companies — refer to the section "Non GAAP Financial Measure Descriptions" below for additional information. In addition, these Non GAAP financial measures should not be considered in isolation as a substitute for, or as superior to, financial measures calculated in accordance with U.S. GAAP, and Shire's financial results calculated in accordance with U.S. GAAP and reconciliations to those financial statements should be carefully evaluated.

Non GAAP Financial Measure Descriptions
Where applicable, the following items, including their tax effect, have been excluded when calculating Non GAAP earnings and from our Non GAAP outlook:

Amortization and asset impairments:
- Intangible asset amortization and impairment charges; and
- Other than temporary impairment of investments.

Acquisitions and integration activities:
- Up-front payments and milestones in respect of in-licensed and acquired products;
- Costs associated with acquisitions, including transaction costs, fair value adjustments on contingent consideration and acquired inventory;
- Costs associated with the integration of companies; and
- Non-controlling interests in consolidated variable interest entities.

Divestments, reorganizations and discontinued operations:
- Gains and losses on the sale of non-core assets;
- Costs associated with restructuring and reorganization activities;
- Termination costs; and
- Income/(losses) from discontinued operations.

Legal and litigation costs:
- Net legal costs related to the settlement of litigation, government investigations and other disputes (excluding internal legal team costs).

Additionally, in any given period Shire may have significant, unusual or non-recurring gains or losses, which it may exclude from its Non GAAP earnings for that period. When applicable, these items would be fully disclosed and incorporated into the required reconciliations from U.S. GAAP to Non GAAP measures.

Depreciation, which is included in Cost of sales, R&D and SG&A costs in our U.S. GAAP results, has been separately disclosed for presentational purposes.

Free cash flow represents Net cash provided by operating activities, excluding up-front and milestone payments, or receipts, for in-licensed and acquired products, but including capital expenditure in the ordinary course of business.

Non GAAP Net debt represents Cash and cash equivalents less short and long term borrowings, capital leases and other debt.

A reconciliation of Non GAAP financial measures to the most directly comparable measure under U.S. GAAP is presented on pages 181 to 183.

Non GAAP CER growth is computed by restating 2017 results using average 2016 foreign exchange rates for the relevant period.

Average exchange rates used by Shire for the three months ended December 31, 2017 were $1.34:£1.00 and $1.18:€1.00 (2016: $1.26:£1.00 and $1.09:€1.00). Average exchange rates used by Shire for the twelve months ended December 31, 2017 were $1.29:£1.00 and $1.13:€1.00 (2016: $1.36:£1.00 and $1.11:€1.00).

A reconciliation of 2020 Non GAAP EBITDA to U.S. GAAP Net income cannot be provided because we are unable to forecast with reasonable certainty many of the items necessary to calculate such comparable GAAP measures, including asset impairments, acquisitions and integration related expenses, divestments, reorganizations and discontinued operations related expenses, legal settlement costs, as well as other unusual or non-recurring gains or losses. These items are uncertain, depend on various factors, and could be material to our results computed in accordance with GAAP. We believe the inherent uncertainties in reconciling Non GAAP measures for periods after 2018 to the most comparable GAAP measures would make the forecasted comparable GAAP measures nearly impossible to predict with reasonable certainty and therefore inherently unreliable.

Non GAAP adjusted ROIC reflects the definition used by the Company in its corporate scorecard. This definition aims to measure true underlying economic performance of the Company, by making a number of adjustments to ROIC as derived from the Company's Non GAAP financial results including:

- Adding back to Non GAAP Operating income all R&D expenses and operating lease costs incurred in the period;
- Capitalizing on the Group's balance sheet historical, cumulative R&D, in process R&D and intangible asset impairment charges and operating lease costs which previously have been expensed;
- Deducting from Non GAAP Operating income and amortization charge for the above capitalized costs based on the estimated commercial lives of the relevant products;
- Excluding the income statement and balance sheet impact of non-operating assets (such as surplus cash and non-strategic investments); and
- Taxing the resulting adjusted operating income at the underlying Non GAAP effective tax rate.

Non GAAP reconciliations (unaudited)

Reconciliation of U.S. GAAP Net income to Non GAAP EBITDA and Non GAAP Operating income:

12 months ended December 31	2017 $'M	2016 $'M
U.S. GAAP Net income	**4,271.5**	327.4
Add back/(deduct):		
(Gain)/loss from discontinued operations, net of taxes	**(18.0)**	276.1
Equity in (earnings)/losses of equity method investees, net of taxes	**(2.5**	8.7
Income taxes	**(2,357.6)**	(126.1)
Other expense, net	**561.8**	476.8
U.S. GAAP Operating income from continuing operations	**2,455.2**	962.9
Add back/(deduct) Non GAAP adjustments:		
Revenue from upfront license fee	**(74.6)**	–
Expense related to the unwind of inventory fair value adjustments	**747.8**	1,118.0
Inventory write down related to U.S. manufacturing site closure	**–**	18.9
One-time employee related costs	**(4.0)**	20.0
Impairment of acquired intangible assets	**20.0**	8.9
Costs relating to license arrangements	**131.2**	110.0
Legal and litigation costs	**10.6**	16.3
Amortization of acquired intangible assets	**1,768.4**	1,173.4
Integration and acquisition costs	**894.5**	883.9
Reorganization costs	**47.9**	121.4
Gain on sale of product rights	**(0.4)**	(16.5)
Depreciation	**495.8**	292.9
Non GAAP EBITDA	**6,492.4**	4,710.1
Depreciation	**(495.8)**	(292.9)
Non GAAP Operating income	**5,996.6**	4,417.2
Net income margin[1]	**28%**	3%
Non GAAP EBITDA margin[2]	**43%**	41%

1 Net income as a percentage of Total revenues.
2 Non GAAP EBITDA as a percentage of Non GAAP Total revenues.

Reconciliation of U.S. GAAP Total revenues to Non GAAP Total revenues:

12 months ended December 31	2017 $'M	2016 $'M
U.S. GAAP Total revenues	**15,160.6**	11,396.6
Revenue from upfront license fee	**(74.6)**	–
Non GAAP Total revenues	**15,086.0**	11,396.6

Reconciliation of U.S. GAAP Gross margin to Non GAAP Gross margin:

12 months ended December 31	2017 $'M	2016 $'M
U.S. GAAP Total revenues	**15,160.6**	11,396.6
Cost of sales (U.S. GAAP)	**(4,700.8)**	(3,816.5)
U.S. GAAP gross margin	**10,459.8**	7,580.1
Add back/(deduct) Non GAAP adjustments:		
Revenue from upfront license fee	**(74.6)**	–
Expense related to the unwind of inventory fair value adjustments	**747.8**	1,118.0
Inventory write-down relating to the closure of a facility	**–**	18.9
One-time employee related costs	**–**	10.0
Depreciation	**276.1**	160.8
Non GAAP gross margin	**11,409.1**	8,887.8
U.S. GAAP gross margin[1]	**69.0%**	66.5%
Non GAAP gross margin[1]	**75.6%**	78.0%

1 U.S. GAAP Gross margin as a percentage of Total revenues. Non GAAP Gross margin as a percentage of Non GAAP Total revenues.

Reconciliation of U.S. GAAP Net income to Non GAAP Net income:

12 months ended December 31	2017 $'M	2016 $'M
U.S. GAAP Net income	**4,271.5**	327.4
Revenue related to license arrangements	**(74.6)**	–
Expense related to the unwind of inventory fair value adjustments	**747.8**	1,118.0
Inventory write-down relating to the closure of a facility	**–**	18.9
One-time employee related costs	**(4.0)**	20.0
Impairment of acquired intangible assets	**20.0**	8.9
Costs relating to license arrangements	**131.2**	110.0
Legal and litigation costs	**10.6**	16.3
Amortization of acquired intangible assets	**1,768.4**	1,173.4
Integration and acquisition costs	**894.5**	883.9
Reorganization costs	**47.9**	121.4
Gain on sale of product rights	**(0.4)**	(16.5)
Amortization of one-time upfront borrowing costs for Baxalta and Dyax	**6.1**	93.6
(Gain)/loss on sale of long term investments	**(28.7)**	6.0
(Gain)/loss from discontinued operations	**(26.9)**	375.0
Fair value adjustment for joint venture net written option	**15.0**	–
Non GAAP tax adjustments	**(3,174.3)**	(865.8)
Non GAAP Net income	**4,604.1**	3,390.5

Reconciliation of U.S. GAAP diluted earnings per ADS to Non GAAP diluted earnings per ADS:

12 months ended December 31	2017 $'M	2016 $'M
U.S. GAAP diluted earnings per ADS	**14.05**	1.27
Revenue related to license arrangements	**(0.25)**	–
Expense related to the unwind of inventory fair value adjustments	**2.46**	4.32
Inventory write-down relating to the closure of a facility	**–**	0.07
One-time employee related costs	**(0.01)**	0.08
Impairment of acquired intangible assets	**0.07**	0.03
Costs relating to license arrangements	**0.43**	0.43
Legal and litigation costs	**0.03**	0.06
Amortization of acquired intangible assets	**5.82**	4.54
Integration and acquisition costs	**2.94**	3.41
Reorganization costs	**0.16**	0.47
Gain on sale of product rights	**0.00**	(0.06)
Amortization of one-time upfront borrowing costs for Baxalta and Dyax	**0.02**	0.36
(Gain)/loss on sale of long term investments	**(0.09)**	0.02
(Gain)/loss from discontinued operations	**(0.09)**	1.45
Fair value adjustment for joint venture net written option	**0.05**	–
Non GAAP tax adjustments	**(10.44)**	(3.35)
Non GAAP diluted earnings per ADS	**15.15**	13.10

Reconciliation of U.S. GAAP Net cash provided by operating activities to Non GAAP free cash flow:

12 months ended December 31	2017 $'M	2016 $'M
Net cash provided by operating activities	**4,256.7**	2,658.9
Receipts relating to license arrangements	**(74.6)**	–
Capital expenditure	**(798.8)**	(646.4)
Payments relating to license arrangements	**47.5**	90.0
Non GAAP free cash flow	**3,430.8**	2,102.5

Non GAAP Net debt comprises:

12 months ended December 31	2017 $'M	2016 $'M
Cash and cash equivalents	**472.4**	528.8
Long term borrowings (excluding capital leases)	**(16,410.7)**	(19,552.6)
Short term borrowings (excluding capital leases)	**(2,781.2)**	(3,061.6)
Capital leases	**(349.2)**	(353.6)
Non GAAP Net debt	**(19,068.7)**	(22,439.0)

Shareholder information

E-communications

Shire offers shareholders the ability to access shareholder documents, such as its Annual Reports and Notices of AGMs, by way of e-communications as an alternative to receiving paper copies through the post.

Shire encourages shareholders to register for e-communications by simply logging onto www.shareview.co.uk and following the online instructions. To start, you will require your shareholder reference number which you will find on your share certificate or dividend confirmation statement.

Following registration, you will need to alter your mailing preference to e-communications and confirm your email address. Shareholders who do not elect to receive documents or notifications via e-communications will continue to receive paper copies.

Shareholder security

Shareholders of many companies have received unsolicited phone calls or correspondence concerning investment matters. These are typically from overseas based "brokers" who target UK shareholders, offering to sell them what often turn out to be worthless or high-risk shares in U.S. or UK investments. Shareholders are advised to be very wary of any unsolicited advice, offers to buy shares at a discount or offers of free company reports. If you receive any unsolicited investment advice, you should:

- ensure you note the name of the person and organization
- check the FCA register of regulated firms by visiting https://www.fca.org.uk/firms/financial-services-register
- if you suspect a scam, report the matter to the FCA either by calling the FCA Consumer Helpline on 0800 111 6768 or by completing an online form at: www.fca.org.uk/consumers/scams/report-scam/share-fraud-form

If you are still unsure, you should seek financial advice before making a financial commitment.

If you deal with an unauthorized firm, you will not be eligible to receive payment under the Financial Services Compensation Scheme.

Details of any share dealing facilities that the Company endorses will be included in Company mailings.

More detailed information on this or similar activity can be found on the FCA website: https://www.fca.org.uk/consumers/protect-yourself-scams

Event calendar (subject to change)

Second interim dividend payment	April 2018
Annual General Meeting	April 2018
First quarter results announcement	April 2018
Second quarter results announcement	August 2018
First interim dividend payment	October 2018
Third quarter results announcement	October 2018
Annual results announcement	February 2019
Second interim dividend payment	April 2019

Dividends

Shareholders are able to choose how they receive their dividends:

- directly into their bank account*; or
- by cheque.

*Shire preferred option.

The quickest and most efficient way to receive your dividends is to have them paid directly into your bank account. Those selecting this payment method receive a dividend confirmation statement with each payment. To change how you receive your dividends, either log on to www.shareview.co.uk or contact Equiniti.

Income Access Share arrangements

Holders of Ordinary Shares are reminded that, in order to receive UK-sourced dividends via Shire's Income Access Share arrangements (IAS Arrangements), they need to submit a valid IAS Arrangements election form to the Company's registrar, Equiniti.

Holders of Ordinary Shares are advised that:

- any previous elections made using versions of the IAS Arrangements election form in use prior to February 16, 2016, and any elections deemed to have been made prior to April 28, 2016, are no longer valid; and
- if they do not elect, or have not elected using the newly formatted IAS Arrangements election forms published on or after February 16, 2016, to receive UK-sourced dividends via Shire's IAS Arrangements, their dividends will be Irish sourced and therefore incur Irish dividend withholding tax, subject to applicable exemptions

Internet links to the newly formatted IAS Arrangements election forms can be found at: http://investors.shire.com/shareholder-resources/shareholder-forms.aspx

ShareGift

Shareholders with a small number of shares, the value of which makes it uneconomical to sell, may wish to consider donating them to the charity ShareGift (registered charity no. 1052686). Donated shares are aggregated and sold by ShareGift, the proceeds being passed on to a wide range of charities.

Find out more about ShareGift:
Website: www.sharegift.org
Email: help@sharegift.org
Tel: +44 (0)20 7930 3737

Offices

Registered Office
22 Grenville Street
St Helier
JE4 8PX
Jersey
Registered in Jersey (No. 99854)

Group Headquarters
Blocks 2 and 3
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50-58 Baggot St Lower
Dublin 2
D02 Y754
Ireland
Tel: +353 1609 6000

International Operational Headquarters
Zahlerweg 10
CH-6300
Zug
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Tel: +41 800 820890
Fax: +41 448 041444

U.S. Operational Headquarters
300 Shire Way
Lexington
Massachusetts 02421
U.S.A.
Tel: +1 617 349 0200

Website

www.shire.com

Investor Relations
Email: investorrelations@shire.com

UK Investor Correspondence
One Kingdom street, 9th Floor
Paddington
London
W2 6BD
United Kingdom

U.S. Investor Correspondence
650 E Kendall Street
Cambridge
Massachusetts 02142
U.S.A.

Registrar
All administrative inquiries relating to shareholdings should be addressed to Equiniti, clearly stating the registered shareholder's name and address:

Equiniti
Shire Shareholder Services
Equiniti (Jersey) Limited
c/o Equiniti Limited
Aspect House
Spencer Road
Lancing
BN99 6DA
UK

Shareholder helpline
Overseas: Tel: +44 121 415 7593
UK: Tel: 0371 384 2553
Lines are open Monday to Friday
8:30 am to 5:30 pm (UK time) excluding UK Bank Holidays.

American Depositary Shares
The Company's American Depositary Shares (ADSs), each representing three Ordinary Shares, are listed on the NASDAQ Global Select Market under the symbol "SHPG".

The Company files reports and other documents with the Securities and Exchange Commission (SEC) that are available for inspection and copying at the SEC's public reference facilities or can be obtained by writing to the Company Secretary.

Citibank, N.A. is the depository for Shire ADSs. All inquiries concerning ADS records, certificates or the transfer of Ordinary Shares into ADSs should be addressed to:

Citibank shareholder services
P.O. Box 43077
Providence, Rhode Island
02940-3077
U.S.A.

General inquiries
Toll free in U.S.:
+1-877-Citi-ADR (248-4237)
From outside the U.S.:
+1-781-575-4555
E-mail:
citibank@shareholders-online.com

Cautionary statements

Statements included herein that are not historical facts, including without limitation statements concerning future strategy, plans, objectives, expectations and intentions, projected revenues, the anticipated timing of clinical trials and approvals for, and the commercial potential of, in-line or pipeline products, are forward-looking statements. Such forward-looking statements involve a number of risks and uncertainties and are subject to change at any time. In the event such risks or uncertainties materialize, Shire's results could be materially adversely affected. The risks and uncertainties include, but are not limited to, the following:

- Shire's products may not be a commercial success;
- increased pricing pressures and limits on patient access as a result of governmental regulations and market developments may affect Shire's future revenues, financial condition and results of operations;
- Shire depends on third parties to supply certain inputs and services critical to its operations including certain inputs, services and ingredients critical to its manufacturing processes. Any disruption to the supply chain for any of Shire's products may result in Shire being unable to continue marketing or developing a product or may result in Shire being unable to do so on a commercially viable basis for some period of time;
- the manufacture of Shire's products is subject to extensive oversight by various regulatory agencies. Regulatory approvals or interventions associated with changes to manufacturing sites, ingredients or manufacturing processes could lead to, among other things, significant delays, an increase in operating costs, lost product sales, an interruption of research activities or the delay of new product launches;
- the nature of producing plasma-based therapies may prevent Shire from timely responding to market forces and effectively managing its production capacity;
- Shire has a portfolio of products in various stages of research and development. The successful development of these products is highly uncertain and requires significant expenditures and time, and there is no guarantee that these products will receive regulatory approval;
- the actions of certain customers could affect Shire's ability to sell or market products profitably. Fluctuations in buying or distribution patterns by such customers can adversely affect Shire's revenues, financial conditions or results of operations;
- failure to comply with laws and regulations governing the sales and marketing of its products could materially impact Shire's revenues and profitability;
- Shire's products and product candidates face substantial competition in the product markets in which it operates, including competition from generics;
- Shire's patented products are subject to significant competition from generics;
- adverse outcomes in legal matters, tax audits and other disputes, including Shire's ability to enforce and defend patents and other intellectual property rights required for its business, could have a material adverse effect on the Shire's revenues, financial condition or results of operations;
- Shire may fail to obtain, maintain, enforce or defend the intellectual property rights required to conduct its business;
- Shire faces intense competition for highly qualified personnel from other companies and organizations;
- failure to successfully execute or attain strategic objectives from Shire's acquisitions and growth strategy may adversely affect the Shire's financial condition and results of operations;
- Shire's growth strategy depends in part upon its ability to expand its product portfolio through external collaborations, which, if unsuccessful, may adversely affect the development and sale of its products;
- a slowdown of global economic growth, or economic instability of countries in which Shire does business, could have negative consequences for Shire's business and increase the risk of non-payment by Shire's customers;
- changes in foreign currency exchange rates and interest rates could have a material adverse effect on Shire's operating results and liquidity;
- Shire is subject to evolving and complex tax laws, which may result in additional liabilities that may adversely affect the Shire's financial condition or results of operations;
- if a marketed product fails to work effectively or causes adverse side effects, this could result in damage to Shire's reputation, the withdrawal of the product and legal action against Shire;
- Shire is dependent on information technology and its systems and infrastructure face certain risks, including from service disruptions, the loss of sensitive or confidential information, cyber-attacks and other security breaches or data leakages that could have a material adverse effect on Shire's revenues, financial condition or results of operations;
- Shire faces risks relating to the expected exit of the United Kingdom from the European Union;
- Shire incurred substantial additional indebtedness to finance the Baxalta acquisition, which has increased its borrowing costs and may decrease its business flexibility;
- Shire's ongoing strategic review of its Neuroscience franchise may distract management and employees and may not lead to improved operating performance or financial results; there can be no guarantee that, once completed, Shire's strategic review will result in any additional strategic changes beyond those that have already been announced; and

a further list and description of risks, uncertainties and other matters can be found on pages 18 to 21 of this Annual Report.

All forward-looking statements attributable to us or any person acting on our behalf are expressly qualified in their entirety by this cautionary statement. Readers are cautioned not to place undue reliance on these forward-looking statements that speak only as of the date hereof. Except to the extent otherwise required by applicable law, we do not undertake any obligation to update or revise forward-looking statements, whether as a result of new information, future events or otherwise.

Risk Factors

The Company's business and assets are subject to varying degrees of risk and uncertainty. An investor should carefully consider the risks described below, as well as other information contained in this Annual Report and the Company's other reports and filings. Additional risks not presently known to the Company or that it currently deems immaterial may also adversely affect its business. If any of these events or circumstances occurs, the business, financial condition, results of operations, or prospects could be materially harmed. In that case, the value of the Company's securities could decline and an investor could lose part or all of his or her investment. In addition, cautionary statements that are contained in this Annual Report or in the Company's other reports, filings or statements may be subject to the risks described below as well as other risks and uncertainties. For details on Shire's risk management framework, see pages 18 and 19.

Risks Related to the Business

The Company's products may not be a commercial success

The commercial success of the Company's marketed products and other new products that the Company may launch in the future, will depend on their approval and acceptance by physicians, patients, insurers and other key decision-makers, as well as the receipt of marketing approvals in different countries, the time taken to obtain such approvals, the scope of marketing approvals as reflected in the product labels, approval of reimbursement at commercially sustainable prices in those countries where price and reimbursement is negotiated, and safety, efficacy, convenience and cost-effectiveness of the product as compared to competitive products.

The Company's revenues, financial condition or results of operations may be adversely affected if any or all of the following occur:

- if the Company's products, or competitive products, are genericized;
- if the prices of the Company's products are reduced or if prices of competitor products are reduced;
- if launches of new products or launch of the Company's products in new markets are not successful;
- if there are unanticipated adverse events experienced with the Company's products or those of a competitor not seen in clinical trials that impact physicians' willingness to prescribe the Company's products;
- if issues arise from clinical trials being conducted for post-marketing purposes or for registration in another country which raise questions or concerns about a product;
- if the regulatory agencies in one country act in a way that raises concerns for regulatory agencies or for prescribers or patients in another country;
- if there is a reduction in the use of the Company's products by patients, payers or physicians due to the development of or preferences for alternative technologies or treatments;
- if the Company's products are subject to more stringent government regulation than competitor products;
- if patent protection or other forms of exclusivity are lost or curtailed, or if competitors are able to successfully challenge or circumvent the Company's patents or other forms of exclusivity (see Note 25, Legal and Other Proceedings, to the consolidated financial statements);
- if the sizes of the patient populations for the Company's products are less than expected;
- if there are lawsuits filed or government investigations initiated against Shire, including but not limited to, product liability claims, consumer law claims, payer or reimbursement litigation and prior sales or marketing practices; or
- if there are adverse developments in investigations or government proceedings.

If the Company is unable to commercialize its products successfully, there may be a material adverse effect on the Company's revenues, financial condition or results of operations.

Increased pricing pressures and limits on patient access as a result of governmental regulations and market developments may affect the Company's future revenues, financial condition and results of operations

The Company's product revenues are subject to increasing pressures from governmental and other initiatives to regulate or influence prices and access to customers. Regulations in the U.S., the European Union and other jurisdictions mandating price controls or imposing constraints on patients' ability to purchase Shire's products significantly impact its business. In the U.S., the new administration has made public and social media statements regarding proposed changes to existing government initiatives, like the ACA, which has created significant uncertainty for the future of federal government policies that regulate or influence prices and access to customers. Any future changes in such laws, regulations, practices or policies may adversely affect the Company's financial condition and results of operations.

Regulatory measures that could have a material adverse effect on the Company include the imposition of government-approved drug pricing schedules, the use of drug formularies, prohibitions on direct-to-consumer advertising or drug marketing practices, new regulations or new interpretations of existing or historical regulations relating to governmental drug discount or rebate programs that increase the Company's drug discount or rebate liability, and caps or limits on the level of reimbursement provided to the Company by governmental reimbursement schemes for its products.

These pressures have also resulted in market developments, such as the consolidation of managed healthcare organizations, private health insurers, distributors and pharmacies that have increased the relative bargaining power of institutional drug purchasers and enhanced their ability to negotiate discounts and extract other concessions in exchange for purchasing Shire's products.

Such regulatory and market developments create downward pressures on the prices at which the Company can offer its products and on the level of reimbursement its treatments receive from healthcare providers, private health insurers and other organizations, such as health maintenance organizations and managed care organizations.

Additional factors affecting the Company's ability to obtain and maintain adequate prices and levels of reimbursement for its products include:

- higher levels of controls on the use of the Company's products and/or requirements for further price concessions mandated or negotiated by managed healthcare organizations or government authorities;
- legislative proposals to reform healthcare and government insurance programs in many of the Company's markets; and
- price controls, unsuccessful government tenders, or non-reimbursement of new medicines or new indications.

Moreover, the cost of treatment for some of the Company's products is high, particularly those which are used for the treatment of rare diseases. The Company may encounter difficulty in obtaining or maintaining satisfactory pricing and reimbursement for such products. The failure to obtain and maintain pricing and reimbursement at satisfactory levels for its products may adversely affect the Company's revenues, financial condition or results of operations.

The Company depends on third parties to supply certain inputs and services critical to its operations including certain inputs, services and ingredients critical to its manufacturing processes

The Company relies on third-party suppliers, vendors and outsourcing partners to, among other things, research, develop, manufacture and commercialize its products, to provide certain key ingredients and manufacturing inputs and to manage certain sales, distribution, marketing, information technology, accounting, transaction-processing and other business services. While the Company depends on these third parties for multiple aspects of its product development, manufacturing, commercialization and business activities, it does not control these third parties directly.

As a result, there is a possibility these third parties may not complete activities on schedule or in accordance with the Company's expectations, and their failure to meet certain contractual, regulatory or other obligations to Shire, or any disruption of Shire's relationship with these third parties could delay or prevent the development, approval, manufacture or commercialization of the Company's products, result in non-compliance with applicable laws and regulations, disrupt Shire's operations, or result in reputational or other harm to the Company.

This outsourcing risk is of particular concern with respect to third-party suppliers of key manufacturing inputs of certain of Shire's drug products, including, but not limited to, CINRYZE, ADVATE, ADYNOVATE, HYQVIA, ELAPRASE, FIRAZYR, REPLAGAL and GATTEX/ REVESTIVE where the Company currently relies on a single active ingredient source for each. Shire also relies on limited third party sources to provide the donated plasma necessary for the manufacture of CINRYZE. In addition, although the Company dual-sources certain key products and/or active ingredients, the Company currently relies on a single source for production of the final drug product for certain of its products, including, but not limited to, ADDERALL XR, CINRYZE, CUVITRU, FIRAZYR, LIALDA and PENTASA.

For many of those components and materials for which a sole supplier is used, the Company seeks to address potential supply disruption by, among other things, regularly evaluating such risk and, if appropriate, holding strategic inventory in the case of such potential supply disruptions. If such efforts prove unsuccessful, it could have a material adverse effect on the Company's revenues, financial condition or results of operations.

Any failure by a single-source supplier to provide the Company with the required volumes on time or at all, or to provide products that meet quality assurance measures and/or regulatory requirements, could lead to significant delays in the production of Shire's products, increases in operating costs, lost product sales, an interruption of research activities, or the delay of new product launches, all of which could have a material adverse effect on the Company's revenues, financial condition or results of operations.

Any disruption to the supply chain for any of the Company's products, or any difficulties or delays in the manufacturing, distribution and sale of its products may result in the Company being unable to continue marketing or developing a product, or may result in the Company being unable to do so on a commercially viable basis for some period of time

A disruption, delay or other difficulties in the manufacturing, distribution and sale of Shire's products, or in the supply chain of any of its products, may have a material adverse effect on the Company and its revenues, financial condition and results of operations. Examples of such manufacturing and supply chain difficulties include, but are not limited to:

- regulatory or enforcement actions that result in shut-downs, delays in or withdrawal of regulatory approvals necessary to carry on manufacturing activities, product recalls and penalties or fines resulting in unanticipated costs in production, whether imposed directly on the Company or imposed indirectly through one or more of its third-party suppliers;
- the inability of the Company to increase its production capacity for certain drugs commensurate with market demand;
- the possibility that the supply of incoming materials may be delayed or become unavailable and that the quality of incoming materials may be substandard and not detected;
- the possibility that the Company may fail to maintain appropriate quality standards throughout its internal and third-party supply network, or to comply with current manufacturing best practices, rules or other applicable regulations;
- disruptions to supply chain continuity as a result of natural or man-made disasters at the Company's facilities or at one or more of its third-party suppliers' facilities; and
- failure to maintain the integrity of the Company's supply chains against fraudulent and criminal acts, such as intentional product adulteration, diversion, theft, or counterfeiting activities.

Also, as noted above, the Company has also entered into many agreements with third parties for the provision of goods and services to enable it to manufacture its products. If these third parties are unable to manufacture products, or provide these goods and services, in each case in accordance with its respective contractual obligations, the Company's ability to manage its manufacturing processes or to operate its business, including to continue the development or commercialization of its products as planned or on a commercial basis, may be adversely impacted.

The manufacture of the Company's products is subject to extensive oversight by various regulatory agencies. Regulatory approvals or interventions associated with changes to manufacturing sites, ingredients or manufacturing processes could lead to significant delays, an increase in operating costs, lost product sales, an interruption of research activities or the delay of new product launches

Pharmaceutical and device manufacturing sites must be inspected and approved by regulatory agencies such as the FDA and similar agencies in other countries. Active ingredients, excipients and packaging materials used in the manufacturing process must be obtained from sources approved by regulatory agencies.

The development, approval and manufacturing of the Company's products depend on the ability to procure ingredients and packaging materials from approved sources and for the manufacturing process to be conducted at approved sites. Changes of manufacturer or changes of source of ingredients or packaging materials must generally be approved by regulatory agencies, which will involve testing and additional inspections to ensure compliance with the applicable regulatory agency's regulations and standards. The need to qualify a new manufacturer or source of ingredients or packaging materials can take a significant amount of time. Should it become necessary to change a manufacturer or supplier of ingredients or packaging materials, or to qualify an additional supplier, the Company may not be able do so quickly, or at all, which could delay or disrupt the manufacturing process.

U.S.-based manufacturers must be registered with the DEA and similar regulatory authorities in other countries if they handle controlled substances. Certain of the Company's products, including VYVANSE, ADDERALL XR and MYDAYIS, contain ingredients which are controlled substances subject to quotas managed by the DEA. As a result, the Company's procurement and production quotas may not be sufficient to meet commercial demand.

Certain of the Company's products, including but not limited to CINRYZE, ELAPRASE, REPLAGAL, FEIBA, HYQVIA, CUVITRU and GAMMAGARD LIQUID and VPRIV are manufactured using highly complex biological processes. The complexity of the manufacturing results in a number of risks, including the risk of microbial and other types of contamination. Additionally, some of the Company's therapies, including CINRYZE, FEIBA, HYQVIA, CUVITRU and GAMMAGARD LIQUID are derived from human plasma, and are therefore subject to the risk of biological contamination inherent in plasma-derived products.

The failure to obtain regulatory approvals promptly or at all and/or regulatory interventions associated with changes to manufacturing sites, ingredients or manufacturing processes could lead to significant delays, an increase in operating costs, lost product sales, an interruption of research activities, the delay of new product launches or constraints on manufacturing output, all of which could have a material adverse effect on the Company's revenues, financial condition and results of operations.

The nature of producing plasma-based therapies may prevent Shire from timely responding to market forces and effectively managing its production capacity

The production of plasma-based therapies is a lengthy and complex process, and Shire sources its plasma both internally and externally through suppliers. Efforts to increase the collection of plasma or the production of plasma-based therapies may include the construction and regulatory approval of additional plasma collection facilities and plasma fractionation facilities. In connection with the combination with Baxalta, the Company acquired a yet to be completed state-of-the-art manufacturing facility near Covington, Georgia to support growth of its plasma-based treatments. The Company has completed construction of all buildings associated with the Covington facility and is going through a rigorous commissioning and testing process to receive licensing from the FDA and international regulatory agencies. Commercial production at the facility remains scheduled to begin in 2018. The development of such facilities involves a lengthy regulatory process and is highly capital intensive. In addition, access to and transport and use of plasma may be subject to restrictions by governmental agencies both inside and outside the United States. As a result, the Company's ability to match its collection and production of plasma-based therapies to market demand is imprecise and may result in a failure to meet market demand for its plasma-based therapies or, alternatively, an oversupply of inventory. Failure to meet market demand for Shire's plasma-based therapies may result in customers transitioning to available competitive products resulting in a loss of market share or customer confidence. In the event of an oversupply, Shire may be forced to lower the prices it charges for some of its plasma-based therapies, close collection and processing facilities, record asset impairment charges or take other action which could have a material adverse effect on the Company's revenues, financial condition and results of operations.

The Company has a portfolio of products in various stages of research and development. The successful development of these products is highly uncertain and requires significant expenditures and time, and there is no guarantee that these products will receive regulatory approval

Products that initially appear promising in research or development may be delayed or fail to reach later stages of development as:

- preclinical or clinical tests may show the product to lack safety or efficacy;
- delays may be caused by: slow enrollment in clinical studies; regulatory requirements for clinical trial drug supplies; extended length of time to achieve study endpoints; additional time requirements for data analysis or dossier preparation; time required for discussions with regulatory agencies, including regulatory agency requests for additional preclinical or clinical data; regulatory agencies due to staffing or resource limitations; analysis of or changes to study design; unexpected safety, efficacy, or manufacturing issues; shared control with collaborative partners in the planning and execution of the product development, scaling of the manufacturing process, or obtaining approval for manufacturing;
- manufacturing issues, pricing or reimbursement issues, or other factors may render the product economically unviable;
- the proprietary rights of others and their competing products and technologies may prevent the product from being developed or commercialized; or
- submission of an application for regulatory approval of any of the Company's product candidates may be subjected to lengthy review and ultimately rejected.

Success in preclinical and early clinical trials does not ensure that late stage clinical trials will be successful. Clinical results are frequently susceptible to varying interpretations that may delay, limit, or prevent regulatory approvals. The length of time necessary to complete clinical trials and to submit an application for marketing approval for a final decision by a regulatory authority varies significantly and may be difficult to predict. Moreover, once an application is submitted, additional data may be sought by regulators or an application may be rejected. The Company has a range of programs in its product pipeline that are in registration or entering late stage clinical development, including, but not limited to SHP643 for the treatment of HAE, which is in registration, SHP621 for the treatment of EOE, which is in Phase 3 clinical trials, and SHP647 for the treatment of ulcerative colitis, which is in Phase 3. If the Company's large-scale or late-stage clinical trials for a product are not successful, the Company will not recover its substantial investments in that product.

In addition, even if the products receive regulatory approval, they remain subject to ongoing regulatory requirements, including, for example, obligations to conduct additional clinical trials or other non-clinical testing, changes to the product label (which could impact its marketability and prospects for commercial success), new or revised requirements for manufacturing, written notifications to physicians, or product recalls or withdrawals.

The actions of certain customers could affect the Company's ability to sell or market products profitably. Fluctuations in buying or distribution patterns by such customers can adversely affect the Company's revenues, financial conditions or results of operations

A considerable portion of the Company's product sales are made to major pharmaceutical wholesale distributors, as well as to large pharmacies, in both the U.S. and Europe. For the year ended December 31, 2017, 26% of the Company's product sales were attributable to three customers: AmerisourceBergen Drug Corp, McKesson Corp. and Cardinal Health, Inc. In the event of financial failure of any of these customers there could be a material adverse effect on the Company's revenues, financial condition or results of operations. The Company's revenues, financial condition or results of operations may also be affected by fluctuations in customer buying or distribution patterns. These fluctuations may result from seasonality, pricing, wholesaler inventory objectives, or other factors. A significant portion of the Company's revenues for certain products for treatment of rare diseases are also concentrated within a small number of customers. Changes in the buying patterns of those customers may have an adverse effect on the Company's revenues, financial condition or results of operations.

Failure to comply with laws and regulations governing the sales and marketing of its products could materially impact Shire's revenues and profitability

The Company engages in various marketing, promotional and educational activities pertaining to, as well as the sale of, pharmaceutical products and medical devices in a number of jurisdictions around the world. The promotion, marketing and sale of pharmaceutical products and medical devices is highly regulated and the sales and marketing practices of market participants, such as the Company, have been subject to increasing supervision by governmental authorities, and Shire believes that this trend will continue.

In the United States, the Company's sales and marketing activities are monitored by a number of regulatory authorities and law enforcement agencies, including the U.S. Department of HHS, the FDA, the U.S. Department of Justice, the SEC and the DEA. These authorities and agencies and their equivalents in countries outside the United States have broad authority to investigate market participants for potential violations of laws relating to the sale, marketing and promotion of pharmaceutical products and medical devices, including the False Claims Act, the Anti-Kickback Statute, the UK Bribery Act of 2010 and the Foreign Corrupt Practices Act, among others, for alleged improper conduct, including corrupt payments to government officials, improper payments to medical professionals, off-label marketing of pharmaceutical products and medical devices, and the submission of false claims for reimbursement by the federal government. Healthcare companies may also be subject to enforcement actions or prosecution for such improper conduct. Any inquiries or investigations into the operations of, or enforcement or other regulatory action against, the Company by such authorities could result in significant defense costs, fines, penalties and injunctive or administrative remedies, distract management to the detriment of the business, result in the exclusion of

certain products, or the Company, from government reimbursement programs or subject the Company to regulatory controls or government monitoring of its activities in the future. The Company is also subject to certain ongoing investigations by governmental agencies. For further information, see Note 25, Legal and Other Proceedings.

The Company's products and product candidates face substantial competition in the product markets in which it operates

Shire faces substantial competition throughout its business from international and domestic biopharmaceutical companies of all sizes. Competition is primarily focused on cost-effectiveness, price, service, product effectiveness and quality, patient convenience and technological innovation.

Competition may increase further as existing competitors enhance their offerings or additional companies enter Shire's markets or modify their existing products to compete directly with Shire's products. If Shire's competitors respond more quickly to new or emerging technologies and changes in customer requirements, the Company's products may be rendered obsolete or non-competitive. If Shire's competitors develop more effective or affordable products, or achieve earlier patent protection or product commercialization than the Company does, its operations will likely be negatively affected. If Shire is forced to reduce its prices due to increased competition, Shire's business could become less profitable. The Company's sales could be adversely affected if any of its contracts with customers (including with hospitals, treatment centers and other healthcare providers, distributors, group purchasing organizations and integrated delivery networks) are terminated due to increased competition or otherwise.

The Company's patented products are subject to significant competition from generics

In addition to the competition referred to above, Shire faces significant competition from the manufacturers of generic drug products in all of its major markets and in the future may face competition with respect to its biologic and biosimilar products. The introduction of lower-priced generics by the Company's competitors or their successful efforts in aggressively commercializing and marketing their alternative drug products pose significant challenges to maintaining Shire's market share, revenues and sales growth.

For example, since 2009, generic versions of ADDERALL XR have been marketed in the United States, since 2014, generic versions of INTUNIV have been marketed in the United States and since the third quarter of 2017, generic versions of LIALDA and FOSRENOL have been marketed in the United States. As a result, product sales of ADDERALL XR, INTUNIV, LIALDA and FOSRENOL declined.

Factors which could cause further or more rapid declines in Shire's product sales include:

- the loss or earlier than expected expiration of intellectual property rights or regulatory exclusivity periods with respect to the Company's branded products;
- generic or authorized generic versions of these products capturing more of Shire's branded market share than expected;
- lower prices and the actual or perceived greater effectiveness or safety of generic drug products relative to Shire's branded products;
- the FDA approving additional ANDAs for these products or additional ANDAs for generic versions of these products which, if launched, would further reduce branded market share or impact the amount of Shire's authorized generic product sales;
- changes in reimbursement policies of third-party payers; or
- changes to the level of sales deductions for branded Shire products for private or public payers.

Should any of the above developments occur, the resulting generic competition could reduce sales and market share of Shire's branded products and have a material adverse effect on the Company's revenues, financial condition or results of operations.

Adverse outcomes in legal matters and other disputes, including the Company's ability to enforce and defend patents and other intellectual property rights required for its business, could have a material adverse effect on the Company's revenues, financial condition or results of operations

During the ordinary course of its business the Company may be involved in claims, disputes and litigation with third parties, employees, regulatory agencies, governmental authorities and other parties. The range of matters of a legal nature that might arise is extremely broad but could include, without limitation, intellectual property claims and disputes, product liability claims and disputes, regulatory litigation, contract claims and disputes, employment claims and disputes, and tax or other governmental agency audits and disputes.

Any unfavorable outcome in such matters could adversely impact the Company's ability to develop or commercialize its products, adversely affect the product sales and profitability of existing products, subject the Company to significant defense costs, fines, penalties, audit findings and injunctive or administrative remedies, distract management to the detriment of the business, result in the exclusion of certain products, or the Company, from government reimbursement programs or subject the Company to regulatory controls or government monitoring of its activities in the future. Any such outcomes could have a material adverse effect on the Company's revenue, financial condition or results of operations. For further information, see Note 25, Legal and Other Proceedings.

The Company may fail to obtain, maintain, enforce or defend the intellectual property rights required to conduct its business

The Company's success depends upon its ability and the ability of its partners and licensors to protect their intellectual property rights. Where possible, the Company's strategy is to register intellectual property rights, such as patents and trademarks. The Company also relies on various trade secrets, unpatented know-how and technological innovations and contractual arrangements with third parties to maintain its competitive position. The failure to obtain, maintain, enforce or defend such intellectual property rights, for any reason, could allow third parties to make competing products or impact the Company's ability to develop, manufacture and market its own products on a commercially viable basis, or at all, which could have a material adverse effect on the Company's revenues, financial condition or results of operations.

The Company intends to enforce its patent rights vigorously and believes that its commercial partners, licensors and third party manufacturers intend to enforce vigorously those patent rights they have licensed to the Company. However, the Company's patent rights, and patent rights that the Company has licensed, may not provide valid patent protection sufficiently broad to prevent any third party from developing, using or commercializing products that are similar or functionally equivalent to the Company's products or technologies. These patent rights may be challenged, revoked, invalidated, infringed or circumvented by third parties. Laws relating to such rights may in the future also be changed or withdrawn.

Additionally, the Company's products, or the technologies or processes used to formulate or manufacture those products may now, or in the future, infringe the patent rights of third parties. It is also possible that third parties will obtain patent or other proprietary rights that might be necessary or useful for the development, manufacture or sale of the Company's products. The Company may need to obtain licenses for intellectual property rights from others and may not be able to obtain these licenses on commercially reasonable terms, if at all.

The Company also relies on trade secrets and other un-patented proprietary information, which it generally seeks to protect by confidentiality and nondisclosure agreements with its employees, consultants, advisors and partners. These agreements may not effectively prevent disclosure of confidential information and may not provide the Company with an adequate remedy in the event of unauthorized disclosure. In addition, if the Company's employees, scientific consultants or partners develop inventions or processes that may be applicable to the Company's products under development, such inventions and processes will not necessarily become the Company's property, but may remain the property of those persons or their employers.

The Company has filed applications to register various trademarks for use in connection with its products in various countries and also, with respect to certain products, relies on the trademarks of third parties. These trademarks may not afford adequate protection or the Company or the third parties may not have the financial resources to enforce their rights under these trademarks which may enable others to use the trademarks and dilute their value.

In the regular course of business, the Company is party to litigation or other proceedings relating to intellectual property rights. For details of material ongoing intellectual property litigation, see Note 25, Legal and Other Proceedings.

The Company faces intense competition for highly qualified personnel from other companies and organizations

The Company relies on recruiting and retaining highly skilled employees to meet its strategic objectives. The Company faces intense competition for highly qualified personnel and the supply of people with the requisite skills may be limited, generally or geographically. The range of skills required and the geographies in which they are required by the Company may also change over time as Shire's business evolves. If the Company is unable to retain key personnel or attract new personnel with the requisite skills and experience, it could adversely affect the implementation of the Company's strategic objectives and ultimately adversely impact the Company's revenues, financial condition or results of operations. Recent acquisitions by the Company, including without limitation, the Dyax and Baxalta acquisitions, as well as internal reorganizations and transitions of our offices in Illinois, Pennsylvania, the United Kingdom and other locations, may increase the Company's difficulty in recruiting and retaining employees.

Failure to successfully execute or attain strategic objectives from the Company's acquisitions and growth strategy may adversely affect the Company's financial condition and results of operations

The Company's business depends to a significant extent on its ability to improve and expand its product pipeline through strategic acquisitions. Such improvements and expansions, however, are subject to the ability of the Company's management to effectively identify appropriate strategic targets and effectuate the contemplated transactions, the availability and relative cost of acquisition opportunities as well as competition from other pharmaceutical companies seeking similar opportunities.

Moreover, even when such transactions are successfully executed, the Company may face subsequent difficulties in integrating the operations, infrastructure and personnel of acquired businesses and may experience unanticipated risks or liabilities that were not discovered, accurately disclosed or sufficiently assessed during the transactions' due diligence process. Finally, even successfully acquired and integrated businesses may ultimately fail or fall short of achieving the Company's strategic objectives for the transaction over the long term.

Any failures in the execution of a transaction, in the integration of an acquired business or in achieving the Company's strategic objectives, including expected synergies, with respect to such transactions could result in slower growth, higher than expected costs, the recording of asset impairment charges and other actions which could adversely affect the Company's business, financial condition and results of operations.

The Company has recently completed a number of strategic acquisitions, including Dyax in January 2016 and Baxalta in June 2016. Furthermore, the Company is currently exploring, and expects to continue to explore, opportunities for additional strategic acquisitions or combinations in the future. Proposed and completed acquisitions, as well as any future acquisitions, each entail various risks, which include but are not limited to:

- a proposed acquisition may not be consummated due to the occurrence of an event, change or other circumstances that gives rise to the termination of the applicable agreement;
- a governmental, regulatory, board, shareholder or other approval required for a proposed acquisition may not be obtained, or may be obtained subject to conditions that are not anticipated, or another condition to the closing of a proposed acquisition may not be satisfied, resulting in delays or ultimate failure of consummating a proposed acquisition;
- shareholders may initiate legal action to prevent or delay consummation of a proposed acquisition or to seek judicial reevaluation of a proposed acquisition's consideration;
- a lengthy, uncertain process when pursuing a potential combination could disrupt relationships between Shire and a target company's customers, suppliers and employees, distract Shire's or a target company's management from operating its business, and could lead to additional and unanticipated costs;
- a target company may be unable to retain and hire key personnel and/or maintain its relationships with customers, suppliers and other business partners pending the consummation of the proposed acquisition by Shire;
- after the consummation of an acquisition, the Company may be unable to retain the acquired company's key personnel, existing customers, suppliers and other business partners or attract new customers;
- the businesses of an acquired company may be otherwise disrupted by the acquisition, including increased costs and diversion of its management's time and resources;
- failure to achieve the targeted growth and expected benefits of the acquisition if sales of an acquired company's products are lower than anticipated, or these products cannot be successfully commercialized or cannot obtain necessary regulatory approvals;
- any integration of an acquired company into Shire could be complex and time-consuming, and difficulties in effectuating these integrations may lead to the combined companies not being able to realize the expected operating efficiencies, cost savings, revenue enhancements, synergies or other benefits in the timeframe anticipated, or at all;
- failure to successfully obtain regulatory approval of an acquired company's late stage pipeline assets in a timely manner or at all, or to successfully commercialize such products after regulatory approval has been obtained;
- undiscovered or unanticipated risks and liabilities, including legal and compliance related liabilities, may emerge in connection with an acquisition, or may be higher than anticipated; and
- even after successfully completing an acquisition and integrating the acquired company's businesses into Shire, the anticipated benefits of the combinations, including expected synergies, may ultimately prove less than anticipated.

Shire's growth strategy depends in part upon its ability to expand its product portfolio through external collaborations, which, if unsuccessful, may adversely affect the development and sale of its products

Shire intends to continue to explore opportunities to enter into collaboration agreements and external alliances with other parties. These third party collaborators may include other biopharmaceutical companies, academic and research institutions, governments and government agencies and other public and private research organizations.

These third party collaborators are often directly responsible for clinical development under these types of arrangements, and the Company does not have the same level of decision-making capabilities for the prioritization and management of development-related activities as it does for its internal research and development activities. Failures by these partners to meet their contractual, regulatory, or other obligations to the Company, or any disruption in the relationships between the Company and these partners, could have a material adverse effect on the Company's pipeline and business. In addition, the Company's collaborative relationships for research and development extend for many years and may give rise to disputes regarding the relative rights, obligations and revenues of Shire and its partners, including the ownership of intellectual property and associated rights and obligations. These could result in the loss of intellectual property rights or other intellectual property protections, delay the development and sale of potential pharmaceutical products, and lead to lengthy and expensive litigation or arbitration.

Long-term public-private partnerships with governments and government agencies, including in certain emerging markets, may include technology transfers to support local manufacturing capacity and technical expertise. Shire cannot predict whether these types of transfers and arrangements will become more common in the future. These types of technology transfers and similar arrangements could have a material adverse effect on the Company's results of operations as a result of lost exclusivity with respect to certain manufacturing and technical capabilities, particularly if this model becomes widely used. Public-private partnerships are also subject to risks of doing business with governments and government agencies, including risks related to sovereign immunity, shifts in the political environment, changing economic and legal conditions and social dynamics.

A slowdown of global economic growth, or economic instability of countries in which the Company does business, could have negative consequences for the Company's business and increase the risk of non-payment by the Company's customers

Growth of the global pharmaceutical market has become increasingly tied to global economic growth. Accordingly, a substantial and lasting slowdown of the global economy, or major national economies, could negatively affect growth in the markets in which the Company operates. Such a slowdown, or any resultant austerity measures adopted by governments in response to a slowdown, could result in national governments making significant cuts to their public spending, including national healthcare budgets, or reducing the level of reimbursement they are willing and able to provide to the Company for its products and, as a result, adversely affect the Company's revenues, financial condition or results of operations.

A slowdown of a nation's economy could also lead to financial difficulties for some of the Company's significant customers, including national governments, and result in a greater risk of delayed orders or payments, defaults or non-payments of outstanding payment obligations by the Company's customers in that country, which could adversely affect the Company's revenues, financial condition or results of operations.

Changes in foreign currency exchange rates and interest rates could have a material adverse effect on Shire's operating results and liquidity

Shire reports its financial results in U.S. dollars, but generates a substantial portion of its revenue (approximately 36% of its total revenue in 2017) outside the United States. As a result, Shire's financial results may be adversely affected by fluctuations in foreign currency exchange rates. Shire cannot predict with any certainty changes in foreign currency exchange rates or the ability of the Company to mitigate these risks. Shire may experience additional volatility as a result of inflationary pressures and other macroeconomic factors in certain emerging market countries.

Shire is also exposed to changes in interest rates, and Shire's ability to access the money markets and capital markets could be impeded if adverse liquidity market conditions occur.

For discussion of the financial impact of foreign exchange rate and interest rate fluctuations, and the ways and extent to which Shire attempts to mitigate such impact, see Note 16, Financial Instruments, to the consolidated financial statements.

The Company is subject to evolving and complex tax laws, which may result in additional liabilities that may adversely affect the Company's financial condition or results of operations

The Company is subject to evolving and complex tax laws in the jurisdictions in which it operates, and routinely obtains advice on matters, including the tax treatment of the break fee received in connection with the terminated offer for Shire by AbbVie, Inc. (AbbVie) in 2014. Significant judgment is required in determining the Company's tax liabilities, and the Company's tax returns are periodically examined by various tax authorities. The Company regularly assesses the likelihood of outcomes resulting from these examinations to determine the adequacy of its accrual for tax contingencies; however, due to the complexity of tax matters, the ultimate resolution of any tax matters may result in payments greater or less than amounts accrued. In addition, the Company may be affected by changes in tax laws, including tax rate changes, new tax laws, and revised tax law interpretations in domestic and foreign jurisdictions and between jurisdictions, including by the EU.

If a marketed product fails to work effectively or causes adverse side effects, this could result in damage to the Company's reputation, the withdrawal of the product and legal action against the Company

Unanticipated side effects or unfavorable publicity from complaints concerning any of the Company's products, or those of its competitors, could have an adverse effect on the Company's ability to obtain or maintain regulatory approvals or successfully market its products.

The testing, manufacturing, marketing and sales of pharmaceutical products and medical devices entail a risk of product liability claims, product recalls, litigation and associated adverse publicity. The cost of defending against such claims is expensive even when the claims are not merited. A successful product liability claim against the Company could require the Company to pay a substantial monetary award. The Company does not carry product liability insurance for its products due to the Company's analysis of the risk, frequency and severity of a loss and the cost of insurance for the risk. Accordingly, if the Company does not have sufficient financial resources to satisfy a liability resulting from such a claim or to fund the legal defense of such a claim, it could become insolvent. Moreover, an adverse judgment in a product liability suit could generate substantial negative publicity about the Company's products and business and inhibit or prevent commercialization of other products. In addition, failure to effectively identify, aggregate, analyze, report, and protect adverse event data, and/or fully comply with relevant laws, rules, and regulations around adverse event reporting could jeopardize patient safety and expose the Company to penalties, fines, and systemic reputational damage.

It is crucial that Shire report any adverse events to keep customers and patients informed and safe. Specifically, in regards to the various patient support programs, Shire risks noncompliance in safety-reporting and/or reporting of incomplete safety information if adverse events are not documented as part of the patient support programs.

The Company is dependent on information technology and its systems and infrastructure face certain risks, including from service disruptions, the loss of sensitive or confidential information, cyber-attacks and other security breaches or data leakages that could have a material adverse effect on the Company's revenues, financial condition or results of operations

The Company relies to a large extent upon sophisticated information technology systems to operate its businesses. In the ordinary course of business, the Company collects, stores and transmits large amounts of confidential information

(including, but not limited to, personal information and intellectual property), and it is critical that the Company does so in a secure manner to maintain the confidentiality and integrity of such confidential information. The size and complexity of the Company's information technology and information security systems, and those of third-party vendors with whom the Company contracts (and the large amounts of confidential information that is stored on them), make such systems potentially vulnerable to service interruptions or to security breaches from inadvertent or intentional actions by the Company's employees or vendors, or from attacks by malicious third parties.

The Company and its vendors' sophisticated information technology operations are spread across multiple, sometimes inconsistent platforms, which pose difficulties in maintaining data integrity across systems. The ever-increasing use and evolution of technology, including cloud-based computing, creates opportunities for the unintentional dissemination or intentional destruction of confidential information stored in the Company's systems. The Company and its vendors could also be susceptible to third party attacks on their information security systems, which attacks are of ever increasing levels of sophistication and are made by groups and individuals with a wide range of motives and expertise, including criminal groups, "hackers" and others. While the Company has taken steps to protect such information and invested heavily in information technology, there can be no assurance that these efforts will prevent service interruptions or security breaches in its systems, the loss of data or other confidential information due to a lack of redundant backup systems, or the unauthorized or inadvertent wrongful use or disclosure of confidential information that could adversely affect the Company's business operations or result in the loss, dissemination, or misuse of critical or sensitive information.

A breach of the Company's security measures or the accidental loss, inadvertent disclosure, unapproved dissemination, misappropriation or misuse of trade secrets, proprietary information, or other confidential information, whether as a result of theft, hacking, fraud, trickery or other forms of deception, or for any other cause, could enable others to produce competing products, use the Company's proprietary technology or information, and/or adversely affect the Company's business position. Further, any such interruption, security breach, loss or disclosure of confidential information, could result in financial, legal, business, and reputational harm to the Company and could have a material adverse effect on the Company's revenues, financial condition or results of operations.

In addition, legislators and/or regulators in countries in which the Company operates are increasingly adopting or revising privacy, information security and data protection laws, as well as focusing on increased privacy-related enforcement activity, that potentially could have a significant impact on the Company's current and planned privacy, data protection and information security-related practices, its collection, use, sharing, retention and safeguarding of consumer and/or employee information, and some of its current or planned business activities.

Shire faces risks relating to the expected exit of the United Kingdom from the European Union

On June 23, 2016, the United Kingdom held a remain-or-leave referendum on the United Kingdom's membership within the European Union, the result of which favored the exit of the United Kingdom from the European Union (Brexit). A process of negotiation will likely determine the future terms of the United Kingdom's relationship with the European Union, as well as whether the United Kingdom will be able to continue to benefit from the European Union's free trade and similar agreements. The timing of the Brexit and potential impact of Brexit on Shire's market share, sales, profitability and results of operations is unclear. Depending on the terms of Brexit, economic conditions in the United Kingdom, the European Union and global markets may be adversely affected by reduced growth and volatility. The uncertainty before, during and after the period of negotiation is also expected to have a negative economic impact and increase volatility in the markets, particularly in the Eurozone. Such volatility and negative economic impact could, in turn, adversely affect the Company's revenues, financial condition or results of operations.

Our ongoing strategic review of our Neuroscience franchise may distract management and employees and may not lead to improved operating performance or financial results; there can be no guarantee that, once completed, our strategic review will result in any additional strategic changes beyond those that have already been announced

In August 2017, Shire announced that it was conducting a strategic review of its Neuroscience business. On January 8, 2018, following the first stage of this review, Shire announced that its Board has concluded that the Neuroscience business warrants additional focus and investment and that there is a strong business rationale for creating two distinct business divisions within Shire: a Rare Disease division and a Neuroscience division. Shire expects to report the operational performance metrics of each division separately beginning with the first quarter of 2018. The second stage of the review will include continuing to evaluate all strategic alternatives, including the merits of an independent listing for each of the two divisions.

During the course of our strategic review, our management and employees may be distracted, which could impact our business. Further, we may incur additional costs in undertaking the strategic review or executing any conclusion reached as a result of the review. Moreover, operating our business as distinct divisions may not lead to improved operating performance or financial results for one or both businesses or meet the expectations that we have communicated for those businesses or the Company as a whole. Finally, there can be no guarantee that, once completed, our strategic review will result in any additional strategic changes beyond those that have already been announced.

Risks Related to the Combination with Baxalta Incorporated

The Company may not successfully integrate the businesses of Shire and Baxalta

Achieving the anticipated benefits of the combination of Shire and Baxalta will depend in part upon whether the two companies integrate their businesses in an effective and efficient manner. The Company may not be able to accomplish this integration process successfully or realize the expected synergies as planned. The integration of businesses is complex and time-consuming. The difficulties that could be encountered include the following:

- integrating personnel, operations and systems, while maintaining focus on selling and promoting existing and newly acquired or produced products;
- coordinating geographically dispersed organizations;
- distraction of management and employees from operations;
- changes or conflicts in corporate culture;
- management's inability to manage a substantial increase in the number of employees;
- management's inability to train and integrate personnel, who may have limited experience with the respective companies' business lines and products, and to deliver a consistent message regarding diseases treated by the Company;
- retaining existing customers and attracting new customers;
- retaining existing employees and attracting new employees
- maintaining business relationships;
- inefficiencies associated with the integration and management of the operations of the two companies.

In addition, there have been and will continue to be integration costs and non-recurring transaction costs (such as fees paid to legal, financial, accounting and other advisors and other fees paid in connection with the combination) associated with the combination, including costs associated with combining operations and achieving the expected synergies as planned, and such costs may be significant.

An inability to realize the full extent of the anticipated benefits of the combination of Shire and Baxalta, including estimated cost synergies, as well as any delays encountered in the integration process and realizing such benefits, could have an adverse effect upon the revenues, level of expenses and operating results of the Company, which may materially adversely affect the value of the Company's ordinary shares and American Depository Shares (ADSs).

Shire has incurred significant additional indebtedness in connection with the acquisition, which has decreased the Company's business flexibility and increased its interest expense. All of the Company's debt obligations have priority over the Company's ordinary shares and ADSs with respect to payment in the event of a liquidation, dissolution or winding up

As of December 31, 2017, Shire had gross debt of approximately $19.6 billion comprising $12.1 billion of SAIIDAC Notes issued in September 2016, $5.0 billion of Baxalta Notes assumed with the acquisition of Baxalta, $1.2 billion outstanding borrowing under the term loan facility and $810.0 million outstanding borrowing under the $2.1 billion Revolving Credit Facility and certain capital lease and other debt obligations. For further information, refer to Note 18, Borrowings and Capital Leases, to these consolidated financial statements.

The Company's aggregate indebtedness could have the effect, among other things, of reducing the Company's flexibility to respond to changing business and economic conditions. The Company is required to abide by certain covenants within the various financing arrangements, which if not adhered to, would require immediate repayment of the indebtedness.

Moreover, the Company may be required to raise additional financing. The Company's ability to arrange additional financing and the costs of that financing will depend on, among other factors, the Company's financial position and performance, as well as prevailing market conditions and other factors beyond Shire's control.

In any liquidation, dissolution or winding up of Shire, the Company's ordinary shares and ADSs would rank below all debt claims against Shire or any of its subsidiaries. As a result, holders of the Company's ordinary shares and ADSs will not be entitled to receive any payment or other distribution of assets upon any liquidation or dissolution until after Shire's obligations to its debt holders, which rank senior to the Company's ordinary shares and ADSs, have been satisfied.

Uncertainties associated with the combination may cause a loss of employees and may otherwise affect the future business and operations of Shire and the combined company

Uncertainty about the effect of the combination on employees and customers may have an adverse effect on the Company following the combination. These consequent uncertainties may impair the Company's ability to retain and motivate key personnel and could also cause customers, suppliers, licensees, partners and other business partners to defer entering into contracts with, making other decisions concerning, or seeking to change existing business relationships with the Company. Because the Company depends on the experience and industry knowledge of their executives and other key personnel to execute their business plans, the Company may be unable to meet its strategic objectives.

Baxalta only operated as an independent company from July 1, 2015, until the consummation of its merger with Shire on June 3, 2016, and Baxalta's historical financial information is not necessarily representative of the results that Baxalta would have achieved as a separate, publicly traded company, and may not be a reliable indicator of future results of Baxalta. Moreover, any pro forma financial information published by the Company is not necessarily representative of the results that the Company would have achieved, and may not be a reliable indicator of future results

Any historical financial information about Baxalta prior to July 1, 2015, refers to Baxalta's business as operated by and integrated with Baxter. Baxalta's historical and pro forma financial information for such periods was derived from the consolidated financial statements and accounting records of Baxter. In addition, certain pro forma financial information for the Company has incorporated Baxalta's historical financial information for such periods. Accordingly, such historical and pro forma

financial information of Baxalta or the Company does not necessarily reflect the financial condition, results of operations or cash flows that Baxalta would have achieved as a separate, publicly traded company during the periods presented, or those that Shire would have achieved had the combination occurred as assumed for the preparation of the pro forma financial information. As a result, the Company's pro forma financial information is not necessarily representative of the results that the Company will achieve after the merger with Baxalta, and may not be a reliable indicator of future results.

Baxter may not satisfy its obligations under various transaction agreements that have been executed as part of the separation or Shire may fail to have necessary systems and services in place when certain of the transaction agreements expire

In connection with Baxalta's separation from Baxter, the parties entered into various agreements, including a separation and distribution agreement, a transition services agreement, a tax matters agreement, a manufacturing and supply agreement, an employee matters agreement, license agreements and commercial agreements. The separation and distribution agreement, the tax matters agreement and employee matters agreement determined the allocation of assets and liabilities between the companies following the separation for those respective areas and provide for indemnifications related to liabilities and obligations. The transition services agreement sets forth certain services to be performed by each company for the benefit of the other for a period of time after the separation. Baxalta and now Shire will rely on Baxter to satisfy its performance and payment obligations under these agreements. If Baxter does not satisfy its obligations under these agreements, including its indemnification obligations, Shire may not be able to meet its financial reporting requirements and/or could incur operational difficulties or losses as they relate to Baxalta's businesses. If Shire is unable to successfully integrate the Baxalta businesses into Shire's systems and services, or if Shire does not have agreements with other providers of these services once certain transaction agreements expire, Shire may not be able to operate the Baxalta businesses effectively and Shire's profitability may decline.

The acquisition of Baxalta could result in significant liability to the Company if the combination causes the spin-off of Baxalta from Baxter or a Later Distribution, as defined below, to be taxable

In connection with the signing of the merger agreement, Baxter, Shire and Baxalta entered into the Letter Agreement, which, among other things, supplements certain aspects of the tax matters agreement referenced above. Under the Letter Agreement, from and after the closing of the merger, Baxalta agreed to indemnify, and the Company agreed to guarantee such indemnity to, Baxter and each of its affiliates and each of their respective officers, directors and employees against certain tax-related losses attributable to, or resulting from, in whole or in part, the merger. If the contribution of property by Baxter in one or more transfers to Baxalta in exchange for shares of Baxalta common stock, cash, and the assumption of certain liabilities, together with the distribution by Baxter on July 1, 2015, of approximately 80.5% of the shares of Baxalta common stock to shareholders of Baxter (spin-off), Baxter's distribution of cash received from Baxalta to its creditors and/or a Later Distribution, collectively, the "Baxter Transactions", are determined to be taxable as a result, in whole or in part, of the merger (for example, if the merger is deemed to be part of a plan, or series of related transactions, that includes the Baxter Transactions), Baxter and its shareholders could incur significant tax liabilities. Under the tax matters agreement, and the Letter Agreement, Baxalta and the Company may be required to indemnify Baxter for any such tax liabilities. Baxter's waiver of the provisions under the tax matters agreement restricting Baxalta's ability to enter into and consummate the merger will not relieve Baxalta or the Company of its obligation to indemnify Baxter if the merger causes any of the Baxter Transactions to be taxable.

In connection with the signing and closing of the merger agreement, the Company received an opinion from Cravath, Swaine & Moore LLP (Cravath), tax counsel to the Company, to the effect that the merger will not cause the Baxter Transactions to fail to qualify as tax-free to Baxter and its shareholders under Sections 355, 361 and 368(a)(1)(D) of the Internal Revenue Code of 1986, as amended.

The tax opinions referred to in the immediately preceding paragraph are based upon various factual representations and assumptions, as well as certain undertakings made by the Shire, Baxter and Baxalta. If any of the factual representations or the assumptions in the tax opinions are untrue or incomplete in any material respect, an undertaking is not complied with or the facts upon which the tax opinions are based are materially different from the facts at the time of the merger, the opinions may not be valid. Moreover, opinions of counsel are not binding on the Internal Revenue Service (IRS). As a result, the conclusions expressed in the tax opinions could be challenged by the IRS. None of Shire, Baxalta or Baxter has requested a ruling from the IRS regarding the impact of the merger on the tax treatment of the Baxter Transactions, since such rulings are not made by the IRS. Further, the tax opinions do not address all tax aspects of the spin-off, a Later Distribution and other related transactions and it is possible the Company may be obligated to indemnify Baxter despite the continuing validity of the tax opinions.

The Company's indemnification obligations to Baxter and its affiliates, officers, directors and employees under the tax matters agreement and letter agreement are not limited in amount or subject to any cap. If Baxalta or the Company is required to indemnify Baxter and its affiliates and their respective officers, directors and employees under the circumstances set forth in the tax matters agreement, as supplemented by the Letter Agreement, it could have a material adverse effect on the Company.

The "Later Distributions" includes the following transactions that were undertaken by Baxter prior to the closing of the merger: (i) two debt-for-equity exchanges (and related underwritten offerings) with respect to Baxalta shares, (ii) an offer to exchange Baxter shares for Baxalta shares, and (iii) a contribution of Baxalta shares to Baxter's U.S. pension fund, which, in each case, were undertaken prior to the earlier of any Baxalta or Company stockholder vote with respect to the merger and that were intended to be part of a plan that includes the spin-off.

In connection with the merger with Baxalta, the separation and the Later Distributions could result in significant liability to the Company due to Baxalta's spin-off from Baxter

The Baxter Transactions are intended to qualify for tax-free treatment to Baxter and its stockholders under Sections 355, 361, and 368(a)(1)(D) of the Code. Completion of the separation was conditioned upon, among other things, the receipt of a private letter ruling from the IRS regarding certain issues relating to the tax-free treatment of the Baxter Transactions. Although the IRS private letter ruling is generally binding on the IRS, the continuing validity of such ruling is subject to the accuracy of factual representations and assumptions made in the ruling. Completion of the initial distribution of Baxalta shares on July 1, 2015, was also conditioned upon Baxter's receipt of a tax opinion from KPMG LLP, or KPMG regarding certain aspects of the separation not covered by the IRS private letter ruling. The opinion was based upon various factual representations and assumptions, as well as certain undertakings made by Baxter and Baxalta. If any of the factual representations or assumptions in the IRS private letter ruling or tax opinion are untrue or incomplete in any material respect, an undertaking is not complied with, or the facts upon which the IRS private letter ruling or tax opinion are based are materially different from the actual facts relating to the Baxter Transactions, the opinion or IRS private letter ruling may not be valid. Moreover, opinions of a tax advisor are not binding on the IRS. As a result, the conclusions expressed in the opinion of a tax advisor could be successfully challenged by the IRS.

If the Baxter Transactions are determined to be taxable, Baxter and its stockholders could incur significant tax liabilities, and under the tax matters agreement and the letter agreement which were assumed by Shire following the merger, the Company may be required to indemnify Baxter for any liabilities incurred by Baxter if the liabilities are caused by any action or inaction undertaken by Baxalta following the separation (including as a result of the merger).

Certain Baxalta agreements may contain change of control provisions that may have been triggered by the merger that, if acted upon or not waived, could cause the Company to lose the benefit of such agreement and incur liabilities or replacement costs, which could have a material adverse effect on the Company

Prior to and following the merger, Baxalta and its affiliates are each party to various agreements with third parties, including certain license agreements, business development-related agreements, production and distribution related agreements, bonding/financing facilities, contracts for the performance of services material to the operations of Baxalta and/or its affiliates, IT contracts, technology licenses and employment agreements that may contain change of control provisions that may have been triggered upon the closing of the merger. Agreements with change of control provisions typically provide for or permit the termination of the agreement upon the occurrence of a change of control of one of the parties which can be waived by the relevant counterparties. In the event that there is such a contract or arrangement requiring a consent or waiver in relation to the merger for which such consent or waiver was not obtained, the Company could lose the benefit of the underlying agreement and incur liabilities or replacement costs, which could have an adverse effect on the Company.

New regulations issued by the U.S. Department of Treasury may impact the Company following the merger with Baxalta

On April 4, 2016, the U.S. Department of Treasury issued new regulations applicable to acquisitions of U.S. companies by non-U.S. companies. These regulations, among other things, change the manner in which thresholds contained within the so-called "anti-inversion" rules that govern how the combined company will be taxed are calculated. These calculations are affected by the merger and could impact any future acquisitions of U.S. companies funded in whole or in part by Shire securities. These calculations are complicated and depend on several factors. Moreover, the U.S. Department of Treasury also introduced proposed "earnings stripping" regulations as revised on October 13, 2016 that may, among other things, cause certain related-party debt instruments issued by a U.S. corporation to be treated as equity, resulting in the loss of deductible interest payments for U.S. federal income tax purposes.

These regulations are newly issued and complex, and as such their application to any particular set of facts is uncertain. Shire believes that the regulations are not likely to affect the expected tax position of the Company following the acquisition of Baxalta, which belief is based on, among other things, facts that may change or judgments that may prove to be incorrect and, if incorrect, could have an adverse impact on the expected tax position of the Company.

Furthermore, the U.S. tax authorities could issue additional guidance as to the application of these regulations or issue new regulations that could have an adverse effect on the expected tax position of the Company.

Shire plc
Report and financial statements

For the year ended December 31, 2017

Contents

Company Information

Directors

Dominic Blakemore
Olivier Bohuon
William Burns
Ian Clark
Gail Fosler
Dr Steven Gillis
Dr David Ginsburg
Susan Kilsby
Sara Mathew
Anne Minto OBE
Dr Flemming Ornskov
Albert Stroucken

Secretary

Bill Mordan

Registered office

22 Grenville Street
St Helier
Jersey
JE4 8PX
Channel Islands

Corporate headquarters

Block 2, Miesian Plaza
50-58 Baggot Street Lower
Dublin 2
Republic of Ireland

Auditor

Deloitte LLP
London
United Kingdom

Directors' Report

For the year ended December 31, 2017

The Directors present their annual report and the audited financial statements for the year ended December 31, 2017.

Principal activity and business review

Shire plc (the "Company") and its subsidiaries (collectively referred to as either "Shire", or the "Group") is the leading global biotechnology company focused on serving people with rare diseases and other highly specialized conditions.

The Company is the ultimate parent of the Group and its principal activity is that of a holding company.

The Group has grown both organically and through acquisition, completing a series of major transactions that have brought therapeutic, geographic and pipeline growth and diversification. The Group will continue to conduct its own research and development (R&D) focused on rare diseases, as well as evaluate companies, products and pipeline opportunities that offer a strategic fit and have the potential to deliver value to all of the Group's stakeholders: patients, physicians, policy makers, payers, partners, investors and employees.

The principal legislation under which the Company operates is the Companies (Jersey) Law 1991 and regulations made thereunder. The Ordinary Shares of the Company are listed on the London Stock Exchange in the UK, and American Depositary Shares (ADS), representing three Ordinary Shares of the Company, (evidenced by an American Depositary Receipt issued by Shire's Depositary, Citibank, N.A.) are listed on the NASDAQ Global Select Market in the USA.

Business review

The Business review of the Group can be found in the consolidated financial statements and Annual Report and Accounts of the Company for the year to December 31, 2017, prepared in accordance with United Kingdom Listing Authority requirements (the "Shire Annual Report"); in the Chairman's review on pages 4 and 5; the Chief Executive Officer's review on pages 6 to 9; and the Review of the Business on pages 44 to 55. The Shire Annual Report also provides a description of the principal risks and uncertainties facing the Company and the Group, as well as the Group's risk management objectives and policies that are in place to assist in mitigating the potential impact.

During the year, the Company continued in its capacity as the parent company for the Group in the management of its subsidiaries.

The Company is tax resident in the Republic of Ireland.

Key performance indicators

The Company's key performance indicators are the same as the Group's. For details of the Group's key performance indicators see page 16 in the Shire Annual Report.

Income Access Share arrangements

In 2008, Shire put in place and continues to operate Income Access Share ('IAS') arrangements enabling shareholders to choose whether they receive their dividends from the company, which is tax resident in the Republic of Ireland, or from a company tax resident in the UK. Further details of the IAS arrangements can be found in Note 26 of the Shire Annual Report.

Results and dividends

A loss on ordinary activities before taxation of $161.2 million was recorded for the year ended December 31, 2017 (year ended December 31, 2016: loss before taxation of $173.3 million). The decrease in the loss is primarily due to a decrease in professional fees within administrative expenses, offset in part by an increase in interest payable on loans made within the group.

The net assets of the Company increased from $31,666.1 million for the year ended December 31, 2016 to $31,677.6 million for the year ended December 31, 2017, primarily as a result of the capital contribution relating to share-based payments, offset in part by the loss recorded in the year.

Dividends paid and dividend policy

The Company paid dividends amounting to $35.8 million in the year (2016: $20.7 million). In accordance with IAS arrangements, Shire Biopharmaceuticals Holdings paid dividends totalling $245.5 million (2016: $150.6 million) to those shareholders who choose to receive their dividends from a company tax resident in the UK.

A first interim dividend for the six months to June 30, 2017 of 5.08 cents (3.85 pence) per Ordinary Share, equivalent to 15.27 cents per ADS, was paid in October 2017. The Board has resolved to pay a second interim dividend of 29.79 cents (21.58 pence) per Ordinary Share equivalent to 89.37 cents per ADS for the six months to December 31, 2017.

This is consistent with Shire's stated policy of paying a dividend semi-annually, set in U.S. cents per ordinary share. Typically, the first interim payment each year will be higher than the previous year's first interim U.S. dollar dividend. Dividend growth for the full year will be reviewed by the Board when the second interim dividend is determined.

Liquidity, cash flow and going concern

The Company and the Group's business activities, together with the factors likely to affect its future development, performance and position are set out in the Chairman's review, Chief Executive Officer's review and Financial review. The financial position of the Company and the Group, its cash flows, liquidity position and borrowing facilities are described in the Liquidity and capital resources section of the Financial review of the Shire Annual Report and also see Note 18. The Financial review also includes information in respect of the Group's objectives, policies and processes for managing capital; its financial risk management objectives; details of its hedging activity; and its exposures to credit risk and liquidity risk.

The Company's funding requirements depend on a number of factors, including the timing and extent of its development programs; corporate, business and product acquisitions; the level of resources required for the expansion of certain manufacturing and marketing capabilities as the product base expands; increases in accounts receivable and inventory which may arise with any increase in product sales; competitive and technological developments; the timing and cost of obtaining required regulatory approvals for new products; the timing and quantum of milestone payments on business combinations, in-licenses and collaborative projects; the timing and quantum of tax and dividend payments; the timing and quantum of purchases by the Employee Benefit Trust (EBT) of Shire shares in the market to satisfy awards granted under Shire's employee share plans; and the amount of cash generated from sales of Shire's products and royalty receipts.

An important part of the Group's business strategy is to protect its products and technologies through the use of patents, proprietary technologies and trademarks, to the extent available. The Company intends to defend its intellectual property and as a result may need cash for funding the cost of litigation.

The Company finances its activities through cash generated from operating activities; credit facilities; private and public offerings of equity and debt securities; and the proceeds of asset or investment disposals.

The Group's Consolidated Balance Sheets included $472.4 million of Cash and cash equivalents as of December 31, 2017.

The Group has a revolving credit facility (RCF) of $2.1 billion which matures in 2021, $810.0 million of which was utilized as of December 31, 2017. The RCF incorporates a $250 million U.S. dollar and Euro swingline facility operating as a sub-limit thereof.

In connection with the acquisition of Dyax, the Group entered into a $5.6 billion amortizing term loan facility in November 2015. As of December 31, 2017, $1.2 billion of this term loan facility was outstanding. The facility matures on November 2, 2018.

In connection with the acquisition of Baxalta, the Group assumed $5.0 billion of unsecured senior notes previously issued by Baxalta, of which $750.0 million is due within the next twelve months and issued $12.1 billion of unsecured senior notes in September 2016, of which none are due for repayment in the next twelve months.

The details of these debt agreements are presented in Note 18, Borrowings and Capital Leases, to the Group's consolidated financial statements.

In addition, the Group also has access to certain short-term uncommitted lines of credit which are available to utilize from time to time to provide short-term cash management flexibility. As of December 31, 2017, these lines of credit were not utilized.

The Company may also engage in financing activities from time to time, including accessing the debt or equity capital markets.

The Directors have a reasonable expectation that the Company and the Group has adequate resources to continue in operational existence for the foreseeable future. Accordingly the Directors continue to adopt the going concern basis of accounting in preparing the financial statements. Further details regarding the adoption of the going concern basis can be found in the accounting policies in the notes to the financial statements.

Directors

The Directors who served during the year and up to the date of signing these financial statements are shown below:

Dominic Blakemore	
Olivier Bohuon	
William Burns	
Ian Clark	(appointed January 03, 2017)
Gail Fosler	
Dr Steven Gillis	
Dr David Ginsburg	
Susan Kilsby	
Sara Mathew	
Anne Minto OBE	
Dr Flemming Ornskov	
Jeffrey Poulton	(resigned December 31, 2017)
Albert Stroucken	

Payment of creditors

The Company is non-trading and accordingly has no trade creditors.

Directors' liability insurance and indemnification

In the year under review, the Group maintained an insurance policy for its Directors and Officers in respect of liabilities arising out of any act, error or omission whilst acting in their capacity as Directors or Officers. Qualifying third-party indemnity provisions were also in place during the year under review for the benefit of Directors in relation to certain losses and liabilities which they may potentially incur to third-parties in the course of their duties. These remain in force at the date of this report.

Auditor

Each of the persons who is a Director at the date of approval of this report confirms that:

- so far as the Director is aware, there is no relevant audit information of which the Company's auditor is unaware; and
- the Director has taken all the steps that he/she ought to have taken as a Director in order to make himself/herself aware of any relevant audit information and to establish that the Company's auditor is aware of that information.

Deloitte LLP have expressed their willingness to continue in office as auditor and a resolution to reappoint them will be proposed at the forthcoming Annual General Meeting.

Approved by the Board of Directors and signed on its behalf by:

Flemming Ornskov, MD, MPH
Chief Executive Officer
February 16, 2018

Directors' responsibilities in the preparation of the financial statements

For the year ended December 31, 2017

The directors are responsible for preparing the Annual Report and the financial statements in accordance with applicable law and regulations.

Company law requires the directors to prepare financial statements for each financial year. Under that law the directors have elected to prepare the financial statements in accordance with United Kingdom Generally Accepted Accounting Practice (United Kingdom Accounting Standards and applicable law). Under company law the directors must not approve the financial statements unless they are satisfied that they give a true and fair view of the state of affairs of the company and of the profit or loss of the company for that period. In preparing these financial statements, the directors are required to:

- select suitable accounting policies and then apply them consistently;
- make judgments and accounting estimates that are reasonable and prudent;
- state whether applicable UK Accounting Standards have been followed, subject to any material departures disclosed and explained in the financial statements;
- prepare the financial statements on the going concern basis unless it is inappropriate to presume that the company will continue in business.

The directors are responsible for keeping proper accounting records that are sufficient to show and explain the company's transactions and disclose with reasonable accuracy at any time the financial position of the company and enable them to ensure that the financial statements comply with the Companies (Jersey) Law 1991. They are also responsible for safeguarding the assets of the company and hence for taking reasonable steps for the prevention and detection of fraud and other irregularities.

The Directors are responsible for the maintenance and integrity of the corporate and financial information included on the Company's website. Legislation in the United Kingdom governing the preparation and dissemination of financial statements may differ from legislation in other jurisdictions.

Responsibility statement

We confirm that to the best of our knowledge:

- the financial statements, prepared in accordance with United Kingdom Generally Accepted Accounting Practice, give a true and fair view of the assets, liabilities, financial position and profit or loss of the company and the undertakings included in the consolidation taken as a whole;
- the Strategic Report within the Shire Annual Report includes a fair review of the development and performance of the business and the position of the company and the undertakings included in the consolidation taken as a whole, together with a description of the principal risks and uncertainties that they face; and
- the Shire Annual Report and financial statements, taken as a whole, are fair, balanced and understandable and provide the information necessary for shareholders to assess the company's performance, business model and strategy.

Approved by the Board of Directors and signed on it's behalf by:

Flemming Ornskov, MD, MPH
Chief Executive Officer
February 16, 2018

Independent auditor's report to the members of Shire plc

For the year ended December 31, 2017

In our opinion the financial statements of Shire plc (the "Company"):

- **give a true and fair view of the state of the Company's affairs as at 31 December 2017 and of its loss for the year then ended;**
- **have been properly prepared in accordance with United Kingdom Generally Accepted Accounting Practice, including FRS 102 "The Financial Reporting Standard applicable in the UK and Republic of Ireland"; and**
- **have been properly prepared in accordance with the Companies (Jersey) Law 1991.**

The financial statements that we have audited comprise:

- the statement of comprehensive income;
- the statement of financial position;
- the statement of changes in equity;
- the statement of cash flows; and
- the related notes 1 to 18.

The financial reporting framework that has been applied in their preparation is applicable Jersey law and United Kingdom Generally Accepted Accounting Practice — Financial Reporting Standard 102 ('FRS102').

Basis for opinion

We conducted our audit in accordance with International Standards on Auditing (UK) (ISAs (UK)) and applicable law. Our responsibilities under those standards are further described in the auditor's responsibilities for the audit of the financial statements section of our report.

We are independent of the Company in accordance with the ethical requirements that are relevant to our audit of the financial statements in the UK, including the FRC's Ethical Standard as applied to listed public interest entities, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We confirm that the non-audit services prohibited by the FRC's Ethical Standard were not provided to the Company.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Conclusions relating to going concern

We are required by ISAs (UK) to report in respect of the following matters where:

- the directors' use of the going concern basis of accounting in preparation of the financial statements is not appropriate; or
- the directors have not disclosed in the financial statements any identified material uncertainties that may cast significant doubt about the Company's ability to continue to adopt the going concern basis of accounting for a period of at least twelve months from the date when the financial statements are authorised for issue.

We have nothing to report in respect of these matters.

Key audit matters

Key audit matters are those matters that, in our professional judgment, were of most significance in our audit of the financial statements of the current period and include the most significant assessed risks of material misstatement (whether or not due to fraud) that we identified. These matters included those which had the greatest effect on the overall audit strategy, the allocation of resources in the audit, and directing the efforts of the engagement team.

These matters were addressed in the context of our audit of the financial statements as a whole, and in forming our opinion thereon, and we do not provide a separate opinion on these matters.

Investment in Subsidiaries

Key audit matter description	There is a key audit matter related to the size of the Company's investments of $38.4bn (2016: $38.3bn) in Shire Pharmaceutical Holdings Ireland Limited and Shire Regenerative Medicine Inc which are disclosed in note 8.
How the scope of our audit responded to the risk	We have challenged the directors' impairment analysis and have considered the valuation of the Company's subsidiaries against other indicators of value, such as the overall market capitalisation of the Shire group.
Key observations	The disclosures associated with this matter were found to be fair and balanced and there was no indication of impairment identified from our procedures performed.

Management override of controls

Key audit matter description	There is a risk related to management being in a position to perpetrate fraud because of management's ability to manipulate accounting records and prepare fraudulent financial statements by overriding controls that otherwise appear to be operating effectively.
How the scope of our audit responded to the risk	We performed the following procedures to address management override of controls: • tested the appropriateness of, and rationale for, journal entries that had potentially fraudulent characteristics; • reviewed accounting estimates for bias including evaluating both individually and collectively the impact on the financial statements; and • evaluated the business rationale for significant transactions outside the normal course of business or that otherwise appeared unusual.
Key observations	We found management's response to the increased risk to be appropriate and no further findings have arisen as a result of our specific focus in this area.

Our application of materiality

We define materiality as the magnitude of misstatement in the financial statements that makes it probable that the economic decisions of a reasonably knowledgeable person would be changed or influenced. We use materiality both in planning the scope of our audit work and in evaluating the results of our work.

Based on our professional judgment, we determined materiality for the financial statements as a whole as follows:

Company materiality	$120 million (2016: $50 million)
Basis for determining materiality	We have reconsidered materiality in the current year, and have determined materiality for the Company to be $120 million (2016: $50 million). This represents 0.4% (2016: 0.2%) of the net assets of the Company. In addition we consider the materiality of the Company in the context of the group materiality and have capped company materiality at 48% of that of the group (2016: 33%).
Rationale for the benchmark applied	We consider net assets the key benchmark used by members of the Company in assessing financial performance.

We agreed with the Audit, Compliance & Risk Committee (the "ACR Committee") that we would report to the ACR Committee all audit differences in excess of $6 million (2016: $2.5 million), as well as differences below that threshold that, in our view, warranted reporting on qualitative grounds. We also report to the ACR Committee on disclosure matters that we identified when assessing the overall presentation of the financial statements.

An overview of the scope of our audit

Shire plc is the parent company of the Shire plc consolidated group and the activities of the Company are those of a holding company. During the year the transactional processing previously conducted in Basingstoke, UK was moved to a new Corporate Services centre in Dublin, Ireland with other key financial processes and supervisory functions moving to London, UK. The group audit team therefore worked with an audit team based in Dublin to form an integrated audit team for the parent company audit, supervised and directed by the group audit partner

Other information

The directors are responsible for the other information. The other information comprises the information included in the annual report other than the financial statements and our auditor's report thereon.

Our opinion on the financial statements does not cover the other information and we do not express any form of assurance conclusion thereon.

In connection with our audit of the financial statements, our responsibility is to read the other information and, in doing so, consider whether the other information is materially inconsistent with the financial statements or our knowledge obtained in the audit or otherwise appears to be materially misstated.

If we identify such material inconsistencies or apparent material misstatements, we are required to determine whether there is a material misstatement in the financial statements or a material misstatement of the other information. If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact.

We have nothing to report in respect of these matters.

Responsibilities of directors

As explained more fully in the 'Directors' responsibilities in the preparation of the financial statements', the directors are responsible for the preparation of the financial statements and for being satisfied that they give a true and fair view, and for such internal control as the directors determine is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, the directors are responsible for assessing the Company's ability to continue as a going concern, disclosing as applicable, matters related to going concern and using the going concern basis of accounting unless the directors either intend to liquidate the Company or to cease operations, or have no realistic alternative but to do so.

Auditor's responsibilities for the audit of the financial statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with ISAs (UK) will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

A further description of our responsibilities for the audit of the financial statements is located on the Financial Reporting Council's website at: www.frc.org.uk/auditorsresponsibilities. This description forms part of our auditor's report.

Use of our report

This report is made solely to the Company's members, as a body, in accordance with Article 113A of the Companies (Jersey) Law, 1991. Our audit work has been undertaken so that we might state to the Company's members those matters we are required to state to them in an auditor's report and for no other purpose. To the fullest extent permitted by law, we do not accept or assume responsibility to anyone other than the Company and the Company's members as a body, for our audit work, for this report, or for the opinions we have formed.

Report on other legal and regulatory requirements

Matters on which we are required to report by exception

Adequacy of explanations received and accounting records

Under the Companies (Jersey) Law 1991 we are required to report to you if, in our opinion:

- we have not received all the information and explanations we require for our audit; or
- proper accounting records have not been kept by the Company, or proper returns adequate for our audit have not been received from branches not visited by us; or
- the Company financial statements are not in agreement with the accounting records and returns.

We have nothing to report in respect of these matters.

Other matters

Auditor tenure

Following the recommendation of the ACR committee, we were appointed in 2002 to audit the financial statements for the year ended December 31, 2002 and subsequent financial periods. The period of total uninterrupted engagement including previous renewals and reappointments of the firm is 15 years, covering the years ended December 31, 2002 to December 31, 2017.

Consistency of the audit report with the additional report to the ACR Committee

Our audit opinion is consistent with the additional report to the ACR Committee we are required to provide in accordance with ISAs (UK).

Opinion on group financial statements

We have reported separately on the group financial statements of Shire plc for the year ended 31 December 2017. That report includes details of the group key audit matters, how we applied the concept of materiality in planning and performing our group audit, and an overview of the scope of our group audit.

John Adam
For and on behalf of Deloitte LLP
Recognised Auditor
London, United Kingdom
16 February 2018

Statement of comprehensive income

For the year ended December 31, 2017

	Note	2017 $'M	2016 $'M
Turnover		–	–
Administrative expenses		(30.8)	(58.8)
Operating loss		(30.8)	(58.8)
Interest payable and similar charges	2	(130.4)	(114.5)
Loss on ordinary activities before taxation	3	(161.2)	(173.3)
Taxation	6	–	–
Loss on ordinary activities after taxation and loss for the year		(161.2)	(173.3)

Statement of financial position

As at December 31, 2017

	Note	2017 $'M	2016 $'M
Fixed assets			
Investments	8	**38,538.0**	38,361.5
Current assets			
Debtors	9	**41.6**	246.7
Current liabilities			
Creditors: amounts falling due within one year	10	**(3,395.9)**	(6,318.6)
Net current liabilities		**(3,354.3)**	(6,071.9)
Total assets less current liabilities		**35,183.7**	32,289.6
Creditors: amounts falling due after one year	11	**(2,868.9)**	–
Provisions for liabilities and charges	13	**(637.2)**	(623.5)
Net assets		**31,677.6**	31,666.1
Capital and reserves			
Called-up share capital	14	**81.6**	81.3
Share premium account		**26,564.8**	26,531.5
Share-based payments		**1,095.8**	919.3
Own shares held	14	**(224.7)**	(243.5)
Profit and loss account		**4,160.1**	4,377.5
Total equity		**31,677.6**	31,666.1

The financial statements on pages 206 to 216 were approved by the Board of Directors and authorised for issue on February 16, 2018 and are signed on its behalf by:

Flemming Ornskov, MD, MPH
Chief Executive Officer
February 16, 2018

Statement of changes in equity

For the year ended December 31, 2017

	Note	Share capital $'M	Share premium $'M	Share-based payments $'M	Own shares held $'M	Profit & loss account $'M	Total $'M
Balance at January 1, 2017		**81.3**	**26,531.5**	**919.3**	**(243.5)**	**4,377.5**	**31,666.1**
Loss for the year and total comprehensive income		**–**	**–**	**–**	**–**	**(161.2)**	**(161.2)**
Transactions with owners in their capacity as owners:							
Dividends	7	**–**	**–**	**–**	**–**	**(35.8)**	**(35.8)**
Issue of shares	14	**0.3**	**33.3**	**–**	**–**	**–**	**33.6**
Transfer of Treasury Shares for new share issue		**–**	**–**	**–**	**18.8**	**(18.8)**	**–**
Share-based payments		**–**	**–**	**–**	**–**	**(1.6)**	**(1.6)**
Capital contribution relating to share based payments		**–**	**–**	**176.5**	**–**	**–**	**176.5**
Total transactions with owners in their capacity as owners		**0.3**	**33.3**	**176.5**	**18.8**	**(56.2)**	**172.7**
Balance at December 31, 2017		**81.6**	**26,564.8**	**1,095.8**	**(224.7)**	**4,160.1**	**31,677.6**

	Note	Share capital $'M	Share premium $'M	Share-based payments $'M	Own shares held $'M	Profit & loss account $'M	Total $'M
Balance at January 1, 2016		58.9	7,088.1	608.2	(260.5)	4,581.1	12,075.8
Loss for the year and total comprehensive income		–	–	–	–	(173.3)	(173.3)
Transactions with owners in their capacity as owners:							
Dividends	7	–	–	–	–	(20.7)	(20.7)
Issue of shares	14	22.4	19,443.4	–	–	–	19,465.8
Transfer of Treasury Shares for new share issue		–	–	–	17.0	(17.0)	–
Share-based payments		–	–	–	–	7.4	7.4
Capital contribution relating to share-based payments		–	–	311.1	–	–	311.1
Total transactions with owners in their capacity as owners		22.4	19,443.4	311.1	17.0	(30.3)	19,763.6
Balance at December 31, 2016		81.3	26,531.5	919.3	(243.5)	4,377.5	31,666.1

Accounting policies

For the year ended December 31, 2017

General information

Shire plc (the "Company") is a public company limited by shares, incorporated in Jersey and tax resident in Ireland.

The address of the Company's registered office is 22 Grenville Street, St Helier, Jersey, JE4 8PX, Channel Islands.

The address of the Company's principal place of business is Block 2, Miesian Plaza, 50-58 Baggot Street Lower, Dublin 2, Republic of Ireland.

The Company is the ultimate parent of the Group and its principal activity is that of a holding company.

Basis of accounting

These financial statements have been prepared in accordance with FRS 102 "The Financial Reporting Standard applicable in the UK and Republic of Ireland" (FRS 102) and the requirements of the Companies (Jersey) Law 1991, and under the historical cost convention.

Monetary amounts in these financial statements are rounded to the nearest whole $100,000, except where otherwise indicated.

Reduced disclosures

In accordance with FRS 102, the Company has taken advantage of the exemptions from the following disclosure requirements:

- Section 4 'Statement of Financial Position' — Reconciliation of the opening and closing number of shares.
- Section 7 'Statement of Cash Flows' — Presentation of a Statement of Cash Flow and related notes and disclosures.
- Section 11 'Basic Financial Instruments' & Section 12 'Other Financial Instrument Issues' — Carrying amounts, interest income/expense and net gains/losses for each category of financial instrument; basis of determining fair values; details of collateral, loan defaults or breaches, details of hedges, hedging fair value changes recognised in profit or loss and in other comprehensive income.
- Section 26 'Share-based Payment' — Share-based payment expense charged to profit or loss, reconciliation of opening and closing number and weighted average exercise price of share options, how the fair value of options granted was measured, measurement and carrying amount of liabilities for cash-settled share-based payments, explanation of modifications to arrangements.
- Section 33 'Related Party Disclosures' — Compensation for key management personnel.

The financial statements of the Company are consolidated in the financial statements of Shire plc. The consolidated financial statements of Shire plc are available from www.shire.com.

Consolidated financial statements

Consolidated accounts prepared in conformity with accounting principles generally accepted in the United States of America (U.S. GAAP), in which the financial results and cash flow statement of the Company and its subsidiaries are included, can be found in the Shire Annual Report. Consequently, these financial statements present the financial position and financial performance of the Company as a separate entity.

These financial statements have been prepared in accordance with the Company's accounting policies described below, which have been applied consistently throughout the current and preceding year and have been approved by the Board.

The financial statements of the Company are consolidated in the financial statements of Shire plc. The consolidated financial statements of Shire plc are available from its registered office at 22 Grenville Street, St Helier, Jersey, JE4 8PX, Channel Islands or on its website, www.shire.com.

Going concern

The Group's Consolidated Balance Sheets included $472.4 million of Cash and cash equivalents as of December 31, 2017.

The Group has a revolving credit facility (RCF) of $2.1 billion which matures in 2021, $810.0 million of which was utilized as of December 31, 2017. The RCF incorporates a $250 million U.S. dollar and Euro swingline facility operating as a sub-limit thereof.

In connection with the acquisition of Dyax, the Group entered into a $5.6 billion amortizing term loan facility in November 2015. As of December 31, 2017, $1.2 billion of this term loan facility was outstanding. The facility matures on November 2, 2018.

In connection with the acquisition of Baxalta, the Group assumed $5.0 billion of unsecured senior notes previously issued by Baxalta, of which $750.0 million is due within the next twelve months and issued $12.1 billion of unsecured senior notes in September 2016, of which none are due for repayment in the next twelve months.

The details of these debt agreements are presented in Note 18, Borrowings and Capital Leases, to the Group's consolidated financial statements.

In addition, the Group also has access to certain short-term uncommitted lines of credit which are available to utilize from time to time to provide short-term cash management flexibility. As of December 31, 2017, these lines of credit were not utilized.

The Company may also engage in financing activities from time to time, including accessing the debt or equity capital markets.

The Directors have a reasonable expectation that the Company has adequate resources to continue in operational existence for the foreseeable future. Accordingly the Directors continue to adopt the going concern basis of accounting in preparing the report and financial statements.

Functional and presentational currencies

The financial statements are presented in U.S. dollars which is also the functional currency of the Company.

Foreign currencies

Transactions in currencies other than the functional currency (foreign currencies) are initially recorded at the exchange rate ruling on the date of the transaction.

Monetary assets and liabilities denominated in foreign currencies are translated at the rate of exchange ruling at the reporting date. Non-monetary assets and liabilities denominated in foreign currencies are translated at the rate ruling at the date of the transaction or, if the asset or liability is measured at fair value, the rate when that fair value was determined.

All translation differences are taken to profit or loss, except to the extent that they relate to gains or losses on non-monetary items recognised in other comprehensive income, when the related translation gain or loss is also recognised in other comprehensive income.

Other income

Interest income

Interest income is accrued on a time-apportioned basis, by reference to the principal outstanding at the effective interest rate.

Dividend income

Dividend income from investments in subsidiaries is recognised when the Company's right to receive payment is established.

Borrowing costs

Finance costs relating to debt issued are recorded as a deferred charge and amortized to the income statement over the period to the earliest redemption date of the debt, using the effective interest rate method. On extinguishment of the related debt, any unamortized deferred financing costs are written off and charged to interest expense in the consolidated income statement.

Fixed asset investments

Interests in subsidiaries, associates and jointly controlled entities are initially measured at cost and subsequently measured at cost less any accumulated impairment losses.

Interests in subsidiaries, associates and jointly controlled entities are assessed for impairment at each reporting date. Any impairment losses or reversals of impairment losses are recognised immediately in profit or loss.

Taxation

The tax expense represents the sum of the current tax expense and deferred tax expense. Current tax assets are recognised when tax paid exceeds the tax payable.

Current tax is based on taxable profit for the year. Taxable profit differs from total comprehensive income because it excludes items of income or expense that are taxable or deductible in other periods. Current tax assets and liabilities are measured using tax rates that have been enacted or substantively enacted by the reporting date.

Deferred tax is calculated at the tax rates that are expected to apply to the period when the asset is realised or the liability is settled based on tax rates that have been enacted or substantively enacted by the reporting date. Deferred tax is not discounted.

Deferred tax liabilities are recognised in respect of all timing differences that exist at the reporting date. Timing differences are differences between taxable profits and total comprehensive income that arise from the inclusion of income and expenses in tax assessments in different periods from their recognition in the financial statements. Deferred tax assets are recognised only to the extent that it is probable that they will be recovered by the reversal of deferred tax liabilities or other future taxable profits.

Deferred tax is recognised on income or expenses from subsidiaries, associates, branches and interests in jointly controlled entities, that will be assessed to or allow for tax in a future period except where the Company is able to control the reversal of the timing difference and it is probable that the timing difference will not reverse in the foreseeable future.

Current and deferred tax is charged or credited in profit or loss, except when it relates to items charged or credited to other comprehensive income or equity, when the tax follows the transaction or event it relates to and is also charged or credited to other comprehensive income, or equity.

Current tax assets and current tax liabilities and deferred tax assets and deferred tax liabilities are offset, if and only if, there is a legally enforceable right to set off the amounts and the entity intends either to settle on a net basis or to realise the asset and settle the liability simultaneously.

Employee benefits

The costs of short-term employee benefits are recognised as a liability and an expense.

Retirement benefits

The Company contributes to personal defined contribution pension plans of employees. Contributions are charged to the income statement as they become payable. Differences between contributions payable in the year and contributions actually paid are shown as either accruals or prepayments in the balance sheet.

Financial instruments

The Company has elected to apply the provisions of Section 11 'Basic Financial Instruments' and Section 12 'Other Financial Instruments Issues' of FRS 102, in full, to all of its financial instruments.

Financial assets and financial liabilities are recognised when the Company becomes a party to the contractual provisions of the instrument, and are offset only when the Company currently has a legally enforceable right to set off the recognised amounts and intends either to settle on a net basis, or to realise the asset and settle the liability simultaneously.

Financial assets

Trade debtors

Trade debtors which are receivable within one year and which do not constitute a financing transaction are initially measured at the transaction price. Trade debtors are subsequently measured at amortised cost, being the transaction price less any amounts settled and any impairment losses.

Where the arrangement with a trade debtor constitutes a financing transaction, the debtor is initially and subsequently measured at the present value of future payments discounted at a market rate of interest for a similar debt instrument.

A provision for impairment of trade debtors is established when there is objective evidence that the amounts due will not be collected according to the original terms of the contract. Impairment losses are recognised in profit or loss for the excess of the carrying value of the trade debtor over the present value of the future cash flows discounted using the original effective interest rate. Subsequent reversals of an impairment loss that objectively relate to an event occurring after the impairment loss was recognised, are recognised immediately in profit or loss.

Financial liabilities and equity
Financial instruments are classified as liabilities and equity instruments according to the substance of the contractual arrangements entered into. An equity instrument is any contract that evidences a residual interest in the assets of the Company after deducting all of its liabilities.

Equity instruments
Financial instruments classified as equity instruments are recorded at the fair value of the cash or other resources received or receivable, net of direct costs of issuing the equity instruments.

Own shares
The fair value of consideration given for shares repurchased by the Company is deducted from equity.

Trade creditors
Trade creditors payable within one year that do not constitute a financing transaction are initially measured at the transaction price and subsequently measured at amortised cost, being the transaction price less any amounts settled.

Where the arrangement with a trade creditor constitutes a financing transaction, the creditor is initially and subsequently measured at the present value of future payments discounted at a market rate of interest for a similar instrument.

Borrowings
Borrowings are initially recognised at the transaction price, including transaction costs, and subsequently measured at amortised cost using the effective interest method. Interest expense is recognised on the basis of the effective interest method and is included in interest payable and other similar charges.

Commitments to receive a loan are measured at cost less impairment.

Derecognition of financial assets and liabilities
A financial asset is derecognised only when the contractual rights to cash flows expire or are settled, or substantially all the risks and rewards of ownership are transferred to another party, or if some significant risks and rewards of ownership are retained but control of the asset has transferred to another party that is able to sell the asset in its entirety to an unrelated third party. A financial liability (or part thereof) is derecognised when the obligation specified in the contract is discharged, cancelled or expires.

Share based payments
The Company grants share options (equity-settled share-based payments) to certain employees.

Equity-settled share-based payments are measured at fair value at the date of grant by reference to the fair value of the equity instruments granted. Options and performance share awards granted without market conditions are valued using the Black-Scholes option-pricing model. Options and performance share awards granted with market conditions are valued using a binomial model.

The Company participates in a share-based payment arrangement granted to its employees and employees of its subsidiaries. The Company has elected to recognise and measure its share-based payment expense on the basis of a reasonable allocation of the expense for the Group.

The cost for awards granted to the Company's subsidiaries' employees represents additional capital contributions by the Company in its subsidiaries. An additional investment in subsidiaries has been recorded in respect of those awards granted to the Company's subsidiaries' employees, with a corresponding increase in the Company's shareholders' equity. The additional capital contribution is based on the fair value at the grant date of the awards issued. This accounting treatment applies as the parent has granted the share option rather than being subsidiary granting an option in the parent's equity.

Dividends
Dividends are recognised as liabilities once they are no longer at the discretion of the Company.

Notes to the financial statements

For the year ended December 31, 2017

1. Critical accounting estimates and areas of judgment

Estimates and judgments are continually evaluated and are based on historical experience and other factors, including expectations of future events that are believed to be reasonable under the circumstances.

Critical accounting estimates and areas of judgment

The Company makes estimates and assumptions concerning the future. The resulting accounting estimates and assumptions will, by definition, seldom equal the related actual results. The estimates and assumptions that have a significant risk of causing a material adjustment to the carrying amounts of assets and liabilities within the next financial year are discussed below:

The only critical accounting judgments which the Directors believe are relevant to these financial statements are those relating to the treatment of share based payments in the company. Please see the accounting policy above for treatment of the share based payments in these financial statements.

In line with the accounting policies, the Company assesses its subsidiaries for impairment at each reporting date. The assessment of the value of each investment requires estimates in respect of the future cash flows and an appropriate discount rate. The key inputs to the value in use calculations are the discount rate and the future earnings growth.

2. Interest payable and similar charges

	2017 $'M	2016 $'M
Interest arising on bank loans	**12.6**	18.3
Interest arising on loans from group undertakings	**104.1**	78.1
Unwinding of discount on provisions (note 13)	**13.7**	18.1
	130.4	114.5

3. Loss on ordinary activities before taxation

Loss on ordinary activities is stated after (crediting)/charging:

	2017 $'M	2016 $'M
Share based payments	**(1.6)**	7.4
Foreign exchange losses	**0.3**	–

Fees payable to Deloitte LLP and its associates in respect of both audit and non-audit services are borne by a subsidiary undertaking.

4. Segmental reporting

The Company, in its capacity as a holding company, operates as one operating segment. Therefore, there is no additional disclosure to make as required by FRS 102 paragraph 1.5.

5. Employees

The average monthly number of persons (including directors) employed by the Company during the year was:

	2017 No	2016 No
Directors	**2**	2

There were no staff other than the Directors.

Directors

In respect of the Directors of Shire plc:

	2017 $'M	2016 $'M
Wages and salaries	**3.3**	4.0
Social security costs	**0.1**	0.1
Defined contribution pension costs	**0.1**	0.1
Employee share schemes	**(1.6)**	7.4
Directors' fees	**2.7**	2.4
	4.6	14.0

	2017 No	2016 No
The number of Directors to whom retirement benefits are accruing under money purchase schemes was:	**2**	2
The number of Directors who exercised share options during the year was:	**2**	2
The number of Directors who received shares under long term incentive schemes was:	**2**	2

Directors' emoluments disclosed above include the following payments made to the highest paid Director:

	2017 $'M	2016 $'M
Remuneration	**2.8**	3.6
Company contributions to money purchase pension schemes	**0.1**	0.1
Share based payments	**(1.4)**	6.1
	1.5	9.8

6. Taxation

There was $nil corporation tax charged for the year ended December 31, 2017 (2016: $nil).

Factors affecting the tax charge for the year.

The tax assessed for the year is lower than the standard rate of corporation tax in Ireland of 25% (2016: 25%). The differences are explained below:

	2017 $'M	2016 $'M
Company losses on ordinary activities before tax	**(161.2)**	(173.3)
Company loss on ordinary activities multiplied by the standard rate of corporation tax of 25 percent (2016: 25 percent):	**(40.3)**	(43.3)
Effects of:		
Expenses not deductible for tax purposes	**33.8**	35.3
Group relief surrendered	**6.5**	8.0
	–	–

The Company had an unrecognized deferred tax asset of $21.8 million (2016: $21.8 million) in respect of losses as at December 31, 2017.

7. Dividends

	2017 $'M	2016 $'M
2017 First interim dividend — 5.08 cents (3.85 pence) per Ordinary share, equivalent to 15.27 cents per ADS, paid in October 2017	46.5	–
2016 Second interim dividend — 25.70 cents (20.64 pence) per Ordinary share, equivalent to 77.10 cents per ADS, paid in April 2017	234.8	–
2016 First interim dividend — 4.63 cents (3.51 pence) per Ordinary share, equivalent to 13.89 cents per ADS, paid in October 2016	–	41.1
2015 Second interim dividend — 22.16 cents (15.32 pence) per Ordinary share, equivalent to 66.48 cents per ADS, paid in April 2016	–	130.2
	281.3	171.3

Of the above amounts, the Company paid dividends amounting to $35.8 million in the year (2016: $20.7 million). In accordance with IAS arrangements, the Company directed Shire Biopharmaceuticals Holdings to pay dividends totalling $245.5 million (2016: $150.6 million) to those shareholders who choose to receive their dividends from a company tax resident in the UK.

The Board has resolved to pay a second interim dividend of 29.79 cents (21.58 pence) per Ordinary Share equivalent to 89.37 cents per ADS for the six months to December 31, 2017.

8. Fixed asset investments

	Subsidiary undertakings $'M
Cost	
As at January 1, 2017	38,361.5
Additions	176.5
As at December 31, 2017	38,538.0
Net book value	
As at December 31, 2017	38,538.0
As at December 31, 2016	38,361.5

Subsidiaries

The Company directly owned 100% of the issued ordinary share capital of the following companies at December 31, 2017:

Company	Principal activities	Country of incorporation
Shire Pharmaceutical Holdings Ireland Limited	Holding company	Republic of Ireland
Shire Regenerative Medicine LLC	Holding company	United States of America

Details of the Company's indirect subsidiaries can be found in Note 30 of the Shire Annual Report in the consolidated accounts for the year ending December 31, 2017.

9. Debtors

	2017 $'M	2016 $'M
Amounts due from Group undertakings	41.6	242.0
Other debtors	–	4.7
	41.6	246.7

The amounts due from Group undertakings are primarily U.S. dollar denominated. At December 31, 2017 an amount of $10.9 million (2016: $1.0 million) bore interest at floating rates. The remaining balance is non-interest bearing. All amounts due from Group undertakings are repayable on demand.

10. Creditors: amounts falling due within one year

	2017 $'M	2016 $'M
Bank loan (note 12)	–	450.0
Amounts owed to Group undertakings	3,395.4	5,867.4
Accrued interest	–	0.7
Other creditors	0.5	0.5
	3,395.9	6,318.6

The amounts due to Group undertakings are primarily unsecured, U.S. dollar denominated, repayable on demand and non interest bearing (2016: at floating rates of interest).

11. Creditors: amounts falling due after one year

	2017 $'M	2016 $'M
Amounts owed to Group undertakings	2,868.9	–

The amounts due to Group undertakings are primarily unsecured, U.S. Dollar denominated, bear interest at floating rates of interest and are repayable on August 8, 2020.

12. Borrowings

	2017 $'M	2016 $'M
Bank loan	–	450.0

At December 31, 2017 $nil (2016: $450 million) of the RCF was utilised by the Company.

Borrowings under the RCF are denominated in U.S. dollars and bear interest at a floating rate of interest. Shire Acquisitions Ireland Investments DAC, a Group undertaking, became a borrower under the RCF during 2017.

13. Provisions for liabilities

	Dyax Corp $'000	Total $'000
As at January 1, 2017	623.5	623.5
Unwinding of discount on provisions (note 2)	13.7	13.7
As at December 31, 2017	637.2	637.2

Dyax Corp

On January 22, 2016 the Group purchased Dyax Corp. As part of this agreement Shire plc is liable for total undiscounted future potential liabilities of $645.9 million (2016: $645.9 million) upon approval by the FDA of SHP643 for HAE.

At the reporting date the present value of this liability recognised above is $637.2 million (2016: $623.5 million). It is estimated that this provision will be settled in less than one year of the reporting date.

14. Share capital and reserves

Share capital	2017 No	2017 $'M	2016 No	2016 $'M
Allotted, issued and fully paid				
Ordinary Shares of 5p each	**917,140,094**	**81.6**	912,173,612	81.3
Subscriber Ordinary Shares of £1 each	**2**	**–**	2	–
		81.6		81.3

As at December 31, 2017, the Company's authorised ordinary share capital comprised 1,500,000,000 (2016: 1,500,000,000) Ordinary shares of 5p each and 2 (2016: 2) Subscriber Ordinary shares of £1 each.

Ordinary share rights
The Company's Ordinary shares, which carry no right to fixed income, each carry the right to one vote at general meetings of the Company.

As at December 31, 2017, the Company's issued ordinary share capital comprised 909,782,811 (2016: 904,202,151) Ordinary shares of 5p each with voting rights and a further 7,357,283 (2016: 7,971,461) Ordinary shares held in treasury. Therefore the total number of voting rights in the Company at December 31, 2017 was 909,782,811 (2016: 904,202,151).

Share issues
During the year 4,966,482 (2016: 5,884,398) Ordinary shares of 5p each were issued as part of the Shire Group's share based payment scheme.

Share option scheme
Further details in respect of the Ordinary shares reserved for issue under the Company's share option plan can be found in Note 27 of the Shire Annual Report.

Share premium
The share premium reserve represents consideration received for shares issued above their nominal value net of transaction costs.

Purchase of own shares
The treasury shares reserve represents the cost of shares in the Company purchased in the market and held by the Company for the purpose of returning funds to shareholders. The number of Ordinary shares of 5p each held by the Company as at 31 December 2017 was 7,357,283 with a purchase value of $224.7 million (2016: 7,971,461 with a purchase value of $243.5 million) including transaction costs.

Share based payment reserve
The cumulative share-based payment expense.

Retained earnings
Cumulative profit and loss net of distributions to owners.

15. Capital commitments and other contractual obligations

SAIIDAC Notes
On September 23, 2016, SAIIDAC, issued senior notes with a total aggregate principal value of $12.1 billion (SAIIDAC Notes), guaranteed by Shire plc and by Baxalta. SAIIDAC used the net proceeds to fully repay amounts outstanding under the January 2016 Facilities Agreement (discussed below), which was used to finance the cash consideration payable related to the Company's acquisition of Baxalta.

Baxalta Notes
Shire plc guaranteed senior notes issued by Baxalta with a total aggregate principal amount of $5.0 billion in connection with the Baxalta acquisition (Baxalta Notes).

Revolving Credit Facilities Agreement
On December 12, 2014, Shire entered into a $2.1 billion revolving credit facilities agreement with a number of financial institutions. Shire plc and SAIIDAC are able to borrow under the RCF; Shire plc, SAIIDAC and Baxalta are guarantors under the RCF. As of December 31, 2017 SAIIDAC utilized $810.0 million of the RCF.

The RCF, which terminates on December 12, 2021, may be applied towards financing the general corporate purposes of Shire. The RCF incorporates a $250 million U.S. dollar and Euro swingline facility operating as a sub-limit thereof.

Interest on any loans made under the RCF is payable on the last day of each interest period, which may be one week or one, two, three or six months at the election of Shire, or as otherwise agreed with the lenders. The interest rate for the RCF is: LIBOR (or, in relation to any revolving loan in Euro, EURIBOR); plus 0.30% per annum subject to change depending upon (i) the prevailing ratio of Net Debt to EBITDA (each as defined in the RCF) in respect of the most recently completed financial year or financial half year and (ii) the occurrence and continuation of an event of default in respect of the financial covenants or the failure to provide a compliance certificate.

Shire also shall pay (i) a commitment fee equal to 35% of the applicable margin on available commitments under the RCF for the availability period applicable thereto and (ii) a utilization fee equal to (a) 0.10% per year of the aggregate of all outstanding loans up to an aggregate base currency amount equal to $700.0 million, (b) 0.15% per year of the amount by which the aggregate base currency amount of all outstanding loans exceeds $700.0 million but is equal to or less than $1,400.0 million and (c) 0.30% per year of the amount by which the aggregate base currency amount of all outstanding loans exceeds $1,400.0 million.

The RCF includes customary representations and warranties, covenants and events of default, including requirements that Shire's (i) ratio of Net Debt to EBITDA in respect of the most recently-ended 12-month relevant period (each as defined in the RCF) must not, at any time, exceed 3.5:1 except that, following an acquisition fulfilling certain criteria, Shire may elect to increase this ratio to (a) 5.5:1 for the relevant period in which the acquisition was completed (b) 5.0:1 in respect of the first relevant period following the relevant period in which the acquisition was completed and (c) 4.5:1 in respect of the second relevant period following the relevant period in which the acquisition was completed and (ii) ratio of EBITDA to Net Interest for the most recently-ended 12-month relevant period (each as defined in the RCF) must not be less than 4.0:1. Shire elected to increase the Net Debt to EBITDA ratio in connection with the period ending June 30, 2016, following the completion of the acquisition of Baxalta during the period. The final relevant period ended June 2017.

Revolving Credit Facilities Agreement (continued)
The RCF restricts, subject to certain exceptions, Shire's ability to incur additional financial indebtedness, grant security over its assets or provide loans/grant credit. Further, any lender may require mandatory prepayment of its participation if there is a change of control of Shire, subject to certain exceptions for schemes of arrangement and analogous schemes.

Events of default under the RCF include, subject to customary grace periods and materiality thresholds: (i) non-payment of any amounts due under the finance documents (as defined in the RCF), (ii) failure to satisfy any financial covenants, (iii) material misrepresentation in any of the finance documents, (iv) failure to pay, or certain other defaults, under other financial indebtedness, (v) certain insolvency events or proceedings, (vi) material adverse changes in the business, operations, assets or financial condition of Shire as a whole, (vii) if it becomes unlawful for Shire (or any successor parent company) or any of their respective subsidiaries that are parties to the RCF to perform their obligations thereunder or (viii) if Shire (or any successor parent company) or any subsidiary thereof which is a party to the RCF repudiates such agreement or other finance document, among others.

November 2015 Facilities Agreement
On November 2, 2015, Shire entered into a $5.6 billion facilities agreement with various financial institutions (November 2015 Facilities Agreement). Shire plc, SAIIDAC and Baxalta are guarantors under the November 2015 Facilities Agreement. SAIIDAC is the borrower under the November 2015 Facilities Agreement. The November 2015 Facilities Agreement comprises three credit facilities: (i) a $1.0 billion term loan facility of which, following the exercise of the one year extension option in the amount of $400.0 million, $600.0 million matured and was repaid on November 2, 2016 and $400.0 million was repaid on July 31, 2017 (November 2015 Facility A), (ii) a $2.2 billion amortizing term loan facility which was fully paid during 2017 (November 2015 Facility B) and (iii) a $2.4 billion amortizing term loan facility which matures on November 2, 2018 (November 2015 Facility C), of which $1.2 billion remains outstanding as of December 31, 2017.

Interest on any loans made under the November 2015 Facilities Agreement is payable on the last day of each interest period, which may be one week or one, two, three or six months, or as otherwise agreed with the lenders. The interest rate applicable is LIBOR plus, in the case of the November 2015 Facility A, 0.55% per annum, in the case of the November 2015 Facility B, 0.65% per annum and, in the case of the November 2015 Facility C, 0.75% per annum, in each case subject to change depending on (i) the prevailing ratio of Net Debt to EBITDA (each as defined in the November 2015 Facilities Agreement) in respect of the most recently completed financial year or financial half year and (ii) the occurrence and continuation of an event of default in respect of the financial covenants or failure to provide a compliance certificate.

The November 2015 Facilities Agreement includes customary representations and warranties, covenants and events of default, including requirements that Shire's (i) ratio of Net Debt to EBITDA in respect of the most recently ended 12-month relevant period, (each as defined in the November 2015 Facilities Agreement), must not, at any time, exceed 3.5:1, except that following an acquisition fulfilling certain criteria, Shire may elect to increase this ratio to (a) 5.5:1 for the relevant period in which the acquisition was completed, (b) 5.0:1 in respect of the first relevant period following the relevant period in which the acquisition was completed, and (c) 4.5:1 in respect of the second relevant period following the relevant period in which the acquisition was completed and (ii) ratio of EBITDA to Net Interest in respect of the most recently ended 12 month relevant period, (each as defined in the November 2015 Facilities Agreement), must not be less than 4.0:1. Shire elected to increase the Net Debt to EBITDA ratio in connection with the period ending June 30, 2016, following the completion of the acquisition of Baxalta during the period. The final relevant period ended June 2017.

The November 2015 Facilities Agreement restricts, subject to certain exceptions, Shire's ability to incur additional financial indebtedness, grant security over its assets or provide loans/grant credit. Further, any lender may require mandatory prepayment of its participation if there is a change of control of Shire, subject to certain exceptions for schemes of arrangement and analogous schemes.

Events of default under the November 2015 Facilities Agreement include, subject to customary grace periods and materiality thresholds: (i) non-payment of any amounts due under the finance documents (as defined in the November 2015 Facilities Agreement), (ii) failure to satisfy any financial covenants, (iii) material misrepresentation in any of the finance documents, (iv) failure to pay, or certain other defaults, under other financial indebtedness, (v) certain insolvency events or proceedings, (vi) material adverse changes in the business, operations, assets or financial condition of Shire as a whole, (vii) if it becomes unlawful for Shire (or any successor parent company) or any of their respective subsidiaries that are parties to the November 2015 Facilities Agreement to perform their obligations thereunder or (viii) if Shire (or any successor parent company) or any subsidiary thereof which is a party to the November 2015 Facilities Agreement repudiates the November 2015 Facilities Agreement or any other finance document, among others.

January 2016 Facilities Agreement
On January 11, 2016, Shire (as original guarantor and original borrower), entered into an $18.0 billion bridge facilities agreement with various financial institutions (the "January 2016 Facilities Agreement"). The January 2016 Facilities Agreement comprised two credit facilities: (i) a $13.0 billion term loan facility originally maturing on January 11, 2017 (January 2016 Facility A) and (ii) a $5.0 billion revolving loan facility originally maturing on January 11, 2017 (January 2016 Facility B). On April 1, 2016, SAIIDAC became an additional borrower and additional guarantor under the January 2016 Facilities Agreement. The January 2016 Facility A was fully repaid in September 2016. The January 2016 Facility B was canceled effective July 11, 2016, in accordance with its terms.

16. Retirement benefits
The Company operates a defined contribution pension scheme for all qualifying employees in the United Kingdom. The assets of the scheme are held separately from those of the Company in an independently administered fund. The contributions payable by the Company charged to profit or loss amounted to $0.1 million (2016: $0.1 million). Contributions totalling $nil (2016: $nil) were payable to the fund at the year end and are included in creditors.

17. Share based payments

Group share based payment plans

The Company participates in group share-based payment plans, and recognises and measures its share-based payment expense on the basis of a reasonable allocation of the expense recognised for the Group in accordance with paragraph 26.16 of FRS 102. The allocation is based on the number of employees benefiting from the share-based payment plan employed by each group entity. During the year there were no individuals directly employed by the Company and the Directors of the Company referenced in note 5 are contractual employees of a Group undertaking.

Certain employees are contractually employed by other group entities with elements of their payroll costs, including the share based payment charge relating to those employees, recharged to Shire plc on the basis of the fair value of the work performed. Share options relating to those employees are not included in the disclosures given below relating to each of the schemes currently in use.

Stock-settled SARs and stock options

SARs under LTIP and PSP (Part A)

Stock-settled share appreciation rights (SARs), granted to Executive Directors, are exercisable subject to service and performance criteria.

In respect of any award made to Executive Directors under the LTIP, performance criteria are based on Product Sales and Non-GAAP EBITDA targets, with a Non-GAAP Adjusted ROIC underpin. In respect of any award made to Executive Directors under the PSP (Part A), performance criteria are based on growth in Non-GAAP Adjusted ROIC and Non-GAAP EBITDA. These performance measures are an important measure of the Company's ability to meet the strategic objective to grow value for all of its stakeholders.

Awards granted to employees below Executive Director level are not subject to performance conditions and are only subject to service conditions.

Once awards have vested, participants will have until the seventh anniversary of the date of grant to exercise their awards.

As at December 31, 2017 there were no open options under this plan.

UK/Irish Sharesave Plans (Sharesave Plans)

Options granted under the Sharesave Plans are granted with an exercise price equal to 80% and 75% of the mid-market price on the day before invitations are issued to UK and Ireland employees, respectively. Employees may enter into three or five year savings contracts. No performance conditions apply.

As at December 31, 2017 there were no open options under this plan.

Shire Global Employee Stock Purchase Plan (Stock Purchase Plan)

Under the Stock Purchase Plan, options are granted with an exercise price equal to 85% of the fair market value of a share on the enrollment date (the first day of the offering period) or the exercise date (the last day of the offering period), whichever is the lower.

Employees agree to save for a period up to 12 months. No performance conditions apply.

As at December 31, 2017 there were no open options under this plan.

RSUs and PSUs under LTIP and PSAs under PSP (Part B)

PSUs and PSAs granted to Executive Directors and PSUs granted to certain senior employees are exercisable subject to certain performance and service criteria.

RSUs and PSAs granted to employees below Executive Director are not subject to performance criteria and are only subject to service conditions.

The performance criteria for PSUs granted under the LTIP is based on Product sales and Non-GAAP EBITDA targets, typically with a Non-GAAP Adjusted ROIC underpin. The performance criteria for PSAs under the PSP (Part B) is based on growth in Non-GAAP Adjusted ROIC and Non-GAAP EBITDA.

As at December 31, 2017 there were no open options under this plan.

Replacement Awards Issued to Baxalta Employees

In connection with the acquisition of Baxalta and pursuant to the merger agreement associated with the acquisition, outstanding Baxalta equity awards held by Baxalta employees or employees of Baxter were cancelled and exchanged for Shire equity awards. The outstanding Baxalta equity awards consisted primarily of stock options and RSUs and hence were replaced with Shire's stock options and RSUs. The replacement Shire awards generally have the same terms and conditions (including vesting) as the former Baxalta awards for which they were exchanged.

As at December 31, 2017 there were no open options under this plan.

The Company estimates the fair value of its share-based awards using a Black-Scholes valuation model. Key input assumptions used to estimate the fair value of share-based awards include the grant price of the award, the expected stock-based award term, volatility of the Company's share price, the risk-free rate and the Company's dividend yield. The Company believes that the valuation technique and the approach utilized to develop the underlying assumptions are appropriate in estimating the fair values of Shire's stock-based awards. Estimates of fair value are not intended to predict actual future events or the value ultimately realized by employees who receive equity awards, and subsequent events are not indicative of the reasonableness of the original estimates of fair value made by the Company.

18. Related party transactions

The Company has taken advantage of the exemption in Section 33 of FRS 102 to not disclose transactions with wholly owned Group companies.

The Directors consider that they are the only key management personnel of the company and details in respect of their remuneration is given in Note 5 to these financial statements.

Trademarks

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