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**Financial Information**

Takeda’s financial statements are prepared in accordance with International Financial Reporting Standards (“IFRS”).

The revenue of Shire plc (“Shire”), which were previously, presented in accordance with accounting principles generally accepted in the United States (“U.S. GAAP”), have been converted to IFRS, without material difference.

The Shire acquisition closed on January 8, 2019, and our consolidated results for the fiscal year ended March 31, 2019 include Shire’s results from January 9, 2019 to March 31, 2019. References to “Legacy Shire” businesses are to our businesses held prior to our acquisition of Shire. References to “Legacy Takeda” businesses are to these businesses acquired through the Shire acquisition.

This presentation includes certain pro forma information giving effect to the Shire acquisition as if it had occurred on April 1, 2016. This pro forma information has not been prepared in accordance with Article 11 of Regulation S-X. This pro forma information is presented for illustrative purposes and is based on certain assumptions and judgments based on information available to us as of the date hereof, which may not necessarily have been applicable if the Shire acquisition had actually happened as of April 1, 2016. Moreover, this pro forma information gives effect to certain transactions and other events which are not directly attributable to the Shire acquisition and/or which happened subsequently to the Shire acquisition, such as divestitures and the effects of the purchase price allocation for the Shire acquisition, and therefore may not accurately reflect the effect on our financial condition and results of operations if the Shire acquisition had actually been completed on April 1, 2016. Therefore, undue reliance should not be placed on the pro forma information included herein.
Thank you to the Georgia BioScience Training Center

Agenda

- PDT Overview
  - Lunch buffet
- PDT R&D Overview
- Covington Site Introduction
- Q&A
  - Sue Brown, Head, Global BioLife Operations
  - Julie Kim, President, PDT BU
  - Christopher Morabito, Head, R&D, PDT
- Adrian Murphy, Head of Plasma Operating Unit, Global Manufacturing & Supply
- Costa Saroukos, Chief Financial Officer
- Carlos Soto, Covington Site Head
- Close
  - Julie Kim, President, PDT BU
- Training Center & Covington Site tour
Introducing Takeda’s Plasma-Derived Therapies Business

Julie Kim
President, Plasma-Derived Therapies Business Unit

Plasma-derived therapies are critical, life-saving medicines, relied upon by thousands of people worldwide with rare and complex diseases.

Lynayah’s Family
I probably wouldn’t have lived to see six months, which is why my family and I are eternally grateful for you. Your time, and your donation helped save my life.
Lynayah & Family

Pawel
It’s not always easy but, to reach the top, you must go uphill.
March 2019
Plasma presents a unique opportunity

Plasma is a durable business with compelling growth opportunity...

...AND HAS DISTINCT ASPECTS

- **Plasma is collected from human donations - scarce supply**
- **It can take more than 7 months to produce plasma-derived therapies**
- **Capital-intensive manufacturing process**

Plasma is collected from human donations - scarce supply

1. Products have lifecycle spanning decades
2. Indication expansion continues
3. Not subject to patent cliffs
4. Probability of success for R&D is generally high
5. Market demand continues to grow steadily

Demand for key plasma-derived therapies has been continuously increasing and expected to grow

**Worldwide demand for plasma-derived therapies is expected to increase each year**

![Graph showing demand for plasma-derived therapies from 2015 to 2023](image)

- **IG**
- **Blood Factors**
- **Albumin**
- **Other**

<table>
<thead>
<tr>
<th>Year</th>
<th>IG</th>
<th>Blood Factors</th>
<th>Albumin</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>9</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>2018</td>
<td>11</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>2023</td>
<td>17</td>
<td>5</td>
<td>6</td>
<td>4</td>
</tr>
</tbody>
</table>

**This trend is primarily driven by:**

- Greater awareness and increasing rates of diagnosis
- Growing access in emerging markets
- New indications in both immune deficiencies and immune-mediated diseases
- Innovation in formulations and delivery systems

And plasma still has significant untapped therapeutic potential

Multiple factors influence plasma protein metabolism and effects in individuals

By advancing our understanding of plasma proteins, we can:

- Predict how different patients metabolize plasma proteins, and drive individualization of therapy
- Investigate strategies that allow the plasma protein to more precisely target disease or remain in the body longer
- Extend the benefits of plasma-derived therapies across our portfolio


Takeda is now organized – and uniquely positioned - to realize the full potential of plasma-derived therapies

PLASMA-DERIVED THERAPIES DEDICATED BUSINESS UNIT
Top 3 plasma company, investing to grow

RARE DISEASE LEADER
Deep understanding of patient’s needs

GLOBAL PHARMA SCALE & EXPERTISE
Capabilities in digital technology, data analytics, patient insights

75+ YEAR
pioneer legacy in plasma

PLASMA-FOCUSED R&D Team

8 MANUFACTURING SITES

140+ PLASMA COLLECTION CENTERS

13,000 EMPLOYEES
worldwide, focused on plasma business

Source: Evaluate Pharma, PDT Analysis, / Takeda internal data
We are building on a long and successful history of bringing innovative therapies to patients


We’ve established a dedicated business unit to steer our path, bring focus and harness our end-to-end plasma capabilities
Our PDT BU leadership team draws on, and brings together, Takeda’s extensive plasma experience and broader expertise across our business.

Our Ambition

Build a respected, sustainable plasma business that reimagines the industry to best serve patients worldwide.

We have a singular, dedicated plasma focus and strategy

- Responsibility for end-to-end plasma business
- Dedicated R&D organization and budget

We also benefit from the support of a global, values-based biopharmaceutical company

- Long-term view with commitment to invest as plasma is a key growth driver for Takeda
- Access to Takeda’s broader resources, capabilities and expertise, particularly R&D and manufacturing
Our strategy and targeted investments extend across the entire value chain
BioLife, part of Takeda’s Plasma-Derived Therapies Business Unit, is an industry leader in the sourcing of high-quality plasma

**Broad global footprint**
- 140+ collection centers across four countries
- Plasma sourced externally from eight countries
- Three dedicated screening labs

**Recognized expertise**
- Trained medical staff at each center
- Dedicated quality, regulatory and medical employees
- Recognized safety and quality expertise, industry-leading standards

**Fully compliant with requirements from:**
- PPTA
- U.S. Food & Drug Administration
- European Medicines Agency

---

Our BioLife centers offer an exceptional donor experience

**Efficiency & convenience** central to our approach
- Repeat donors spend just ~1 hour at the center
- Appointment-based process with digital scheduling

**Staff committed to the well-being of our donors**

**Modern, high quality facilities**, with free Wi-Fi and supervised children’s playroom in certain centers

**Facilities designed for** donor comfort and regulatory compliance

---

We are accelerating the rate of plasma collection and incrementally increasing overall volume through third parties and acquisition.

We are building momentum....
- Increased plasma volumes by approximately 20% in 2018
- Expanded European presence from 7 to 30 collection centers within past 12 months
- Completed 5 acquisitions in the past 12 months in US, Austria, Hungary and Czechia
- Plan on opening a total of 19 additional new collection centers in fiscal year 2019
- Leveraging third party supply through long-term contracts
- Participating in contract agreements with governments

We will continue to focus on operational excellence
- Open collection sites faster
- Increase speed to peak collection volumes
- Create efficiency via new models and approaches

We are accelerating growth with the goal of increasing plasma supply by >65% over the next 5 years.

We are further enhancing and digitalizing facilities and services to meet growing needs for the future.

Attracting new donors in the community
- Reaching new donors
- Increasing community engagement

Improving the donor experience and improving cost-per-liter through omnichannel engagement.
We have a world-leading plasma-derived therapies manufacturing network in which we continue to significantly invest.

**8 STRATEGIC LOCATIONS**
plus four strategic partners, allowing independent yet inter-related manufacturing operations

**INNOVATION MINDSET**
digitalization and constant drive for excellence to accelerate supply to patients

**CONTINUED CAPACITY EXPANSION**
to increase production of our portfolio to meet market growth while driving efficiencies

**CONTINUALLY INVESTING**
in state-of-the-art facilities that meet the highest quality standards
The global network builds on the strengths of each location while leveraging operational excellence across the sites

**Mass Capture, Fractionation**

- Los Angeles, USA
- Rieti, Italy
- Vienna, Austria
- Sanquin, NL
- Covington, USA

**Downstream Processing**

- Lessines, Belgium
- Covington, USA
- Round Lake, USA
- Pisa, Italy
- Vienna, Austria

We're increasing production capacity by accelerating investment, while further enhancing our quality standards

**Investing in manufacturing capacity**

- Continually investing in technologies and processes to maximize yield
- Higher yield, lower cost fractionation techniques
- Analytics, automation and digitization to optimize network
- **Optimizing plasma efficiency** through the value chain
- **Downstream optimization** within broader Takeda manufacturing network

**Capacity Expansion: 2018 – 2023 (projected)**

We plan to increase our manufacturing capacity within our existing network by **>65%** over the next 5 years
Takeda has world-class safety capabilities and an unsurpassed reputation in both plasma donation and pathogen safety.

**Donation safety standards**

<table>
<thead>
<tr>
<th>Standard</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strict donation criteria and screening at each visit</td>
<td>Every plasma donation screened for HIV, hepatitis A, B &amp; C, parvo B19</td>
</tr>
<tr>
<td>Donation frequency management system</td>
<td></td>
</tr>
<tr>
<td>Strong inspection record</td>
<td></td>
</tr>
<tr>
<td>Plasma screening, inventory hold and look back procedure</td>
<td></td>
</tr>
</tbody>
</table>

**Pathogen safety standards**

<table>
<thead>
<tr>
<th>Department</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>BioSafety Level 3+ Lab</td>
<td>Purpose-built, state-of-the-art biocontainment laboratory</td>
</tr>
<tr>
<td>Process sciences</td>
<td>Qualified models of all bioprocessing steps</td>
</tr>
<tr>
<td>Virology</td>
<td>Classical &amp; molecular virology expertise and capability</td>
</tr>
<tr>
<td>Publication / presentation</td>
<td>Strong track record</td>
</tr>
</tbody>
</table>

**Dedicated virology expertise and capabilities**

<table>
<thead>
<tr>
<th>Staff</th>
<th>Education</th>
<th>Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>40+ highly trained staff</td>
<td>&gt;50% with specialized</td>
<td>&gt;200 years post-</td>
</tr>
<tr>
<td></td>
<td>education</td>
<td>graduate experience</td>
</tr>
</tbody>
</table>

PLASMA SOURCING > MANUFACTURING > COMMERCIALIZATION > RESEARCH & DEVELOPMENT
Our broad and differentiated portfolio of plasma-derived therapies treats rare and complex diseases worldwide

For illustrative purposes only, geographies and products do not correspond.

Our two SCIG brands complement each other and address different patient needs

**Cuvitru**
- Human Normal Immunoglobulin (20% for subcutaneous administration)
- Well tolerated
- Limited volumes (up to 60ml per site) through frequent infusions
- Ease of use/preparation
- 2 or 4 infusion sites/needles
- PID and SID*
- Fast, regular infusions
- Daily to biweekly
- Home setting

**HyQvia**
- Human Normal Immunoglobulin (10%) Recombinant Human Hyaluronidase
- Similar efficacy to IVIG and IV-like administration features
- High volumes (up to 600ml per site) and monthly infusions (every 3-4 weeks)
- Improved Bioavailability vs cSCIG
- 1 or 2 infusion sites/needles
- PID, SID*
- CIDP (regulatory approval decision expected in 2023)
- Less frequency, high volume
- Monthly to biweekly
- Home or hospital setting

---

For patients who prefer

*SID not approved in the US. Only select SIDs are approved for the above-mentioned products: chronic lymphocytic leukemia, multiple myeloma and hematopoietic stem cell transplantation.

Currently, global supply is not keeping up with demand for IG therapies

The Global Polyvalent IG Market (IVIG/SCIG) from 2000 to 2016, with Projected Global Demand Through 2024
Millions of grams

STRONG & CONTINUED IG DEMAND
IG is increasingly recognized for its diverse therapeutic value, and is expected to grow in approved indications for a range of diseases

MARKED BY SCIG GROWTH RATE
SCIG market continues to drive IG growth at CAGR of 20%

Takeda’s commitment during times of supply-demand imbalance is to focus on sustainable patient care

Consider the global community
Support for those with highest need to gain treatment
Focus on existing patients first and responsibly pursue new opportunities
Partner to explore and implement policies and practices that enable sustainable supply
Our goal is to continue to bring personalized, innovative, lifelong care to as many people as possible throughout the patient journey.

**Diagnosis**
- Partnership with large hospital systems in the US to leverage electronic medical records
- Co-chairing the Global Commission to End the Diagnostic Odyssey for Children with Rare Disease
- Awareness campaigns
- Diagnostic test kits

**Access**
- Sustainable pricing
- Dedicated access support
- Patient assistance programs
- Broad portfolio of products

**Personalized Care & Support**
- Enhanced patient services
- Nurse training to support new patients
- Devices and delivery systems

---

We anticipate significant growth opportunities across our portfolio.

<table>
<thead>
<tr>
<th>Example Takeda products</th>
<th>Takeda revenue (OY, 2018)</th>
<th>Global plasma market size (OY, 2018)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last Litre</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Immunoglobulin</td>
<td>~2,870</td>
<td>~12,500</td>
</tr>
<tr>
<td>Albumin</td>
<td>~580</td>
<td>~5,000</td>
</tr>
<tr>
<td>First Litre</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemophilia products</td>
<td>~890</td>
<td>~2,800</td>
</tr>
<tr>
<td>Other products</td>
<td>~660</td>
<td>~3,700</td>
</tr>
<tr>
<td>Total</td>
<td>~5,000*</td>
<td>~24,000</td>
</tr>
</tbody>
</table>

*2018 revenue is a pro-forma which adds Legacy Shire’s 9 month (April – December 2018) revenue previously reported under US GAAP and converted to IFRS without material differences and converted to JPY using FY2018 actual rate for the period. 2018 revenue also includes product sales of Nihon Pharmaceutical products, Takeda’s consolidated subsidiary.

Source: MRB; EvaluatePharma; Takeda internal data
And we are embarking on a trajectory to improve overall Plasma-Derived Therapies business performance

Key Growth & Margin Drivers for PDT

- Focused sustainable, value-based commercial strategies, including tenders
- Process efficiencies across the network
- Capacity increase across collections and manufacturing
- R&D investments across portfolio

Key Financial Aspiration for PDT*

- Annual revenues (CAGR) Mid to high single digit
- CAPEX (% of Revenue) Mid single digit

* The “Key Financial Aspirations” listed above represent Takeda’s goals in the long-term for the PDT business as of the date hereof and are based on certain assumptions. Actual Amounts/results may differ materially and are subject to a number of risks and uncertainties. See “Note Regarding Forward Looking Statements” on Page 1 of this presentation.

Key takeaways

1. At Takeda, plasma is a long-term strategic focus, led by a dedicated business unit investing to grow across the value chain and leveraging Takeda capabilities

2. Our goal is to accelerate growth in capacity by >65% over the next 5 years to bring additional and improved therapies to more people around the world

3. Our broad and differentiated portfolio brings personalized, innovative, lifelong care and underlines our credentials for reimagining the industry
A New Dedicated Focus on Innovative, Sustainable Solutions for Plasma-Derived Therapies

Christopher Morabito, M.D.
Head of R&D, Plasma-Derived Therapies

PDT R&D’s credentials and infrastructure are well-established

Pathogen Safety
Global Center of Excellence for Pathogen Safety

Pharmaceutical Science
Strong team connected across the value chain

Pilot Labs
Within Vienna, Los Angeles, Georgia and Lessines sites
Our independence brings focus on plasma and is bolstered by access to broader R&D capabilities and resources

These links strengthen Takeda R&D’s modality mix, now the broadest among the Top 10 global biopharmaceutical companies

The PDT R&D Leadership Team is well-integrated and brings deep and diverse functional expertise

Christopher Morabito MD
R&D Head
Boston, MA

Catherine Parham MD
Program Leadership
Boston, MA

Róry Bukofzer
Program Leadership
Boston, MA

Leman Yeş MD
Clinical Medicine
Boston, MA

Chris Tremblay
R&D Operations
Boston, MA

Bagirath Gangadharan PhD
Translational Research
Vienna, Austria

Andreas Liebminger PhD
Pharmaceutical Sciences & Devices
Vienna, Austria/Boston, MA

Sascha Haverfield DPhil
Regulatory Affairs & Development Operations
Boston, MA

Geoffrey Pot PhD
Global Manufacturing External Supply & Plasma Innovation
Lessines, Belgium

Gabriele Ricci
Digital Technologies
Boston, MA

William Standaert
Legal
Zurich, Switzerland

Cara Laurello
Ethics and Compliance
Boston, MA

Ambreen Landa
Human Resources
Boston, MA

Pritesh Patel
Finance
Boston, MA

Julia Ellwanger
Communications
Bannockburn, IL
We are driving a culture of innovation through two R&D engines

Early Development Innovation Engine

Generate new and improved therapeutics by:
- Investigational new drug candidates
- Mechanisms of action
- Responder populations
- New process development

Late Development Innovation Engine

Improve health outcomes by:
- Diagnostic efficiencies
- Expanded data and devices to support effectiveness
- Point of Care services and drug delivery services
- Data-driven guidelines for acute and chronic management

PDT R&D Strategy

Maximize the therapeutic value of plasma-derived therapies for patients with rare and complex diseases through innovation across the product life cycle

Realize full potential of in-line First and Last Liter products
- Expanded indications and benefit-risk datasets
- Device-driven solutions for diagnosis, management, and long-term follow-up
- Global expansion
- New formulations

Optimize efficiencies of plasma-derived therapy production
- Pharmaceutical science support for manufacturing

Identify and develop new plasma-derived therapies
- New targeted therapies for diverse therapeutic areas
We are prioritizing near-term late development...

### RESEARCH / NON-CLINICAL DEVELOPMENT

<table>
<thead>
<tr>
<th>Program</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CUVITRU</td>
<td>Wearable Device</td>
</tr>
<tr>
<td>TAK 880</td>
<td>Low IgA-IgG (IV) Primary Immunodeficiency</td>
</tr>
<tr>
<td>Hyper-Immune IG</td>
<td>Infectious disease</td>
</tr>
<tr>
<td>CINRYZE</td>
<td>Ex-HAE indications TBD</td>
</tr>
</tbody>
</table>

### LATE DEVELOPMENT

<table>
<thead>
<tr>
<th>Program</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HYQVIA</td>
<td>Halozyme US - Pediatric PID</td>
</tr>
<tr>
<td>HYQVIA</td>
<td>Halozyme EU - Pediatric PID</td>
</tr>
<tr>
<td>HYQVIA</td>
<td>Halozyme Chronic inflammatory demyelinating polyneuropathy (CIDP)</td>
</tr>
<tr>
<td>HYQVIA</td>
<td>Halozyme Geographic expansion</td>
</tr>
<tr>
<td>HYQVIA</td>
<td>Flextronics Delivery Device</td>
</tr>
<tr>
<td>HYQVIA</td>
<td>HyHub Flextronics Delivery Device</td>
</tr>
<tr>
<td>HYQVIA</td>
<td>CINRYZE Geographic expansion</td>
</tr>
<tr>
<td>GLASSIA</td>
<td>Kamado Immunogenicity/bronchoalveolar lavage</td>
</tr>
<tr>
<td>GLASSIA</td>
<td>Kamado Ex-HAE indications TBD</td>
</tr>
</tbody>
</table>

**... while enabling discovery of next generation therapeutics**

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<table>
<thead>
<tr>
<th>Program</th>
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</tr>
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<tbody>
<tr>
<td>PROTHROMPLEX TOTAL</td>
<td>Device and formulation</td>
</tr>
<tr>
<td>CUVITRU</td>
<td>Wearable Device</td>
</tr>
<tr>
<td>TAK 881</td>
<td>Facilitated 20% SC IgG Primary Immunodeficiency (PID)</td>
</tr>
<tr>
<td>Alpha-1 Antitrypsin (A1AT)</td>
<td>Next generation formulations</td>
</tr>
<tr>
<td>PROTHROMPLEX TOTAL</td>
<td>Butyryl Cholinesterase Organophosphate poisoning</td>
</tr>
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<td>Kamado Immunogenicity/bronchoalveolar lavage</td>
</tr>
<tr>
<td>GLASSIA</td>
<td>Kamado A1ATD-emphysema*</td>
</tr>
<tr>
<td>PROTHROMPLEX TOTAL</td>
<td>US - Drug-induced bleeding**</td>
</tr>
<tr>
<td>CEPROTIN</td>
<td>Geographic expansion</td>
</tr>
</tbody>
</table>

*Subject to regulatory approval
**Pending FDA pre-IND consultation and future acceptance of an IND

Programs and projects added since Day 1
Over the next 3 years, we plan to allocate resources to research and early development.

Distribution of PDT R&D spend for FY2019

- 95%
- 5%
- 0%

Estimated % of PDT R&D spend for FY2023

- 60%
- 10%
- 30%

~70% of resources will be allocated to improving in-line products and production efficiencies.

Our goal is to realize the full potential of in-line first and last liter products.

Estimated % of PDT R&D spend for FY2023

- 60%
- 10%
- 30%

- Expanded indications and benefit-risk datasets
- Device-driven solutions for diagnosis, management, and long-term follow-up
- Global expansion
- New formulations

Optimizing value of in-line products
Plasma production efficiencies
New plasma-derived therapies

Optimizing value of in-line products
Plasma production efficiencies
New plasma-derived therapies
Immunoglobulins provide the scaffold for PDT innovation

Current State
- Exploring efficacy and safety of HYQVIA in patients with neuro-immune diseases (e.g. CIDP)
- Ongoing delivery device development

Opportunities
- Indications: New neuro-immunology and secondary immunodeficiencies (SID) programs**
- Geographic expansion: CUVITRU-Japan first patient to be enrolled in Q4 FY 2019
- Integrated care solutions:
  - Advance point of care diagnosis of primary immunodeficiency (PID)
  - New delivery and eHealth devices
- Develop f-20% SCIG

Source: Bain Study (US&EU), Volumes, Estimates based on internal calculations on EU Country Data
*Not all indications are approved for a Takeda product
**Subject to regulatory approval

Facilitated 20% SCIG has the potential to provide further value to patients who require higher volume administrations

Pig model, sequencially administered recombinant human hyaluronidase (rHuPH20) and 20% IgG (CUVITRU)*

Significantly decreased induration and infusion pressure and induration, and improved cutaneous blood flow

* In collaboration with Halozyme
Sequentially administered rHuPH20 and CUVITRU is for investigational use only
PROTHROMPLEX TOTAL can be developed to treat a variety of bleeding disorders

**Current State**
- Many different mechanisms used for prophylactic and surgical anticoagulant therapy
- PROTHROMPLEX TOTAL use is limited to Vitamin K antagonists associated bleeding ex-US

**Opportunities**
- Geographic expansion into the US*
- Broaden indication to include treatment of multiple types of drug-induced bleeding
- Improved use via new formulations and device

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ARALAST & GLASSIA provide opportunities to improve outcomes in patients with alpha-1 antitrypsin deficiency (A1ATD)

**Current State**
- Current standard of care does not adequately treat A1ATD

**Opportunities**
- New clinical study to assess the efficacy of a higher dose of GLASSIA in patient with emphysema related to A1ATD
- Next generation A1AT*: formulation, delivery and management devices
- Explore A1AT as acute phase reactant

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*Investigational use, subject to regulatory approval
Investigational A1AT-replacement formulations may offer additional value to patients*

**Short term**
- Highly purified post-fractionations pdA1AT-precursor

**Mid term**
- Protein Modification
  - site-specific modification leading to an extended t1/2
- Concentration of A1AT by ultra filtration potentially leading to an extended t1/2
- Purification by ion-exchange chromatography

**In Vivo Model**
- PK parameters for a modified A1AT have been assessed in vivo
- Statistically significant improvement of PK parameters for modified A1AT compared to Aralast

**Formulation Development**
- Evaluate SC administration

**Device Development**
- Potential to add incremental value for patients

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We are optimizing efficiencies of plasma-derived therapy production

**Estimated % of PDT R&D spend for FY2023**
- 60%
- 10%
- 30%

- Optimizing value of in-line products
- Plasma production efficiencies
- New plasma-derived therapies

- Pharmaceutical science support for manufacturing
We are further improving manufacturing efficiencies to increase yield

High yield high throughput initiatives will improve delivery of last liter products to patients globally

A new high yield & high throughput process:

- Process development to shorten IgG upstream and total albumin cycle times
- Capture of purification waste to isolate proteins for possible new development

Potential benefit of higher yield and increased capacity

Significantly reduced COGS with positive ROI

We are identifying and developing new plasma-derived therapies

Estimated % of PDT R&D spend for FY2023

- 60%
- 10%
- 30%

New targeted therapies for diverse therapeutic areas
We believe there is a tremendous amount of untapped potential in plasma proteins.

>3000 plasma proteins control balance, some with health promoting + effects and other with disease associated – effects.

Generally, PDTs have been developed to replace functional deficiencies in health promoting proteins.

We believe PDTs, alone or in combination, can be developed to address acute and chronic diseases.

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We are well-positioned to create near-term and sustainable growth.

**NEAR TERM CATALYSTS**

<table>
<thead>
<tr>
<th>FY19 – FY22</th>
<th>FY23 – FY24</th>
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<tbody>
<tr>
<td><strong>IMMUNOLOGY</strong></td>
<td></td>
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<tr>
<td>HYQVIA: Chronic inflammatory demyelinating polyneuropathy (CIDP)</td>
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<tr>
<td>GLASSIA: Kamada Immunogeneity/bronchoalveolar lavage</td>
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<tr>
<td>HYQVIA - HyHub: Flextronics Delivery Device</td>
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<tr>
<td>HYQVIA: Geographic expansion</td>
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<tr>
<td>CUVITRU: Geographic expansion</td>
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<tr>
<td><strong>HEMATOLOGY</strong></td>
<td></td>
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<tr>
<td>CEPROTIN: Geographic expansion</td>
<td></td>
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<tr>
<td>FEIBA: Volume reduction</td>
<td></td>
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<tr>
<td><strong>PROTHROMPLEX TOTAL</strong></td>
<td></td>
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<tr>
<td>Device and formulation</td>
<td></td>
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<tr>
<td>Butyryl Cholinesterase</td>
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<tr>
<td>Organophosphate poisoning</td>
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**SUSTAINED GROWTH**

<table>
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<tr>
<th>FY23 AND BEYOND</th>
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<tbody>
<tr>
<td><strong>IMMUNOLOGY</strong></td>
</tr>
<tr>
<td>GLASSIA: Kamada A1ATD-emphysema*</td>
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<tr>
<td>HYQVIA: Nolozyme EU Pediatric PID</td>
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<tr>
<td>TAK 880: Low IgA-IgG (IV) Primary Immunodeficiency</td>
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<tr>
<td>HYQVIA: Nolozyme US Pediatric PID</td>
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<tr>
<td>CUVITRU: Wearable Device</td>
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<tr>
<td>TAK 881: Facilitated 20% SC IgG Holozyme Primary Immunodeficiency (PID)</td>
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<tr>
<td><strong>HEMATOLOGY</strong></td>
</tr>
<tr>
<td><strong>PROTHROMPLEX TOTAL</strong></td>
</tr>
<tr>
<td>US - Drug-induced bleeding **</td>
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</table>

**TARGET APPROVAL FY**

- **HYQVIA**
- **CUVITRU**
- **GLASSIA**
- **HYQVIA - HyHub**
- **HYQVIA**
- **CUVITRU**
- **CEPROTIN**
- **PROTHROMPLEX TOTAL**
- **PROTHROMPLEX TOTAL**

*Subject to regulatory approval

**Pending FDA Pre-IND consultation and future acceptance of an IND**
Treatment paradigms of rare and complex diseases are dynamic and we are innovating continuously

<table>
<thead>
<tr>
<th>Uncertainties</th>
<th>PDT Innovation</th>
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<tbody>
<tr>
<td>➤ Deepening understanding of underlying mechanisms of diseases and co-morbidities</td>
<td>➤ Directed most appropriate uses of PDTs</td>
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<tr>
<td></td>
<td>➤ With Takeda Global R&amp;D, investigate plasma-drug combinations</td>
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<tr>
<td>➤ Evolution of Fc- and Fc-Receptor approaches (including anti-FcRn)</td>
<td>➤ Focus on primary and secondary immunodeficiencies</td>
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<tr>
<td>➤ Gene therapies and RNAi for specific diseases</td>
<td>➤ Identify IgG responders in specific auto-immune diseases</td>
</tr>
<tr>
<td>➤ Perception of lack of plasma product differentiation</td>
<td>➤ Develop PDTs in conjunction with gene therapies and RNAi (e.g. A1ATD-liver disease)</td>
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Key takeaways for Plasma-Derived Therapies R&D

1. Dedicated PDT R&D organization focused on – and investing in – reimagining plasma, while leveraging Takeda’s broader R&D resources and capabilities

2. Poised to deliver near-term value by optimizing our in-line portfolio and improving efficiencies throughout the value chain

3. Committed to creating long-term value by unlocking the full potential of plasma to develop innovative, integrated solutions that meaningfully benefit patients globally
Introducing our Covington Manufacturing Facility

Carlos Soto
Covington Site Head

This was our starting place in October 2012
Our vision and plans for Covington enable us to serve more patients as we continue to ramp up our operations.

- Increases capacity for PLASMA-DERIVED THERAPIES
- Investment of $1 BILLION+
- Manufacturing campus covers 1 MILLION+ FT²
- Takeda will employ ~1,500 EMPLOYEES in Georgia at full ramp up

This is how our site looks today - November 2019.
Our current footprint allows for further expansion

Today, we manufacture these therapies from plasma proteins

GAMMAGARD Liquid

FLEXBUMIN
Our facility is vertically integrated

**Fully integrated end-to-end production site**

<table>
<thead>
<tr>
<th>Plasma testing</th>
<th>Fractionation</th>
<th>Purification</th>
<th>Filling</th>
<th>Packaging</th>
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</thead>
</table>

- ~1000 employees today / ramp up plan in place
- Site includes already approved BioLife testing and storage facility

**Flexible design for future expansion**

<table>
<thead>
<tr>
<th>Fractionation capacity, million liters</th>
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<tr>
<td>Original design basis: ~3</td>
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<tr>
<td>Current “optimized” capacity: &gt;4</td>
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<tr>
<td>Expansion potential with added investment: 10+</td>
</tr>
</tbody>
</table>

Video of Covington Manufacturing Facility
Creating impact together

Through a dedicated plasma business unit, we will reimagine the plasma industry and uncover the full potential of plasma-derived therapies to benefit patients worldwide.