Thursday, June 4th 2015 – Raleigh

<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00</td>
<td>Pick up from hotels</td>
</tr>
<tr>
<td>9:30 - 10:00</td>
<td>Coffee + Welcome</td>
</tr>
<tr>
<td>10.00 - 10.15</td>
<td>Introductory remarks</td>
</tr>
<tr>
<td>10.15 - 10.45</td>
<td>Global operations: Overview &amp; Strategies</td>
</tr>
<tr>
<td>10.45 - 12.00</td>
<td>Bioscience: Growing demand</td>
</tr>
<tr>
<td>12.00 - 12.30</td>
<td>Diagnostic: A new global franchise</td>
</tr>
<tr>
<td>12.30 - 13.30</td>
<td>Lunch</td>
</tr>
<tr>
<td>13.30 - 14.15</td>
<td>Plasma procurement progress</td>
</tr>
<tr>
<td>14.15 - 15.00</td>
<td>Future of plasma derivatives and Grifols initiatives</td>
</tr>
<tr>
<td>15.00 – 16.00</td>
<td>Aging and the therapeutic benefits of plasma</td>
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</table>
### Thursday, June 4th 2015 – Raleigh

<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
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<tbody>
<tr>
<td>16.00</td>
<td>Coffee break</td>
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<tr>
<td>16.30 - 17.15</td>
<td>Financials</td>
</tr>
<tr>
<td>17.15 - 17.30</td>
<td>Final remarks: Conclusions</td>
</tr>
<tr>
<td>17.30 - 18.00</td>
<td>Q&amp;A</td>
</tr>
<tr>
<td>18.00</td>
<td>Transfer</td>
</tr>
<tr>
<td>19.00</td>
<td>Pick up from hotels</td>
</tr>
<tr>
<td>19.30</td>
<td>Dinner &amp; Movie: Plasma proteins manufacturing</td>
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### Friday, June 5th 2015 – Clayton

<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
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</thead>
<tbody>
<tr>
<td>8:00</td>
<td>Pick up from hotels</td>
</tr>
<tr>
<td>9:00 - 9:30</td>
<td>Coffee + Welcome. Introduction to the tour</td>
</tr>
<tr>
<td>9:30 - 10:15</td>
<td>Visit: North Fractionation Facility</td>
</tr>
<tr>
<td>10:15 - 10:45</td>
<td>Visit: Pilot plant, specialty plasma</td>
</tr>
<tr>
<td>10:45 - 11:30</td>
<td>Visit: New plasma warehouse</td>
</tr>
<tr>
<td>11:30 - 12:00</td>
<td>Final Q&amp;A</td>
</tr>
<tr>
<td>12:00 - 13:00</td>
<td>Lunch in NFF (Buffet)</td>
</tr>
<tr>
<td></td>
<td>Transfers to airport</td>
</tr>
</tbody>
</table>
Introduction remarks

Gregory Rich
Global operations: Overview & Strategies
Ramón Riera

Grifols mission & values

Grifols is a leading, diversified, global Bioscience company with a growing position in the Diagnostic and Hospital fields

Our mission is to improve the health and well-being of people around the world by providing state of the art therapies, products and services to patients and customers while delivering value to shareholders

PRIDE - SAFETY - EFFORT - COMMITMENT - EXCELLENCE - TEAMWORK - INNOVATION
Grifols to date

### PROFILE
A global employer with 14,000 employees, subsidiaries in 30 countries and world-class manufacturing facilities located in the US, Europe and Australia

### IMAGE
A reputation built on commitment to quality and safety with a unique position as family profile and longest legacy in the industry

### GROWTH
Grifols 2006 public stock offering set the stage for accelerated global growth, with Talecris and Novartis Diagnostic acquisitions further transforming the organization

Grifols successful track record

![Graph showing Grifols' successful track record]

- **Alpha Acquires 50% of Grifols**
- **Internationalization Starts Spain Joins EU**
- **Biomat Acquisition**
- **Grifols Acquires Alpha Shares**
- **European Expansion**
- **Barcelona Plant Licensed by FDA**
- **Acquisition of ATC Assets & Flebogamma FDA Licensed**
- **Acquisition of Australian Group - Diagnostic**
- **Talecris Acquisition**
- **Novartis Diagnostics Acquisition**
Grifols new global organization
Grifols has always been a dynamic and lively company. This means that changes are part of our culture. Some of those changes are bigger than others and always have been a challenge for all of us.

- In order to better accomplish the goals of our **Strategic Plan** the company has established a new, internal organizational structure across the world.

- Our aim is to anticipate to new health scenarios and enable the company to offer a more competitive, effective and integrated response to the needs of customers and patients.

---

**New corporate organization**

The new corporate organization is focused around **Business Divisions**.

**Industrial** and **commercial** responsibilities are clearly differentiated, with new regional areas for the 3 commercial divisions.
New global operations’ structure

Grifols headquarter structure

The increased operational importance of the divisions is reflected in the creation of headquarters for each one.

<table>
<thead>
<tr>
<th>HEADQUARTERS</th>
<th>LOCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corporate HQ</td>
<td>Sant Cugat (Barcelona – Spain)</td>
</tr>
<tr>
<td>Bioscience HQ</td>
<td>Raleigh (North Carolina – US)</td>
</tr>
<tr>
<td>Diagnostic HQ</td>
<td>Emeryville (San Francisco – US)</td>
</tr>
<tr>
<td>Hospital HQ</td>
<td>Sant Cugat (Barcelona – Spain)</td>
</tr>
<tr>
<td>Worldwide Warehouse and Distribution</td>
<td>Dublin (Ireland)</td>
</tr>
</tbody>
</table>
Two essential questions to address

✓ Is there a growing and sustainable demand for plasma derivatives products?
✓ What is Grifols competitive position in terms of:
  - Quality and safety
  - Production capacity
  - Commercial and distribution power
  - Pipeline
Plasma derivatives market: steady growth

Demand has been growing steadily over the past ten years, in spite of the worldwide economic downturn

CAGR: 11.7%

...and it will continue to grow based on the multiple new indications, undiagnosed patients and unpenetrated markets

Source: MRB 2013

Excellence in manufacturing

A major differentiating factor for Grifols

- Grifols is the only manufacturing company which combines the capacity to produce biological and non-biological pharmaceutical products, disposable sterile products, reagents and instrumentation, the development of software and engineering solutions, and self-sufficiency in raw materials

- Grifols has created its own engineering company to develop technology for our production companies and to support and supply solutions to other manufacturers of pharmaceutical products

Grifols Engineering: unique solutions developed by our engineering experts represent a clear competitive advantage
The FDA and Industry Standards (IQPP & QSEAL) set in place a basic framework to ensure the quality and safety of plasma-derived products. Quality and safety are of such fundamental value to Grifols that we demonstrate our commitment by going beyond these basic requirements.

The activities outlined below set a more robust industry standard:

**DONATION**
- Commitment to Source Plasma
- Grifols Donor Mgmt. System

**PLASMA TESTING & TRACEABILITY**
- Plasma Sampling
- RFID System

**PRODUCTION**
- Automated Bag/Bottle Opener
- Sterile Filling Systems

**PRODUCT TRACEABILITY**
- PediGr® System
- Laser Etching System

---

**Capacity in place for growth**

- 12.5 million liters of total plasma fractionation capacity completed and approved by FDA and EMA
- With balanced purification capacity for equivalent amounts of individual proteins
Grifols a worldwide leader

Grifols leads the global worldwide market in three out of the four biggest plasma proteins

- **IVIG**: 24%
- **ALPHA-1**: 64%
- **pdFVIII**: 23%
- **ALBUMIN**: 7%

Source: MRB & internal data

In the US and Canada market

......also leads in three of them

- **IVIG**: 35%
- **ALPHA-1**: 58%
- **pdFVIII**: 47%
- **ALBUMIN**: 32%

Source: MRB & internal data
Grifols is the Num. 1 supplier in the US market of plasma proteins

Robust R&D pipeline

- New indications for Albumin, IG, Alpha-1, Antithrombin
- New formulations, presentations and administration routes for Albumin, IG, Alpha-1, Factor VIII
- New products from plasma, fibrin sealant, plasmin, fibrinogen
- New products non plasma, Pulmaquin® synergistic with our Pulmonology franchise

In 2014, 73% of Grifols R&D clinical investment was spent in phase III trials
Update acquisition of the new Diagnostic business in 2014

✓ Today the business is **fully integrated** and managed as a single Diagnostic division

✓ The acquisition of the new Diagnostic unit has:
  - Positioned Grifols as a leading global, integrated provider of transfusion medicine solutions, from donation to transfusion
  - Increased Grifols’ global presence in the market of transfusion safety
  - Diversified Grifols’ business and added balance through a large and growing diagnostics unit

✓ In 2014, Grifols Diagnostic division accounts for more than 18% of revenues, with a sales of 620 million euros
Net revenue by division 2014 vs 2013

Business diversification

Grifols Diagnostic vision

Expand our leadership in Transfusion Medicine

Build a strong Specialty Diagnostic business

Leverage internal manufacturing and R&D capabilities

Capitalize on external partnerships to build a leading global diagnostic player
Hospital Division

Contract manufacturing

✓ Contract manufacturing by Laboratorios Grifols (LG) has been and it will continue to be one of the strategic areas of development of the Grifols Hospital Division. LG already has some FDA approved facilities.

✓ We have a significant number of internal and external ongoing projects that should represent business opportunities for the coming years.
Grifols acquired 50% of share capital of Kiro Robotics

- Kiro Robotics is a technological company specialized in the development of machinery and equipment to automate hospital processes
- Spin-off of Mondragon Health
- The company is the developer of some of the world most sophisticated hospital pharmacy technology, the Kiro Oncology Robot

<table>
<thead>
<tr>
<th>Product</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kiro Oncology (for chemotherapy preparations)</td>
<td>Commercialized product</td>
</tr>
<tr>
<td>Kiro IV (for batch compounding)</td>
<td>Launch scheduled for 2017</td>
</tr>
<tr>
<td>Kiro Onkosoft</td>
<td>Launch scheduled for 2017</td>
</tr>
</tbody>
</table>

Across the board opportunities
Cross-over opportunities

✓ Leverage our hospital products and manufacturing capabilities to reduce dependence on 3rd party suppliers, increase efficiencies, and provide market advantages
  ▪ Plasma operations (saline sodium solution, anticoagulant solution, etc.)
  ▪ Bioscience product administration kits (diluent for lyophilized products)
  ▪ Innovative Bioscience product presentations (Albumin in bags)

✓ Leverage our diagnostics development and manufacturing capabilities to increase efficiencies and optimize treatments
  ▪ Plasma operations (donor screenings)
  ▪ Companion diagnostics to optimize diagnosis of patients susceptible to be treated with plasma proteins

✓ Leverage division sales forces and existing customer relationships
  ▪ Co-promotion of products from different divisions to the same target customer or channel

Distribution
Grifols has a responsive, effective logistics organization that is able to meet the needs of hospital centers throughout the world, punctually.

In Ireland, Grifols is near completion of a global facility for warehousing, labelling, final packaging and worldwide distribution of Bioscience products.

Estimated number of employees: 140
Latest legal entities incorporated

Key Global operations Takeaways
Key Global operations Takeaways - I

- **Core Business Optimization**
  - Grow demand for our products
  - Balance the liter

- **Geographical Expansion**
  - Focus on emerging markets
  - Expanding diagnosis and indications in developed markets

- **Innovation Acceleration**
  - Strong R&D product pipeline to secure sustainable growth

- **Capacity Leadership**
  - “Best in Class” manufacturing facilities in continuous expansion to meet market demand

- **Multi-business build**
  - Leveraging capabilities across different divisions

---

Key Global operations Takeaways - II

- **Grifols is active in markets with long term growing demand and is enjoying a strong competitive position based on**
  - Strong portfolio of products
  - Technology and quality
  - Manufacturing capacity
  - Geographical footprint and worldwide sales, marketing and distribution
Strategic plan pillars: Bioscience priorities

CORE BUSINESS OPTIMIZATION
Increasing CIDP Diagnosis & Treatment
Continuing Alpha-1 Diagnosis campaign
Expanding Albumin promotion
Price competition
Impelling teams

GLOBAL EXPANSION
IG entry into select EU markets
2016 Fibrin Sealant EU launch
Alpha-1 model expansion
New market entries

CAPACITY LEADERSHIP
NC NFF fully operational
Next round capacity upgrades presented
Continued progress on paste exchange

INNOVATION ACCELERATION
Alzheimer’s results
Albumin in bags
Gamunex® Nanofiltration (EU)
Alphanate® 2000 iu
Gamunex® 40g
Prolastin®-C Liquid Pulmaquin® launch

MULTI-BUSINESS BUILD
Identify cross-division opportunities with Hospital & Diagnostic

Promotional levers

Patient ID/Diagnosis
- CIDP
- Primary Immune Deficiency
- Alpha-1
- Rabies and Tetanus prophylaxis

Treatment choice
- IG
- Albumin
- pdFVIII
- ATIII

Brand choice
- Gamunex® & DIF 5%
- Prolastin®-C
- Alphanate®

Dosing persistence / compliance
- Gamunex® CIDP
- Prolastin®-C
Executive summary: Bioscience division plan

Current growth
- Accelerate U.S. IG pull-through growth by growing CIDP market
- Strengthen position of Flebogamma® in US
- Increase IVIG market share in EU
- Continue investing in Alpha-1 model
- Prepare Fibrin Sealant launch in EU

Mid-term growth
- Deliver on product innovation (Alpha-1 liquid, Albumin bags)
- Expand treatment with IVIG in UK, Spain, Germany, Italy
- Expand geographic penetration
- Expand Alpha-1 model
- Accelerate ATIII diagnostic development
- Launch Fibrin Sealant in US
- Launch of Pulmaquin®

Long-term growth
- Deliver on product innovation (Sub-cu with differentiation, FS with differentiation, New indications for Alpha-1, IG, Albumin, ATIII)
- New protein development
- Complimentary technology and product acquisition
- Grifols maintains capacity leadership throughout planning period

Significant focus on execution and expanding markets while delivering innovation

Bioscience performance
Grifols second largest manufacturer of plasma-derived therapies

Total market 2013 (values)

- CSL
- GRIFOLS
- BAXTER
- OCTAPHARMA
- KEDRION
- LFB
- BIOTEST
- SHIRE
- OTHERS*

Source: Internal data, MRB & Secondary official data year 2013

Grifols market leader for three major proteins

Core business optimization

<table>
<thead>
<tr>
<th>Product</th>
<th>Market share</th>
<th>Global ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>IVIG</td>
<td>24%</td>
<td>Number 1</td>
</tr>
<tr>
<td>Alpha-1</td>
<td>64%</td>
<td>Number 1</td>
</tr>
<tr>
<td>pdFactor VIII</td>
<td>23%</td>
<td>Number 1</td>
</tr>
<tr>
<td>Albumin</td>
<td>17%</td>
<td>Number 2</td>
</tr>
</tbody>
</table>

Source: Internal data, MRB & Secondary official data year 2013
US Bioscience 2011 - 2014 growth

- **US**
  - +11.4% CAGR

  - Maintained leadership in IG market – Gamunex®-C preferred IVIG in CIDP
  - Product differentiation through launch of Gamunex®-C (40g), Alphanate® (2000 IU vial)
  - Expanded managed markets team and created new payer team focused on maintaining and improving access
  - Increased Alpha-1 diagnosis and treatment through increased testing and expanded promotion

China, Asia Pacific, & Middle East Bioscience 2011 - 2014 growth

- **China, Asia Pacific & Middle East**
  - +10.4% CAGR

  - Significant Albumin sales growth in China through strengthened commercial presence
  - Converted the branch office in China (Shanghai) into a commercial subsidiary of the Group in 2013
  - Increased presence in emerging markets (Turkey, Russia and Dubai)
  - Grifols became IG market leader in Turkey retail market in 2014 where Grifols is developing a new commercial model involving a closer presence and stronger support for our distributor’s network
Germany Bioscience 2011 - 2014 growth

Germany
+7.2% CAGR

- Increased demand of IG, Albumin, and Prolastin® driving record sales of all three products in 2014
- Successful launch of new patient service program. New patient identification program prepared to start in 2015

Bioscience Sales LTM Performance
Bioscience sales volume growth - LTM quarterly

2014 Bioscience revenue quarterly growth acceleration

Constant Currency (CC) excludes the impact of exchange rate movements
Grifols IG market share in US steady since 2012

Underlying IG US business trends

Grifols has maintained share overall and grown share in CIDP. CIDP procedures have consistently grown faster than the total.

Source: PPTA and Internal data

Source: Health Market Sciences
Global IG market share

Grifols is #2 in the global IG market

Grifols is #1 in the IVIG market

Source: Internal data, MRB & Secondary official data year 2013
Global IG market share

Grifols is the market leader in the US Hyperimmunes market

Source: Internal & MRB 2013 data

Neurology drives IG market

- **Neurology** accounts for largest share of IG use in key markets:
  - CIDP, GBS, MS, MMN, other autoimmune neuropathies
  - CIDP is the largest driver with 25%-30% of all IVIG use
  - Consistent across key markets such as US, Germany, Canada, UK and Australia

- **Immune deficiencies** (PIDD or SIDD due to CLL, ALL, transplant, etc.) are next largest segment:
  - Less PIDD use in Germany than US and Canada or UK

How common is CIDP?

- **GAMUNEX-C** (immune globulin injection [human], 10% caprylate/chromatography purified) is indicated for the treatment of primary humoral immunodeficiency disease (PID), idiopathic thrombocytopenic purpura (ITP), and chronic inflammatory demyelinating polyneuropathy (CIDP).

- GAMUNEX-C is contraindicated in patients who have had an anaphylactic or severe systemic reaction to the administration of human immune globulin. It is contraindicated in IgA-deficient patients with antibodies against IgA and history of hypersensitivity.

Source: Internal Data & Market Research
CIDP prevalence in patients with diabetes

The occurrence of CIDP may be higher in patients with diabetes

Market expansion focus on peripheral neuropathies & diagnosis of CIDP

Though similar in presentation, there are key differences between typical CIDP and DPN:

<table>
<thead>
<tr>
<th>TYPICAL CIDP</th>
<th>DPN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distal and proximal weakness</td>
<td>Distal weakness mainly in the feet</td>
</tr>
<tr>
<td>Motor and sensory loss</td>
<td>Sensory loss, with no motor loss observed</td>
</tr>
<tr>
<td>Reduced or absent reflexes</td>
<td>Must have absent ankle jerks</td>
</tr>
<tr>
<td>Symptoms evolve over months</td>
<td>Symptoms evolve over years</td>
</tr>
</tbody>
</table>

The occurrence of CIDP may be higher in patients with diabetes
Investors’ & Analysts’ Meeting | Raleigh 2015

Product segmentation: Germany

**GAMUNEX®**

Dedicated neurology sales team since 2011

**FLEBOGAMMA® DIF**

New campaign and dedicated sales team launched in 2013

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**Product segmentation: Germany**

**GAMUNEX®**

- 9.3% CAGR

<table>
<thead>
<tr>
<th>Year</th>
<th>Sales</th>
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<tbody>
<tr>
<td>2011</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td></td>
</tr>
</tbody>
</table>

**FLEBOGAMMA® DIF**

- +60%

<table>
<thead>
<tr>
<th>Year</th>
<th>Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td></td>
</tr>
</tbody>
</table>
Global IG expansion

Optimize position in markets where Grifols IG brands are market leaders

- United States
- Germany
- Canada

Launch and grow Grifols IG brands in other key markets

- France
- Turkey
- Latin America

Hyperimmune growth: Rabies and Tetanus

- Rabies is essentially 100% fatal, but also 100% preventable
- 59% of patients who get rabies vaccine do not get rabies IG despite CDC recommendation for passive immunity (RIG) plus active immunity (vaccine) after exposure
- HyperRAB® is one of two RIG products available in US and has over 90% share (MRB 2013)
- New dedicated Hyperimmune team will raise awareness of appropriate rabies prevention and drive brand preference for HyperRAB®

US HyperRAB® ($M)

24.5% CAGR

2011 2012 2013 2014

Patient is exposed to rabies:

- Administer HyperRAB® and the first rabies vaccine dose (1 mL, IM)
- Rabies vaccine (1 mL, IM)
- Rabies vaccine (1 mL, IM)
- Rabies vaccine (1 mL, IM)

HyperRAB® can be given up to 7 days after the first dose of rabies vaccine.
Building around core customer: Tetanus IG and Vaccine - I

CDC guidelines suggest tetanus immunoglobulin (TIG) & Vaccine treatment for patients with less than three doses of vaccine or an uncertain vaccination history

<table>
<thead>
<tr>
<th>Vaccination History</th>
<th>Type of wound</th>
<th>Tetanus Vaccine Booster</th>
<th>Tetanus Immunoglobulin</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 5 years since last dose</td>
<td>All wounds</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>3 or more doses</td>
<td>Clean minor wounds</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>5-10 years since last dose</td>
<td>All other wounds</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>&gt; 10 years since last dose</td>
<td>All wounds</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>&lt; 3 doses or uncertain</td>
<td>Clean minor wounds</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td></td>
<td>All other wounds</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Building around core customer: Tetanus IG and Vaccine - II

- CDC Post-Exposure Prophylaxis guidelines to include TIG for those within uncertain vaccination history are not routinely followed
- Grifols has 100% share of the Tetanus IG market with HyperTET® and has licensed a tetanus diphtheria (Td) vaccine from MassBiologics (currently holds 1/3 of a two-product market)
- Call point at emergency department is same for post-exposure prophylaxis of rabies and tetanus
- Focused selling team, targeting, and message expected to add over $10M in vaccine sales to US portfolio within two years, while also driven HyperTET® growth
Immunoglobulin portfolio summary

- Focused product positioning for Gamunex® and Flebogamma® DIF is strengthening the leading global immunoglobulin portfolio
- Emphasis on patient diagnosis and optimal treatment creates additional growth opportunity for Gamunex®
- New market launches plus expansion in underdeveloped markets is a core part of our immunoglobulin strategy
- Grifols’ Hyperimmune portfolio is an important driver of value and we are investing to increase growth through emphasis on guideline-based treatment and brand choice
Grifols holds leading pdFVIII position (values)

Grifols regional split

1 Internal data, MRB & Secondary official data year 2013
2 Grifols 2014 net revenues

Grifols FVIII sales split - I

Tender sales: 44%
- Three Grifols brands with a similar share of units
  - Fanhdi®/ Alphanate® 34%
  - Koate® 34%

Commercial sales: 56%
- Fanhdi®/ Alphanate®
- 3 uses

Sources: Internal data & Secondary official data year 2014
### 2014: Grifols FVIII products maintain leadership and grow equal or faster in promotion sensitive markets

<table>
<thead>
<tr>
<th>Countries</th>
<th>Market pdFVIII</th>
<th>Grifols pdFVIII</th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td>8%</td>
<td>8%</td>
</tr>
<tr>
<td>Italy*</td>
<td>2%</td>
<td>24%</td>
</tr>
<tr>
<td>Spain</td>
<td>6%</td>
<td>13%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>5%</td>
<td>9%</td>
</tr>
</tbody>
</table>

Sources: Internal data & Secondary official data year 2014

*Excluded National Plasma self-sufficiency market

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### Growth to continue for plasma-derived therapies - I

**Key drivers of success for the commercial market:**

**Improve brand choice in ITI treatment:**

- **Alphanate® is the preferred natural factor VIII among hematologists practicing in hemophilia treatment centers**
  - Survey participants preferred Alphanate® over the other five available natural factor VIII products by a statistically significant margin \((p<0.05)\) 95% confidence interval
  - Alphanate® has captured 83% of the plasma derived pdFVIII high volume market*

- **Improve Fanhdi® and Alphanate® labelling:**
  - Experience labelling on ITI (UK, Italy, Germany, Czech Rep, Slovak Rep, Poland & Spain)
  - ITI prospective trial (Alphanate® trial)

* Source: Adivo / MRB
Growth to continue for plasma-derived therapies - II

Key drivers of success for the commercial market:

✓ Improve Frenhdi® and Alphanate® convenience:
  - High vial assays: Alphanate® 2000 IU vial
  - Future projects: higher assays, reduce the volume

![Hemophilia HV US patient population chart]

Source: UDC date 2011 / MRB / PPTA / Market Research

Grifols pdFVIII summary

✓ Grifols maintains a leading position in the pdFVIII market with 23% global share that keeps the FVIII as one of the key proteins to balance the liter
✓ Grifols pdFVIII is growing faster than the market with the promotion of natural FVIII used to treat patients that develop inhibitors
✓ Alphanate® has a leadership position in the US with a 45% of overall market share and 83% share of the high volume market. Alphanate® is the preferred natural Factor VIII among hematologists practicing in hemophilia treatment centers
Grifols is a global leader with strong positions in China & US

Albumin market shares¹

Grifols regional split²

¹ Internal data, MRB & Secondary official data year 2013
² Grifols 2014 net revenues
Grifols well positioned

- Grifols well positioned as market demand estimated to grow at 9.1% CAGR
- Growth driven by US and China, where Grifols is expected to grow above the market
- Developing countries are expected to grow at double digit rate in the coming years
- FDA & EMA restrictions on HES allow for Albumin growth (mainly EU)
- Grifols is investing in Albumin:
  - New indications: Alzheimer, cirrhosis and other diseases
  - Field promotion in key markets
  - New packaging: Albumin in bags
  - Expanded manufacturing capacity

Grifols Albumin summary

- Grifols maintains a global leading position in Albumin sales with strong positions in the largest markets: China and US
- Grifols is investing in Albumin as a new therapeutic agent for Cirrhosis, Acute Liver Failure and ALS. Should these clinical trials be successful this would reinforce Albumin properties beyond fluid management and could create a sales opportunity of approximately 500M+ euros over a five year period
- Albumin market demand will continue to grow and this will be driven by the US and China where Grifols is expected to grow above market with specific promotion in the main identified indications
Grifols holds leading Alpha-1 position

Grifols is the leading manufacturer in the worldwide Alpha-1 business

Alpha-1 market shares\(^1\)

- GRIFOLS: 64%
- CSL: 16%
- BAXTER: 9%
- Others: 11%

Grifols regional split\(^2\)

- North America: 69%
- Europe: 30%
- Others: 1%

---

\(^1\) Internal data, MRB & Secondary official data year 2013
\(^2\) Grifols 2014 net revenues
As many as 350,000 diagnosed COPD patients in US, Canada, Europe and other accessible global markets may have severe Alpha-1 deficiency as the underlying cause of COPD*

* Grifols estimates based on published prevalence studies and internal data

Global Alpha-1 strategy

- **Dedicated pulmonary teams**
  - Established in US, Canada and Germany
  - Expanding to Spain, Portugal, Italy and LATAM

- **Focused Alpha-1 testing**
  - Proprietary test kits (US, Canada and Europe)
  - New targets (e.g. COPD patient pilots in US and Germany)

- **Alpha-1 disease management**
  - Prolastin Direct with AlphaNet in US and Canada
  - AlphaCare in Germany
Testing and patient enrollment respond to increased promotion in US market

- Test kits (43% CAGR)
- New patients (17% CAGR)

Launched dedicated Sales Force expansion

Source: Internal data

Similar investments in other key markets (values)

**GERMANY**
- Disease Management
- Sales Force Expansion
- Dedicated Sales Team

- 2010
- 2011
- 2012
- 2013
- 2014

- 7% CAGR

**CANADA**
- Disease Management
- Expanded Sales Team
- Dedicated Sales Team

- 2010
- 2011
- 2012
- 2013
- 2014

- 25% CAGR

Source: Internal data
Alpha-1 strategy maintains leadership, delivers growth, balances plasma use

Grifols maintains a leading position in the Alpha-1 market with 64% global share that is increasing revenue efficiency per liter

The global opportunity in Alpha-1 patient identification and treatment is large, making new and underdeveloped markets a core part of our growth strategy

Our model of driving patient identification through dedicated pulmonary teams and offering disease management for Alpha-1 patients has proven successful in US, Canada and Germany and we are expanding the strategy to new markets

The addition of Pulmaquin® for non-cystic fibrosis bronchiectasis (NCFBE) will be the first portfolio addition to take advantage of our commercial strength in the specialized pulmonary market
Building around the core customer: Pulmaquin®

- An exclusive, worldwide license signed by Grifols for Aradigm's proprietary formulations of inhaled ciprofloxacin (Pulmaquin®) for the treatment of severe respiratory diseases (August 2013)
- Pulmaquin® is a once daily, dual release inhaled formulation that is a mixture of encapsulated and unencapsulated ciprofloxacin
- Initial indication is for NCFBE with launch anticipated in the US in 2017 and EU in 2018
- Pulmaquin® will have commercial synergies with Grifols' Alpha-1 business
Safe-harbor statement

This presentation contains forward-looking statements that are based on Aradigm’s current expectations and beliefs and are subject to a number of risks, uncertainties, and assumptions that could cause actual results to differ materially from those described. All statements, other than statements of historical fact, are statements that could be deemed forward-looking statements, including estimates of revenues, operating margins, capital expenditures, cash, the extent of cash needs and the sufficiency of cash resources, other financial metrics, expected legal, arbitration, political, regulatory, or clinical results, and other such estimates and results. Forward-looking statements involve significant risks and uncertainties, including those discussed below and more fully described in the Securities and Exchange Commission (SEC) reports filed by Aradigm, including Aradigm’s most recent annual report on Form 10-K and most recent periodic reports on Form 10-Q and Form 8-K. Please refer to Aradigm’s most recent Forms 10-K, 10-Q, and 8-K for additional information on the uncertainties and risk factors related to our business. Unless otherwise noted, Aradigm is providing this information as of May 11, 2015 and expressly disclaims any duty to update information contained in this presentation.

No forward-looking statement can be guaranteed and actual results may differ materially from those we project. Aradigm’s results may be affected by our ability to successfully develop, partner and market our products domestically and internationally, difficulties or delays in manufacturing our products, and regulatory developments (domestic or foreign) involving current and future products and manufacturing facilities. Discovery or identification of new product candidates cannot be guaranteed and movement from concept to product is uncertain; consequently, there can be no guarantee that any particular product candidate will be successful and become a commercial product. In addition, while we routinely obtain patents for our products and technology, the protection offered by our patents and patent applications may be challenged, invalidated, or circumvented by our competitors. Our business may be impacted by government investigations, litigation, and products liability claims.

Aradigm, AERx, Lipoquin®, Pulmaquin® and the Aradigm Logo are registered trademarks of Aradigm Corporation. Other names and brands may be claimed as the property of others.

Company overview

Experts in medications administered by inhalation

- Emerging respiratory specialty pharma company
- Exclusively focused on prevention and treatment severe pulmonary disease
- Located in the San Francisco Bay Area
- Most of the development team worked at Genentech
Therapeutic product pipeline*

Development stage (P= Pulmaquin®, L=Lipoquin®)

<table>
<thead>
<tr>
<th></th>
<th>Pre-clinical</th>
<th>Phase I</th>
<th>Phase IIa</th>
<th>Phase IIb</th>
<th>Phase III</th>
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</thead>
<tbody>
<tr>
<td>Bronchiectasis (P)</td>
<td>Completed</td>
<td></td>
<td>Underway</td>
<td></td>
<td></td>
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<tr>
<td>Cystic Fibrosis (L)</td>
<td>Completed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biodefense** (P,L)</td>
<td>Successful rodent studies</td>
<td>Protocols in development for approval under the “Animal Rule”</td>
<td></td>
<td></td>
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<tr>
<td>NTM (P,L)</td>
<td>Promising preclinical data</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inhaled Nicotine for Smoking Cessation</td>
<td>Completed</td>
<td>Protocols in development</td>
<td></td>
<td>Inhaled Nicotine for cigarette replacement (consumer product)</td>
<td></td>
</tr>
</tbody>
</table>

*NIH-funded diagnostic program in humans underway as well
**Tularemia, Plague, Melioidosis and Q-Fever

Investment highlights

Applied pulmonary expertise provides multiple opportunities

**Pulmaquin®**: Proprietary Inhaled Ciprofloxacin for Lung Diseases

1. Currently in phase III for chronic therapy for Bronchiectasis - an Orphan Drug indication
   - Protocols designed with input from both FDA and EMA; QIDP designation and fast track received from FDA

2. Compelling phase IIa data in Cystic Fibrosis (orphan disease), animal data against bioterrorism infections and preclinical results in non-TB mycobacteria

3. Global licensing deal in place with Grifols, S.A

4. Patents granted in multiple geographies - exclusivity to 2031
Bronchiectasis (BE): Background

- **BE is a severe obstructive lung disease**
  - Vicious cycle of lung injury, infection, inflammation, airflow obstruction and eventually death due to respiratory complications
  - Many diseases can lead to BE (TB, CF, COPD)
- **“Non-CF BE” > 110,000 patients in US (growing at ~ 8.7% p.a.), 210,000 in EU who are not CF patients and whose disease is unlikely to be caused by smoking**
  - Aradigm has Qualified Infectious Disease Product (QIDP) designation and orphan drug designation for BE in US
- **Large populations in Asia and other parts of the world**
- **No specific treatment approved**
- **Respiratory infections are the key reason for pulmonary exacerbations leading to a high incidence of hospitalizations**
  - Average cost: $42,000 per hospitalized event

Infections with *Pseudomonas aeruginosa*

Differentiating characteristic underlying the severity

- **Cystic Fibrosis**
- **Non-CF Bronchiectasis**
- **COPD (chronic bronchitis, emphysema)**
- **No *P. aeruginosa***
- **Severities of disease**
  - **Chronic *P. aeruginosa***
  - **Bacteria burden (illustrative)**
  - **30 million U.S. Patients**
  - **>110,000 U.S. Patients**
  - **30,000 U.S. Patients**
Colonization with *P. aeruginosa*:

The presence of PA rapidly increases rate of exacerbations and decline in lung function.

**Lung function**

**Infections/exacerbations**

**TIME**

**Chronically infected with *P. aeruginosa***

---

**Aradigm’s lead product: Pulmaquin®**

- **Initial Formulation**
  - Liposome (cross-section)
  - Ciprofloxacin
  - Lipoquin® ARD-3100 (Initial formulation)

- **Pulmaquin® ARD-3150**
  - Lipoquin® ARD-3100 (Initial formulation)
  - Superior antibacterial activity plus anti-inflammatory effect

Inhaled once daily using FDA-approved Pari LC Sprint Nebulizer
Aradigm’s opportunity in BE

Orphan condition with no approved therapies, QIDP designation and Fast Track received
High treatment costs and premature death
Fast track, priority review possible

Strong IP protection
Four patents issued in US, two in Australia, one each in Japan and EU—protection to 2031
US QIDP and orphan drug status granted

Approvable endpoint achieved in ORBIT-2 – Phase IIb trial
Increase in time to exacerbation is beneficial for payers and patients
Phase III program underway

Few competitors pursuing this indication
Previous attempts using “unencapsulated” inhaled antibiotics (e.g., TOBI, Cayston, colistin) failed

Aradigm’s unique approach:
Potent antibacterial activity
Good pulmonary safety and tolerability
Significant positive impact on pulmonary exacerbations

Aradigm believes Pulmaquin® for BE is a “billion $ plus” opportunity
Grifols has stated sales expectations of $300 million in Year 3 post launch

Very high sustained Ciprofloxacin sputum levels
Unachievable with oral or IV Ciprofloxacin

Pulmaquin®

Preventing pulmonary exacerbations

Why do we use inhaled Liposomal Ciprofloxacin?

Choice of drug: Ciprofloxacin

- Broad spectrum antibiotic – different class from approved inhaled antibiotics, no cross-resistance
- Approved as tablets and injections
- Tablets and injections used to treat acute lung infections – rarely used chronically for prevention of pulmonary exacerbations because:
  - Ciprofloxacin has systemic side effects
  - There are concerns about emergence of antibiotic resistance with systemic antibiotic use

Choice of delivery method: Inhalation

- Rapid onset of action, improved efficacy (rapid and sustained high antibiotic concentrations at the sites of infection in the respiratory tract)
- Low blood levels – less likely systemic side effects and resistance

Choice of formulation: Slow Release Liposomal Encapsulation

- Reduces frequency of dosing (once daily vs. twice daily for TOBI® and three times for Cayston®)
- Improves respiratory tolerability compared to unencapsulated inhaled antibiotics

ORBIT-2 phase IIb study of Pulmaquin® vs placebo in bronchiectasis

42 patients, 3 cycles of 28 days on/28 days off (~ 6 months)

<table>
<thead>
<tr>
<th>Endpoint</th>
<th>Drug*</th>
<th>Placebo*</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>P. aeruginosa</em> colony-forming units/Logs at 28 days (primary)</td>
<td>-4.44 (27,000 fold)</td>
<td>+0.13</td>
</tr>
<tr>
<td>Median time to first pulmonary event (secondary)</td>
<td>134 days</td>
<td>58 days</td>
</tr>
<tr>
<td>Required supplemental antibiotics (secondary)</td>
<td>7 patients</td>
<td>15 patients</td>
</tr>
</tbody>
</table>

ORBIT-2 demonstrated that controlled release of inhaled ciprofloxacin in the lung results in excellent anti-infective activity coupled with good safety and tolerability, leading to a statistically significant increase in the median time to first pulmonary exacerbation – an approvable primary endpoint. No evidence of emergence of resistance due to treatment.

* Safety: Superior pulmonary adverse events profile in the treatment group vs. the placebo group. No significant change in lung function (FEV1)
Pulmaquin® in BE

Phase III design cleared with FDA and EMA

- Two phase III pivotal trials currently enrolling
- Trial design
  - ~255 patients per trial
  - 6 cycles of once daily treatment with Pulmaquin® vs placebo (6x28 days on/28 days off ~ 1 year) + 28 days open label extension
  - Primary endpoint: time to first pulmonary exacerbation
  - ORBIT-2 met this endpoint with statistical significance: 134 days with Pulmaquin® vs 58 days on placebo
- FDA and EMA agreement on design

Pulmaquin® potential markets

Unmet or poorly met medical needs present high value opportunities

- Pseudomonas aeruginosa
  - Non-CF Bronchiectasis (BE) (phase III underway)
  - Cystic Fibrosis (CF) (phase IIa)
  - Severe COPD
  - Japan: Diffuse Panbronchiolitis

- Other infections
  - Non-TB mycobacteria (preclinical – funded by NIH grant)
  - Broad-spectrum prophylaxis and treatment of “bioterrorism infections”: inhalational tularemia, Q-fever and plague (animal data, funded by UK and Canadian defense research labs)
Key Bioscience Takeaways

- Strategic focus is on market growth and geographic expansion while delivering innovation.
- In the countries that account for 80% of Grifols Bioscience sales, the CAGR was 11% from 2011 to 2014.
- Growth rates slowed into 2014 due to depletion of Albumin inventory synergies, slower market growth and pricing pressures, but within 2014, growth strengthened throughout the year.
- Grifols sustains a leading position within our core business of plasma-derived therapies, being #1 in most of the major proteins.
- Products like the TD vaccine and Pulmaquin® are building around the core of our business with the customer in mind.
- Grifols has invested in the Bioscience division to sustain growth throughout the planning period (Commercial investments, Fractionation capacity, R&D).
- Significant growth opportunities remain for key proteins.
Diagnostic: A new global franchise

Carsten Schroeder

2014 Highlights
2014 Highlights: Fully integrated new business

- **GLOBAL EXPANSION**
  - Strengthened presence in strategic markets
  - Gained momentum in US for blood typing solutions

- **CAPACITY LEADERSHIP**
  - Continued investment to upgrade and expand Diagnostic manufacturing plants

- **INNOVATION ACCELERATION**
  - Received FDA clearance and CE mark for key products
  - Initiated first project to capitalize on synergies with Bioscience

- **MULTI-BUSINESS BUILD**
  - Integrated the newly acquired blood screening business

---

Where we are today

- **STABILIZE**
  - Operations to ensure business continuity

- **INTEGRATE**
  - the organizations successfully

- **EXECUTE**
  - the Diagnostics strategy
Diagnostic vision

A global diagnostics company focused on select, high-value markets providing innovative solutions to:

- Detect human diseases
- Monitor therapies
- Ensure a safe blood and plasma supply

Overview & Strategy
# Diagnostic division

## AT-A-GLANCE
- 1,000+ full-time employees supporting Diagnostic success
- Integrated from assay/instrumentation development through commercialization
- FDA, GMP & CE Licenses
- Commercial leader in Transfusion Medicine and emerging Specialty Diagnostics Portfolio

## UNITED STATES
- **Headquarters & DX Manufacturing**: Emeryville, CA

## SWITZERLAND
- **Regional Office**: Basel
- **DX Manufacturing**: Düdingen

## SPAIN
- **Regional Office**: Barcelona
- **DX Manufacturing**: Bilbao, Murcia, Zaragoza

## CHINA
- **Regional Office**: Hong Kong

## AUSTRALIA
- **DX Manufacturing**: Victoria

## DIAGNOSTICS OVERVIEW

<table>
<thead>
<tr>
<th>Nucleic Acid Testing (NAT)</th>
<th>Immunoassay</th>
<th>Blood typing</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2014 Net revenue % share</strong></td>
<td>53%</td>
<td>26%</td>
<td>14%</td>
</tr>
<tr>
<td><strong>Market share</strong></td>
<td>57%</td>
<td>50 - 80%</td>
<td>7%</td>
</tr>
<tr>
<td><strong>Partner/Business model</strong></td>
<td>Hologic 50% revenue share</td>
<td>Ortho Clinical Diagnostics 50% profit share</td>
<td>-</td>
</tr>
<tr>
<td><strong>Products</strong></td>
<td>Instruments, assays</td>
<td>Antigens</td>
<td>Gel cards (typing), genotyping, instruments</td>
</tr>
</tbody>
</table>

93% of today’s Diagnostic revenue comes from the **Transfusion Medicine**

---

1 Nucleic acid testing represents the adopted market; Immunoassay represents OCD/Grifols, depending on segment and geography
A global leader in Transfusion Medicine

- **COLLECTION**
  - Blood bags, separators, and blood management software

- **TESTING**
  - **INFECTIOUS DISEASE SCREENING**
    - Procleix NAT Solutions
    - NAT instruments, assays, and software
  - **IMMUNOASSAY REAGENTS**
    - Joint business with Ortho Clinical Diagnostics

- **TYPING**
  - **COMPATIBILITY & PRE-TRANSFUSION TESTING**
    - ABO/Rh typing
  - Blood group genotyping

- **TRANSFUSION**
  - Identify, register, and track transfusion elements

---

**A global leader in Transfusion Medicine**

**IMMUNOASSAY REAGENTS**

**JOINT BUSINESS WITH ORTHO CLINICAL DIAGNOSTICS**
World-leading manufacturer and supplier of HCV & HIV antigens

We supply HCV and HIV antigens to the top three immunoassay players

Market position established with proprietary IP and sustained through manufacturing expertise for more than 20 years

Consistent source of financial returns

50-80% immunoassay market share depending on segment and geography

Grifols & Ortho Clinical Diagnostics partnership

Grifols contributions

- HCV & HIV patents
- Antigen research, manufacturing & supply
- Assay research support

OCD contributions

- Assay development & manufacturing
- Instrument development & manufacturing
- Product commercialization

Delivering 26% of the total Grifols Diagnostic division net revenue
A global leader in Transfusion Medicine

**COLLECTION**
- **BLOOD COLLECTION**
  - GRIFOLS: Blood bags, separators, and blood management software

**TESTING**
- **INFECTIOUS DISEASE SCREENING**
  - Procleix NAT Solutions
    - NAT instruments, assays, and software
  - Immunoassay Reagents
    - Joint business with Ortho Clinical Diagnostics

**TYPING**
- **COMPATIBILITY & PRE-TRANSFUSION TESTING**
  - ABO/Rh typing
  - Blood group genotyping

**TRANSFUSION**
- **TRACEABILITY**
  - Identify, register, and track transfusion elements
A global leader in NAT blood screening

- Differentiated automated platforms and best-in-class assays
- Customer value and satisfaction through focus on sales, service and support

Global market split

- ~87 million donations
- 24% Adopted
- 76% Unadopted

Global share of adopted

- 43% Grifols
- 57% Others

Regional share

- US: 79% Grifols
- APAC: 75% Grifols

Converting unadopted markets and accounts

- Competitive account conversion
- Unadopted to adopted

- Russia +8%
- Mexico +10%
- Brazil +6%
- Canada +21%
- South Korea +65%
- Taiwan +90%
- Japan +100%
- Indonesia +7%
- India +4%
- China +14%

Market share percentage point increase from 2010 - 2014; internal estimate
Grifols & Hologic® partnership

Grifols contributions

- HCV & HIV patents
- Product commercialization, technical service, support & training
- Regulatory activities outside of US

Hologic® contributions

- Product development & manufacturing
- Technology (TMA) patent
- Regulatory activities in the US

Delivering 53% of the total Grifols Diagnostic net revenue

Transfusion Medicine pipeline

**TESTING**

**NAT**

Automation-Ready Procleix Panther

**IMMUNOASSAY**

Summit System, Vitros Instrument *In partnership with OCD*

**BLOOD TYPING SOLUTIONS**

Donor Center Erytra®, Multi-cards, BGG

HEV, Dengue, Parvo/HAV 3.0

HIV-Combo, New antigens

Integrated software solution
Expanding our Transfusion Medicine business

- Protect and grow the business
- Enter targeted emerging markets
- Continue best-in-class service & support

- Continue investment to upgrade and expand Diagnostic manufacturing plants

- Invest in strategic partnerships/ technologies
- Offer innovative and integrated solutions

Our current business

TRANFUSION MEDICINE

SPECIALTY DIAGNOSTICS
Build a strong Specialty Diagnostics business

- Leverage instrument installed base and current product portfolio
- Focus on unmet medical needs
- Develop proprietary, high value tests
- Evaluate next generation sequencing platform
Leverage capabilities across divisions

Maximize market opportunities for Bioscience

- Alzheimer’s disease needs an early diagnosis
- Araclon has developed kits that has allowed a direct determination of beta-amyloid proteins in blood
- Clinical studies are underway to validate our Aβ test kits as indicative tools in the diagnosis of Alzheimer’s

“Alzheimer’s kills more than prostate and breast cancers combined.”

Maximize market opportunities for Bioscience

- Alpha-1 deficiency which often goes undetected, is a genetic disorder that can lead to serious health issues such as lung disease.
- Early diagnosis and intervention is important.
- Grifols is developing a novel Alpha-1 diagnostic test and offers plasma therapies for Alpha-1 deficiency.

Cost and efficiency opportunities in plasma collection

Exploring a “quick screen” infectious disease test here... …further improves efficiency and costs
Key Diagnostic Takeaways

- **GLOBAL EXPANSION**
  - Continue to expand Transfusion Medicine leadership
  - Build a strong Specialty Diagnostic business

- **CAPACITY LEADERSHIP**
  - Continue investment in manufacturing plants to meet growing Diagnostic business

- **INNOVATION ACCELERATION**
  - Invest in strategic partnerships and technologies
  - Launch innovative integrated solutions

- **MULTI-BUSINESS BUILD**
  - Capitalize on commercial synergies with Bioscience and Hospital
Plasma procurement progress

Shinji Wada

“Integration” to “Excellence”

- Network of 150 centers maintained while supporting the company’s increasing plasma throughput
- Critical processes harmonization progressed under the Grifols Plasma Operations Management team
- Field organization was restructured and streamlined for better oversight and tactical execution
- Three testing laboratories were integrated to two Texas labs with in-house NAT testing platform
Completion of NC plasma logistics center

- 7,760 m² Fully automated plasma storage and clearing warehouse
- 5,032 pallet positions for 3.2 million liters capacity

Donor center automation projects - I

**Plasma Bottle Sampling (PBS) System**

- Designed and build by Grifols Engineering
- Simplify extraction of plasma samples
- Verify integrity of unit/sample identification
- Improved employee safety during the process
- Rollout to Grifols donor centers will be completed in 2015
Donor center automation projects - II

Grifols Donation System (GDS)

- Donor Center Management Software designed and build by Grifols IT
- Tailored to Grifols Best Practices and SOP for further quality excellence
- Powerful data and logistic management functions

Significant labor cost saving and process efficiency improvement expected

Technological advance for plasma logistics

Plasma RFID Bottle

- Patented RFID technology for Plasma unit management
- Developed with major soft goods suppliers
- Assure complete traceability and quality of plasma unit handling at donor centers, logistic center and fractionation plant

Reduce significant manual work load of plasma unit logistics
US plasma collection industry

- Double digit y-o-y volume increase for the last 3 years
- Rapid increase of new donor centers
- Declining recovered plasma availability
- Increasing competition among donor centers
- Industry focus on donor-safety

Supporting growing plasma demand

- 15 new donor centers opened or relocated and upgraded to “Grifols Standard”
- 12 major remodeling completed
- Average collection volume of existing centers nicely growing
- Aggressive new center opening, planned (65 facilities in 5 years) to warrant company’s long-term growth and capacity leadership
New donor centers in start-up

- Need careful balancing of quality operation and collection volume increase
- Controlling cost at any new center is challenging
- 2 plus years to reach cost target
Aggressive plasma cost management

- Fixed cost absorption by planned volume growth
- Accelerating process automations with new technologies for significant labor cost and process efficiency improvements
- Re-engineering donor center labor management model
- Pursuing further synergies with other Grifols divisions
- Further investments for center employees development

Plasma cost structure:

- Fees
- Logistics
- Support & Fixed
- Testing
- Supply & Other var.
- Labor

Quality of employees matters

Grifols Academy accredited by ACCET

The Grifols Academy received accreditation for a five year period by the Accrediting Council for Continuing Education and Training (ACCET)

Provides national recognition to the Academy

Allows the Academy to grant continuing education credits (CEUs) to be used by Grifols employees

Grifols Academy’s partnership with the College for America

Grifols Plasma Operations employees who want to continue to grow their career with Grifols can receive their necessary education through College for America

221 Employees actively enrolled

179 Associates degree
5 Bachelors degree
3 Completed the program

Grifols partnership with the College for America was recognized by the White House after President Obama’s State of the Union Address on January 20, 2015
Key Plasma procurement progress Takeaways

Grifols Plasma Procurement progress Takeaways

- Continue maximizing plasma collection at existing, licensed donor centers
- Aggressively adding new centers for long-term capacity leadership
- Improvement of plasma cost efficiency by innovative solutions, labor model re-engineering and continuous process improvements
- Continue investment to employee competency development through Grifols Academy programs
- Enhance specialty plasma programs to support hyper-Ig franchise
Grifols initiatives

- Plasma derivatives as natural products
- Immunoglobulins in infectious disease and immunology
  - Specific IGs
  - World plasma pool
- Liver failure
- Aging, age-related conditions and other diseases
  - Alzheimer’s
  - ALS (Lou Gehrig’s disease) and others
  - Young plasma derivatives
Plasma derivatives are natural products

Natural plasma proteins

- Until the 80’s there was just one type of therapeutic plasma proteins that found in Nature
- Found in human plasma
- Consequence of human evolution through Natural selection
- Hundreds of millions years needed to evolve
- Critical components for the equilibrium of multiple functions
Engineered proteins

- **Recombinant** and **Transgenic**: produced from the 80's as “copies” of natural proteins in *genetically modified* cells or animals, with a few differences due to post-translational modifications, which came to satisfy the required amount for certain diseases
  - recombinant Factor VIII (success)
  - transgenic A1P1 (failure)

- **Fusion proteins**: new artificial proteins “created” from other proteins modifying their natural function and metabolism
  - Fc Fusion

---

**Fc Fusion**

- Assembly of a recombinant Factor VIII fragment and an immunoglobulin portion
- Factor VIII is not bound to its natural partner, von Willebrand Factor
- Not found in Nature
- Potentially more immunogenic than the natural protein and its copies
- Other risks not yet known (multiple functions)
- Little advantage in front of the natural (e.g. 2 weekly infusions instead of 3)
IG in infectious disease and immunology

IG as a treatment of infectious diseases

- Human immune system can avoid re-infection in patients recovered from a first infection (e.g. measles)
- Immune system produces IG against pathogens (defenses)
- Such IG can be used to treat disease during its course
- Specific IG target specific pathogens
- Same concept leads to vaccination: the immune system produces specific IG
- In addition, immunodeficient patients cannot be vaccinated

But regardless of vaccination, IG have been used for treatment of infections
The scientific world has forgotten this use
Not all IGs are the same

- Different IG bind to different sites of a toxin or pathogen and with different intensity
- Monoclonal IG bind to a **single** site
- Natural IG bind to **multiple** sites
- Natural IG present a **higher likelihood of neutralizing** a toxin or pathogen
- Natural IGs are capable of inhibiting **multiple paths** to infectivity

Grifols has and is developing neutralizing tests to explore new indications for our natural immunoglobulins

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Development of hyperimmune natural IG

- Vaccination of a naïve population without the disease
- Immune system produces specific IG against disease
- **Hyperimmune** plasma collection from donors

- Vaccine is not available
- Population that has recovered from disease has high titers of specific IG against disease
- **Convalescent plasma** collection from recovered patients
Potential opportunities for hyperimmune IG

- Hyperimmune plasma to approach diseases with an active vaccine
- May include all infectious diseases for which there is an effective vaccine

(075) NATIONS OF THE WORLD

Hyperimmune IG can be used in countries where there is no effective vaccination

Grifols has a broad hyperimmune portfolio

<table>
<thead>
<tr>
<th>North America</th>
<th>Worldwide Markets</th>
<th>Indication</th>
<th>Dosage</th>
<th>Co-therapeutic</th>
<th>Packaging</th>
</tr>
</thead>
<tbody>
<tr>
<td>HyperRab S/D</td>
<td>HyperRab S/D</td>
<td>Post-exposure prophylaxis for rabies</td>
<td>20 IU/kg (0.133 mL/kg)</td>
<td>rabies vaccine</td>
<td>2mL and 10mL vials</td>
</tr>
<tr>
<td>HyperTet S/D</td>
<td>Igantet</td>
<td>Post-exposure prophylaxis for tetanus</td>
<td>4.0 units/kg (&lt;7 yrs) 250-IU IM injection (&gt;7yrs)</td>
<td>tetanus vaccine</td>
<td>250 unit prefilled syringes (PFS)</td>
</tr>
<tr>
<td>HyperRho S/D</td>
<td>Igamad, Igantid</td>
<td>Rh hemolytic disease of the newborn (HDN)</td>
<td>1500 IU ante-partum and post-partum series</td>
<td>none</td>
<td>1500 IU PFS</td>
</tr>
<tr>
<td>HyperHepB S/D</td>
<td>Igantibe, NIULIVA</td>
<td>Post-exposure prophylaxis for hepatitis B virus</td>
<td>0.06 mL/kg IM within 7 or 14 days of exposure; 0.5 mL on day of birth</td>
<td>hepb vaccine</td>
<td>0.5 (neonatal), 1 and 5 mL PFS</td>
</tr>
<tr>
<td>GammaStan S/D</td>
<td>Igamplia</td>
<td>Pre- and post-exposure prophylaxis for hepatitis A virus; prophylaxis for measles and rubella during 1st trimester of pregnancy</td>
<td>HAV - 0.02 mL/kg, up to 2 weeks post exposure; Measles - 0.25 mL/kg.</td>
<td>none</td>
<td>2 mL and 10 mL single dose vials</td>
</tr>
</tbody>
</table>
Hyperimmune IGs can cover the vulnerability gap

- There is a gap between administration and protection timepoints in vaccination
- Immune vulnerability gap
- **Hyperimmune IGs can cover the gap**

Convalescent hyperimmune IG: dengue virus distribution

- Dengue is endemic in at least **100 countries** in Asia, the Pacific, the Americas, Africa, and the Caribbean
- Nearly all dengue cases reported in the 48 continental states were **acquired elsewhere by travelers or immigrants**
- The last reported continental dengue outbreak was in south Texas in 2005
- Local transmission of dengue was reported for the first time in France and Croatia in 2010
- In 2012, an outbreak of dengue on the Madeira islands of Portugal resulted in over 2,000 cases and imported cases were detected in mainland Portugal and 10 other countries in Europe

No vaccine is available
Potential treatment with convalescent immunoglobulin
Dengue virus IG facts

- Up to 500 million people are infected yearly with hundreds of thousands of severe cases occurring including 20,000 deaths
- Rates of dengue virus infection are increasing and the disease is spreading to new regions of the world
- IG may provide a useful tool to clinicians treating dengue patients
- Dengue virus antibodies have been detected in blood donations from endemic areas
- Convalescent plasma has been demonstrated to have neutralizing activity for other viruses of the same family

Grifols is developing tools that can be used to assess potential anti-dengue neutralizing activity in existing Grifols IG products and to develop new products.

Anti-Ebola convalescent hyperimmune IG: Grifols project

- Use of hyperimmune plasma from recovered patients
- Production of anti-Ebola hyperimmune IG preparations
- Modular plasmapheresis center to collect convalescent plasma in epidemic areas
- Convalescent plasma IG facility to produce anti-Ebola IG
Grifols plasmapheresis modular center for epidemic areas

Grifols pioneering spirit: convalescent plasma IG facility

Clayton. Visit tomorrow, June, 5th

Probably the first and only completely isolated plasma IG facility in the world
World plasma pool: potential IG benefits

- Globalization facilitates human movements worldwide
- Infection patterns are different in different areas
- Immunodeficient patients are less protected

Unless

- Commercial IG have a broad representation against multiple agents from multiple world areas
- Combination of plasma collected from different areas of the world (world plasma pool) to be used in manufacturing IG
- Much broader spectrum against pathogens from multiple areas

Spectrum of IG: Primary immunodeficiencies

- Commercial IG is a polyclonal pool of immunoglobulins
- Representation of different IG depends on donor population
- IG obtained from different donor populations have different antibody patterns
- Patients suffering from Primary immunodeficiency need IG to survive Vaccination does not work for them
- Better coverage against infectious disease if a broader spectrum of IG is contained into IG preparations

A mixture of plasma collected in different geographical areas would guarantee this broader antibody spectrum: World Plasma Pool
Analysis of IGs from different geographical plasma origins

India shows higher titers of Dengue, Hepatitis E, Chikungunya and WNV antibodies.
Different pathogen antibodies in different world areas - II

- Canada shows higher titers of Varicela-Zoster, Poliovirus, Tetanus, etc.

The use of hyperimmune IG includes prevention and treatment

- Hyperimmune IG is obtained from vaccinated population plasma if vaccine is available
- Hyperimmune IG is obtained from convalescent plasma if vaccine is not available
- Hyperimmune IG can be used for prevention (immunodeficient patients)
- Hyperimmune IG can be used for treatment of infectious diseases (endemic, epidemic, emerging)

Not all the potential uses of IG have been developed yet
A pilot study performed with Albumin

- Total plasma exchange with Albumin 5% in Acute-on-chronic liver failure (ACLF)
- High mortality complication of liver cirrhosis (ICU patients)
- Liver transplant is the only therapy life-saving
- Most patients die before an organ is available
- Ten patients in a single institution in BCN, Spain (completed)
- Principal investigator: V. Arroyo, MD, Chairman of the European Consortium of Chronic Liver Failure

Preliminary results: survival improvement
A pilot study performed with Albumin

- Use of Albumin 20% in cirrhotic patients with ascitis
- Regular weekly intravenous infusion
- Thirty patients in 6 centers in Spain (completed)
- Principal investigator: V. Arroyo, MD, Chairman of the European Consortium of Chronic Liver Failure

Preliminary results: prevention of circulatory dysfunction

Effect of plasma exchange with Albumin on survival
Pivotal phase III clinical trials

**Albumin 5%**
- **APACHE** study. Plasma exchange in ACLF
- Approx. 350 patients in EU and US. Randomized, controlled
- Primary variable: survival
- Approval planned for 2020

**Albumin 20%**
- **PRECIOSA** study. Intravenous infusion of Albumin 20% in cirrhosis with ascitis
- Approx. 400 patients in EU and US. Randomized, controlled
- Primary variable: circulatory dysfunction
- Approval planned for 2020

**Albumin in Alzheimer’s**
**Albumin: a therapeutic agent for Alzheimer’s disease**

**Total plasma exchange**
- Removal of a plasma volume from a patient and replacement with the same volume of Albumin 5%. Blood cells are injected back to the patient
- Removes Amyloid-beta and other substances potentially related with Alzheimer’s etiology

**Hemopheresis**
- Removal of a limited volume of plasma (similar to that of a donation) from a patient and replacement with different doses of Albumin 20%. Blood cells are injected back to the patient
- IVIG is infused from time to time to replace the endogenous IG removed
- Maintenance treatment after total plasma exchange

**AMBAR clinical trial**

**Alzheimer Management by Albumin Replacement**
- A multicenter, randomized, controlled study to evaluate the efficacy and safety of short-term plasma exchange followed by long-term plasmapheresis with infusion of human Albumin combined with intravenous immunoglobulin in patients with mild-moderate Alzheimer’s disease
- Phase IIb/III
- Study sites: Spain, US
- Main goal: to evaluate cognition and function in mild-moderate AD
AMBAR clinical trial

- Phase IIb/III clinical trial
- 364 patients, mild-moderate Alzheimer’s, randomized, controlled
- Weekly conventional plasma exchange combined with monthly low volume plasma exchange
- Three treatment arms with 3 doses Albumin + 1 control (sham) group
- Approx. 40 sites in Spain and the US

AMBAR status

<table>
<thead>
<tr>
<th>Study Approval</th>
<th>Spain</th>
<th>US</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participating sites</td>
<td>21</td>
<td>22</td>
</tr>
<tr>
<td>Health Authorities</td>
<td>Spanish Agency</td>
<td>FDA</td>
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<td>Ethics Committee / IRB</td>
<td>H.U. Vall d’Hebrón Ethics Committee</td>
<td>Shulman Associates IRB</td>
</tr>
<tr>
<td>Active recruiting sites</td>
<td>16</td>
<td>11</td>
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<tr>
<td>Patients</td>
<td>Recruited</td>
<td>120</td>
</tr>
<tr>
<td>Total</td>
<td>170 out of 364</td>
<td>50</td>
</tr>
</tbody>
</table>
AMBAR interim analysis

- Planned with approx. 180 subjects
- Confirmation of safety and treatment feasibility
- No influence of the interim analysis on the trial conduction
- Expected end of 2015

No formal efficacy evaluation due to blinding

Albumin in ALS (Lou Gherig’s disease)
Developments in ALS (Lou Gherig’s disease)

Use of plasmapheresis with 5% Albutein® in newly diagnosed patients

- Clinical trials:
  - Phase I, open-label, single-center, non-controlled clinical trial
    12 out of 13 patients included (April 2015) from Spain
  - Phase IIa, open-label, single-center, non-controlled clinical trial
    10 patients expected to be included in the US starting this year (2015)

- Potential role for low volume plasma exchange (hemopheresis) with 20% Albutein® (subject to results)

Plasma proteins and anti-inflammation
Plasma proteins have a role in inflammation

Inflammation

✓ Inflammation is the common final pathologic path in many diseases
✓ Inflammation has a role in normal and pathologic aging (e.g. neuroinflammation in neurodegenerative disease)
✓ Oxidative stress is closely related with inflammation as a cause of disease

Plasma proteins

✓ Plasma proteins have known anti-inflammatory effects
✓ Antithrombin, Alpha-1, Albumin
✓ Albumin is the biggest antioxidant system in the body beyond its current role as a mere plasma expander (significant R&D opportunity)

Grifols has clinical development plans of Antithrombin in cardiac surgery, Alpha-1 Antitrypsin in diabetes and Albumin in cirrhosis and Alzheimer’s

Young plasma and aging
Plasma contains substances against age-related processes

From the Investors’ and Analysts’ meeting 2014 in Barcelona

**The Wall Street Journal**

**Transfused Blood Rejuvenates Old Mice**

*Research May Point to Ways to Reverse Some Effects of Human Aging*

In one study, researchers at Stanford University and the University of California, San Francisco found that blood transfusions from young mice reversed cognitive effects of aging, improving the old mice’s memory and learning ability. The report was published Sunday in the journal *Nature Medicine*.

Two other reports appearing in Science from researchers at Harvard University found that exposing old mice to a protein present at high levels in the blood of young mice and people improved both brain and exercise capability. An earlier report by some of the same researchers linked injections of the protein to reversal of the effects of aging on the heart.

**BBC News Health**

**New blood 'recharges old brain', mouse study suggests**

In the study, published in *Nature Medicine*, mice aged 18 months were given injections of the fluid part of blood (plasma) taken from mice aged three months. The injected mice performed better on memory tests than mice of the same age that had not been given blood plasma.

**Grifols participation in Alkahest: 47.5%**

**The Wall Street Journal**

**Grifols to make a major equity investment in Alkahest**

4th March, 2015

Alkahest is a company founded in 2014 by leading scientists who demonstrated at Stanford University (US) that **factors in the blood of young animals were able to restore mental capabilities in old animals**

Grifols acquires **47.5%** of the equity of Alkahest for **$37.5 million**

Alkahest and Grifols **to work together** to develop **plasma-based products** for the treatment of **cognitive decline in aging** and other central nervous system (CNS) disorders, including **Alzheimer’s**
Key Future of plasma derivatives and Grifols initiatives Takeaways

- Plasma proteins are **natural products** compared with recombinant, transgenic and fusion proteins.
- IG preparations provide a means to **prevent and treat** infectious diseases (immunodeficient patients and normal population).
- Albumin, alone and through plasmapheresis, shows activity beyond plasma expansion (AMBAR, liver failure).
- **Antithrombin, Alpha-1 Antitrypsin and Albumin** have **anti-inflammatory properties** being explored in clinical trials (AMBAR, cardiac surgery, diabetes).
- Plasma “content” shows activity in modulating **normal aging and age-related diseases** (Alkahest/Stanford).

Plasma proteins provide many unexplored opportunities.
Aging and the therapeutic benefits of plasma

Karoly Nikolich – Tony Wyss-Coray

Revitalizing therapies from plasma for age-related brain diseases

- Plasma carries soluble agents that influence brain function
- Powerful therapeutic potential for quality of life in aging
Alkahest, Inc.

- Company founded in 2014
- Based on Tony Wyss-Coray’s discoveries at Stanford University
- Investment by and partnership with Grifols in 2015
- Grifols-Alkahest partnership based on unique synergies
  - World-class plasma supply and plasma fraction production
  - Neuroscience expertise to focus on cognitive functions
  - Diseases affecting quality of life growing with aging population

Alkahest, Inc.

- **Management:**
  - **Karoly Nikolich**, CEO (Genentech, Amnestix, Circuit Therapeutics, Stanford)
  - **Joseph McCracken**, VP BD (Roche, Genentech, Aventis)
  - **Stephen Peroutka**, CMO (Stanford, Genentech, PRA)
  - **Steven Braithwaite**, CSO (Stanford, Wyeth, Circuit Therapeutics)
  - **Tammy Kent**, VP Operations and HR (Venture Law, AGY, Circuit Therapeutics)

- **Scientific Advisory Board:**
  - **Tony Wyss-Coray**, Stanford, Chairman
  - **Lee Rubin**, Harvard
  - **Eric Reiman**, Banner Alzheimer’s Institute
  - **Lennart Mucke**, Gladstone Institute
  - **Saul Villeda**, UCSF
  - **Tom Rando**, Stanford
Young plasma improves cognition in old mice

Tony Wyss-Coray 2011, 2014

**Parabiosis**, “Siamese mice”
- Old mouse: improved cognition (rejuvenation)
- Young mouse: impaired cognition

**Plasma transfer**
- Young plasma into old mice improved cognition
- Old plasma into young mice impaired cognition

Plasma contains factors that modulate brain function

“Youth factors” are beneficial; “Aging factors” are detrimental

Alkahest’s foundational science and intellectual property
Therapeutic opportunities

"Youth factors" as therapeutics
Whole plasma, plasma fractions, proteins, protein cocktails, small molecule modulators

Antidotes against "Aging factors" as therapeutics
Plasmapheresis, antibodies, small molecule inhibitors

Why Aging Matters
One of the most important medical challenges of our generation
We live longer

Lifestyle, nutrition, healthcare have increased life expectancy

But can we deal with old age?

- People aged 80 years or over will reach 400 million by 2050, more than 3x today
- This will present an unprecedented challenge for societies
Age-related diseases are increasing with growing aged population

Among them, brain diseases are the most challenging

Other organs
- Arthritis
- Cancer
- Diabetes
- Heart attack
- Heart disease
- Osteoporosis
- Pneumonia

Brain
- Alzheimer’s disease (AD)
- Amyotrophic lateral sclerosis (ALS)
- Delirium
- Multiple sclerosis (MS)
- Parkinson’s disease (PD)
- Sleep disorders
- Stroke

Effective treatments for many diseases developed but not for CNS

Dementia and neurodegenerative diseases are on the rise

While treatments for cancers, infectious diseases have been developed, in contrast, no effective therapies have been discovered and developed for Alzheimer’s disease

Alzheimer’s Association, 2013
We may live longer than 90 years…

…but we will face an Alzheimer’s epidemic

Many studies have been carried out to treat Alzheimer’s disease but no disease-modifying therapies have succeeded
Alzheimer’s disease drug-development pipeline

AD drug-development: pipeline few candidates, frequent failures

*Cummings J.L. et al, Alzheimer’s Research and Therapy, 2014:

- Between 2002 to 2012, 413 AD trials were performed:
  - 124 phase I trials, 206 phase II trials, and 83 phase III trials
  - Very high attrition rate was found, with an overall success of 0.4% (99.6% failure)

We need fundamentally NEW approaches

Pioneering Science: blood-brain communication

Tony Wyss-Coray, Stanford University Medical School

The ageing systemic milieu negatively regulates neurogenesis and cognitive function
Saul A. Villeda, ...., Tony Wyss-Coray

Young blood reverses age-related impairments in plasticity and cognitive function
Saul A. Villeda, ...., Tony Wyss-Coray
Nature Medicine, 20: 659-63 (2014)

A young systemic environment reverses degeneration in a mouse model of Alzheimer’s disease
Jinte Middeldorp, ...., Tony Wyss-Coray
In review
Life-span and Health-span
We want to live longer and healthier lives
Cognitive competence is a key element

Alzheimer’s disease:
What do we expect from plasma based therapies?

Our aim is to halt disease progression and/or induce regenerative mechanisms

**Youth factor** based therapeutics

Young Plasma

- Clinical Studies in Dementia
- Clinical Studies in non-CNS Indications
- Clinical Studies with Plasma Fractions

- Opportunity for direct clinical studies with whole plasma and with plasma fractions
- Identification of plasma fractions affecting brain plasticity and function
- In-depth characterization of plasma fractions

Young Plasma to treat Alzheimer’s disease

**Alkahest – Stanford Clinical Study**

<table>
<thead>
<tr>
<th>The Plasma for Alzheimer SymptoM Amelioration (PLASMA) Study</th>
<th>FDA ClinicalTrials.gov Identifier: NCT02256306</th>
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</thead>
<tbody>
<tr>
<td>Recovered plasma from young donors Age 18 – 25 years</td>
<td>Stanford Blood Center</td>
</tr>
<tr>
<td>Phase I/IIa clinical study design under IRB with FDA support</td>
<td>Stanford Neurology Department Dementia Center</td>
</tr>
<tr>
<td>Mild- to moderate Alzheimer’s disease patients:</td>
<td>Rolling enrollment of up to 18 (24) patients</td>
</tr>
</tbody>
</table>
Characterization and development of plasma fractions as therapeutics

Investors’ & Analysts’ Meeting | Raleigh 2015

“Aging factor” based therapeutics

- Identification of proteins from old human plasma that cause cognitive decline
- Antibodies against damaging proteins
- Functional studies with antibodies to test for neutralizing activity
- Potential to combine with plasmapheresis

Old Plasma

Clinical studies in dementia

Clinical studies in non-CNS indications

Clinical studies with plasma fractions
Alkahest founded on groundbreaking science that plasma modulates cognitive function

World-class team and scientific network

Aging process:
- Decline of positive modulators of brain function
- Increase in aging factors negatively affecting brain function

Alkahest - Grifols partnership aims to:
- Identify and develop plasma based therapeutics for age-related cognitive diseases
- Multiple opportunities for products
- Improve health-span, quality of life, not just life-span
- Strong synergy in concepts, therapeutic approaches
Significant increase in the aging population worldwide

Source: UN World Population Prospect
Age-related decrease in cognition

Aging → Loss in Cognition

Graph showing the decrease in mean T-scores for various cognitive functions as age increases.
Aging
Rejuvenation
A fountain of youth for mice?

Heart Muscle
Liver
Brain
Pancreas

Wyss-Coray
Rubin
Franklin

Rando
Wagers

Lee

Parabiosis

Rando
Liver

Dor

A fountain of youth for mice?
Aging

Growth and survival factors

Inflammatory factors
Aging

Correlates of tissue aging

Modulators of tissue aging

Tissue rejuvenation through heterochronic parabiosis

Old = Young
Tissue rejuvenation through heterochronic parabiosis

18-month-old mouse ~ 65-year-old human

3-month-old mouse ~ 20-year-old human

Old = Young

Effects of a young systemic environment on the old brain

Rejuvenation

✓ more neural stem cell activity
✓ higher synaptic activity
✓ higher levels of genes involved in memory
✓ less inflammation in the brain

Parabiosis

Effects of a young systemic environment on the old brain

**Rejuvenation**

- more neural stem cell activity
- higher synaptic activity
- higher levels of genes involved in memory
- less inflammation in the brain
- improved memory

**Plasma transfer**


**Can this concept be applied to humans?**
Human plasma to immunodeficient NSG mice

“NOD Scid Gamma Mice” (NSG)

Saline  Plasma

NSG Mice
“Parking lot test” for old mice

Old mouse treated with saline
Old mouse treated with young plasma

Young plasma reverses Alzheimer-like disease in mice

Normal mice | Alzheimer mice
---|---
WT pbs | WT pim
Saline | Plasma
Saline | Plasma

Synaptic Integrity

Jinte Middeldorp, Eliezer Masliah
Young plasma reverses Alzheimer-like disease in mice

Jinte Middeldorp, Eliezer Masliah

Spatial learning and memory: Fear Conditioning

Jinte Middeldorp
Rejuvenation

Key Takeaways
Key Takeaways

- Blood plasma factors regulate brain functions
- Plasma from aged mice is detrimental for young mice
- Plasma from young mice reverses cognitive deficits in aged and Alzheimer’s mice
- Proteins from aged blood plasma that contribute to neural damage can be neutralized in blood for therapeutic benefit
- Exclusive license to patent portfolio

Hypothesis: young plasma benefits Alzheimer’s disease

Financials

Alfredo Arroyo
2014 Grifols highlights

**Investment activities**
- Targeted M&A activity: Diagnostic segment acquisition and strengthening R&D
- 50% of Kiro Robotics
- 47% of Alkahest (in Q1 2015)

**R&D**
- Direct R&D: €181m, 5.4% of Net Revenue, rising over 46%
- Indirect R&D: acquisitions and collaboration agreements (+€26m)

**CAPEX**
- Capex 2014: €250m
- Fractionation capacity: 12.5m liters
- 22 new + relocation plasma centers for 2014-2015

**Record figures**
- Revenue: €3.4b (+24% cc)
- EBITDA: over €1b (+21%)
- Net Profit: €470m (+36%)
- Cash Flow operations: €1b
- Liquidity position: €1.4b
- EPS: €1.37 (+36%)

**Diversification/Segment strengthening**
- Integration of transfusional Diagnostic business
- Group revenue diversification
- Complementary product range
- Year 1 accretion

**Debt refinancing**
- Average cost of debt < 3.5% (-200 bps)
- Extended maturity: ~7 years average
- Moderate leverage ratio: 3.0x
## Q1 2015 Net revenue by division

<table>
<thead>
<tr>
<th>Division</th>
<th>Q1 2015 (€ Million)</th>
<th>% of Net Revenue</th>
<th>Q1 2014 (€ Million)</th>
<th>% of Net Revenue</th>
<th>% Variance</th>
<th>% Variance at constant rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bioscience</td>
<td>681.0</td>
<td>75.0%</td>
<td>601.0</td>
<td>75.3%</td>
<td>13.3%</td>
<td>0.0%</td>
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<tr>
<td>Diagnostic</td>
<td>172.6</td>
<td>19.0%</td>
<td>146.6</td>
<td>18.4%</td>
<td>17.7%</td>
<td>6.0%</td>
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<tr>
<td>Hospital</td>
<td>23.3</td>
<td>2.5%</td>
<td>24.3</td>
<td>3.0%</td>
<td>-4.1%</td>
<td>-5.2%</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>876.9</strong></td>
<td><strong>96.5%</strong></td>
<td><strong>771.8</strong></td>
<td><strong>96.7%</strong></td>
<td><strong>13.6%</strong></td>
<td><strong>1.0%</strong></td>
</tr>
<tr>
<td>Raw Materials &amp; Others</td>
<td>31.5</td>
<td>3.5%</td>
<td>26.2</td>
<td>3.3%</td>
<td>20.2%</td>
<td>5.1%</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td><strong>908.4</strong></td>
<td><strong>100.0%</strong></td>
<td><strong>798.0</strong></td>
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## Q1 2015 Net revenue by region

<table>
<thead>
<tr>
<th>Region</th>
<th>Q1 2015 (€ Million)</th>
<th>% of Net Revenue</th>
<th>Q1 2014 (€ Million)</th>
<th>% of Net Revenue</th>
<th>% Variance</th>
<th>% Variance at constant rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>US + Canada</td>
<td>567.1</td>
<td>62.4%</td>
<td>484.8</td>
<td>60.7%</td>
<td>17.0%</td>
<td>0.2%</td>
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<tr>
<td>EU</td>
<td>171.0</td>
<td>18.8%</td>
<td>169.2</td>
<td>21.2%</td>
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<td>-0.7%</td>
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<td>R.O.W.</td>
<td>138.8</td>
<td>15.3%</td>
<td>117.8</td>
<td>14.8%</td>
<td>17.8%</td>
<td>6.9%</td>
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<tr>
<td>Subtotal</td>
<td>876.9</td>
<td>96.5%</td>
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<td><strong>13.8%</strong></td>
<td><strong>1.1%</strong></td>
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</table>

## Q1 2015 sustainable positive performance

### Net Revenues

<table>
<thead>
<tr>
<th>Period</th>
<th>(€ Million)</th>
<th>% Variance</th>
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</thead>
<tbody>
<tr>
<td>Q1 2014</td>
<td>798.0</td>
<td>-66.9%</td>
</tr>
<tr>
<td>Q1 2015</td>
<td>908.4</td>
<td>+13.8%</td>
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### Financial Result

<table>
<thead>
<tr>
<th>Period</th>
<th>Net Profit (€ Million)</th>
<th>% Variance</th>
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<td>Q1 2014</td>
<td>-66.9</td>
<td>-4.7%</td>
</tr>
<tr>
<td>Q1 2015</td>
<td>-74.2</td>
<td>-7.7%</td>
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### EBITDA

<table>
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<th>EBITDA (€ Million)</th>
<th>% Variance</th>
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<tbody>
<tr>
<td>Q1 2014</td>
<td>270.2</td>
<td>+33.9%</td>
</tr>
<tr>
<td>Q1 2015</td>
<td>280.0</td>
<td>+30.8%</td>
</tr>
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</table>

### Net Profit

<table>
<thead>
<tr>
<th>Period</th>
<th>Net Profit (€ Million)</th>
<th>% Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1 2014</td>
<td>121.0</td>
<td>+15.2%</td>
</tr>
<tr>
<td>Q1 2015</td>
<td>128.5</td>
<td>+14.1%</td>
</tr>
</tbody>
</table>
R&D expense - shifted to support phase III projects

R&D growth across the stages (*)
- Discovery / Pre-Clinical +32%
- Clinical +110%
- Post-commercialization +12%

Pipeline progression driving faster shift towards Phase III projects
- Phase I 3%
- Phase II 24%
- Phase III 73%

Key Phase II and III projects:
- Pulmaquin®
- Albumin in Alzheimer
- Fibrin-Glue
- 20% SCIG
- Alpha-1 for Cystic Fibrosis and Diabetes

(*) 2014 cash-out R&D increase vs 2013

Q1 2015 Financial result - interests declining from Q1 2014

<table>
<thead>
<tr>
<th>(€ Million)</th>
<th>Q1 2015</th>
<th>Q1 2014</th>
<th>% Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interest expense</td>
<td>41.2</td>
<td>47.1</td>
<td>-12.5%</td>
</tr>
<tr>
<td>Financing deferred cost</td>
<td>15.4</td>
<td>16.5</td>
<td>-6.7%</td>
</tr>
<tr>
<td>Other financial expense</td>
<td>2.7</td>
<td>0.0</td>
<td>NM</td>
</tr>
<tr>
<td>Derivatives valuation</td>
<td>5.9</td>
<td>4.8</td>
<td>NM</td>
</tr>
<tr>
<td>FX variance loss (gain)</td>
<td>9.0</td>
<td>-1.5</td>
<td>NM</td>
</tr>
<tr>
<td><strong>Total Financial Result</strong></td>
<td>74.2</td>
<td>66.9</td>
<td>11.0%</td>
</tr>
</tbody>
</table>

- 4.7% excluding FX
### Q1 2015 Cash flow

<table>
<thead>
<tr>
<th>Sources</th>
<th>Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Operating Cash Flow 159.2</td>
<td>- CAPEX and Intangible -77.3</td>
</tr>
<tr>
<td>- Net Operating Cash Flow 62.3</td>
<td>- Interest -28.2</td>
</tr>
<tr>
<td>- Sale of fixed assets 12.0</td>
<td>- Alkahest acquisition -33.0</td>
</tr>
<tr>
<td>- Cash Beginning Balance 1,079.2</td>
<td>- Gross Debt Decrease -29.5</td>
</tr>
<tr>
<td>- Cash Ending Balance 797.8</td>
<td>- FX and Others 88.8</td>
</tr>
<tr>
<td>- Cash Decrease 281.4</td>
<td>Total -355.7</td>
</tr>
</tbody>
</table>

#### Total 355.7

### Q1 2015 Net profit reconciliation

<table>
<thead>
<tr>
<th>(€ Million)</th>
<th>128.5</th>
<th>15.4</th>
<th>10.1</th>
<th>-5.3</th>
<th>148.7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Reported Net Profit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amortization of deferred financial expenses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amortization of intangible assets acquired in business combinations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tax impacts of adjustments</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted Group Net Profit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
FX impacts

FX impacts – USD exposure

**Profit & Loss - 2014**

- Net Revenue ........................................ 71.5%
- COGS+Opex ......................................... 78.0%
- COGS+Opex+Financial Expenses ..... 78.7%

**Balance Sheet - 2014**

- Total Assets ......................................... 85%
- Gross Debt .......................................... 88%
- Cash ..................................................... 86%
FX impacts - sensitivity analysis

USD variance impact (annual basis):
- Positive on Net revenue + c.3.7%
- Positive on EBITDA + c.€30m
- Negative on EBITDA margin - c.25 bps
- Negative on Financial expenses - c.€10m
- Positive on Net income + c.€10m

FX variance - How would Q1 2015 look like at constant rate?

<table>
<thead>
<tr>
<th>Q1 2015 Actual</th>
<th>Q1 2015 at constant rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>€ / $</td>
<td></td>
</tr>
<tr>
<td>1.18</td>
<td>1.37</td>
</tr>
<tr>
<td>-14% USD devaluation</td>
<td>-14% USD devaluation</td>
</tr>
<tr>
<td>NR € million</td>
<td></td>
</tr>
<tr>
<td>908</td>
<td>807</td>
</tr>
<tr>
<td>% YoY 13.8%</td>
<td>% YoY 1.1%</td>
</tr>
<tr>
<td>EBITDA € million</td>
<td></td>
</tr>
<tr>
<td>280</td>
<td>255</td>
</tr>
<tr>
<td>30.8% % Margin</td>
<td>31.6% % Margin</td>
</tr>
<tr>
<td>+80 bps</td>
<td>+80 bps</td>
</tr>
<tr>
<td>EBIT € million</td>
<td></td>
</tr>
<tr>
<td>236</td>
<td>216</td>
</tr>
<tr>
<td>26.0% % Margin</td>
<td>26.8% % Margin</td>
</tr>
</tbody>
</table>
Plasma industry margin comparison – Grifols leading margins

Source: Morgan Stanley Report March 24, 2015 (Exhibit 32)
### Financial metrics - Peers benchmark

<table>
<thead>
<tr>
<th>% of Net Revenue</th>
<th>Grifols</th>
<th>Player 1</th>
<th>Player 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBITDA</td>
<td>31.2%</td>
<td>30.0%</td>
<td>34.1%</td>
</tr>
<tr>
<td>EBIT</td>
<td>25.6%</td>
<td>26.5%</td>
<td>30.9%</td>
</tr>
<tr>
<td>EBIT excl. intangible amortization</td>
<td>27.8% ✓</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>CAPEX</td>
<td>7.5% ✓</td>
<td>16.4%</td>
<td>14.1%</td>
</tr>
<tr>
<td>Cash from Operations</td>
<td>29.2% ✓</td>
<td>16.7%</td>
<td>23.1%</td>
</tr>
</tbody>
</table>

Source: 2014 Annual Reports

### Bioscience manufacturing facilities are on track - US

<table>
<thead>
<tr>
<th>Project</th>
<th>Investment (USD Million)</th>
<th>Capacity / Size</th>
<th>Location</th>
<th>Current Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Fractionation Facility (NFF)</td>
<td>$380 M</td>
<td>5.9 ML</td>
<td>Clayton</td>
<td>FDA Approved at the end of 2014. First lot of Gamunex® manufactured in the NFF, already commercialized</td>
</tr>
<tr>
<td>NFF Albumin Expansion</td>
<td>$30 M</td>
<td>5.7 ML</td>
<td>Clayton</td>
<td>Construction completed and validation started, expected FDA approval by Q2 2016</td>
</tr>
<tr>
<td>Albumin Purification</td>
<td>$20 M</td>
<td>4 ML</td>
<td>LA</td>
<td>Construction completed, expected FDA validation by Q4 2015</td>
</tr>
<tr>
<td>Warehouse Raw Material</td>
<td>$10 M</td>
<td>6,400 m²</td>
<td>Clayton</td>
<td>Construction completed, expected FDA validation by Q4 2015</td>
</tr>
<tr>
<td>Gamunex® purification</td>
<td>$78 M</td>
<td>9,500 m² and 4 ML</td>
<td>LA</td>
<td>FDA approved in Q4 2014, started operations in January 2015</td>
</tr>
<tr>
<td>5 Liquids filling lines</td>
<td>$46 M</td>
<td>2,200 m²: Multiformat filling</td>
<td>Clayton</td>
<td>Construction of new lines to be completed and approved by Q4 2016</td>
</tr>
<tr>
<td>Project</td>
<td>Investment (USD Million)</td>
<td>Capacity / Size</td>
<td>Location</td>
<td>Current Status</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>--------------------------</td>
<td>----------------------------------</td>
<td>-----------</td>
<td>-------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>GWWO - Warehousing / Logistics</td>
<td>$80 M</td>
<td>22,000 m² in 11 Ha. land plot</td>
<td>Dublin</td>
<td>Construction completed, validation in progress. Start operations in Q1 2016</td>
</tr>
<tr>
<td>Labelling / Packaging lines</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prolastin®-C</td>
<td>$45 M</td>
<td>7,250 m² and 4.3 ML</td>
<td>Barcelona</td>
<td>Construction ongoing, completed by Q3 2016. Validations process through mid 2017</td>
</tr>
<tr>
<td>New Fractionation Plant</td>
<td>$25 M</td>
<td>2.1 ML</td>
<td>Barcelona</td>
<td>Completed and validated. Production started in Q1 2014</td>
</tr>
</tbody>
</table>
Shareholders returns - 40% pay-out with 2 payments

- 2013
  - Interim 2013: €0.20
  - Final 2013: €0.20
  - Pay-out 40%

- 2014
  - Interim 2014: €0.25
  - Final 2014: €0.30
  - Pay-out 40%

(*) The information above includes the related preferred dividends of €0.01

Stock Price Grifols shares vs IBEX35 – June 2011 to 22 May 2015

- Organic and acquisition growth continues
- Strong performance of all share classes

- Class A 22 May 2015 (GRF €37.52)
- Class B 22 May 2015 (GRF.P €29.71)
- ADR B 22 May 2015 (GRFS $32.86)

Source: Infobolsa
Base 100 June 3, 2011 unadjusted closing price

IBEX:+12%
Key Financials Takeaways

- Core business / financial **fundamentals remain** the same
- **Opportunities** to **improve margins** in Bioscience after new plants ramp-up
- Higher plasma collections will support **plasma cost improvements**
- **R&D investment** stabilized after 2014 pick-up, significant weight of **phase III projects**
- **EBITDA margin**: c.30% in the **medium term**, targeting 31% - 33% in the **long term**
- Strong **FX tailwind** in 2015
- **Financing**: long term debt maturities, quasi bullet and **low financing costs**
- Tax rate: 20% - 22% range
- **Sustainable growth in EPS**
- Continuous Shareholders reward through dividends:
  - 40% pay-out
  - **Two payments per year** (interim / final)
Grifols Engineering, S.A. as a significant competitive advantage

- Grifols in-house Engineering advanced designing and construction skills enable to build state of the art manufacturing facilities at lower cost than our competitors and at faster pace.

- As a result of the large engineering expertise, the Grifols manufacturing Capex is very moderate, which is positively impacting our EBIT due to lower tangible depreciation and also in our Cash Flow.

- In the Q1 2016, Grifols will announce the location and timing of the next fractionation facility (4 million liters).

- Based on the actual construction costs, the estimate manufacturing Capex for a 4 million liter fractionation / purification / filling, facilities will amount to $310 million, which represents near 60% lower Capex than our competitors.
Manufacturing facilities cost detail

<table>
<thead>
<tr>
<th>Barcelona Facility actual cost (2 million liters)</th>
<th>US new Facility estimated cost (4 million liters)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Detail</strong></td>
<td><strong>$Million</strong></td>
</tr>
<tr>
<td>Land</td>
<td>0</td>
</tr>
<tr>
<td>Fractionation</td>
<td>30</td>
</tr>
<tr>
<td>Purification</td>
<td>0</td>
</tr>
<tr>
<td>Offices &amp; Warehouse</td>
<td>0</td>
</tr>
<tr>
<td>Services &amp; Others</td>
<td>0</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>30</strong></td>
</tr>
</tbody>
</table>

Grifols Engineering, S.A. as a significant competitive advantage

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- As a result of the large engineering expertise, the Grifols manufacturing Capex is very moderate, which is positively impacting our EBIT due to lower tangible depreciation and also in our Cash Flow
- In the Q1 2016, Grifols will announce the location and timing of the next fractionation facility (4 million liters)
- Based on the actual construction costs, the estimate manufacturing Capex for a 4 million liter fractionation / purification / filling, facilities will amount to $310 million, which represents near 60% lower Capex than our competitors
- Since the EBITDA does not include the depreciation charges, EBIT becomes a more meaningful metric when reviewing P/L performance and peer comparison
Conclusions: Key Messages - I

- The plasma industry is healthy and demand keeps growing at steady rate, with a very positive future outlook
- Pricing environment with up/downswings in the short term, stable in the long term. Price movements are not cycle-related
- Manufacturing and plasma collection capacity in place ready to cover additional sales opportunities
- A new global organization is operational, focused on the three business divisions, with industrial and commercial activities clearly differentiated

Conclusions: Key Messages - II

- Geographical expansion, a key level for the short- and long-term growth
- The company continues to proactively make investments in R&D, manufacturing, sourcing and commercial to support future growth
- Diagnostic business fully integrated reflecting strategic fit. Ready for organic and non-organic growth
- Capturing across the board opportunities: FDA approval of IV Plant in process
Conclusions: Key Messages - III

- Acquisitions and partnerships to build the business and create growth platforms are an integral part of Grifols strategy.

- Grifols will continue to pioneer and lead the plasma industry with new and innovative approaches, products and indications.

- The company is focused on delivering financial results as it has historically done over 75 years.