Investors' & Analysts' Meeting 2017

Emeryville (California, USA)

June 7th and 8th, 2017

GRIFOLS

Wednesday, June 7th 2017 Emeryville

Time	Topic	Presenter
08:30	*Pick up from hotels*	
09:00	*Arrival at Grifols Diagnostic Solutions (GDS) headquarters*	
09:00 - 09:30	*Coffee + Welcome*	
09:30 - 9:45	Introductory remarks	V. Grífols Deu
09:45 - 10:15	Grifols global leadership	R. Riera
	Bioscience Division	
10:15 - 11:00	Plasma procurement strategy	E. Herrero
11:00 - 11:15	*Coffee break*	
11:15 - 12:15	Commercial strategies to deliver sustainable growth	L. Morgan
12:15 - 13:00	Bioscience capacity expansion plan: keeping pace with growing demand	D. Fleta
13:00 - 14:00	*Lunch*	

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Wednesday, June 7th 2017 Emeryville

Time	Topic	Presenter
14:00 - 14:30	Hospital Division: expansion through integrated solutions	P. Allen
	Diagnostic Division	
14:30 - 15:00	Driving profitable growth	C. Schroeder
15:00 - 15:30	Maximizing value through effective integration	G. Rich
15:30 - 16:00	Investing for growth	O. Duñach
16:00 - 16:30	Q&A	
16:30 - 16:45	*Coffee break*	
16:45 - 17:00	Tour presentation	C. Roura / R. Biosca
17:00	Facility tour	
18:00	*Transfer to restaurant*	
18:45	Update on Alkahest	T. Wyss-Coray
19:00	*Dinner*	

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Thursday, June 8th 2017 Emeryville

Time	Topic	Presenter
08:00	*Pick up from hotels*	
08:30	*Arrival at Grifols Diagnostic Solutions (GDS) headquarters*	
08:30 - 09:00	*Coffee*	
09:00	Bio Supplies Division introduction	A. Arroyo
09:00 - 09:30	Access Biologicals	M. Crowley
09:30 - 10:15	Innovation: redefining the industry	D. Bell
10:15 - 10:45	*Coffee break*	
10:45 - 11:45	Financials: focus on profitable growth	A. Arroyo
11:45 - 12:15	Q&A	
12:15 - 12:45	Driving value creation through disciplined strategy execution	V. Grífols Deu
12:45	*Lunch and transfers to airport*	

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FORWARD-LOOKING STATEMENTS

This document contains forward-looking information and statements about Grifols based on current assumptions and forecast made by Grifols management, including proforma figures, estimates and their underlying assumptions, statements regarding plans, objectives and expectations with respect to capital expenditures, synergies, products and services, and statements regarding future performance. Forward-looking statements are statements that are not historical facts and are generally identified by the words "expected", "potential", "estimates" and similar expressions. Although Grifols believes that the expectations reflected in such forward-looking statements are reasonable, various known and unknown risks, uncertainties and other factors could lead to material differences between the actual future results, financial situation, development or performance of the company and the estimates given here. These factors include those discussed in our public reports filed with the Comisión Nacional del Mercado de Valores and the Securities and Exchange Commission, which are accessible to the public. The company assumes no liability whatsoever to update these forward-looking statements or conform them to future events or developments. Forward-looking statements are not guarantees of future performance. They have not been reviewed by the auditors of Grifols.

GRIFOLS

Introductory remarks

Víctor Grífols Deu
Co-Chief Executive Officer

GRIFOLS

PRIDE
SAFETY
EFFORT
COMMITMENT
EXCELLENCE
TEAMWORK
INNOVATION &
IMPROVEMENT

Grifols global leadership

An industry pioneer and market leader

Ramón Riera

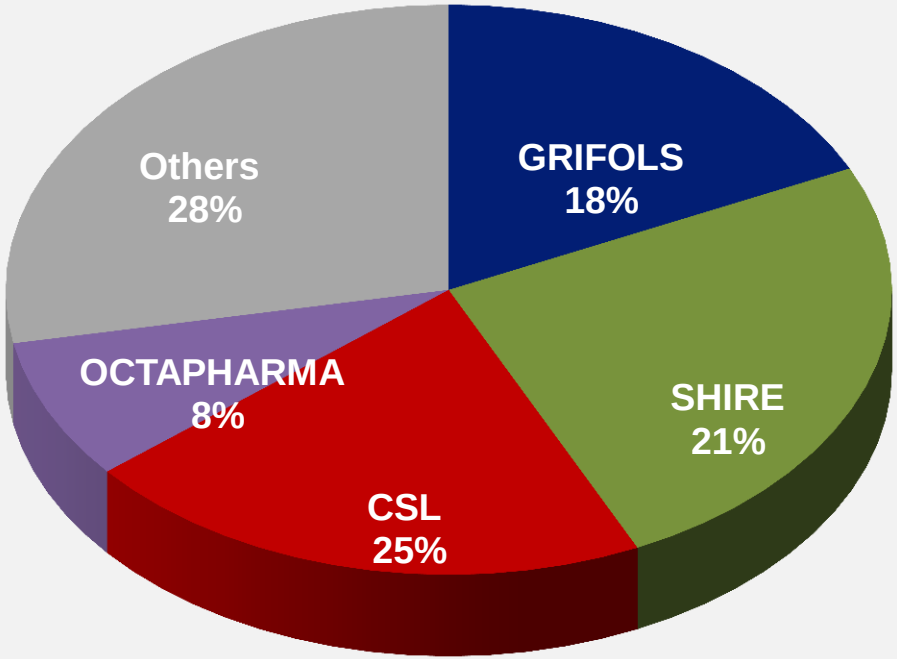
Chief Operations Officer

GRIFOLS

PRIDE
SAFETY
EFFORT
COMMITMENT
EXCELLENCE
TEAMWORK
INNOVATION &
IMPROVEMENT

Global leader in the plasma-derivatives sector

Market distribution by company 2016(1)



Note: 1. Source: Grifols internal provisional data, 2016

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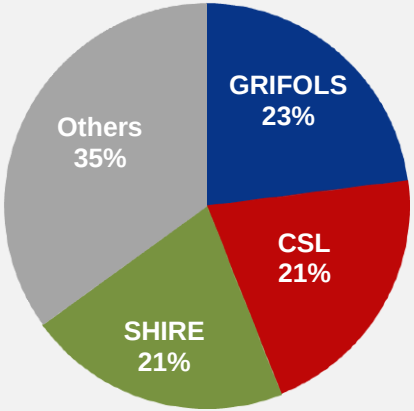
Global leader in the plasma-derivatives sector

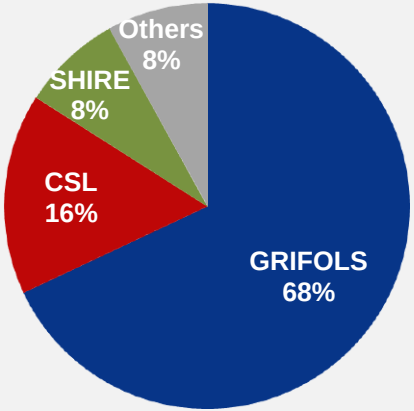
Leadership position for three major proteins(1)

IVIG



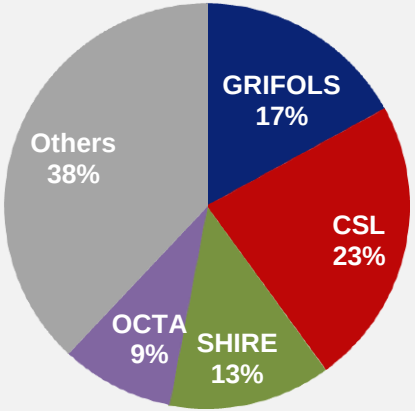
#1 — 23% share

Alpha-1 Antitrypsin



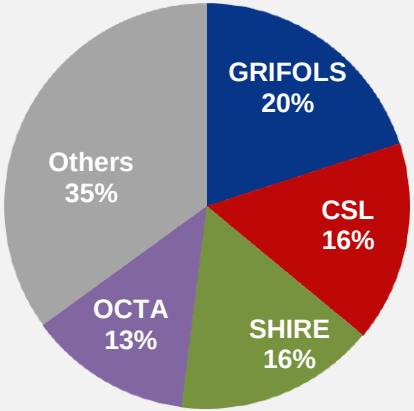
#1 — 68% share

Albumin



#2 — 17% share

PdFactor VIII



#1 — 20% share

Note: 1. Source: Grifols internal provisional data, 2016

GRIFOLS

Leadership and successful pioneering track record

Leadership and successful pioneering track record

Competitively positioned across the value chain

- **Transfusion and transfusion safety**
- Hospital pharmacy
- Quality and safety of our products
- Hemophilia community
- Alzheimer's and liver diseases
- Alpha-1 deficient patients community
- Immunodeficient patients and neurological disorders
- Support of rare diseases
- Global footprint

GRIFOLS

Pioneers in blood transfusion and blood and plasma collection

Dedicated to developing innovative healthcare products and services since 1940

- **Invention of the Flebula**

The double-ended device known as the *flebula* was introduced in 1928 by José Antonio Grífols Roig. The device resolved many of the inconveniences related to blood transfusions, including poor asepsis, severe vein damage in patients and transport challenges

- **Development of Plasmapheresis**

Dr. José Antonio Grífols Lucas developed the process of plasmapheresis to obtain plasma for transfusion and fractionation. In 1951, he presented the results of his research at the 4th International Congress of Blood Transfusion. The paper was published in 1952 in the *British Medical Journal*

Today, plasmapheresis continues to be a common procedure in plasma donation centers to obtain plasma for fractionation

GRIFOLS

Pioneers in blood transfusion and blood and plasma collection

Dedicated to developing innovative healthcare products and services since 1940

- **Development of IV Solutions and micro-hematocrit**

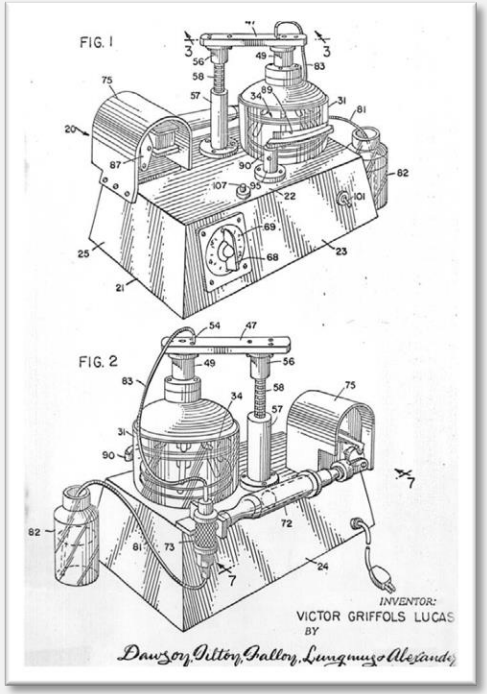
In 1951, Gri-Cel introduced the hematocrit technique in the Spanish market. The device reads the ratio of red cells in the blood in a simple step

Manufacturing facilities of blood-collection bags

GRIFOLS

Pioneers in blood transfusion and blood and plasma collection

Automatic Coombs centrifuge



GRIFOLS

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GRIFOLS

Innovation in IV fluid therapy, pharmacy compounding and medication delivery

Manufacturing facilities for parenteral solutions

GRIFOLS

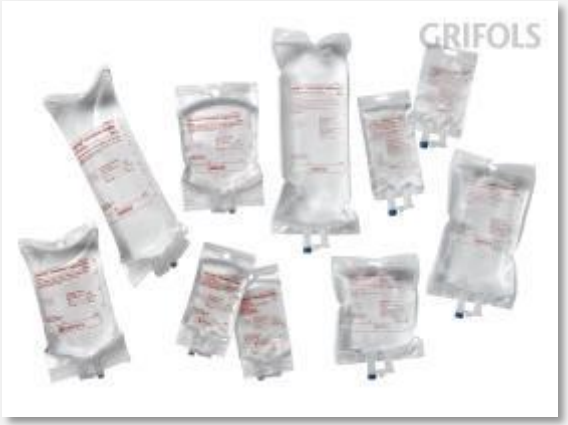
Innovation in IV fluid therapy, pharmacy compounding and medication delivery

Manufacturing facilities for parenteral solutions

GRIFOLS

Innovation in IV fluid therapy, pharmacy compounding and medication delivery

- Support for the hospital pharmacy in Spain and Latin America; development of specific software to manage hospital pharmacy inventories
- Unidose software
- Flebobag introduction



GRIFOLS

Innovation in IV fluid therapy, pharmacy compounding and medication delivery

Sterile compounding. Grifill®

Misterium®

GRIFOLS

Innovation in IV fluid therapy, pharmacy compounding and medication delivery

Robots for compounding in hospital pharmacy

GRIFOLS

Leadership and successful pioneering track record

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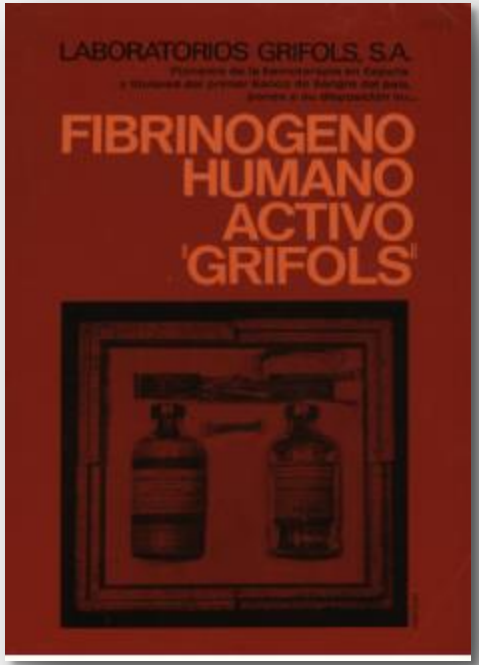
GRIFOLS

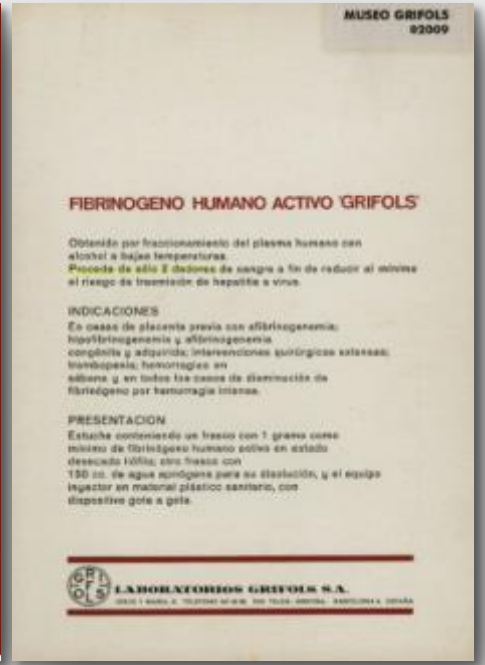
Leading the industry in product safety and innovation

A history of quality and safety fosters long-term value

Single donor cryoprecipitate

Two donor fibrinogen





GRIFOLS

Leading the industry in product safety and innovation

A history of quality and safety fosters long-term value

- First fractionator to apply pdFVIII viral inactivation
- Early adoption HCV testing (1984)
- Early adoption HIV testing (1985)
- FDA establishment license (1995)
- Academies in Barcelona, Glendale, Indianapolis

GRIFOLS

Leading the industry in product safety and innovation

A history of quality and safety fosters long-term value

PediGri®

- Grifols has offered PediGri® to healthcare professionals for more than 20 years
- This unique service provides a simple yet effective means of tracing each unit of final product back through the production chain, providing additional information about the quality and safety of plasma-derived products
- PediGri ® reflects the company's beliefs in transparency and longstanding commitment to healthcare professionals

GRIFOLS

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GRIFOLS

First manufacturer of pdFVIII to apply double viral inactivation

Commitment to innovation for enhanced well-being

- Introduced in the early 1980s, Criostat® was Grifols' first concentrated clotting pdFVIII
  - 1984 Criostat® HT, a heat-treated version
  - 1989 Criostat® SD-2, with double viral inactivation: heat treatment and solvent-detergent process
- Removal of inhibitors to pdFVIII through immunotolerance regimes with pdFVIII clinical experience

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Grifols participation in SIPPET

Commitment to innovation for enhanced well-being

- The SIPPET(1) Study (Survey of Inhibitors in Plasma-Product Exposed Toddlers) is an international multicenter clinical trial involving 42 sites and 14 countries in 5 continents, whose main objective is to evaluate the frequency of inhibitor development in previously untreated hemophilia patients, following exposure to plasma derived concentrates
- The findings may shape the understanding of the condition and treatment strategies

Note: 1. SIPPET Study results show that treatment with recombinant factor VIII (rFVIII) is associated with an 87% greater incidence of inhibitors than when using plasma-derived factor VIII with von Willebrand factor (pdFVIII/VWF) in previously untreated patients with severe hemophilia A

GRIFOLS

World Federation of Hemophilia donation

Grifols continues to support the global hemophilia community

- Grifols will donate a minimum of 140 million international units (I.U.) of blood clotting factors to the World Federation of Hemophilia (WFH) over the next 5 years as a continuation of the company's 3-year commitment, which began in 2014
- The renewed partnership with WFH reaffirms Grifols' commitment to the global hemophilia community. It is the company's most significant contribution to date to the WFH Humanitarian Aid Program

GRIFOLS

The Martín Villar Haemostasis Awards

Grifols continues to support the global hemophilia community

- Grifols is committed to promoting scientific research as part of an ongoing process to enhance the health and well-being of people worldwide
- The Martín Villar Haemostasis Awards aim to support scientific excellence and innovation, by engaging both physicians and scientists early in their careers who are interested in investigating hemostasis and blood coagulation disorders and promoting new insights and innovation in this area

GRIFOLS

Leadership and successful pioneering track record

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GRIFOLS

More than 10 years of commitment with Alzheimer

Leading advocates in the fight against Alzheimer's

- Research strategy:
  - Early diagnosis
  - Treatment that slows its progression
  - Vaccination to prevent and protect
- The medical study AMBAR (Alzheimer Management by Albumin Replacement) is based on the use of albumin and IVIG through hemapheresis (selective removal of certain components of blood) as a treatment for patients with mild-to-moderate Alzheimer's disease
- In 2012, Grifols acquired 51% of Araclon Biotech's share capital
- Development of a vaccine that would combat the disease in asymptomatic preclinical stages

alzheimer management by albumin replacement

ambar

Araclon Biotech

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Groundbreaking liver cirrhosis trials

Exploring new indications for albumin

- **APACHE**

  Phase III study on acute-on-chronic liver failure (ACLF) based on albumin detoxification functions using Albutein® 5%

- **PRECIOSA**

  Phase III study on administration of Albutein® 20% in patients with advanced cirrhosis and its impact on cardio circulatory, renal function and hepatic hemodynamics

GRIFOLS

The Albus Albumin Awards Program

Driving the benefits of albumin

- The Albus program seeks to foster the creation of a scientific network and spread the knowledge of use of albumin as a therapeutic alternative
- The program is further testament of Grifols' commitment to innovation in this field

GRIFOLS

Leadership and successful pioneering track record

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GRIFOLS

The isolation and purification of alpha-1 antitrypsin and its therapeutic administration began in the 1980s

- **1987:** license for replacement therapy to treat severe congenital deficiency and impaired lung function
- **1988:** launch in the U.S. and licensed in Canada and Germany
- **1992:** license in Spain
- **2009:** Talecris Biotherapeutics receives approval for Prolastin®-C, a more concentrated version
- **2011:** Grifols acquires Talecris Biotherapeutics

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Alpha-1 antitrypsin deficiency

Grifols is leading the industry in treating alpha-1 deficiency

Grifols is global leader in alpha-1 antitrypsin. The most common symptoms of alpha-1 antitrypsin deficiency (AATD) relate to gradual loss of lung function. An estimate 1 in every 2,500 patients suffers from AATD, 95% of which are undiagnosed

Grifols continuously invests in research and technology in order to:

- Expand awareness of AAT deficiency
- Increase product supply
- Enhance safety
- Offer innovative products and delivery techniques

GRIFOLS

International Alpha-1 Patient Congress, April 11-13, 2013

Grifols is leading the industry in treating alpha-1 deficiency

- On April 11, 2013 Grifols hosted the Alpha-1 Patient Congress to commemorate the 50th anniversary of the discovery of alpha-1 antitrypsin deficiency
- More than 200 delegates, including clinicians, researchers, educators, advocates, patients and Grifols representatives, participated in a special event held at the Sant Cugat Auditorium
- Delegates from over 20 countries attended the event. The congress was highly successful, achieving its overriding goal of increasing awareness about alpha-1 antitrypsin deficiency and gathering researchers and patients to work together toward a cure

GRIFOLS

The ALTA Alpha-1 Antitrypsin Laurell's Training Award

Driving the benefits of alpha-1 deficiency

- The ALTA award strives to identify and engage researchers, both physicians and scientists, who are early in their careers and have a keen interest in researching alpha-1 antitrypsin deficiency
- The award also aims to reinforce collaborations among scientists and clinicians working in the field of alpha-1 antitrypsin deficiency

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Leadership and successful pioneering track record

Competitively positioned across the value chain

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- Global footprint

GRIFOLS

The SPIN Scientific Progress Immunoglobulins in Neurology

Proven commitment to address neurological diseases

- The SPIN Award Program was launched in 2008 to support research on the use of immunoglobulins in neurology
- Grifols considers the program a tangible contribution to improve the standards of care and outcomes for patients with neurological conditions
- Objectives:
  - Develop novel concepts in immunoglobulin research in the field of neurology
  - Encourage the discovery of beneficial immunoglobulin applications for neurologic disorders
  - Promote research of novel therapeutic options for patients with neurologic conditions

GRIFOLS

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GRIFOLS

Hemophilia

Support of rare diseases

Hemophilia A

- The most common form of hemophilia, present in about 1 in 5,000-10,000 male births
- Known as Factor VIII deficiency or classic hemophilia
- Treatment: Alphanate® and Fanhdi®

Hemophilia B

- A rare form of the disease caused by a deficiency of Factor IX which affects only 1 in every 30,000 males worldwide
- Treatment: AlphaNine® SD

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Neurological diseases

Support of rare diseases

Chronic Inflammatory Demyelinating Polyneuropathy (CIDP)

- A rare disorder of the peripheral nerves. The number of new cases per year is about 1-2 per 100,000 people. Early detection is critical to prevent long-term axonal damage
- Gamunex®-C is indicated for treatment of CIDP to improve neuromuscular disability and impairment, as well as for maintenance therapy to prevent relapse

Post-Polio Syndrome (PPS)

- Recognized as a rare disease. The U.S. FDA has granted orphan drug designation for the use of human immunoglobulin
- Immunoglobulin has shown significant and clinically meaningful results in endpoints such as pain, walking mobility and quality of life

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Alpha-1 and specialty plasma products

Support of rare diseases

- **Alpha-1 deficiency:** a genetic disorder that causes significant reduction in the blood protein alpha-1 antitrypsin causing certain enzymes to attack healthy tissues, primarily in the lungs. To replace reduced levels of this protein, physicians often prescribe an alpha-1 proteinase inhibitor
- **Hyperimmunoglobulins:** concentrated, plasma-derived immunoglobulins which provide rapid passive immunity to patients with immune systems compromised or challenged by exposure to infectious agents
- Grifols produces hyperimmunes for a variety of diseases:
  - Tetanus
  - Rabies
  - Hepatitis A&B
  - Congenital Rubella
  - RH hemolytic disease of the newborn (HDN)
  - Varicella

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The GATRA Program Research Awards

Grifols longstanding commitment to research

- Awarded annually, the GATRA Program (Grifols Scientific Awards about research on antithrombin) is designed to cultivate a scientific network and spread knowledge about antithrombin as a therapeutic product. Project proposals often relate to efficacy, mechanism of action, safety and tolerability, quality of life and pharmacoeconomics
- Evidence of Grifols' commitment to innovation, GATRA aims to:
  - Develop novel concepts on antithrombin research
  - Encourage new applications of antithrombin
  - Further investigate mechanisms of action and clinical effects in different indications
  - Establish new and long-lasting collaborations among scientists and clinicians
  - Reinforce and build the existing network between the researcher community and Grifols
  - Foster relationships with key opinion leaders across different fields

GRIFOLS

Leadership and successful pioneering track record

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- **Global footprint**

GRIFOLS

First steps toward international expansion

Increasing our global footprint

- In 1983, Grifols established trade connections with China via the Green Cross Corporation, initially exporting gammaglobulin, followed by albumin

  China was Grifols' first truly important export customer. In 1984, exports of gammaglobulin totaled approximately 2 million vials

- Portugal was the company's first foreign subsidiary. Established in Lisbon in 1988, it was our first step in a process of internationalization, offering important insights and laying the groundwork for our future global expansion

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Latin American subsidiaries and Miami

Increasing our global footprint

- **Chile**, established in 1990 in Santiago
  Among the first subsidiaries to sell nearly the entire portfolio
- **Argentina**, established in Buenos Aires in 1991
  Sells all main product lines for domestic market, as well as for Paraguay and Uruguay
- **Mexico**, established in 1993
  Also distributes to Bolivia, Ecuador, Venezuela and Central America
- **Miami**, inaugurated in 1990
  The site of our first U.S. office
- **Brazil**, established in Curitiba in 1998
  Branch in Sao Paulo

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European subsidiaries/Czech Republic Fractionation Program

Increasing our global footprint

- **United Kingdom,** based in Cambridge and established in 1979 as a subsidiary of Alpha. Early in 1990, it became a distributor of Grifols IVIG and pdFVIII
- **Czech Republic,** Customer Fractionation Program. Grifols commenced its activities through Coyco Farma. A year later, the company won the tender from the Czech Department of Health to fractionate plasma collected in the country. In 1992, a subsidiary was established in Prague, which was also responsible for Albania, Poland and Bulgaria
- **Italy,** established in 1993 in Pisa by Alpha, acquired by Grifols in 1997
- **Germany,** Grifols Deutschland progressively took over in 1997 all activities previously performed by Alpha GmbH in the German plasma protein market. At that time one of the most important in the world

GRIFOLS

Presence in Asia

Increasing our global footprint

- The first office in Asia was opened in 2000 in Singapore, which serves as a springboard for entering other Southeast Asian markets. After acquiring the Alpha assets in 2003, it joined the Malaysian and Thai subsidiaries
- Grifols Asia-Pacific serves 15 countries in the region

GRIFOLS

U.S. entry through the acquisitions of Alpha and Talecris assets

Increasing our global footprint

- **In 2003,** Grifols acquired the assets of Alpha Therapeutic Corporation-Mitsubishi and established corporate offices in California. From this base, the company manages plasma therapy manufacturing and oversees the U.S. sales structure for the Bioscience and Diagnostic divisions
- **2011**, acquisition of Talecris Biotherapeutics Inc., which made Grifols the third largest global manufacturer of plasma-derived protein therapies

GRIFOLS

Direct commercial presence in 30 countries

Increasing our global footprint

Grifols continues to grow by broadening our product portfolio, expanding into new markets and acquiring companies around the world that offer innovative products and technologies

GRIFOLS

Key takeaways
Grifols global leadership

Key takeaways

Grifols global leadership

- Grifols is a strong and well-positioned industry growth leader
- Successful track record built on sustainable strategies
- Grifols' focus on patients, advancement of treatment options and production of innovative industry solutions is delivering results
- Grifols is a true global player with a worldwide presence to optimize the business
- Grifols' pioneering mindset and approach is a competitive advantage

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Plasma procurement strategy

Capacity leadership to maximize growth

Eduardo Herrero

Deputy President of Bioscience Industrial Group

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Agenda

A comprehensive strategy to continue increasing plasma collection

1. An integrated model: a solid structure for a sustainable growth
2. Plasma procurement strategy: growth and plasma cost framework
3. Integrated supply chain model:
    - Logistics and transportation
    - Testing laboratories and capabilities
    - Talent management
    - Driving efficiencies through organizational and operational improvements
4. Key takeaways

GRIFOLS

Grifols:
A fully integrated plasma procurement model

GRIFOLS

A fully integrated plasma procurement model

Committed to support sustainable growth

- Grifols aims to consistently offer the safest and highest-quality plasma while delivering the best donor experience
- The 7,000+ Grifols Plasma Operation (GPO) professionals contribute toward sustainable growth by:
  - Opening new centers, as well as expanding or remodeling existing ones
  - Innovating and improving processes and systems to provide an enhanced donor service
  - Building an efficient supply chain by managing testing labs and logistics centers
- Grifols strives to ensure long-term sustainability by:
  - Moving toward decentralization, greater flexibility and adaptability in a dynamic environment
  - Generating business platforms that adapt more easily to change

GRIFOLS

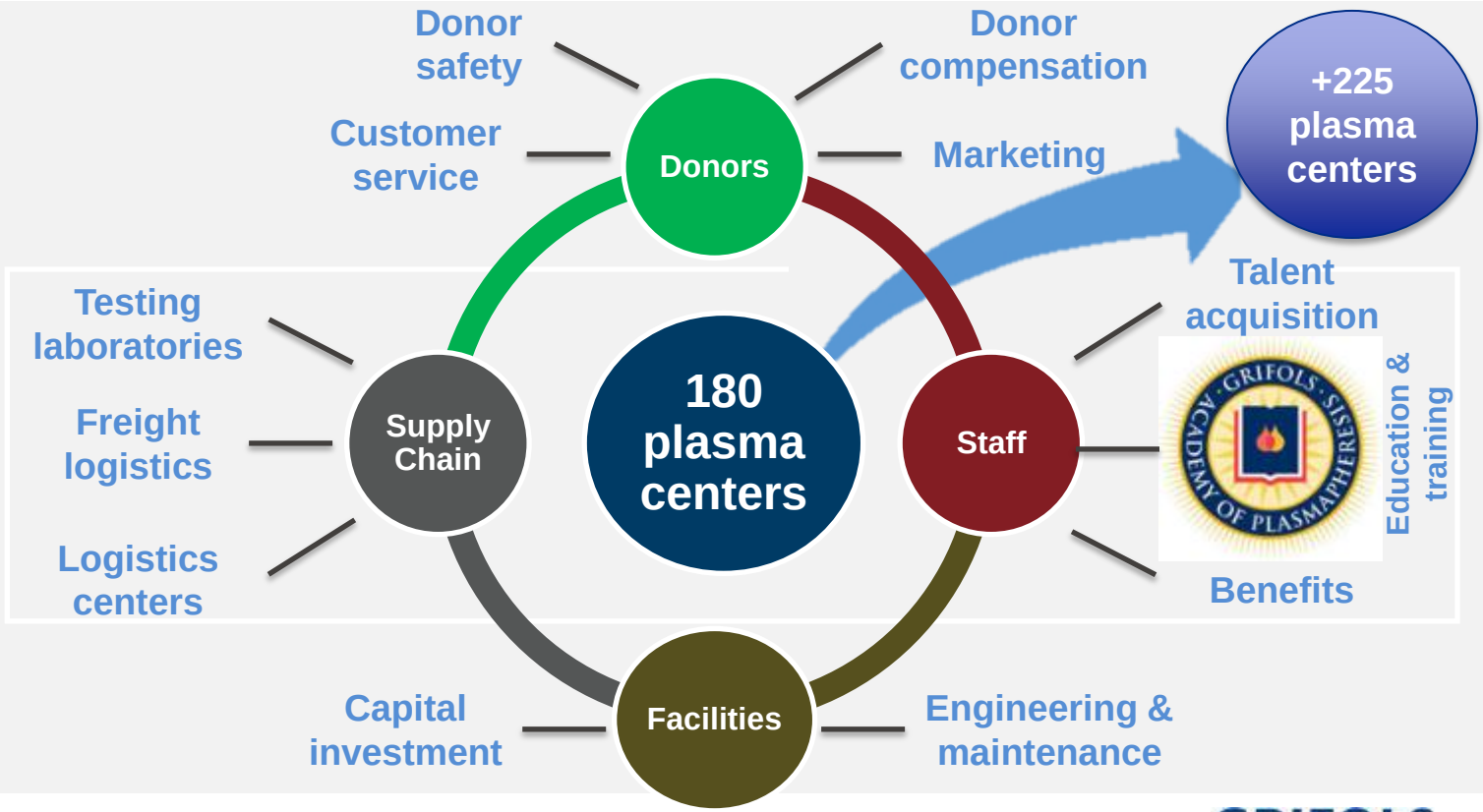
A fully integrated plasma procurement model

Plasma procurement universe

Sustainable growth

Direct control/ Influence over critical elements

Best-in-class processes



GRIFOLS

Plasma procurement strategy: Growth and plasma cost framework

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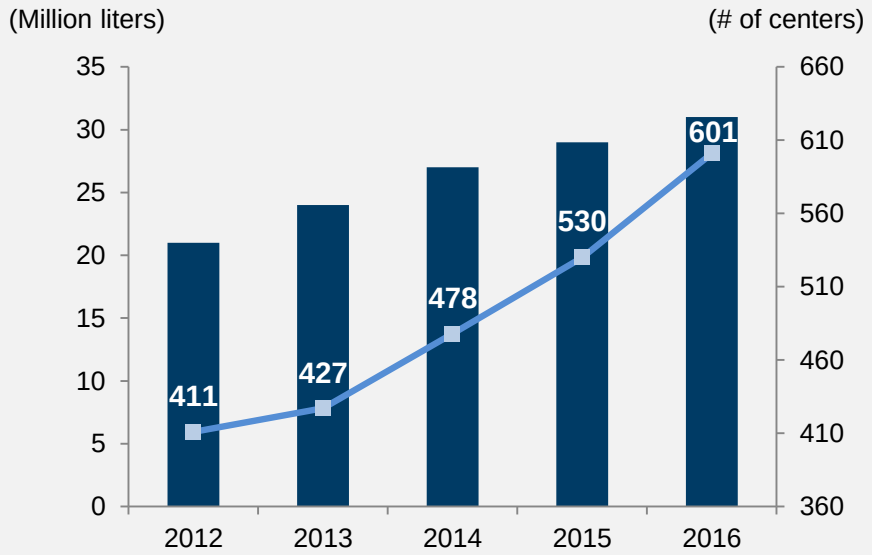
Plasma procurement strategy

U.S. plasma collection growth(1)

- Plasma collection is a large, growing industry
- Since 2012, the number of centers and volume collected have increased by 45%
- In 2016, the U.S. plasma market has collected c.31.5 million liters
- The number of donor centers reached 601 by the end of 2016
- Increasing collections and recruiting qualified staff are main challenges



Note: 1. Source: PPTA - The Plasma Protein Therapeutics Association data

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Plasma procurement strategy

Grifols plasma donor centers: presence and opportunities ahead

- Grifols is the world-leading company with 180 plasma donation centers in the U.S.
- Grifols' existing footprint outside the Western region aligns with the geographical distribution of the plasma collection market
- Grifols is expanding its presence in MO, NM, and SC
- Grifols has a much larger presence in UT, CA, South Texas, TN and IL than competitors(1)

Grifols' strong presence

Note: 1. Source: PPTA - The Plasma Protein Therapeutics Association data

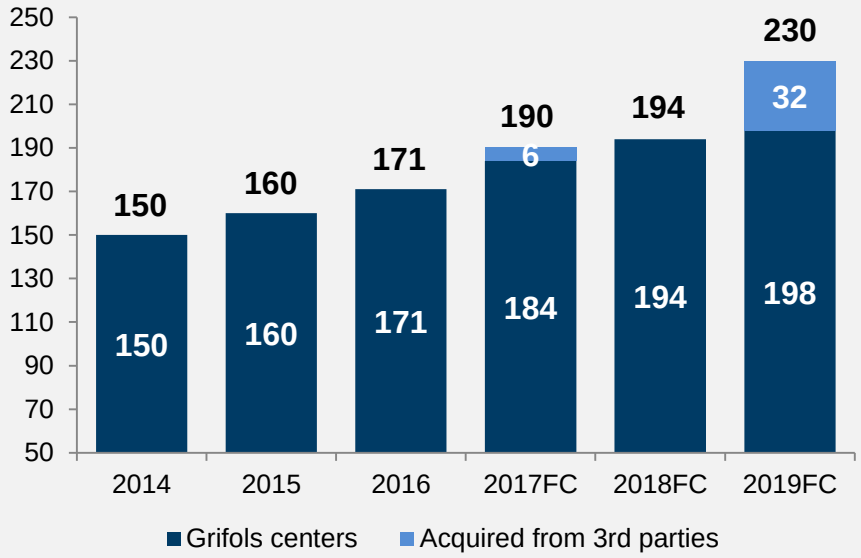
GRIFOLS

Plasma procurement strategy

Expanding our plasma capacity organically and inorganically

- 2-year acceleration plan to reach target of 225+ plasma donor centers by 2019
- Acquisition of 6 plasma centers in February 2017
- IBBI operates 25 plasma donor centers in 2017, in addition to blood centers and laboratory
- Over 100 projects through 2022 to spearhead new locations, expansions, major remodeling and relocations
- Objective of establishing operations in new regions to create clusters and attain collection efficiency
- All projects adhere to Grifols standards and comply with U.S. FDA and EMA requirements, among others

Grifols U.S. plasma centers



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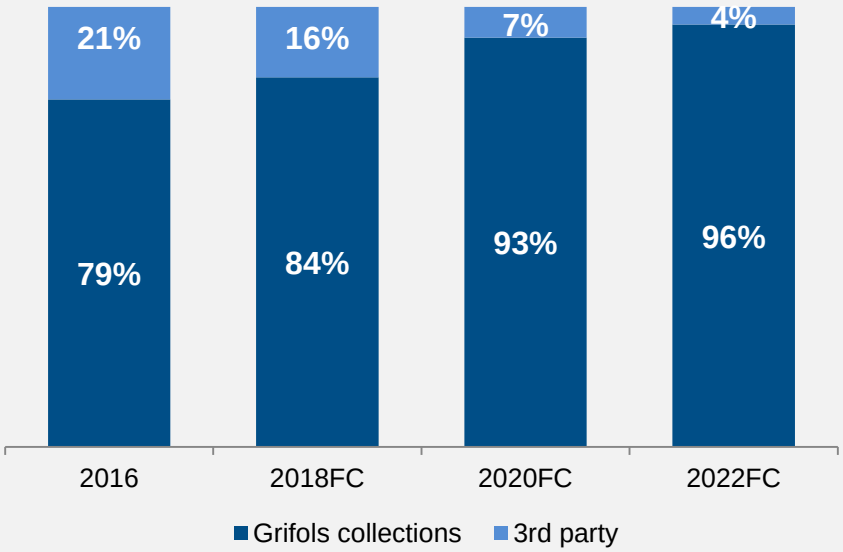
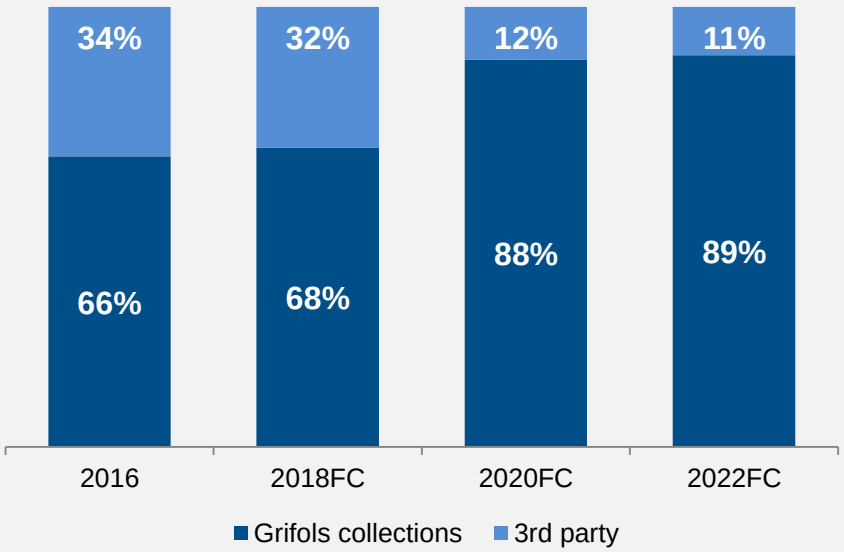
Plasma procurement strategy

Expanding our plasma capacity while working toward self-sufficiency(1)

Regular source plasma



Leadership on hyperimmune plasma(2)



Note: 1. As % of total liters of fractionated plasma
2. Anti-Hepatitis B, Anti-D, Anti-Tetanus and Anti-Rabies programs

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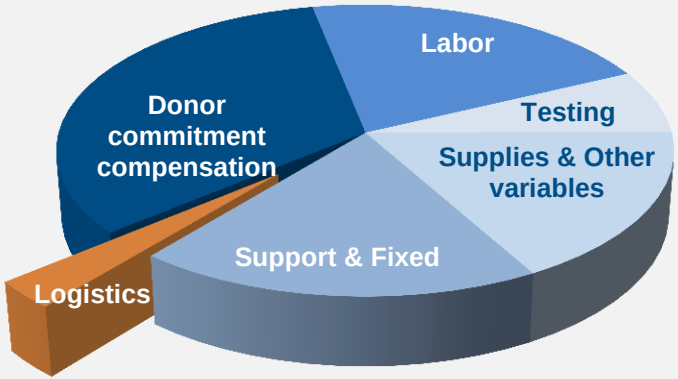
Plasma cost management

Continuous improvement of the entire value chain to promote cost containment

- Planned volume growth drives fixed cost leverage
- Maintain donor commitment compensation consistent with market
- Management of U.S. labor market consistent with the industry
- Process improvements and automations to further promote cost savings

Plasma cost structure



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Logistics: integrated plasma supply chain

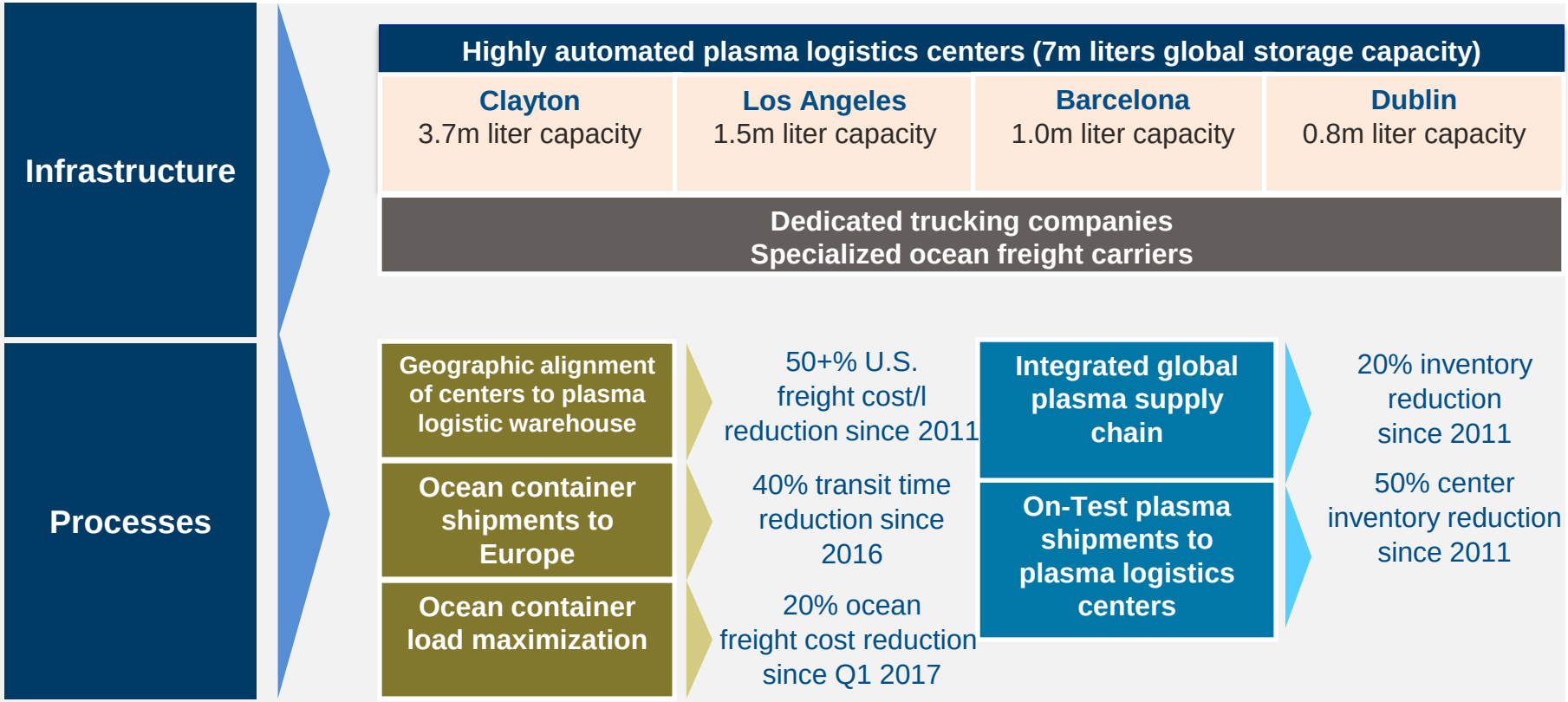
New plasma warehouse multi-site system drives cost reductions

- 70% throughput increase with only a 25% increase in labor
- One shared database among multiple locations (LA, Clayton and Ireland)
- Grifols U.S. centers and warehouses currently operate with centralized release
- Semi-automated plasma clearing lines
- Automated freezer, conveyors and pallet automatic retrieval systems
- Efficiencies and greater control of inventory management
- RFID(1) for crate count and maintenance
- Back-up systems to support emergency situations

Note: 1. RFID: Radio-frequency identification

Logistics: integrated plasma supply chain

Alignment across the supply chain drives cost reductions



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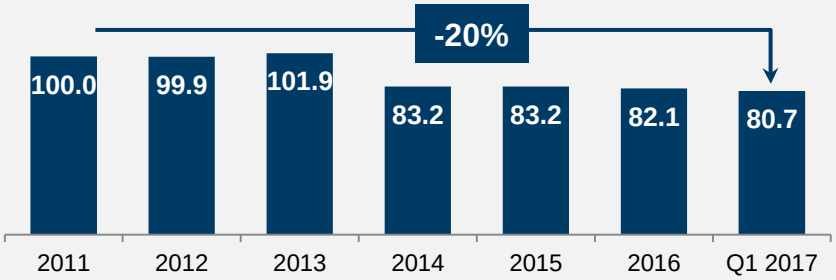
Logistics: integrated plasma supply chain

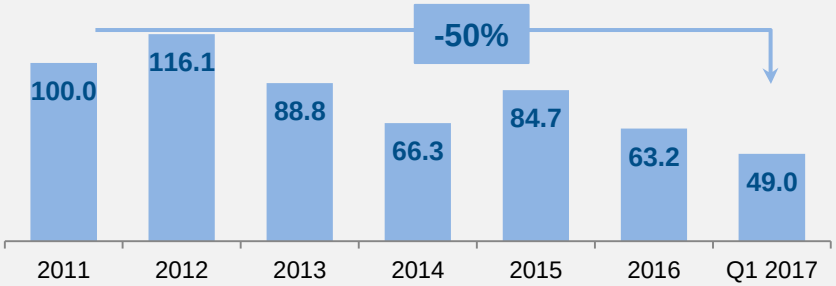
Inventory and logistics management drives cost reductions(1)

Inventory management

INVENTORY OPERATING TARGET (MONTHS-ON-HAND)

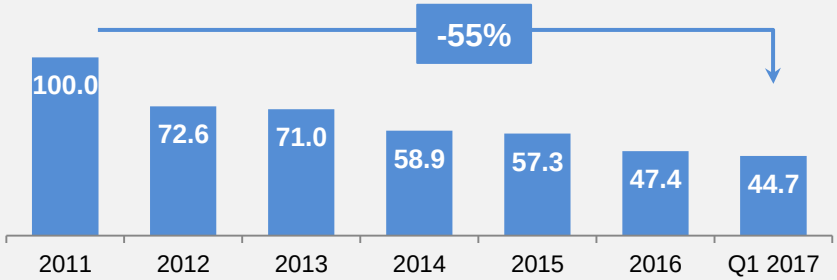


CENTER INVENTORY (WEEKS-ON-HAND)



Logistics

U.S. FREIGHT COST (COST/LITER)



Plasma supply chain has been optimized to enable working capital reduction, operational efficiencies and cost savings

Note: 1. 2011 baseline

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Plasma cost management

Continuous improvement of the entire value chain to promote cost containment

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- Maintain donor commitment compensation consistent with market
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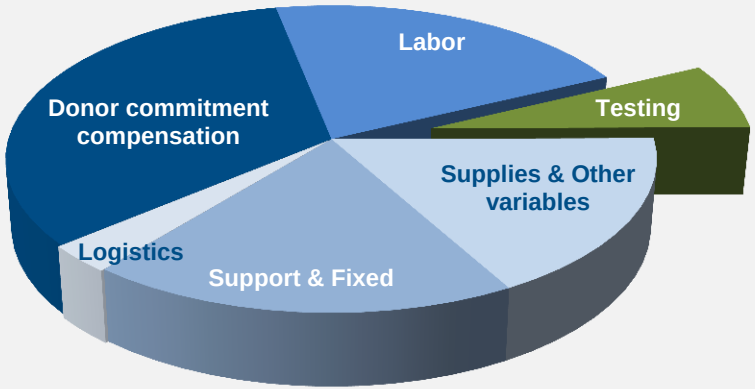
- Process improvements and automations to further promote cost savings

Plasma cost structure



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Plasma testing laboratories: capabilities and efficiency

Focus on reducing costs while maintaining high operational integrity

Plasma screening and Blood HCT/P - Organ Donor Screening

- **Serology:** anti-HCV, anti-HIV1/2, HBsAg, anti-HBc, anti-CMV, anti-EBV, anti-Toxo, anti-T Cruzi
- **NAT (Grifols Diagnostic platform and back-up):** HCV, HIV, HBV, pB19, HAV, WNV, ZIKA (IND[1])
- **Immunohematology and Ancillary testing:** ABO Grouping, Rh Typing, ALT, SPE, Total Protein, RPR (Syphilis), Hyperinmune testing (Anti-Tetanus, Anti-HB, Anti-Rabies)

San Marcos, TX

Austin, TX

Memphis, TN (call option in 2019)

Note: 1. IND: Investigational New Drug Application – FDA

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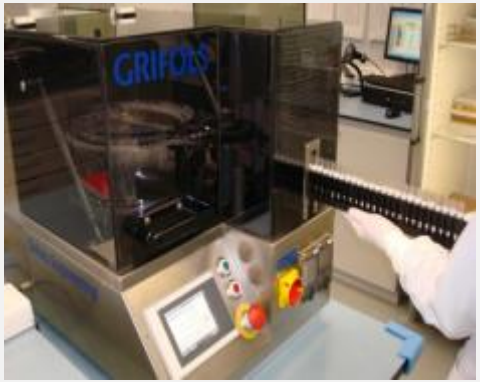
Plasma testing laboratories: capabilities and efficiency

Focus on reducing costs while maintaining high operational integrity

The laboratory processes are designed for controlled high volume testing:

- Combined testing capacity:
  - Up to 17.5 million annual donations
  - More than 147 million reported test results
- Planned expansion of the Austin, TX facility in the design phase:
  - Increase total laboratory size from 25,000 to 50,000 square feet
  - Increase testing capacity up to 20.5 million donations



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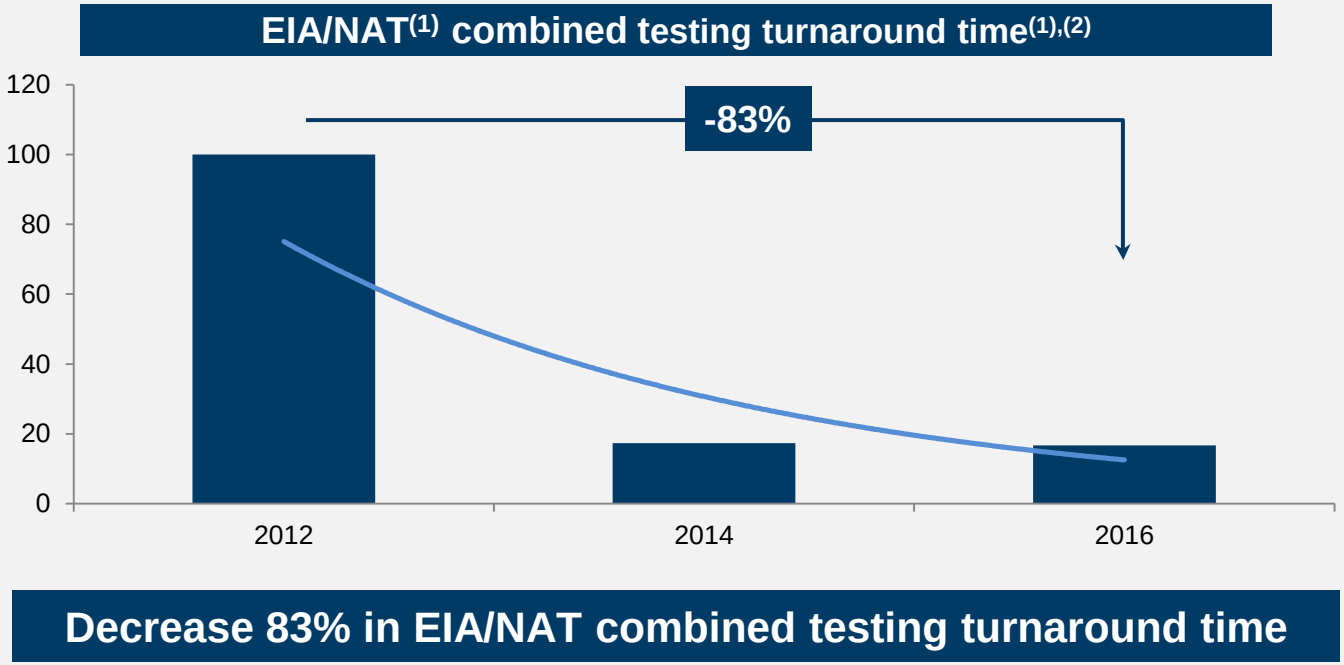
Plasma testing laboratories: capabilities and efficiency

Expansion and automation provides excellent donor and product management



Note: 1. EIA: Enzyme immunoassay. NAT: Nucleic Acid Testing
2. 2012 baseline

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Plasma cost management

Continuous improvement of the entire value chain to promote cost containment

- Planned volume growth drives fixed cost leverage
- Maintain donor commitment compensation consistent with market
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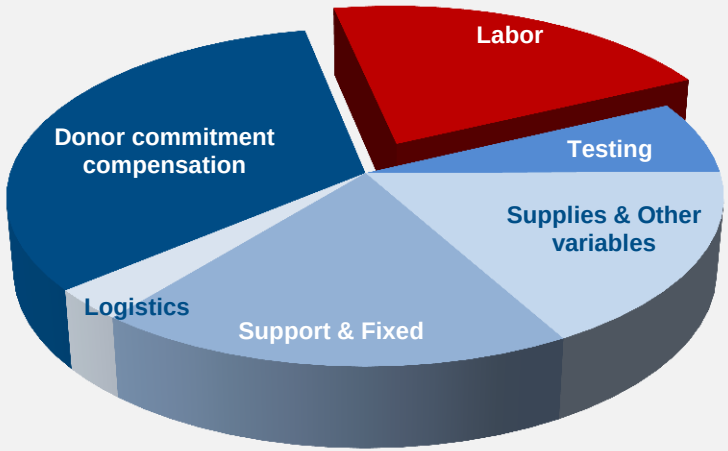
- Process improvements and automations to further promote cost savings

Plasma cost structure



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Grifols Academy of plasmapheresis: talent retention

Commitment to continuous employee development

- **2016 classroom training:**
  - 274 classes offered
  - 1,634 participants
  - 26,262 training hours
- **2016 online self-study:**
  - 15,952 courses completed
- **Academy campuses:**
  - 12,000 square-foot expansion of the Glendale Academy completed in 2Q 2017
  - The Indianapolis and Glendale locations have 30,000 total square feet and capacity for 350 students
  - Auditorium with seating for 110
  - State-of-the-art audio and video systems
  - 6 satellite locations

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Grifols Academy of plasmapheresis: partnerships

Commitment to continuous employee development

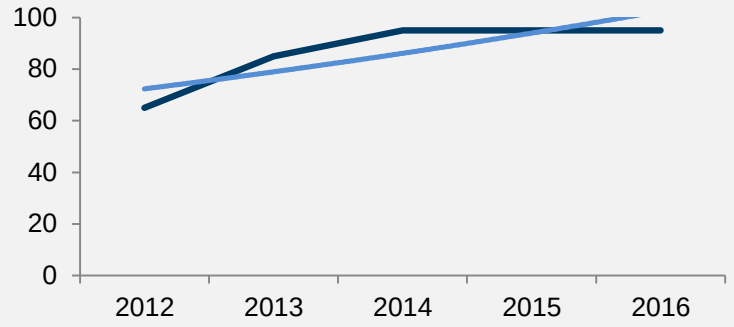
Academy awarded accreditation 2014	38 degrees awarded 2016 and 2017	444 continuing education certificates issued in 2016	90 academy classes in articulation agreement	115 employee certifications
E-learning programs accredited 2016	100 employees enrolled in program	1,110 continuing education hours in 2016	UoP students convert to college credits	Academy offers preparation course & proctors examination

Regulatory inspections 2016

Grifols high standards ensure operational efficiency and sustainable growth

Agency	Inspection days[2]	Admin actions[2]
FDA[1]	331	0
EU	262	0
COLA/CLIA	80	0
PPTA	58	0
Other[3]	16	0

Close to 100% of FDA inspections with "0" observations[4]



A proven track record: no administrative actions or other regulatory issues promote cost savings across the value chain

Note:
1. *More than 90% of FDA inspections resulted in 0 observations*
2. *Suspension, revocation, or loss of any license or certification; Warning Letter; imposed suspension of any regulated activity, etc.*
3. *State environmental agencies, OSHA, ex-US/EU Agencies*
4. *Number of FDA inspections with "0 issues (Form-483)*

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Driving efficiencies through organizational and operational improvements

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Operational improvements

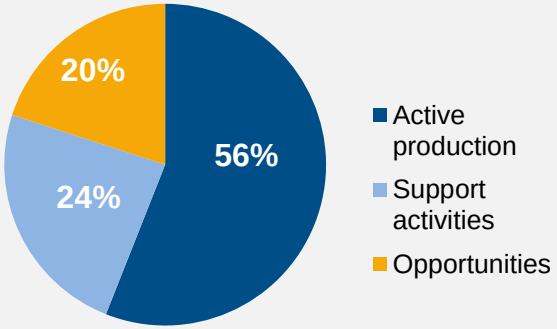
Driving significant productivity gains through organizational efficiency

Process Standardization and Resource Management

Improve operational performance by standardizing processes, managing production costs and implementing quality assurance best practices

Integrated Resource Management

- Staff
- Procedures
- Materials
- Facilities
- Equipment



"The right number of people with the right skills, at the right place and at the right time"

- Minimize donor wait times (30% reduction)
- Optimize equipment turnover (16% increase)
- Maximize staff utilization
- Increased donor & employee satisfaction
- Increased competitive advantage
- Lower employee and donor turnover
- Increase skill level
- Greater competencies

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Operational improvements

Driving significant productivity gains through organizational efficiency

Biometrics donor health history:

- Self-administered questionnaires at center kiosks
- Biometric donor verification
- Encourages donor self-screening
- Electronic donor history data retrieval
- Tracks and traces responses and deferrals
- Promotes safety for donors and product
- Technology improves donor satisfaction and reduces labor costs
- Automatic exchange of information with main systems

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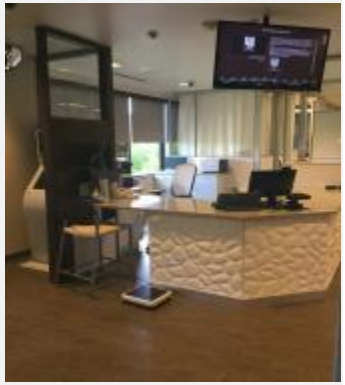
Operational improvements

Driving significant productivity gains through organizational efficiency

Process Modeling Tool:

- Emulates functionality of an operating site
- Assists operations in schedule and workflow creation
- Allows full simulation and proof of concept in process improvement



Donor Center laboratory:

- Complete model of a working center
- Test bed for process improvement research and development
- Full testing of new technologies before deployment

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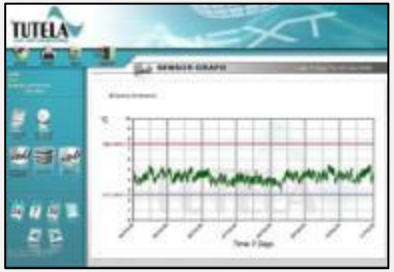
Operational improvements

Driving significant productivity gains through organizational efficiency

Commitment to excellence

- Automated temperature monitoring and management on freezing location
- Investigation of unexpected test results with potential retesting of individual unit
- Sample archive system for all collected plasma: health studies and IND
- PediGri®
- RFID on supply chain



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Operational improvements

Driving significant productivity gains through organizational efficiency

Plasma sampling machine and verification system (PBS/GSV)

- 100% automation of sample to unit verification
- Automated label printing per sample eliminating batch label set and potential for mislabeling
- Specifically designed for the plasma operations by Grifols Engineering and Grifols IT
- Removal of human error leads to superior product integrity

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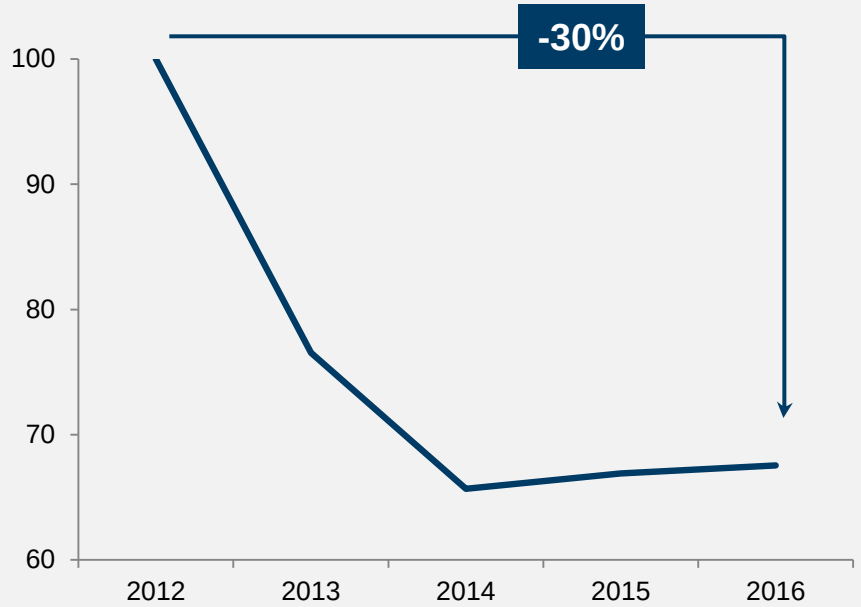
Operational improvements

Driving significant productivity gains through organizational efficiency

Plasma rejected and downgraded(1)

- Decrease of c.-32.5% in unsuitable plasma post collection
- Focus on process improvement, training and education of staff and donors
- Continuous improvements by monitoring of KPIs
- Quality program in place to attain further reductions in 2017-2018

Evolution of rejected plasma(2)



Note: 1. Plasma available for further fractionation but with some markets restrictions
2. 2012 baseline

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Operational improvements

Looking ahead: plasma productivity journey

Up to 2016

Present

Core systems identification
Digital transformation
Strategic Technology Office

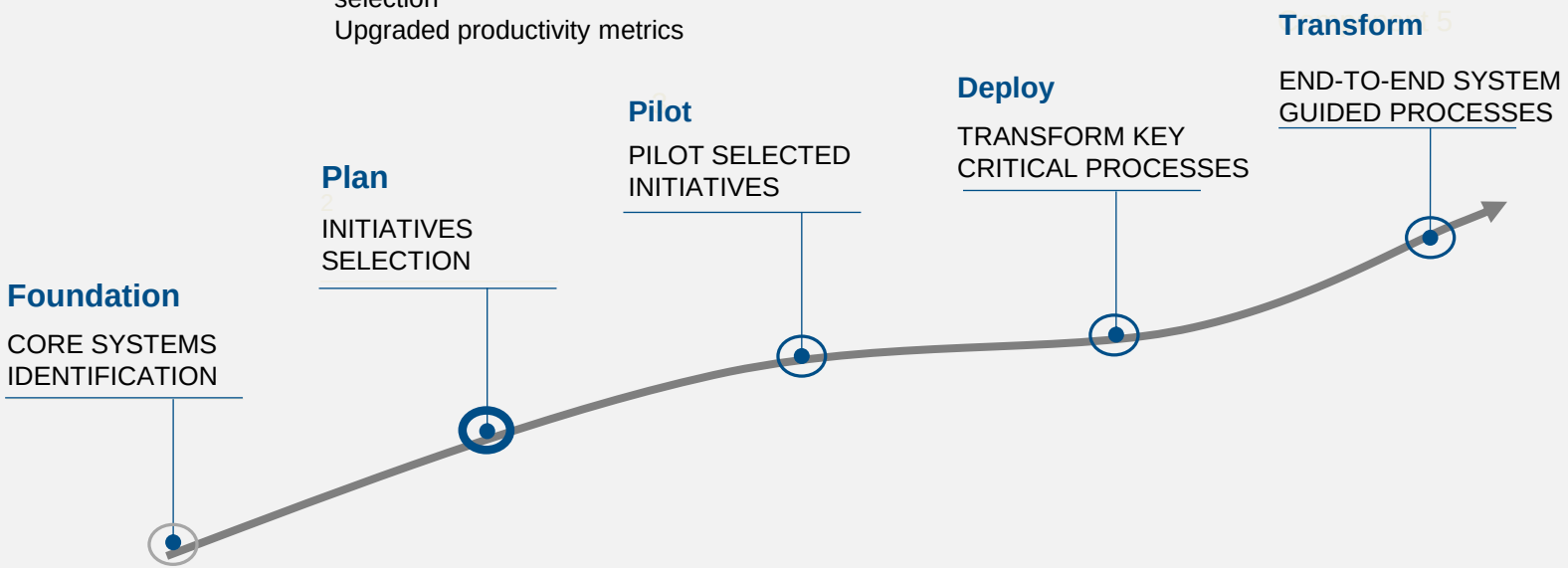
2017

Next steps

Strategic roadmap
Improved Business Process Management (BPM) tool selection
Upgraded productivity metrics

Piloting
Initiate plasma critical process transformation through BPM

End-to-end operations visibility



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Strategic roadmap

Solid, comprehensive strategy to increase productivity: 3 core pillars

Donor	• **Recruit:** CRM implementation. Collaborate with marketing on BI development campaigns • **Retain:** Payment system. Bonus application and reminder notification system for donors • **Interact:** Donor application development. Rewards and “Donation Rapid Pass” systems
Center	• **Operate:** Flow and donor 360 dashboards. Mobility. Queue management and resources planning • **Comply:** Plasma quality database. System traceability. Quality metrics and audit trail • **Collect:** Continue to reduce donor door-to-door flow time. System-driven operations
Corporate	• **Govern:** Right information, at the right place and at the right time. BPM systems integration. Big data • **Monitor:** End-to-end operations visibility • **Support:** Enable full corporate-center interaction via Grifols collaboration tools

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Key takeaways

Continuous improvement of the entire value chain to promote cost containment

Key takeaways

Continuous improvement of the entire value chain to promote cost containment

- Grifols strategy is built on a solid foundation of quality and safety
- Grifols is committed to maintaining its leadership through a sustainable growth in plasma collection by promoting a fully integrated and balanced plasma procurement organization
- Grifols is investing in new centers to accelerate our 2-year goal of reaching 225+ by 2019; innovation and operational efficiency improvements
- Grifols is driving continuous improvement of the entire value chain to promote cost containment
- Operational efficiency improvements include continuously upgrade our plasma centers; excellent turnaround results and flexibility in testing laboratories; achieve efficient inventory management, deliver high-impact education and training opportunities for employees; and positive medical outcomes with outstanding quality
- Grifols multifaceted approach will be a competitive advantage now and in the future

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Investors' & Analysts' Meeting 2017

Emeryville (California, USA)
June 7th and 8th, 2017

GRIFOLS

Bioscience commercial strategies

Maintaining strong sustainable growth

Lafmin Morgan

President of Bioscience Commercial

GRIFOLS

PRIDE
SAFETY
EFFORT
COMMITMENT
EXCELLENCE
TEAMWORK
INNOVATION &
IMPROVEMENT

Bioscience commercial strategy

Strategies to deliver sustainable growth

Sustaining market leadership	• Grifols Bioscience has sustained growth[(1)] of approximately 6% or more over the last 8 quarters • Grifols has successfully built leading market positions for the four key proteins • Grifols continues to consolidate a leading market position in the U.S., the largest market for plasma proteins
Expanding total market	• Grifols is spearheading efforts to expand markets through promotional activities aimed at supporting appropriate diagnosis and treatment • Grifols leads the industry in plasma research investments aimed at attaining approval for new indications and formulations of existing proteins
Geographic expansion	• Grifols Bioscience will continue its global expansion • In 2016, noteworthy inroads were made in Australia, France and India

Note: 1. At constant currency (CC), which excludes the impact of exchange rate movements

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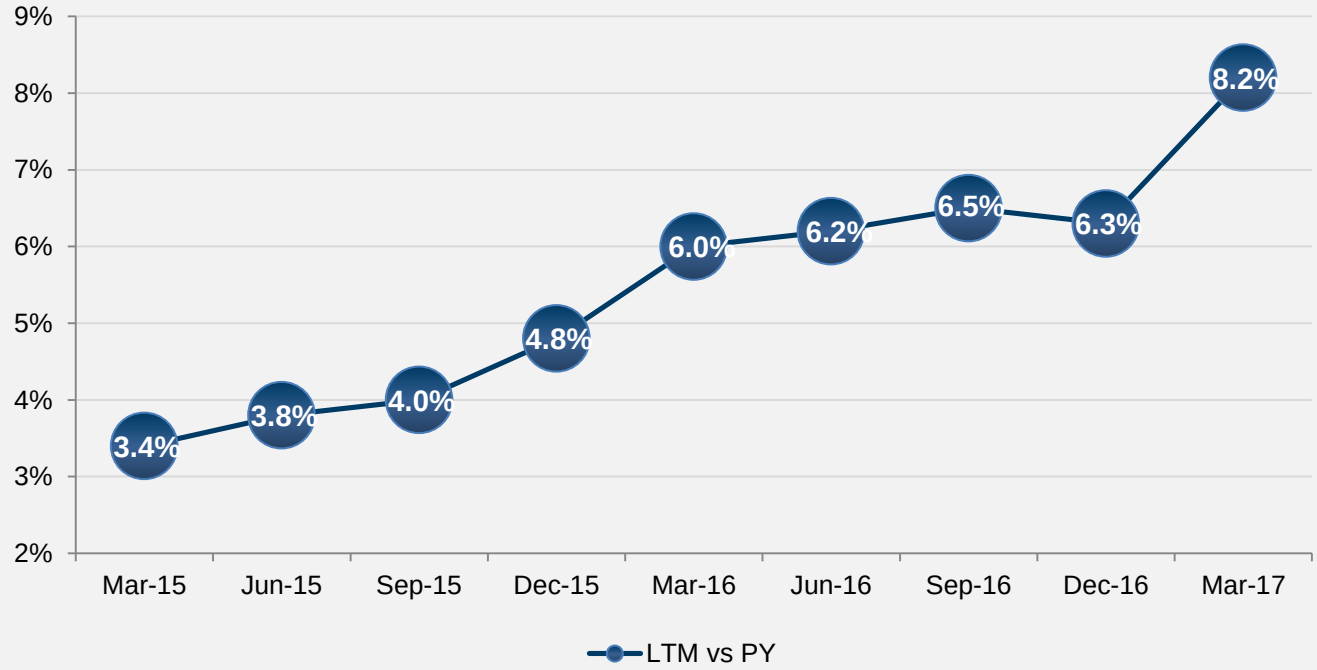
Bioscience commercial strategy

Bioscience revenue growth[(1),(2)] has consistently accelerated over the last 8 quarters



Note: 1. All data at constant currency (CC), which excludes the impact of exchange rate movements
2. Starting in 2017, a non-significant amount of Bioscience Division sales were moved to Bio Supplies Division

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Bioscience product strategy

Focused product strategies to deliver continued growth

Immunoglobulin (IG)	• Grifols is investing to grow markets by focusing efforts on diagnosis and treatment • Grifols is making investments in new indications like myasthenia gravis • Grifols is investing to expand subcutaneous immunoglobulin (SCIG) offering to include a 20% product
Albumin	• Grifols is the only company investing to expand albumin indications • Grifols has strengthened its market position in the most attractive albumin markets • Grifols will submit new albumin container for U.S. approval in 2018
Alpha-1 Antitrypsin	• Grifols continues to invest to support appropriate diagnosis and treatment • Grifols has an ongoing program to develop new indications and formulations • Grifols continues to expand geographic markets with Australian approval

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Bioscience product strategy

Focused product strategies to deliver continued growth

PdFactor VIII	• Grifols has demonstrated the benefits of pdFVIII in the hemophilia market • Grifols is focused on market segments that will benefit from pdFVIII • Grifols has a strong presence in key tender and emerging markets
Speciality plasma products	• Grifols leverages synergies in promoting a portfolio of hypermunes, along with tetanus and diphtheria (Td) vaccine • Thrombate® III continues to lead the antithrombin III market • Grifols is making progress with the Biologics License Application (BLA) and EMA submissions for its fibrin sealant product

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Grifols plasma derived products market summary

Growth fundamentals remain strong

- Grifols sustains a leading position[(1)] within our core business of plasma-derived therapies

	Grifols global market share	Grifols global position	Grifols U.S. market share	Grifols U.S. market position
IVIG	23%	**#1**	32%	**#1**
Alpha-1	68%	**#1**	64%	**#1**
Albumin	17%	**#2**	26%	**#2**
PdFVIII	20%	**#1**	54%	**#1**

- Per capita utilization and diagnosis are growing for IG, albumin and alpha-1
- Market growth and geographic expansion strategies continue to deliver results
- Grifols continues investing in the Bioscience Division to sustain growth

Note: 1. Grifols internal provisional data, 2016

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Plasma proteins market summary

Plasma proteins market has demonstrated consistent growth

- Sustained growth continues, while opportunities to expand use remain strong
- Grifols maintains a leadership position as:
  - #1 in 3 of the major proteins
  - One of the leading companies in the overall plasma-derived market
- IG market continues to show strong growth across the major markets
- Robust growth of albumin continues in China and other markets
- Alpha-1 market growth continues in North America, Europe and other markets
- New evidence of unique benefits of pdFVIII, which has both clinical and economic implications

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Grifols Immunoglobulin

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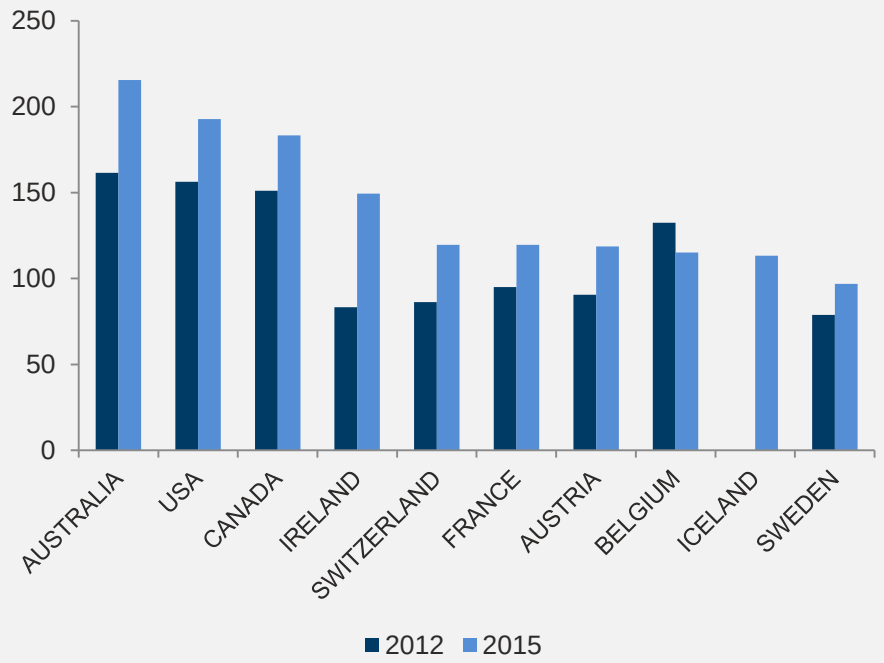
Top 10 countries in per capita[1][2] utilization, 2012 vs. 2015

Strong momentum in IG per capita utilization

- Top markets in per capita utilization continue to grow at brisk rates
- Growth seen consistently across markets
- Aging demographics fuel IG growth
- Growth continues in 2016:

  U.S.: +9%[3]
  Germany: +8%[3]
  Spain: +11%[4]
  England: +8%[5]



Note: *1. g/1,000 inhabitants-year*
2. Source: Grifols global plasma industry database per capita difference explanation adapted from MRB report
3. Source: PPTA - The Plasma Protein Therapeutics Association data
4. Source: PPTA - The Plasma Protein Therapeutics Association data and internal data
5. Source: NHS - National Health Service

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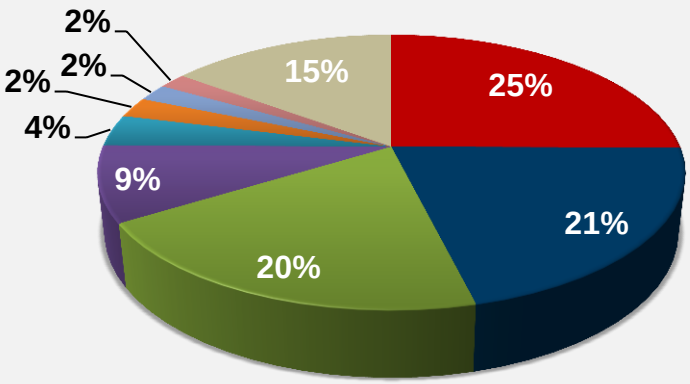
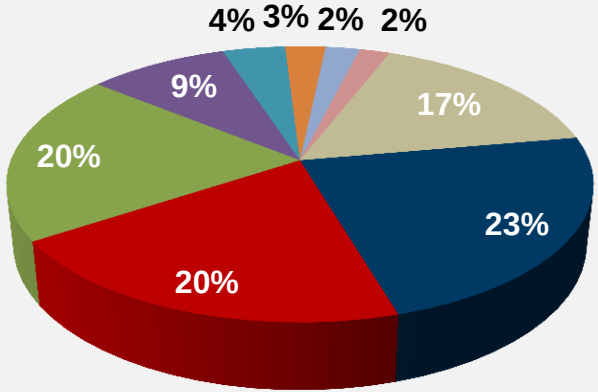
IG market shares(1)

Grifols maintains leading IG market share

IV and SCIG immunoglobulin



IVIG market



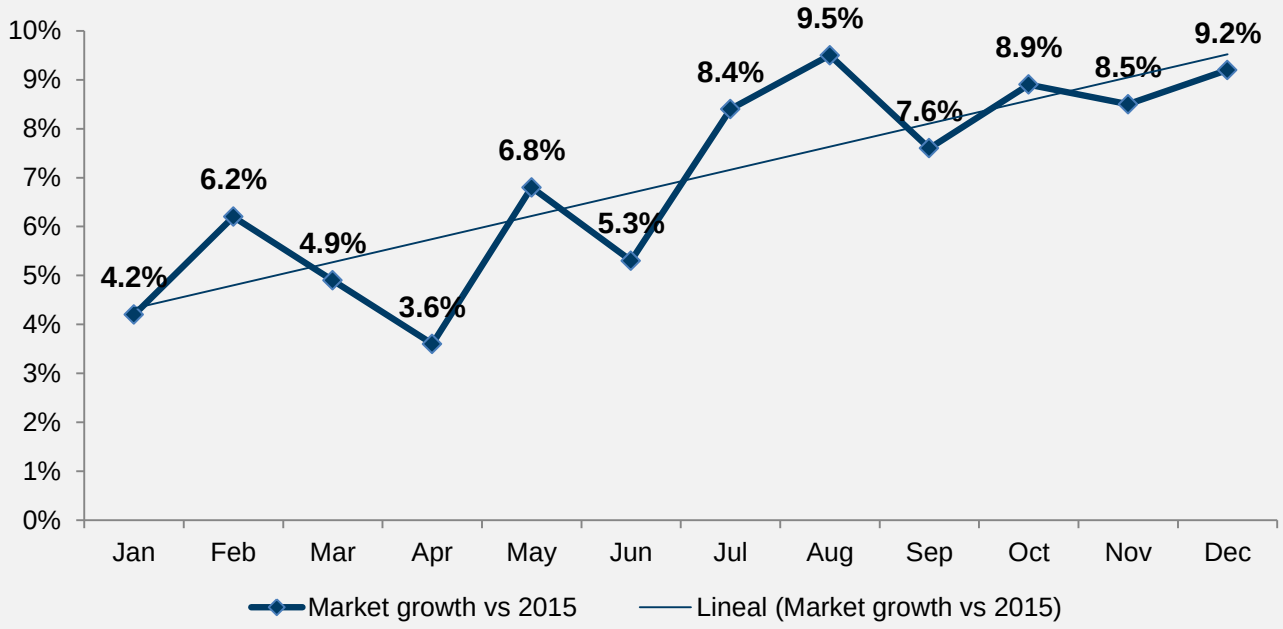
CSL GRIFOLS BAXALTA OCTAPHARMA KEDRION BIOTEST CBPO LFB OTHERS

Note: 1. Source: Internal data, MRB and secondary official data, 2015. In value

GRIFOLS

2016 U.S. IG market performance(1)

Accelerated growth in the mid to high single digits

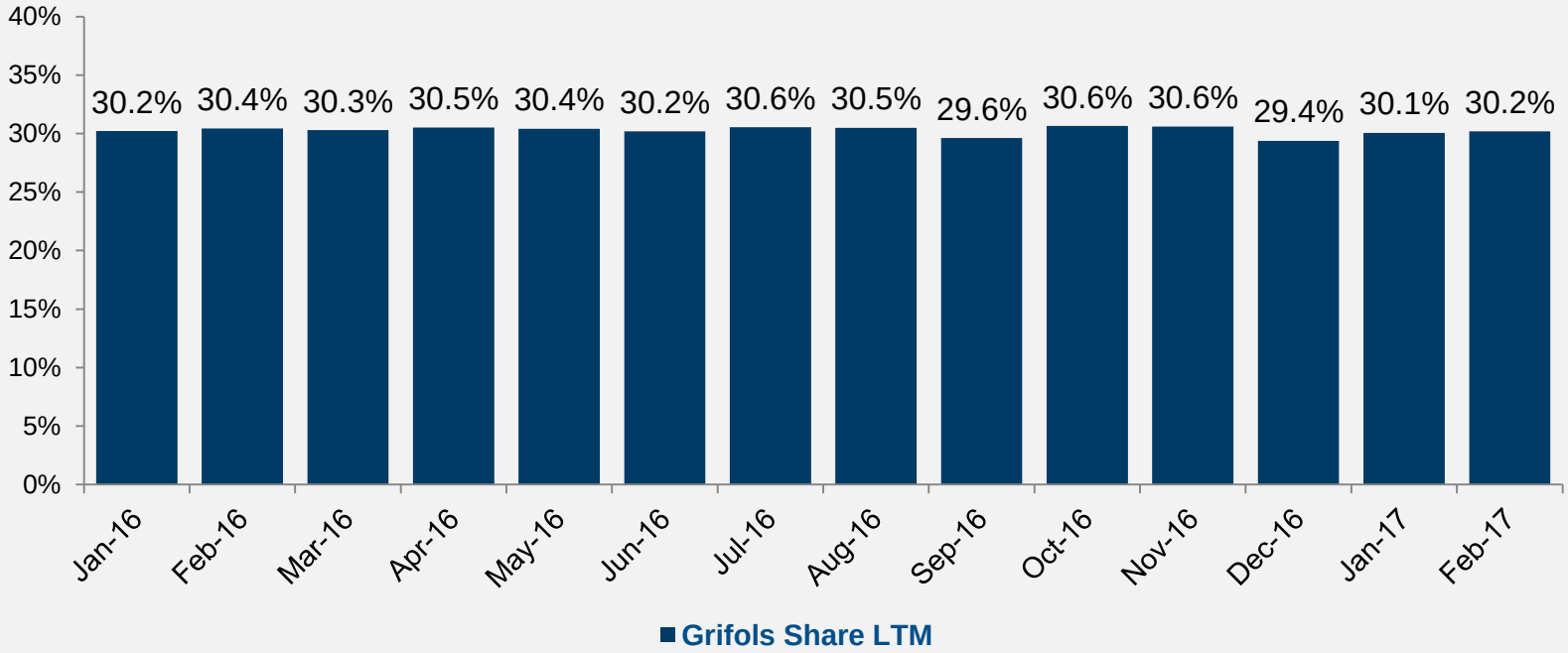


Note: 1. Source: PPTA - The Plasma Protein Therapeutics Association data

GRIFOLS

U.S. IG market performance(1)

Grifols IG share in the U.S. remains strong - Data for LTM



Note: 1. Source: PPTA (The Plasma Protein Therapeutics Association) volume data and Grifols Internal volume in kg sold

GRIFOLS

Grifols IG continues to strengthen its leadership position

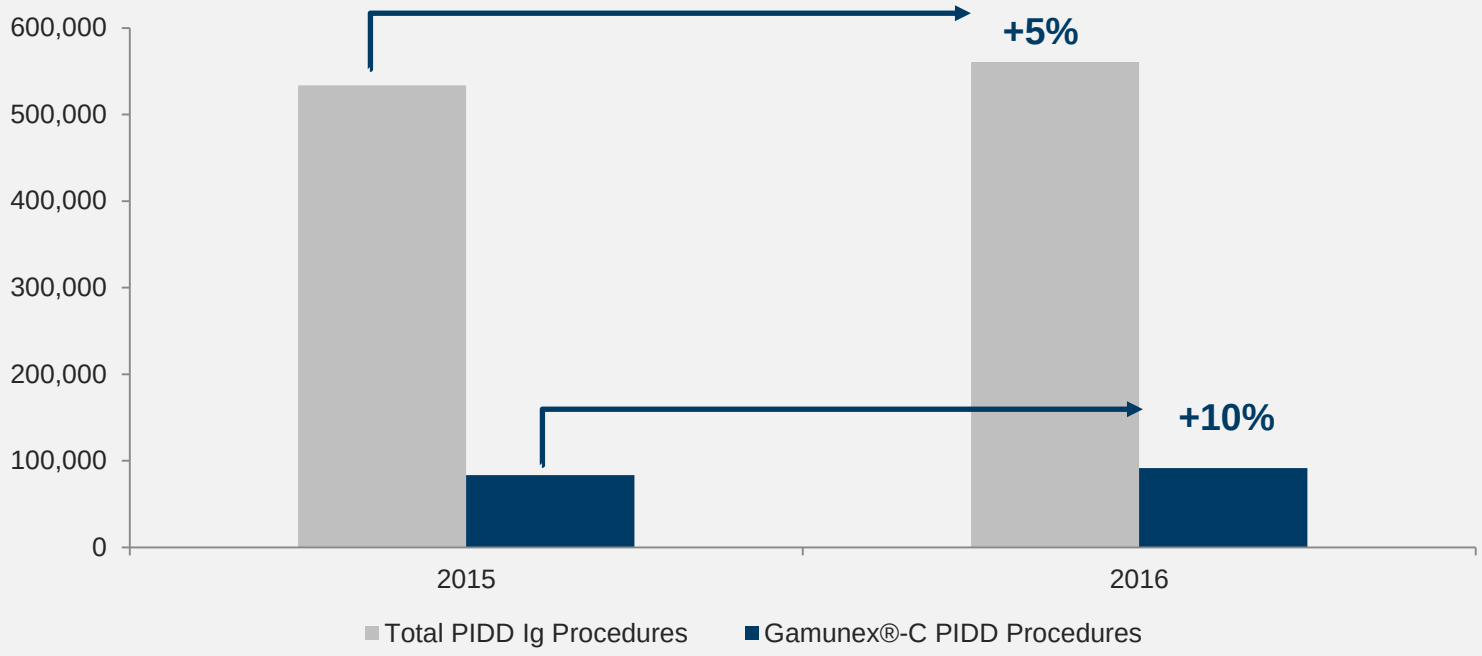
Gamunex®-C is the leading IG treatment in CIDP

- CIDP focus: accurate recognition, confirmation and treatment
  - Gamunex®-C is the #1 prescribed IG therapy for CIDP
  - First-ever CIDP fellows ambassador program
  - Grifols IG representatives complete the AANEM CIDP Knowledge Assessment (94% of IG representatives passed)

GRIFOLS

Grifols IG continues to strengthen its leadership position

Gamunex®-C grew more than other leading IVIG in PIDD(1)



Note: 1. Source: Lexis-Nexis, Medical claims data only; Gamunex® -C data includes GammaKed® due to shared J-code

GRIFOLS

Grifols IG continues to strengthen its leadership position

Grifols IG growth sustained despite 10 years of SCIG(1)

- 92% of all grams in the global IG market were IV

  87% of growth in the global IG market derived from IV

- 90% of grams in the U.S. were IVIG and 10% were SCIG

  Most growth in the U.S. market was driven by IVIG

- Grifols is consolidating a long-term leadership position

  Grifols is preparing for the future launch of a 20% SCIG product

Note: 1. Source: Internal data, MRB and secondary official data, 2015

GRIFOLS

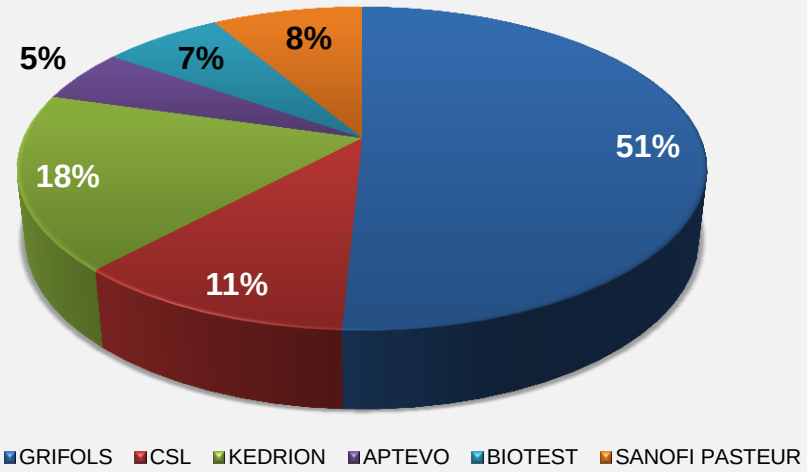
Grifols hyperinmunes market(1)

Grifols is the market leader in the U.S. hyperimmunes market

A leading and differentiated portfolio

- Market leader in the rabies market
- GammaSTAN® is only treatment for post-exposure Hep A & measles
- HyperHepB® is the only immunoglobulin specifically designed for pediatric use
- Grifols is the only company that offers products for passive and active tetanus immunity

U.S. market for hyperimmunes



Note: 1. Source: Internal data, 2016

Key takeaways

Grifols Immunoglobulin portfolio is the cornerstone of the division

- Grifols is the IVIG leader and continues to build on its leadership position
- Grifols is investing to grow markets by focusing efforts on diagnosis and treatment
- Grifols is making investments in new indications such as myasthenia gravis
- Grifols continues to grow in Primary Immune Deficiency (PIDD) market
- Grifols is investing to expand its SCIG offering to include a 20% treatment
- Grifols is the market leader in the hyperimmunes market

GRIFOLS

Grifols Albumin

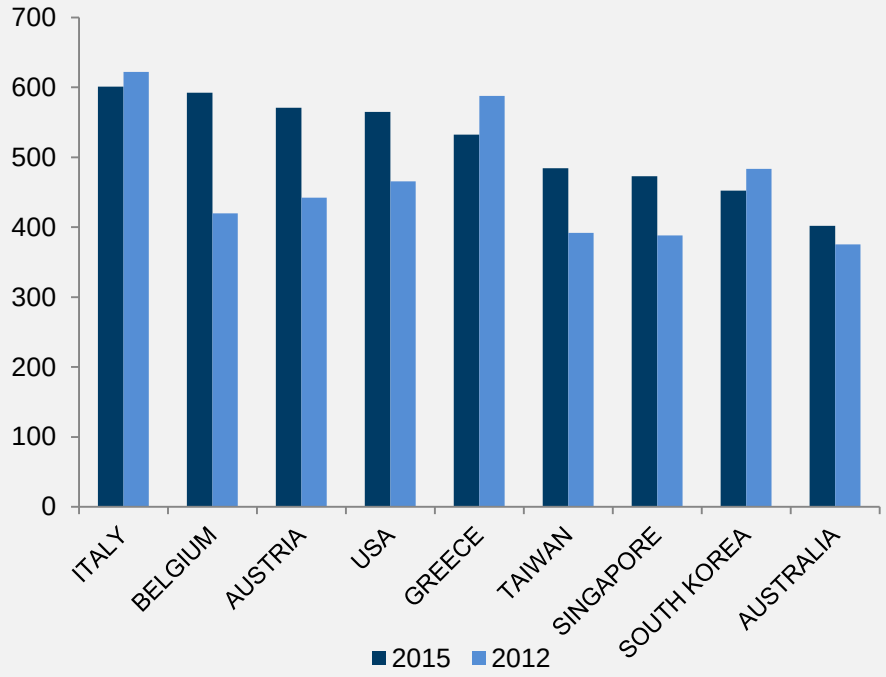
GRIFOLS

Top 10 countries in per capita[1][2] utilization, 2012 vs. 2015

Momentum continues in per capita utilization of albumin

- Albumin growth continues in most markets
- The world's largest market (China) is not among top 10 by per capita consumption
- New clinical data will fuel future growth
- Growth continues in 2016:

  China: +18%[3]
  Germany: +11%[4]



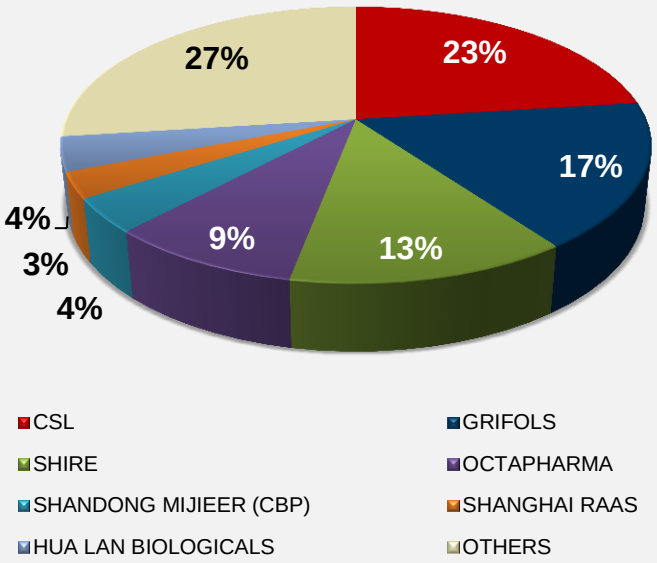
Note: *1. g/1,000 inhabitants-year*
2. Source: Grifols global plasma industry database per capita difference explanation adapted from MRB report
3. Source: Imported official data
4. Source: PPTA - The Plasma Protein Therapeutics Association data

GRIFOLS

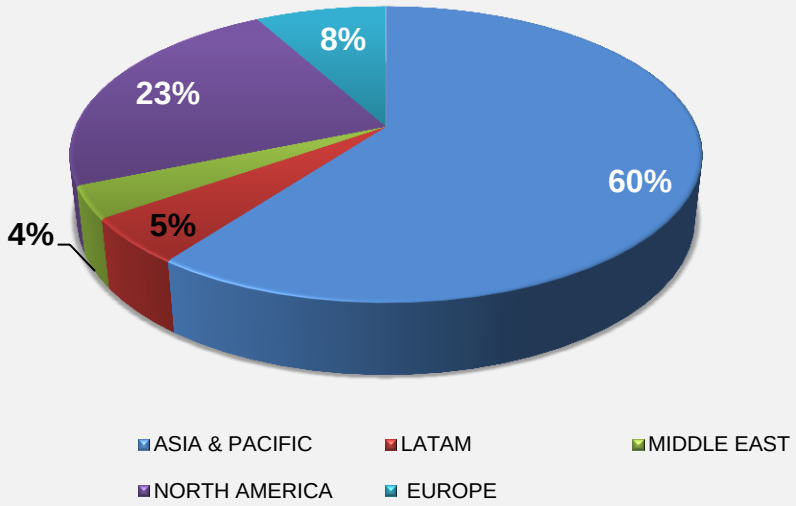
Albumin market shares(1)

Grifols is a global leader, with solid positions in China and the U.S.

Albumin market shares



Grifols regional split(2)



Note: 1. Source: Grifols internal provisional data, 2016. In value
2. Grifols 2016 net revenues

GRIFOLS

ANSWER clinical trial results presented at EASL[(1)]

New clinical data supports future growth of albumin

The rate of survival was significantly higher in patients receiving human albumin plus to standard therapy, compared with those receiving standard therapy only. **Treatment with human albumin reduced the risk of death by 38%.** Statistically significant benefits of administering human albumin rather than standard therapy alone were demonstrated for the management of ascites, complications of cirrhosis, quality of life and hospital admissions.

"**The reduction in mortality observed in the albumin-treated** arm of this randomised controlled study is a novel and **important** piece of information**.** Based on this data, **weekly administration of albumin should be considered** in patients with cirrhosis and ascites to prevent life-threatening complications," said Prof Annalisa Berzigotti, University Clinic for Visceral Surgery and Medicine, University of Berne, Switzerland, and EASL Governing Board Member.

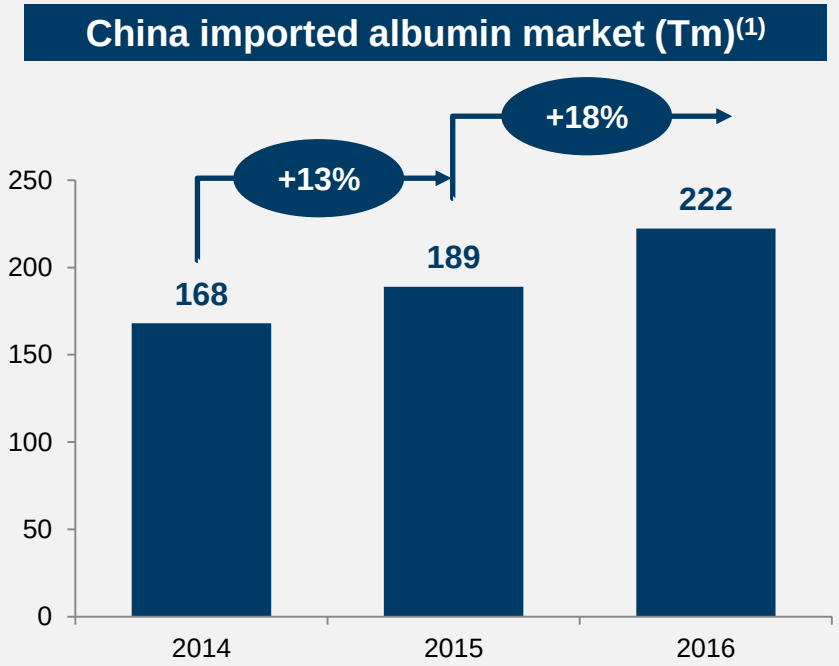
Note: 1. European Association for the Study of the Liver. Public Release: 22-Apr-2017. Highlight & bold text added for emphasis

GRIFOLS

China albumin market

Grifols is growing faster than the market in China

- China continued to achieve double-digit growth(1)
- Grifols sales in the country grew well above the market(2)

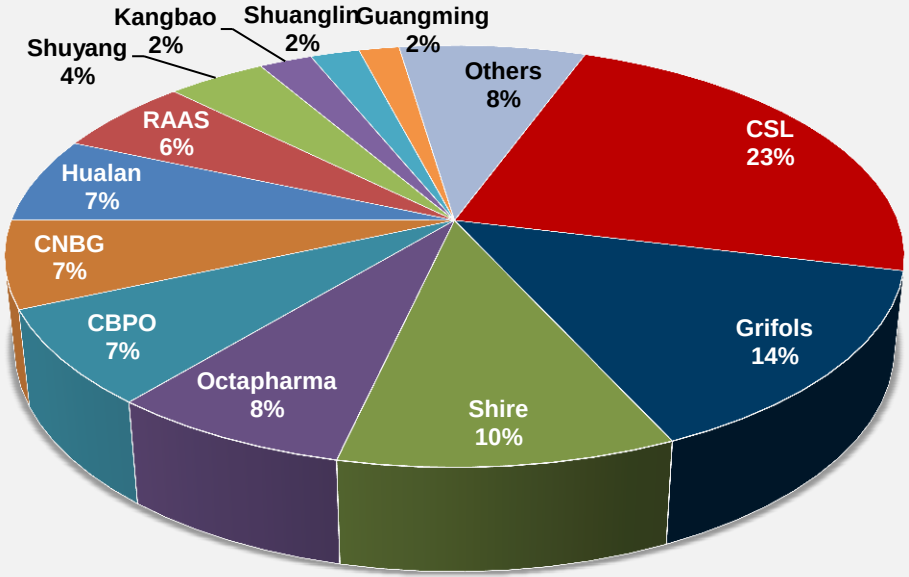


Note: 1. Source: Imported official data
2. Grifols 2016 net revenues

GRIFOLS

China albumin market

In 2016 Grifols gained the #2 albumin market share(1)



Note: 1. Source: Institutes of Food and Drug Control

CBPO: Guizhou Taibang, Shandong Taibang & Xi'an Huitian
CNBG: Rongsheng and Shanghai, Lanzhou & Wuhan Institutes
RAAS: Shanghai Raas, Zhengzhou Raas & Tonrol

Total albumin released in 2016
392.9 million grams

GRIFOLS

China albumin market

Grifols performance surpassed China's growth rate in 2016

- In 2016, Grifols' sales grew by 32% in China, making Grifols a significant contributor to China's growth
- In 2016, Grifols gained the no. 2 position in the China albumin market, with 14% market share
- Grifols is actively pursuing further expansion strategies in the Chinese market to support the continued growth of albumin

GRIFOLS

Key takeaways

Albumin continues to be a driver of Bioscience growth

- Grifols is well positioned in the market
- Growth driven by the U.S. and China, where Grifols is expected to grow above the market
- Developing countries are expected to grow at double-digit rates in the coming years
- Grifols continues to invest in albumin:
  - New indications: Alzheimer, cirrhosis, acute-on chronic liver failure and ALS(1)
  - Field promotion in key markets
  - New packaging: albumin in bags
  - Expanded manufacturing capacity
- New data will reinforce albumin benefits beyond fluid management (ANSWER)

Note: 1. ALS: Amyotrophic lateral sclerosis

GRIFOLS

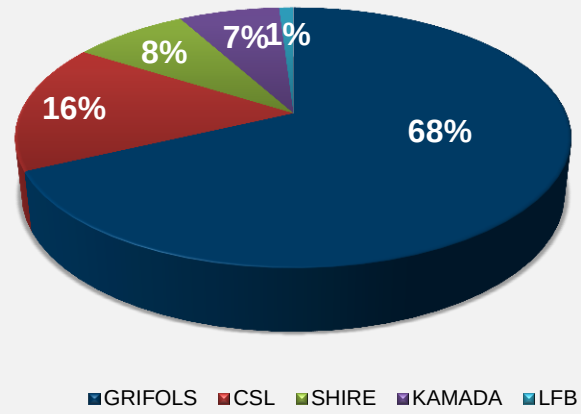
Grifols Alpha-1 Antitrypsin

GRIFOLS

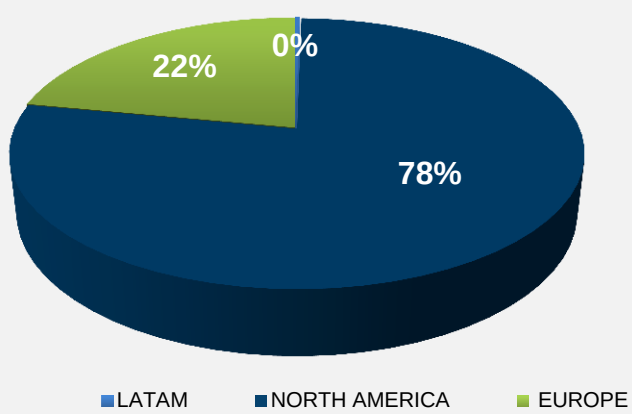
Alpha-1 antitrypsin market shares(1)

Grifols is the leader in the worldwide alpha-1 business

Alpha-1 market shares



Grifols regional split(2)

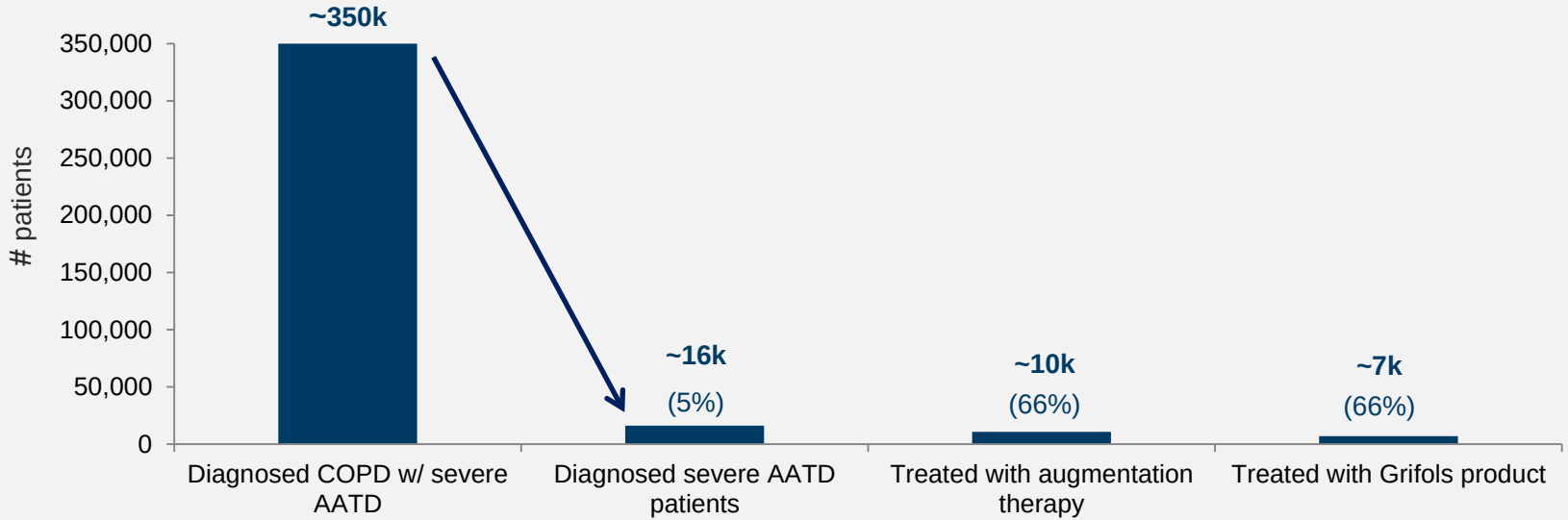


Note: 1. Source: Grifols internal provisional data, 2016. In value
2. Grifols 2016 net revenues

Alpha-1 potential market

Significant opportunity to increase diagnosis

As many as 350,000 diagnosed COPD patients in accessible global markets may have severe alpha-1 antitrypsin deficiency as the underlying cause of COPD; however, less than 5% of these cases has been identified



Note: 1. Sources and assumptions: Grifols patients based in 1Q 2017 patient counts (last update 10 May 2017). It is assumed that Grifols holds 66% of total patients. It is assumed that two-thirds of diagnosed patients receive treatment based on market knowledge and affiliate input

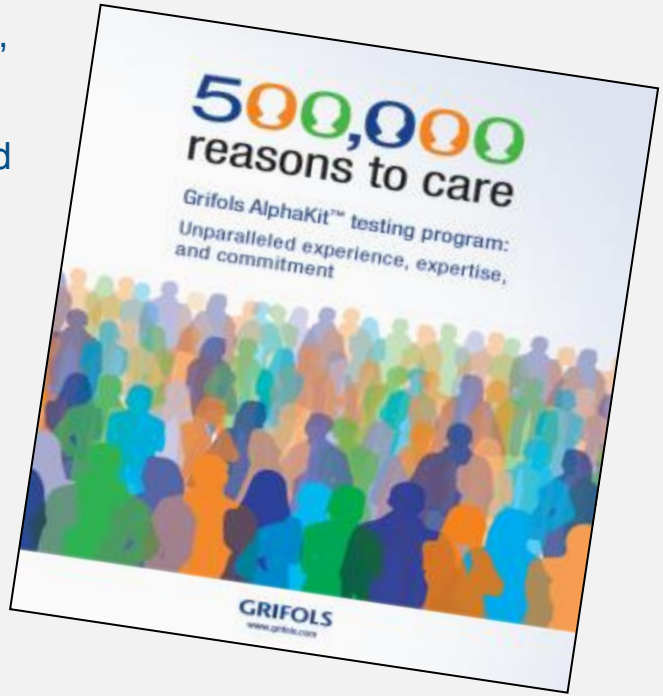
GRIFOLS

Grifols is the clear leader in alpha-1

On-going commitment to patient diagnosis and differentiation of Prolastin®-C

- Continued commitment of Grifols alpha-1 national testing program, with more than 500,000 patients tested
- Patient management put at HCP's fingertips through diagnosis and treatment portals, providing HCP access to secure patient-level information and electronic prescribing

MyAlphaKit.com and MyProlastinDirect.com



- Comprehensive patient support every step of the way with the assist program: first promotional co-pay program

PROLASTIN DIRECT®
alpha$_1$-proteinase inhibitor (human) 1.800.305.7881
assist

GRIFOLS

Grifols is the clear leader in alpha-1

Strengthening alpha-1 leadership

What about the competition?

Thanks to a unique business model and excellent execution, Grifols continues to strengthen its alpha-1 business, including markets with new competitors like Germany, Spain and Italy

GRIFOLS

Key takeaways

Alpha-1 extends contribution to balance the liter

- Grifols continues to build on its leadership position in the alpha-1 market, with 68%(1) global share which is increasing revenue efficiency per liter
- Significant opportunities worldwide in alpha-1 patient identification and treatment, with new and underdeveloped markets a core part of our growth strategy
- Our model of driving patient identification through dedicated pulmonary teams and disease management for alpha-1 patients has proven successful in North America, Germany, Canada and Spain. We plan to implement this strategy in new markets

Note: 1. Source: Grifols internal provisional data, 2016. In value

GRIFOLS

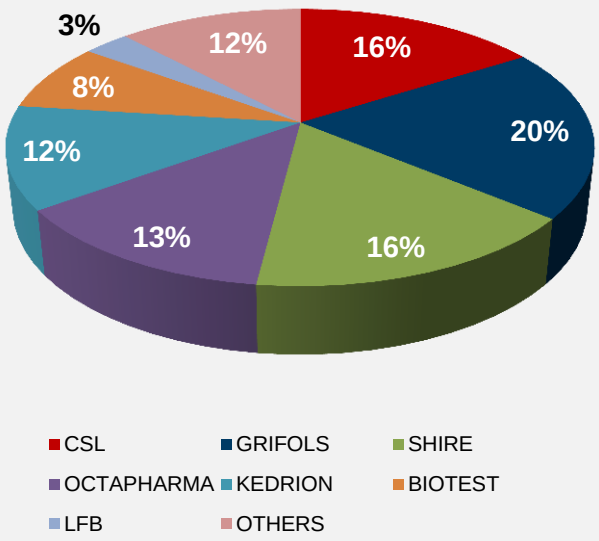
Grifols pdFVIII

GRIFOLS

PdFVIII market shares(1)

Grifols holds leading pdFVIII market position

PdFVIII market shares



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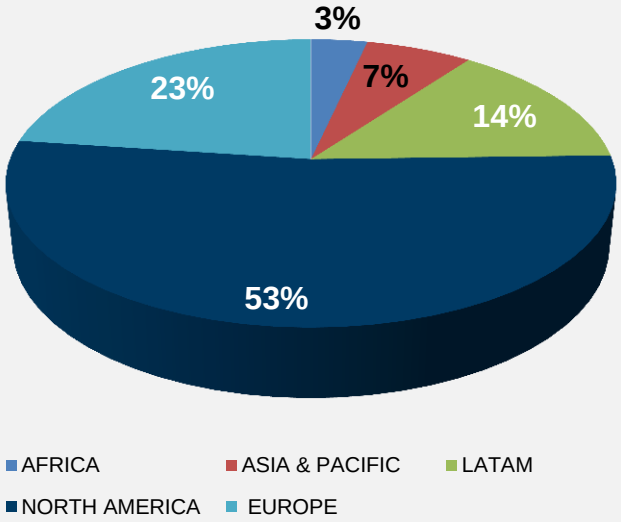


Note: 1. Source: Grifols internal provisional data, 2016. In value
2. Grifols 2016 net revenues
HA market, VWD not included

GRIFOLS

SIPPET study results

Greater opportunities for pdFVIII therapies

SIPPET awareness campaign:

- Published in May 2016, SIPPET results are considered scientifically compelling:
  - Major hemophilia organizations have opened the door to treat PUPs with pdFVIII/VWF
  - More than 35 articles have cited SIPPET results and its implications
  - SIPPET study has spotlighted pdFVIII as a valid treatment option
- SIPPET study has created a halo effect for Grifols' pdFVIII beyond PUPs

GRIFOLS

SIPPET study results

Leading organizations have modified their recommendations

SIPPET statements released shortly after publication of findings

All major haemophilia organizations have published SIPPET statements on treating PUPs with pdFVIII/VWF

Canadian Hemophilia Society

"pd products containing VWF should be presented as an option for the treatment […] "

UKHCDO

"UK clinicians should counsel parents on the implications of known inhibitor studies […] plasma-derived concentrates should be considered."

National Hemophilia Foundation — for all bleeding disorders

HFA

"individuals should consider the new data from the SIPPET study…"

EHC

"Many physicians are likely to recommend the use of a pdFVIII/VWF concentrate […] This is a very reasonable option, based on the results of the SIPPET study."

WFH

"the new data from the SIPPET study should be considered in the choice of product classes with which to initiate therapy."

EAHAD

"…where patients who develop inhibitors have no access to ITI or bypassing agents, plasma-derived products may be preferred…"

HFA = Hemophilia Federation of America; UKHCDO = United Kingdom Hem. Centers Doctors Organization; AICE = Associazione Italiana Centri Emofilia; WFH = World Federation of Hemophilia; EAHAD = European Association for Hemophilia and Allied Disorders; EHC = European Hemophilia Consortium;
Source: Official websites from the mentioned organizations (check "Want to know more?").

GRIFOLS

SIPPET study results

Clinical and regulatory views in Europe continue to evolve

Haemophilia

EDITORIAL

SIPPET trial: the answers

Factor VIII

PRAC concludes there is no clear and consistent evidence of a difference in inhibitor development between classes of factor VIII medicines

EMA's Pharmacovigilance Risk Assessment Committee (PRAC) has completed its review of factor VIII medicines to evaluate the risk of developing inhibitors in patients with haemophilia A who have not previously been treated with these medicines. Having reviewed the available evidence, the PRAC concluded that there is no clear and consistent evidence of a difference in the incidence of inhibitor development between the two classes of factor VIII medicines: those derived from plasma and those made by recombinant DNA technology.

Factor VIII is needed for blood to clot normally and is lacking in patients with haemophilia A. Factor VIII products replace the missing factor VIII and help control bleeding. However the body may develop inhibitors as a reaction to these medicines, particularly in patients starting treatment for the first time. This can block the medicines' effect, so bleeding is no longer controlled.

The review was started following publication of the SIPPET study,[1] which concluded that inhibitors develop more frequently in patients receiving recombinant factor VIII medicines than in those receiving plasma-derived factor VIII medicines. The review also covered other relevant studies, including interventional clinical trials and observational studies.

The studies reviewed differed in their design, patient populations and findings, and the PRAC concluded that they did not provide clear evidence of a difference in the risk of inhibitor development between the two classes of factor VIII medicines.

In addition, due to the different characteristics of individual products within the two classes, the PRAC considered that evaluation of the risk of inhibitor development should be at the product level instead of at the class level. The risk for each individual product will continue to be assessed as more evidence becomes available.

The PRAC recommended that the prescribing information should be updated to reflect the current evidence. The update should include, as appropriate, listing of development of inhibitors as a very common side effect in previously untreated patients and as an uncommon side effect in previously treated patients. The existing warning on inhibitor development should be amended to highlight that the presence of low levels of inhibitors poses less of a risk of severe bleeding than high levels.

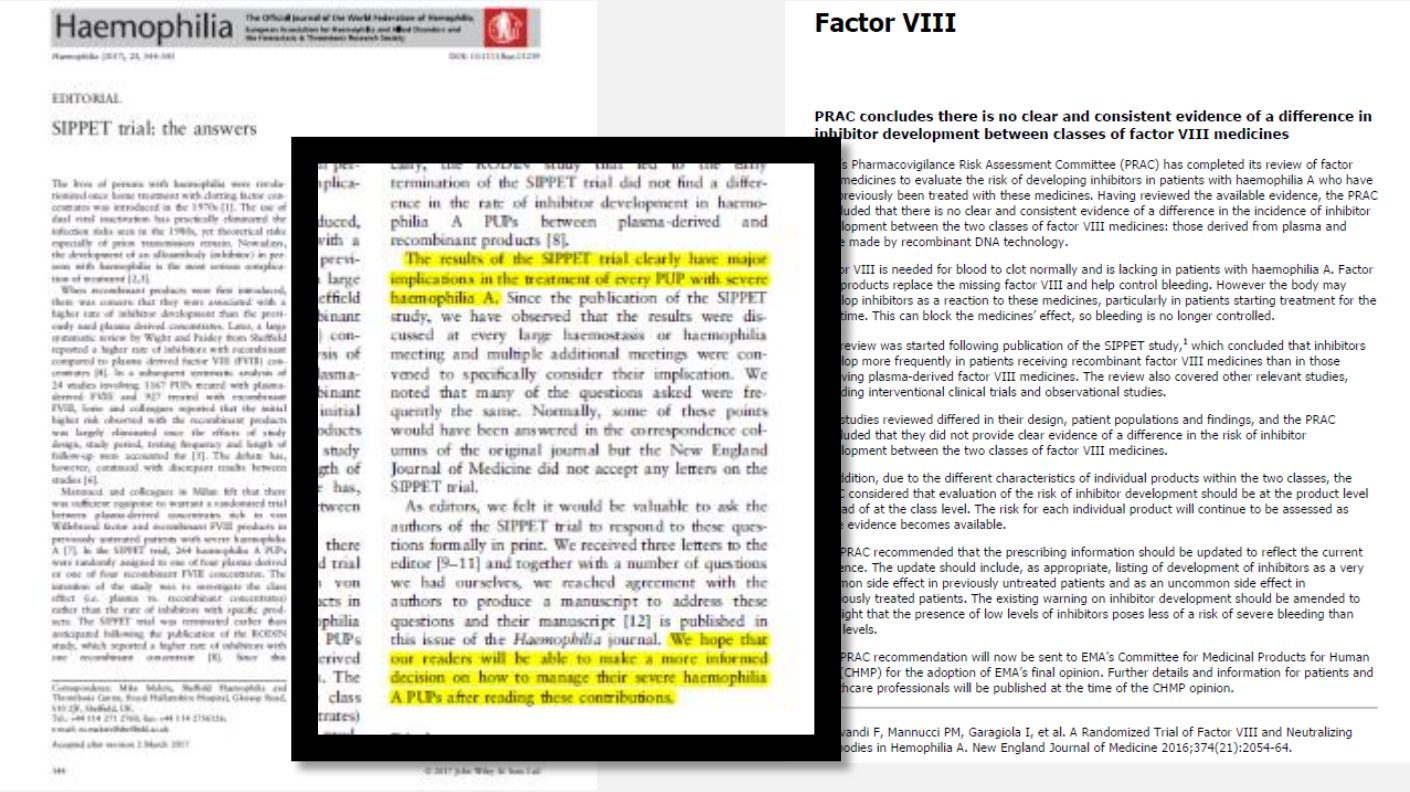
The PRAC recommendation will now be sent to EMA's Committee for Medicinal Products for Human Use (CHMP) for the adoption of EMA's final opinion. Further details and information for patients and healthcare professionals will be published at the time of the CHMP opinion.

[1]Peyvandi F, Mannucci PM, Garagiola I, et al. A Randomized Trial of Factor VIII and Neutralizing Antibodies in Hemophilia A. New England Journal of Medicine 2016;374(21):2054-64.

GRIFOLS

SIPPET study results

Clinical and regulatory views in Europe continue to evolve



Haemophilia

EDITORIAL

SIPPET trial: the answers

termination of the SIPPET trial did not find a difference in the rate of inhibitor development in haemophilia A PUPs between plasma-derived and recombinant products [8].

The results of the SIPPET trial clearly have major implications in the treatment of every PUP with severe haemophilia A. Since the publication of the SIPPET study, we have observed that the results were discussed at every large haemostasis or haemophilia meeting and multiple additional meetings were convened to specifically consider their implication. We noted that many of the questions asked were frequently the same. Normally, some of these points would have been answered in the correspondence columns of the original journal but the New England Journal of Medicine did not accept any letters on the SIPPET trial.

As editors, we felt it would be valuable to ask the authors of the SIPPET trial to respond to these questions formally in print. We received three letters to the editor [9–11] and together with a number of questions we had ourselves, we reached agreement with the authors to produce a manuscript to address these questions and their manuscript [12] is published in this issue of the *Haemophilia* journal. We hope that our readers will be able to make a more informed decision on how to manage their severe haemophilia A PUPs after reading these contributions.

Factor VIII

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GRIFOLS

Key takeaways

Grifols pdFVIII represents significant opportunities ahead

- Grifols maintains a leading position in the pdFVIII market with 20%[1] global share and volume increase above the market
- In the U.S., Grifols pdFVIII is growing faster than the market thanks to the diffusion of positive results regarding the use of natural FVIII/VWF complex to treat patients who developed inhibitors
- SIPPET results have been considered scientifically compelling and put pdFVIII back in the conversation as a treatment option
- SIPPET study has created a halo effect for Grifols pdFVIII beyond previously untreated patients (PUPs), with 2017 promotional campaign building on 2016 momentum
- Emerging countries are a relevant growth source as their budget allocations for healthcare resources increase

Note: 1. Source: Grifols internal provisional data, 2016

GRIFOLS

Key Bioscience takeaways

Commercial leadership will continue to deliver sustainable growth

Key Bioscience takeaways

Commercial leadership will continue to deliver sustainable growth

Sustaining market leadership	• Grifols Bioscience has sustained growth[1] of approximately 6% or more over the last 8 quarters • Grifols has successfully built leading market positions for the four key proteins • Grifols continues to consolidate a leading market position in the U.S., the largest market for plasma proteins
Expanding total market	• Grifols is spearheading efforts to expand markets through promotional activities aimed at supporting appropriate diagnosis and treatment • Grifols leads the industry in plasma research investments aimed at attaining approval for new indications and formulations of existing proteins
Geographic expansion	• Grifols Bioscience will continue its global expansion • In 2016, noteworthy inroads were made in Australia, France and India

Note: 1. At constant currency (CC), which excludes the impact f exchange rate movements

GRIFOLS

Bioscience Capacity Expansion Plan

Solid headway to keep pace with growing demand

Daniel Fleta

Grifols Engineering Managing Director

GRIFOLS

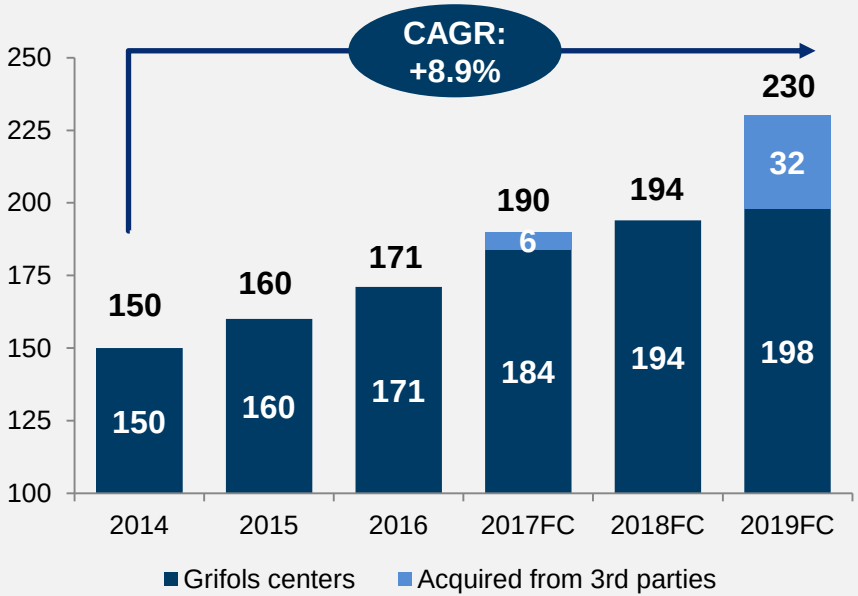
PRIDE
SAFETY
EFFORT
COMMITMENT
EXCELLENCE
TEAMWORK
INNOVATION &
IMPROVEMENT

Plasma procurement
Expanding plasma collection capacity

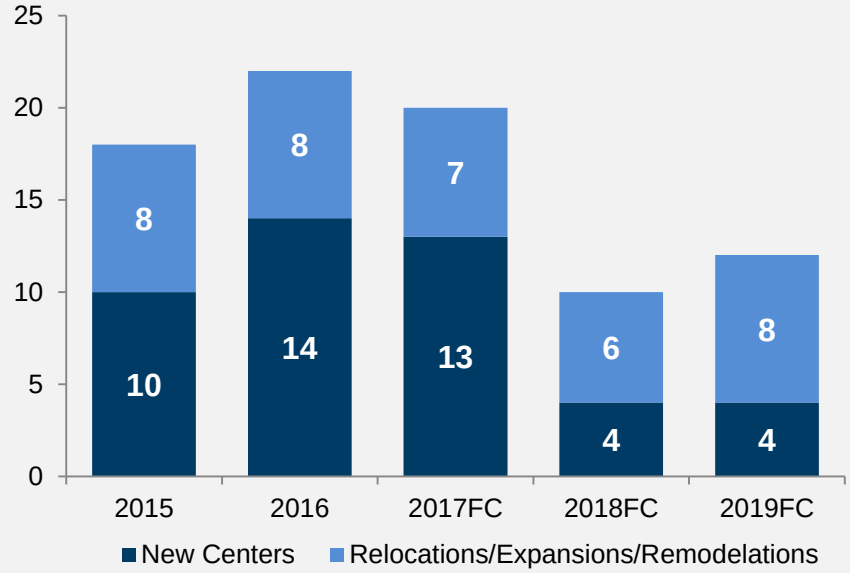
Plasma procurement

Expanding collection capacity to meet growing demand

Grifols U.S. plasma donor centers



Grifols U.S. plasma donor center projects

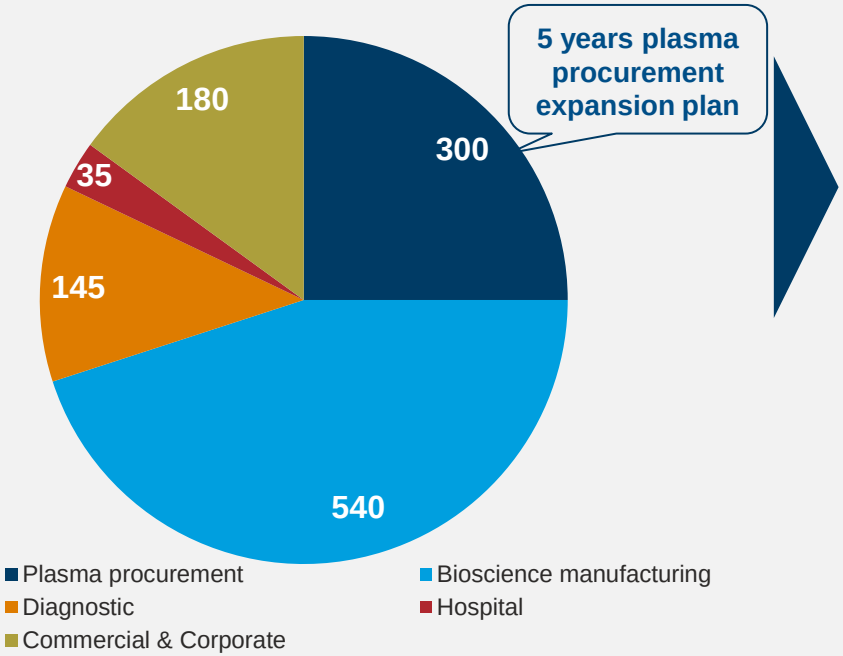


GRIFOLS

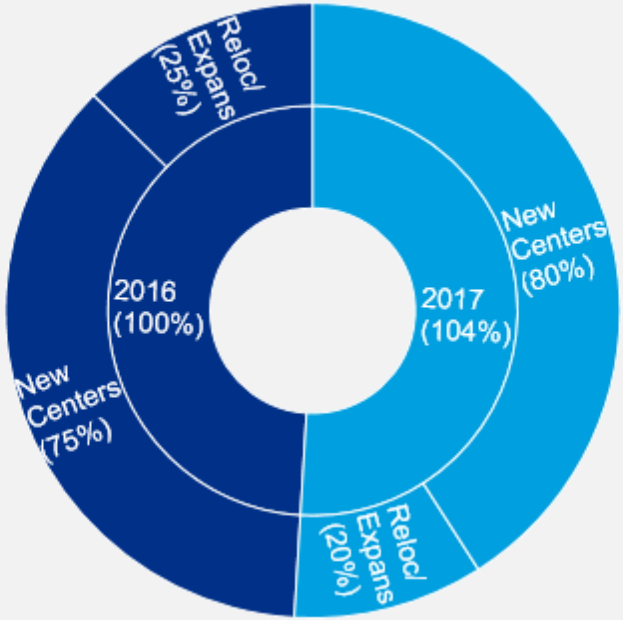
Plasma procurement

Expanding collection capacity to meet growing demand

Capital allocation 2016-2020



Plasma procurement investment 2016-2017



GRIFOLS

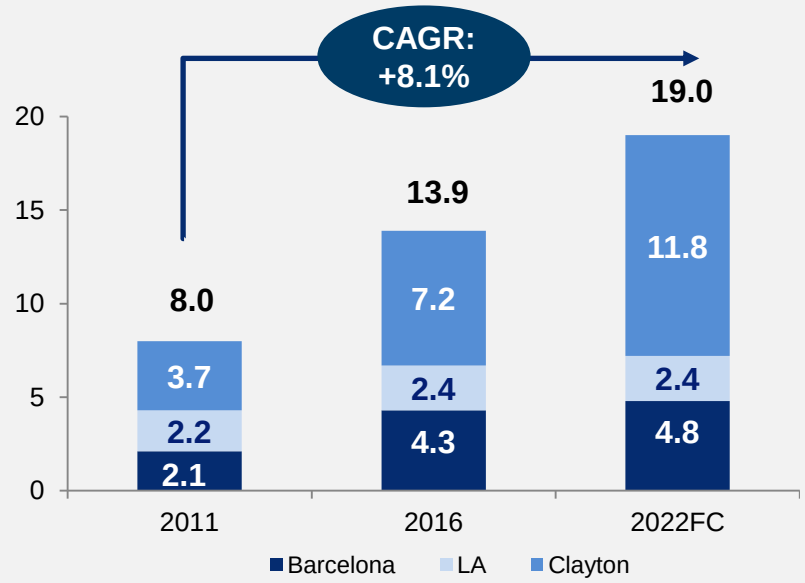
Plasma fractionation
Increasing global capacity up to 19m liter/year

GRIFOLS

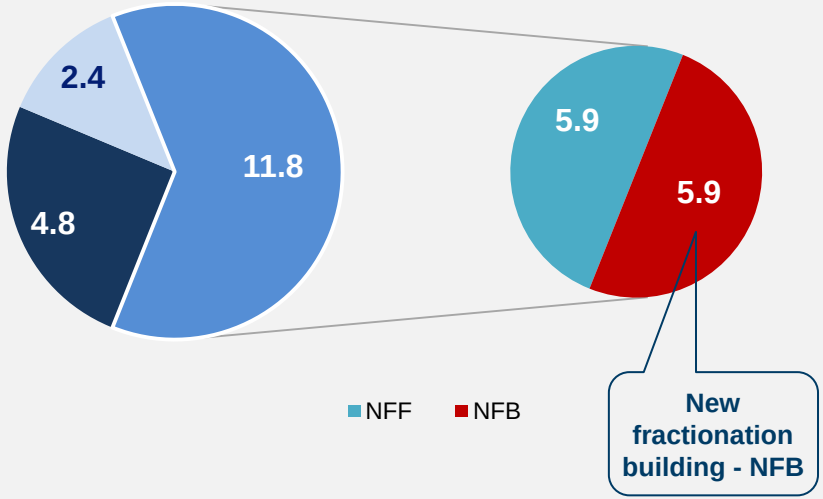
Plasma fractionation

Investment in new capacity to address growing demand

Grifols fractionation growth(1)



Grifols fractionation capacity by site in 2022(1)



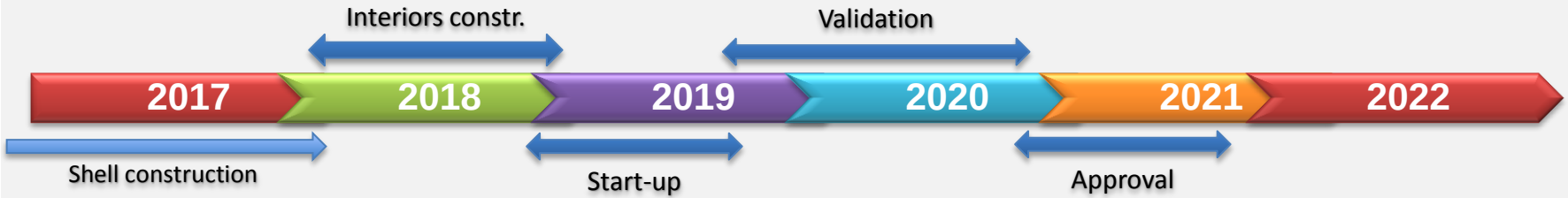
Note: 1. In million plasma liters/year

GRIFOLS

New Fractionation Building (NFB) project at Clayton (NC)

Engineered for maximum efficiency and flexibility

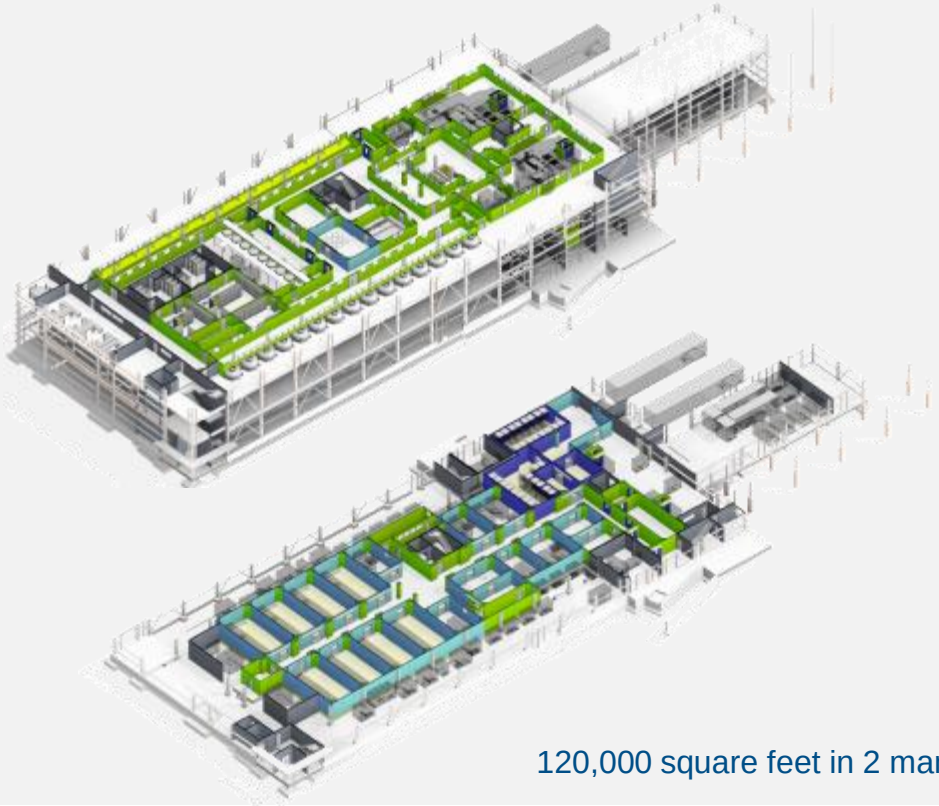
- Fractionation capacity: **5.9m liter plasma/year**
- CAPEX: USD90m
- **Two parallel** plasma pooling and fractionation lines will enable greater production flexibility



GRIFOLS

New Fractionation Building (NFB) project at Clayton (NC)

Engineered for maximum efficiency and flexibility



2nd level:

- 36 vessels in 2 parallel lines
- 2 Plasma pooling Automatic Bottle Opener ABO_6

1st level:

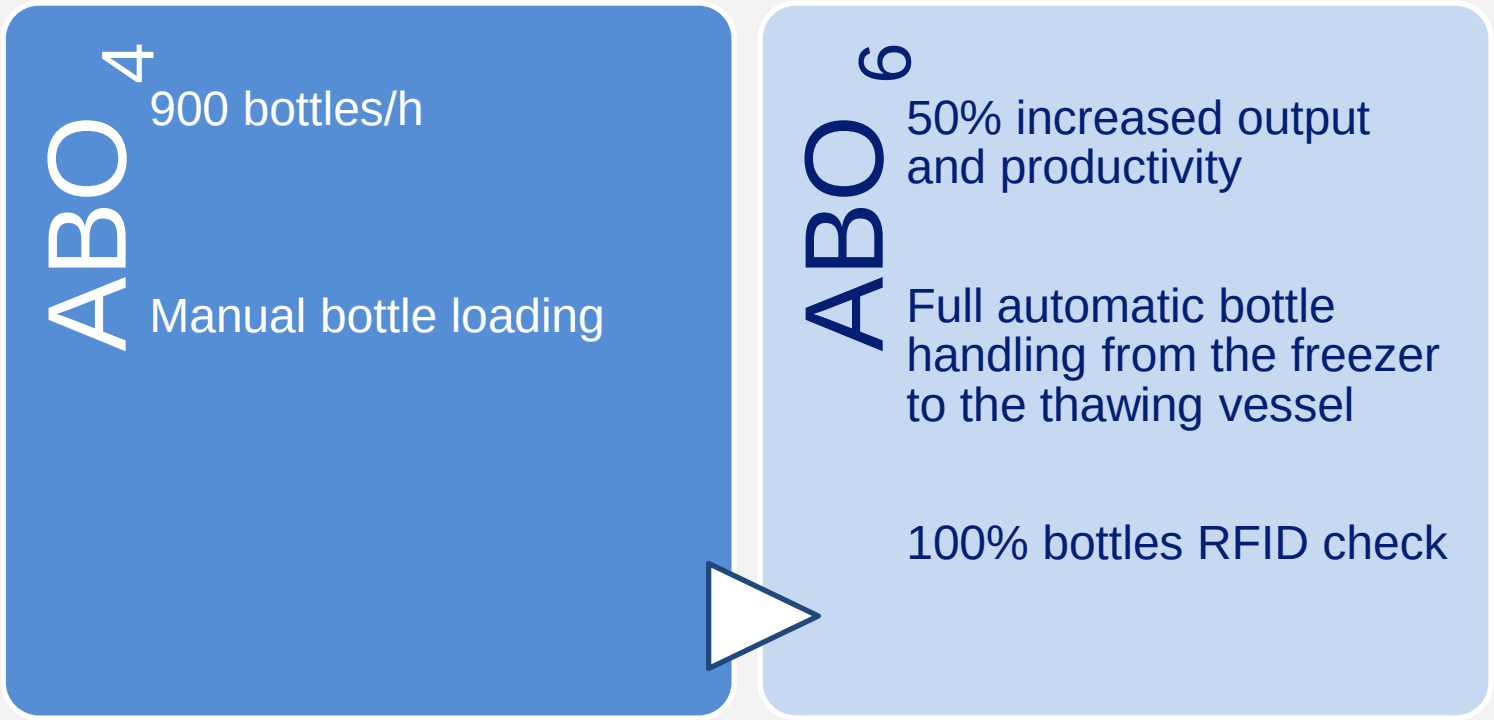
- Separation equipment in 2 parallel lines
- Plasma, pastes and RM shipping and receiving

120,000 square feet in 2 manufacturing levels

GRIFOLS

Automatic plasma Bottle Opener (ABO_6)

Enhancing plasma-pooling efficiency and enabling full real-time traceability



GRIFOLS

Automatic plasma Bottle Opener (ABO_6)

Closing the plasma pooling automation loop

Current manual loading

New automatic bottles handling

GRIFOLS

Automatic plasma Bottle Opener (ABO_6)

Twin robots to double productivity

ABO bottle discharge

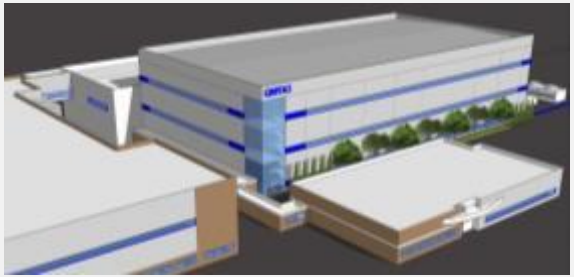
GRIFOLS

Protein purification and Fill-Finish
Balanced growth to bolster fractionation expansion

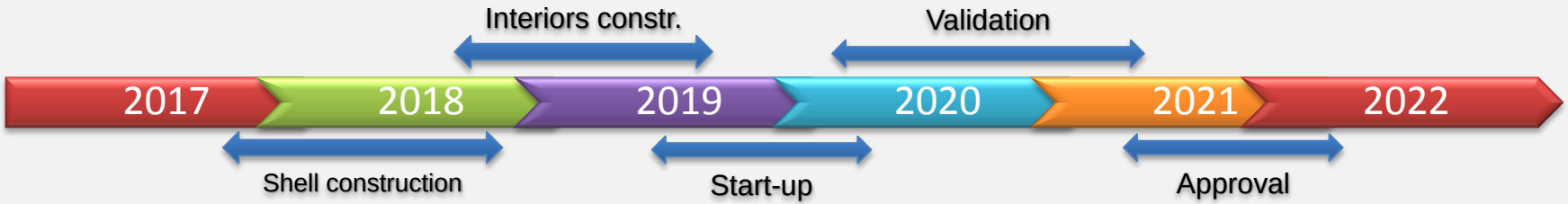
GRIFOLS

New IG purification and filling facility at Clayton

First-in-class facility for the next generation of IGs



- **World's first sterile filling facility for IGs in flexible containers**
- Purification and Filling Plant for **6m eqLplasma/year IG**
  - Subcutaneous
  - Intravenous
  - Intramuscular
- CAPEX: USD120m



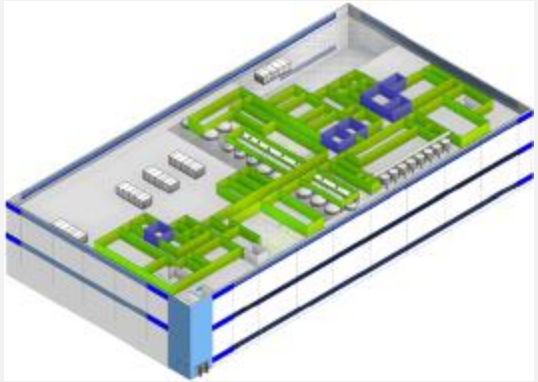
GRIFOLS

New IG purification and filling facility at Clayton

First-in-class facility for the next generation of IGs

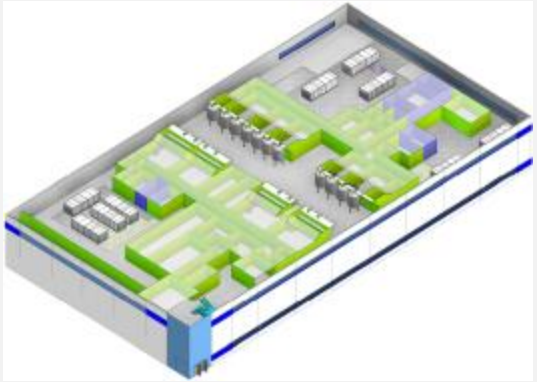
3rd level:

- IG buffer preparation area



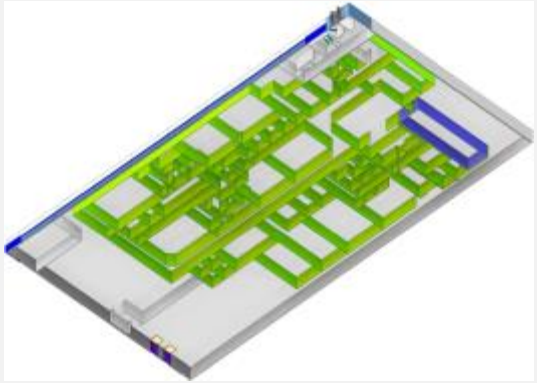
2nd level:

- IG purification areas



1st level:

- Aseptic filling & FD operations
- Pastes, RM and finished products shipping and receiving



- 150,000 square feet on 3 levels
- Provides aseptic operations **flexibility** to the Clayton site

GRIFOLS

New albumin purification and filling facility in Dublin

State-of-the-art facility for global supply of the albumin in a flexible container

- Purification and Filling Plant for **6m eqLplasma/year of albumin**
- CAPEX: USD85m
- 4 sterile filling lines for albumin in bags. Implementation of **online continuous process,** from bag forming to pasteurization, **to enhance production efficiency**

GRIFOLS

New albumin purification and filling facility in Dublin

State-of-the-art facility for global supply of the albumin in a flexible container

3rd level:

- QC laboratory
- Office space

2nd level:

- Albumin purification areas
- Pasteurizers

1st level:

- Aseptic filling operations
- Pastes, RM and finished products shipping and receiving
- Quarantine

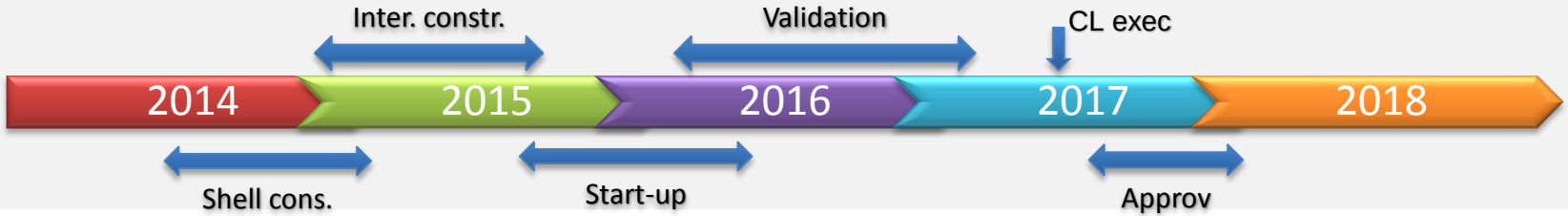
215,000 square feet on 3 levels

GRIFOLS

Alpha-1 purification and filling facility in Barcelona

New plant ready to provide continued support of alpha-1 contribution

- Purification and Filling Plant for **4.3m eqLplasma/year of Prolastin®-C**
- New Formulation for **Prolastin®-C Liquid** presentation
- GSF® proprietary technology used for aseptic filling operations
- CAPEX: USD65m
- 80,000 square feet on 3 levels



GRIFOLS

Alpha-1 purification and filling facility in Barcelona

New plant ready to provide continued support of alpha-1 contribution

Purification area

GRIFOLS

Alpha-1 purification and filling facility in Barcelona

New plant ready to provide continued support of alpha-1 contribution

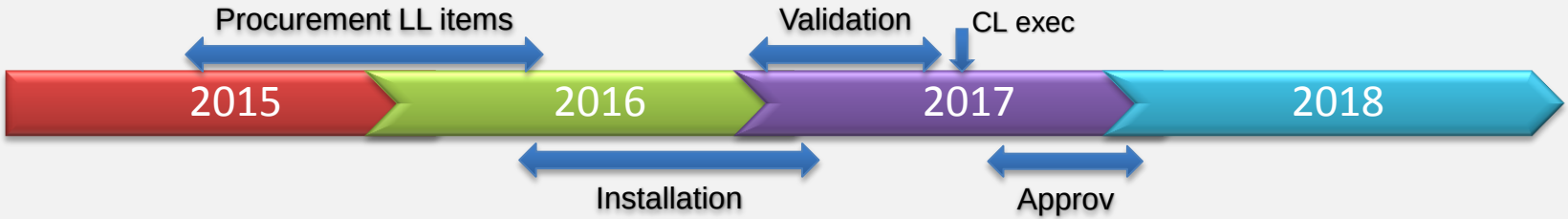
Aseptic processing area

GRIFOLS

Immunoglobulin 2nd purification train in Los Angeles

Leveraging capabilities for maximum efficiency

- Expand the purification plant **from 2.6 to 5.1m eqL plasma/year for Gamunex®**
- CAPEX: USD10m
- 2nd Gamunex® purification train
- Provides **expansion** and **flexibility** both for Los Angeles and Clayton Gamunex® existing purification plants



GRIFOLS

Immunoglobulin 2nd purification train in Los Angeles

Leveraging capabilities for maximum efficiency

Purification area

GRIFOLS

New flexible container aseptic filling line in Los Angeles

Broadening the portfolio with unique technology

- Sterile filling of albumin 5%, 20% and 25%
- Flexible container volume range: 50, 100, 250 and 500 mL
- Groundbreaking design for the sterile filling of bags for biological products leveraging 30+ years experience with the Grifols Sterile Filling GSF® Technology

GRIFOLS

New flexible container aseptic filling line in Los Angeles

Broadening the portfolio with unique technology

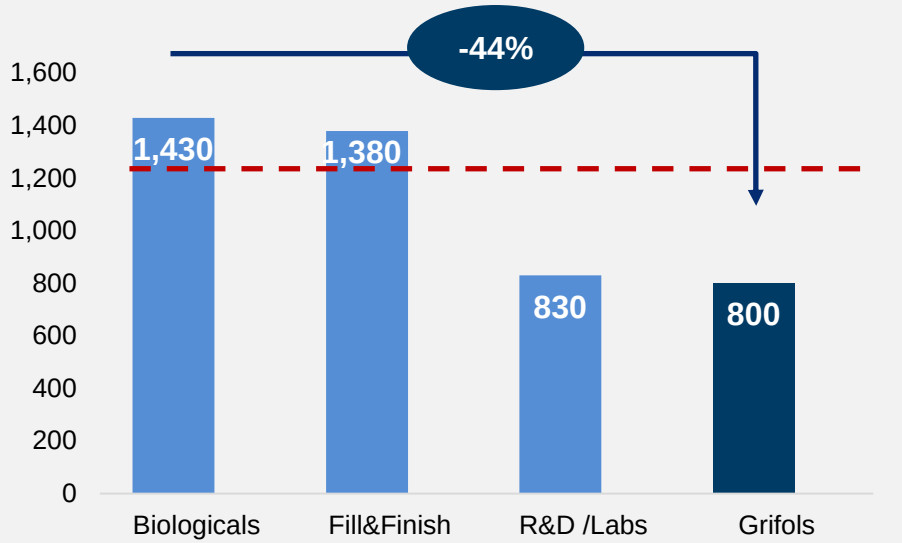
GRIFOLS

Capital expenditures benchmarking(1) across the industry

Competitively advantaged in capital investment

Sector	Global average regular project costs (USD/square feet)
Biologicals Mfg.	1,430
Fill & Finish	1,380
R&D / Labs	830
Grifols	**800**

Project cost benchmark (USD/square feet)



Note: 1. Source data: Facility of the Year Awards (2007-2016). ISPE Pharmaceutical Engineering

GRIFOLS

Key takeaways

Capital expenditure discipline focused on creating value

Key takeaways

Capital expenditure discipline focused on creating value

- Bioscience capacity expansion plan **on track** and **outperforming plans**
- The capacity expansion plan and the investments execution strategy follow **Grifols holistic approach** for plasma fractionation
- Proven **advantage in project management**; industry-leading capital efficiency
- The new facilities expands current capacity while offering additional **operations flexibility**
- **Unique innovation** forms the cornerstone of the design of the new facilities, devised to develop new products and optimize processes to enhance efficiency and product safety
- **Grifols capital investments costs for facilities** are **significantly below** the average pharmaceutical industry

GRIFOLS

Investors' & Analysts' Meeting 2017

Emeryville (California, USA)
June 7th and 8th, 2017

GRIFOLS

Hospital

Expansion through integrated solutions

Peter Allen

President of Hospital Commercial

GRIFOLS

PRIDE
SAFETY
EFFORT
COMMITMENT
EXCELLENCE
TEAMWORK
INNOVATION &
IMPROVEMENT

Sustain mid-single digit growth in OUS markets

while accelerating growth in U.S.

through organic and acquisition strategies

GRIFOLS

Last year we said...

GRIFOLS

Grifols maintains a strong position and reputation in Spain

Strong legacy business - Spain

- Broad portfolio:
  - IV therapy base
  - Medical devices
  - Pharmatech
  - Clinical nutrition
- Advanced hospital pharmacies
- Good “backyard” customer base; learning, trialing
- Manufacturing and engineering advantages

GRIFOLS

Grifols poised for penetration in U.S. market

U.S. market drivers align with Grifols strengths

- Novel Pharmatech portfolio - alignment of trends
  - Regulatory **specific**
  - Personalized medicine **individualized**
  - Accountability care organization **outcomes**

  } automation; process and compliance
- Opportunity for end to end compounding portfolio: control, efficiency, data

Compliant sterile cleanrooms

Secure high density inventory mgmt

IV workflow management system

Gri-Fill® sterile compounder

Kiro® Oncology

Sterile disposables

GRIFOLS

Strategic considerations inform future; U.S. focus

Methodical pursuit of a successful strategy

- Current market position
  - Spain
  - United States
  - ROW/LATAM
- Customer/Technology advising the future
- Gap assessment
- Revised strategy - emphasis on U.S. market

GRIFOLS

This year we now know…

GRIFOLS

Base business poised to match mid-single digit market growth

Iberia and LATAM are 90% of sales revenue; product mix

- **Execute on EBIT- improving growth strategies**
  - Revitalize Nutrition portfolio sales
  - Gain new Medical devices distribution
  - Optimize IV therapy and Pharmatech markets
- **Implement plant utilization tactics**
  - Increase volume
  - Leverage plant footprints for optimal utilization

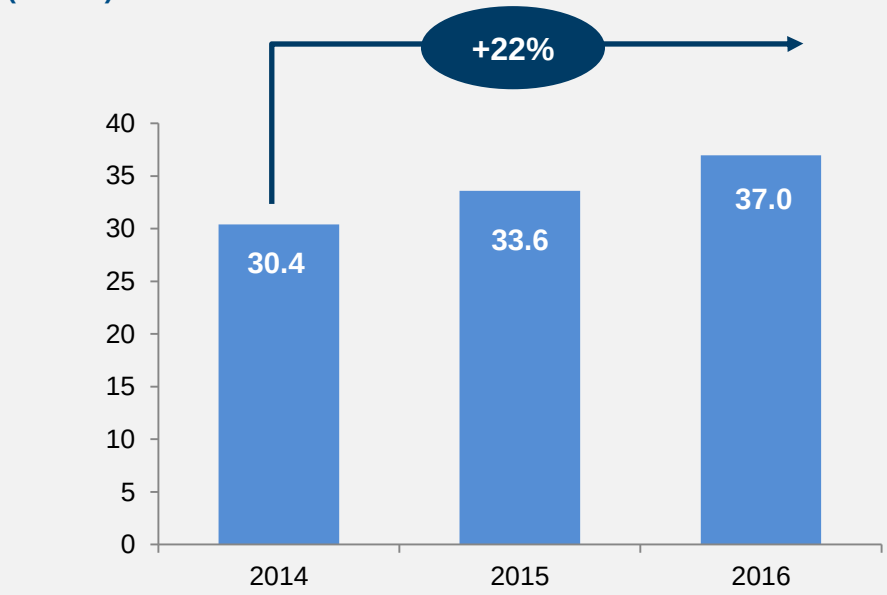
GRIFOLS

Pharmatech portfolio with software addition underpins growth

Strategy poised to meet growing market needs and future demands

- **Pharmacy market trends** worldwide will demand changes in technology and information
- Current solutions are inadequate; current providers are beholden to **legacy technology**
- OUS markets strapped for **access to capital**
- Distinguishing Grifols devices through **smart integration** (non-capital intensive)
- **Expand** from cleanroom centric to pharmacy operations and adjacencies
- Design systems for **OUS market**

U.S. drug expenditures in non-federal hospital increasing substantially(1)



Note: 1. Source: American Journal of Health-System Pharmacy

GRIFOLS

Industry drivers impacting hospital & compounding pharmacies

Global pharmacy market trends will continue to demand changes in tech. & info

Cost management pressures / Economic advantages

- Consolidation
- Technology leverage
- Evolving decision-maker and consumer demographics
- Accountability care

Regulatory / Safety – Intensifying

- Personalized medicine
- Regulation authorities expanding

Data Ecosystem

- Inter-connectivity
- Outcomes data justifying costs (drugs!)
- Controls

GRIFOLS

Clear path to strengthening portfolio for growth

A robust strategy dynamically positions the division

Enhance current portfolio	• Kiro device and implementation improvements • Pharmatech integration to software platform • Launch new nutrition products and expand markets • Enhance profit models with services
Expanding into systems	• Design platform to meet current and future market needs • Expand sales capabilities with dedicated force • Establish service and support infrastructure
Optimize LVP(1) business	• Organize manufacturing for optimal production • Rationalize portfolio for strategic and production benefit • Secure Bioscience advantages through business continuity access

Note: 1. LVP: Large volume parenterals

GRIFOLS

Just gained U.S. IV solution market access

An attractive and immediate growth opportunity

Biomat USA

GRIFOLS

- FDA approved Grifols manufactured saline for export to U.S.
- Establishing self-sufficiency for Grifols Plasma Operations
- Engaging distribution channel for U.S. market (excluding GPO)
- Optimizing plant capacity
- Evaluating additional export opportunities

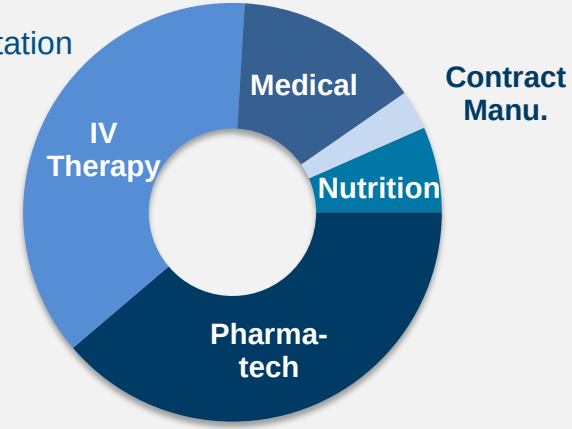
GRIFOLS

Plan strengthens division and sets up escalating growth

Building a financial track record

“Today”

2016 Year-end division segmentation

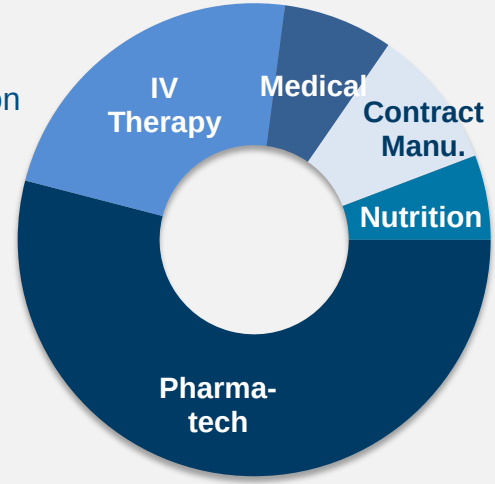


Near Term Milestones:

Portfolio improvements with software commercialization that increases U.S. market opportunity to USD950m (from USD600m)

“Tomorrow”

Future division segmentation



Mid- to Long-Term Milestones:

Breakeven EBIT with targeted positive EBIT growth over 5 years

GRIFOLS

Key takeaways

Strategy poised to meet growing market needs and future demands

Key takeaways

Strategy poised to meet growing market needs and future demands

- Leverage saline approval to successfully enter into the U.S. market
- Iberia and LATAM leverage portfolio strengths for mid-single digit growth
- Expand our systems capabilities to underpin smart device benefits
- Build / acquire software infrastructure for support and service
- Reconfigure all device software for thorough integration
- Optimize LVP manufacturing and logistics for Bioscience continuity benefits
- The Hospital Division is well positioned to regain growth and profitability

GRIFOLS

Diagnostic

Driving profitable growth

Carsten Schroeder

President of Diagnostic Commercial

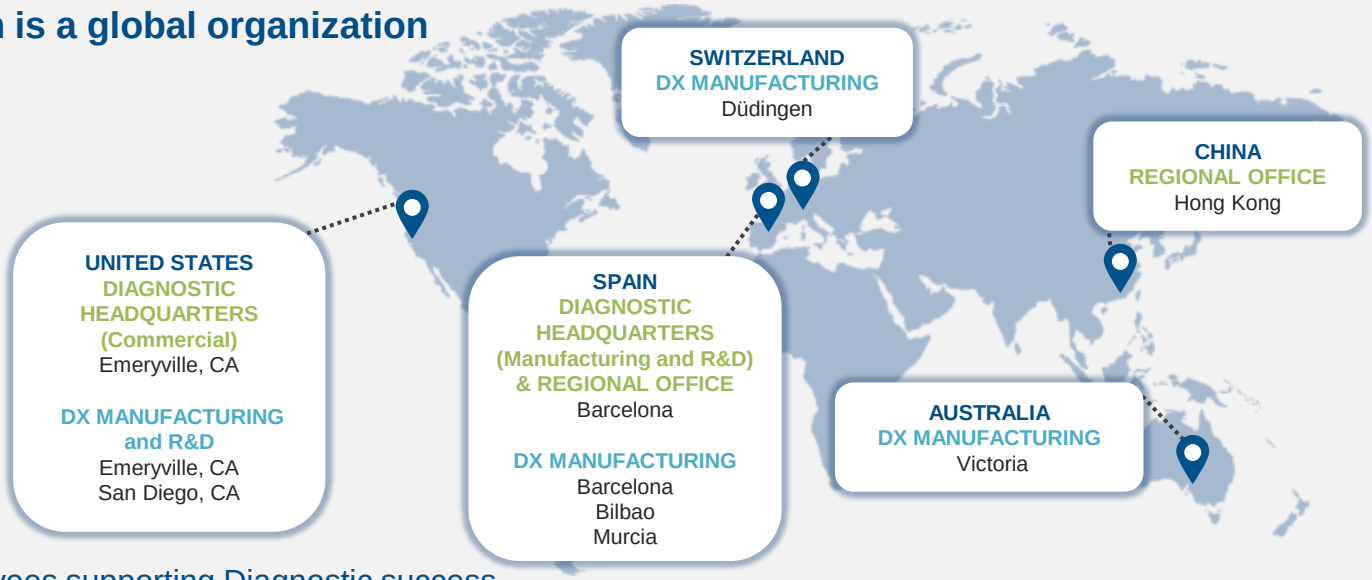
GRIFOLS

PRIDE
SAFETY
EFFORT
COMMITMENT
EXCELLENCE
TEAMWORK
INNOVATION &
IMPROVEMENT

The global leader in transfusion medicine

Building a Specialty Diagnostics portfolio

The Diagnostic Division is a global organization



At a glance:

- 1,450+ full-time employees supporting Diagnostic success
- Integrated from assay/instrumentation development through commercialization
- FDA, GMP and CE licenses

GRIFOLS

With a clear mandate…

Build a global diagnostics company

focused on select, high-value markets,

providing innovative solutions

to ensure the safety of the blood and plasma supply,

detect human diseases and monitor therapies

GRIFOLS

Our product portfolio spans the healthcare continuum

We serve blood banks, hospital-based transfusion services and plasma

SCREENING | **DIAGNOSIS** | **PROGNOSIS** | **MONITORING**

TRANSFUSION MEDICINE (TM) | **SPECIALTY DIAGNOSTICS (SDx)** | **TM & SDx**

Collection
Offers safe, efficient & high quality collection and processing of donor blood

BLOOD COLLECTION SYSTEMS

Detection
Provides high, sensitive & automated tests to detect infectious diseases

DONOR SCREENING & IMMUNOASSAYS

Procleix NAT Solutions

Ortho Clinical Diagnostics

Typing
Determines blood type compatibility between donor & patient; characterizes blood

BLOOD TYPING SOLUTIONS

BLOODchip
Blood Group Genotyping

Early detection
Ensures detection at the onset

INFECTIOUS DISEASES, AUTOIMMUNITY

AESKU.DIAGNOSTICS
THE DIAGNOSTIC TOOL THAT WORKS

Likely outcome
Predicts likely outcome enabling better care pathways

HEMOSTASIS, AUTOIMMUNITY

Systems

Effective treatment
Monitors patients ensuring effective therapies & outcomes

BLOOD COLLECTION SYSTEMS, PROMONITOR

PROmonitor

GRIFOLS

Diagnostic had EUR 664m in net revenues in 2016

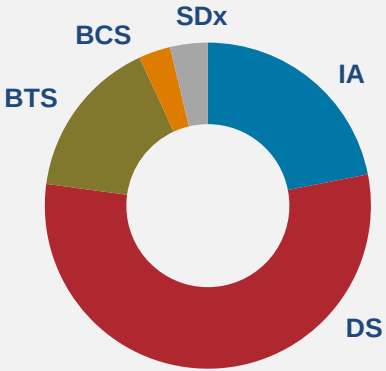
Donor screening, immunoassays and immunohematology are our core businesses

2016 Diagnostic revenue

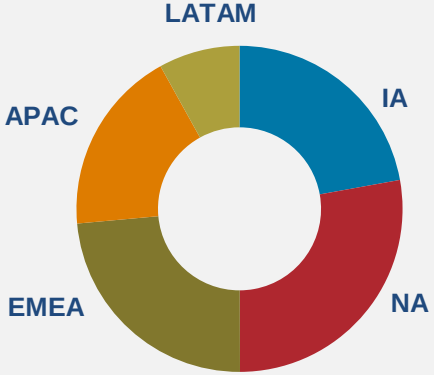
664

-3.9% (cc) vs 2015

2016 sales by product line



2016 sales by region



Transfusion medicine is ~95% of our business

Note: DS = Donor Screening; BTS = Blood Typing Solutions; BCS = Blood Collection Systems
SDx = Specialty Diagnostics; IA = Immunoassays (not assigned to regions)
NA = North America; EMEA = Europe, Middle East and Africa; APAC = Asia-Pacific; LATAM = Latin America

GRIFOLS

Diagnostic had EUR 171m in sales in 1Q 2017

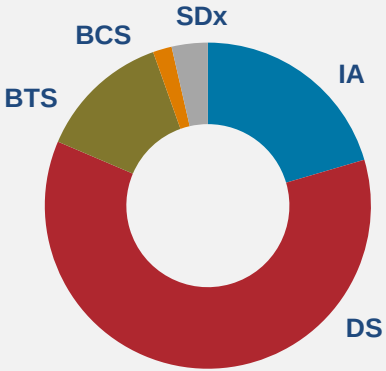
Delivered a growth of 3.3% vs. 1Q 2016

1Q 2017 Diagnostic revenue

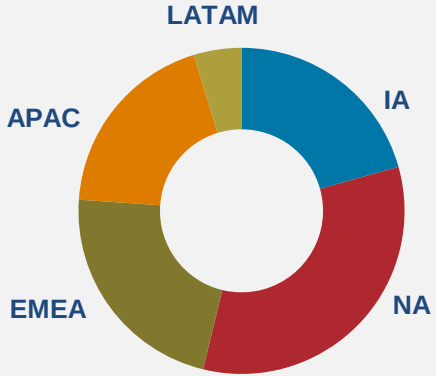
171

+3.3% (cc) vs 1Q 2016

1Q 2017 sales by product line



1Q 2017 sales by region



Our sales are well balanced geographically

GRIFOLS

Global manufacturing footprint to serve worldwide customers

We continue to expand our production capacity to enable growth

EMERYVILLE California - USA	Manufacture of antigens for diagnostic tests Expansion: Project Horizon
SAN DIEGO California - USA	Production of Procleix® NAT tests Acquired from Hologic
CURITIBA Brazil	New factory for production of blood collection systems
PARETS DEL VALLES Barcelona - Spain	Instruments and IVD reagents for immunohematology, autoimmunity and hemostasis
DÜDINGEN Switzerland	Production of tests for the rapid identification of blood type (MDmulticard®), gel-technology test cards (DG GEL®) and reagent RBC
MELBOURNE Australia	Production of gel-technology test cards (DG GEL®) and red blood cells
DERIO Vizcaya - Spain	Design and manufacture of molecular biology tests and immunoassays
MURCIA Spain	Production of intravenous serums in flexible packaging and blood collection systems

EMERYVILLE
California - USA

CURITIBA
Braziil

SAN DIEGO
California - USA

GRIFOLS

Donor screening
Committed to the blood safety and plasma supply

GRIFOLS

Acquisition of NAT blood donor screening unit

Strengthening our leading position in transfusion medicine

STRATEGIC RATIONALE

- Providing Grifols Diagnostic with control over the NAT business
- Solidify our position in the diagnostic market as a leader in Transfusion Safety

MANUFACTURING FACILITY

- 94,000 square feet CBER and ISO certified in San Diego

PEOPLE

- ~175 positions now fully integrated into Grifols Diagnostic
- Expertise in assay development and manufacturing, quality assurance and regulatory affairs

ASSAY DEVELOPMENT

- Full control of the NAT development and manufacturing processes
- Provide flexibility to prioritize projects (i.e. Babesia and Arboplex) and quickly meet customer needs

PRE-ACQUISITION

Revenue share agreement (until 2025)

HOLOGIC

- Assay development
- Assay manufacturing
- Instrument development

GRIFOLS

- Distribution
- Sales & Marketing
- Service

POST-ACQUISITION & INTEGRATION

HOLOGIC

- Instrument co-development

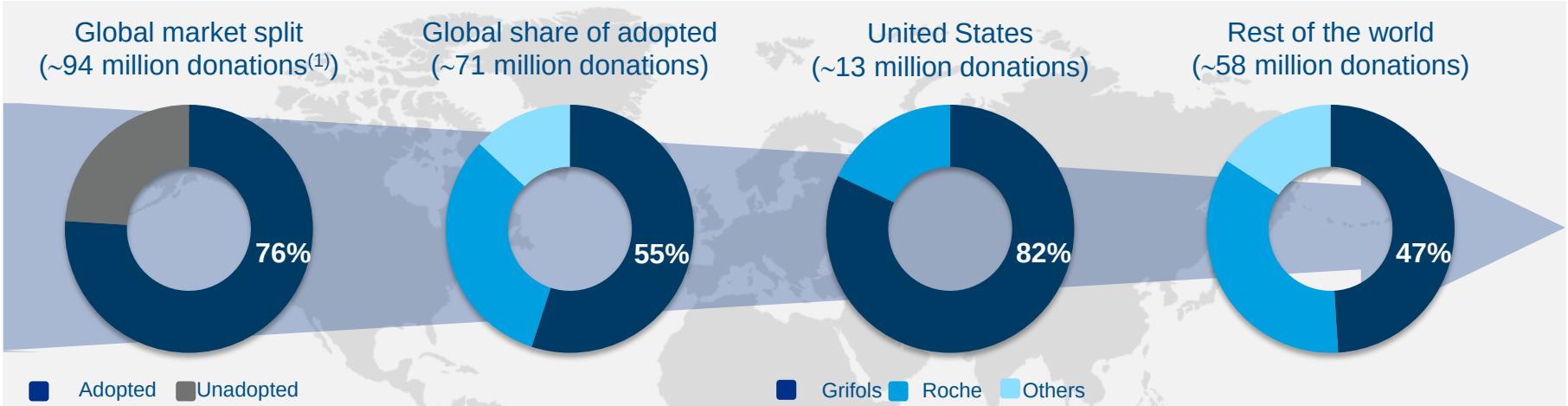
GRIFOLS

- Assay development
- Assay manufacturing
- Distribution
- Sales & Marketing
- Service

GRIFOLS

The global leader in NAT blood donor screening

Despite market challenges there is potential for growth



Future Growth Drivers

- Geographic expansion into non-adopted countries
- Plasma fractionators (in addition to Grifols) will be addressed with new Procleix Ultrio Elite & Panther in large pool sizes
- Emerging pathogens: Zika and Babesia

Market Challenges

- Declining number of blood donations in developed countries due to blood management programs

Note: Source: Q1 2017 Internal Data. It does not include plasma collection

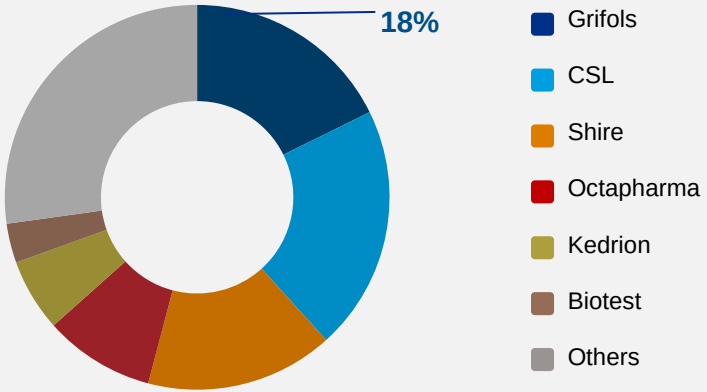
GRIFOLS

NAT Plasma donor screening represents a growth opportunity

Panther® in large pool sizes submitted to FDA for approval

NAT Plasma Testing Market = USD150m

Share of tested liters of plasma



Note: Source: International directory of plasma fractionators 2015 Market Research Bureau report

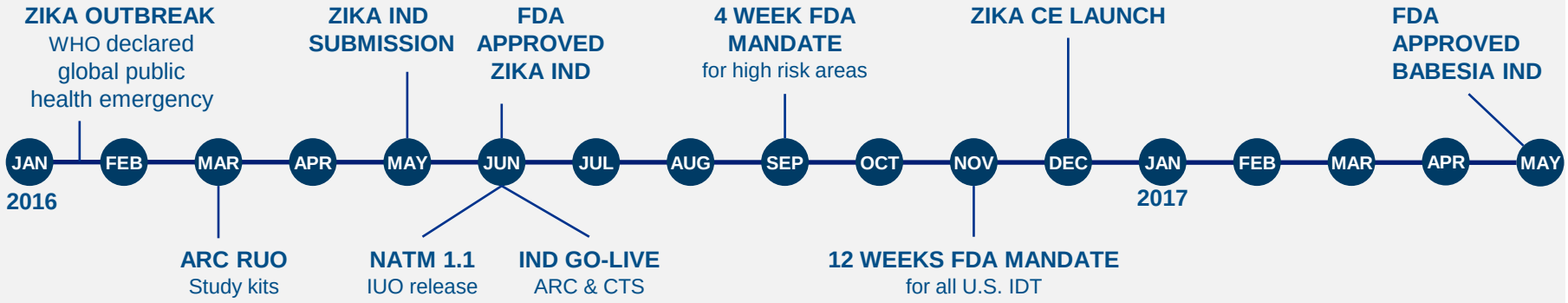
Market Outlook

- "Big 6" commercial fractionators represent ~75% of the source plasma market
- Plasma fractionation (and plasma testing) market is expected to continue to grow, driven by an increase in global demand for plasma therapeutics
- Due to whole blood volume contraction in the U.S. and E.U., blood banks are looking to enter the recovered plasma testing market
- APAC is the fastest growing region in the plasma industry and represents an area of growth

GRIFOLS

Grifols delivered in response to the 2016 Zika outbreak

Recently started screening for Babesia under IND in the U.S.



World map of areas with risk of Zika(1)

Note: 1. Source: www.cdc.gov

Outcome of Zika IND

- Use of Procleix® Zika assay
- In U.S., 67 Panther® systems installed at 15 locations
- +100 operators trained
- Evaluation and routine testing in Singapore, New Zealand, Malaysia and France

Babesia IND in the US

- Use of Procleix® Babesia assay on the fully automated Procleix® Panther® system
- Use in selected blood banks and donor centers
- Further increase safety of blood supply

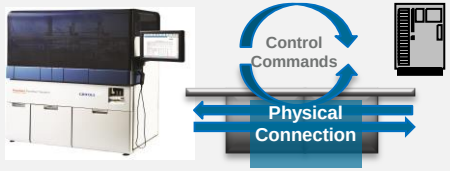
GRIFOLS

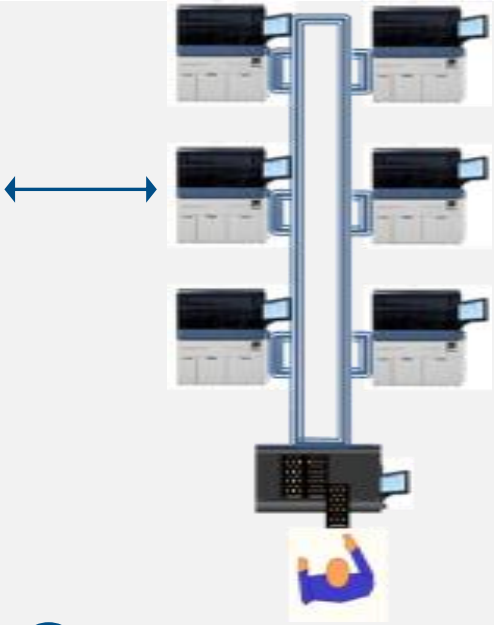
Automation will further support our NAT portfolio

Strengthening our NAT portfolio

1 Next Gen Middleware

Streamline customer operations with dashboards, flexibility and streamlined data. Modular, flexible middleware to enhance laboratory operational efficiency





2 Panther® AR

Panthers share data on tests and reagents for efficiency; Dashboard display

3 Panther® AR Track-compatible

Modifications to Panther to enable connectivity to a track tube transport system

4 Panther® AR Workcell

I/O Module and Track system that routes sample tubes for testing

GRIFOLS

Immunoassays
Worldwide market leader in hep/retro

GRIFOLS

Leader in antigen supply for immunoassays

Worldwide market leader in hep/retro immunoassays antigens

Grifols supplies HCV / HIV antigens to top immunoassay manufacturers covering more than 80% of the immunoassay market

Main Grifols customers:

Ortho Clinical Diagnostics

SIEMENS

Abbott
A Promise for Life

OraSure Technologies

Immunoassay market value = USD1.0bn(1)

Note: Source: In Vitro Diagnostic Market Segment Review 2013-2014 and 2019 Forecast Ad hoc report from Boston Biomedical Consultants, Inc., 2015 and internal estimations
1. It includes whole blood and source plasma

Profit share agreement (until 2039)

GRIFOLS Ortho Clinical Diagnostics

- HCV & HIV patents
- Antigen research, manufacturing & supply
- Assay research support
- Assay development & manufacturing
- Instrument development & manufacturing
- Product commercialization

Future Growth Drivers

- New HIV Combo for OCD's VITROS platform
- Expand customer base for antigens
- Expand portfolio of antigens

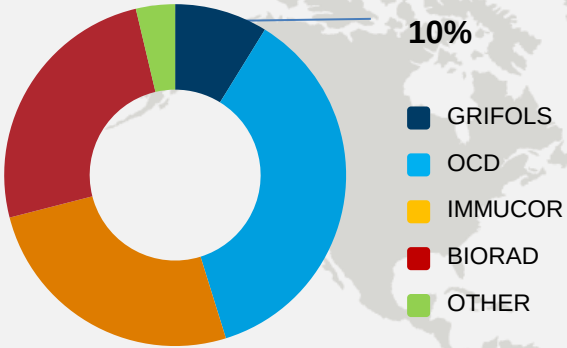
Immunohematology
Fastest growing player in blood typing solutions

GRIFOLS

Grifols is the fastest growing player in Immunohematology

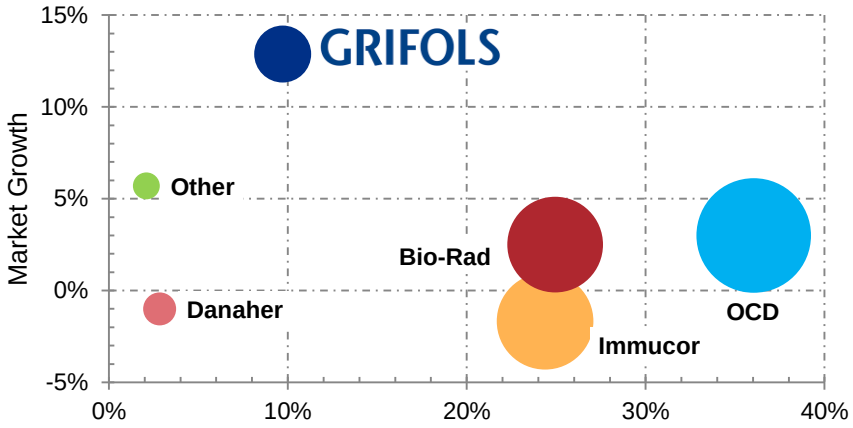
We continue to drive double-digit growth

Immunohematology market value = USD1.0bn



2016 IH Sales > EUR 100m

Market Share



Source: Q4 2016 Internal Data

Penetration in the U.S. market will continue to drive mid-term growth

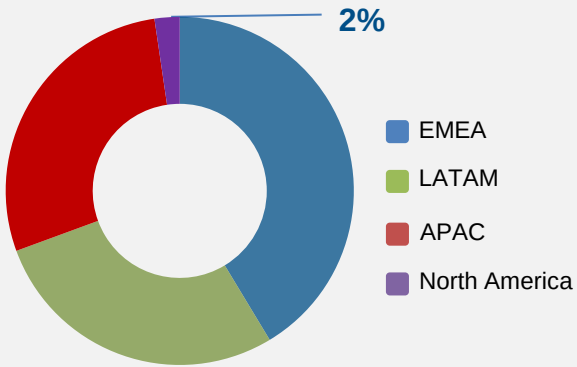
Note: Source: Worldwide Blood Typing Product Market Analysis, Intelab Corporation, May 2015; Grifols sales data

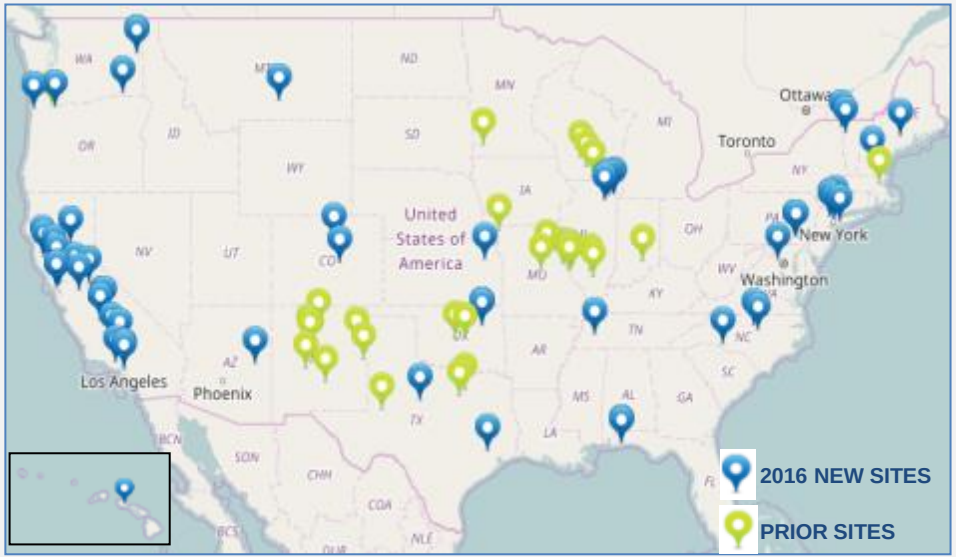
GRIFOLS

U.S. IH - Over 100 customer sites under contract

Our investments in sales, marketing and service are paying off

Grifols IH revenues geographic split:





Key facts about U.S. IH growth:

- 58 new customers in 2016
- 33 new Erytras placed

Doubled the number of customers in 2016

GRIFOLS

A complete portfolio of instruments, gel cards, RBC and reagents

Continuously improving our competitive portfolio of products

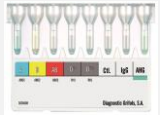
INSTRUMENTS

Manual

Semi-Automated

Automated

GEL CARDS



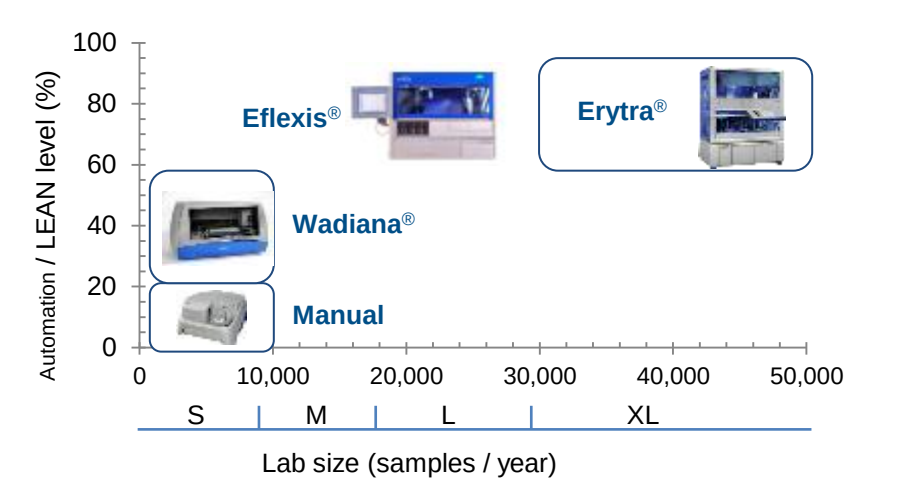
RED BLOOD CELLS & ANTISERA

GRIFOLS

Erytra® Eflexis® being launched in CE-marked countries

Fully automated, flexible, mid-sized analyzer

The **Erytra® Eflexis®** performs pre-transfusion compatibility testing using DG Gel® technology with a smart and compact design offering intuitive operations



Upcoming portfolio updates:

- New version of Erytra® software with improved features
- New middleware solutions worldwide
- New reagent blood cells and antisera to support U.S. expansion

GRIFOLS

Completing our portfolio of BLOODChip® ID products

FDA approval of ID CORE XT expected by 4Q 2017

BLOODchip ID

An effective and innovative solution for the genetic identification of red blood cell and platelet antigens

EASY
- Ready to use reagents
- No washing or filtration

FAST
- Results in 4 hours
- Hands on time only 30 min

FLEXIBLE
- Standard Luminex equipment
- Multiple product batch

Proven accuracy and reliability

	CE	FDA	Comments
ID CORE XT		4Q 2017	Analyzes 29 polymorphisms to determine **37 antigens** of RBC groups. Rh CE, Kell, Kidd, Duffy, MNS, Diego, Dombrock, Colton, Cartwright and Lutheran
ID HPA XT		--	Analyzes **13 polymorphisms** to determine **12 HPA** systems
ID RHD XT		--	Analyzes Weak D type 1-3, RHD deletion, Pseudogene and r's.
ID CORE CONTROL	--	--	Positive control for ID CORE XT
BIDS XT		--	BLOODChip ID software

ID CORE XT

BIDS XT

GRIFOLS

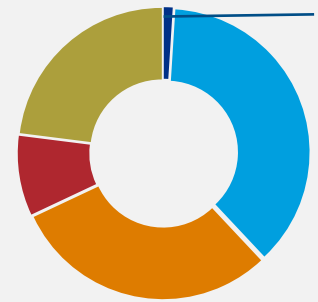
Blood Collection Systems
Leveraging new manufacturing capabilities

GRIFOLS

Leverage new manufacturing facilities in Spain and Brazil

Strengthen our position in LATAM and expansion plans in EMEA

BCS global market value(1) = USD2.9bn



Grifols market share in LATAM = 8%

Grifols
Fresenius
Terumo BCT
Haemonetics
All Others

We produce high quality blood collection bags for collecting and processing whole blood and storing blood components

Key initiatives

- Take full advantage of manufacturing facility in Brazil
- Re-launch in EMEA with a soft filter product
- Explore possibility of entering the U.S. market

BOOD COLLECTION BAGS EQUIPPED WITH AN IN-LINE FILTER

Note: 1. Source: Blood Processing Supplies & Equipment (GIA 2015) and internal estimates. Includes Blood Bags, Apheresis, Component prep instruments, pathogen inactivation and hemovigilence

GRIFOLS

Hemostasis
Global exclusive distribution agreement

GRIFOLS

Hemostasis

Grifols and Beckman Coulter enter into an exclusive distribution agreement

- Early June, Grifols has reached an exclusive worldwide agreement with **Beckman Coulter** for the global distribution of Grifols' hemostasis instruments, reagents and consumables
- The agreement has an initial term of 15 years and it may be extended for up to five additional years
- The agreement leverages Grifols' strength in manufacturing reliable instruments and reagents with that of Beckman Coulter's commercial strength

- Hemostasis is a **USD2.4bn market** growing at approximately 7% annually
- We have an attractive scalable portfolio of hemostasis analyzers, **Q system**, and a broad catalogue of reagents for routine and special techniques

Specialty Diagnostics
Building our portfolio in Specialty Diagnostics

Building our portfolio in Specialty Diagnostic

Making progress in all product lines

PROMONITOR

- We continue to expand our portfolio, to other biological drugs and biosimilars, single dilution tests and a point of care solution
- Dedicated sales force in Europe

CLIA US

- The Center of Excellence for Immunohematology now offers molecular and serological tests
- Launched new lab services for biological drug monitoring

AESKU

- Helios system obtained FDA approval in 2016. Commercial launch in the U.S. ongoing
- Full pipeline of additional tests awaiting registration in the U.S.

PROMONITOR® ELISA test offers key information about drug bioavailability and immunogenicity in patients prescribed with biological therapy for the treatment of chronic inflammatory diseases and other indications.

	2 Dil.		1 Dil.	
CE-marked references	DL	ADA	DL	ADA
Infliximab				
Adalimumab				
Etanercept				
Rittuximab				
Golimumab				

Point of Care (Poc)

Promonitor® Quick Anti-IFX

Building our portfolio in Specialty Diagnostic

Making progress in all product lines

PROMONITOR

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TDMonitor

The IH center offers

- A broad variety of molecular and serology tests
- Several courses and workshops, including transfusion science educational courses (TSECs), webinars and hands-on workshops

TDMonitor Tests	DL	ADA
Infliximab		
Adalimumab		
Vedolizumab		

The American Gastroenterological Association (AGA) recommends the use of therapeutic drug monitoring for inflammatory bowel disease management in non-responding patients in its latest guideline draft

Tests also available

- Familial Hypercholesterolemia (FH)
- Araclon AB assay for AMBAR study
- ApoE assay for Alzheimer prognosis

GRIFOLS

Building our portfolio in Specialty Diagnostic

Making progress in all product lines

PROMONITOR

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AESKU.GROUP
WE TAKE CARE OF YOUR HEALTH

GRIFOLS

Key takeaways

The global leader in transfusion medicine building a portfolio in Specialty Diagnostic

Key takeaways

The global leader in transfusion medicine building a portfolio in Specialty Diagnostic

- Grifols Diagnostic is the global leader in transfusion medicine:
  - **Acquisition of NAT R&D and manufacturing assets** gives us **full control** over our Donor Screening business
  - **Antigens - expanding the capabilities** of our new antigen manufacturing facility in Emeryville
  - **Immunohematology -** the **fastest growing player** with a complete portfolio of products
- We continue to build a diversified portfolio of businesses in **Specialty Diagnostics**
- **Hemostasis** - growing our product line of instruments and reagents through a worldwide distribution agreement just signed with **Beckman Coulter**
- We will continue exploring business development opportunities and long-term partnerships

GRIFOLS

Diagnostic

Maximizing value through effective integration

Greg Rich
Head of the Integration Office
President and CEO of Grifols Shared Services NA

GRIFOLS

PRIDE
SAFETY
EFFORT
COMMITMENT
EXCELLENCE
TEAMWORK
INNOVATION &
IMPROVEMENT

Executive Summary

Integration, a core capability of Grifols

- Grifols has successfully integrated businesses for over 15 years
- Grifols has established an Integration Management Office (IMO) to oversee, in collaboration with senior management, all integration activities
- Transitional Services Agreement established to provide an orderly and efficient transition of the NAT blood screening business
- The integration of the NAT blood screening business is on track
- Grifols will continue to collaborate with Hologic

GRIFOLS

Integration, a core capability of Grifols

Proven track record

Track record of identifying, executing and integrating acquisitions

- Grifols has the intellectual know-how to integrate businesses from the simplest to the most complicated eliminating the need for consultants
- The internal know-how culminated in the establishment of the Integration Management Office, as part of the Corporate Strategy Office

GRIFOLS

Integration governance structure

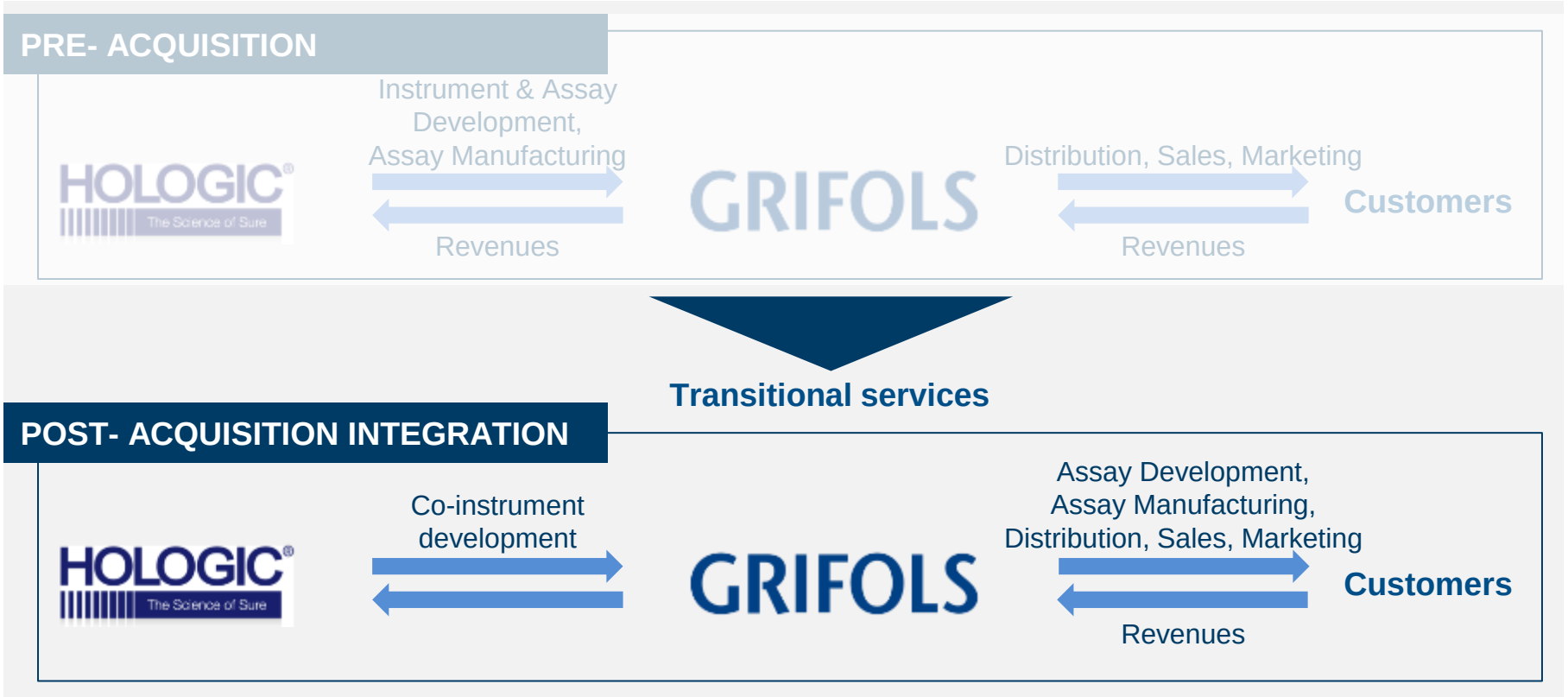
Comprised of teams from Grifols and Hologic

- Managed by the Grifols Integration Management Office
  - Using a structured and repeatable integration model, the IMO drives execution of the integration plan focusing on milestones and value-drivers
- Includes a cross-functional workstream members
- Transitional Services Agreement ensures continued, un-interrupted operations until full segregation has been obtained

GRIFOLS

Hologic Partnership Evolution

Capturing maximum value chain benefit , leveraging capabilities



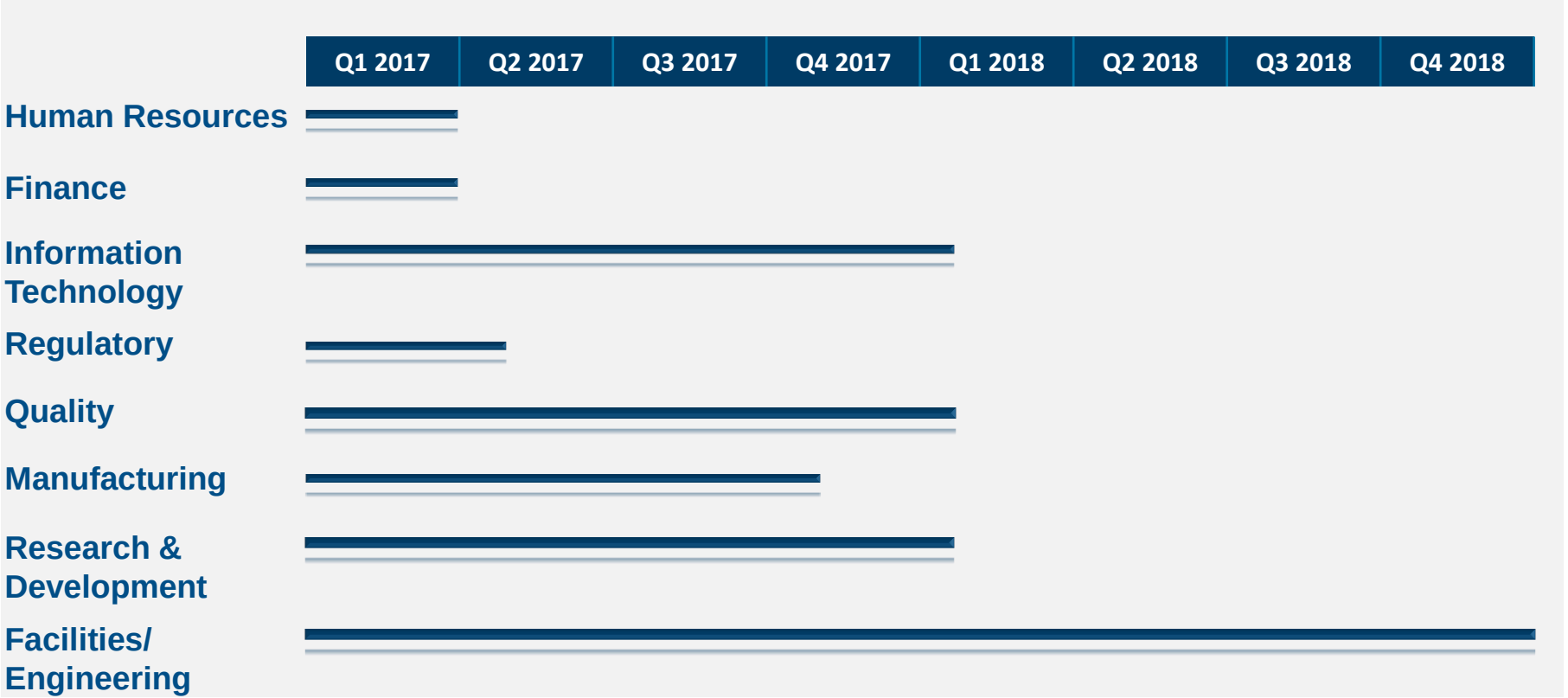
GRIFOLS

NAT Hologic integration milestones

GRIFOLS

Key integration activities

Integration process is on track. Support functions fully integrated within 12 months



GRIFOLS

Key integration activities

Milestones are on track

Facilities/ Engineering

Q1 2017	Q2 2017	Q3 2017	Q4 2017	Q1 2018	Q2 2018	Q3 2018	Q4 2018

- R&D, Quality and raw material buildings leased
  - Third party facilities vendor contracts transitioned
  - Construction completed:
    - Ambient warehouse completed
      - Raw materials, cold chain warehouses
        - R&D and Quality facilities
        - Packaging areas
          - Pilot plant
          - Template positive manufacturing

GRIFOLS

Manufacturing operations - Vision

Improving and streamlining product workflow

Moving dispersed manufacturing activities to a more efficient, scalable flow

GRIFOLS

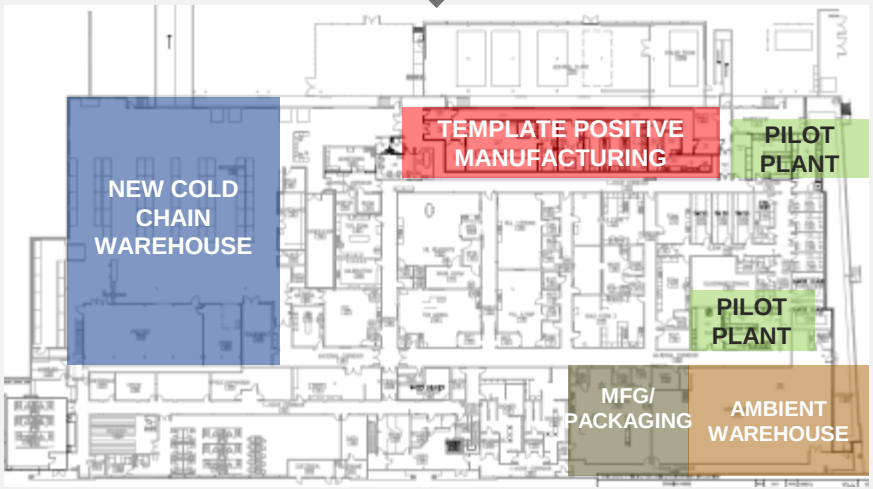
Manufacturing facilities

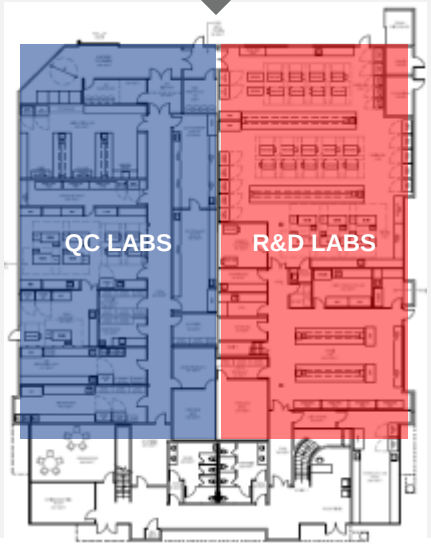
Close proximity of facilities

GRIFOLS

Manufacturing facilities - Future state

Close proximity of facilities





GRIFOLS

Continued collaboration with Hologic

GRIFOLS

Continued partnership

Leveraging strengths and capabilities

Co-development agreement	• Continued collaboration:
	  • On ongoing development projects
	  • Future instrumentation development activities

Purchasing power	• Volume combined in select purchases to minimize costs:
	  • Consumables
	  • Enzymes

Other opportunities	• Leverage in-house expertise and new state-of-the-art manufacturing facilities:
	  • Supply agreement
	  • Contract manufacturing

GRIFOLS

Key takeaways
Capturing the value of integration

Key takeaways

Capturing the value of integration

- Integration is a value add capability and is a competitive advantage for Grifols
- Grifols has a proven track record of integrating businesses
- Integration of the NAT testing blood screening business is on track
  - Support functions will be fully integrated within 12 months
- The Transitional Services Agreement is in place to ensure no interruption to either companies
- Collaboration will continue:
  - Co-development of instruments
  - Joint purchasing power
  - Future opportunities

GRIFOLS

Diagnostic

Investing for growth

Oriol Duñach

President of Diagnostic Industrial Group

GRIFOLS

PRIDE
SAFETY
EFFORT
COMMITMENT
EXCELLENCE
TEAMWORK
INNOVATION &
IMPROVEMENT

Leveraging the Chiron legacy and investing for the future

From the tradition to realizing our potential

Past	Present	Future
The Chiron legacy • HCV, HIV, HBV discoveries • License and antigen supply agreements	**Investing for growth** • Optimize efficiencies with consolidated manufacturing facility (CMF) • Update equipment and utilities for future growth • Extend current supply agreements • Enhance R&D capabilities	**Realizing our potential** • New Grifols immunoassay products • New customers • Expand Dx menu • New capabilities and services

GRIFOLS

The Past
A tradition of innovation

GRIFOLS

Emeryville site

A tradition of innovation

Past

Cloned and sequenced the HIV genome (1984)
Cloned and identified the Hepatitis C virus (1987)
Pioneered Nucleic Acid Testing for blood screening (1988)

GDS becomes part of Grifols:
Global leader in NAT systems and recombinant protein manufacturing
Initiate immunoassay and platform development
Ongoing investments in advanced solutions to advance blood safety and laboratory efficiency

CHIRON

GRIFOLS

1981 — **1991** — **2006** — **2014**

cetus

Founded 1972

Developed polymerase chain reaction (PCR) DNA amplification technique (1983) - awarded Nobel Prize in Chemistry

NOVARTIS

Novartis Vaccines and Diagnostics and Novartis Institute of BioMedical Research continue tradition of innovation

GRIFOLS

Strategic relationships

Grifols antigens in essential blood and plasma assays

Past

Ortho Clinical Diagnostics

Joint Business Partner since 1989

Develops and markets a complete line of antibody-based screening immunoassays

Grifols manufactures and performs research on the HCV, HIV, HBV antigens

Abbott A Promise for Life

HCV licensee and antigen customer since 1989

Donor screening and clinical diagnostic immunoassays

SIEMENS Healthineers

HCV and HIV rights and antigen customer since 2001

OraSure

HCV licensee and antigen customer since 2005

Point-of-care diagnostics assays

The Present
Investing in manufacturing and R&D

GRIFOLS

Project Horizon: Consolidated Manufacturing Facility (CMF)

October 2014: Grifols project redesign objectives

Present

- State-of-the-art manufacturing facility, based on Grifols know-how
- Increase manufacturing process flow efficiency
- Incorporate mammalian cell fermentation capability
- Consolidate all GMP materials handling and warehouse operations with manufacturing operations
- Increase overall plant efficiency in order to continue reducing costs

GRIFOLS

Project Horizon: Consolidated Manufacturing Facility (CMF)

Investing for future growth

Present

- GMP manufacturing of 21 commercial products used for testing blood
- GMP warehouse and raw materials sampling space
- Mechanical and process utilities (existing + upgrades of selected systems)
- Office and collaboration space
- Consolidation of existing manufacturing operations into a single building
- Space for future manufacturing growth

Bay Center B

Building N

Building V

Consolidated antigen manufacturing

GRIFOLS

Project Horizon

Investing for future growth

Present

GRIFOLS

Project Horizon

Investing for future growth

Present

GRIFOLS

Project Horizon

Investing for future growth

Present

GRIFOLS

Project Horizon

Investing for future growth

Present

GRIFOLS

Project Horizon

Investing for future growth

Present

GRIFOLS

Project Horizon

Investing for future growth

Present

GRIFOLS

Project Horizon: Timeline and regulatory

The project is on track

Present

Jan 2016 | **Jan 2017** | **Jan 2018**

Construction | **Commissioning / Qualification** | **Validation**

Aug 2015
Construction start

Sept 2016
Building occupancy
C&Q start

Dec 2016
Warehouse operations transfer

July 2017
GMP start

Dec 2017
First FDA submission

Dec 2018
Tech transfer complete

GRIFOLS

Strengthening long-standing relationships

Extending agreements. Launching new products

Present

Abbott

- New agreement signed in 2015
- Term through 2026
- Extend production of current antigens
- Add five new antigens

OraSure

New agreement signed in 2016 - 5 year extension

"OraSure is committed to delivering high quality infectious disease diagnostic products for our customers. As one of our trusted suppliers, Grifols' focus on service, quality and collaboration play a key role in our ongoing relationship."

Douglas A. Michels, President and CEO of OraSure Technologies
Press Release April 24, 2017

Ortho Clinical Diagnostics

- Receive CE mark for HIV Combo Test (June 2016)
- Submit HIV Combo Test for FDA review (February 2017)

GRIFOLS

Three main protein expression platforms for growth

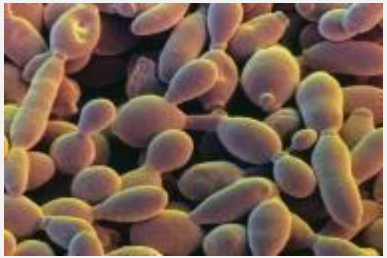
Addressing proteins complexity

Present

Bacteria (prokaryote)

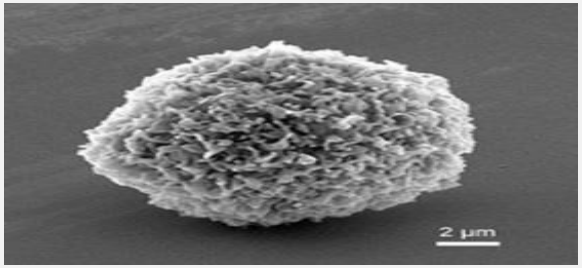
- Cell is designed for speedy replication
- Good for simple proteins

Yeast (eukaryote)



- Cell is designed for speedy replication
- Some complex protein production

Mammalian Cells (eukaryote) (CHO, NS0, HEK293, etc)



- Excellent for expression of glycoproteins (complex secretion systems)
- Monoclonal Antibodies, hemostasis and blood group antigens

Surge in Mammalian produced proteins due to need for complex glycoproteins and mAbs

GRIFOLS

R&D capabilities that span the development continuum

Expanding our existing approach

Present

Molecular Design	Protein Expression	Protein Purification	Monoclonal generation and Immunoassay development	Process Development
• Design of rproteins • Engineering function properties • Fc fusions • Rec mAbs • Computational design (Rosetta)	• Advice on design and platform choice • Mammalian CHO HEK transient and stable • Yeast proprietary strains • E. coli	• Custom purification and analysis • Tagged and untagged proteins • Mass spectrometry • Light scattering • Affinity analysis • Reverse engineering of proteins	• De novo Hybridoma generation • Recombinant mAb design and expression • HT screening • Novel platforms • Proof of concept	• Technical development • Process development • Validation and verification • Design of experiments • Transfer to manufacturing

GRIFOLS

The Future
Realizing our potential

Strategies for value creation

Realizing our potential

Future

Near-term

Approach diagnostic companies with infectious disease menu without HCV, HIV or HBV:

- Critical to approach early in the development process before antigen decisions are made. Expect 2-3 year timeline before product launch and regular supply

Mid-term

Explore collaboration opportunities with other organizations that sell diagnostic reagents:

- Fill gaps in 3rd party portfolios and leverage their sales organization to sell Grifols current antigens

Long-term

Explore partnering on development and supply of new molecules:

- Opportunity to engage at early stage and be strategic partner for therapeutic and diagnostic pipelines
- Start a revenue generating development program in R&D with plan for future GMP manufacturing

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New R&D antigens for internal Diagnostics Projects

Robust pipeline to support and accelerate growth

Future

Hemostasis	• Novel vWF receptor derivatives (for clotting assay) • Recombinant tissue factor (for improved clotting assay performance and cost efficiencies)
Immuno-hematology	• Fc fusion blocking protein (to resolve interference of daratumumab in antiglobulin testing) • Novel rare blood group antigens (stable reagents for extended blood typing menu)
Infectious disease	• New or improved HIV, HBV, HCV, and HTLV antigens (for ultrasensitive donor screening assays) • New antigens for WNV, Zika, Babesia, Ebola to extend menu for donor screening and clinical diagnostics

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Hemostasis reagents

Robust pipeline to support and accelerate growth

Future

BLEEDING DISORDERS
- DG-FII DG-FV DG-FVII
- DG-FVIII DG-FIX DG-FX
- DG-FXI DG-FXII
- DG-Latex VWF: Gp1b (GOF) (Activity)

THROMBOTIC DISORDERS
- DG-Chrom AT L
- DG-APC
- DG-Chrom PC
- DG-DRVVT
- DG-Clot PS
- DG-DRVVT Confirm

ANTICOAGULATION
- DG-Chrom Hep
- DG-Chrom Anti Xa (Anti Xa DOAC)

CALIBRATORS & CONTROLS
- DG-REF
- DG-C1 (6x1)
- DG-C2 (20x1)

ROUTINE
- DG-PT
- DG-PT RecombiLIQ
- DG-APTT Synth G-Fib L Human
- DG-TT L Human
- DG-Latex D Dimer

Reagents highlighted in yellow will profit from recombinant proteins or antibodies developed and manufactured at Emeryville site

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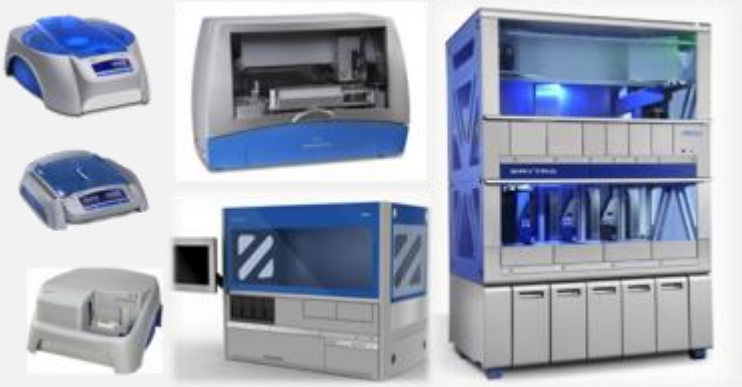
Immunohematology reagents

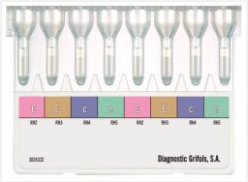
Robust pipeline to support and accelerate growth

Future

Automation range



RBC antigen typing



RBC AB detection

Recombinant blood antigens, manufactured in Emeryville, will be used to manufacture reagents able to complement/substitute current red cells

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New R&D monoclonal antibodies

Robust pipeline to support and accelerate growth

Future

Hemostasis	• Proprietary mAb for improved thrombosis assay (cost reduction) • mAbs against clotting factors as improved controls (selectively depleted plasma) for clotting assays
Autoimmune (biological drug monitoring)	• Biosimilars for TNF-alpha (for improved cost efficiency for ProMonitor assays)
Infectious disease	• Mabs against HIV, HBV, HCV, HTLV as capture/detection reagents for donor screening assays; mabs against other pathogens for clinical diagnostics (Ebola, Zika)

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Immunochemistry program for donor screening

Innovative technology in recombinant proteins

Future

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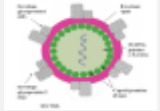
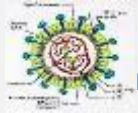
Leveraging Grifols Proprietary New and Legacy Recombinant Proteins

HBV Ags



HCV Ags

HIV-1 Ags



HTLV Ags

CMF

Design, Development, V&V, and Manufacturing of IMMUNOASSAY Reagents & Assays

Singulex

Proprietary ultra-sensitive Single Molecule Counting (SMC™) technology

Technology expertise and co-development of HIV and HCV Assays; reader (Laser Scanner) likely to be reused in Grifols platform

Grifols fully automated immunoanalyzer platform with proprietary assays for blood and plasma screening

Design, Development, V&V, and Manufacturing Transfer* of Instrument, Consumables, and Software

3rd Party Platform Vendor

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Key takeaways
Focus on innovation and growth

Key takeaways

Focus on innovation for growth

- Manufacturing and R&D capabilities provide a strategic growth competency and platform
- Grifols is investing in manufacturing to support future growth, increase efficiency and lower costs
- Grifols is investing in R&D to enlarge pipeline and capabilities
- Multiple recombinant proteins in research progressing rapidly towards development phase
- Trusted development partner for molecular design, expression, purification, characterization, and process development, also for other focus areas

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Investors' & Analysts' Meeting 2017

Emeryville (California, USA)
June 7th and 8th, 2017

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Project Horizon tour visit

Ramón Biosca

VP/GM Grifols Diagnostic Solutions

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PRIDE
SAFETY
EFFORT
COMMITMENT
EXCELLENCE
TEAMWORK
INNOVATION &
IMPROVEMENT

GDS manufacturing / R&D
Snapshot

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GDS Manufacturing

Snapshot

22 products	**6** licensed	**140** grams	**10-250 l.** scale
HCV **HIV** **HBV** **Reagents**	**With FDA** **HCV** **HBV**	**Product shipped in 2016**	**E. Coli** **Yeast**

High-quality manufacturing:

- FDA licensed manufacturer, compliant with cGMP standards (CFR 210, 211 & 820)
- ISO 9001:2008 and 13485:2003
- First HCV antigen manufactured in the late 1980s (5-1-1)
- Grifols continues to develop new antigens and improve processes: HIV combo launched in 2016 uses a new HIV antigen

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GDS R&D

A global operation with multiple geographic centers of excellence

200+ full-time employees

Areas of expertise:

- Molecular biology assay development
- Recombinant protein design, expression, and purification
- Immunoassay development
- Reagent development
- Platform/Technology evaluations
- Instrumentation and software
- Systems integration
- Project and portfolio management
- Global clinical trials (+CLIA Lab) and data management

Grifols Diagnostic Solutions
(Emeryville, CA
San Diego, CA)

Diagnostic Grifols (Barcelona, Spain)
Progenika (Bilbao, Spain)
Araclon (Zaragoza, Spain)
Medion Grifols (Düdingen, Switzerland)

In Emeryville, novel Grifols recombinant proteins are designed with state-of-the-art protein engineering capabilities in research, shepherded through robust development processes and become components of proprietary Grifols assays

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Facility Tour
CMF layout and Tour logistics

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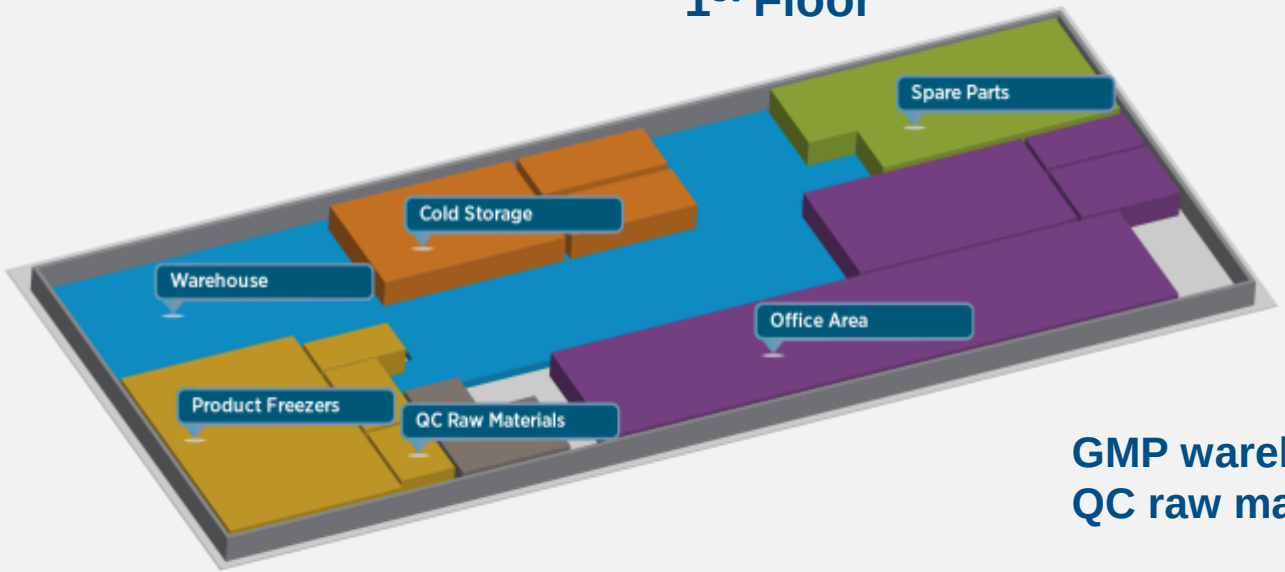
CMF: Consolidated Manufacturing Facility

Investing for future growth

4-story facility

1st Floor



GMP warehouse, spare parts, QC raw materials, office space

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CMF: Consolidated Manufacturing Facility

Investing for future growth

4-story facility

2nd Floor

Shipping / receiving, label center, MFG expansion / 9,000 sqf

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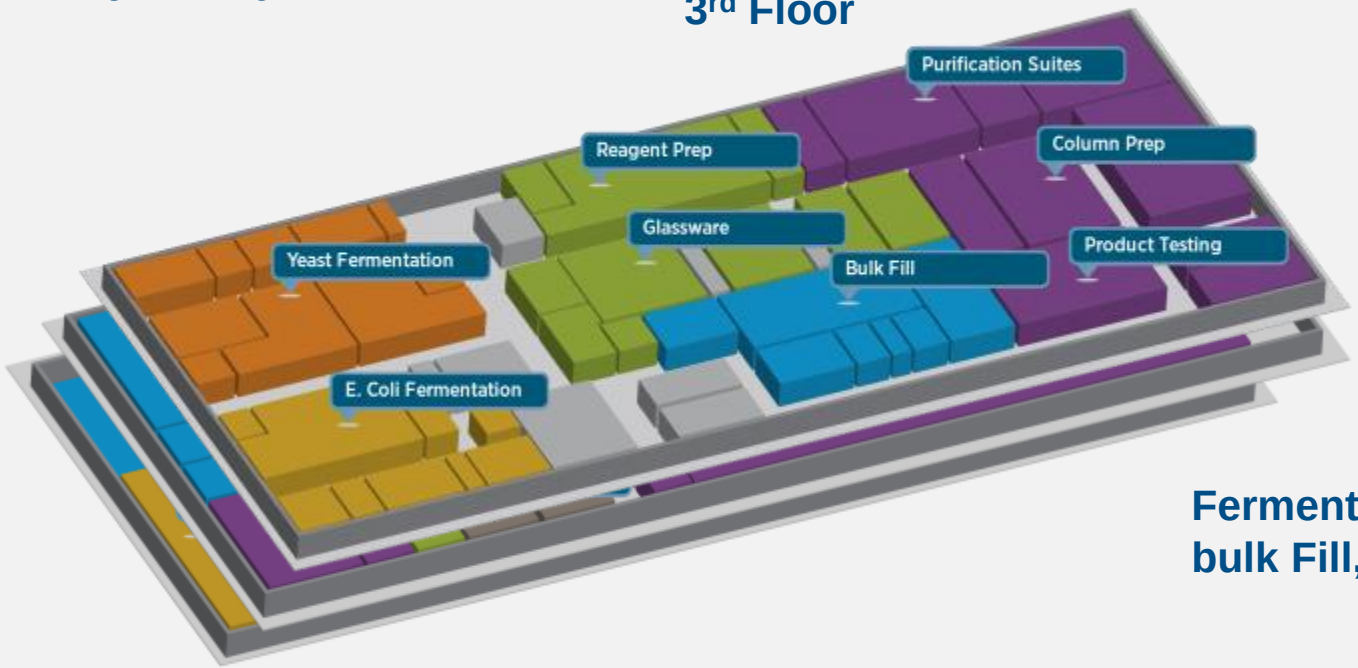
CMF: Consolidated Manufacturing Facility

Investing for future growth

4-story facility

3rd Floor



Fermentation, purification, bulk Fill, tech services

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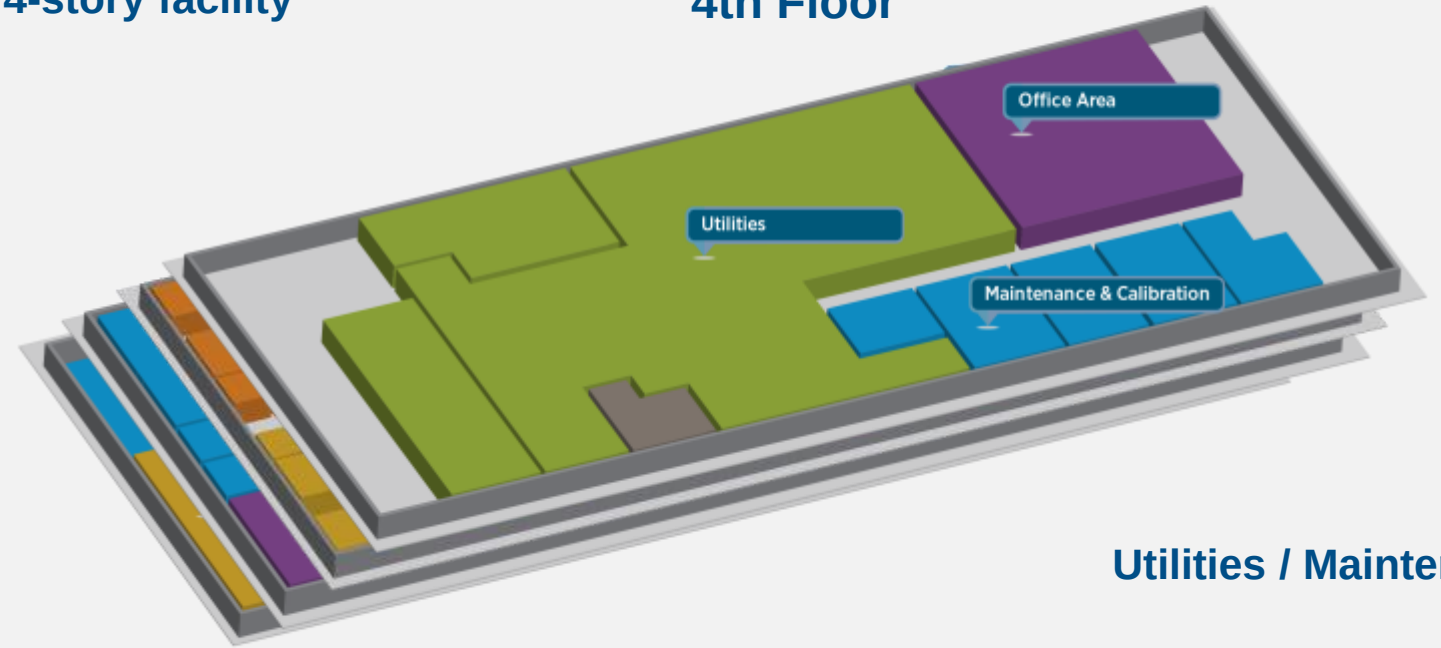
CMF: Consolidated Manufacturing Facility

Investing for future growth

4-story facility

4th Floor



Utilities / Maintenance space

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CMF: Consolidated Manufacturing Facility

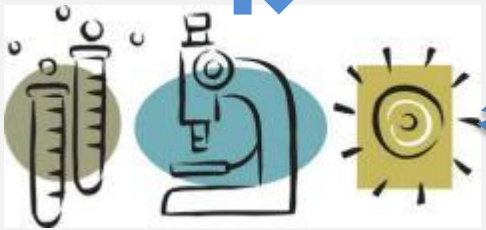
Tour logistics

Presenters at CMF

- Zack McGahey
- Rodger Sheppa
- Christian Mayer
- Kim Berger

Presenters at R&D

- Norbert Piel
- Jody Berry



Group A
Preston Thomas
Head Facilities

Group B
Rino Lee
Head *Quality*

Group C
Grace Ching
R&D

Group D
Josep Salvador Maturana
Grifols Engineering

Please leave your belongings in the tent
You may collect your items at the end of the tour

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Investors' & Analysts' Meeting 2017

Emeryville (California, USA)
June 7th and 8th, 2017

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Investors' & Analysts' Meeting 2017

Emeryville (California, USA)

June 7th and 8th, 2017

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Thursday, June 8th 2017 Emeryville

Time	Topic	Presenter
08:00	*Pick up from hotels*	
08:30	*Arrival at Grifols Diagnostic Solutions (GDS) headquarters*	
08:30 - 09:00	*Coffee*	
09:00	Bio Supplies Division introduction	A. Arroyo
09:00 - 09:30	Access Biologicals	M. Crowley
09:30 - 10:15	Innovation: redefining the industry	D. Bell
10:15 - 10:45	*Coffee break*	
10:45 - 11:45	Financials: focus on profitable growth	A. Arroyo
11:45 - 12:15	Q&A	
12:15 - 12:45	Driving value creation through disciplined strategy execution	V. Grífols Deu
12:45	*Lunch and transfers to airport*	

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Bio Supplies Division

Strengthening our diversified recurring revenue base

Alfredo Arroyo

Chief Financial Officer

GRIFOLS

PRIDE
SAFETY
EFFORT
COMMITMENT
EXCELLENCE
TEAMWORK
INNOVATION &
IMPROVEMENT

Bio Supplies Division

Strengthening our diversified recurring revenue base

Bio Supplies

- The new Bio Supplies Division includes revenues from manufacturing agreements, biological products for non-therapeutic use and other biological products
- Current revenues were previously included in Raw Materials and Bioscience
- To enhance its business, Grifols acquired 49% of Access Biologicals, with a 5-year call option
- Access Biologicals, serving the Diagnostic and Life Sciences industries, manufactures biological products for biopharmaceutical, in-vitro Diagnostic cell culture companies and Diagnostic research and development
- Supply agreement to sell to Access Biologicals plasma products for non-therapeutic use
- In the future, this new division will make a very positive revenue and margin contribution

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Access Biologicals LLC

Powering growth through optimization and innovation

Mike Crowley

Managing Director

GRIFOLS

Access Biologicals LLC

The Access Biologicals advantage

Access Biologicals LLC

What we do:

Manufacture biological products for non-therapeutic use

Who we serve:

Biopharma, in-vitro Dx cell culture, and diagnostic R&D

Closed loop supply chain:

Full control of the collection, testing, and production of our human biological products

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The Access Biologicals' model

Access Biologicals LLC

What we do:

- Access Biologicals manufactures non-injectable plasma into diagnostic controls/calibrators used by large instrument manufactures as reagents.
- We provide the liquid component used for testing patient samples to validate accuracy and performance of the instrument prior to reporting the test results.

Closed loop supply chain:

- Access Biologicals owns a collection center and the licensing for numerous disease state markers.
- Our testing lab includes an extensive selection of instruments for customization of plasma characteristics per customer specifications.

Robust strategy to increase market share

Access Biologicals LLC

Sales Channels	• Capitalize on Access Biologicals' sales channels of over 275 unique corporate customers to increase sales volume of the non-therapeutic products
Vendor Approvals	• Leverage Access Biologicals' customer vendor approvals for the introduction of new products. • As vendor consolidation continues, we are able to strengthen our market position.
Cell Culture Manufacturing	• Use Access Biologicals' manufacturing capabilities to produce serum media components for the fast growing immunotherapy market. • The immunotherapy market has substantial high-margin growth opportunities as we internally source all raw materials and own the manufacturing facilities.

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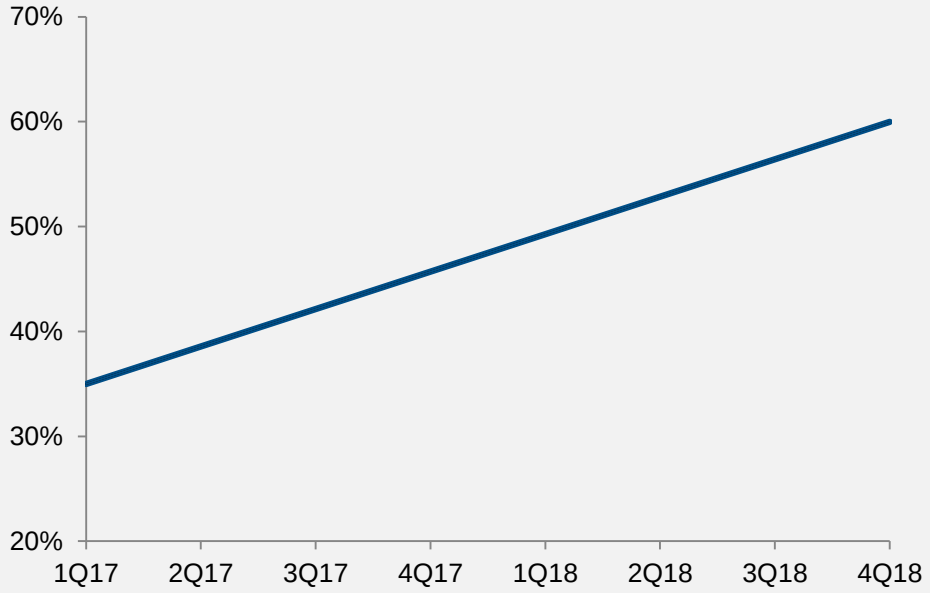
Margin enhancement through better utilization of existing facilities and resources

Access Biologicals LLC

AB's Vista, CA capabilities are ideally suited to manufacture raw materials into value-added diagnostic reagents

Utilization rate of existing facilities



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Key takeaways

Access Biologicals LLC

The Access Biologicals-Grifols strategic advantage:

- Capitalize on the availability of new inventory by converting them into Diagnostic and Cell Culture materials.
- Increase utilization of the manufacturing facility by selling higher margin finished goods and the use of technology transfers.
- Maximize our innovation to create media components for the immunotherapy market.

Research, development and innovation

Redefining the industry

David Bell

Chief Innovation Office. General Counsel

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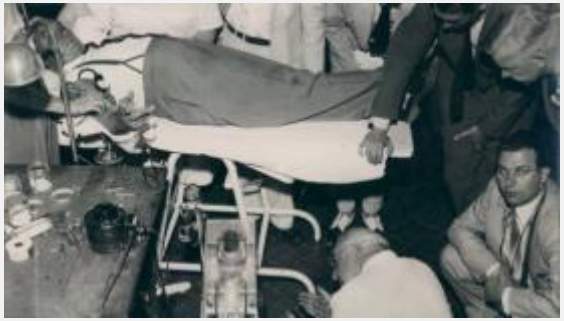
COMMITMENT
EXCELLENCE
TEAMWORK
INNOVATION &
IMPROVEMENT

Grifols has a long history of transformative innovation

…which has defined the very essence of our industry



Establishing the core technology of plasmapheresis

Paving the way for the birth of the plasma fractionation industry as we know it today

Redefining technology through engineering and manufacturing pre-eminence

Grifols remains a recognized leader in innovation by advancing the field of plasma therapeutics while also exploring new platforms for growth

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Grifols is a recognized leader of innovation

Ranked among the world's 100 most innovative companies for fourth consecutive year

GRIFOLS

Innovation across divisions

2016-2017 regulatory submissions snapshot

864 regulatory submissions for product approvals					
	Biologic products	**Diagnostic Products**	**Hospital products**	**35 Partner studies**	**389 Patents granted**
FDA approvals	35	5		Under the Grifols Investigator Sponsored Research (ISR) Program covering 7 varied disease states	Covering 46 distinct inventions
EMA approvals (or other European)	51	26	26		
Other regulatory authorities	177	392			
Total approvals	**263**	**423**	**26**		

GRIFOLS

Innovation is embedded in Grifols pioneering spirit

The objective is R&D drives long-term growth and profitability

Creativity

- Foster an environment of creativity, actively looking for disruptive technologies and value-enhancing opportunities

Broad Engagement

- Ensure all employees are engaged across commercial divisions and Engineering
- Drive an interdisciplinary approach to discovering and capitalizing on emerging technology and business: incorporating R&D, Commercial (Sales/Marketing), Regulatory, Manufacturing, Medical & Scientific Affairs

Latitude

- Drive innovation that includes internal and external R&D projects, collaborations, investments, licensing, ISRs and IP

Differentiation

- Ensure industry leadership in all of our product and service offerings

INNOVATION OBJECTIVES:

Meet market requirements and support the business by keeping it competitive

Broaden and deepen our product offerings to drive long-term growth and profitability

Bring innovative therapies and services to global markets to further the company's mission

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Our simple goal: redefine the industry

GRIFOLS

Our innovation strategy

Exploit existing capabilities while exploring new opportunities

A broad and differentiated portfolio

- Maximize the liter (new proteins, new indications)
- Expand the market (adjacencies/complementary opportunities)
- Pursue incremental improvements in existing products/operations to drive efficiencies and deliver ever-greater value

Exploratory breakthroughs

- Leverage and apply technological/process advances to fundamentally change our business
- Develop new testing solutions for product and patient safety
- Advance disruptive technologies that profoundly enhance our portfolio

Strategic collaborations

- Partnerships with over 35 leading universities and institutions, including Stanford University, Harvard University, the Mayo Clinic, Hospital Clinic Barcelona, University of Pittsburgh and Fundación Ace
- GIANT: Leveraging our external investments for commercial success

GRIFOLS

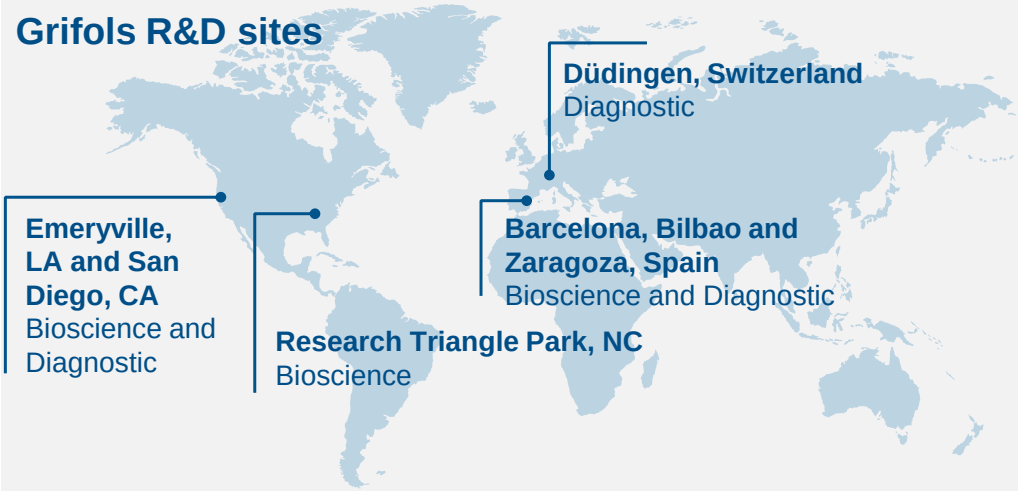
Strategic collaborations: leveraging internal & external expertise

Side-by-side exploration of basic science and disruptive technology

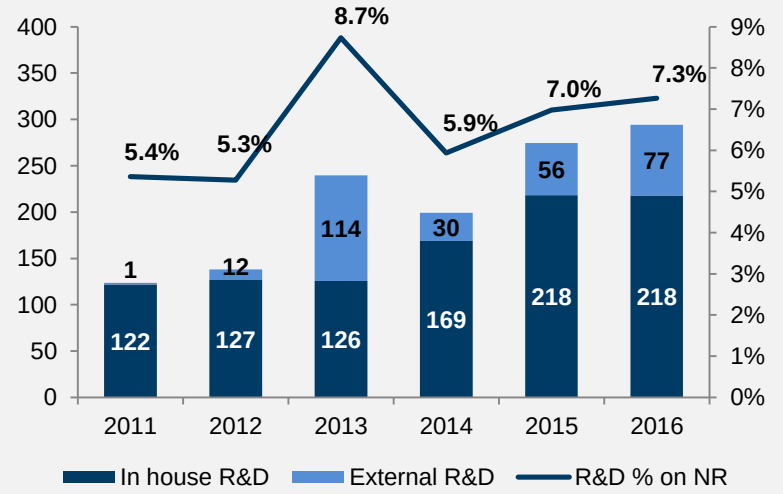
Our partnerships and investments act as an extension to our internal R&D department allowing our teams to collaborate with world-renowned researchers on the exploration of basic science and disruptive technologies

Approximately 1,000 Grifols employees are involved in R&D. Over 100 additional researchers help drive our innovation strategy from within our partnerships and investments

Grifols R&D sites



Group R&D investment evolution (EURm)



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Broad and differentiated portfolio - Selected projects

Three innovation horizons for Bioscience

	Near-term < 3 years	Mid-term 3-5 years	Long-term 5-10 years
New technology	• SCIG (Subcutaneous) • Albumin in bags • Liquid A-1PI • Reduced volume pdFVIII • IGIM Hyperimmunes	• Flexible dosing • IVIG in bags	• Transdermal • Inhaled
New instrumentation	• Neurologic disease modulation • Alzheimer's (AMBAR) • MMN • Myasthenia Gravis (crisis)	• Diseases associated with aging (cognitive and motor function) • Albumin • Liver failure • Cirrhosis	• Myasthenia Gravis (maintenance) • Biosurgery
New products	• Fibrin sealant • Thrombin • Inhaled antibiotics for BE	• Plasma youth factors for disease modulation	• Aging inhibitors and youth factors

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Broad and differentiated portfolio - Selected projects

Three innovation horizons for Diagnostic

	Near-term < 3 years	Mid-term 3-5 years	Long-term 5-10 years
New technology	• Enhanced blood collection systems • Reagent red blood cells manufacturing using recombinant red cells antigens • Promonitor Quick (lateral flow) for anti-IFX	• Next generation donor screening - single molecule counting	• Next generation donor screening - single molecule counting • Next generation sequencing
New instrumentation	• High throughput Hemostasis instrument • NAT automation • Immunohematology gel card reader	• Middleware software • IH Multicard automation	• Next generation immunoassay instrument
New products	• New NAT virus test development (Zika, Babesia) • A1AT genotyping test (for alpha-1 deficiency) • IH Blood genotyping (D) kit • New kits for biologicals treatments monitoring	• New assays for emerging pathogens • Multiple target testing (multiplexed)	• Reagents: D-Dimer Hemostasis kits • Pathogen detection by NextGen sequencing

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Expanding indications through partnerships

Investigator Sponsored Research (ISR) studies

Immunoglobulin	• Refine diagnosis in CIDP • Biomarkers of azonal changes in solid organ transplantation • Cutaneous lupus erythematosus • Small fiber neuropathy • Demyelination in diabetes mellitus
Alpha-1 Antitrypsin	• Assessing risk of COPD in PI MZ genotype • Dose adjustment on microbiome profiles • ST-Segment elevation acute myocardial infarction • Bronchiolitis obliterans
Albumin	• Management of patients requiring dialysis for acute kidney failure • Prevention of renal failure from complications of cirrhosis • Improvement of coronary integrity in heart transplant

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Expanding indications through partnerships

Investigator Sponsored Research (ISR) studies

Antithrombin	• Prevent bleeding complications in pediatric patients requiring heart-lung machine support (ECMO) • Acute respiratory distress syndrome (ARDS)
pdFactor VIII	• Mechanisms of immunotolerance • Superiority as an hemostatic drug vs. rFVIII

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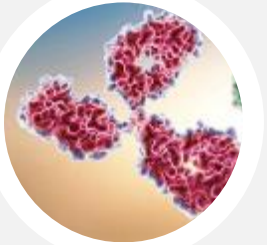
Exploratory breakthroughs

Redefining the future through disruptive technology

Identifying disease biomarkers for predictive diagnosis and treatment

Aging and youth factors in plasma proteins



Polyclonal recombinant antibodies

Therapeutics for the prevention of disease

Unlocking the human proteome for therapeutic value

GRIFOLS

Tackling neurodegenerative diseases

Comprehensive approach to the fight against Alzheimer's

alzheimer management by albumin replacement

ambar

- **Grifols AMBAR** study (launched 2012), combines the use of plasma products (albumin, IVIG) and plasmapheresis to treat Alzheimer's disease. In November 2015, the study released intermediate results that support the feasibility of the treatment. The last patient visit is scheduled for 2017

- **Diagnostics:** Early detection of Alzheimer's Disease - ability to differentiate from other dementias
- **Treatment**: Alzheimer's - Preventative therapeutic against scientifically accepted targets
- **Testing**: Capabilities in our CLIA Laboratory in San Marcos, TX

araclon BIOTECH

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Transformative therapies relating to the aging process

Expanding our plasma-derived proteins

ALKAHEST

- Identify plasma-based proteins that function as “youth” or “aging” factors/triggers
- Develop function-restoring and enhancing therapies derived from plasma and its recombinant analogs
- Proteomic analysis of plasma and plasma fractions occurring at a remarkable rate, accelerating the pathway to therapeutic success
- Clinical trials initiated in humans

Next generation immunoassay

Highly sensitive technology applicable to both transfusion and specialty diagnostics

Singulex®

- Single Molecule Counting (SMC™) technology is 100 times more sensitive than contemporary immunoassay platforms, enabling unprecedented high precision and digital detection of viral markers.
- Sets a new standard for Immunoassay sensitivity
  - Enhanced safety for blood and plasma donations
- Compliment to NAT
- Provides for geographic expansion

Key takeaways
Redefining the industry

Key takeaways

Redefining our industry

Innovation

We are redefining the Plasma Therapeutics and Specialty Diagnostics fields with a differentiated product portfolio and disruptive technologies that will change the course of the these industries

Collaboration

Our collaborative model of innovation leverages internal expertise, partnerships and strategic investments - providing access to top researchers, creative ideas and disruptive technologies

Success

Our success will ensure our continued status as an industry leader, commercializing cutting-edge technologies that enhance patient health and product quality

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Investors' & Analysts' Meeting 2017

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Financials

Focus on profitable growth

Alfredo Arroyo

Chief Financial Officer

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INNOVATION &
IMPROVEMENT

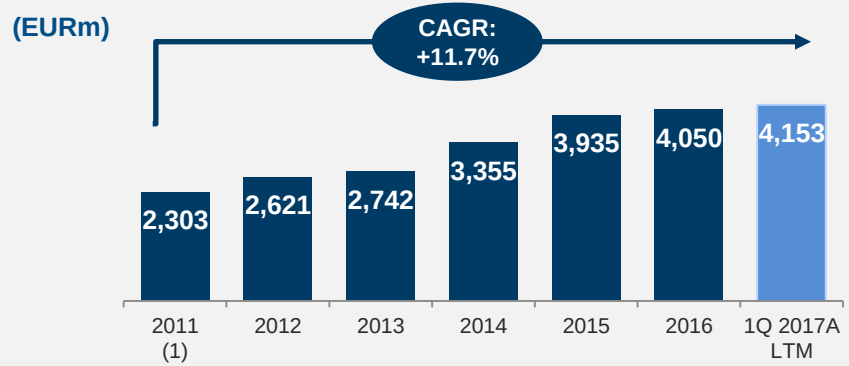
Grifols investment case

Grifols investment case

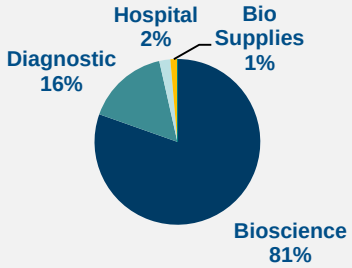
Positioned for success

- Global presence with a diversified revenue base
- Leading player in plasma-derivatives industry
- Vertically integrated business model
- Improved market dynamic for plasma-derivatives products with strong fundamentals and barriers to entry
- Leading market position and a full product portfolio in transfusion medicine
- Attractive margins with significant cash flow generation
- Significant value creation through acquisitions
- Refinance process completed: value creation

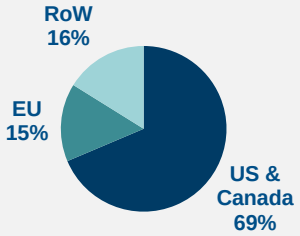
Grifols revenue evolution



By division(2)



By geography(2)



1. 2011 figures are proforma for Talecris acquisition
2. Net revenue breakdown based on 1Q2017 figures

Grifols investment case

Strengthening the value chain across the 3 main divisions

Bioscience	• Global producer with market leadership to be further enhanced by ongoing capacity expansion programs • Plasma derived therapies expected to continue growing supported by favorable demand and supply dynamics • Focused R&D to support and contribute future growth
Diagnostic	• Steady growth. Highly profitable business • Market leadership in transfusion medicine • Continuous investment in new diagnostic technologies
Hospital	• Maintain leadership in Spain • Leader in the introduction of hospital logistics automation systems in Spain and Latin America • Strengthening presence in the U.S. market

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Grifols investment case

Strengthening the value chain: New Bio Supplies Division

Bio Supplies

- The new Bio Supplies Division includes revenues from manufacturing agreements, biological products for non-therapeutic use and other biological products
- Current revenues were previously included in Raw Materials and Bioscience
- To enhance its business, Grifols acquired 49% of Access Biologicals, with a 5-year call option
- Access Biologicals, serving the Diagnostic and Life Sciences industries, manufactures biological products for biopharmaceutical, in-vitro Diagnostic cell culture companies and Diagnostic research and development
- Supply agreement to sell to Access Biologicals plasma products for non-therapeutic use
- In the future, this new division will make a very positive revenue and margin contribution

GRIFOLS

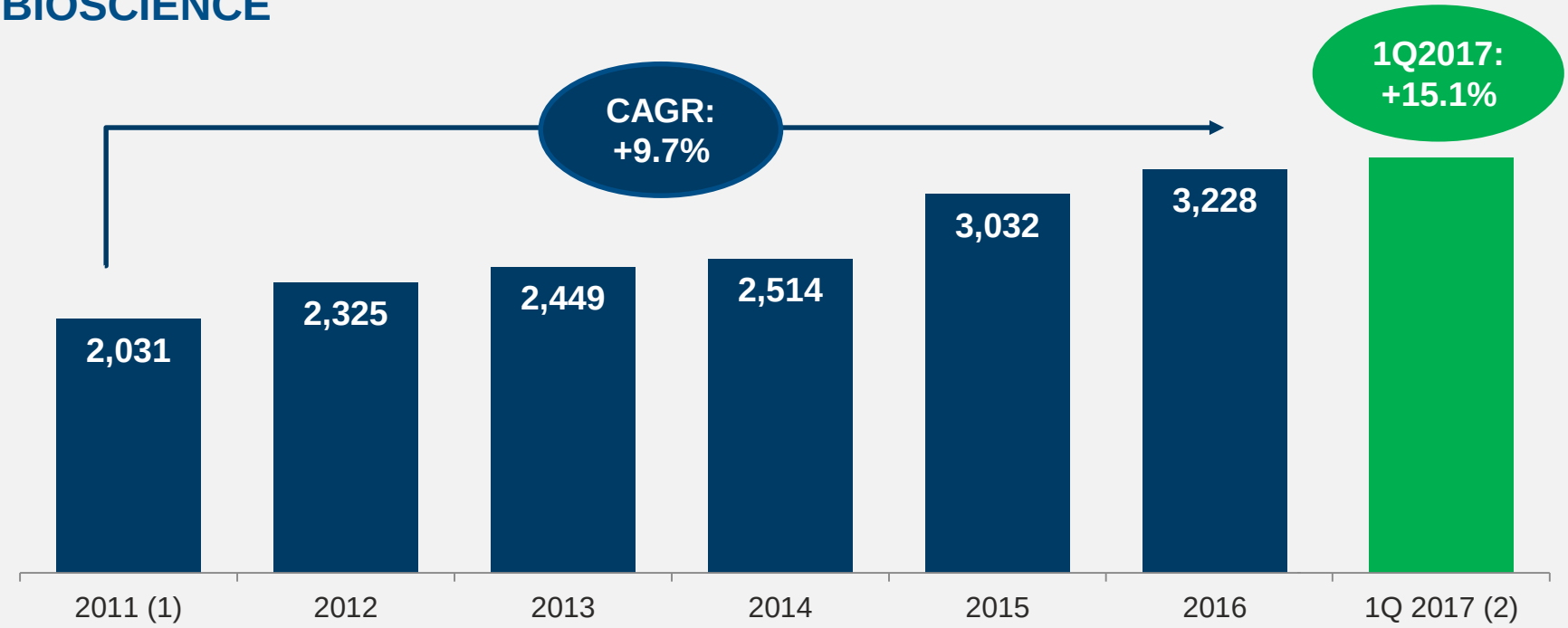
Grifols by the numbers
Long-term growth trajectory

GRIFOLS

Grifols by the numbers: long-term growth trajectory

Building a financial track record (EURm except %)

BIOSCIENCE

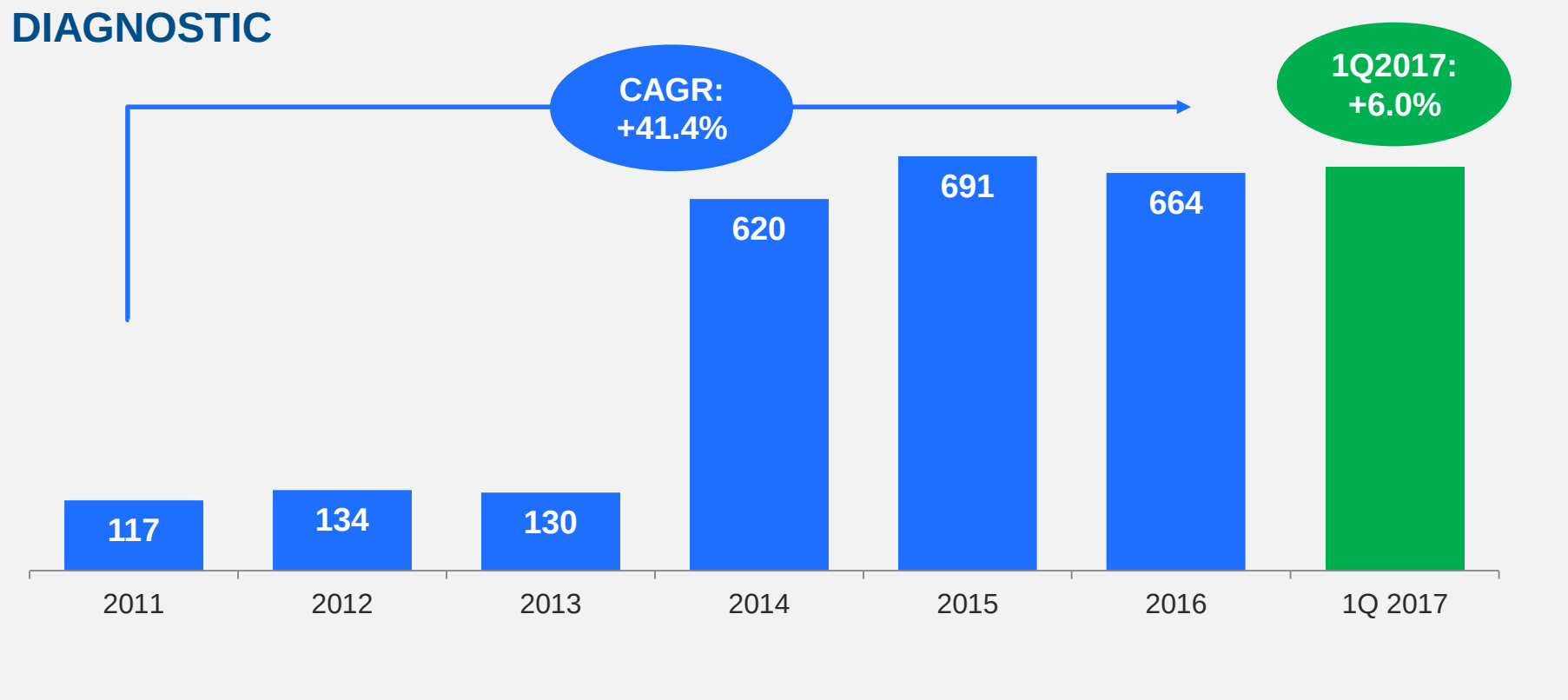


Note: 1. 2011 figures are proforma for Talecris acquisition.
2. 1Q2017 growth includes the reclassification of the biological products for non-therapeutic use 1Q 2017 sales that since January of 2017 are reported in the Bio Supplies Division

GRIFOLS

Grifols by the numbers: long-term growth trajectory

Building a financial track record (EURm except %)

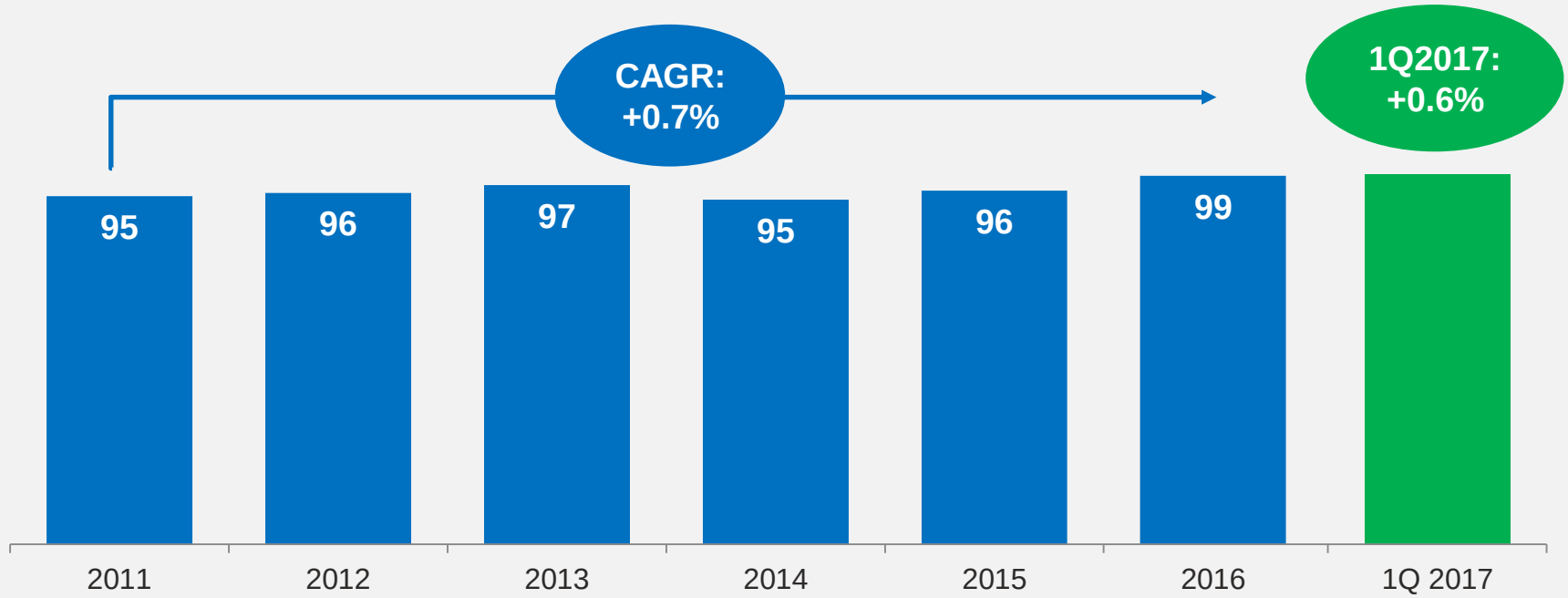


GRIFOLS

Grifols by the numbers: long-term growth trajectory

Building a financial track record (EURm except %)

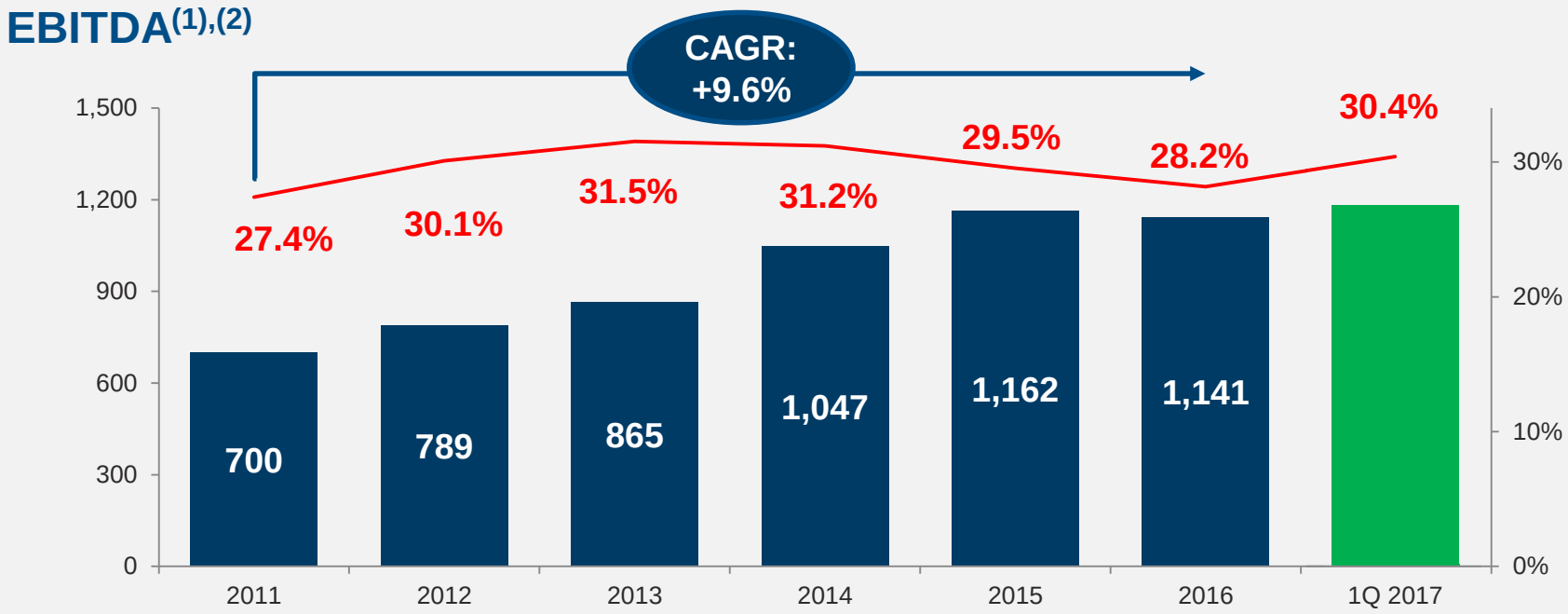
HOSPITAL



GRIFOLS

Grifols by the numbers: long-term growth trajectory

High margins with significant cash flow generation (EURm except %)

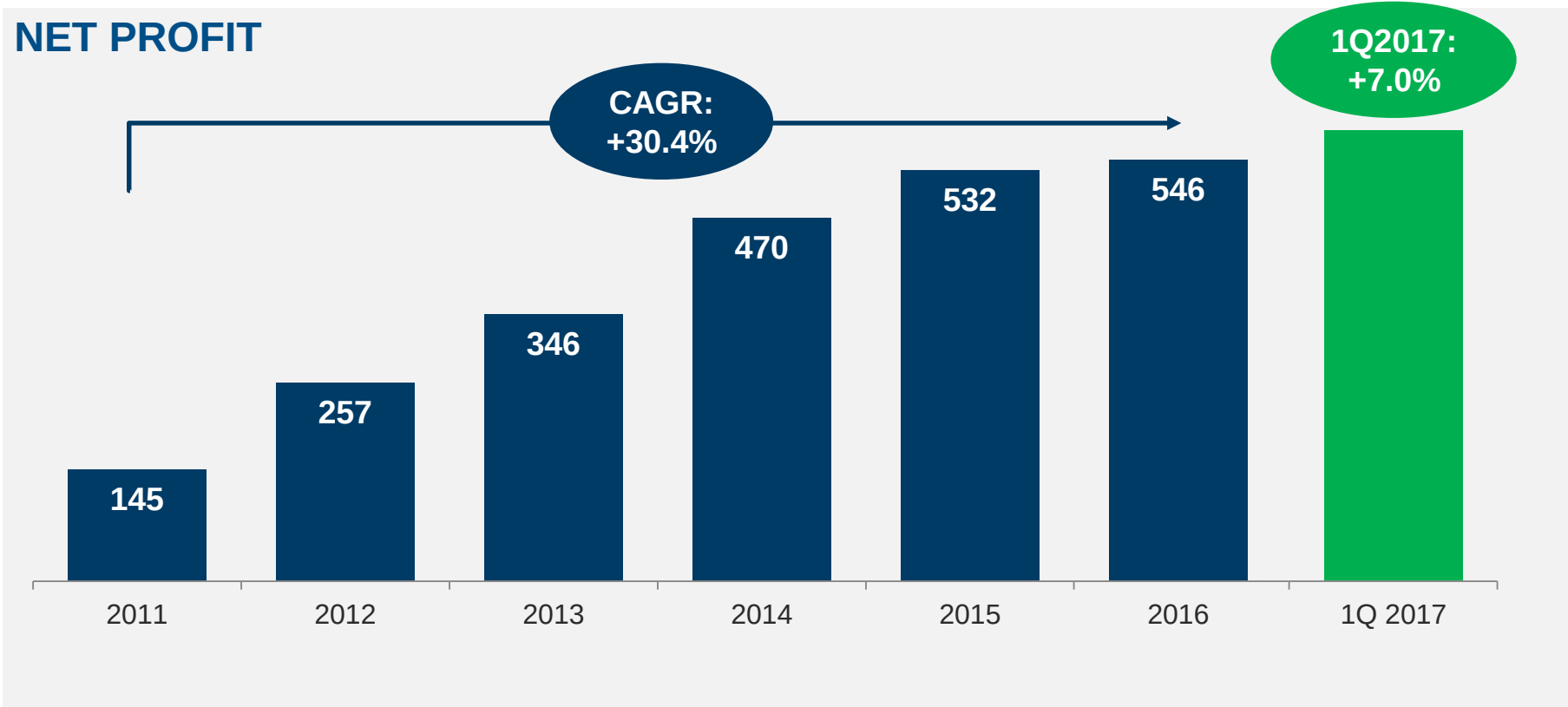


Note: 1. 2011 figures are proforma for Talecris acquisition
2. 2011 and 1Q 2017 EBITDA are Adjusted EBITDA

GRIFOLS

Grifols by the numbers: long-term growth trajectory

High margins with significant cash flow generation (EURm except %)

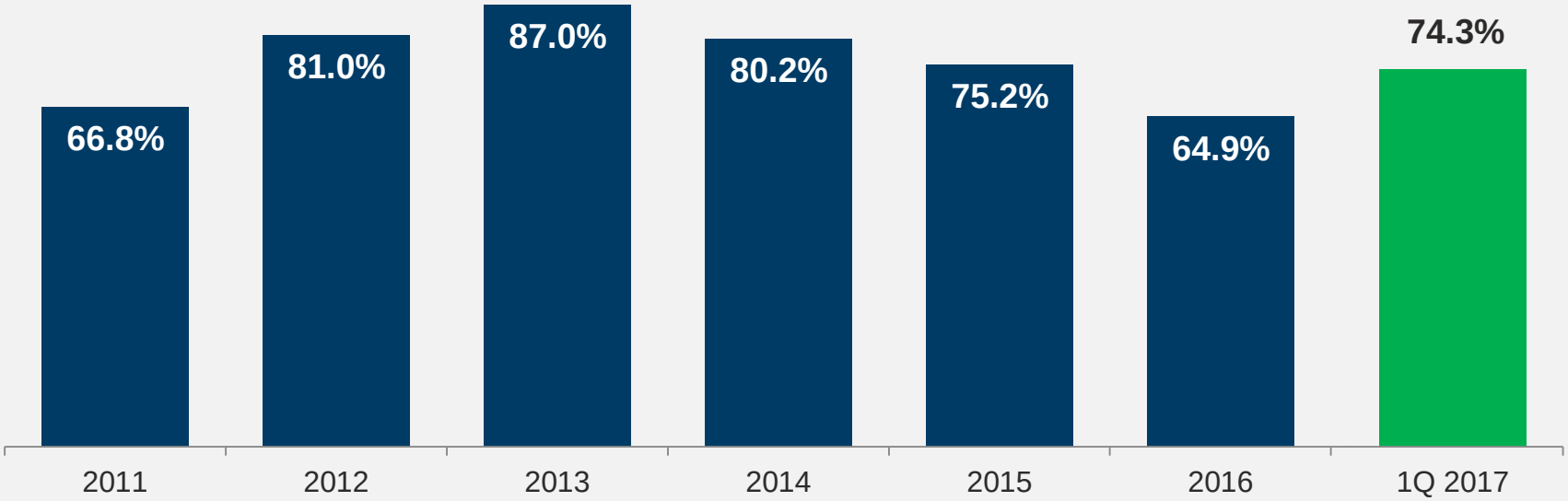


GRIFOLS

Grifols by the numbers: long-term growth trajectory

High margins with significant cash flow generation

CASH CONVERSION(1)



Note: 1. Cash conversion: (EBITDA - Capex - Δ Working Capital) / EBITDA

GRIFOLS

Grifols by the numbers: long-term growth trajectory

Financial strengths: 2016 through 1Q 2017

Bioscience Revenues

Steady growth in 2016 (+6.6% cc in 2016). Improved market dynamics in H1 2017 (+11.9% cc in 1Q 2017)

- Alpha-1 continued its double-digit hike
- Albumin banked on China sales increase
- IVIG robust growth in the U.S.
- pdFVIII: lower volumes offset by a shift to higher-priced areas (positive geographic mix)

Diagnostic Revenues

Turning into positive growth in H2 2016 and 1Q 2017 (+3.3% cc in 1Q 2017)

- NAT reversed H1 low sales in H2 2016. NAT integrated business delivered further growth in 1Q 2017 driven by the U.S., China and Japan
- Immunoassay impacted by Abbott contract (H1 2016) and lower manufacturing costs
- Immunohematology strengthening its position in U.S.

Hospital Revenues

Flat performance in 2016 and 1Q 2017

- Main contributions from Intravenous Solutions and Pharmatech
- Internationalization with presence in the U.S., Portugal, Chile and several countries of Asia-Pacific

GRIFOLS

Grifols by the numbers: long-term growth trajectory

Financial strengths: 2016 through 1Q 2017

Margin

- Bioscience impacted by the plasma costs related with a significant opening of new donation centers
- Diagnostic margins improved in H2 2016. Margin boosted as a result of the NAT acquisition in 1Q 2017
- Significant royalty revenues drop as planned in 2016

Cash flow

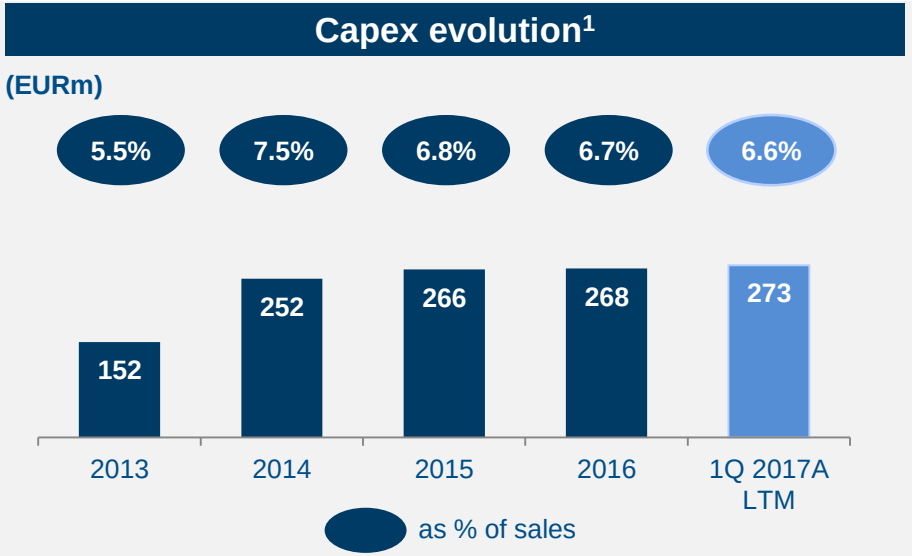
- Net operating cash flow of EUR 553m in 2016 and EUR 640m for 1Q 2017 LTM
- 1Q 2017 strong cash position despite of the NAT acquisition cash payment and transaction and refinancing costs
- Leverage ratio increased to 4.45x at 1Q 2017 from 3.55x at December 31, 2016 due to the NAT acquisition

GRIFOLS

Grifols by the numbers: long-term growth trajectory

Capital allocation: Capex for growth

- Managed 1Q 2017 LTM Capex to EUR 273m
- Continued emphasis on execution and capital allocation efficacy and return
- New wave of investment for additional capacity in Bioscience Division
- Maintenance vs expansion capex: half-and-half

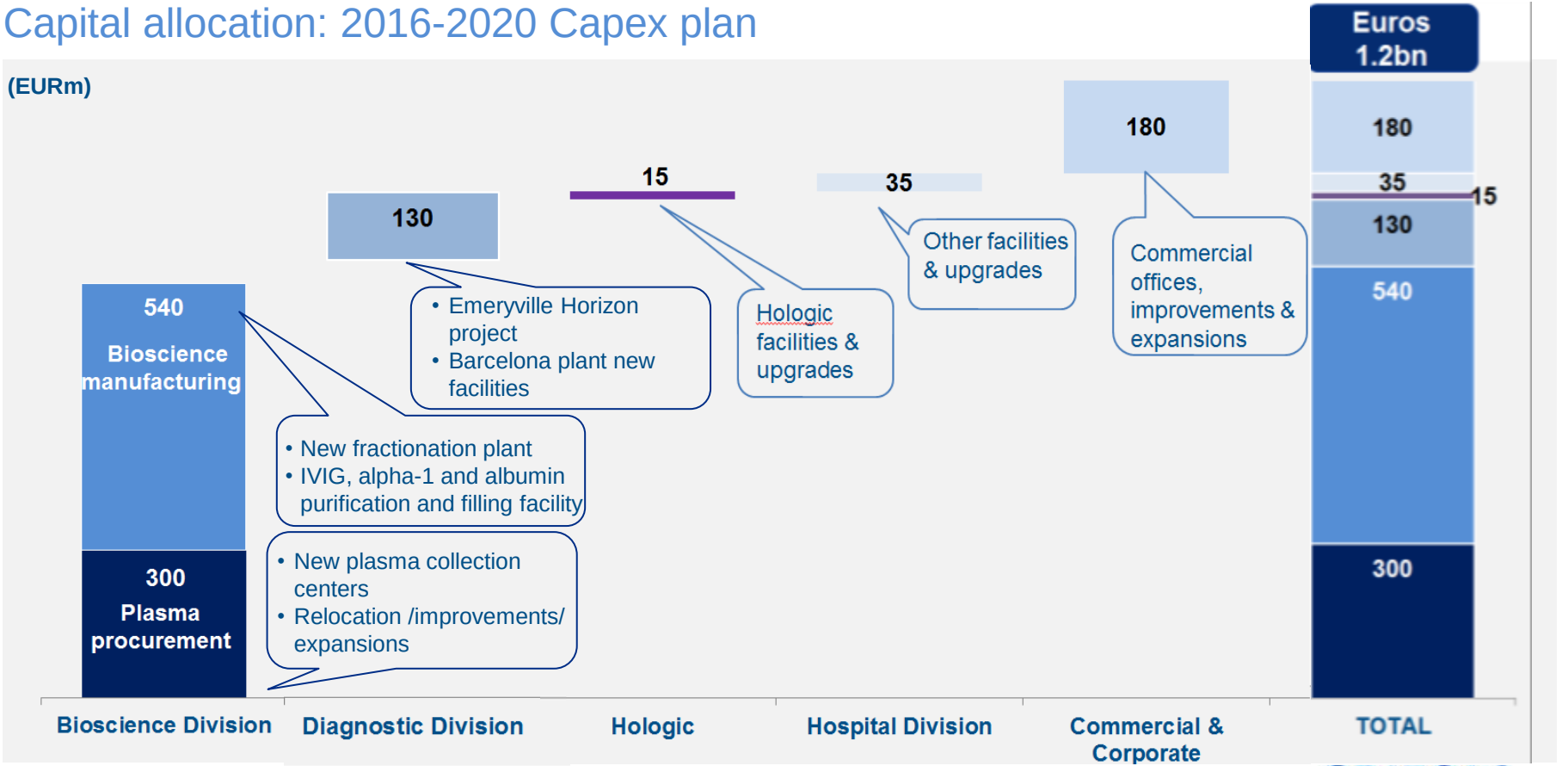


Note: 1. Includes investments in PP&E; excludes extraordinary cash flow items

GRIFOLS

Grifols by the numbers: long-term growth trajectory

Capital allocation: 2016-2020 Capex plan



GRIFOLS

Grifols by the numbers: long-term growth trajectory

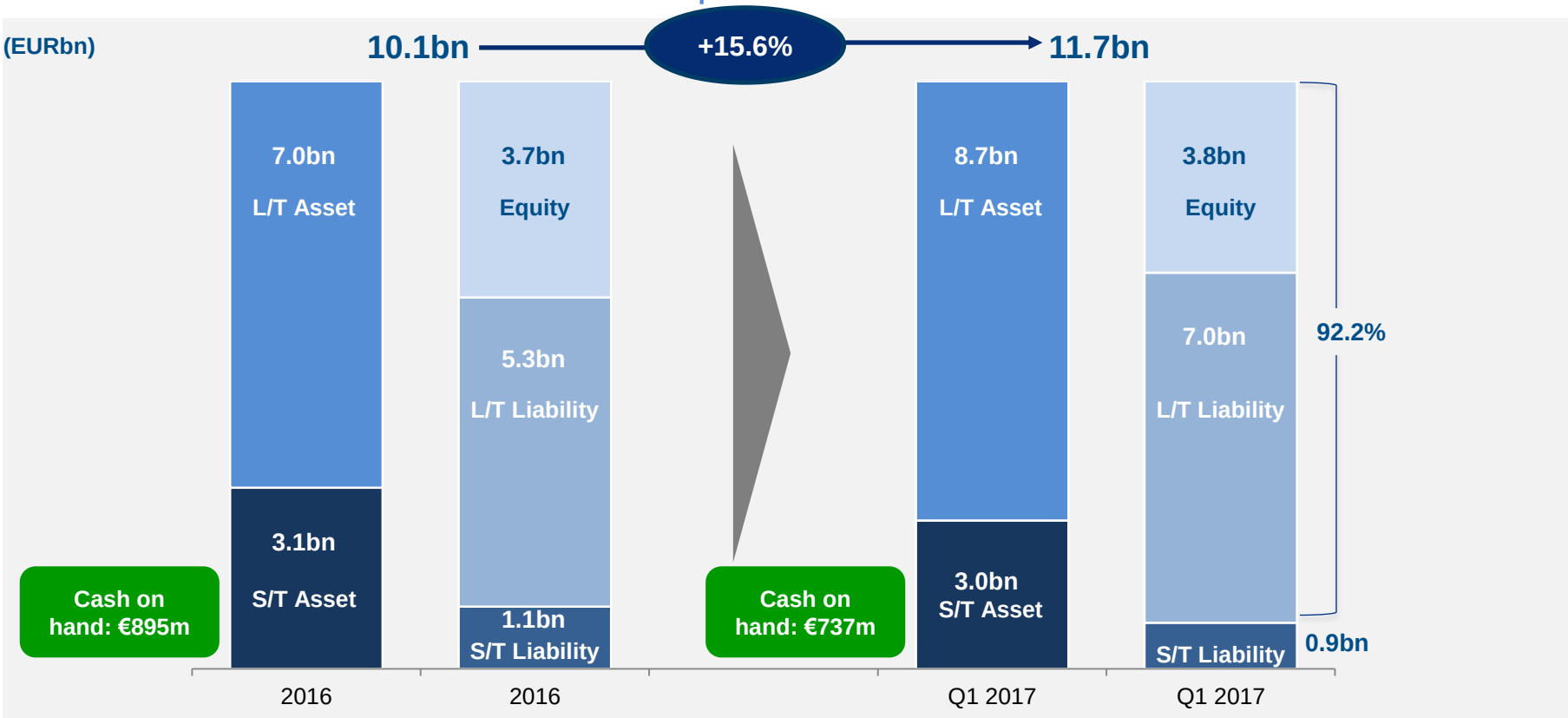
Enhancing the portfolio and securing future growth through acquisitions

INTERSTATE Blood Bank Inc	Singulex	Access Biologicals LLC	KEDPLASMA
United States	**United States**	**United States**	**United States**
May 2016	May 2016	January 2017	February 2017
Stake of 49% USD100m	Stake of 20% USD50m	Stake of 49% USD51m	6 plasma centers in the U.S. USD47m
One of the main private and independent plasma suppliers in the U.S. Currently one of Grifols' external plasma suppliers The acquisition enables to strengthen plasma sources	Highly sensitive technology applicable to both transfusion and specialty diagnostics Enable high-value assays using rare biomarkers	Manufacture of biological products, such as specific intravenous and plasma reagents, which are used by biotechnological and biopharmaceutical companies for in-vitro diagnosis, cell culture and research and development in the field of diagnosis	Grifols already runs the 6 plasma centers from March 1, 2017
3-year call option		5-year call option	

GRIFOLS

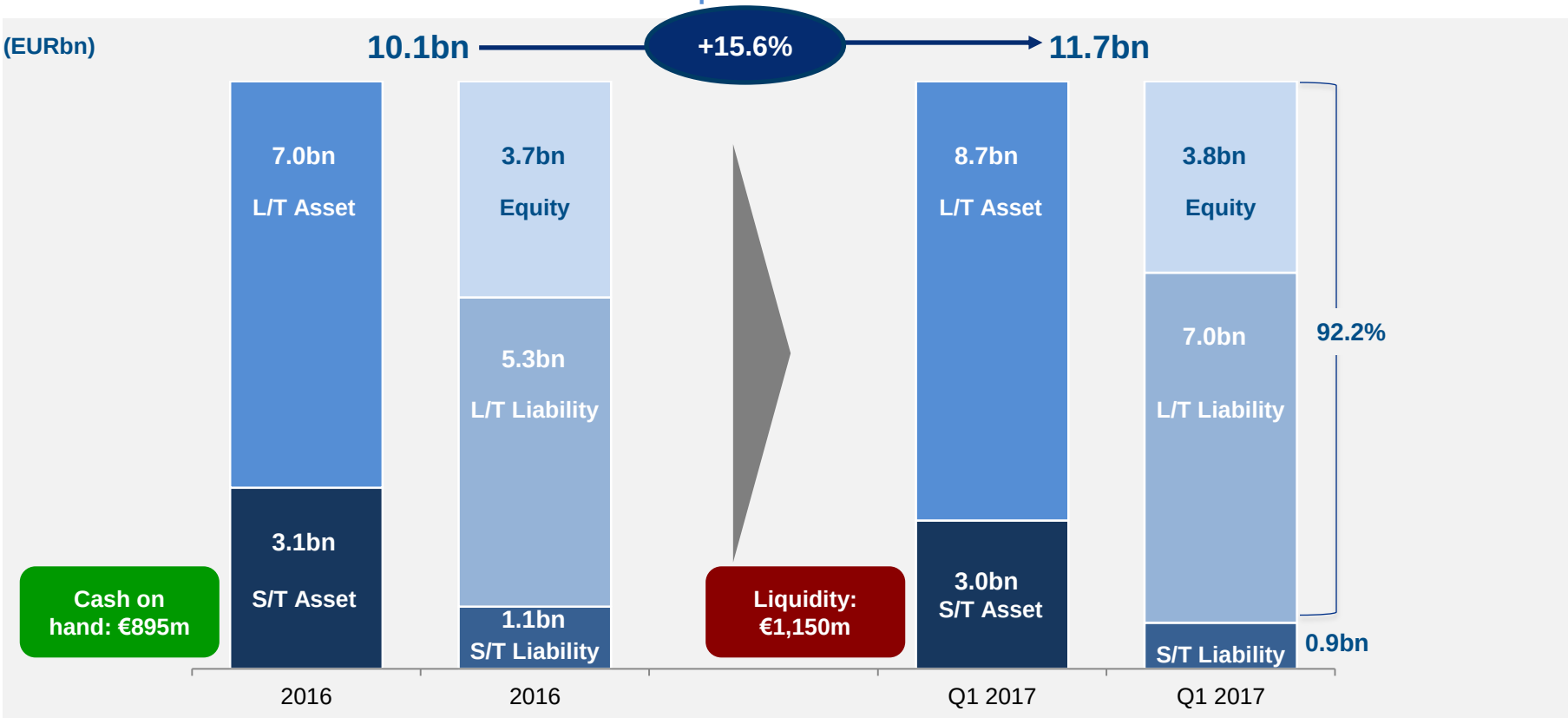
Grifols by the numbers: long-term growth trajectory

Solid Balance Sheet: Sound financial position



Grifols by the numbers: long-term growth trajectory

Solid Balance Sheet: Sound financial position



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NAT Acquisition
Capturing the value of integration

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Capturing the value of integration

The acquisition transforms Diagnostic into an integrated, high-margin business

Vertically integrated NAT business	• Creates a vertically integrated NAT business across R&D, manufacturing, sales & marketing and corporate functions • Captures operational efficiency across the whole value chain
Consolidated diagnostics platform	• Further consolidates diagnostics capabilities, combining NAT Blood Screening, Immunoassay Blood Donor Screening and Immunohematology businesses
Enhanced market leadership	• Enhances Grifols Diagnostic leadership position in the global diagnostics market, with an estimated c.60% share global blood donations
Significant margin expansion	• The transaction improves Diagnostic EBITDA margin from c.17% to c.40% and Grifols Group EBITDA margin by +350bps

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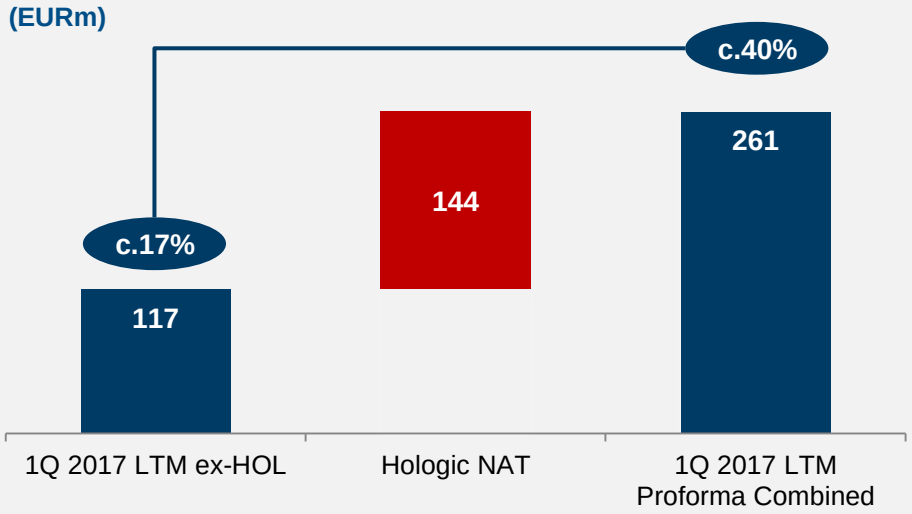
Capturing the value of integration

Significant increase in profitability

- This transaction is part of the growth strategy envisaged for the Diagnostic Division
- The acquisition enables Grifols to continue strengthening its leading position in transfusion medicine
- The integration of manufacturing and R&D capabilities makes a significant margin contribution
- The entire cash flow is transferred to Grifols

Diagnostic Adjusted EBITDA 1Q 2017 LTM Proforma Combined



GRIFOLS

Building value through debt refinancing

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Building value through debt refinancing

Leveraging our strength: targets achieved

USD7.3bn
Debt refinanced

TLA (USD3.0bn) RCF (USD0.3bn)	TLB (USD3.0bn)	HY Bond EUR 1.0bn
Margin: L+175bps	Margin: L+225bps	Coupon: 3.2%
Tenor: 6 years	Tenor: 8 years	Tenor: 8 years
Quasi-Bullet amortization	Bullet amortization	Bullet amortization

→ **Interest rate reduction[1,2]: c.-120bps**

→ **Financial expenses[1] annual reduction: c.EUR -80m**

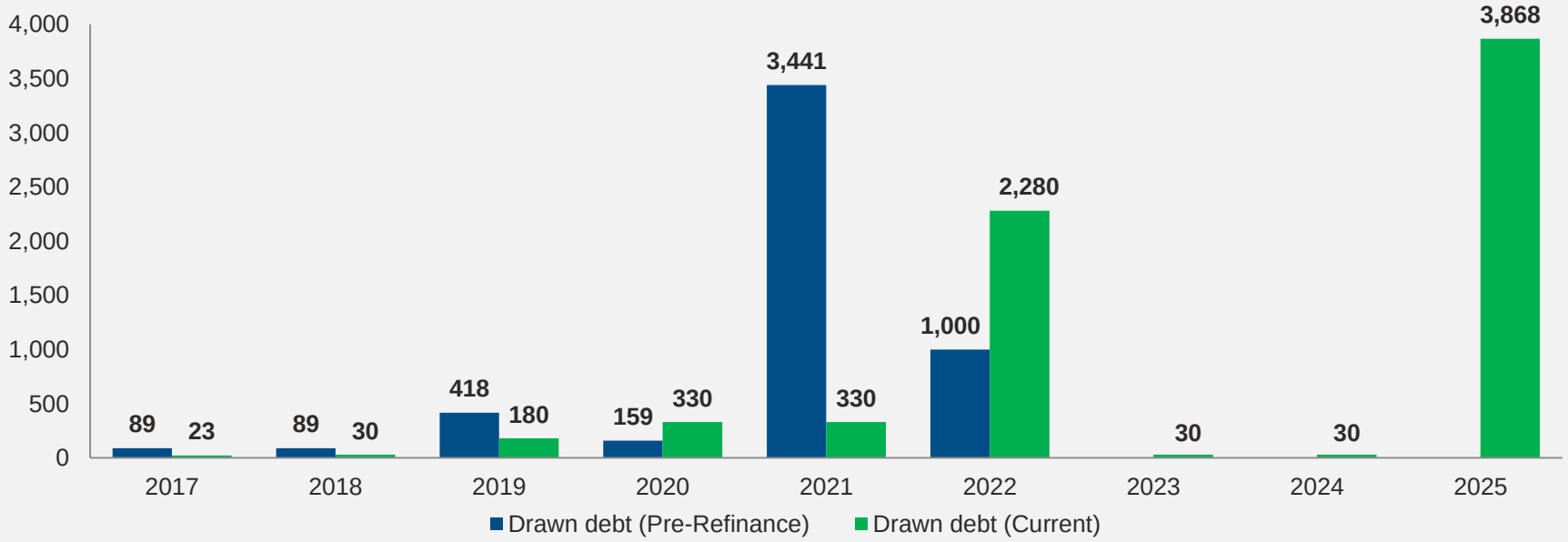
→ **Average Interest Cost lower than 3%**

Note: 1. Like-for-like
2. Weighted average annual interest rate reduction

GRIFOLS

Building value through debt refinancing

Debt(1) maturity profile c.7 years average tenor in USDm(2)



Note: 1. Excludes RCF and any other non-financial debt
2. Fixed USD/EUR exchange rate of 1.1

GRIFOLS

Enhanced growth and margin
Broad portfolio of opportunities

GRIFOLS

Enhanced growth and margin

Managing the business to achieve industry-leading returns

Bioscience	• Effectively drive organic growth through diagnosis and treatments • Accelerate market development in relevant global markets • Capacity leadership in plasma collection and manufacturing to maximize growth opportunities • Drive revenue growth through delivery of innovation of new plasma products and new formulations • Volume and scale driving costs improvements
Diagnostic	• Effectively drive growth and profitability across the value chain • Expand commercial reach through products and customers, geographies and distribution networks • Increase manufacturing capabilities • Enhance product portfolio to strengthen competitive edge and investment in new technologies with broad applicability • Leverage leadership position in the transfusion medicine space. Specialty diagnostics growth
Hospital	• Increase scale and profitability • Global expansion increasing presence in the U.S. market • Optimize current manufacturing capabilities • Timely innovation projects to support future division growth and value creation • Leverage existing business capabilities and product portfolios

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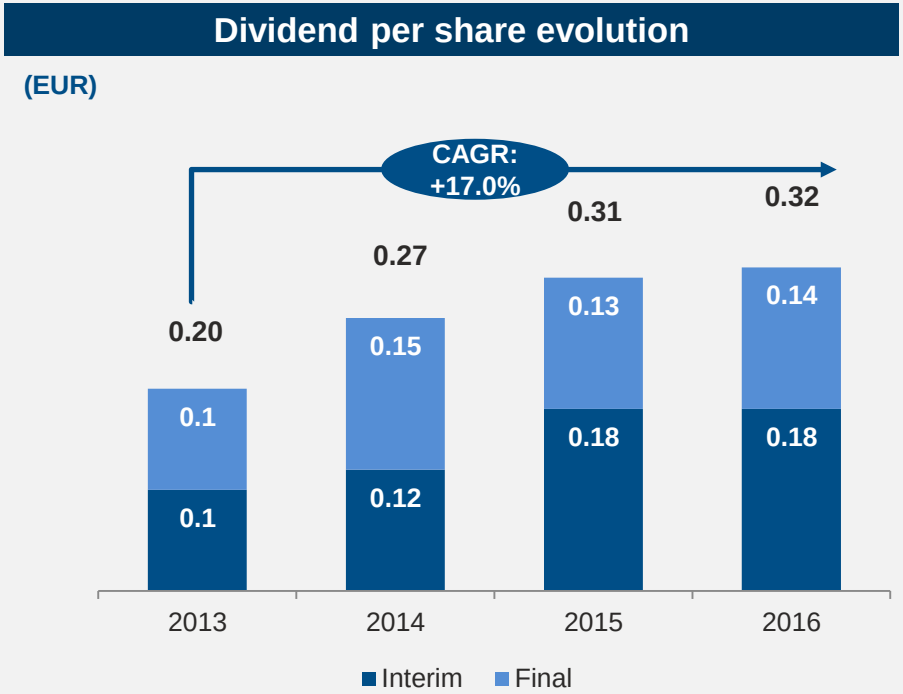
Return to shareholders

GRIFOLS

Return to shareholders

Sharing success with shareholders

- Accumulated annual dividend up 17.0% over the last 4 years
- Over EUR 660m returned to shareholders since 2011
- Pay-out ratio 40% of reported consolidated profits
- Continuous DPS increase on the back of profit growth



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Key takeaways
Creating long-term value

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Key takeaways

Creating long-term value

- Maintain long-term industry growth and returns
  - Global plasma industry has historically enjoyed significant and steady growth and is expected to experience further 6-7% annual sustainable growth
  - Strengthen market leadership in a high margin transfusion medicine industry
- NAT acquisition: capture value-chain benefits, leverage capabilities
- Refinancing process: long-term value creation
- Target profitable growth together with cash flow generation
- Financial policy and capital allocation well established, efficient, disciplined and focused
- Continued dividend distribution to create value through profitable growth

GRIFOLS

Strategy Update

Driving value creation through disciplined strategy execution

Víctor Grífols Deu

Co-CEO

GRIFOLS

PRIDE
SAFETY
EFFORT
COMMITMENT
EXCELLENCE
TEAMWORK
INNOVATION &
IMPROVEMENT

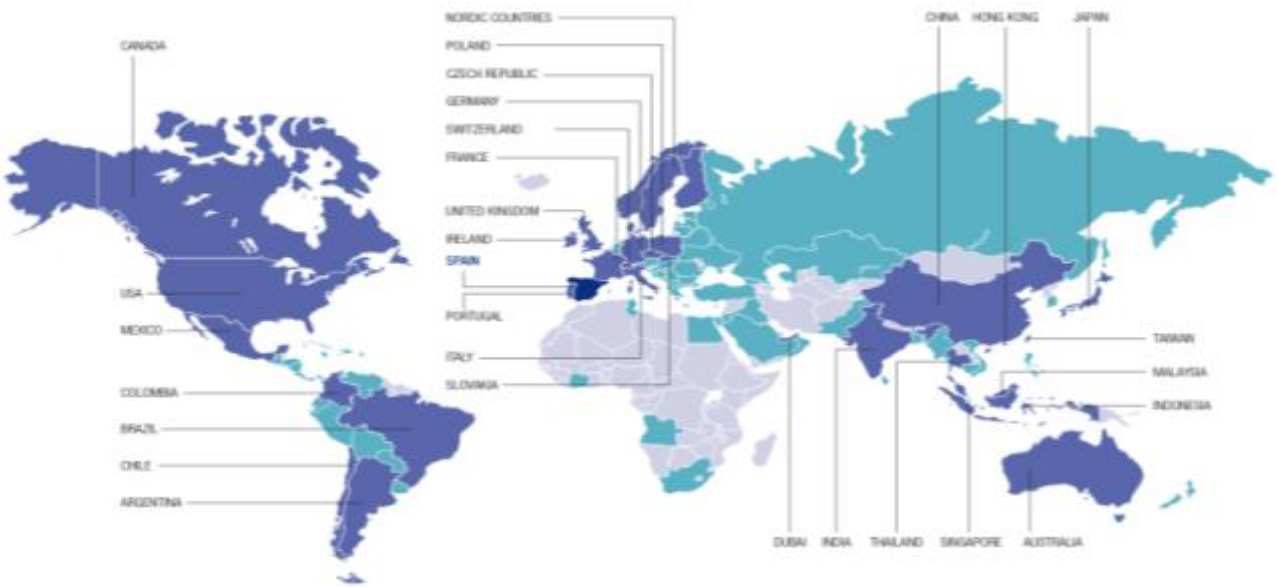
Grifols Mission

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

Our mission is to provide state-of-the-art therapies, products and services to our patients and customers around the world while delivering value to shareholders

GRIFOLS

Grifols in 2017: company profile and global footprint



Subsidiaries
Distribution
Future markets

New assets in San Diego, CA

Subsidiaries in 30+ countries

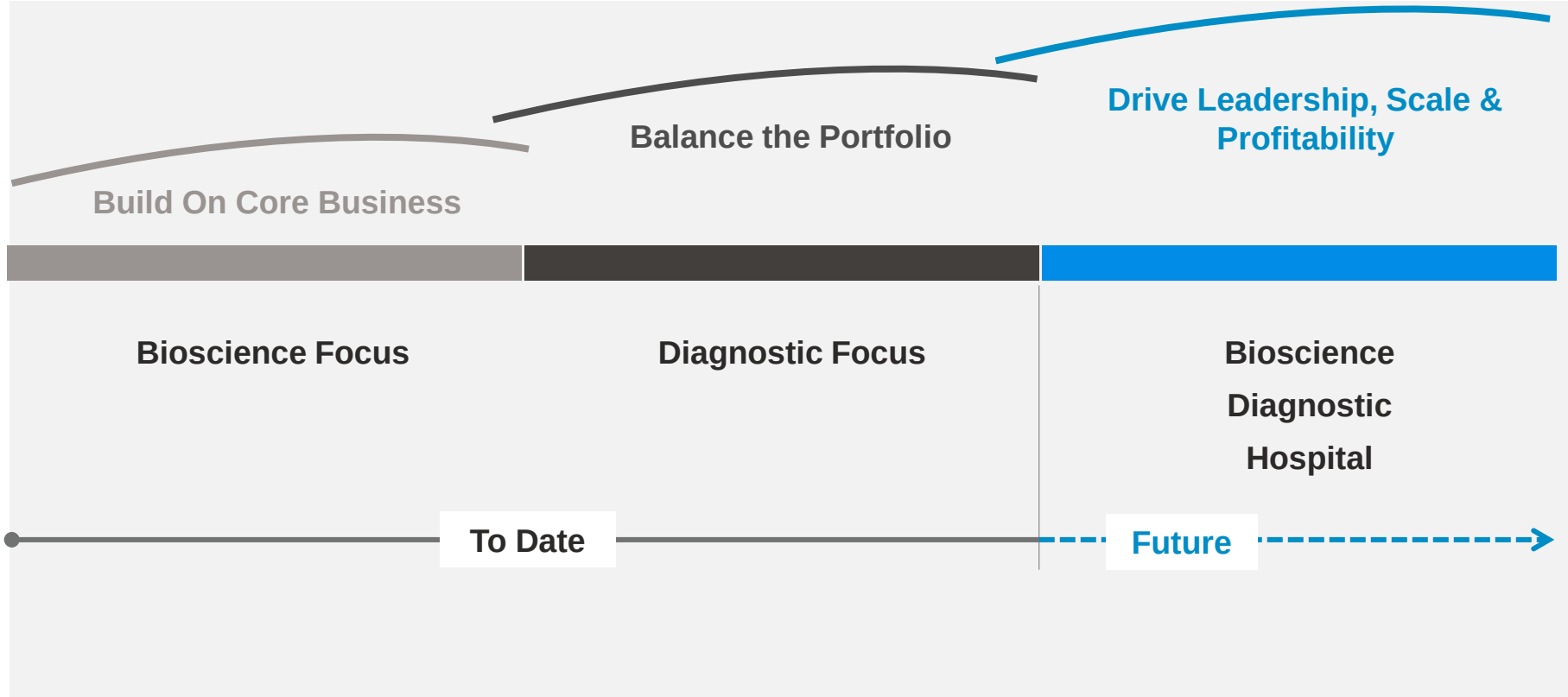
Distribution in 100+ countries

Manufacturing in 10 sites worldwide

Nearly 16,000 employees worldwide

GRIFOLS

Three growth horizons



GRIFOLS

Highlights of our focused and disciplined growth strategy to date

Core Business Optimization

Alpha and Talecris acquisitions

Biomat and other donor center acquisitions

Global market share leader for IVIG, alpha-1, albumin, pdFVIII

Yield improvements

Global Expansion

Commercial subsidiaries in over 30 countries

Distribution in over 100 countries

GWWO in Dublin

Expansion into Mid East and Asia growth markets

Capacity Leadership

180 plasma collection centers

13.9m liters fractionation capacity

Optimal flexibility for paste exchange

Antigen manufacturing expansion in Emeryville

Innovation Acceleration

GIANT and Office of Innovation

Alkahest, Araclon, … etc., partnerships

35+ academic collaborations

Grifols Engineering (ABO[1])…etc.

Multi-Business Build

Novartis Dx and Hologic NAT acquisitions

Access Biologicals acquisition

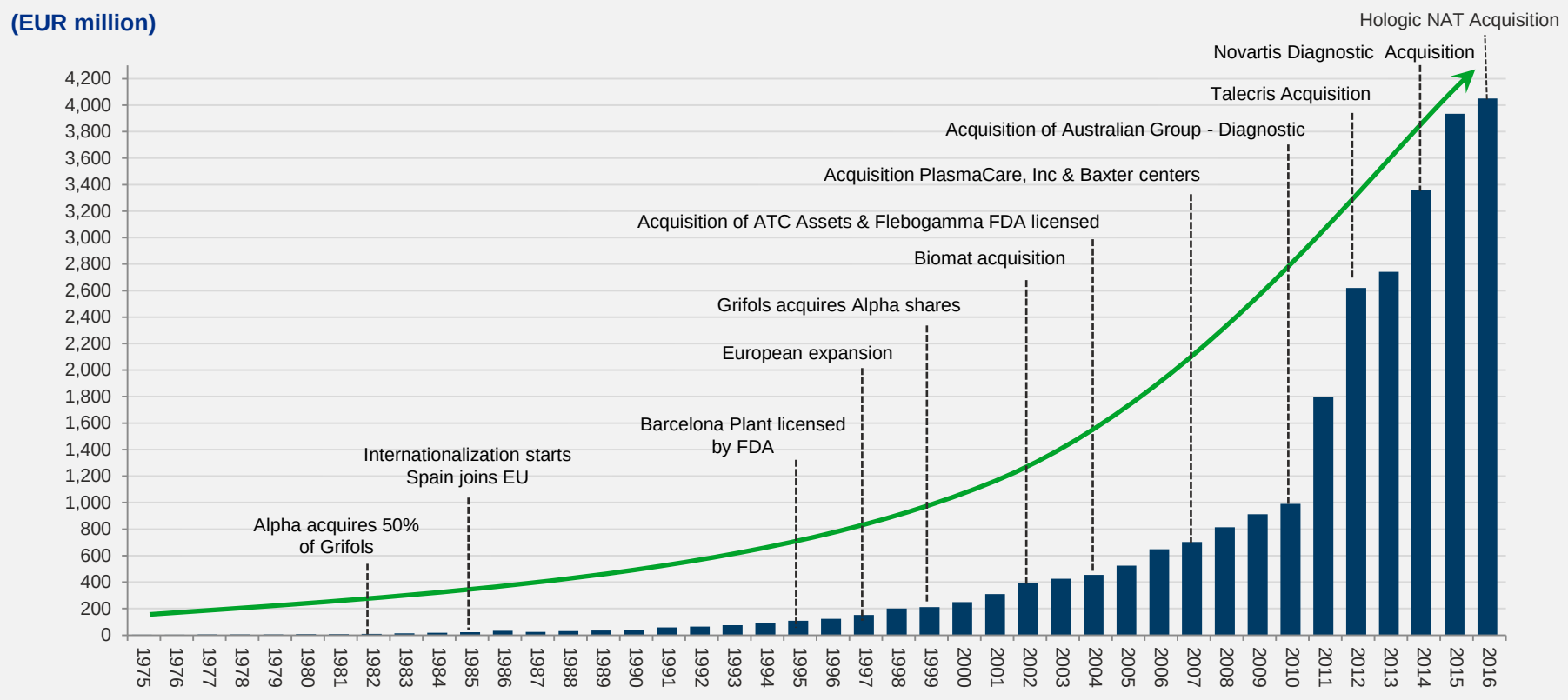
Kiro® Oncology Robot partnership and launch

Linhaliq bolt-on

Note: 1. ABO: Automated plasma Bottle Opener

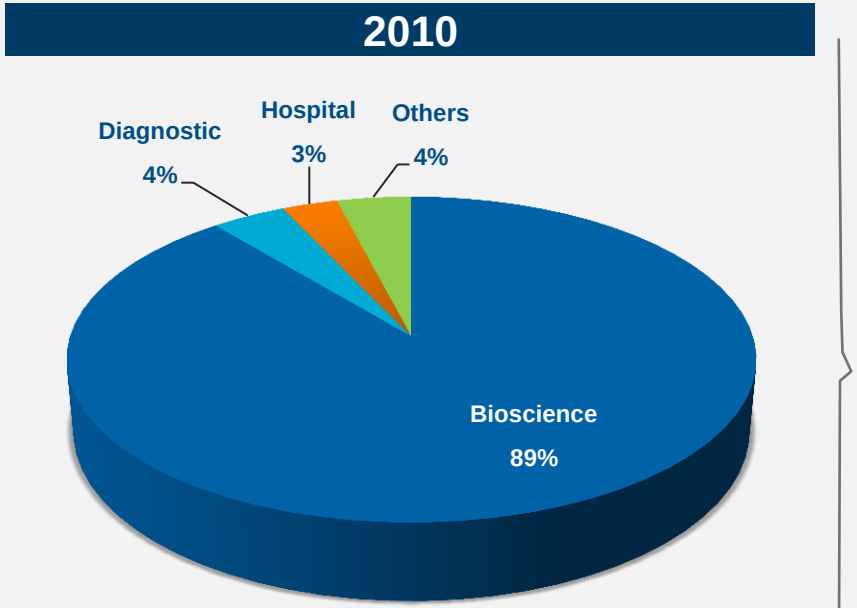
GRIFOLS

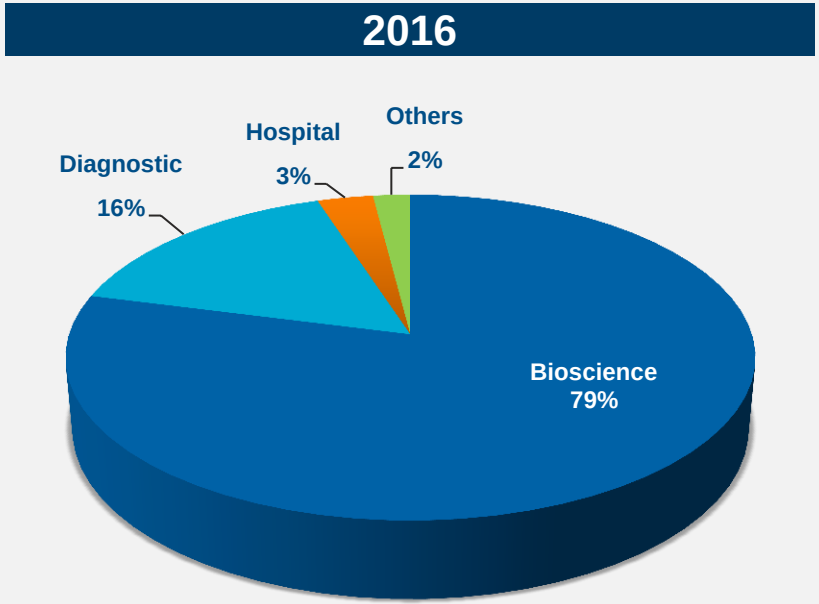
Results: top-line growth



GRIFOLS

Results: diversified revenue base





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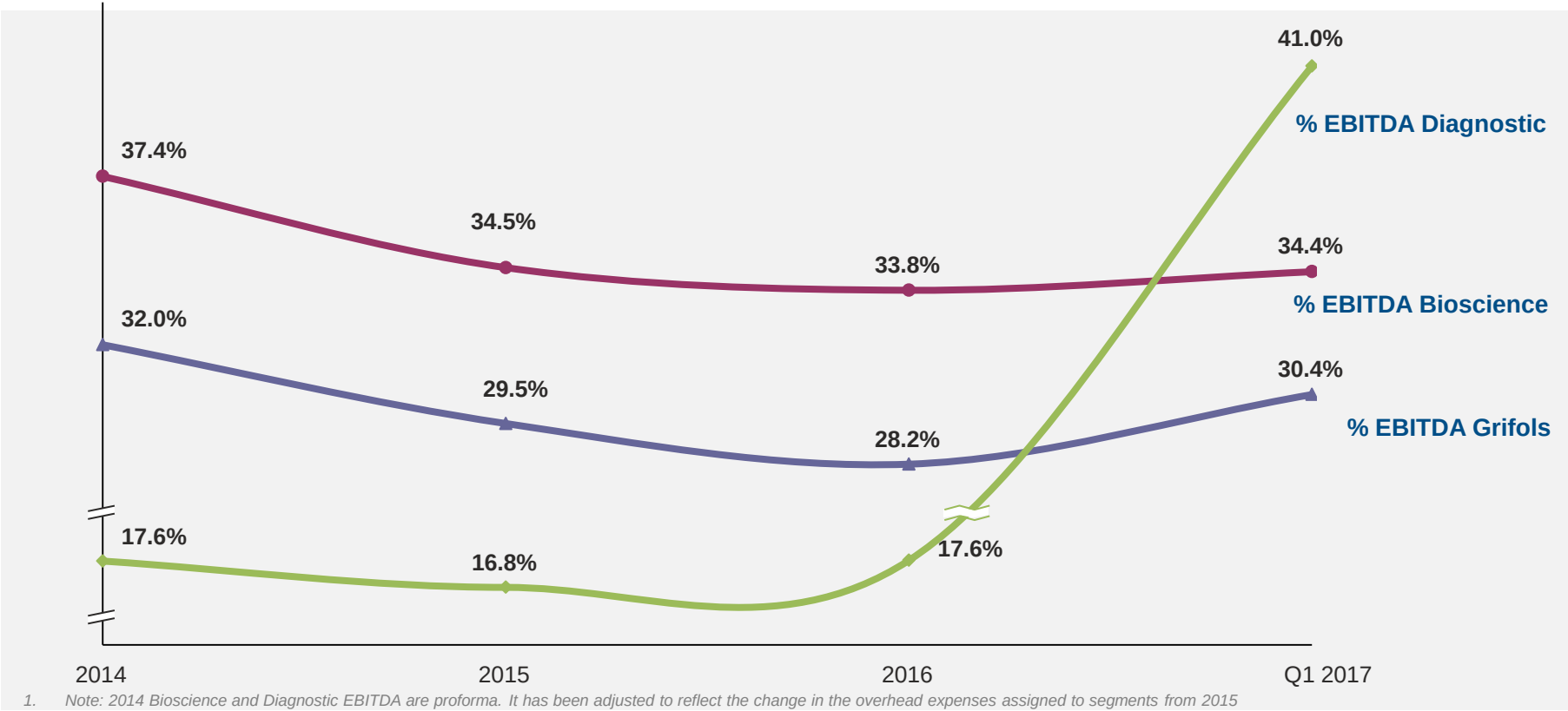
Results: profitability evolution

% Adjusted EBITDA



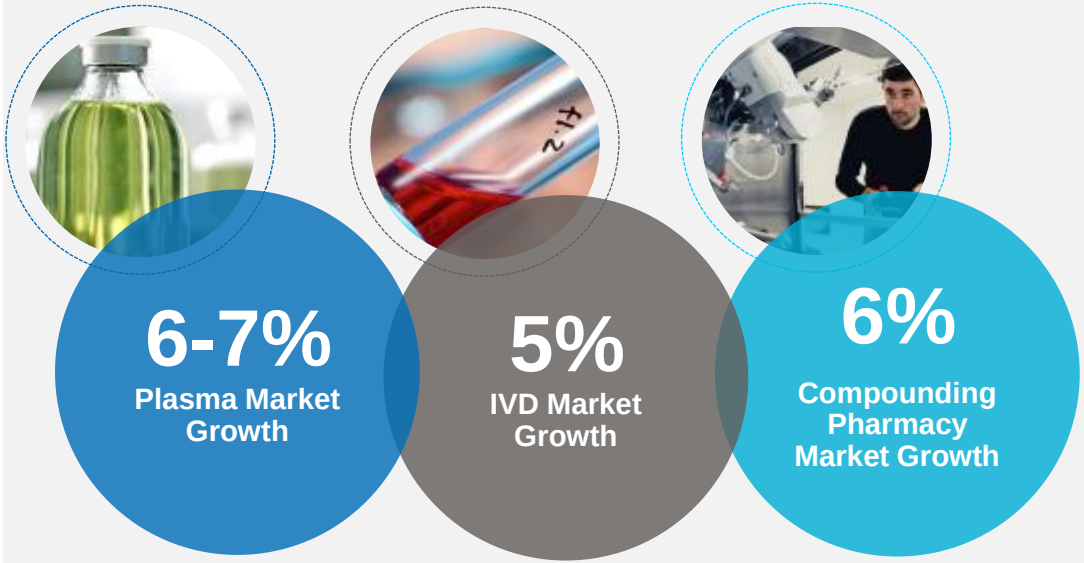
1. *Note: 2014 Bioscience and Diagnostic EBITDA are proforma. It has been adjusted to reflect the change in the overhead expenses assigned to segments from 2015*

GRIFOLS

Looking ahead

We are well positioned for the future

Operating in growth markets



Executing on these opportunities

- Capabilities, platforms and infrastructure to drive growth
- Vertically integrated businesses to manage margins and value chain
- FCF(1) to take advantage of opportunities that enhance shareholder value
- New leadership but unchanged philosophy, vision and strategy
- Track record of strategy execution with financial discipline

Note: 1. FCF: Free Cash flow

GRIFOLS

Focus going forward

Unlocking value for profitable growth across all businesses

BIOSCIENCE DIVISION

Continued leadership in the plasma therapeutics industry

DIAGNOSTICS DIVISION

Expanding an integrated, high margin, specialty business

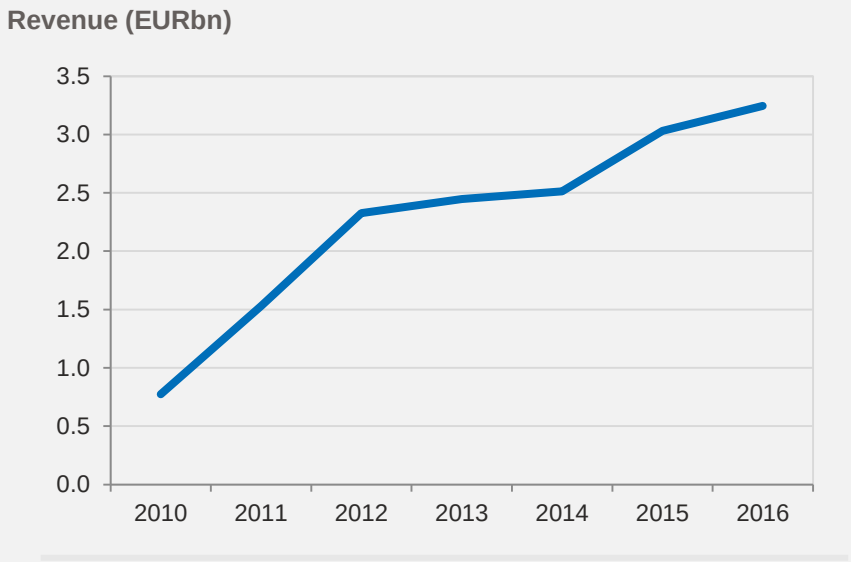
HOSPITAL DIVISION

Building a profitable niche leader with synergistic strength

GRIFOLS

Continued leadership in the plasma therapeutics industry

Grifols is the global market leader for 3 major proteins(1)



Sustained Bioscience revenue growth
18% global market share in 2016(1)

23% **Global market share for IVIG**
#1 position

68% **Global market share for Alpha-1**
#1 position

20% **Global market share for pdFVIII**
#1 position

17% **Global market share for Albumin**
#2 position

Note: 1. Source: Grifols internal provisional data, 2016

GRIFOLS

Continued leadership in the plasma therapeutics industry

Bioscience has a clear roadmap

Plasma protein therapeutics will continue to be at the core of our Bioscience Division strategy

	Drive organic growth through diagnosis and treatments bolstered by excellent supply/demand dynamics
	Drive geographic expansion in relevant global markets while balancing whole liter economics for margin protection
	Increase plasma collection and processing capabilities while controlling cost-per-unit evolution
	Lead the market in new products and indications (Alzheimer's), while investing in exploratory breakthroughs (Alkahest)
	• Expand and leverage current uses of plasma (Bio-supplies) • Execute on partnerships that expand our portfolio

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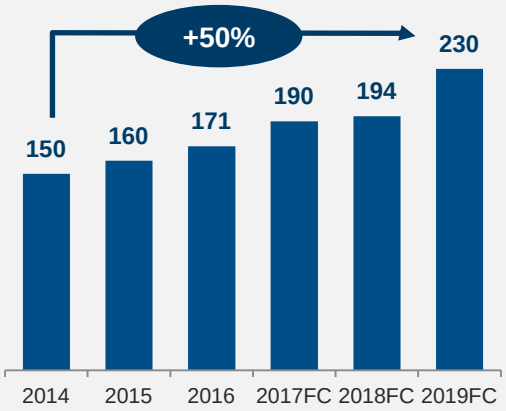
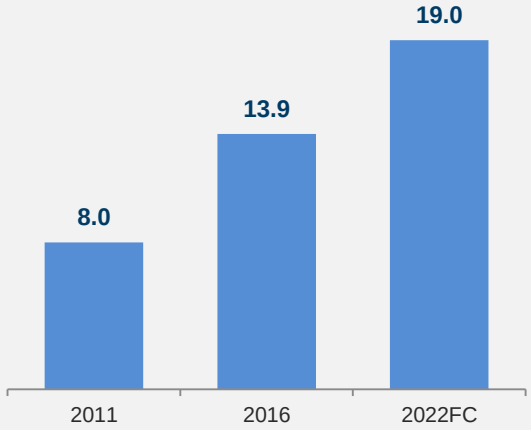
Continued leadership in the plasma therapeutics industry

The foundations of successful growth

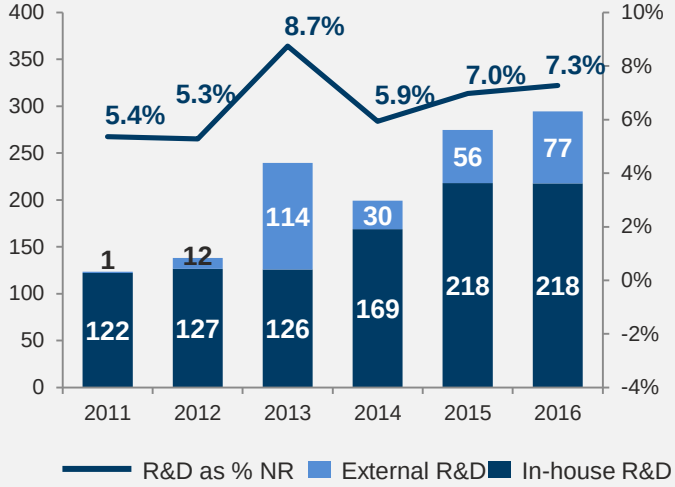
Donor center growth
(# of Centers)



Fractionation capacity growth
(m liters)



Innovation investment
(EURm)



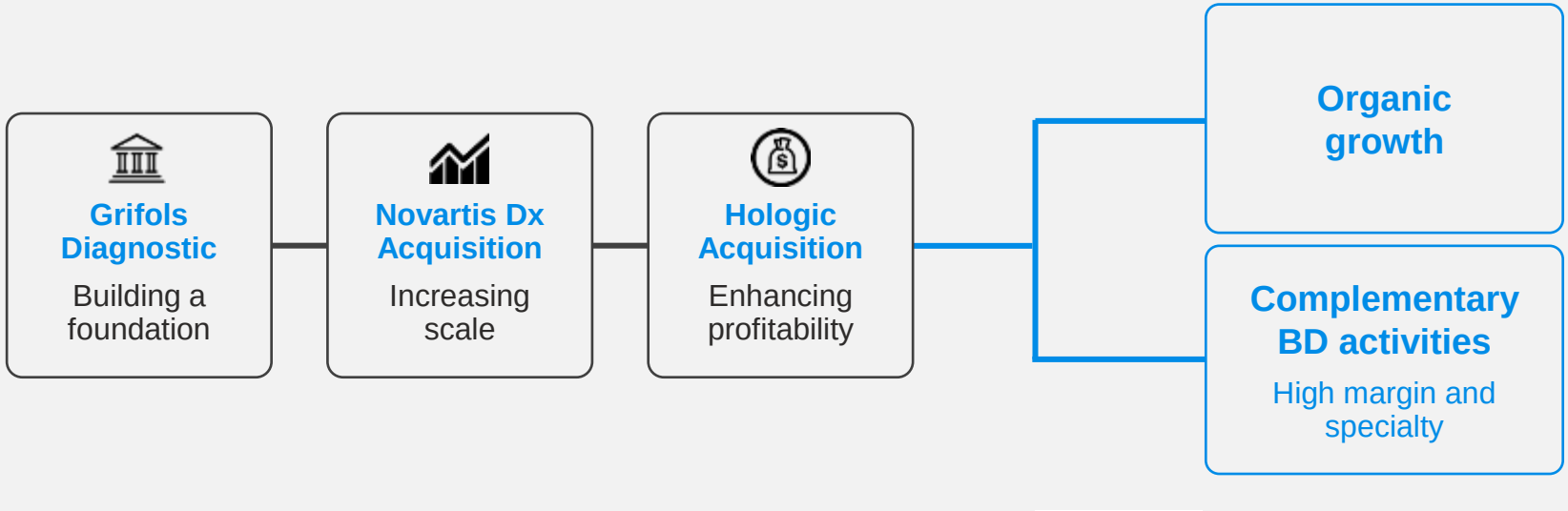
Plasma procurement and fractionation capacity expansions are aligned, on track and able to support dynamic growth

A consistent investment in innovation

GRIFOLS

Expanding an integrated, high-margin specialty business

Diagnostic is a fast evolving business



GRIFOLS

Expanding an integrated, high-margin specialty business

Diagnostic has a clear niche leadership roadmap

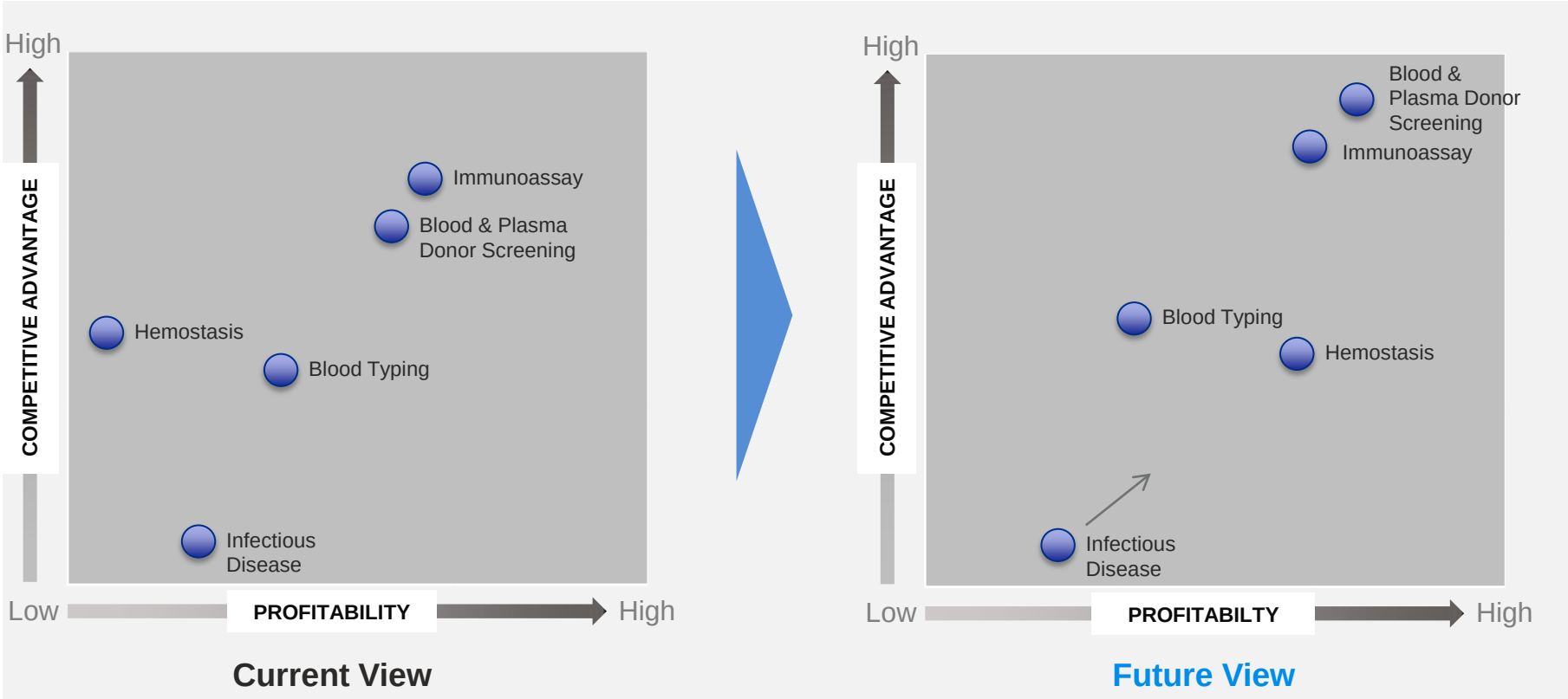
We will leverage our leadership in transfusion medicine to build a specialty Dx business - focused on niche markets

	Grow and harness the full profitability of our NAT blood screening business
	Profit from the broadest Blood Typing Solutions portfolio in the market
	Leverage recombinant protein expertise and capacity, further growing specialty diagnostics manufacturing (Project Horizon)
	Optimize investments in new platforms (Singulex technology) to develop high specialty products and enter new segments
	Complement organic growth with synergistic partnerships and business development

GRIFOLS

Expanding an integrated, high-margin specialty business

Diagnostic value creation path



GRIFOLS

Building a niche hospital leader with synergistic strengths

Hospital focus on core business development and profitable growth

Portfolio and Market Development

Develop our position in the U.S. hospital pharmacy market

Core Business

Strengthen and grow core business in Iberia/LATAM

i.v.TOOLS

Hospital pharmacy market drivers align with Grifols strengths

GRIFOLS

Building a niche hospital leader with synergistic strengths

Hospital has a clear niche leadership roadmap

Integrated, "smart" hospital pharmacy solutions will drive our Hospital Division strategy

	Rebalance portfolio and refocus on profitability
	Accelerate U.S. expansion with IV solutions and KIRO through organic and BD strategies
	Leverage highly automated facilities for LVPs for low unit cost and adaptability to profit from market conditions
	Leverage sterile compounding expertise and products to develop new software applications and next generation enhancements
	Explore opportunities to build portfolio through BD activities and leverage capabilities for Bioscience

GRIFOLS

Key takeaways
Driving value creation through disciplined strategy execution

GRIFOLS

Key takeaways

Driving value creation through disciplined strategy execution

Core Business Optimization

Plasma therapeutics as the core business - now and tomorrow

Global Expansion

Profitable growth and expansion organically and through BD

Capacity Leadership

A foundation for leadership and profitable, multi-business growth

Innovation Acceleration

Innovation from all businesses as a focus and priority

Multi-Business Build

Diagnostic a profitable growth engine and Hospital an emerging business with opportunities

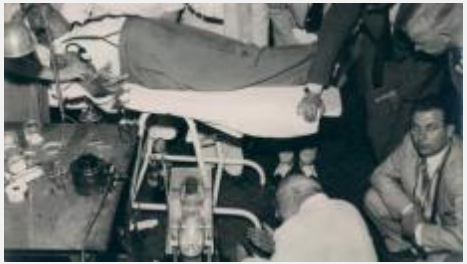
Drive sales growth and manage EBITDA margins

GRIFOLS

The future

Building on over 75 years of leadership, innovation and commitment to patients

Our recent leadership succession ensures that our mission, vision and priorities remain unchanged



This commitment and consistent approach to strategy formulation and execution will continue to deliver profitable growth and drive value creation

GRIFOLS

Investors' & Analysts' Meeting 2017

Emeryville (California, USA)
June 7th and 8th, 2017

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