



Investor and Analyst Meeting

North Carolina
June 5-6, 2019

GRIFOLS

Disclaimer

This document has been prepared by GRIFOLS, S.A. (GRIFOLS or the “Company”) exclusively for use during the Investor Day Presentation dated June 5-6, 2019. Therefore it cannot be disclosed or made public by any person or entity with an aim other than the one expressed above, without the prior written consent of the Company. The Company does not assume any liability for the content of this document if used for different purposes thereof. The information and any opinions or statements made in this document have neither been verified by independent third parties nor audited; therefore no express or implied warranty is made as to the impartiality, accuracy, completeness or correctness of the information or the opinions or statements expressed herein. Neither the Company, its subsidiaries nor any entity within the GRIFOLS group or any subsidiaries, the company’s advisors or representatives assume liability of any kind, whether for negligence or any other reason, for any damage or loss arising from any use of this document or its contents. Neither this document nor any part of it constitutes a contract, nor may it be used for incorporation into or construction of any contract or agreement.

IMPORTANT INFORMATION

This document does not constitute an offer or invitation to purchase or subscribe shares, in accordance with the provisions of the Spanish Securities Market Law (Royal Legislative Decree 4/2015, of 23 October, as amended and restated from time to time), Royal Decree 1310/2005, of November 4, and its implementing regulations. In addition, this document does not constitute an offer of purchase, sale or exchange, nor a request for an offer of purchase, sale or exchange of securities, nor a request for any vote or approval in any other jurisdiction.

FORWARD-LOOKING STATEMENTS

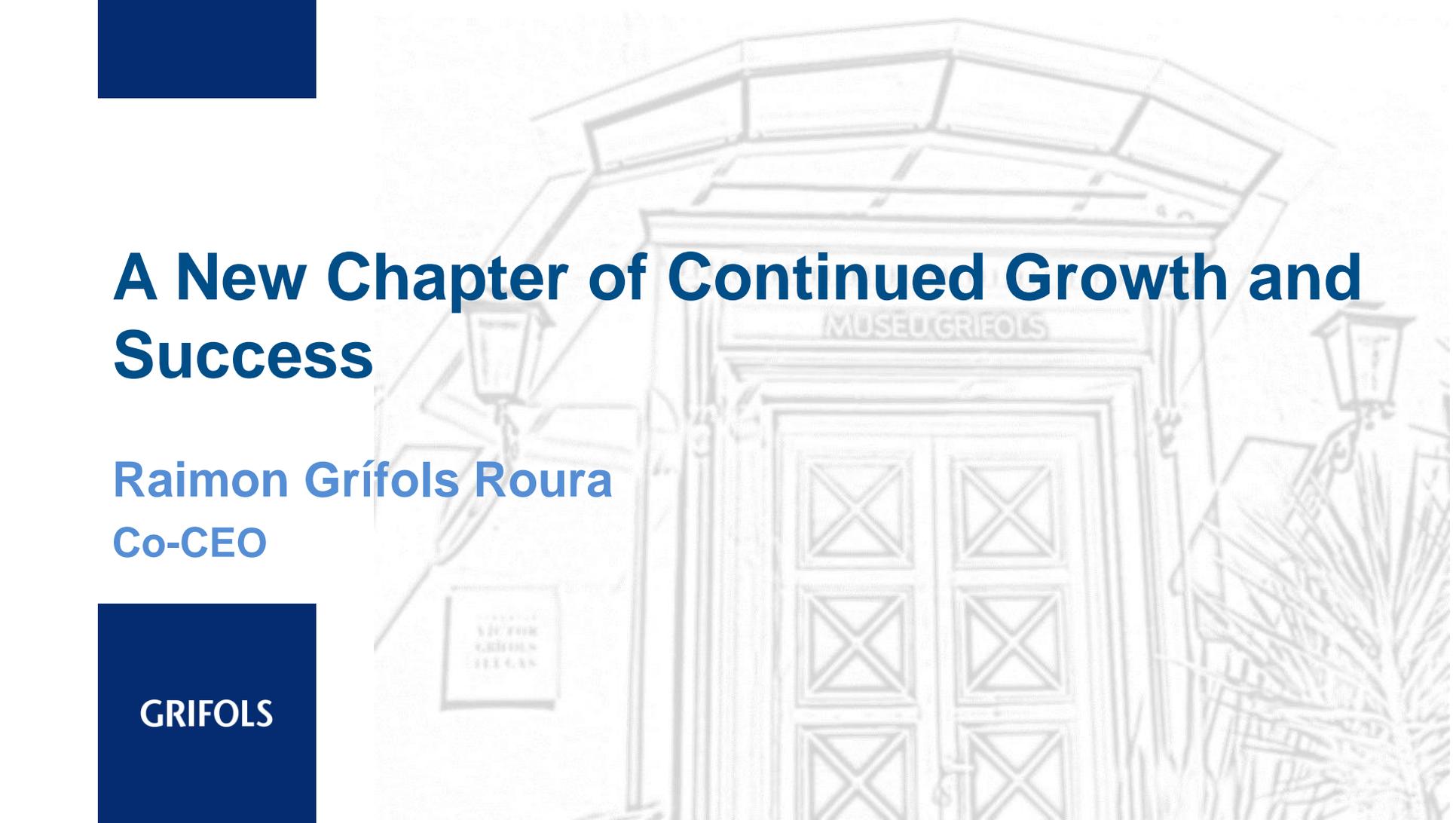
This document contains forward-looking information and statements about GRIFOLS based on current assumptions and forecast made by GRIFOLS management, including proforma figures, estimates and their underlying assumptions, statements regarding plans, objectives and expectations with respect to capital 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.

Investor and Analyst Meeting

June 5-6, 2019

June 5 – Clayton, NC		June 5 – Clayton, NC		June 6 – Raleigh, NC	
7:30	<i>Pick-up from recommended hotels</i>	2:00-2:45	Novel Plasma Therapies Development <i>T. Willis</i>	7:30	<i>Pick-up from recommended hotels</i>
8:30-9:00	<i>Registration and welcome</i>	2:45-3:30	AMBAR: Grifols' Alzheimer Trial <i>A. Paez</i>	8:30-9:30	R&D Tour
9:00-9:30	Introduction <i>R. Grífols</i>	3:30-4:00	<i>Break</i>	9:30-10:15	China: Facing the Opportunity <i>A. Martinez</i>
9:30-11:30	Commercial Strategies <i>L. Morgan/J. Abelson/ C. Schroeder/R. Jagt</i>	4:00-4:30	Q&A	10:15-10:45	Digital Innovation <i>X. Sueiras</i>
11:30-12:00	<i>Break</i>	4:30-5:00	Tour Introductions	10:45-11:15	<i>Break</i>
12:00-1:00	Industrial Capacity and Plasma Capabilities <i>P. Allen/E. Herrero/D. Fleta</i>	5:00-6:30	Site Tour: New Fractionation Building and Ebola plant	11:15-12:00	Financials <i>A. Arroyo</i>
1:00-2:00	<i>Lunch</i>	7:00	<i>Dinner</i>	12:00-12:30	Grifols: A Socially Responsible Company <i>T. Rione</i>
		10:00	<i>Back to recommended hotels</i>	12:30-12:45	Closing <i>V. Grífols Deu</i>
				12:45-1:15	Q&A
				1:15	<i>Lunch</i>



A New Chapter of Continued Growth and Success

Raimon Grífols Roura
Co-CEO

GRIFOLS

A New Chapter of Continued Growth and Success

OVER THE PAST TWO YEARS, EVERY DECISION HAS BEEN A BUILDING BLOCK THAT HAS PAVED OUR WAY INTO THE FUTURE...



Organization



Talent



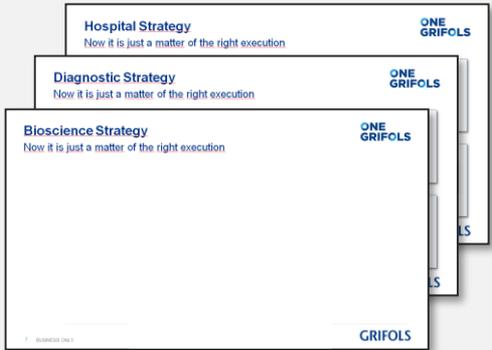
Business



Business expansion

...WE BELIEVE EVERYTHING IS NOW IN PLACE, NOW IS A MATTER OF RIGHT EXECUTION...

Key priorities moving forward



...TO ENSURE OUR CONTINUED GROWTH & SUCCESS

Corporate Focus areas



A New Chapter of Continued Growth and Success

Past Two Years

OVER THE PAST TWO YEARS, EVERY DECISION HAS BEEN A BUILDING BLOCK THAT HAS PAVED OUR WAY INTO THE FUTURE...



Organization



Talent



Business



Business expansion

Grifols Today

Over the Past Two Years, Every Decision We Made Has Been a Building Block Paving our Way into the Future



ORGANIZATION

- **Governance**
 - MB/EC
 - Strategy Board
- **Corporate Functions**
 - Strategy Office
 - Innovation Office
- **Divisions:** Bio Supplies
- **Communication** Department
- **Data Protection** Office



TALENT

- **+7,000 new employees**
- Executed a **successful succession plan** coupled with selected external hiring
- **Leadership Day**
- Enhanced **compensations & benefits** plans
- **Work-life balance** measures
- Doubled down **training & development**

Grifols Today

Over the Past Two Years, Every Decision We Made Has Been a Building Block Paving our Way into the Future

	 BUSINESS	 BUSINESS EXPANSION
Bioscience	<ul style="list-style-type: none"> • Expansion and Diversification of Plasma Sources • Strengthen Industrial Bioscience operations • Albumin franchise 	<ul style="list-style-type: none"> • Alpha-1 Liquid • Fibrin Sealant / Thrombin • Alpha-1 genetic test • AMBAR Results • Albumin in liver disease • Haema • Biotest • First EBOLA lot (dec'18) • GigaGen • Alkahest
Diagnostic	<ul style="list-style-type: none"> • Acquisition of Hologic to gain control over the value chain 	<ul style="list-style-type: none"> • Hologic • Singulex • Brasil Plant end construction • Eflexis
Hospital	<ul style="list-style-type: none"> • Execute US focus • IV & Anticoagulant (U.S.) 	<ul style="list-style-type: none"> • MedKeeper • Kiro • InklusIV
Across-the-Board	<ul style="list-style-type: none"> • One Grifols • Continued CAPEX Investments • Bio Supplies establishment 	<ul style="list-style-type: none"> • Refinancing \$6.3B and several BEI financings • Shanghai RAAS • Access Biologicals* • Vilajuiga

**Part of Bio Supplies*

Our Future

Everything Is or Soon Will Be in Place

Across

- **People & talent**
- **One Grifols**
- **China (*Shanghai RAAS*)**

Bioscience

- **Plasma availability**
- **AMBAR**
- **Innovation**
- **New manufacturing plants**

Diagnostic

- **Wide product portfolio**
- **Leadership position**
- **Vertical integration**
- **New manufacturing plants**

Hospital

- **Expanding product portfolio of **compounding control** solutions: InklusIV**

Now is just a matter of the right execution

A New Chapter of Continued Growth and Success

Our Future, a Matter of Having the Right Execution

OVER THE PAST TWO YEARS, EVERY DECISION HAS BEEN A BUILDING BLOCK THAT HAS PAVED OUR WAY INTO THE FUTURE...



Organization



Talent



Business



Business expansion

...WE BELIEVE EVERYTHING IS NOW IN PLACE, NOW IS A MATTER OF RIGHT EXECUTION...

Key priorities moving forward

Hospital Strategy
Now it is just a matter of the right execution

Diagnostic Strategy
Now it is just a matter of the right execution

Bioscience Strategy
Now it is just a matter of the right execution

...TO ENSURE OUR CONTINUED GROWTH & SUCCESS

Corporate Focus areas

Corporate Strategy
There are a set of focus areas in which we need to focus moving forward

- One Grifols:** Operate as one company and leverage on capabilities to unlock synergies
- Business Optimization:** Identify inefficiencies to improve productivity and optimize value
- Innovation Performance:** Leverage technological advancements to deliver innovative solutions and transformational breakthrough
- Customer Centricity:** Enhance organization value based on meeting and exceeding customer needs to build sustainable competitive advantage
- Digital:** Build digital capabilities to deliver better outcomes, explore new areas to play in and identify new sources of value
- Talent:** Ensure that we have the right talent in the right roles and develop our people to strengthen and expand competencies

Corporate Strategy

There Are a Set of Focus Areas in Which We Need to Focus Moving Forward

Focus areas



One Grifols

Operate as **one company** and leverage on capabilities to **unlock synergies**



Business Optimization

Identify inefficiencies to **improve productivity and optimize value**



Innovation Performance

Leverage technological advancements to **deliver innovative solutions and transformational breakthroughs**



Customer Centricity

Enhance organization wide focus on meeting and exceeding customer needs to build sustainable, **competitive advantage**



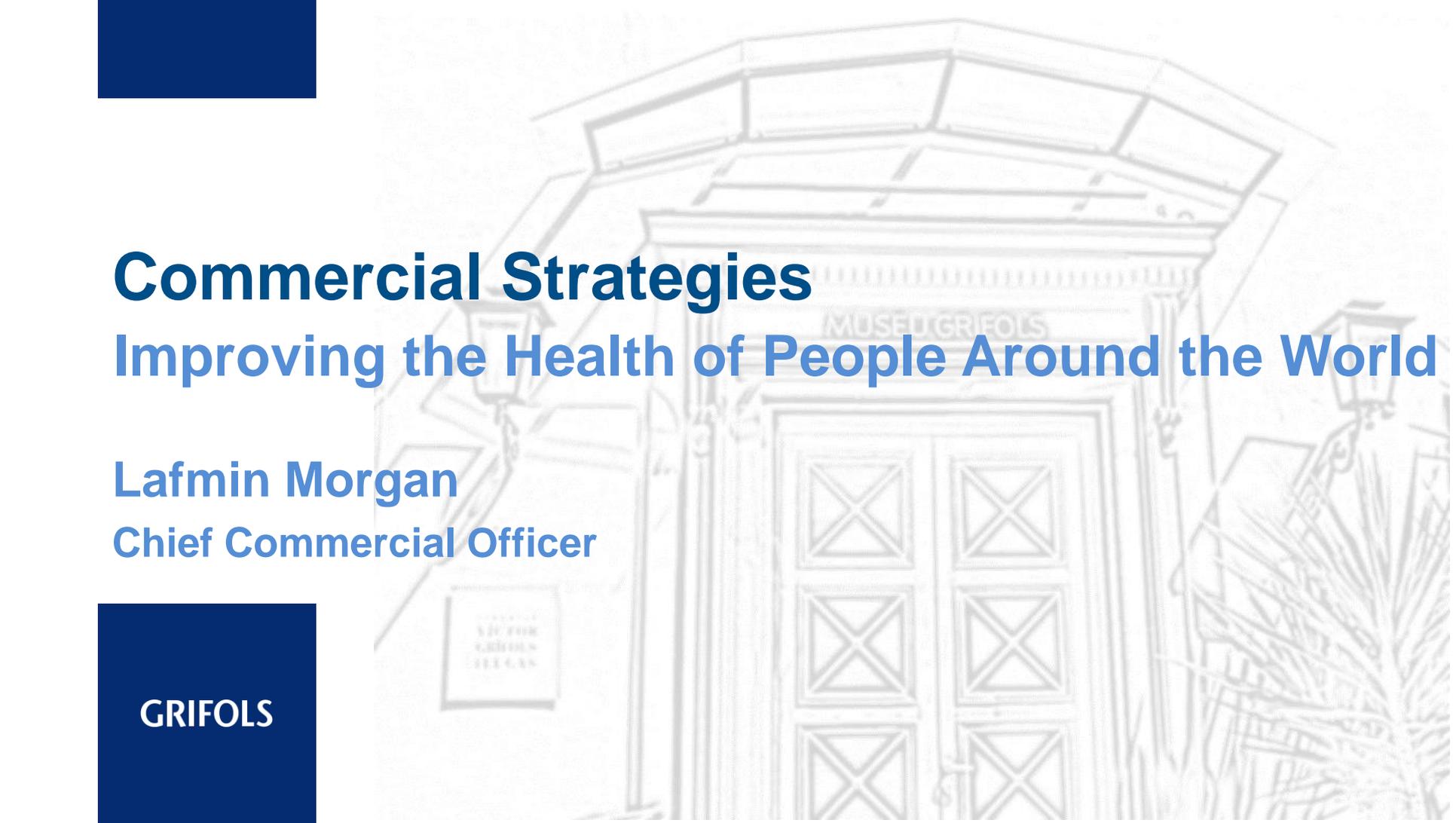
Digital

Build **digital capabilities to deliver better outcomes**, explore new areas to play in and identify new sources of value



Talent

Ensure that we have the **right talent** in the **right roles** and **develop our people** to strengthen and expand competencies



Commercial Strategies

Improving the Health of People Around the World

Lafmin Morgan
Chief Commercial Officer

GRIFOLS

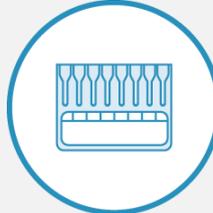
Grifols Today

Global Presence With a Diversified Revenue Base

Leading Position in Bioscience with a Growing Position in Diagnostic, Hospital and BioSupplies



A leading producer of essential plasma-derived therapies worldwide



A leader in transfusion medicine from donation to transfusion



Advanced pharmacy specialty products for hospital use



Promotes biological products for non-therapeutic use

Headquartered in Barcelona with more than 22,000 employees in 30 countries

Achieving Lasting Customer Success

Grifols Commercial Is Achieving Lasting Success

Leadership and Successful Track Record

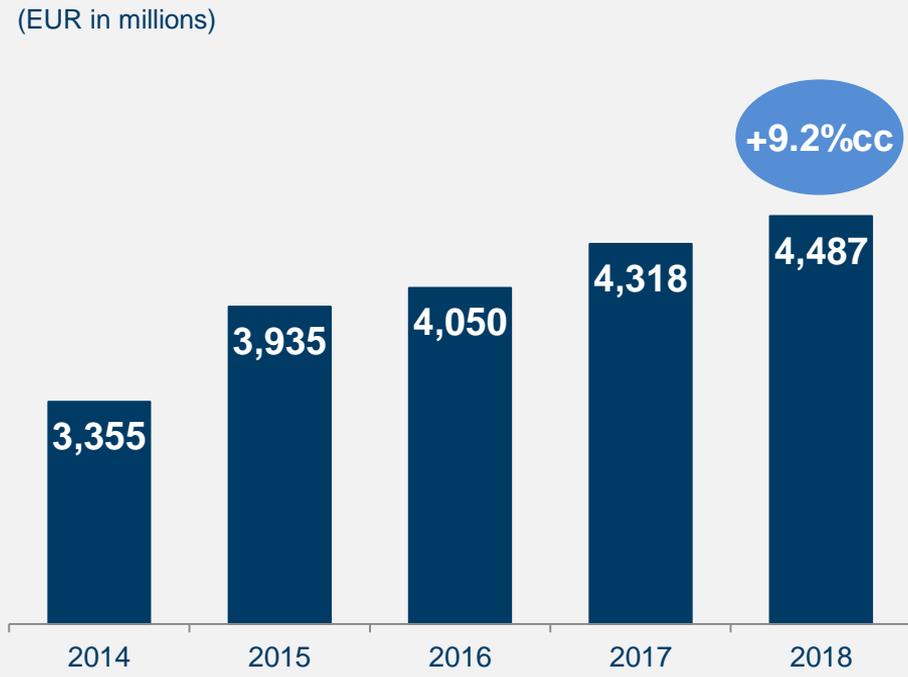
- Talented team with proven ability to execute and overcome obstacles
- Strong market fundamentals across business lines
- Long-term benefit accruing from One Grifols customer focus
- Planned launches building on strong foundation for future growth
- Continued growth through geographical expansion

Successful Track Record

Demonstrated Ability to Successfully Build on Growth

Grifols has generated growth by offering timely, relevant solutions to customers

- Expanding our customer base
- Increasing customer trial
- Retaining existing customers
- Introducing new innovative products and solutions



Immunoglobulins | Patient Growth Fuels Expansion

Growth is Consistent Across Therapeutic Uses and Geographies

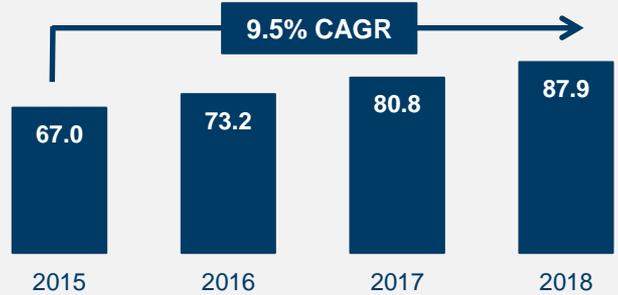
Growing Awareness, Diagnosis & Treatment

Therapeutic uses showing the highest U.S. IG volume growth were driven by:

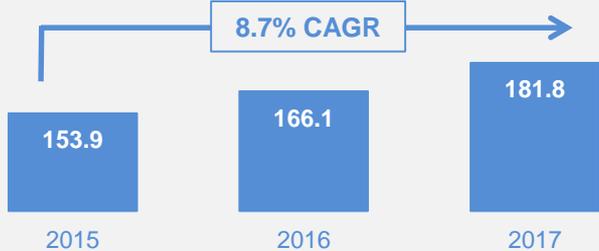
- **PIDD:** Expanding awareness & discovery of new sub-indications
- **CIDP:** Increased diagnosis rates & preference for IG as a first-line therapy
- **SID:** Expanding immune-modulator use in hematology-oncology patients

Source: U.S. PPTA Distribution Data & Data on File
PIDD: Primary Immune Deficiency Disorder
CIDP: Chronic Inflammatory Demyelinating Polyneuropathy
SID: Secondary Immune Deficiency (not an FDA approved indication in the U.S.)

Total U.S. Volume of IG (grams, M)



Total U.S. Patients on IG ('000)



Immunoglobulins | CIDP Indication

Opportunity to Improve Dosing

Results: 72% of CIDP patients received fewer grams than recommended as per the ICE trial. On average, CIDP patients receive 45% of the grams recommended (587.9/1,300 grams)

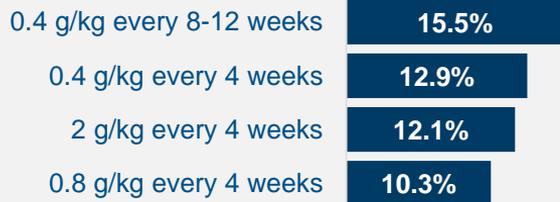


■ Prescribed FEWER g than ICE trial ■ Prescribed per ICE trial ■ Prescribed MORE g than ICE trial

Actual vs. Ideal IG Prescribing for CIDP Patients

CIDP	Mean IVIG Total Dose Per Patient /Year
Actual Dosing	587.9
Ideal Dosing per ICE Trial	1,300
Proportion of Ideal Dose	45%

Most Common Maintenance IVIG Dosing Regimens



Source: ICE trial: [https://www.thelancet.com/journals/lanneur/article/PIIS1474-4422\(07\)70329-0/fulltext](https://www.thelancet.com/journals/lanneur/article/PIIS1474-4422(07)70329-0/fulltext)

Alpha-1 | Making a Significant Change in the Course of a Serious Disease

Improving Health Also Represents a Significant Opportunity



8.3
years

Average interval between onset of pulmonary **symptoms and diagnosis**



2.7
physicians

Average number of physicians seen by patients before diagnosis

The longer AAT deficiency remains undiagnosed, the greater the risk for irreparable lung damage

Source: Campos et al., Trends in the Diagnosis of Symptomatic Patients With AATD Between 1968 and 2003, Chest, 2006

Alpha-1 | Making a Significant Change in the Course of a Serious Disease

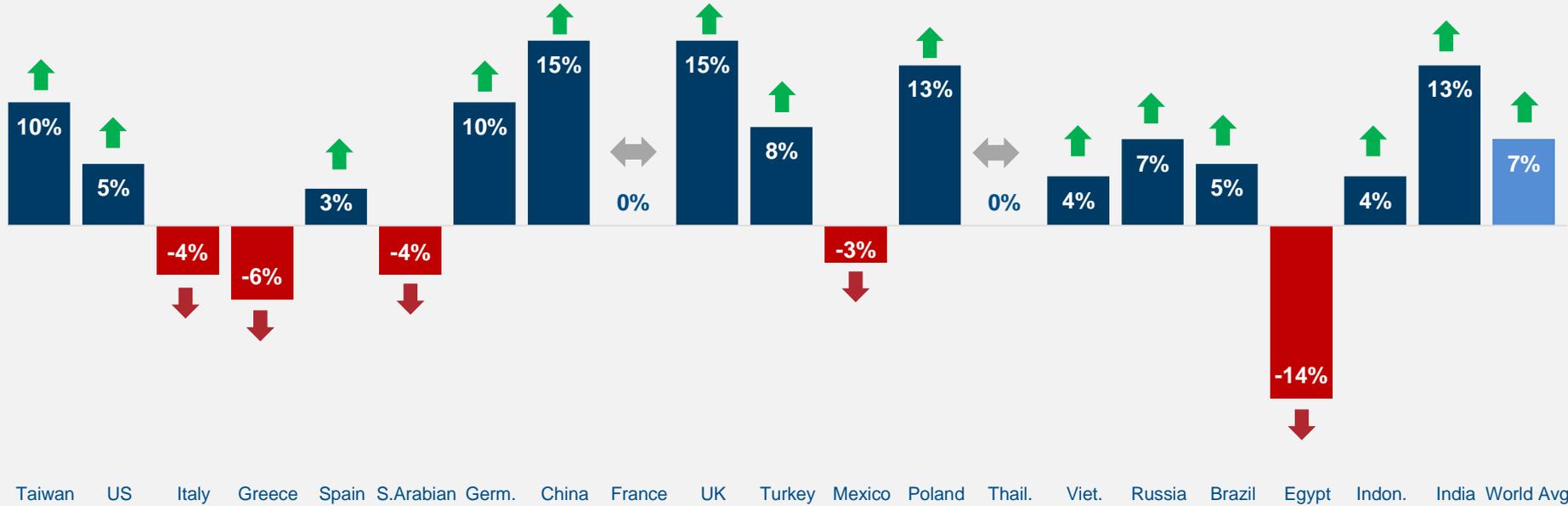
Patient Diagnosis Continues to Drive Growth



Albumin | Healthcare Access Trends Continue to Support Growth

Per Capita Consumption Continues to Grow Consistently Across Grifols Markets

CAGR 2012-2016 for Identified Top 20 Grifols Markets



Source: Grifols internal data

Grifols Diagnostic | Ensuring the Safety of the Blood Supply

Innovating to Address Present and Future Public Health Risks

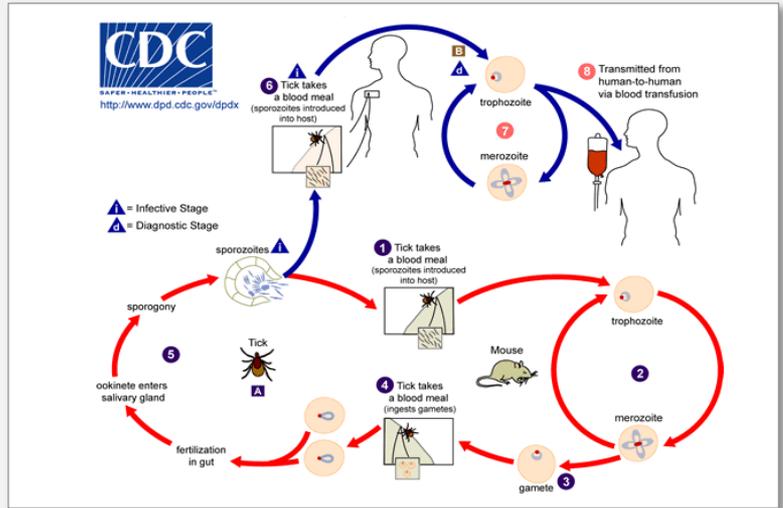
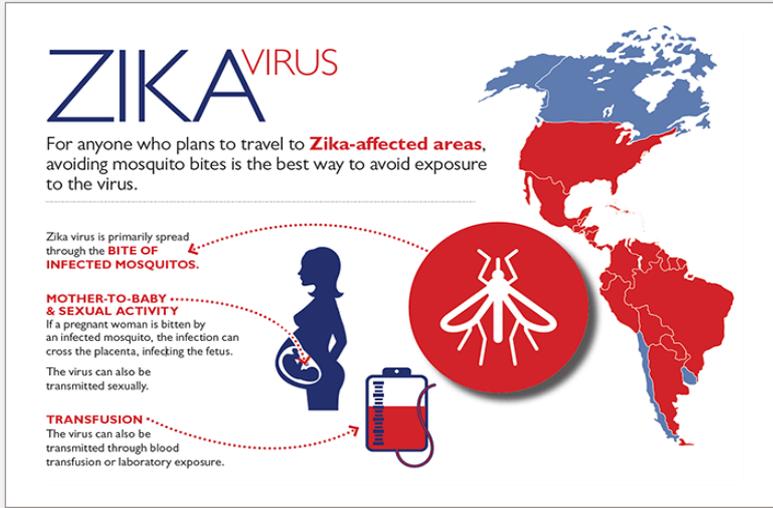
ZIKA VIRUS

For anyone who plans to travel to **Zika-affected areas**, avoiding mosquito bites is the best way to avoid exposure to the virus.

Zika virus is primarily spread through the **BITE OF INFECTED MOSQUITOS**.

MOTHER-TO-BABY & SEXUAL ACTIVITY
If a pregnant woman is bitten by an infected mosquito, the infection can cross the placenta, infecting the fetus. The virus can also be transmitted sexually.

TRANSFUSION
The virus can also be transmitted through blood transfusion or laboratory exposure.



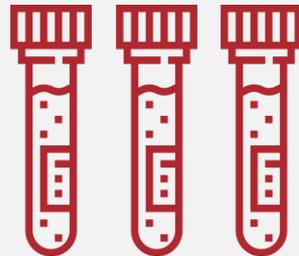
At first opportunity, Grifols R&D team began developing **Zika Virus & Babesiosis** blood screening assays to prevent transmission in the blood supply:

- Grifols **Zika assay** went into use less than 6 months after the epidemic began
- Grifols **Babesia assay** was approved for use by FDA in February 2019

Grifols Diagnostic | The Global Leader in Blood Donor Screening

Global Expansion and Plasma Drive Growth

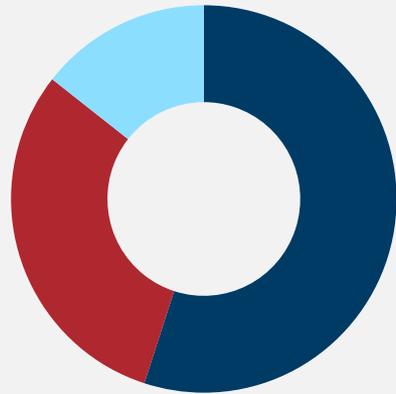
Blood Donations Tested



38M

10.4M plasma donations tested for Grifols plasma unit

Global Share of Adopted



■ Grifols ■ Roche ■ Others



70+

donations tested every minute with a Procleix assay*



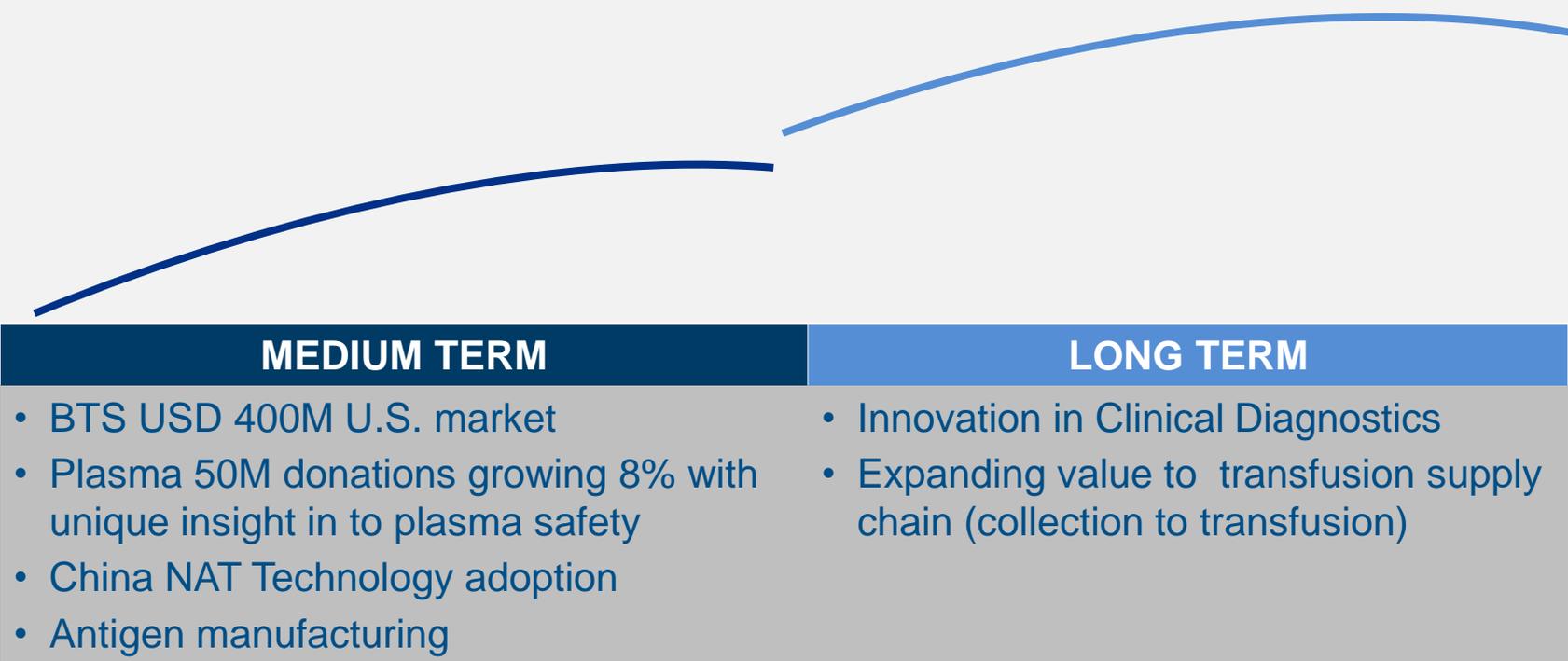
200+

people impacted every minute*

Source: Internal Data. * Does not include plasma collection

Grifols Diagnostic | Capturing New Diagnostic Opportunities

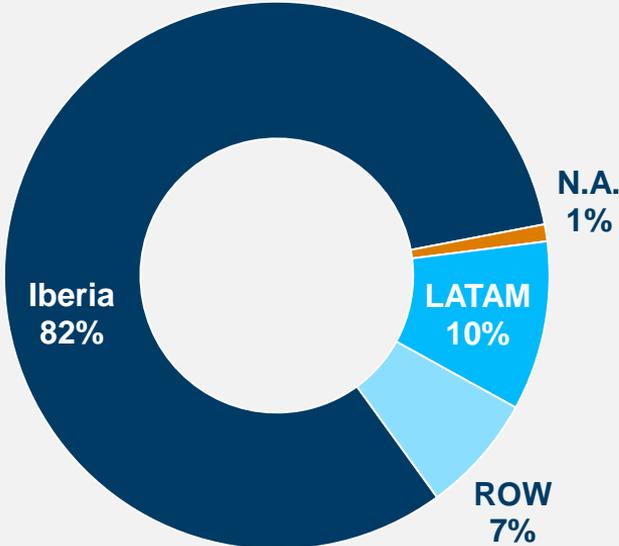
The Stage Is Set for Renewed Growth



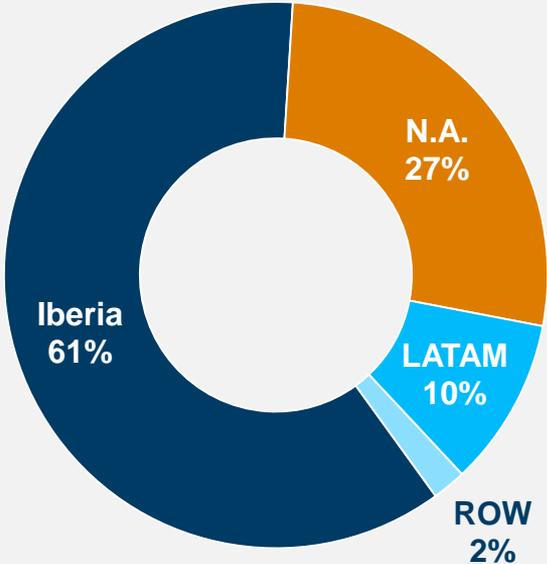
Grifols Hospital | Transformed by Strategy Execution

A Robust Strategy Dynamically Positions the Division

2012 Geo Mix Sales – EUR 96M



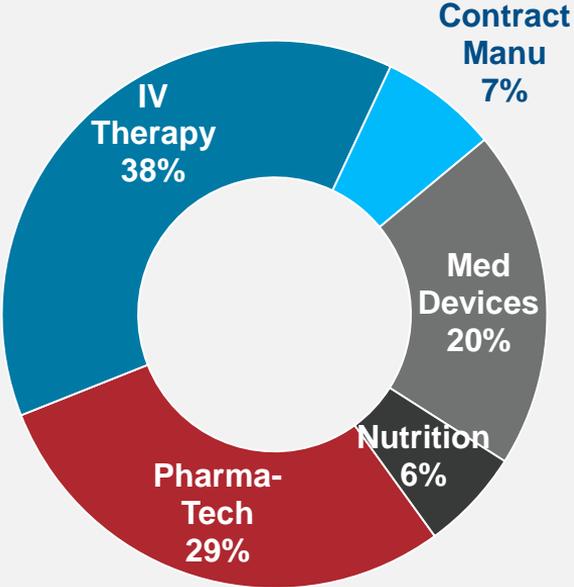
2018 Geo Mix Sales – EUR 120M



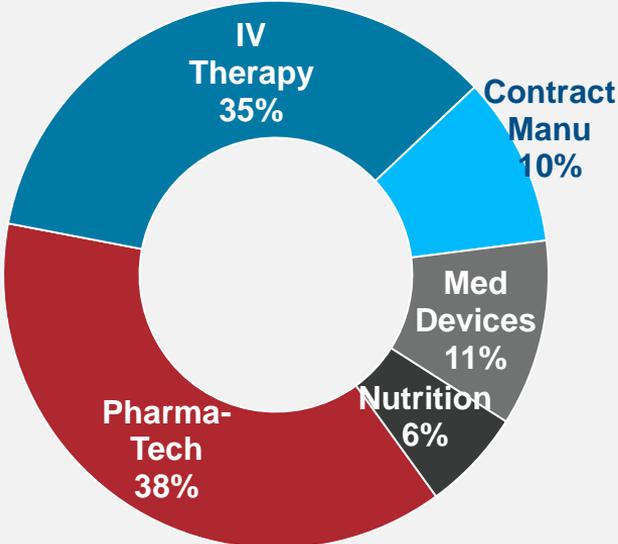
Grifols Hospital | Transformed by Strategy Execution

A Robust Strategy Dynamically Positions the Division

2012 Product Mix Sales – EUR 96M



2018 Product Mix Sales – EUR 120M



Grifols' Commercial Leadership Team

Experienced Dedicated Leadership



Joel Abelson

President,
Bioscience Commercial
Division



Carsten Schroeder

President,
Diagnostics Commercial
Division



Rob Jagt

President,
Hospital Commercial
Division



Bioscience Division

Expanding Grifols' Impact and Delivering Growth

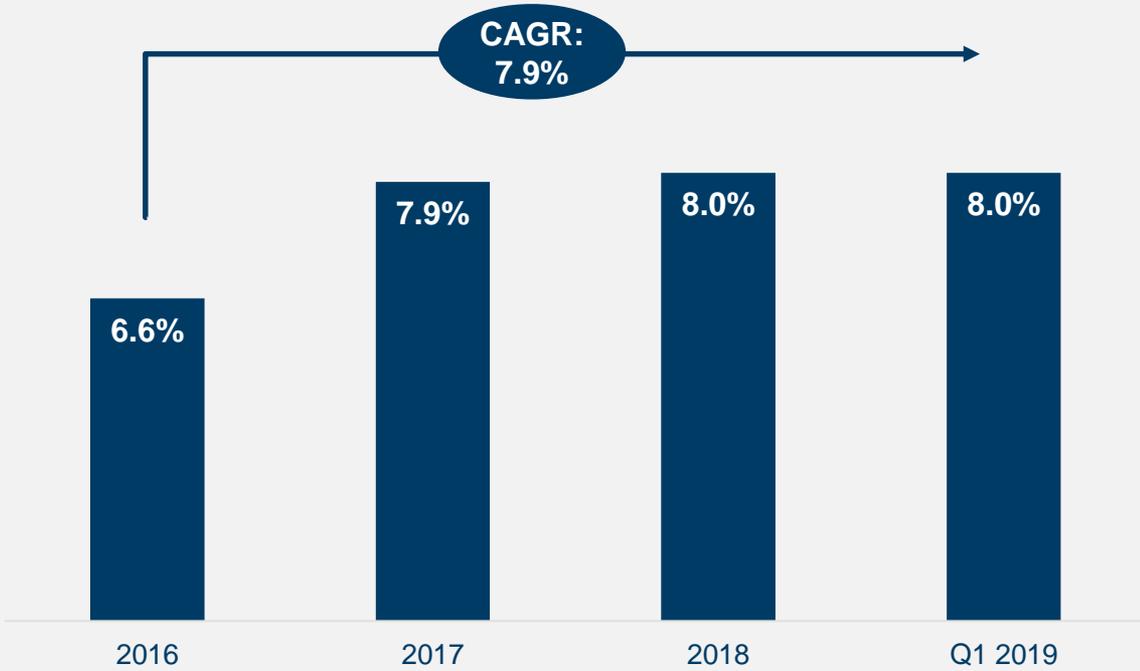
Joel Abelson

President, Bioscience Commercial Division

GRIFOLS

Delivering Continued Sales Growth

Bioscience Revenue Has Grown at 7.9% CAGR at CC Since 2016



Year-over-year variance as reported in constant currency (CC)

Bioscience Growth Fundamentals Remain Strong

Leading Position Within Core Business of Plasma-Derived Therapies in 2018

	Global Market Share*	Grifols Global Position	U.S. Market Share*	Grifols U.S. Position
IVIg	25%	#1	35%	#1
Alpha-1	67%	#1	66%	#1
pdFVIII**	17%	#1	45%	#1
Albumin	15%	#2	33%	#2

Per capita utilization and diagnosis are growing for IVIg, albumin and alpha-1

Market growth and expansion strategies continue to deliver results

Grifols continues to invest in the Bioscience Division to sustain growth

* Market shares in revenue

** vWF not included

Source: Grifols Global Plasma Database, Provisional Data 2018

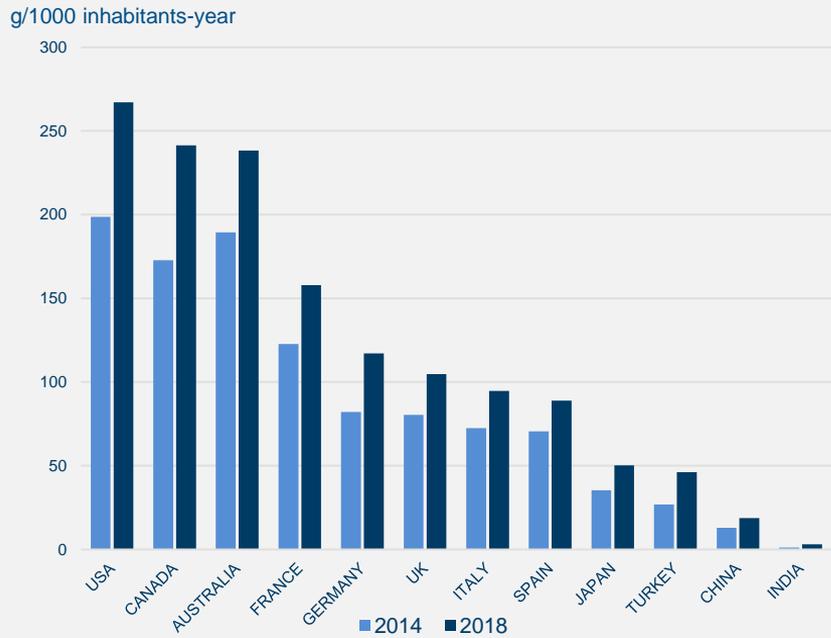
Grifols Immunoglobulin

Leading Market Growth and Meeting Patient Needs

Global Demand for IG Continues to Accelerate

Multiple Factors Support Continued Growth in Immunoglobulin

Top Countries in Per Capita Utilization of IG (2014 vs. 2018)



Key Factors Driving Growth:

- Demographic trends: pop. growth, aging populations
- Increased physician diagnosis and treatment of CIDP, PIDD
- Increased need to treat SID due to more aggressive therapies

Top Countries Growth Continues in 2018:

- U.S.: +9%
- Germany: +12%
- Spain: +9%
- Australia: +10%

Our plasma investments enable us to deliver a consistent supply to our patients

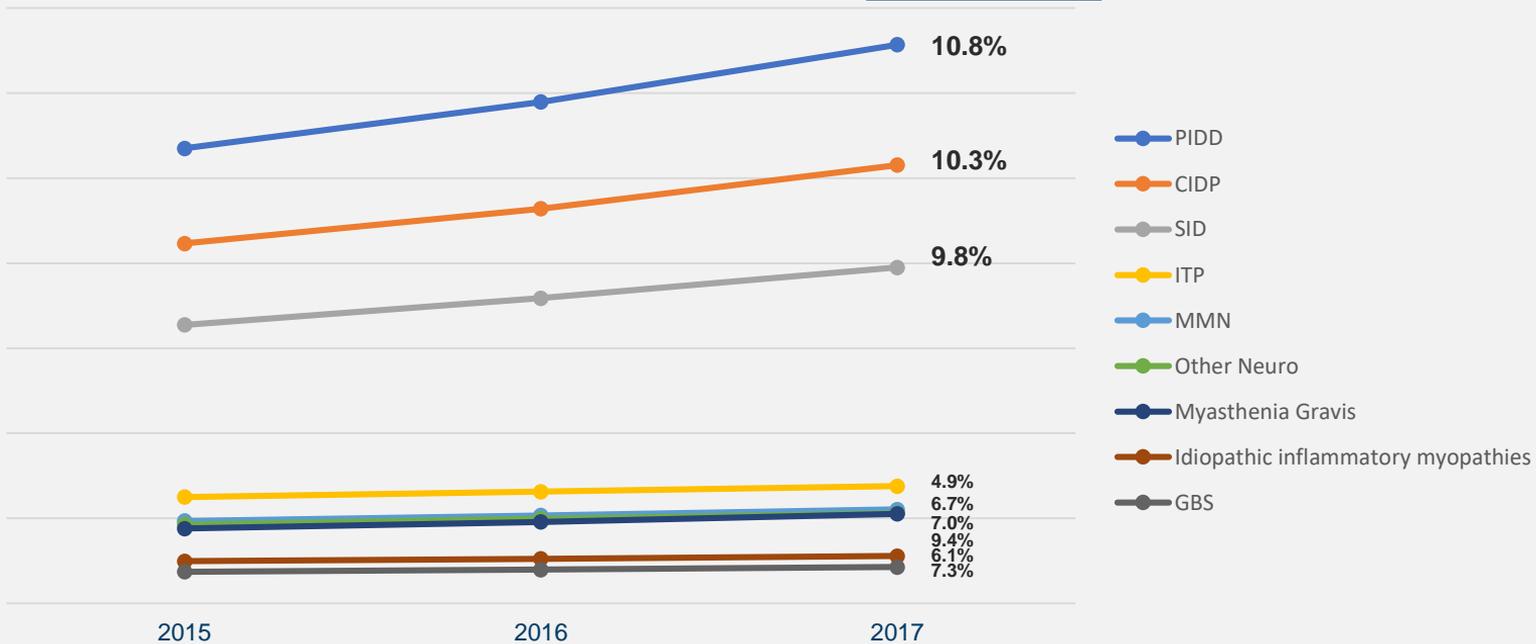
Source: Grifols Global Plasma Database & Marketing Research Bureau Provisional Data, 2018

Diagnosis and Treatment Drive Global IG Utilization

CIDP, PIDD and SID Are Leading Growth

IG Utilization Growth 2015-2017 (Volume)

2015-2017 CAGR



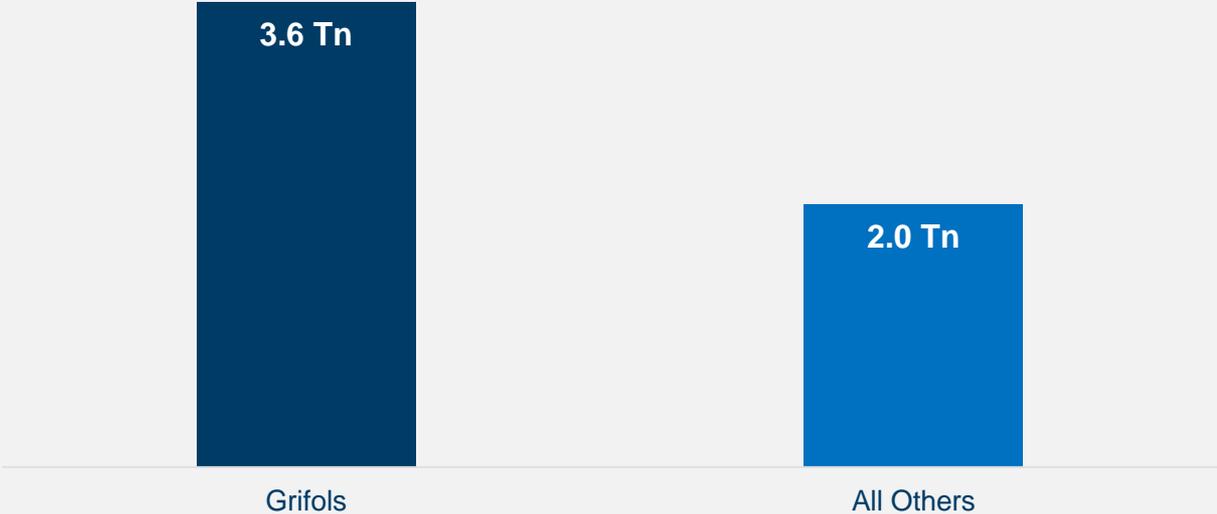
Source: Data on File; US, Canada, Spain, Germany, France, Italy

Grifols Led Industry Response to U.S. IVIG Demand in 2018

Grifols Accounted for 64% of All YoY U.S. IVIG Growth

2018 Growth Over 2017, Grifols vs. All Others

Tons IVIG only (excludes SCIG) (000)

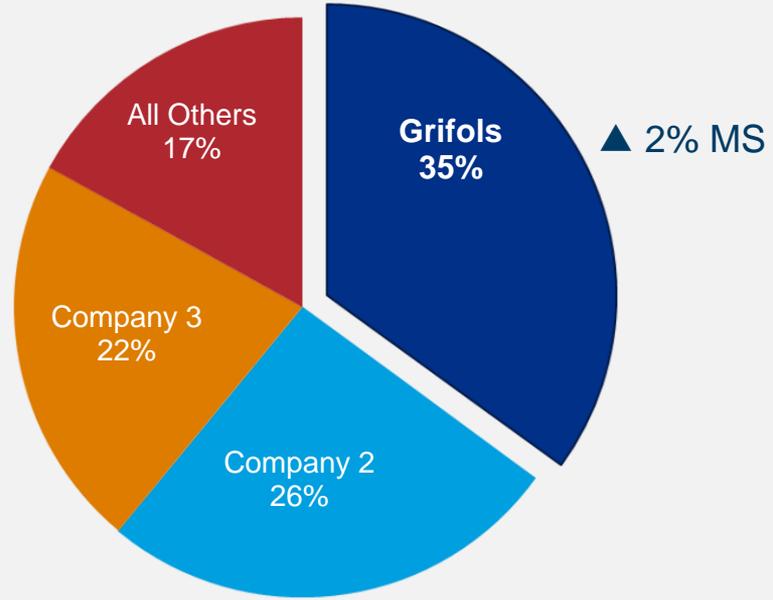


Source: Grifols Global Plasma Database & Marketing Research Bureau Provisional Data, 2018

Grifols Increased U.S. IVIG Market Share in 2018

Increased Two Points to 35% in the U.S. in 2018

2018 U.S. IVIG Market Share (Volume)

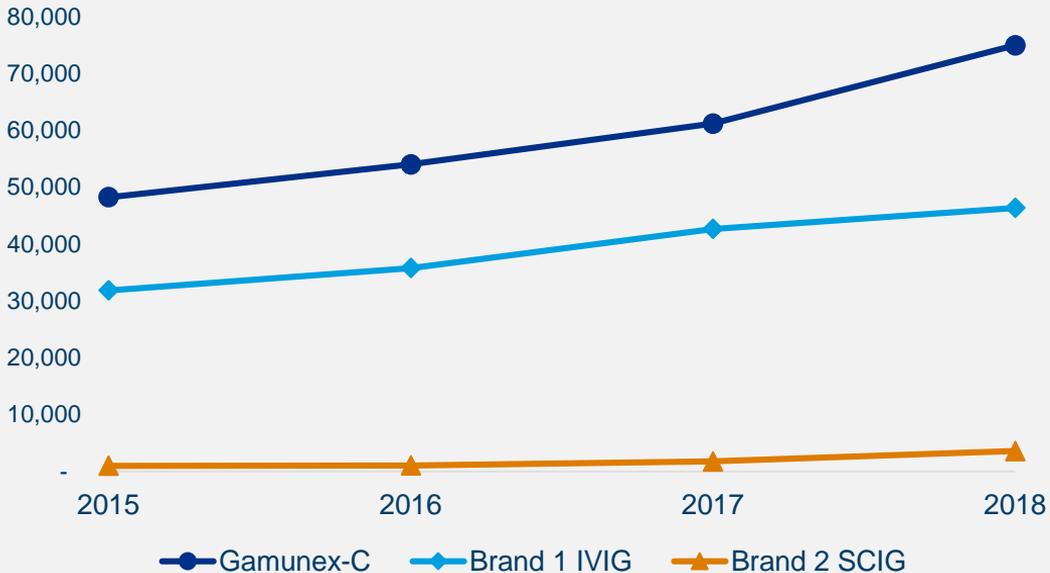


Source: Grifols Global Plasma Database & Marketing Research Bureau Provisional Data, 2018

Gamunex[®]-C Continues to Drive the U.S. CIDP Market

Grifols Grew CIDP Procedures by 23% in the U.S. in 2018, Despite New SCIG Entrant

CIDP Procedure Volume



- 23% Gamunex[®]-C growth in CIDP procedures (YoY)
- Gamunex[®]-C grew outpacing market by 6% (market grew at 17%)
- Despite competitors receiving approval for CIDP

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

Gamunex[®]-C Continues as the Recognized Leader in CIDP

Two-Pronged Approach Focuses on Time to Diagnosis and Our Differentiation

Improving Time to Diagnosis



200+ patients indicated they 'have been diagnosed with CIDP'

HAVE YOU BEEN DIAGNOSED WITH CIDP?

YES NO

Why Gamunex[®]-C Story

gamunex-c
immune globulin (c1g) 10%
intravenous (IGIV) solution

CIDP

IN THE ICE STUDY, THE LONGEST IVIG STUDY FOR CIDP¹

#1
MOST EFFECTIVE
IN CIDP

87%
relapse-free

PERCENTAGE OF PATIENTS WHO WERE
RELAPSE-FREE AT 48 WEEKS¹

60% OF GAMUNEX-C RESPONDERS ACHIEVED
MAXIMAL RESPONSE BY WEEK 6[†]

ADVERSE REACTIONS IN CIDP STUDY
In CIDP, the most common adverse reactions with GAMUNEX-C were headache, pyrexia, hypertension, chills, rash, nausea, arthralgia, and asthma. The most serious adverse reaction was pulmonary embolism (PE) in 1 subject with a history of PE.

*ICE101: caprylate-chromatography purified immune globulin intravenous (IGIV-C) CIDP efficacy.

Please see Important Safety Information on back, and refer to accompanying full Prescribing Information for GAMUNEX-C.

References: 1. Hughes RAC, Grifols R, Shi Y, et al on behalf of the ICE Study Group. Intravenous immune globulin (10% caprylate-chromatography purified) for the treatment of chronic inflammatory demyelinating polyneuropathy: a 52-week study in a randomized controlled trial. *Lancet Neurology*. 2006;7(7):644-53. doi:10.1016/S1473-3099(06)28262-1

Uncover the Difference

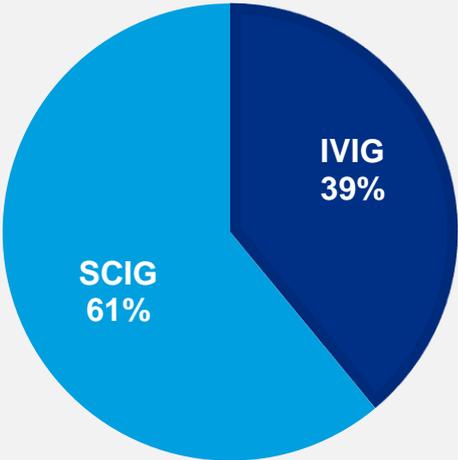
GRIFOLS

GAMUNEX-C.com | 1-888-MYGAMUNEX | 1-888-694-2686

Grifols Is Well-Positioned in the U.S. PIDD Market With IVIG

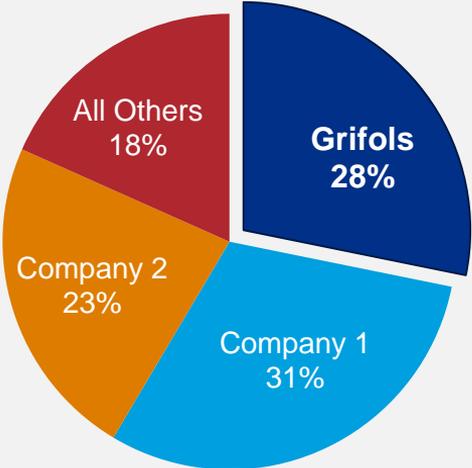
We Are Preparing to Enter the Growing SCIG Market in 2019

U.S. PIDD Patient Treatment Estimates (2018)



Source: Internal Grifols Estimates

U.S. IVIG Market Share for PIDD Procedures (2018)



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

Introducing Xembify™, a New 20% SCIG Option for U.S. Patients

Expanding Our U.S. IG Portfolio to Meet the Large, Unmet Medical Need in PIDD



- New 20% SCIG option for patients in search of an alternative treatment
- Continued large unmet need to diagnose and treat patients with PIDD
- Anticipate Q3 2019 FDA approval
- Launch preparation underway

Grifols Successfully Launched New HyperRAB® in 2018

First Advancement in Rabies IG Administration in 40+ Years



HyperRAB® is the #1 prescribed rabies IG in the U.S. with a market share of 85-90%

Grifols launches higher potency formulation (300 IU/mL):

- 2x the rabies antibodies delivered at wound site (compared to existing products)
- Treatment with 50% the volume in a total dose
- Fewer injection sites

Feb. 2018 FDA New Formulation Approval. May 2018 Launch:

- 100% conversion to selling new formulation
- 90%+ awareness of new formulation among treaters
- New competitor restricted to minimal market share (6-7%)
- Nearly 80% of previous customers have already transitioned to new formulation

Grifols Td vaccine
Tetanus and Diphtheria Toxoids Adsorbed

Key Takeaways

Immunoglobulin: Leading Market Growth and Meeting Patient Needs

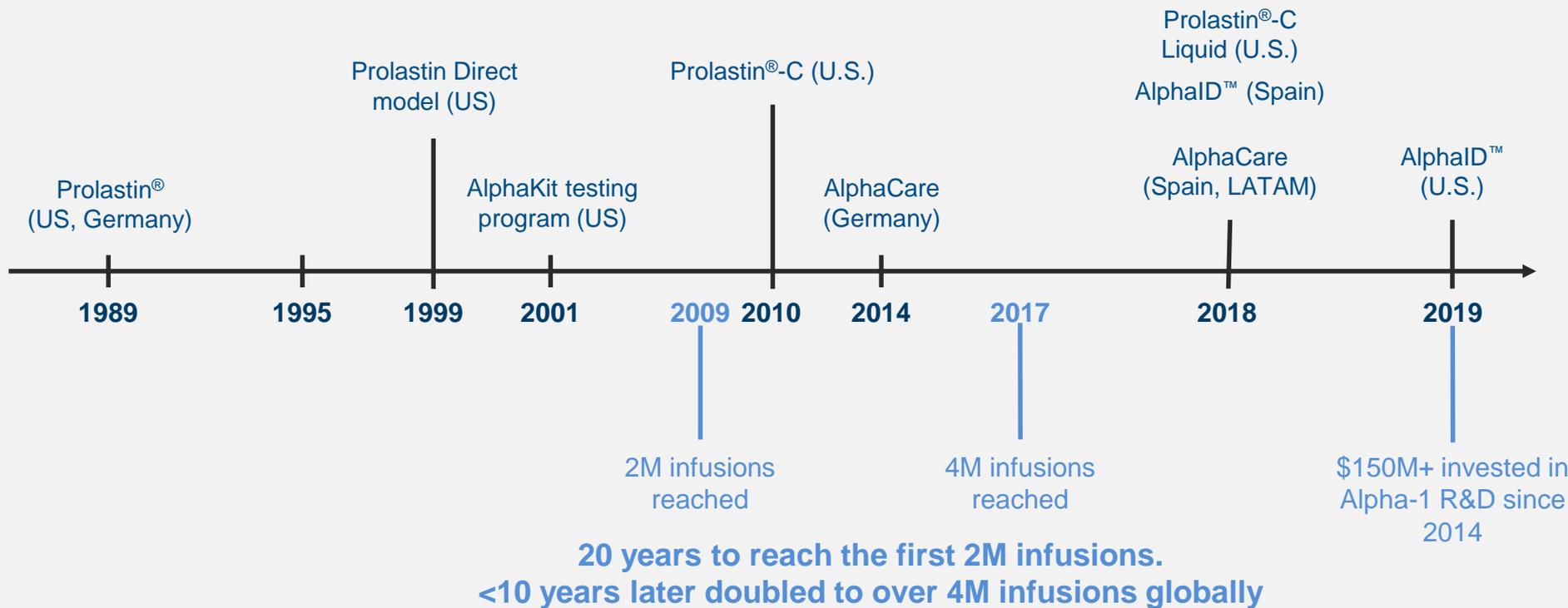
- Multiple drivers support continued Immunoglobulin market growth
- In 2018 Grifols increased IVIG share in both the U.S. and EU
- Our recent significant plasma investments have allowed us to ensure a continuous supply of IG to our patients
- Grifols led industry in increasing U.S. IVIG volume in 2018, delivering 64% of IVIG growth
- Gamunex[®]-C experienced strong growth in CIDP procedures at 23% in 2018 in the U.S.
- Grifols well positioned in U.S. PIDD market with IVIG - preparing to enter SCIG market
 - Xembify[™], our 20% SCIG treatment, license expected Q3 2019
- Grifols retained 90% of the rabies market after new competitor launch in mid-2018

Grifols Alpha-1 Antitrypsin

Accelerating Growth Through Strategic Investments

Over 25 Years of Commitment to Alpha-1 Patients

Grifols Has Led the Market With Innovations in Diagnosis and Treatment Since 1988

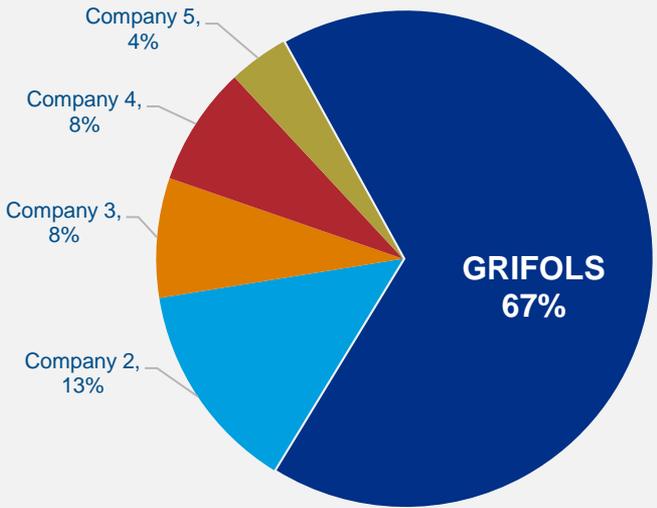


Grifols Is the Global Market Leader in Alpha-1

Grifols Alpha-1 Volume Growth Has Consistently Outpaced the Market

Global Alpha-1 2018 Market Share

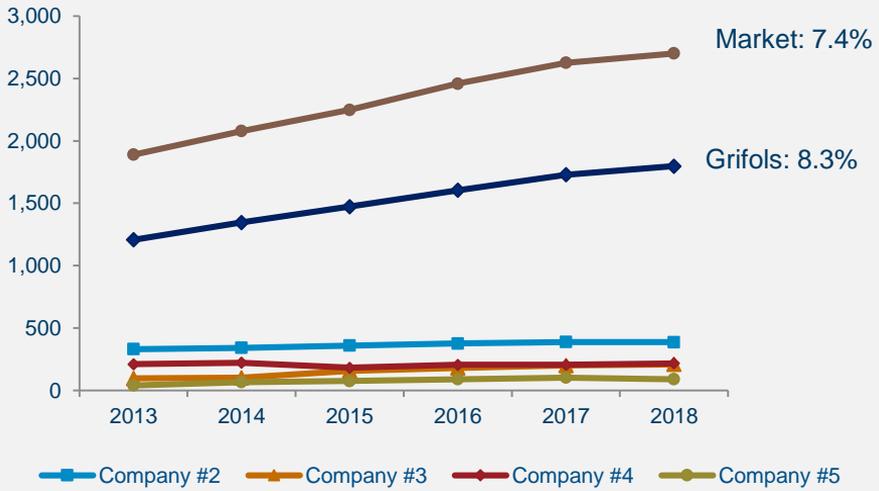
In Grams



Global Alpha-1 2013-2018 Volume Growth

In Grams

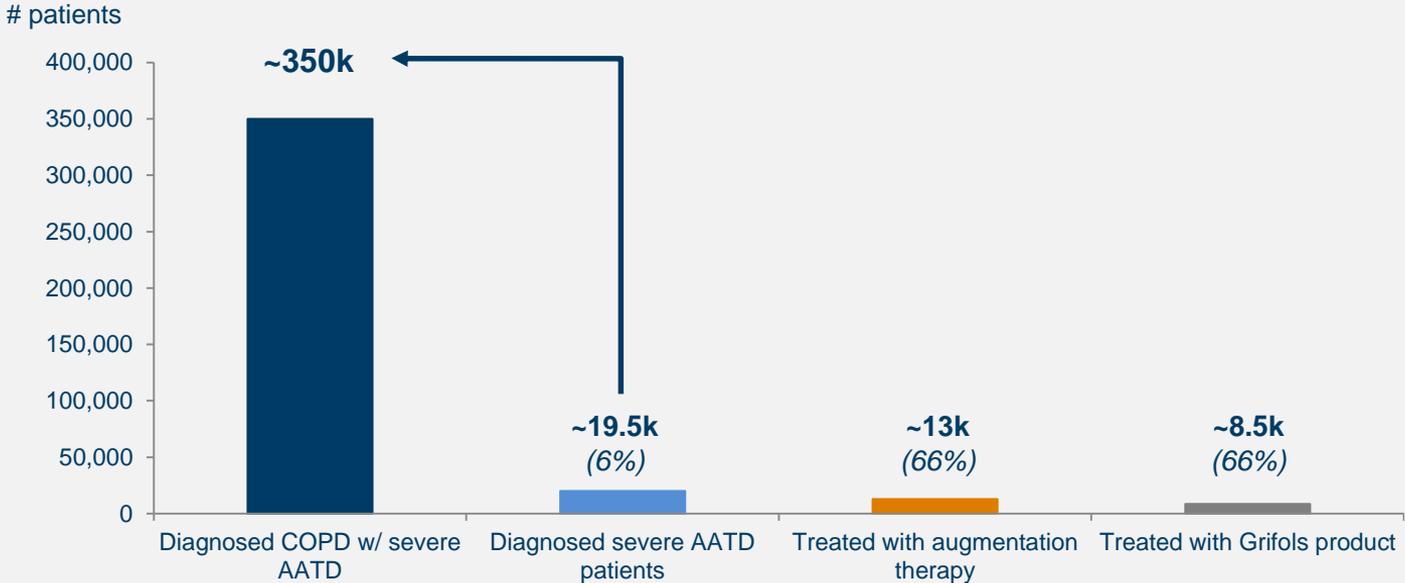
2013-2018 CAGR



Source: Grifols Global Plasma Database & Marketing Research Bureau Provisional Data, 2018

Global Alpha-1 Growth Opportunity Remains Significant

Less than 10% of WW Patients With Severe Alpha-1 Deficiency Have Been Diagnosed



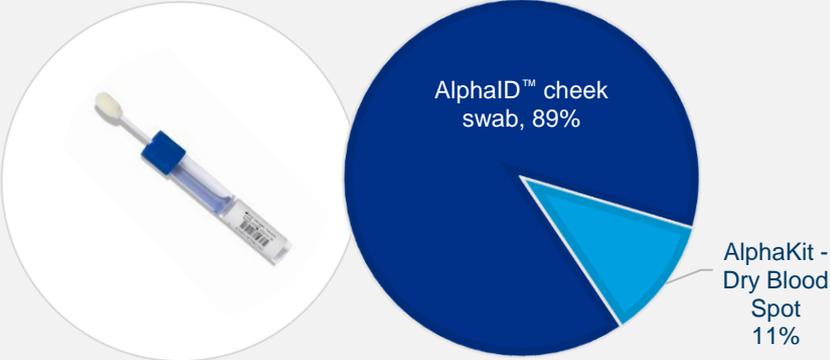
Significant opportunity still remains to increase diagnosis of AATD patients

Sources and assumptions: Grifols patients based in 1Q19 patient counts (last update 24APR2019); assume Grifols holds 66% of the total patients based in Grifols BI database (see market overview slide); assume 2/3 of patients diagnosed receive treatment based in market knowledge and affiliate input.

Grifols Continues to Innovate in the Diagnosis of Alpha-1

New Diagnostic Test Offers More Convenience: Launched in Spain, U.S. to Follow

Spanish Testing Program (2019) Physician Test Kit Usage When Given a Choice



Grifols Alpha-1 Testing Program*

Grifols continues to innovate via the newly launched AlphaID cheek swab

- Improved testing convenience compared to the dried blood spot test
- Presents an opportunity to further expand into the PCP market

Based on the success in Spain we plan to launch the buccal swab in the U.S. in 2019

- Pilot begins mid-year will a full launch by year-end

**Testing Technology from Progenika Biopharma, a Grifols Company*

Grifols Differentiates in Patient Treatment and Support

Once Diagnosed, We Have Novel Treatment Options and Support Programs for Patients

U.S. Liquid Launch (July 2018)

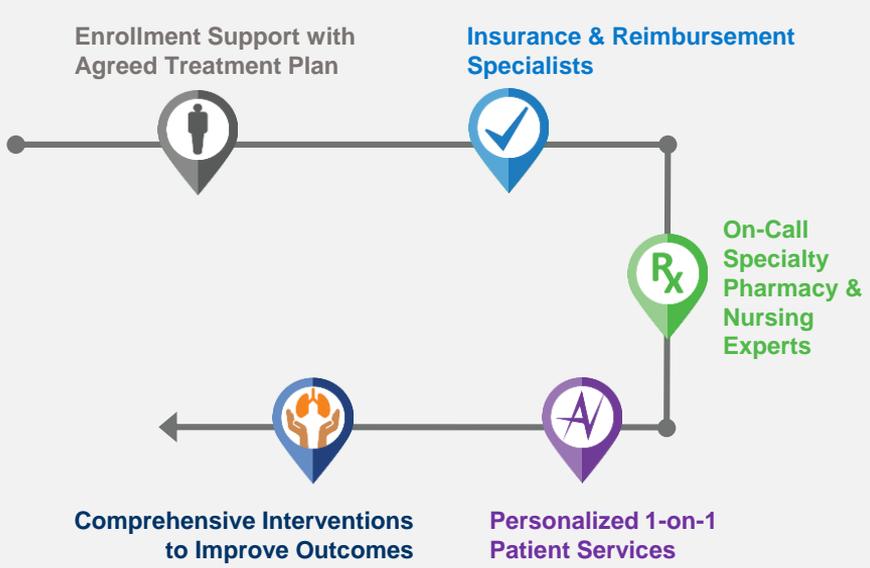
- Successful Execution: 85% of patients successfully converted to Prolastin®-C Liquid

Disease Management Programs

- U.S. Prolastin Direct program has **over 95% treatment regimen adherence**
- Strong patient participation in global Prolastin disease management programs
 - U.S. (Prolastin Direct)
 - Germany & Spain (AlphaCare)

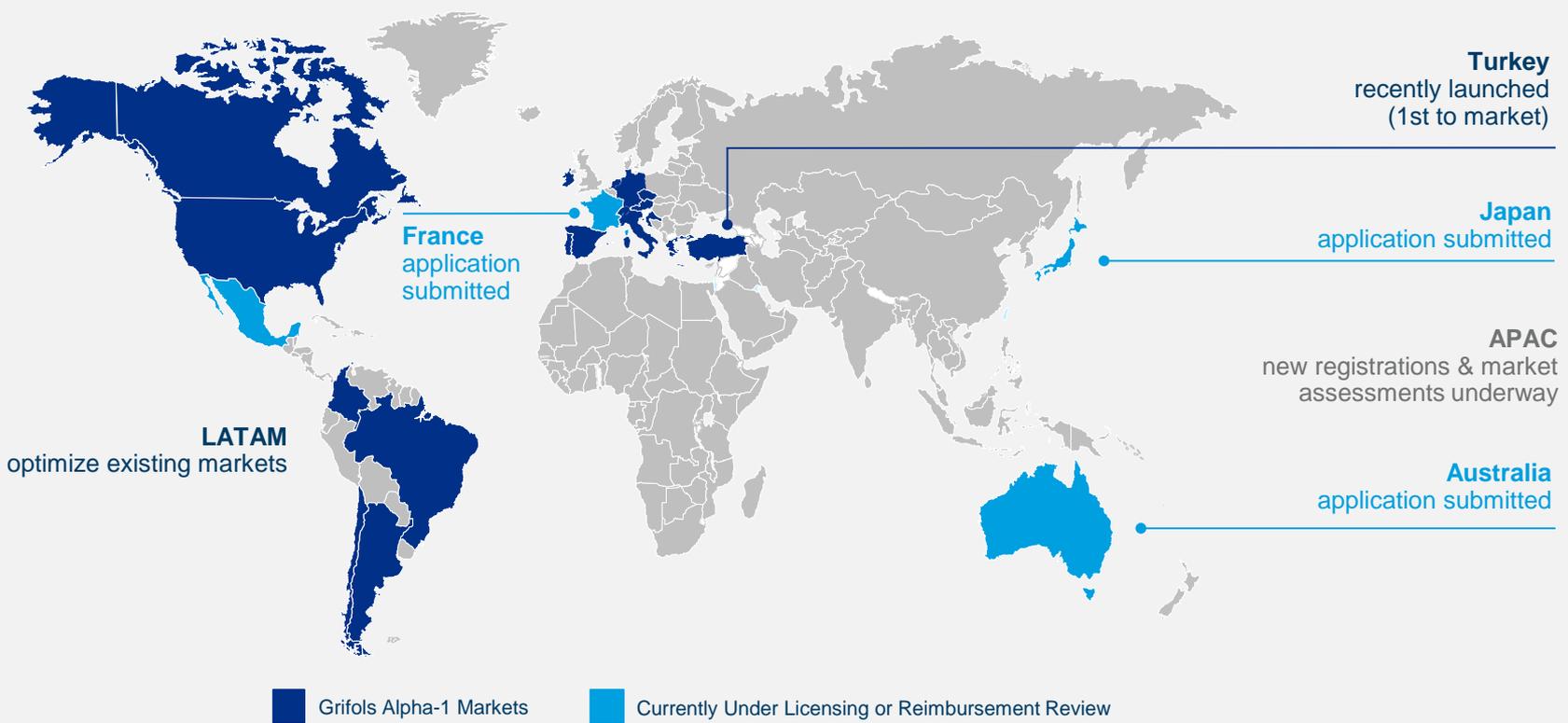
EU Nursing Program Launches: New home infusion programs launched in Germany (H1 2019) and Italy (H2 2019)

Prolastin Direct Model for Disease Management



Expanding to New Geographies

Untapped Markets Represent Opportunities for Continued Growth



Key Takeaways

Alpha-1: Accelerating Growth Through Strategic Investments

- Prolastin[®]/Prolastin[®]-C continues to be the global market leader in Alpha-1
 - Outgrowing the market from 2013-2018 (8.3% CAGR)
- Significant opportunities remain to identify and treat additional patients, with 90%+ of the global market still undiagnosed
- Innovations in product development, diagnosis, education, home infusion and direct-to-consumer initiatives will further differentiate and position Grifols for continued leadership
- The new AlphaID[™] cheek swab test offers a faster, more convenient diagnostic test for patients and physicians
 - 2018 launched in Spain and 2019 in U.S.

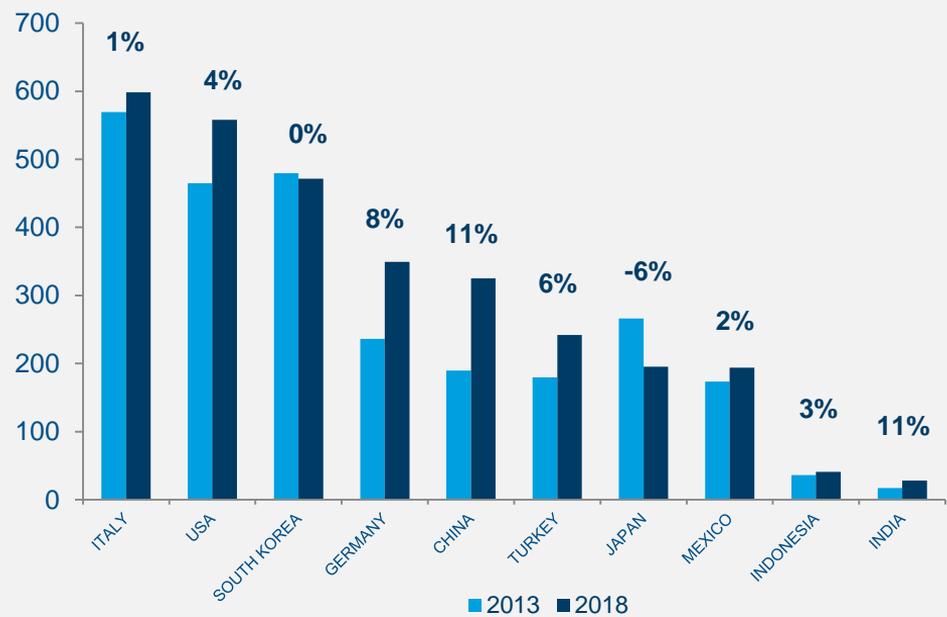
Grifols Albumin

A Key Driver of Bioscience Growth

Global Albumin Market Continues Strong Growth

Per Capita Utilization of Albumin Grew 7% in Top 10 Countries, Primarily Driven by China

Per Capita Utilization +7% CAGR (2013-2018)



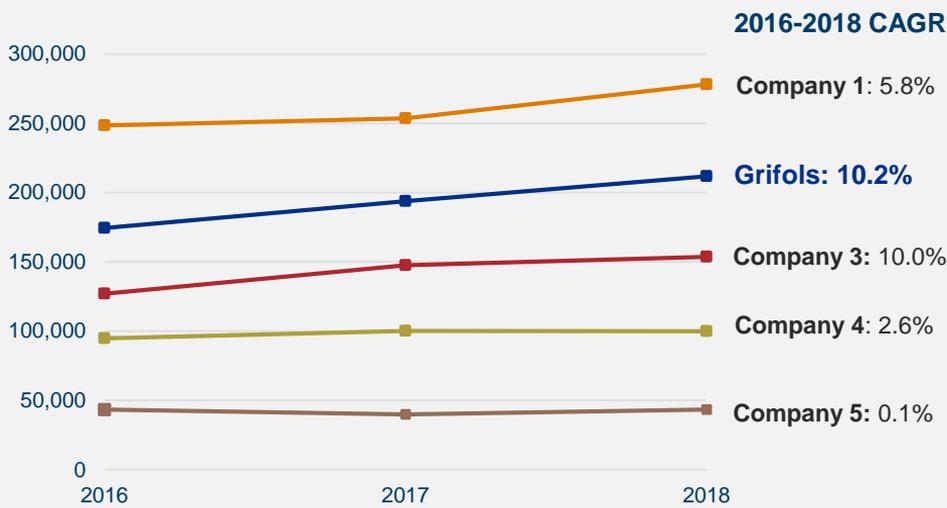
- Global Albumin market grew in volume (grams) at 7% CAGR from 2013-2018
- Per Capita Utilization in the top 10 countries matched global market growth at 7% CAGR over the same period
- Italy and U.S. led in terms of overall utilization, with China and Germany leading in growth
- Consumption continues to increase across nearly all top countries

Source: Grifols Global Plasma Database & Marketing Research Bureau Provisional Data, 2018

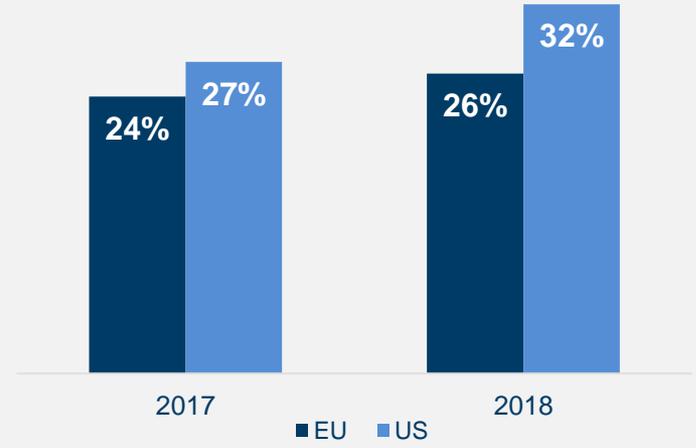
Grifols' Global Albumin Growth Outpaces Competitors

Grifols Holds #2 Global Position, Captured Market Share in U.S. and EU in 2018

Global Growth Among Top Manufacturers 2016-2018 (Albumin Tons)



Grifols Albumin Market Share Evolution 2018 vs. 2017 (Volume)



Source: Grifols Global Plasma Database, Provisional Data 2018

Grifols Continues Robust Upward Momentum in China

Grifols Expansion Strategy in World's Largest Albumin Market



2012-18 Official Release CAGR:

- China Albumin: +13.3%
- Domestic: +8.9%
- Imported (incl. GRF): +17.2%

2012-2018 Grifols CAGR +19.0%:

- 15% Market Share in 2018 (+1% YoY)
- 24.6% Imported Market Share in 2018

Grifols expansion strategy in China is delivering positive results

Focus on providing increased supply to Top 11 provinces and driving penetration in the retail sector:

- Top 11 provinces overall sales growth of 32.9% (2016-18)
- Retail channel sales growth of +140% (2016-18)

Source: Institutes of Food and Drug Control Batch Released in China 2012-2018 CAGR

Opportunities in New Indications and Utilization Methods

Grifols Leads in Albumin Clinical Research Investment (PRECIOSA, APACHE, AMBAR)

	Population, Use	Study Name	Innovation
Liver Cirrhosis	Moderate Cirrhotic Patients Long-Term Albumin Use	ANSWER PRECIOSA*	Increased Utilization New Indication
	Severe Cirrhotic Patients Acute Albumin Use	APACHE*	New Indication
Sepsis	Septic Shock Patients Long-Term Albumin Use	ARISS ALBIOS 2	Increased Utilization Increased Utilization
Alzheimer's Disease	Mild & Moderate Alz Patients Long-Term Albumin Use	AMBAR*	Non-Specialty Treatment Protocol

ANSWER STUDY

April 2017 Published Results

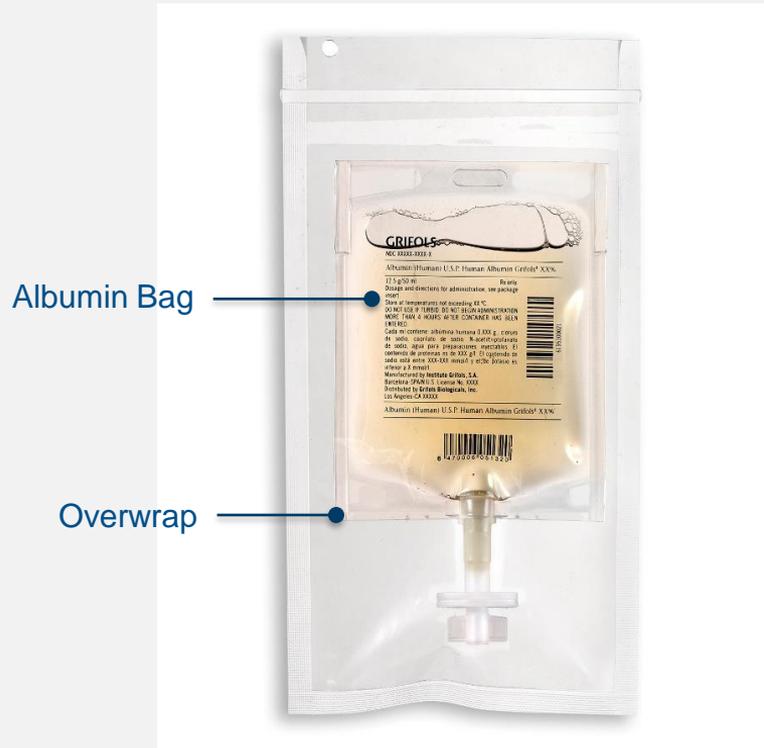
Long-term Albumin use in moderate cirrhotic patients reduces mortality by 38%

At peak, 24 additional tons of albumin would be needed to treat chronic cirrhosis patients with Albumin in EU4** as per Answer Study protocol

* Grifols-sponsored clinical programs
 ** EU4 includes Spain, Germany, Italy, UK

Grifols Albutein® FlexBag 25% Approved in the U.S.

New Flexible Container Designed to Enhance Customer Experience



Flexible container compliments vials to broaden Grifols offering to customers

- Improved flexible container with overwrap in two sizes
- Launch preparation underway

Key Takeaways

Albumin: A Key Driver of Bioscience Growth

- Grifols holds the #2 global Albumin position, leading growth among top 5 manufacturers (2016-2018)
- Grifols outperformed competitors in 2018 in the U.S., China and Europe
- We believe the Albumin market will continue to grow - significant opportunity exists with new indications for long-term/chronic use of Albumin
 - Liver Cirrhosis (including long-term Albumin use) and Sepsis will drive increased consumption and fuel future growth
 - Investing in untapped potential for Albumin that will drive further growth
- Grifols Albutein® FlexBag 25% will enhance customer experience

Grifols pdFVIII/VWF

The Key Role of pdFVIII in Bleeding Disorders

Paradigm Shift in pdFVIII Continues, Business Impact Absorbed

Grifols Has Weathered the Business Challenge, Growth Opportunities Remain

- **A changing market:** there is a new treatment paradigm in Hemophilia since the Hemlibra® launch in Q4 2017
- In spite of pdFVIII decline, the Bioscience business continues to grow at ~8% CAGR
- We believe pdFVIII has a pivotal role in mature Hemophilia A markets along with a large, unmet need in emerging markets

Patients in Mature Markets Continue to Rely on pdFVIII Therapy

Grifols pdFVIII/VWF Plays a Key Role in the New Therapeutic Environment

In mature Hemophilia A markets there continues to be an ongoing need for pdFVIII therapy in bleed/surgery management and the prevention/eradication of inhibitors

Eradication of Inhibitors: Grifols R&D provided evidence that pdFVIII/VWF can be safely used in combination with new therapies

- Episodic treatment (management of bleeds, in surgery)
- Eradication of inhibitors

Patients Requiring/Preferring Plasma-Derived Therapies:

- Patients satisfied with traditional prophylaxis or those requiring on-demand treatment
- Treatment of **von Willebrand disease** (these patients can only be treated with factor therapies)

NON-ADDITIVE EFFECT ON THROMBIN GENERATION OF FVIII/VWF COMBINED WITH EMICIZUMAB IN HAEMOPHILIA A PLASMA: AN *IN VITRO* STUDY

Maria Isabel Bravo¹, Aida Raverios¹, Ana Maria Ortiz², Montserrat Costa², Todd Willis², Salvador Grancha¹, Juan Ignacio Jorquera¹
 Grifols Bioscience Research Group; ¹Barcelona, Spain; ²North Carolina, United States

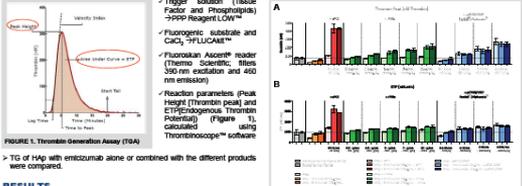
INTRODUCTION

Emicizumab (Hemlibra[®], Chugai-Roche) is a chronic treatment for haemophilia A. However, emicizumab may be associated with breakthrough bleeds (eg surgery) that require concomitant acute haemostatic treatment, such as coagulation factor VIII (FVIII), recombinant activated factor VII (rFVIIa), or activated prothrombin complex concentrate (aPCC). The use of aPCC in the presence of emicizumab has been related to fatal thrombotic events [1]. Although this risk has not been observed with rFVIIa and FVIII [1-2], further studies to elucidate the thrombotic effect of combined emicizumab with concomitant haemostatic treatments are still needed. In this study, we assessed thrombin generation (TG) *in vitro* when a plasma-derived FVIII/VWF (Alphanate[®]/Fanhb[®], Grifols) was added to haemophilia A plasma (HAp) with emicizumab.

METHODS

> A pool of HAp (Technocone) alone or containing therapeutic doses of emicizumab (50 µg/ml as a normal level and 100 µg/ml as the highest level detected during HAVEN 1 [1]) was combined with aPCC (EtiBAP, Shire) at 0.5 to 2 IU/ml (approximately equivalent to 25 to 100 U/kg), rFVIIa (Novoseven[®], Novo Nordisk) at 0.5 to 1.5 µg/ml (approximately equivalent to 0.7 to 8.0 µg/kg), or pdFVIII/VWF at 0.1 to 4.5 IU/ml (approximately equivalent to 5 to 200 IU/kg).
 > Samples were analyzed with TG assays using Calibrated Automated Thrombogram (CAT) from Stage.

For ETS, addition of aPCC to HAp with emicizumab increased results until 4 fold. rFVIIa increased from 1.5 fold (rFVIIa 0.5 µg/ml) to 2 fold (rFVIIa 1.5 µg/ml). pdFVIII/VWF increased by 1.2 fold to 1.7 (µg/ml prophylaxis dose) and 1.7 to 2 (TI dose). These results are summarized in Table 1 and Figure 2B.



RESULTS

For breven peak, TG results of HAp with emicizumab (50 and 100 µg/ml) combined with aPCC 0.5 IU/ml increased the peak height and the peak time; rFVIIa moderately increased peak from 2 fold at 0.5 µg/ml to 5 fold at 1.5 µg/ml; pdFVIII/VWF up to prophylaxis dose (0.1 to 1 IU/ml) increased peak from 1.2 to 3 fold while pdFVIII/VWF up to TI dose (2 to 4.5 IU/ml) increased peak from 3 to 6 fold. These results are summarized in Table 1 and Figure 2A).

DISCUSSION / CONCLUSIONS

> Addition of aPCC to HAp with emicizumab had a synergistic effect on TG even at low doses.
 > Addition of rFVIIa resulted in a moderate dose-related increase in TG but within normal ranges.
 > By contrast, addition of pdFVIII/VWF (Alphanate[®]/Fanhb[®]) at doses ranging from 1 IU/ml to as high as 4.5 IU/ml showed a non-additive effect, since TG was unchanged to that observed in HAp without emicizumab.
 > These results may suggest that emicizumab has limited ability to promote FX activation in presence of natural pdFVIII/VWF reducing the risk of over dosing, and are in agreement with those observed in HAVEN 3 [2].

12th Congress of European Association for Haemophilia and Allied Disorders (EAHAD), 6-8 February 2019, Prague, Czech Republic
GRIFOLS

Underlying Demand Is Driving Growth in Emerging Markets

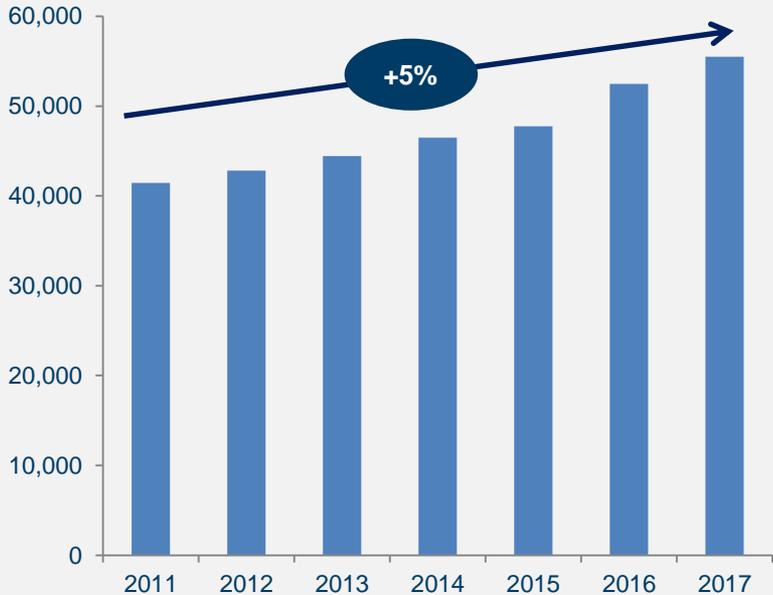
Opportunity to Build on Our Leadership Position to Meet Patient Needs

A large population of underdiagnosed and untreated hemophilia patients exists within emerging markets

Grifols in emerging markets: Focus on improving standards of care and access to treatment together with geographical expansion

- Clinical trial to support low-dose prophylaxis in Indonesia
- Partnerships to accelerate care in Indonesia, India, Philippines via centers of excellence, support in diagnosis, etc.
- Participation in new tenders and further expansion into the Middle East and North Africa

Evolution of diagnosed HA patients in emerging markets, 2011-2017



Source: World Federation of Hemophilia, 2011-2017

Key Takeaways

pdFVIII/VWF: The Key Role of pdFVIII in Bleeding Disorders

- Hemophilia experts foresee an ongoing need for the prevention and eradication of inhibitors, bleed/surgery management and VWD treatment with pdFVIII/VWF
- Grifols research shows that pdFVIII/VWF can be safely used in combination with new therapies
- Additional opportunities for pdFVIII/VWF come from emerging markets focusing on access to treatment

Key Takeaways

Bioscience Growth Fundamentals Remain Strong

Product Strategies Will Deliver Continued Growth

Immunoglobulin



- Grifols is the global & U.S. IVIG market leader, delivering 64% of all U.S. IVIG volume growth in 2018
- Our robust plasma investments support a continuous IG supply to patients
- Xembify™, our 20% SCIG treatment for U.S. PIDD patients, is expected to be licensed Q3 2019

Albumin



- Grifols holds #2 global Albumin position, leading growth among top 5 manufacturers (2016-18)
- Albumin market growth opportunity exists with new indications for long-term/chronic use
- Grifols Albutein® FlexBag 25% to be launched in the U.S.

Alpha-1



- Grifols Alpha-1 franchise continues as global market leader, outgrowing the market (2013-18)
- The new AlphaID™ cheek swab test offers more convenience – launches in Spain & U.S.

pdFVIII



- Hemophilia experts foresee ongoing need for the prevention and eradication of inhibitors, bleed/surgery management and VWD treatment with pdFVIII/VWF
- Additional growth will come from emerging markets focusing on access to treatment



Diagnostics Division

Global Leader in Transfusion Medicine

Carsten Schroeder
President, Diagnostic Commercial Division

GRIFOLS

A Global Leader in Transfusion Medicine

During 2018 We Have Sales in ~100 Countries

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 & CE Licenses

UNITED STATES
DIAGNOSTIC HEADQUARTERS (Commercial)
Emeryville, CA

DX MANUFACTURING and R&D
Emeryville, CA
San Diego, CA

SWITZERLAND
DX MANUFACTURING and R&D
Düdingen

CHINA
REGIONAL COMMERCIAL OFFICE
Hong Kong

SPAIN
DIAGNOSTIC HEADQUARTERS (Manufacturing and R&D)
Barcelona
REGIONAL COMMERCIAL OFFICES
Barcelona

DX MANUFACTURING and R&D
Barcelona
Bilbao
Murcia

BRAZIL
DX MANUFACTURING
Curitiba

AUTRALIA
DX MANUFACTURING
Melbourne

The Diagnostic Division Reached EUR 702M in Sales in 2018

Sustainable Mid-Single Digit Growth Over the Last 5 Years

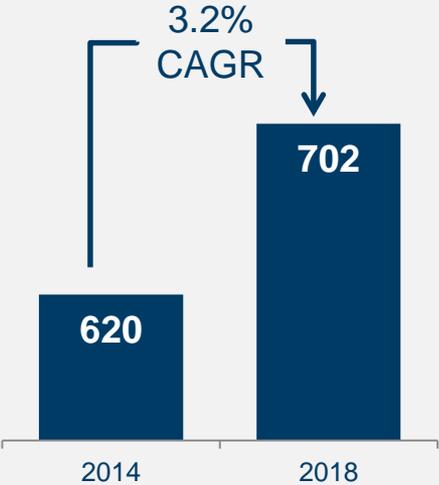
**2018
Revenue**



702M

Grifols is the 15th largest
Diagnostic company

**2014-2018
Growth**



**Grifols'
Largest Customers**

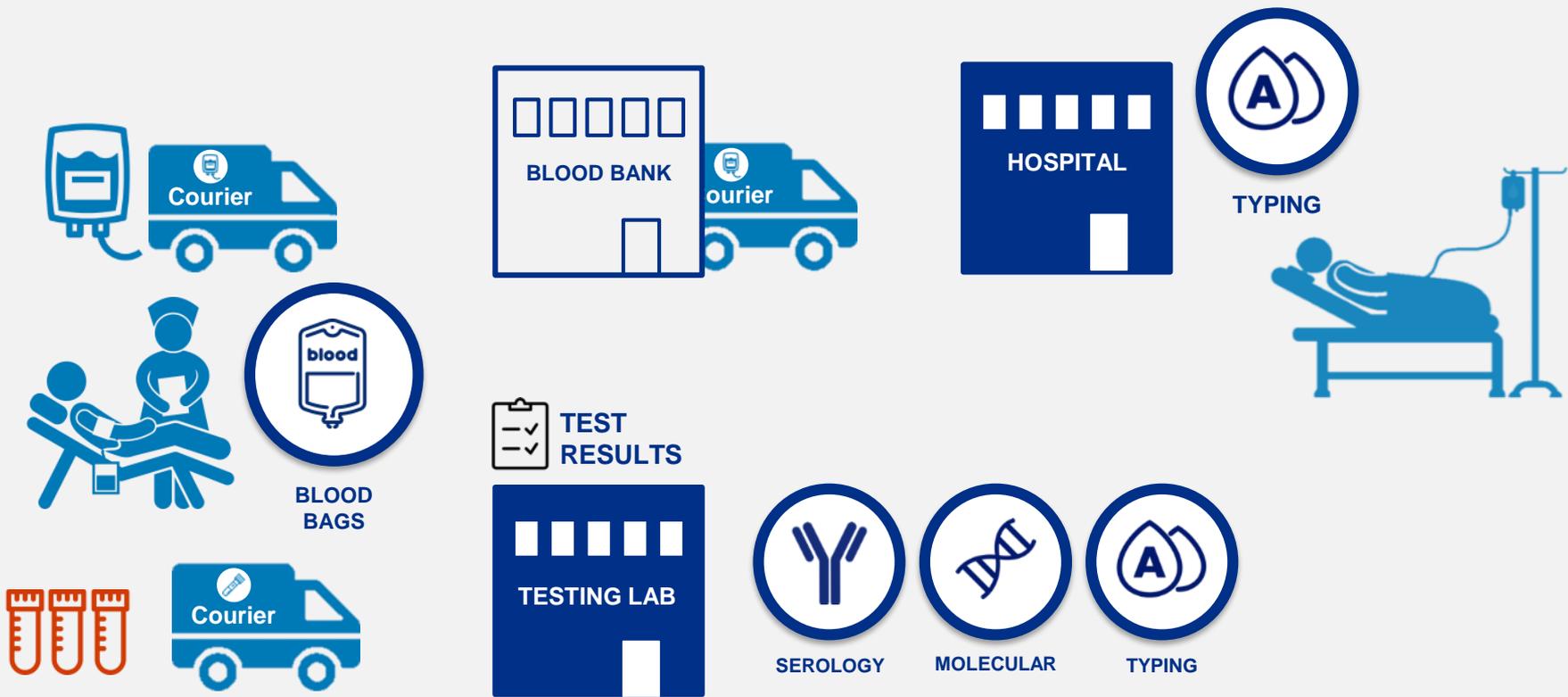
2 OF TOP 5



Creative Testing Solutions and Ortho Clinical Diagnostics and logo are registered trademarks of their respective owners

The Journey of Blood

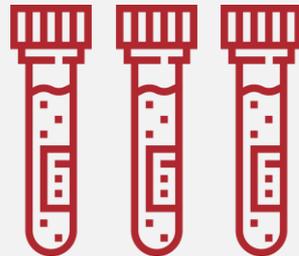
Grifols Plays a Vital Role Ensuring the Safety of the Blood Supply



Global Leader in Blood Donor Screening

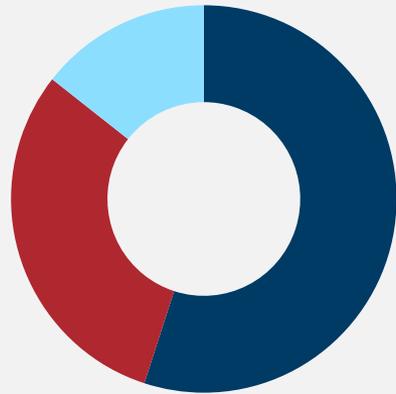
Stable NAT Adoption Worldwide Enables Grifols to Grow Around 2% in 2018

Blood Donations Tested



38M

Global Share of Adopted



■ Grifols ■ Roche ■ Others

Grifols continues to lead the global NAT donor screening with a 55% market share



70+
donations tested every minute with a Procleix assay*



200+
people impacted every minute*

*Source: Internal Data. * Does not include plasma collection*

Top 6 Customers Account for ~21M Donations

Multi-Year Agreements in Place With All Six Customers



Creative Testing Solutions, Japanese Red Cross Society and Australian Red Cross Blood Service and logos are registered trademarks of their respective owners.

Responding to Customer Needs

Successful Product Development Leveraging Vertical Integration



Emerging Pathogens & Panther and Procleix Assays received FDA approval



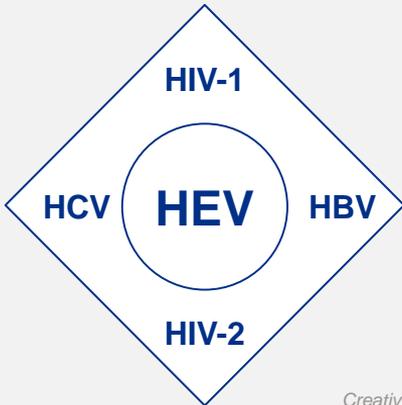
ZIKA



BABESIA



New Assay Development: Ultrio Plex E



Automation Ready Technology



Creative Testing Solutions, Japanese Red Cross Society and Australian Red Cross Blood Service and logos are registered trademarks of their respective owners.

Automation Project Is Approaching Market Launch

Modular Design to Address Specific Customer Needs and Variable Workflows

Panther ART

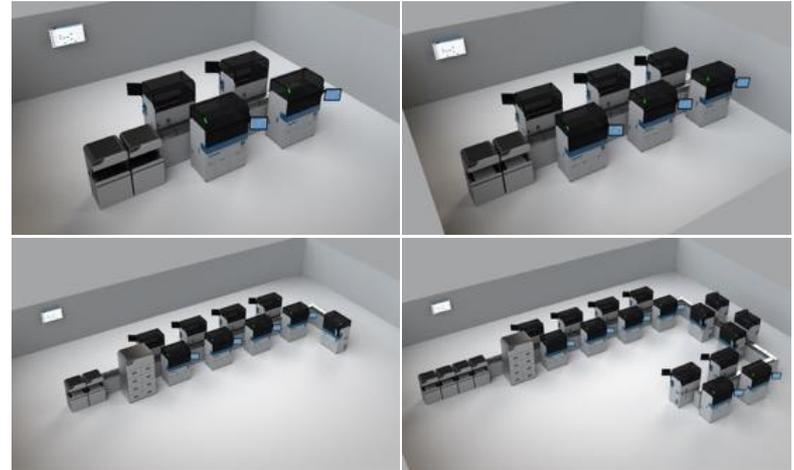


A modified Panther designed to:

- Connect to a network of Panthers
- Connect to track transport system
- Includes waste drain, MTU capacity, other software & hardware modifications

Panther ART is designed to interface with any CLSI-compliant track system

Panther ART Workcell



- Track-based sample transport
- Up to 16 Panthers

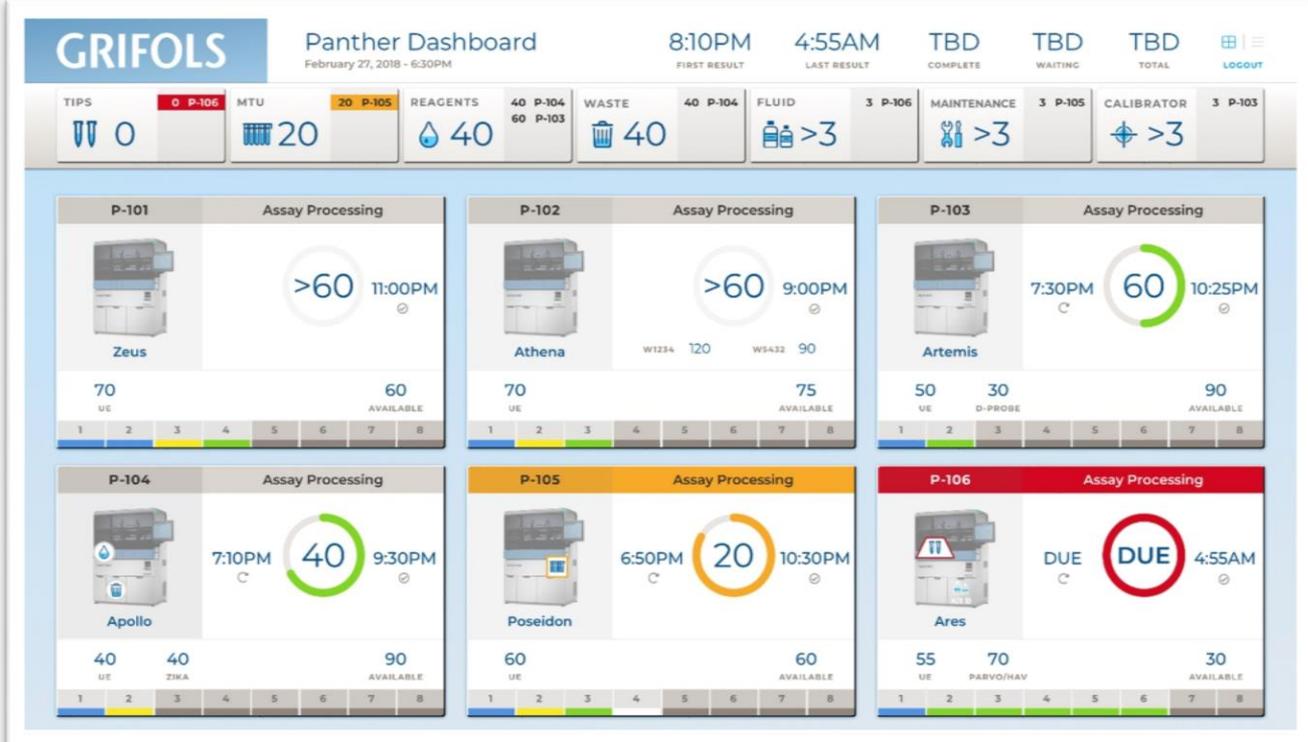
Panther Automation Is Today a Reality

Functional Track-Based Demo System Installed in Emeryville



Middleware and Panther Dashboard

Visual Tools That Manage and Prioritize Work in the Laboratory



Focus operations on what needs to be done in the next minutes, next hours, and next shift

Above Market Growth Driven by New Products

Record Number of Gel Cards Sold

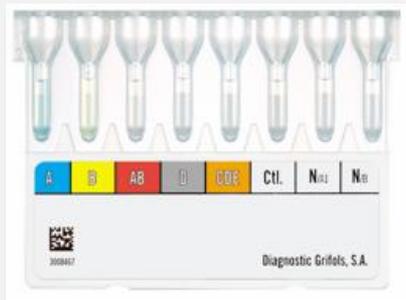
Blood Typing



9.3%

Growth (cc)
vs 2017

Gel Cards



42M

Units sold

New Distributor



Runda
MEDICAL

Runda Medical and logos are registered trademarks of their respective owners.

Successful New Erytra Eflexis[®] Launch

250+ Customer Placements Since End Q2 2017

Instrument Placements

250+

Since launch in Q2 2017

Competitive Conversions

+50% 

Countries



36

Countries

U.S. Launch

20+

Since FDA approval in Q1 2019



“ Flexible, reliable and easy-to-use ”

M.Maresca
(Gemelli Policlinico, Rome, Italy)

U.S. Immunohematology – Over 200 Customer Sites Under Contract

Launch of New Products Will Continue to Fuel Grifols' Growth

50% Growth (cc) vs 2017

New FDA Approved



Leverage Manufacturing Facilities in Spain and Brazil

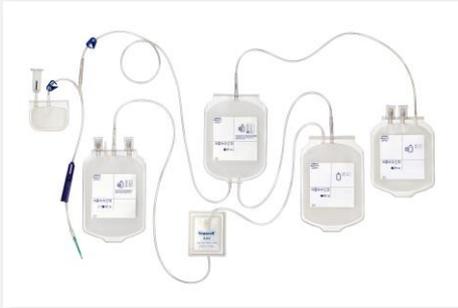
Strengthen Our Position in LATAM and Expansion Plans in EMEA

Blood Collection



13.4%

Growth (cc)
vs 2017



Leucored RC T&B, new Asahi Filter

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

CURITIBA
BRAZIL



MURCIA
SPAIN



Key initiatives

- Take full advantage of manufacturing facility in Brazil
- Re-launching in EMEA with a soft filter product

Leader in Antigen Supply for Immunoassays

Worldwide Market Leader in Hep/retro Immunoassays Antigens*



- CMF manufacturing site
- HCr43 and HBCore antigens

134,759

Antigen
shipped
(milligrams)

Future Growth Drivers

- Continuous expansion of antigens portfolio
- Exploring contract manufacturing opportunities outside of the agreement



** In Vitro Diagnostic Market Segment Review 2013-2014 and 2019 Forecast
Ad hoc report from Boston Biomedical Consultants, Inc., 2015 and internal estimations*

Expanding the Possibilities of the New Emeryville Facility

Center of Excellence for Recombinant Protein Design and Development

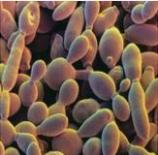
Protein Expression Platforms

BACTERIA



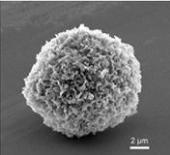
- Good for proteins not requiring post-translational modifications
- New vectors in design and development

YEAST



- Good for complex protein production
- Workhorse for legacy antigen expression

MAMMALIAN CELLS



- Excellent for expression of glycoproteins
- Enables post-translational modifications

Robust Immuno-Reagent Pipeline

Donor Screening

- New or improved antigens and mAbs (i.e. HIV, HCV, HBV)
- New antigens and mAbs for additional pathogens (Zika, Dengue, Babesia, etc.)

Hemostasis

- Novel vWF receptor derivatives
- Recombinant tissue factor
- Proprietary mAb for improved thrombosis assay

Immunoematology

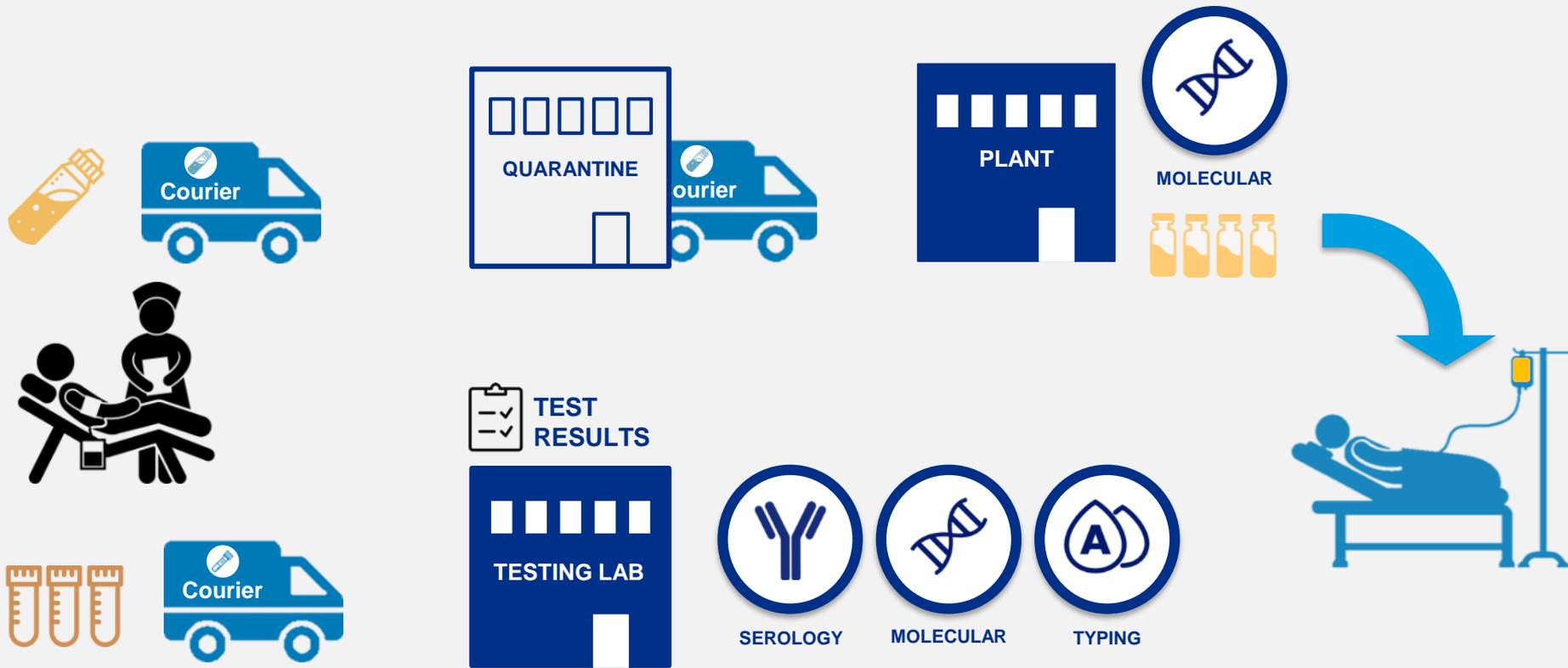
- Novel rare blood group antigens (stable reagents for extended blood typing menu)
- Fc fusion blocking protein (to resolve interference of daratumumab in antiglobulin testing)

Neurodegenerative

- New antigens and mAbs to support Alkahest's drug discovery process in aging related diseases

The Journey of Plasma

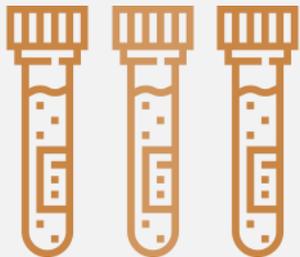
Contributing to the Safety of the Plasma Supply



Plasma Offers Growth Opportunity

Leveraging on Grifols' Plasma Testing

Volume Tested



10.4M

Donations

Grifols' Testing

Tigris to Panther transition
EU in P96 FDA approved



Upcoming Transitions



Blutspendedienst



Quality. Flexibility. Excellence.



New Org Chart

Dedicated sales & marketing team



**Converting accounts to Procleix
and increasing the number of tested donations**

Strategic Alliance in China: Shanghai RAAS

Long-Term Growth Opportunities for Diagnostic

**Fast Growing
IVD Market**

10.9%

CAGR (2016-2021)

**Great IH
Opportunity**

\$310M

IH IVD Testing Market

**New NAT
Blood Donations**

+2.5M

(From 2018 to 2020)

**NAT Mandate
Plasma Donations**

+15.5M

New plasma donations tested



Sources: NIFDC 2018; InterChina survey 2017

A Global Leader in Transfusion Medicine

Building a Specialty Diagnostics Portfolio

Transfusion Medicine



Donor Screening

Global leader in donor screening



Immunoassays

New manufacturing in Emeryville



Blood Typing space

Complete portfolio of instruments, gel cards and reagents



Blood Collection

Manufacturing in Spain and Brazil



Hemostasis

Distribution agreement with Beckman



Specialty Diagnostics

Aesku
Promonitor

New Organization for Grifols Specialty Diagnostics

Provide Focus for Future Growth, Following Strategic Plan

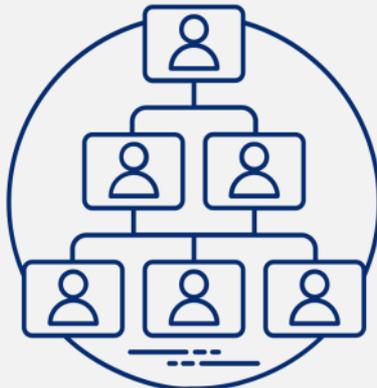
Specialty Diagnostics



3.5%

Growth (cc)
vs 2017

New Org Chart



Promonitor



15%

Growth (cc)
vs 2017

We Have a Bright and Exciting Future

Grifols Diagnostic Has Multiple Growth Opportunities



Global Leader in Transfusion Medicine

- Blood & Plasma Donor Screening
- Antigen Manufacturing
- Blood Typing Solutions



Growing Loyal Customer Base

- Top 6 NAT Customers
- BTS Competitive Conversions
- Sales in 100+ Countries



Manufacturing Excellence & R&D

- Excellent GMP Facilities
- Increasing vertical integration
- Innovative R&D



Bright & Exciting Future

- Emerging Pathogens
- Geographical Expansion, esp. China
- Robust pipeline of new products



Hospital Division

Successful Execution of a Transformational Strategy

Robert Jagt

President, Hospital Commercial Division

GRIFOLS

OUR FOCUS is on delivering products, integrated technology solutions and services that improve safety, quality and efficiency in operational pharmacy



Successful Execution of a Transformational Strategy: Sales Inflection

A Robust Strategy Dynamically Positions the Division

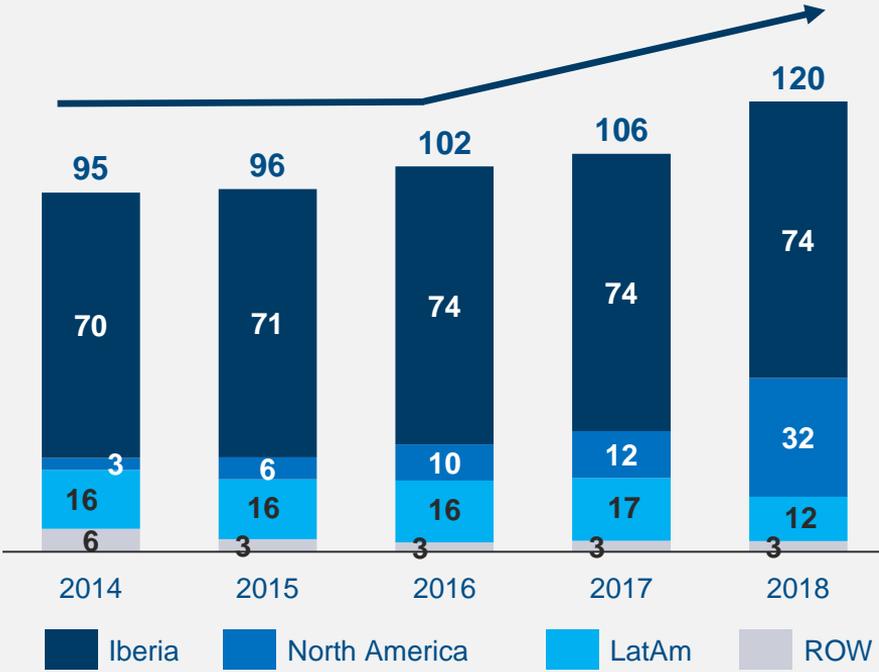
The Hospital Division will continue its strategic evolution to become a comprehensive solutions provider for the Operational Pharmacy - enabling the division to become meaningful contributor to the GRIFOLS group

In 2017 we embarked on a journey to become a comprehensive solutions provider for Operational Pharmacy

Transformational investments in Kiro and MedKeeper to create GRIFOLS COMPLETE have changed the vision and strategic focus for this division

Accelerated Performance:

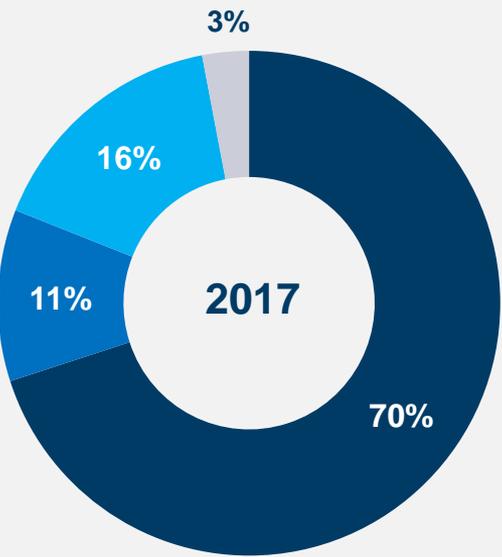
- Double-digit growth in 2018, following low growth in prior years
- Growth coming from the U.S.
- Fueled by IV Compounding Portfolio and IV Fluids



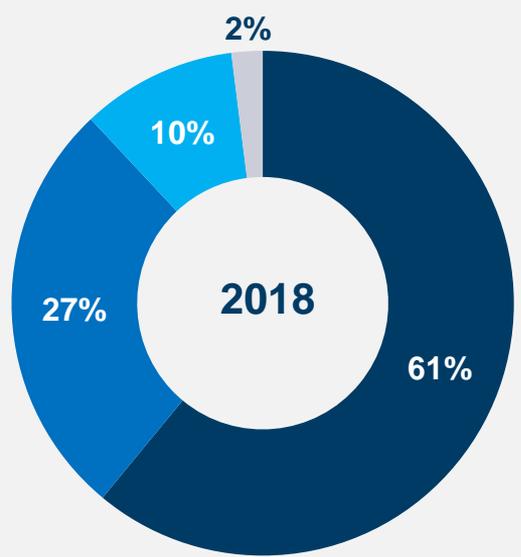
Clear Path to Strengthening Portfolio for Growth

U.S. and Pharmatech Drove 16% cc Growth in 2018

EUR 106 M



EUR 120 M



Iberia N. America LATAM ROW

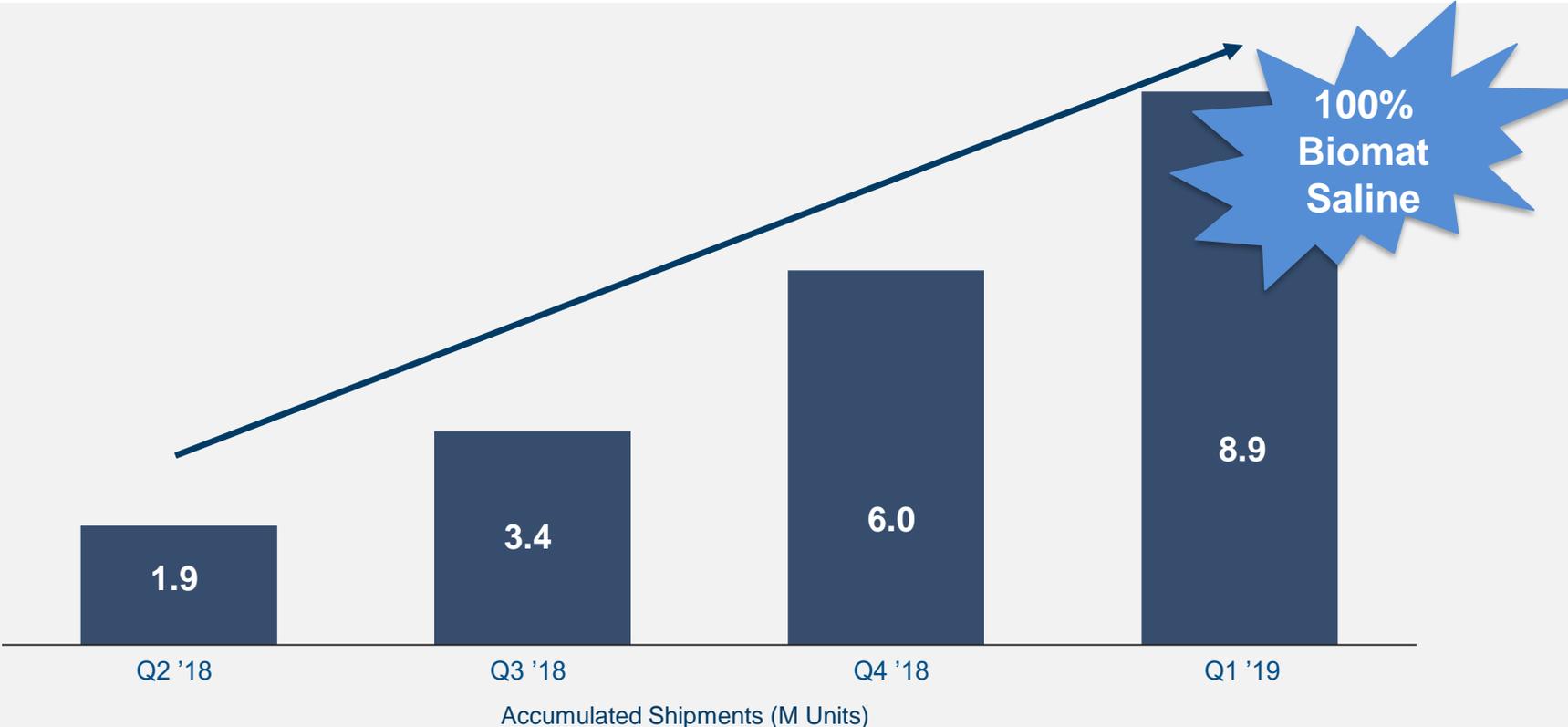
- Growth across all lines
- Dramatic increase in N. America

Key events:

- MedKeeper acquisition
- Kiro stake increased to 90%
- Saline launch in U.S.

Strengthening Vertical Integration

Utilizing Own Manufactured Saline in Grifols' Plasma Centers



Hospital on the Path to Profitability

LTM EBITDA Trend at Constant Currency

(EUR in millions)



Maintaining a Strong Position and Reputation in Iberia While Accelerating Penetration in the U.S. Market

By Leveraging Our Strong Position, Reputation and Legacy in IBERIA and LATAM

- Broad portfolio including Pharmatech, IV therapy base, medical devices and clinical nutrition
- Advanced hospital pharmacies
- Established leaders; learning, trialing
- Manufacturing and engineering advantages

By Accelerating U.S. sales - Offering a Solution Aligned with U.S. Market Drivers & Grifols Strengths



Current Market Conditions for IV Compounding in the U.S.

Tailwinds Support Market Expansion and Dynamics



Population Health

Personalized medicine and aging population are driving a growing number of compounded sterile preparations



Regulatory Compliance

Regulatory pressures are driving clean room improvements and investments in automation

Tougher FDA, USP & SBoP requirements are leading to new challenges for compounding pharmacies (503a and 503b)



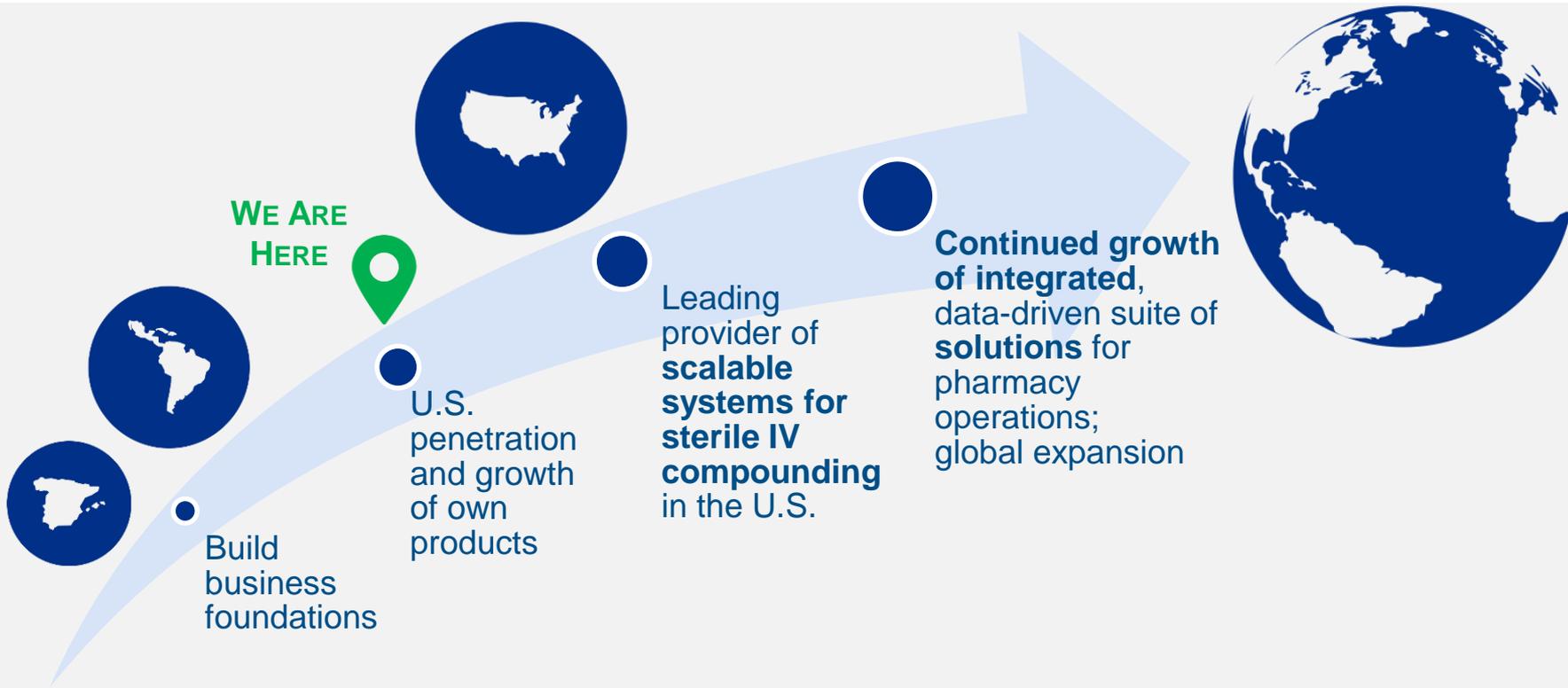
Quality & Safety Challenges

Dynamic conditions exist as many organizations are receiving notification from regulators regarding quality issues

Closures or “cease of operations” occurring in compounding pharmacies within health systems and outsourcing companies

Pharmatech Ambition for IV Compounding Ecosystem

Toward Strategy Execution



Global IV Compounding Market Is Set for Sustained Growth

Strategy Poised to Meet Growing Market Needs and Future Demands

U.S. Growth:

- **GRIFOLS Inclusiv** portfolio sales in the U.S. have more than doubled in one year
- Continued strength is expected as ~6k hospitals deal with challenging new requirements
- Current adoption of IV workflow software is estimated at ~20% and experiencing high growth
- Adoption of automation solutions in IV compounding is low and expected to experience sustained growth

Global Growth:

- Other markets have already begun to adopt stricter standards for IV compounding and this trend is expected to continue to expand globally

**Global IV
Compounding market**

\$1.3bn

in 2017

**Global Pharmacy
Automation market**

\$6bn

in 2017

Source: Pharmacy Automation: Technologies and Global Markets Report from BCC Research, 2016; IAS026E and also on Global Cleanroom Technology Market Size: Industry Report from Grand View Research, 2017; GVR-2-68038-216-7

Complete Solution to Meet IV Compounding Needs

Most Comprehensive IV Compounding Portfolio: A Key Opportunity



Devices	Misterium airinspace® CIMScan™	Phocus Rx	KIRO oncology KIRO Fill Gri-fill	StocKey®	
Software	MedKeeper suite of apps				
	Verification	Carts	Activities Training	Inspections Tracking	
	CIMScan™	KIRO Link Silicon. (CPOE)	StocKey®	CIMScan™	Silicon. (CPOE)
Service	Misterium GRIFOLS ENGINEERING				

Complete Solution to Meet IV Compounding Needs

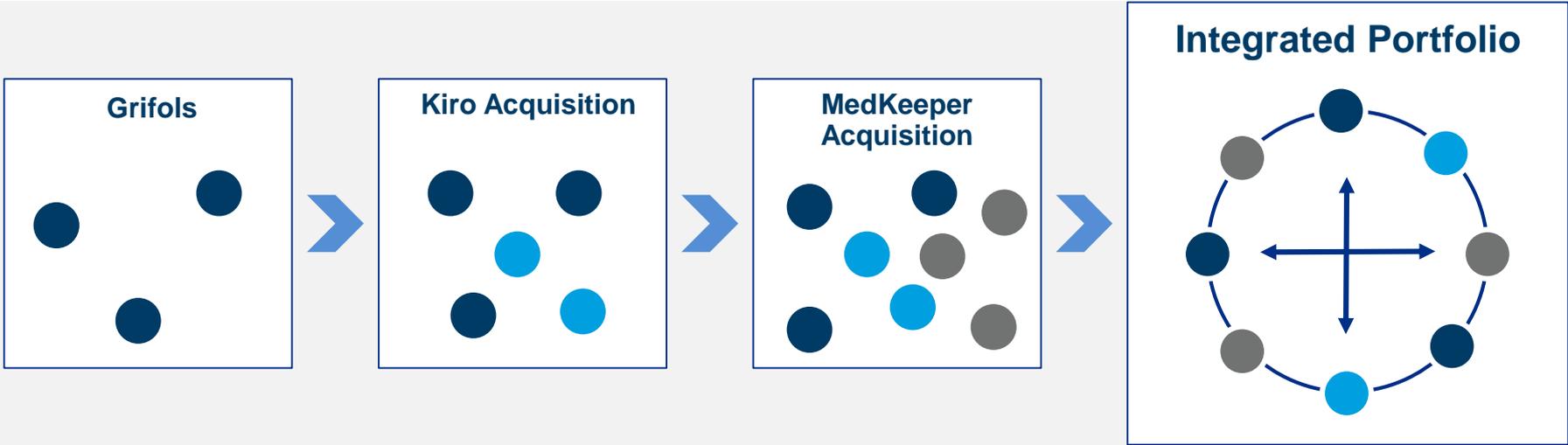
Most Comprehensive IV Compounding Portfolio: A Key Opportunity

	Compounding Inventory	Aseptic Procedures Consulting	Cleanroom	IV Workflow Management	Semi-Automated Compounding	Robot Oncology	Robot batch IVs
Grifols	✓	✓	✓	✓	✓	✓	✓*
Omniceil	✓			✓		✓	✓
Loccioni						✓	✓*
ARxium						✓**	✓
Baxter				✓	✓		
ICU				✓	✓		
BD	✓			✓			

* Under development: Kiro Fill for Grifols. Little is known about the Loccioni product.
 ** ARxIUM claims that RIVA could be used for Oncology/HZ drugs, they report one installation but not confirmed results yet Baxter, ICU (Hospira) and Becton Dickinson (Alaris) have smart infusion pumps (IV Delivery & Administration)

Positioning for a Comprehensive and Integrated Portfolio

Strengthening Grifols' Portfolio



Customer Experience

Moves from an isolated product offering to an integrated system in which each product plays a key role

Partner vs. Product expert

Core Insight

It Is All About Safety

- **Pain points** included the need to meet regulatory requirements, demands for efficiency, and a host of other daily pressures
- However their **underlying motivation** was safety:



- **Safety was far and away their primary motivation** –specifically, **patient safety**
- Most pharmacy directors had **chosen to work** in hospitals to work **more closely with patients**
- In their **leadership roles** they felt they could have a **larger impact** on safety

New Branded Portfolio

Strengthening Grifols' Portfolio



A single over-arching portfolio of integrated products – customer focused.

· Power is in the system vs components ·

Protecting patients is your most important responsibility.

inclusiv is an IV compounding portfolio that integrates technology, software and services.

Designed to keep your patients safe through:

- IV Workflow Management Systems
- Modular Cleanroom Systems & Consulting
- Robotics & Other Machines for Sterile Compounding
- Pharmacy Operations Software

And that's all backed by 75 years of proven experience in sterile manufacturing environments.

Visit www.inclusiv.com to learn more.

HELPS ENSURE USP <797> AND USP <800> COMPLIANCE

Portfolio Offers Strong Value Proposition

Strengthening Grifols' Portfolio

- Customers felt the range of products in the **portfolio presented was comprehensive** and few considered it to be missing any components
- They **responded very positively to the idea of a single provider** that could offer a **full portfolio of solutions** for the IV compounding area and also found it unique

“ It seems like a **one-stop shop**. It's good. I haven't seen anybody **actually present it in a complete package like this**”

“ I haven't seen anybody that has **breadth of services like this**”

Inclusiv Brand Communicates Breadth and Depth

Strengthening Grifols' Portfolio



- The winning brand name and logo successfully communicated the **breadth of a connected IV portfolio** consistent with the value proposition presented to customers

“ Is when they have everything that’s needed for compounding”

“ Initially, when I looked at it, it said to me **it’s everything ...which tells me that it’s all things IV**”

New Campaign Communicates Safety and Strongly Resonates

Strengthening Grifols' Portfolio

- The advertising concept successfully **communicated patient safety** in a way that **connected emotionally** with customers
- The **portfolio** was seen as the **solution** that could help customers **protect their patients**



“ We have the ability to either care for the family through the baby or not; it's more than the little one there. **It's about the patient, protecting our patients, and that's the most important thing we do, that's why we're pharmacists**”

“ As a **healthcare provider** it's our **responsibility**, sort of like a **parent to a baby**, because they can't protect themselves. **It starts with somebody overseeing the protection and the safety process.** It's relatable, **especially if you have children**, as well as some of the history causing the movement in **safety in the compounding space**”

Inclusiv Portfolio Is a Good Fit Within Broad GRIFOLS Relationship

Strengthening Grifols' Portfolio

“What does **GRIFOLS** signify for me?
Stability. Commitment. They are there
to develop long-term relationships and
that's what I like about them”

Key Takeaways

Near-Term

Strengthen

Leverage leadership and expertise in IBAM to **accelerate growth and profit in U.S.**

Drive value of **MedKeeper & Kiro acquisitions**

Execute core strategies in IV Compounding Control, Contract Manufacturing and IV Solutions

Mid-Term

Expand

As growth accelerates, **resource for sustainability, including expanded Multichannel Marketing capabilities**

Consider growth through **adjacent strategies**

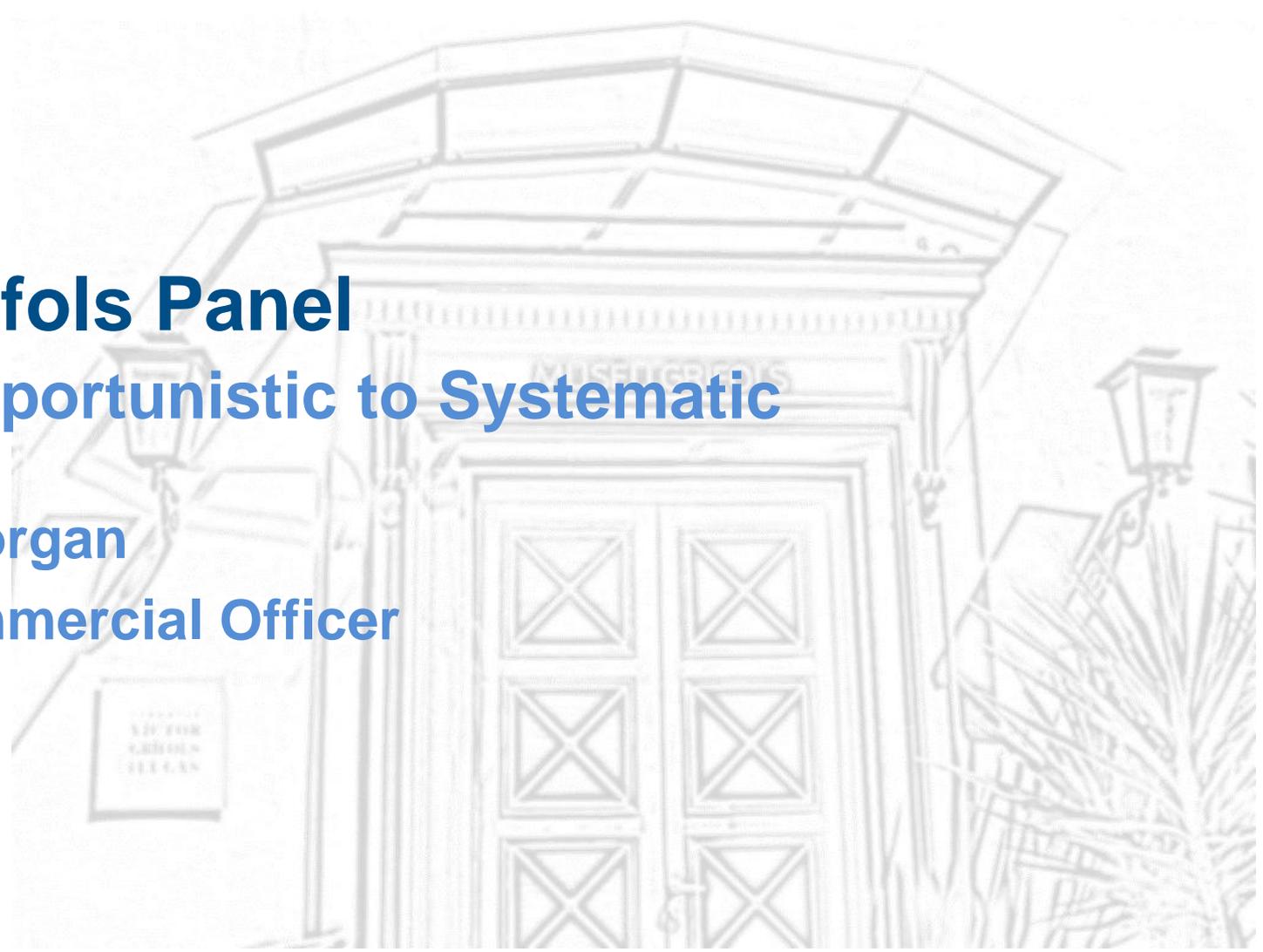
Longer-Term

Lead

Leading provider of scalable systems for sterile IV compounding in the U.S.

Continued growth of integrated, data-driven suite of solutions for pharmacy operations through global expansion

Grifols Hospital Division Will Continue Its Strategic Evolution to Become a Comprehensive Solutions Provider for the Operational Pharmacy



One Grifols Panel From Opportunistic to Systematic

Lafmin Morgan
Chief Commercial Officer

GRIFOLS

Evolution in Our One Grifols Approach

From Opportunistic to Systematic and Strategic



Research

Customer Needs & Expectations

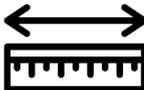
- **Strategic Partnerships:** Fully understand customer goals and priorities - offer tailored, strategic solutions
- **Ease of Doing Business:** One account manager as single-access point for each customer



Act

Strategic Account Management

- **Cross-training:** Knowledge of full commercial portfolio
- **Cross-pollination:** Businesses meet/discuss common customers
- **Education:** Interpret buying signals/purchasing process across all businesses



Measure

Monitoring Our Impact

- **New Opportunities:** As the broader portfolio has been socialized new opportunities for all businesses have emerged
- **Awareness:** Evolution in customer awareness of our full portfolio & how new opportunities impact our existing baseline business

IDNs Are Key to Build the U.S. Immunohematology Business

Leverage Existing Relationship to Open Doors for Our BTS Products

IDNs and GPOs Organizations

Consolidation is a key trend on the industry

+500

M&A ACTIVITIES
(SINCE 2014)

IDNs and GPOs goal is to reduce members' operating costs

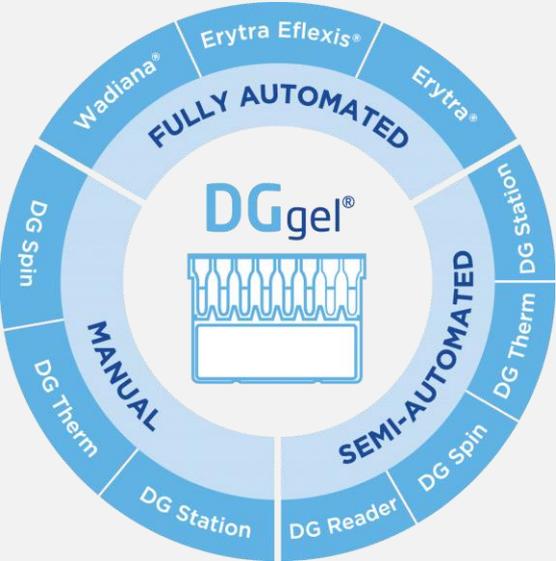
Grifols Organization

ONE GRIFOLS

We are structured to ensure that each buying experience promotes our corporate values in terms of:

- Patient Safety
- Operational Ease
- Financial Transparency

Best Portfolio to Meet Customer Needs



Self-Sustainability with IV Solutions

Saline Today and Anti-Coagulant in the Future

- 100% of Normal Saline for Biomat is from GRIFOLS
- NDA for anti-coagulant solution (sodium citrate) has been submitted to FDA



One Grifols Panel

Impact on Customer Engagement

Grifols, the Provider of the Portfolio

A Robust Strategy Dynamically Positions the Division

- Most customers were **familiar with Grifols pharmaceutical products** and had **positive** impressions
 - **Reliability** (consistency of supply) and product **quality** were mentioned
- **Only a minority** of customers were **aware of the products and services** offered by Grifols **in the IV compounding area**. Those who were familiar with them had positive experiences with clean room design and consultation
- **Most found it credible** that Grifols could offer the portfolio, citing our ability to **meet rigorous cGMP standards** required of an FDA-approved pharmaceutical manufacturer

“ I think they have a **good brand name associated with them**. Positive connotation”

“ They are the experts in this. They are living it through their manufacturing arm. They have the ability to help you out”

Improving A1AT Genetic Diagnosis

Partnerships With Local Laboratory or In-house Testing Services

Model A local partner laboratory



6,500

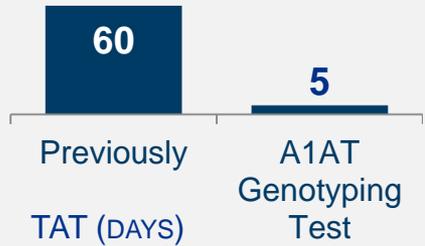
SAMPLES TESTED

- Reduction on diagnostic times
- Decrease need for sequencing
- Positive user feedback

Model B Service at Progenika laboratory



Significant Reduction of Laboratory Turnaround Time



- 3,500 samples processed
- 29 new patients candidate for treatment



Partner with local laboratory or in-house testing services

AATD Testing

First Buccal (Cheek) Swab on the Market for Alpha-1 Diagnosis



Benefits to Healthcare Providers and Patients

Technology, innovation and services improve ease of use and convenience for HCPs and patients



Easy to use



Non-invasive



Detects 99.9% of AATD cases



Rapid results (<1 week)



Reliable results (EU and FDA approval)

One Grifols Panel

Internal Impact

Creation of Global Commercial Technical Services

New Global Function Will Support Customers Across All Divisions and Regions



New Ways of Working

- Identify and use common technologies and approaches
- Strengthen collaboration between industrial and commercial functions by building a customer first framework
- Optimize the customer experience and leverage internal synergies to the benefit of all divisions



Bioscience



Diagnostic



Hospital

CLIA Lab in San Marcos Provides Multi-Divisional Support

Multiple Collaboration Projects With Bioscience and Other Areas



Biomat USA

GRIFOLS

Grifols Plasma Special Program

Identification of donors with Rho D Antibody to make Rho(D) Immune Globulin



Araclon Biotech

GRIFOLS

AB Test Validation

CLIA validation for the investigation of Alzheimer's disease

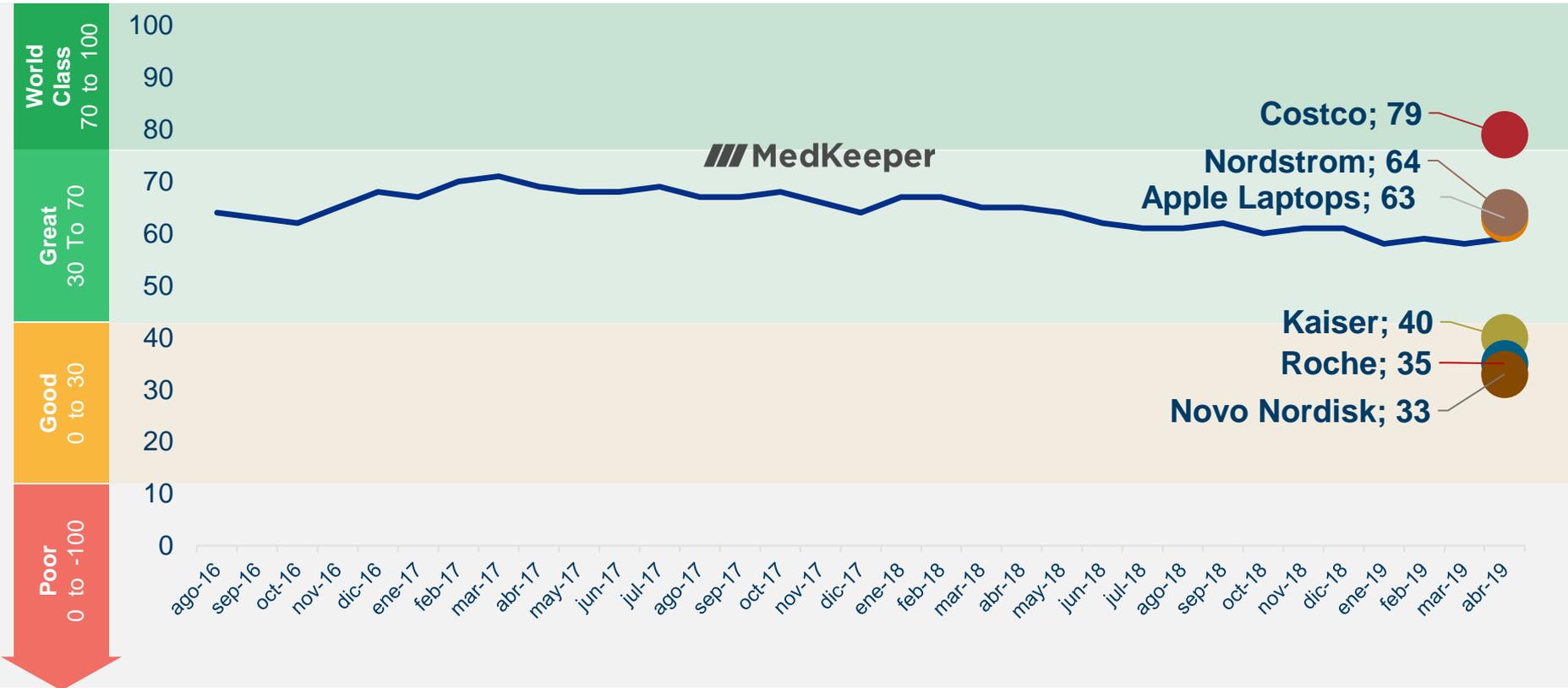


ALKAHEST

Genetic Testing Services

Clinical Study on patients with mild-to-moderate Alzheimer's disease

Grifols-MedKeeper NPS Rolling 12-Month Average



One Grifols Awards

Enterprise-Wide Incentives Support a One Grifols Culture



One Grifols Panel Discussion

Grifols Commercial Is Achieving Lasting Success

Leadership and Successful Track Record

- Talented team with proven ability to execute and overcome obstacles
- Strong market fundamentals across business lines
- Long-term benefit accruing from One Grifols customer focus
- Planned launches building on strong foundation for future growth
- Continued growth through geographical expansion



Plasma Procurement Strategy

Capacity Leadership in Plasma to Optimize Growth

Peter Allen
President and CEO, Biomat USA

GRIFOLS

Grifols Plasma Procurement Is Strong and Well Positioned

Capacity Leadership Drives Growth Opportunities

- 122 additional centers since 2016
- Global network of +290 centers on two continents; pending three
- Collection network will expand to approximately 370 by 2024
- Advance strong self-sufficiency position
- Focus on donor segmentation
- Excellence in logistics and lab testing; accuracy and throughput
- Improving efficiencies through technology and programs

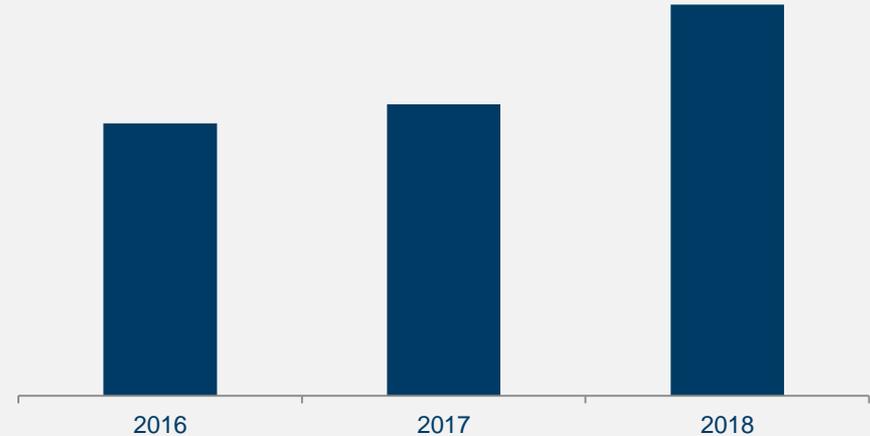


Double-Digit Collections Growth With Strong Performance

Capacity Leadership Drives Growth Opportunities

- Plasma obtained have increased significantly, driven by improved processes, extension of hours, facility expansions, and acquisitions
- Benefitting our plasma collection growth is a fully integrated and balanced plasma procurement organization
- Substantial work has been done to focus on both donor and center employee recruitment and loyalty
- Continued focus on quality performance

Grifols Plasma Volume Performance in Liters



Grifols' Global Plasma Procurement

Grifols' Plasma Donor Centers U.S.: 171 (Dec. 2016)

2016



Grifols' Global Plasma Procurement

Grifols' Plasma Donor Centers Worldwide: 293 (June 2019)

2017-2019



Establishment of the Biomat USA Holding and business units

Grifols' Global Plasma Procurement

Grifols' Plasma Donor Centers Worldwide: 293 (June 2019)

2017-2019

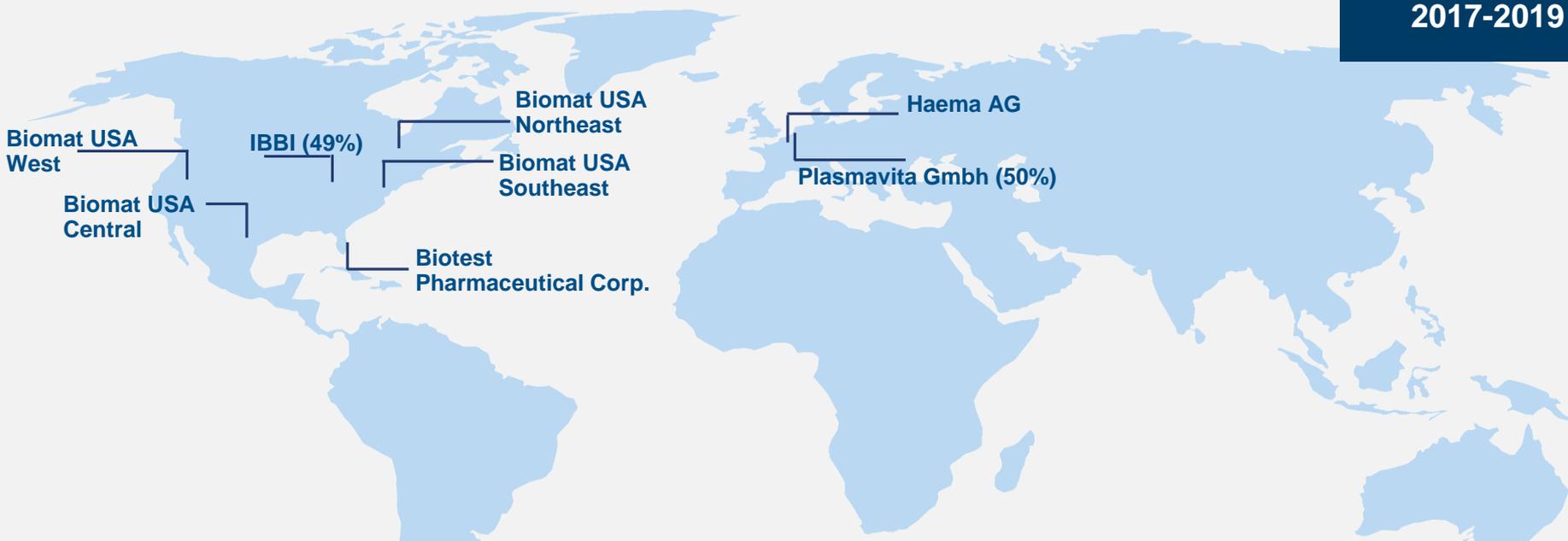


Establishment of the Biomat USA Holding and business units
Acquisition of Biotest U.S. Corporation and 12 Kedplasma donor centers

Grifols' Global Plasma Procurement

Grifols' Plasma Donor Centers Worldwide: 293 (June 2019)

2017-2019



Establishment of the Biomat USA Holding and business units
Acquisition of Biotest U.S. Corporation and 12 Kedplasma donor centers
First Grifols DC's in Europe with acquisition of Haema AG. Also, joint venture with Plasmavita GmbH

Grifols' Global Plasma Procurement

Grifols' Plasma Donor Centers Worldwide: 293 (June 2019)

2017-2019



Establishment of the Biomat USA Holding and business units.
Acquisition of Biotest U.S. Corporation and 12 Kedplasma donor centers
First Grifols DC's in Europe with acquisition of Haema AG. Also, joint venture with Plasmavita GmbH
Intention to have strategic alliance in China, with 26.2% stake in Shanghai RAAS

Grifols' Global Plasma Procurement

Grifols' Plasma Donor Centers Worldwide: 293 (June 2019)

2017-2019



- Establishment of the Biomat USA Holding and business units
- Acquisition of Biotest U.S. Corporation and 12 Kedplasma donor centers
- First Grifols DC's in Europe with acquisition of Haema AG. Also, joint venture with Plasmavita GmbH
- Intention to have strategic alliance in China, with 26.2% stake in Shanghai RAAS
- Acquisition of the remaining 51% of IBBI

Grifols' Global Plasma Procurement

Grifols' Plasma Donor Centers Worldwide: 293 (June 2019)

2017-2019



- Capitalize on best practices
- Leverage global and local balance

- Diversified talent pool
- Effective learning, trials, pilot studies

Establishment of the Biomat USA Holding and business units
Acquisition of Biotest U.S. Corporation and 12 Kedplasma donor centers
First Grifols DC's in Europe with acquisition of Haema AG. Also, joint venture with Plasmavita Gmbh
Intention to have strategic alliance in China, with 26.2% stake in Shanghai RAAS
Acquisition of the remaining 51% of IBBI

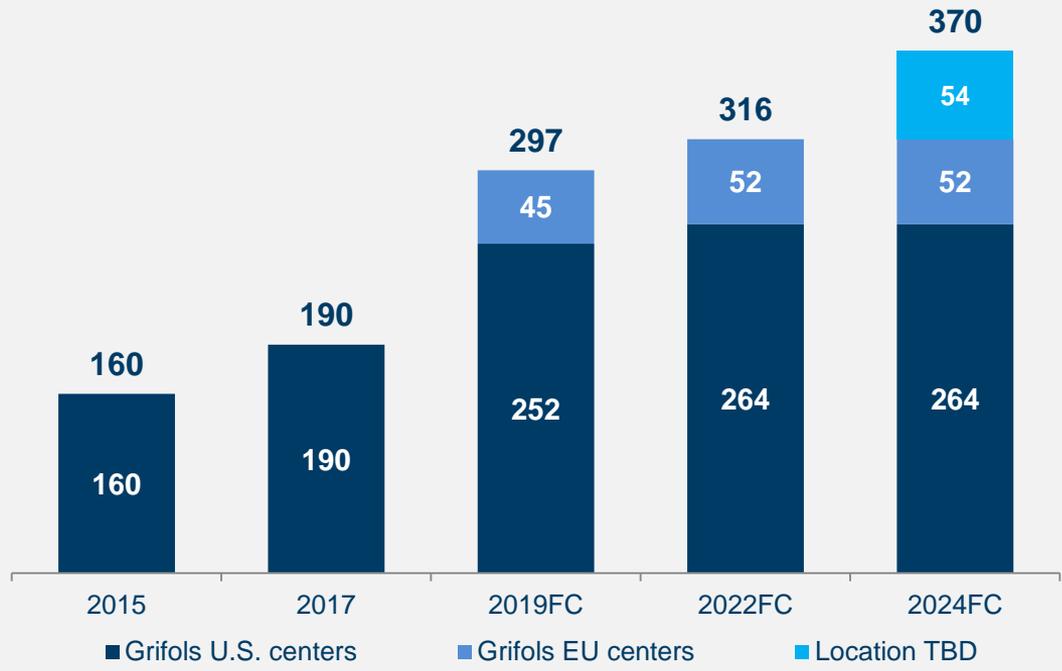
Plasma Procurement Strategy: Expansion and Diversification

Capacity Leadership in Plasma to Optimize Growth Opportunities

Growth Above the Plan



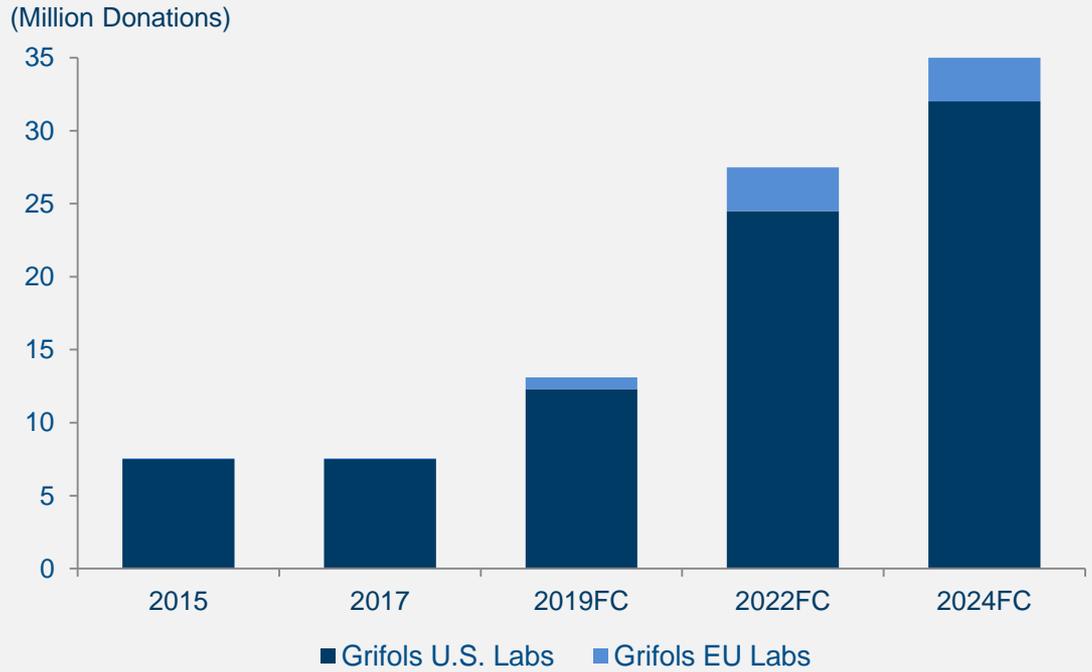
Grifols U.S. & EU Donor Centers



Plasma Procurement Strategy: Lab Expansion

Capacity Leadership in Plasma to Optimize Growth Opportunities

Grifols U.S. & EU Lab Capacity

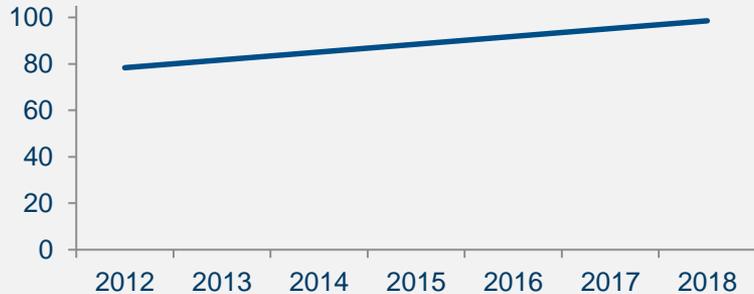


Regulatory Inspections in 2018

Grifols' High Standards Ensure Operational Efficiency and Sustainable Growth

Agency	Inspection Days	Admin Actions ⁽²⁾
FDA ⁽¹⁾	405	0
EU	313	0
COLA/CLIA	86	0
PPTA	82	0
Other ⁽³⁾	116	0
TOTAL	1,002	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

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)

Plasma Procurement Strategy

Focus on Grifols' Competitive Advantage

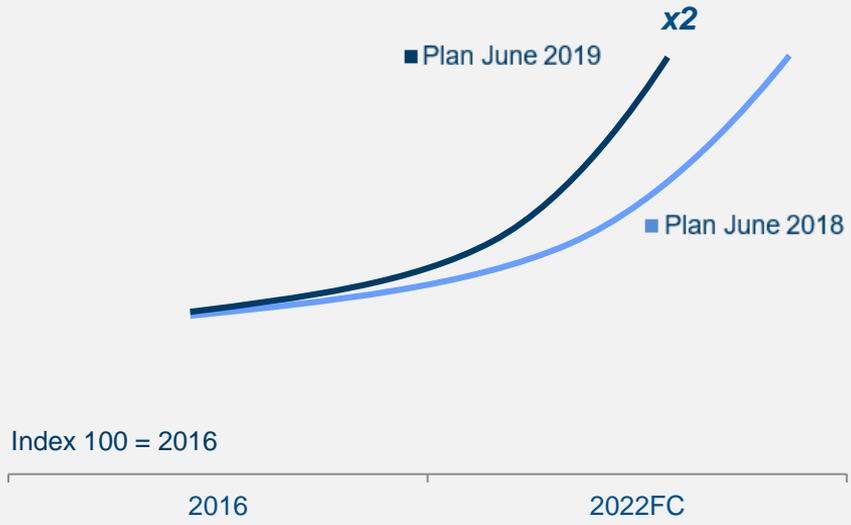
Growth

- Acceleration in growth of plasma centers
- ↑ Number of donor centers
- x2 Collections 1 year in advance
- ↑ EU plasma supply; diversifying supply
- Expand business development capabilities

Operational efficiencies

- Standardizing processes
- Continuous quality assurance best practices
- Leverage current and new technologies

Grifols Plasma Collections



Market and Self-Sufficiency

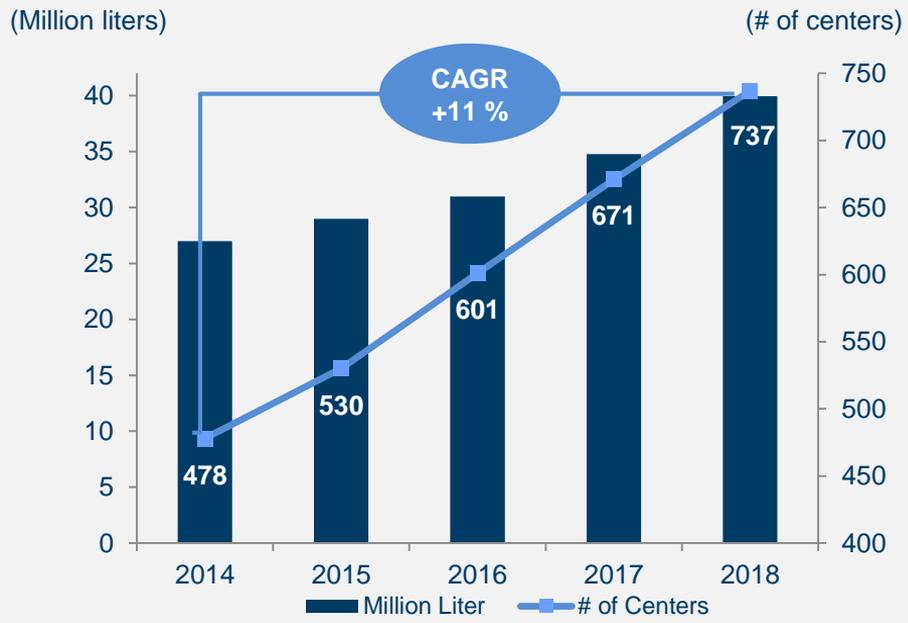
U.S. Plasma Market

Plasma Collection Growth¹

Consistent Growth

- Plasma collection has continued to be a large, growing industry year-on-year
- In 2018, the U.S. plasma market collected c.40 million liters
- The number of donor centers reached 737 by the end of 2018
- Increasing collections and recruiting qualified staff are main challenges
- Growth in volume with CAGR +10%
- Growth in centers with CAGR +11%

U.S. Plasma Collection Growth



¹ Source: PPTA - The Plasma Protein Therapeutics Association data
Plasma figures corresponds to plasma from plasmapheresis

EU Plasma Market

Plasma Collection Growth¹

Restrained Growth

- In 2018, the EU plasma market collected c.2.4 million liters (Germany 1.6, Austria 0.5 and Czech Rep and Hungary 0.3 million liters)
- The number of donor centers reached 111 by the end of 2018
- Increasing collections and recruiting qualified staff are main challenges, as volume growth is flat in the last years.
- Main players, Grifols (Haema), Octapharma, CSL, Biotest, TMD and KedPlasma
- Growth in centers with CAGR +5%

EU Plasma Collection Growth



¹ Source: PPTA EPCC - The Plasma Protein Therapeutics Association data
Plasma figures corresponds to plasma from plasmapheresis

European Collection Dynamics Continue to Evolve

European Collection Requirements Differ From the U.S.

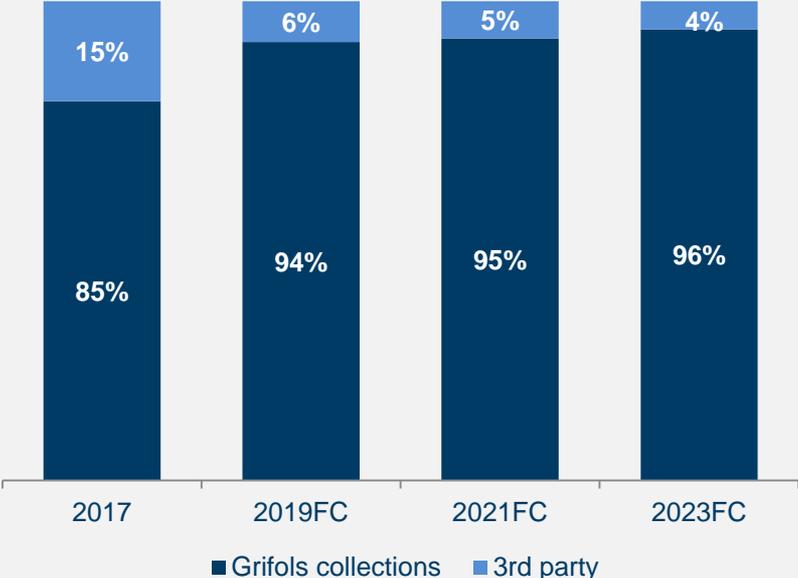
	EU	U.S.
Frequency	Varies; From 2x/7 days (48h Lapse) to 1x/14 days From 24 to 60 donations/year	2x/7 days (1 day btw 2); 104 donations/year
Collection volume	Varies, based on weight or estimation % blood From 600 ml to 850 ml	Std. volume based on weight; 690, 825, 880 ml
Donor compensation	Reimbursement only in 4 countries (CZ, DE, AT & HU)	Not regulated; Compensation for time/effort at market rates
Donor culture	Creating donor cultures: centers smaller/newer	Developed culture in most markets

- U.S. utilizing more of its collection capacity; less for export
- EU dependency on U.S. source plasma must be replaced
- EU nations vary in regulatory statutes impacting viability for collectors

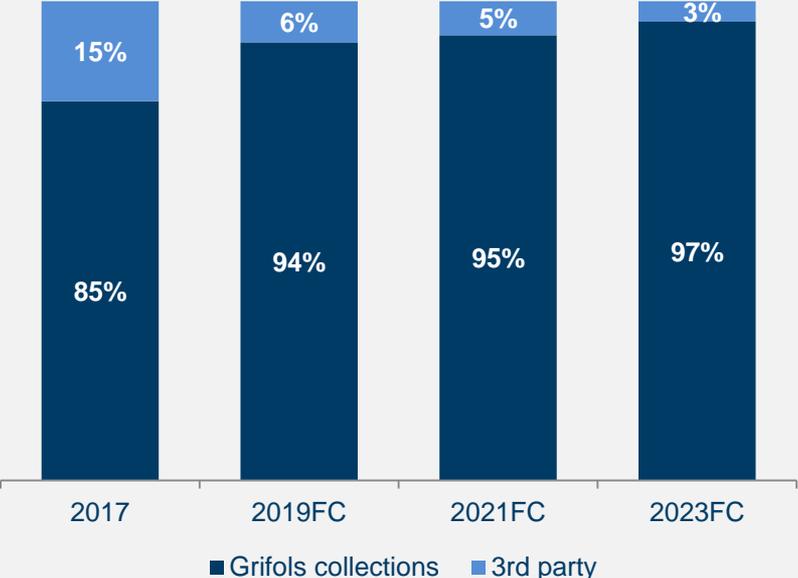
Plasma Procurement Strategy: Update 2019

Expanding Plasma Capacity While Working Toward Self-Sufficiency¹ Ahead of Plan

Regular Source Plasma – 2018 IAD



Regular Source Plasma – Update 2019

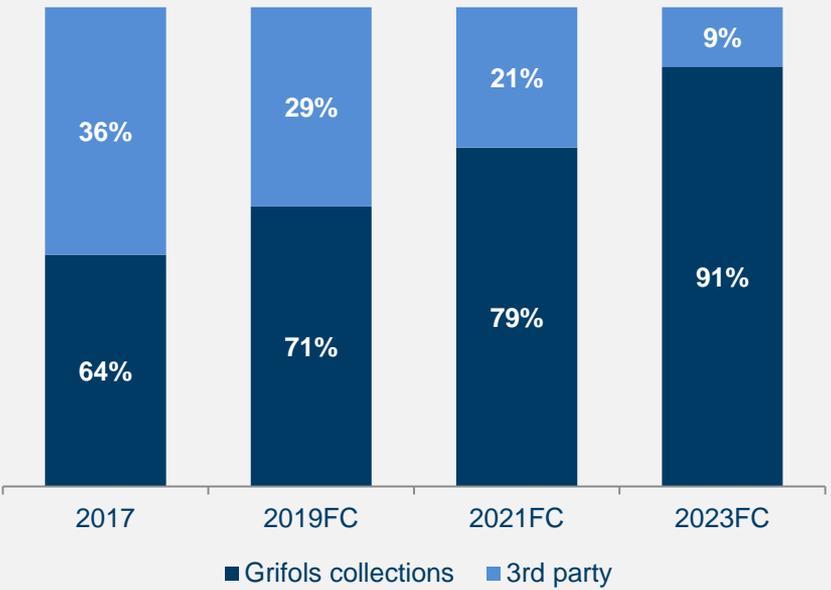


1. As % of total liters of fractionated plasma

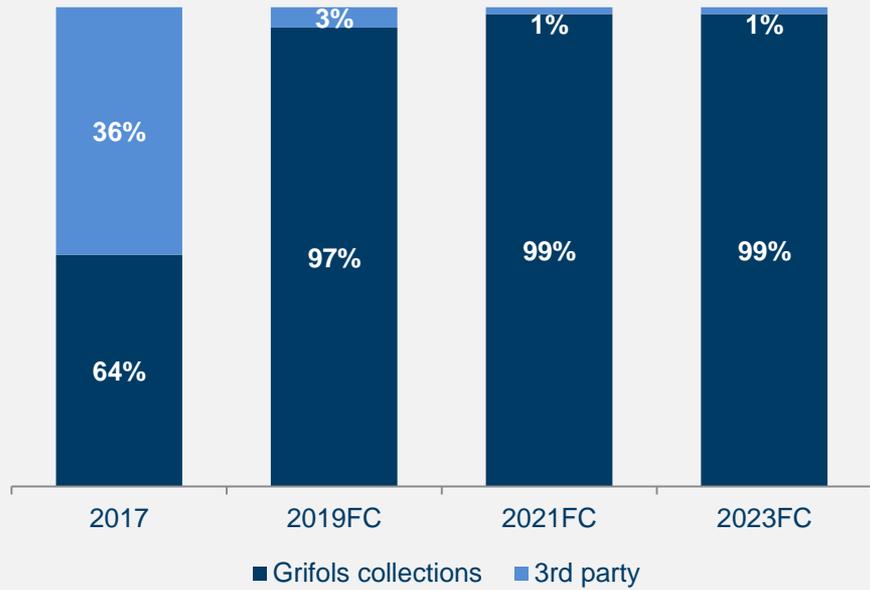
Plasma Procurement Strategy: Update 2019

Expanding Plasma Capacity While Working Toward Self-Sufficiency¹ Ahead of Plan

Hyperimmune Plasma – 2018 IAD



Leadership on Hyperimmune Plasma² – Update 2019

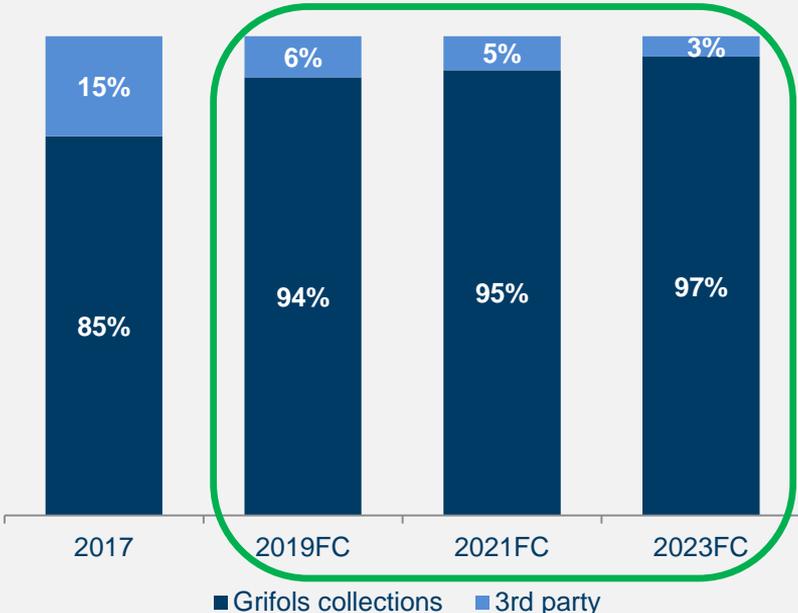


¹ As % of total liters of fractionated plasma
² Anti-Hepatitis B, Anti-D, Anti-Tetanus, Anti-Rabies, CMV and RSV programs

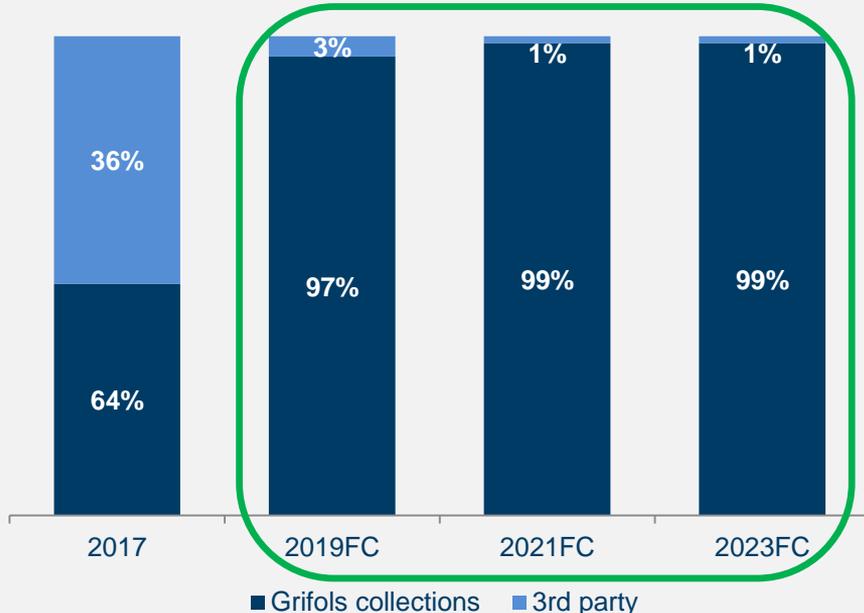
Plasma Procurement Strategy: Update 2019

Expanding Plasma Capacity While Working Toward Self-Sufficiency¹ Ahead of Plan

Regular Source Plasma



Leadership on Hyperimmune Plasma²



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

Positioned for Self-Sufficiency in Plasma Collection

One Grifols and Long-Term Contracts Protect Our Market Position and Growth

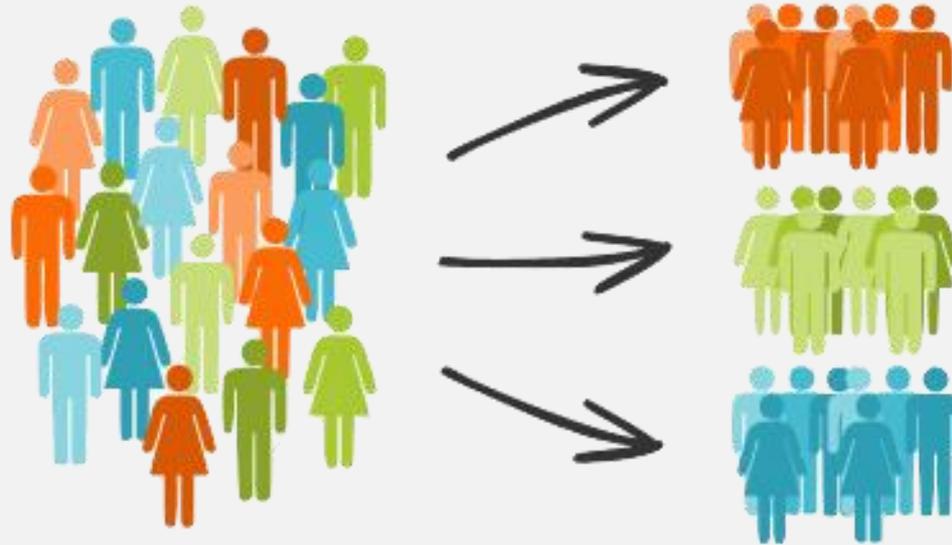
- Plasma collection centers
- Source plasma
- Hyperimmune plasma
- Testing
- Logistics
- Saline (Biomat USA centers 100%)
- Anti-coagulant (2019 approval)



Plasma Procurement: Future Growth

Plasma Procurement: Future Growth

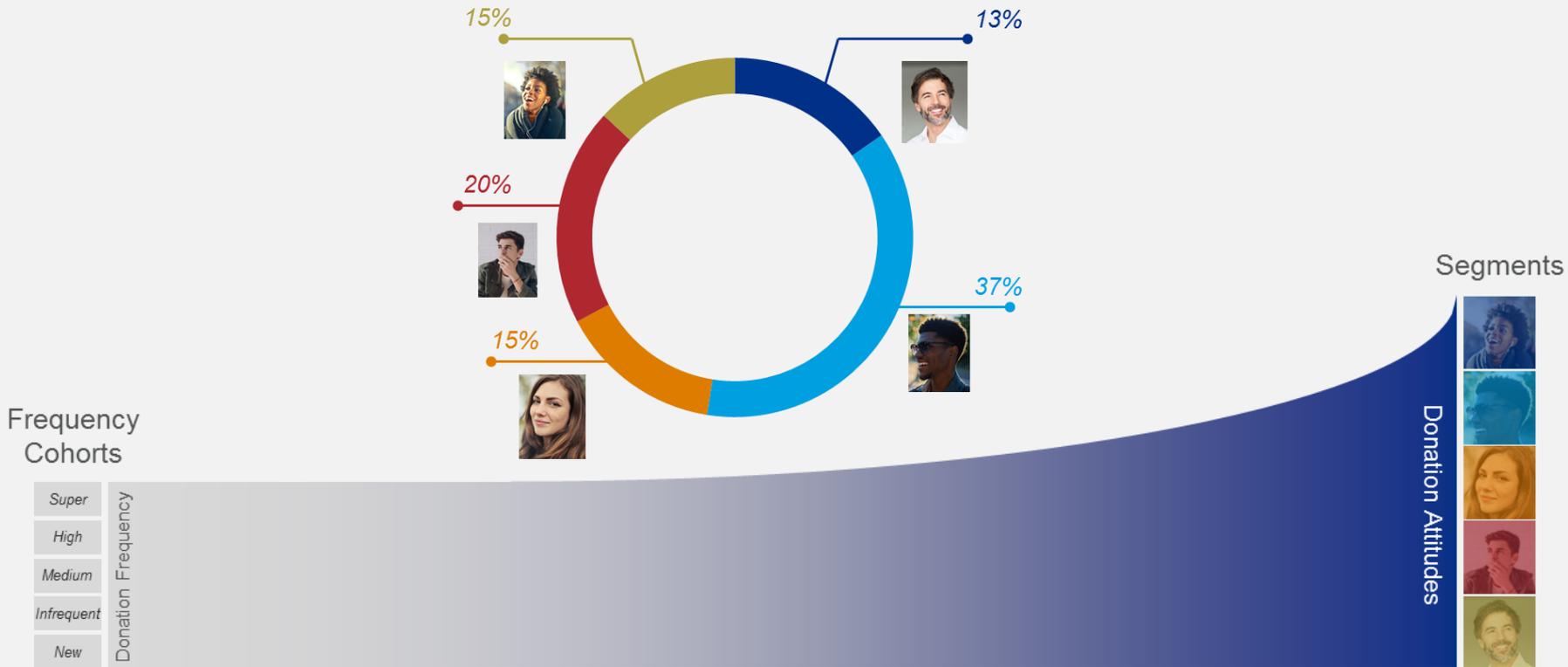
Delivering Personalized Experience Through Segmentation



Segmentation analysis seeks to identify natural segments in the market by **MAXIMIZING SIMILARITIES WITHIN SEGMENTS** and **MAXIMIZING DIFFERENCES BETWEEN SEGMENTS**

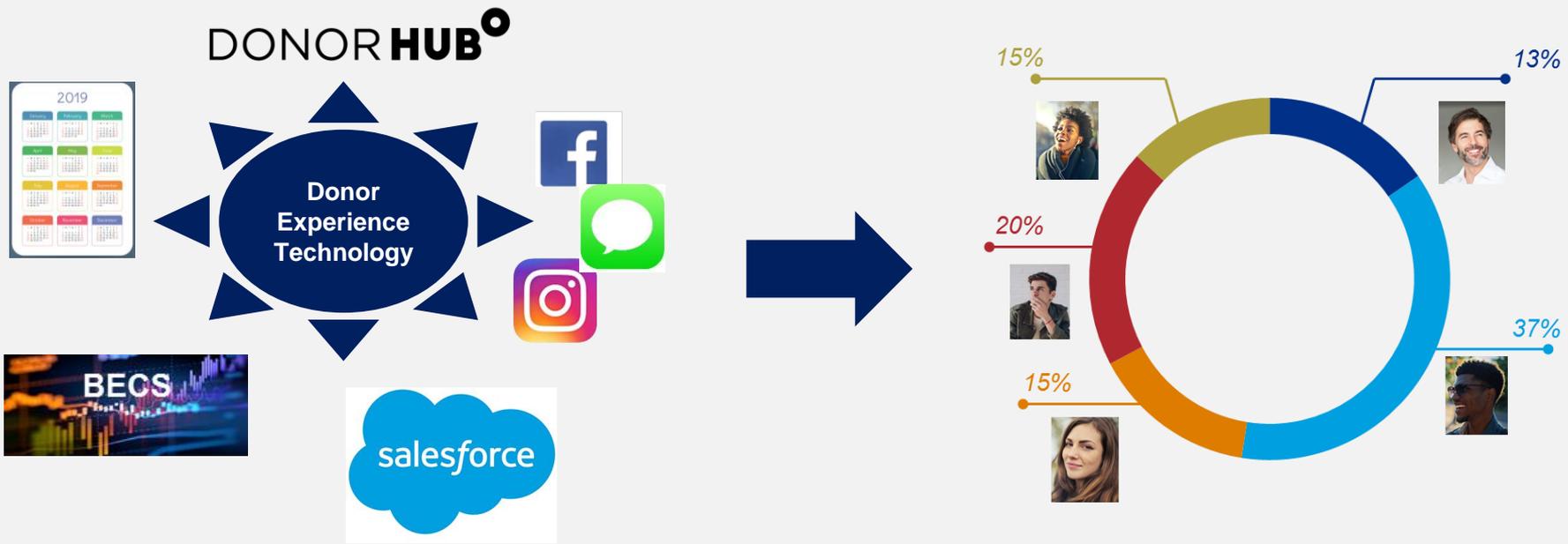
Five Segments Identified, Representative Across Fleet

Shift from Differentiating by Donor Frequency to Personalizing by Life Philosophy and Donation Attitudes



Technology Ecosystem Enables Engagement

Uniquely Positioned to Deliver With Internal Development and Partnerships

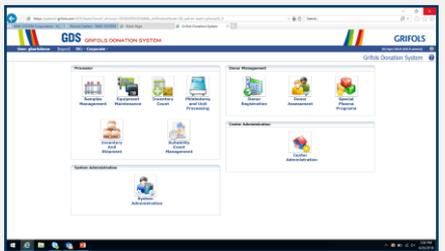


Plasma Productivity Journey

Journey Status on Track

Journey achievements

- Plasma technology plan defined in alignment with 4 goals
- Acquisitions providing essential insights
 - Collection technology
 - BECS
- Business Process Management tool



Plasma Supply Chain Efficiencies

Logistics: Integrated Plasma Supply Chain

Capable Multi-Site System Drives Cost Reductions

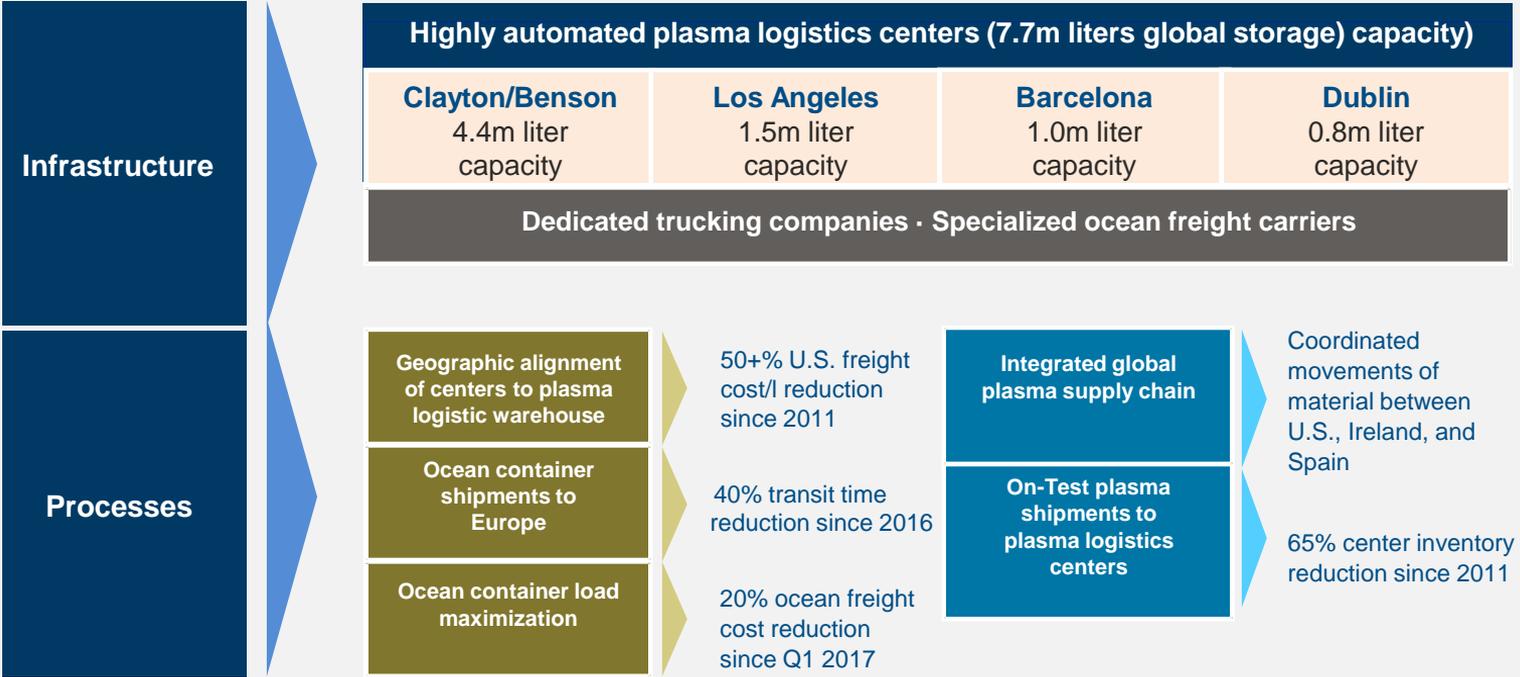
- 125% throughput increase with a modest increase in labor
- One shared database among multiple locations (LA, Clayton and Ireland)
- Grifols U.S. centers and warehouses currently operate with centralized release, enabling efficiencies in inventory management
- Semi-automated plasma clearing lines
- Automated freezer, conveyors and pallet automatic retrieval systems
- Back-up systems to support emergency situations



Logistics: Integrated Plasma Supply Chain

Capable Multi-Site System Drives Cost Reductions

Alignment across the supply chain drives cost reductions



Key Takeaways

Key Takeaways

Capacity Leadership to Optimize Growth

FOCUS ON SOURCING AND DIVERSIFICATION

- Grifols is committed to maintaining its leadership through a sustainable growth in plasma collection by promoting a fully integrated plasma procurement organization
- Grifols is investing in new centers to continue the plan to reach approximately 370 by 2024
- Plasma procurement is now on three continents, further diversifying plasma supply
- Self-sufficiency positions Grifols for stable performance and cost benefits

FOCUS ON DONOR ATTENTION AND EFFICIENCIES

- Donor focus and attention is continuously refined and supported
- Grifols' commitment to highest quality and safety standards remains top priority
- Operational efficiency improvements include continuous upgrades of plasma centers and customer service to increase donor recruitment and loyalty
- Excellent testing turnaround times and flexibility in testing laboratories



Bioscience Manufacturing Operations

Excelling at the Fundamentals

Eduardo Herrero
President, Bioscience Industrial Group

GRIFOLS

Bioscience Manufacturing Operations

Grifols' Global Footprint Today

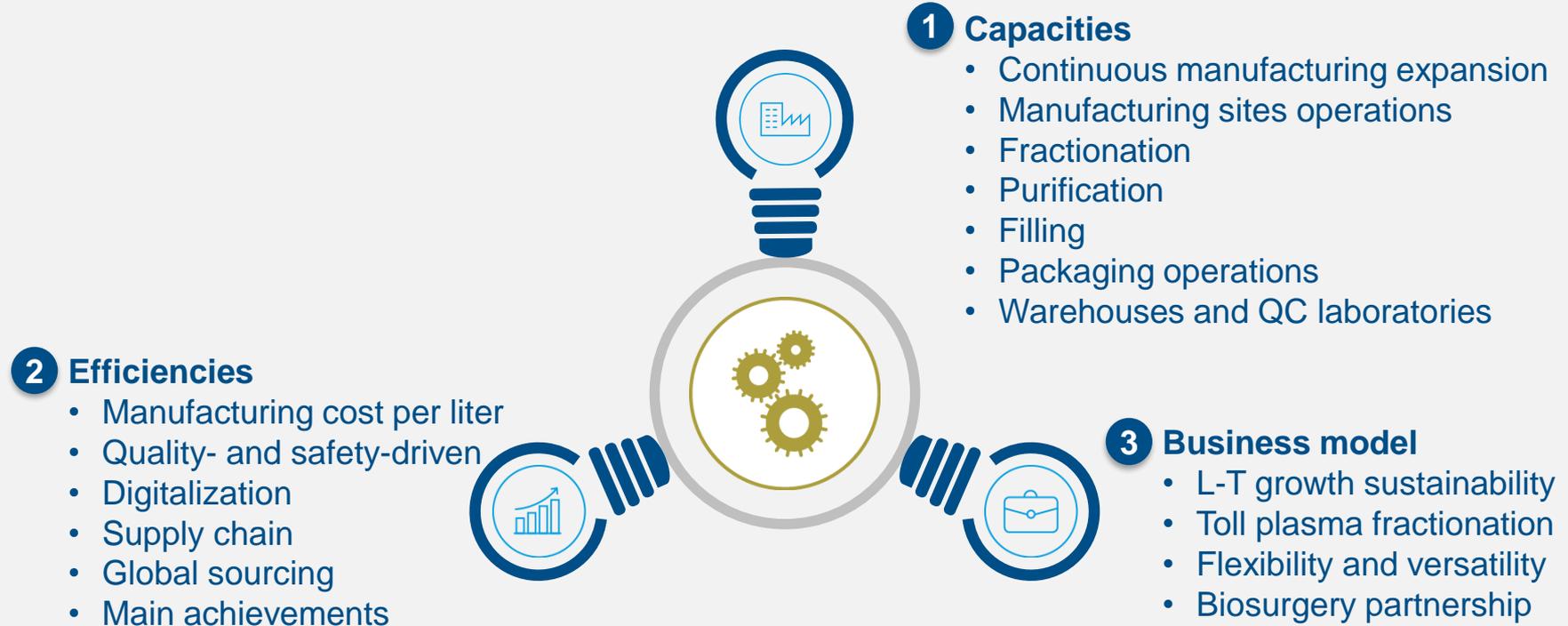
30+ million packaged vials in 2018	16,000+ Bioscience operations employees
	3,500+ employees in manufacturing sites
4 Manufacturing sites	450+ R&D employees
USD 1.3+ billion in CAPEX investments over the last 5 years	12,500+ employees in plasma operations sites
290+ plasma collection centers across the U.S. and Europe	

State-of-the-Art Manufacturing Sites



Bioscience Manufacturing Operations

Core Pillars

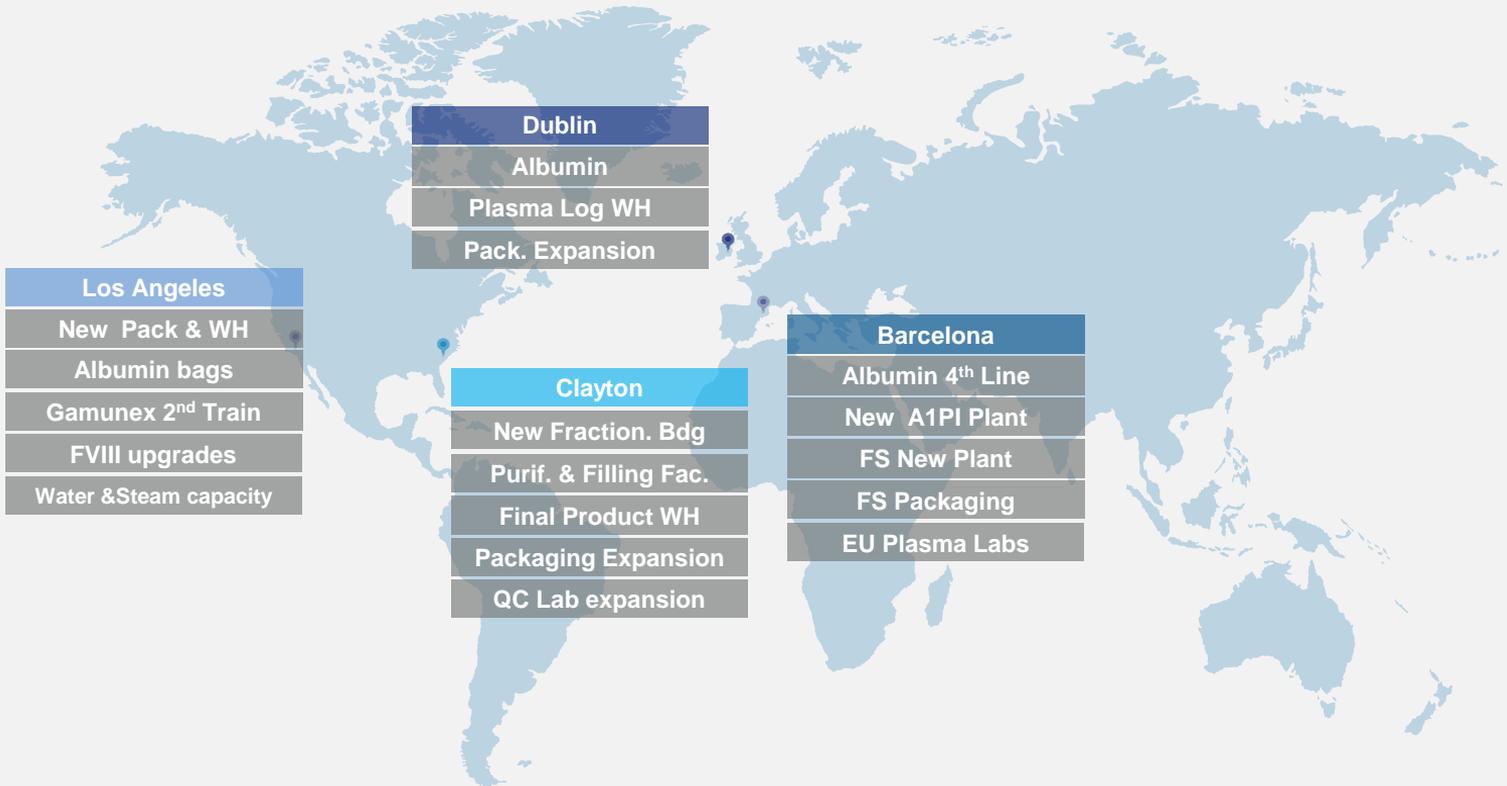


Bioscience Manufacturing Capacities

1

Continuous Manufacturing Expansion

Global Enhancement



Manufacturing Sites Operations

A Dynamic and Flexible Approach



	 Manufacturing activities	 Talent*	 Products
Clayton	Fractionation	1,200+	Immunoglobulin Albumin pd Coag. Factors Alpha-1 Antitrypsin Specialty IG, Antithrombin III
Barcelona	Purification Filling	1,100+	
Los Angeles	Packaging	800+	
Dublin	Packaging	100+	Immunoglobulin Albumin pd Coag. Factors Alpha-1 Antitrypsin Solvents



* It includes direct and indirect headcount in manufacturing plant

Fractionation Capacity

Global Capacity Availability at Constant Growth

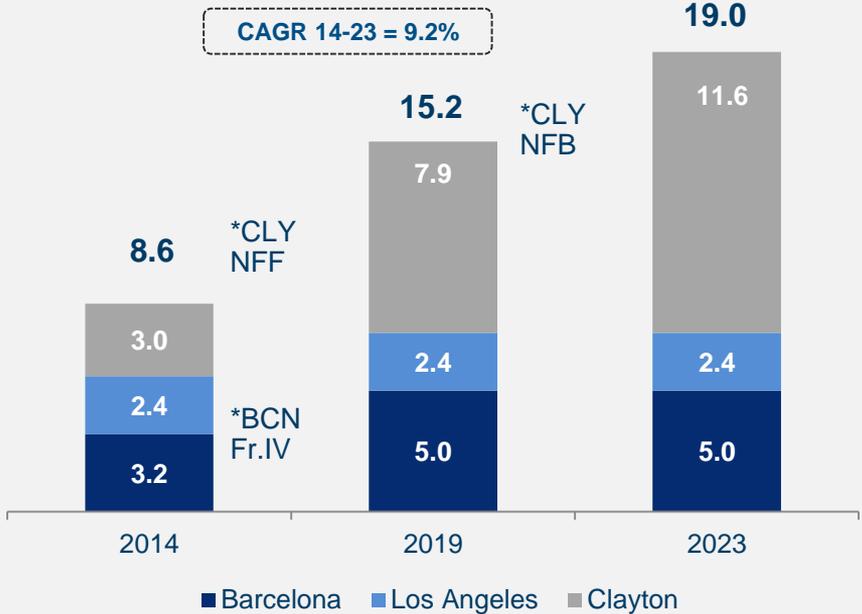
General Remarks



- Process efficiencies allow continuous incremental capacities: 3% fractionation capacity increase over 2018
- Target fractionation capacity accelerated to be reached in 2021
- Global demand is becoming more complex as new and emerging markets start to play decisive roles
- Grifols Engineering solutions for ABOs in plasma in bags and bottles represent new opportunities (recover and source)

Fractionation Capacity per Year

(Million liters)



Key Proteins Purification Capacity (I)



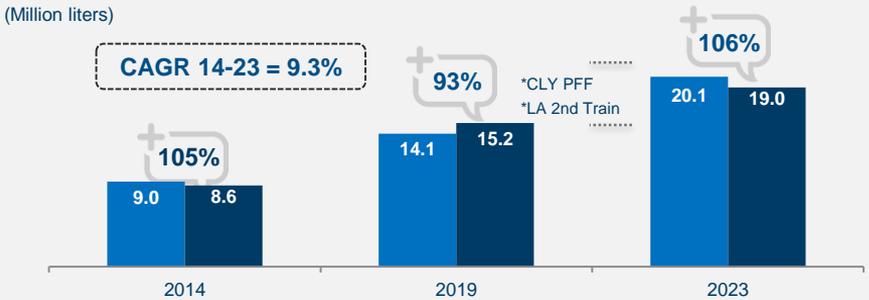
Adapting to Demand Variability

General Remarks

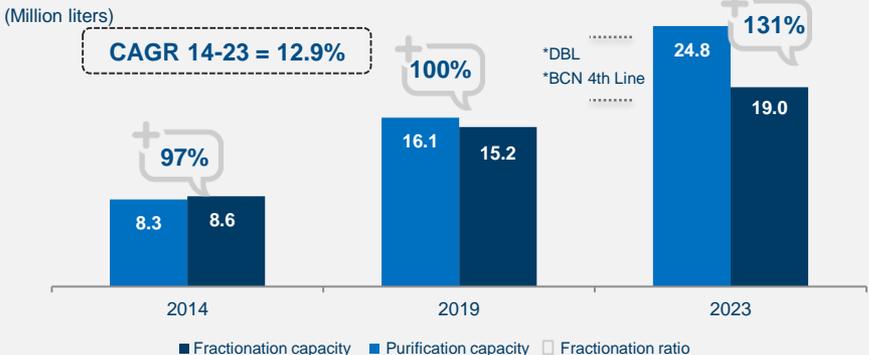


- Immunoglobulin and albumin are expected to continue driving the hemoderivatives market and Grifols is committed to meeting this demand
- Albumin production increase and additional bag presentation to address the needs of a growing market
- Balanced ratio fractionation and purification

Immunoglobulin



Albumin



Key Proteins Purification Capacity (II)



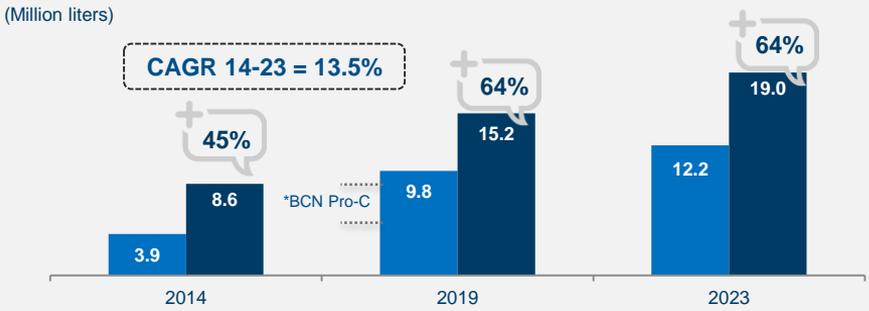
Adapting to Demand Variability

General Remarks

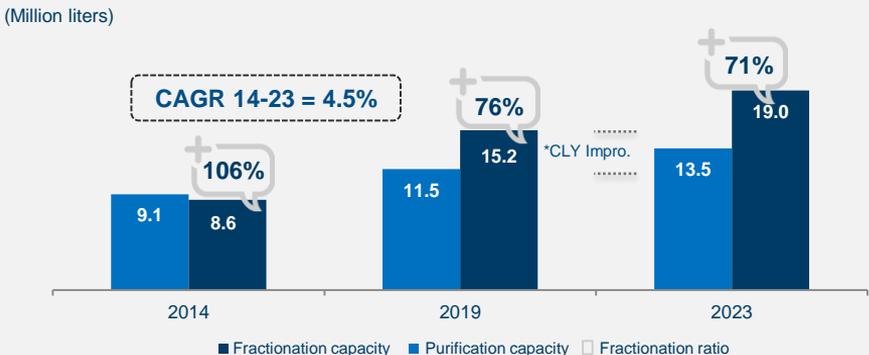


- Investments and execution of new facilities, along with validation and regulatory submissions ensure Prolastin[®]-C facilities in the U.S. and Spain will meet global demand
- pd FVIII will continue balancing Grifols' performance. Equipment upgrades and process optimization both support product availability at a competitive cost

Alpha-1 Antitrypsin



Pd FVIII

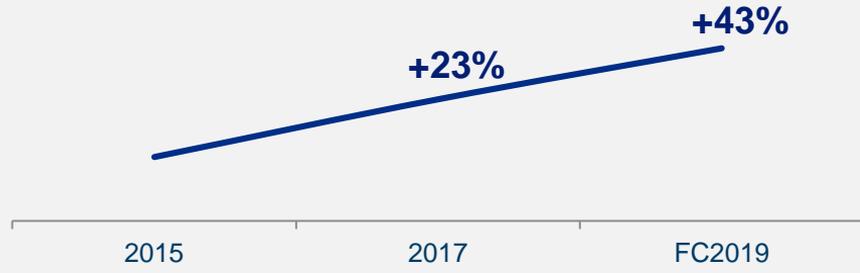


Evolution of Filling Production

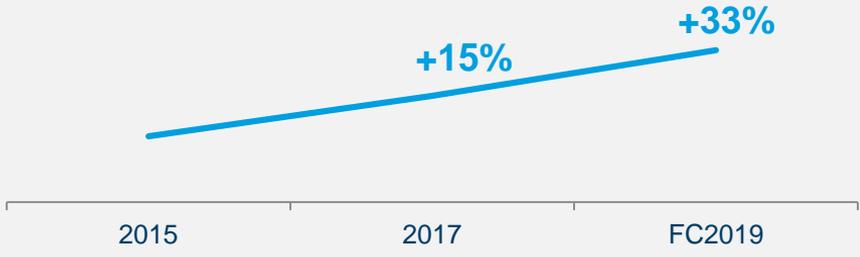
Generating Reliability and Sustainable Growth



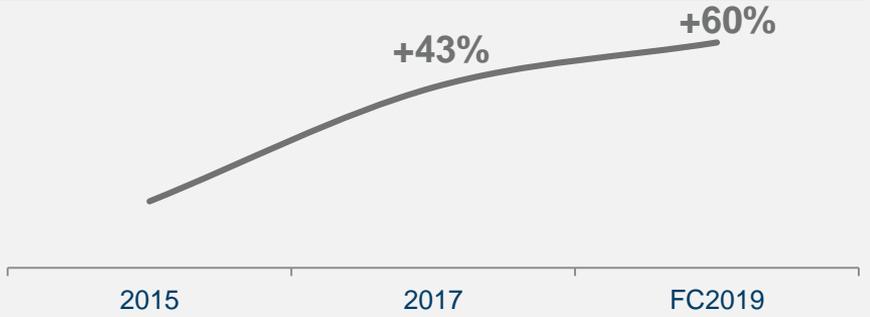
Albumin



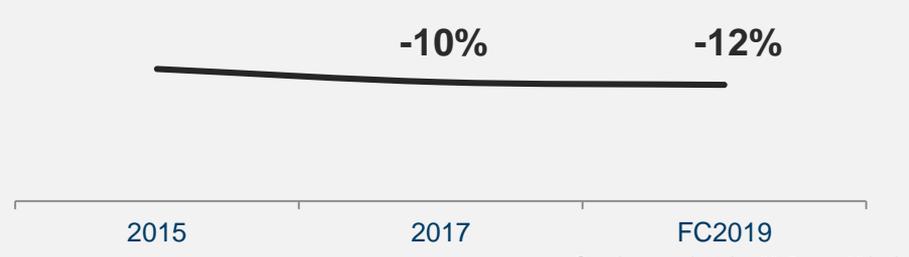
IVIG



Alpha-1



pd Factor VIII



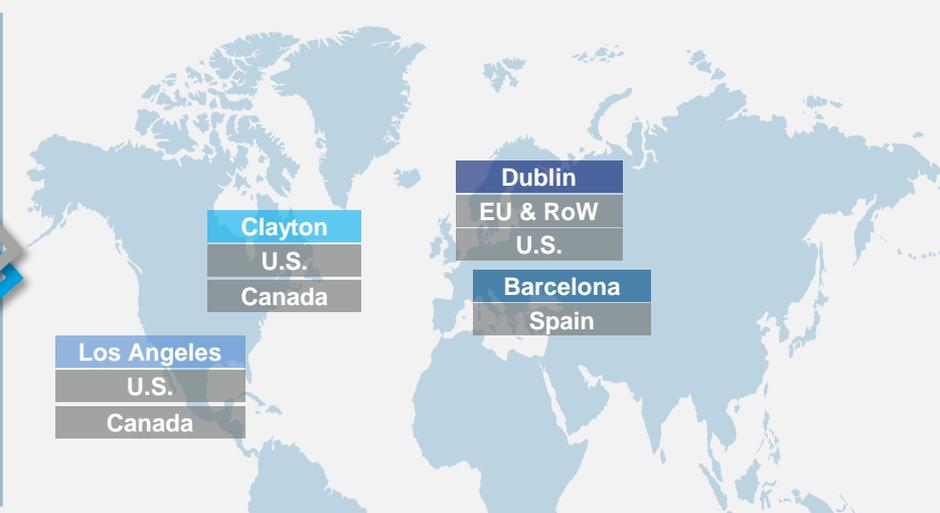
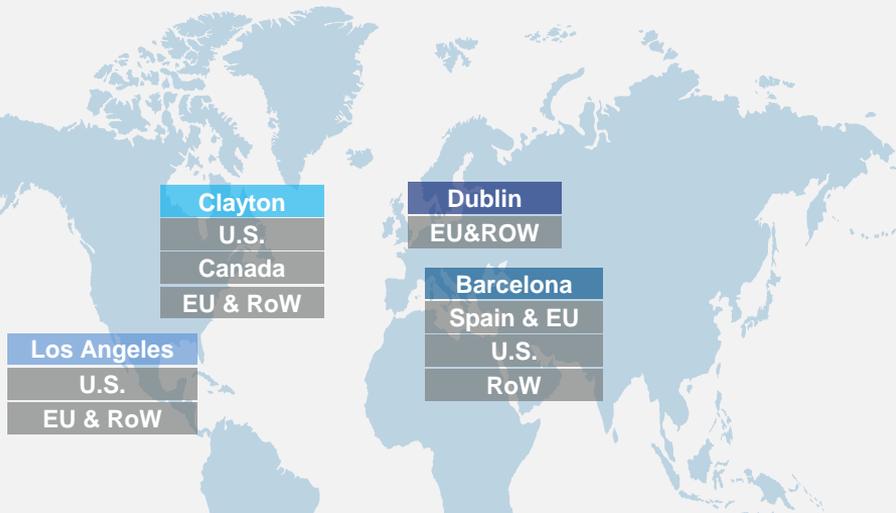
Growths are projected on 2015 year 100 basis

Packaging Operations

Standardized Packaging Process Enhances the Supply Chain

Today

2024



- U.S. plants to cover domestic market
- BCN plant to cover local market and EU toll fractionation
- Increased capacity by site market dedication

- Dublin centralization of packaging activities globally boosts flexibility and efficiency
- Standardized packaging process enables executing on margin recovery at all sites

Warehouses and QC Labs

Enhancing Manufacturing Chain



Warehouses

North Carolina Final product Warehouse

- CAPEX ~ USD 12M
- +6,000 pallet positions → 31,250 ft²
- More efficient storage
- Improve physical & IT control over final product
- Risk reduction and no 3rd party

Los Angeles Packaging Operations

- CAPEX ~ USD 17M
- +17,000 pallet positions → +105,000 ft²
- Two new packaging lines
- Future Albumin in Bags packaging line
- +6% of final product storage capacity



QC Labs

QC Laboratories in Barcelona

- CAPEX ~ EUR 2.2M
- 6 Kardex carousel → +1.3 M samples
- Clinical archive of samples Library → up to 0.7 M in 2021
- R+D Lab enlargement (+450 m²)

QC Laboratories North Carolina & LA

- CAPEX ~ EUR 5M
- Micro / Sterility Lab
- +107% of area expansion
- Improve performance of assays
- Sterility testing area based on isolators



Bioscience Manufacturing Efficiencies

2

Evolution of Manufacturing Cost per Liter



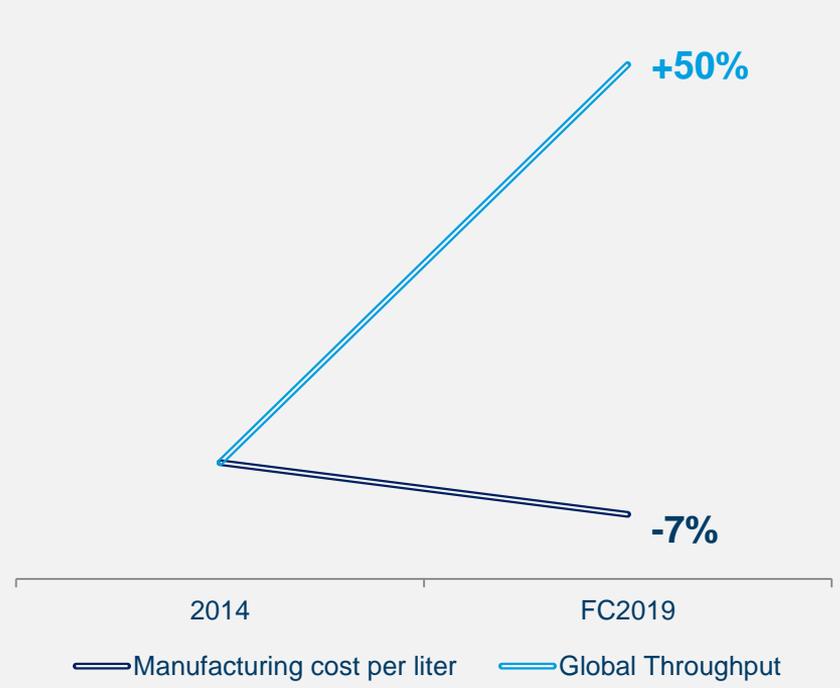
Capacity Leadership in Manufacturing to Optimize Growth Opportunities

General remarks



- New facilities are deployed to work optimally to reduce cost per liter
- Constant upgrades in manufacturing operations lead to continuous yield increases
- Skilled workforce able to produce more per headcount

Manufacturing Cost Per Liter¹ vs. Throughput



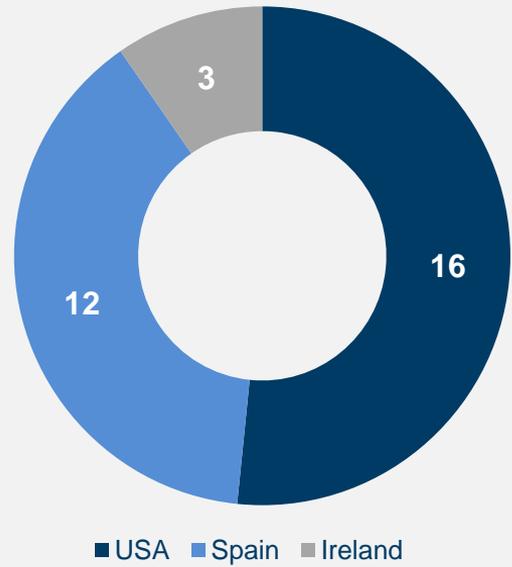
1.- Manufacturing cost per liter does not include amortizations and depreciations

Driven by Quality and Safety

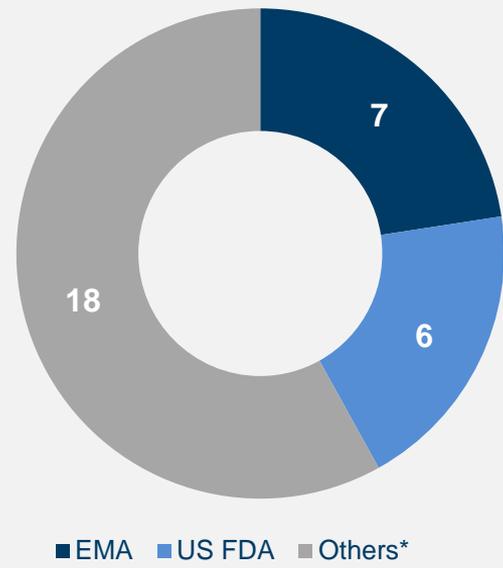
Grifols' Value Proposition



Regulatory inspections 2017 - 1Q 2019 by site



Regulatory inspections 2017 - 1Q 2019 by entity



> 30 inspections without critical observations

*Taiwan FDA, Health Canada OSE, CFDI Chinese FDA, MoH of Rep. Kazakhstan, ANVISA Brazil, South Korea MFDS, PPTA...

Ecosystem

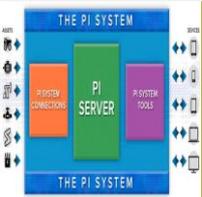
Manufacturing plants will collect significant data from operational processes:

- Big Data
- Predictive analysis
- Artificial Intelligence



Data collected will be leveraged to develop an integral Manufacturing Plant Information System based on KPIs

→ Productivity driven by an efficient ecosystem



Ongoing Projects

Segmentation

- Automatically guarantee fulfillment of required characteristics for each product license and destination in batches produced
- Production planning based on the capacity of specific lines and manufacturing equipment
- Management of batch allocation according to specific market requirements and prioritization in cases with multiple options
- Cost reduction by ~ EUR 5M for disposal of raw materials and repackaging



Online Notification

- IT systems in plants connected to an MRP
- Stock optimization
- Minimize documentation errors and information flow up to 85%
- Enhance efficiencies in production processes

A New Integrated Planning Process Model: A Roadmap for Grifols' Value Chain

Product Management Review

Demand Review

Supply Review

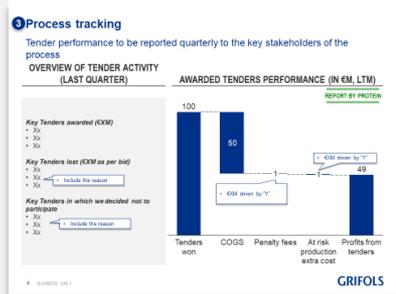
Integrated Reconciliation

Management Business Review

- ONE Business Plan from strategy to execution, enhancing alignment between production and markets needs
- E2E visibility to improve predictability, anticipation and responsiveness
 - New Tender Management Tool
- Optimize inventory thresholds for plasma, intermediates and finished goods
- Supply chain KPIs
 - Plant attainment
 - Vials filled, packed and sold

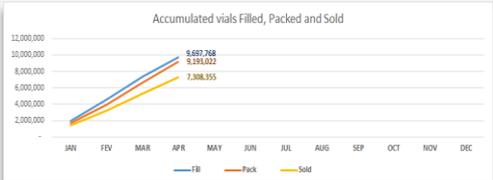


Tender Management Tool



Vials filled, packed and sold

Plant Attainment

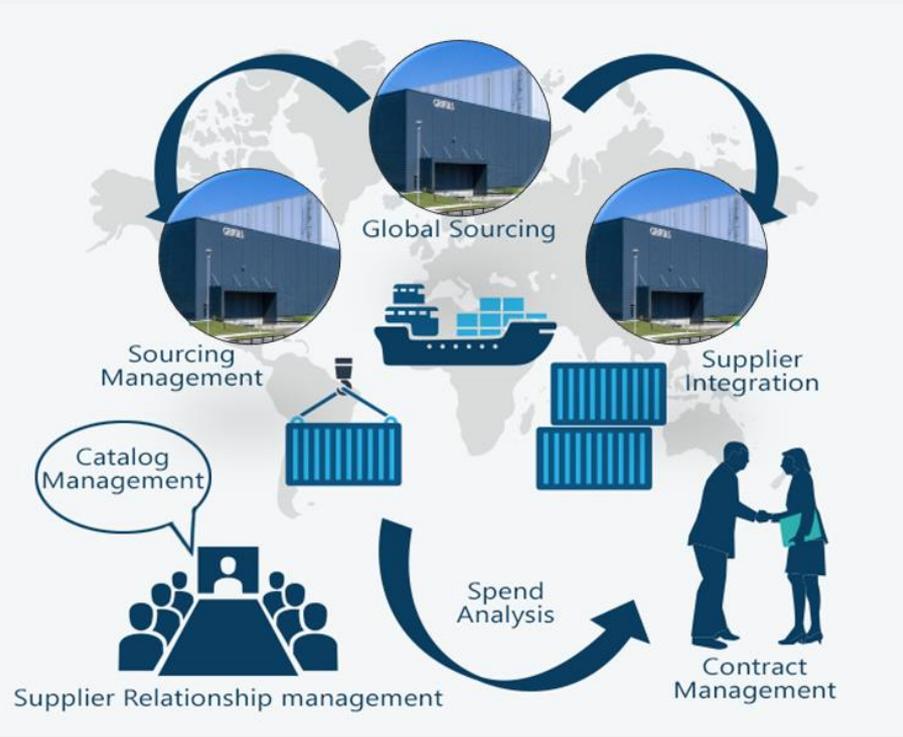


Global Sourcing

Manufacturing Operations Cost Containment and Risk Mitigation

- Globalization of vendor management is key to ensure both economic efficiency and manufacturing flexibility
- Rationalizing the vendor base allows grouping procurement volumes, leading to better economic outcomes
- Standardizing raw material specifications across manufacturing sites improves flexibility in the supply chain
- Global sourcing mitigates supply chain risks by ensuring double sourcing for critical raw materials
- Nearly 70% of contracts are under global procurement supply and price negotiation instead of local activity by plant, leading to price reductions

Bioscience Global Sourcing



Manufacturing and Product Approvals - Progress on Track

2018 to Present

- Fr. IV-1/IV-4 co-precipitation in NFF
- Prolastin[®] from Spanish plasma toll fractionation
- Filling line 3 (Alpha-1 Liquid)
- Approval of Gamunex[®] 2nd train in LA
- Alternative Plasma storage and packaging in Dublin (FDA)
- Ebola plant and product (CDC and IFER)
- Albumin in bags 25% (FDA)
- Rabies-C and GamaSTAN[®]-C (FDA)
- IGIV-C (Gamunex[®]-C) - Fraction II+III Paste Weight Increase

Ongoing

- License submission of Fraction IV₁ from Clayton for Prolastin[®]-C in BCN
- Submission of 20% SCIG
- Alphanate[®] new method in Clayton
- Albumin in bags 5% and 20%
- Prolastin[®]-C Liquid 0,5g and 4g
- New packaging lines in Dublin
- Koate[®] Room Temperature
- Modular Thrombin for Ethicon (U.S.)
- 900 IU HyperRAB[®] vial

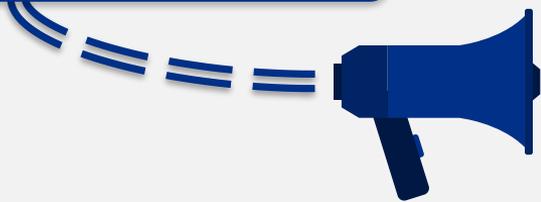
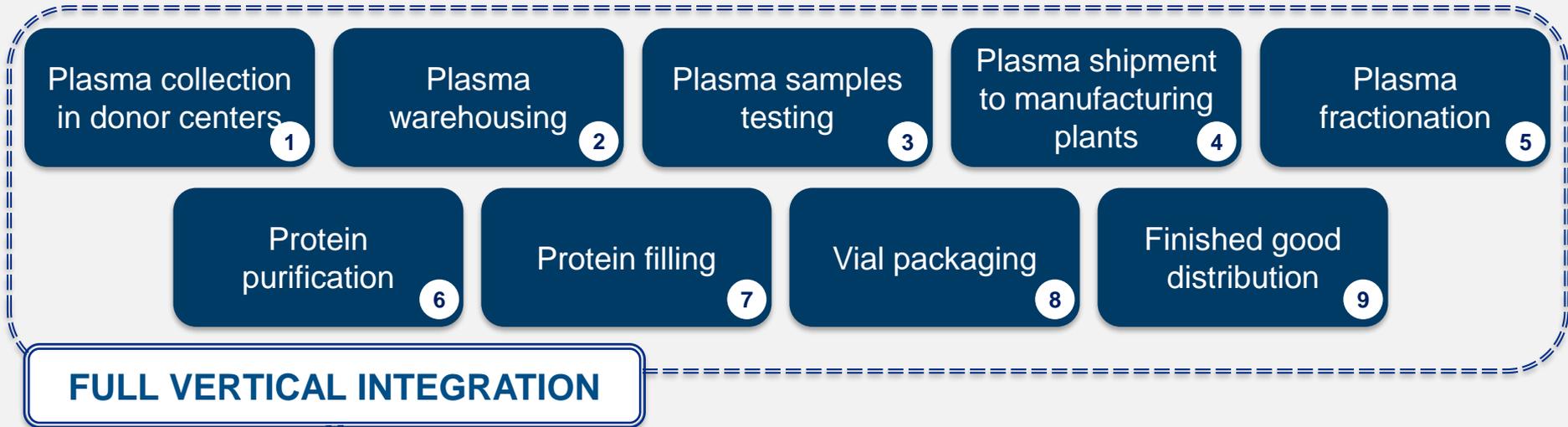
Bioscience Industrial Business Model

3

Long-Term Manufacturing Sustainability



Prepared to Exploit Market Opportunities



- Total control over the supply chain
- Product availability according demand
- Ability to react to market opportunities



Toll Plasma Fractionation

Our Track Record Endorses Us

Business Review



- Promotes countries' **self-sufficiency** in hemoderivatives



Foreign dependency



Saving for these countries

- Allows diverting U.S. plasma procurement and manufacturing supply more efficiently
- Develops technology transfer and enhances awareness

Grifols Know-How

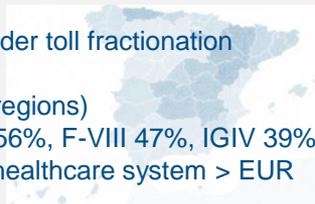
- Operating in 5 countries
- Projects in new 5 countries (EU and ROW)

Country	Since	Approx. annual volume (L) (2018)	Grifols facility
Spain	1978	375,000	Barcelona
Canada	1988	140,000	Clayton NC
Slovak Rep.	2002	40,000	Barcelona

Reference in Toll Plasma Fractionation with nearly **10 M** of plasma liters collected since 1978

Spain

- 100%** Spanish Plasma under toll fractionation contracts
- 17** different agreements (regions)
- Self-sufficiency: Albumin 56%, F-VIII 47%, IGIV 39%
- 2018 savings in Spanish healthcare system > EUR **60M**



Grifols Additional Services

Communication Tools

Web (Plasma Management Services portal)

PediGri system provides total traceability from donation to the end product

Contract Fractionation Plasma Manual

Quality & Professional Training Services

Quality program at Academy

Professional Training in GMP

Blood Bank Services Portfolio

Plasma Transport & Storage

Contingency plans

IPTH & Secure Program

Manufacturing Flexibility and Versatility (I)

Four Manufacturing Plants, One Aligned Approach

Pastes
Multiple combinations in pastes transfer among manufacturing plants creates back-ups and enables maximizing fractionation facilities utilization



Packaging
Full packaging movement options among manufacturing plants allows meeting potential demand peaks driven by market volatility

Manufacturing Flexibility and Versatility (II)



Four Manufacturing Plants, One Aligned Approach

Albumin for the Italian market



Possible alternatives:

- Fractionation, purification, filling and packaging in Los Angeles (LA)
- Fractionation (NC), purification and filling (LA) and packaging (LA or Dublin)
- Fractionation, purification, filling (NC) and packaging (NC or Dublin)
- Fractionation, purification, filling (Barcelona) and packaging (Barcelona or Dublin)

Manufacturing Flexibility and Versatility (III)

Alpha-1 Antitrypsin

Today

Prolastin®

- European market
- Lyophilized product
- Dose = 1g
- Purification & filling capacity > 3 M eqL
- ~70 employees

Prolastin®-C

- U.S. market
- Liquid product
- Dose = 1g
- Purification & filling capacity > 8 M eqL
- ~140 employees

Upcoming years

Transition from Prolastin® (Lyophilized) to Prolastin® -C (Liquid) for European market

Prolastin®-C facilities versatility enables covering multiple production requirements:

- Liquid and Lyophilized Prolastin
- Factor VIII RV
- Lyophilized Thrombin

Transition from Lyophilized to Liquid Alpha-1 reports 16% manufacturing cost reduction → solvents, freeze driers and HC

Manufacturing Flexibility and Versatility (IV)

Albumin in Bags

Performance

- Filling throughput up to 4,000 bags/h

Capacity

- Up to 7.5 million of equivalent plasma liters

Manufacturing presentations

- Bag size of 50 ml, 100 ml, 250 ml and 500 ml
- Albumin 5%, 20% and 25%

Facilities

- Pasteurization and quarantine area
- QC laboratory



Biosurgery: A New Opportunity (I)

Leveraging Grifols' Manufacturing Expertise and Industrial Capacity

Biosurgery Focus

- Partner with the global category leader in the treatment of surgical bleeding and leaks, improving and standardizing patient care
- Merging Grifols' track-record in the manufacture of hemoderivatives and biological products and Ethicon's capabilities in medical -device design and robust marketing and commercial structure
- This strategic partnership will lead to a comprehensive biosurgery portfolio, enabling standardizing the use of hemostats and sealants by choosing the appropriate product for each type of bleeding and leak site



Biosurgery: A New Opportunity (II)

Leveraging Grifols' Manufacturing Expertise and Industrial Capacity

Fibrin Sealant VistaSeal®

- New generation of Fibrin Sealant PAS Approval obtained in Q2 2019
- Planned submission to EU in August 2019
- Production in June 2019 → + 300,000 kits by 2020
- Capacity to expand to more than 3M eqL

Fibrin Sealant (Packaging & Warehouse)



Finished Product



Biosurgery: A New Opportunity (III)

Business Model



Leveraging on Grifols' Manufacturing Expertise and Industrial Capacity

LyoThrombin Evithrom

- FDA submission completed and expected approval in Q3 of current year
- Planned submission in EU in Q2 of current year
- Initial production capacity of 3.8M eqL to be expanded to more than 7M eqL
- Ongoing routine production → +1,000,000 vials in 2020

**Grifols
Manufactures**



**Ethicon
Distributes**

Key Takeaways

Key Takeaways

Manufacturing Expansion Plans to Promote Sustainable Growth

Manufacturing Capacities

- Global fractionation capacity expansion to be accomplished by 2021, reaching **19 million liters**
- Execution of key purification, filling and packaging capacities well balanced as planned
- Addition of facilities for storage, packaging operations and QC laboratories improves supply chain efficiencies in product and inventory management

Manufacturing Efficiencies

- Continuous **improvements in manufacturing performance** ensures better manufacturing cost per liter
- Digitalization projects provide overall business optimization in manufacturing and supply chain
- Flexibility in intermediates, purification and packaging operations as **alternate manufacturers**
- Excellent quality and safety track record

Business Model

- Vertical supply-chain integration to promote Grifols' reputation as a reliable and sustainable player in dynamic environments
- Company expertise to expand contract plasma fractionation opportunities
- Partnership in new therapeutics areas using industrial capabilities to promote further growth



Industrial Capacity Strengthening Competitive Advantage

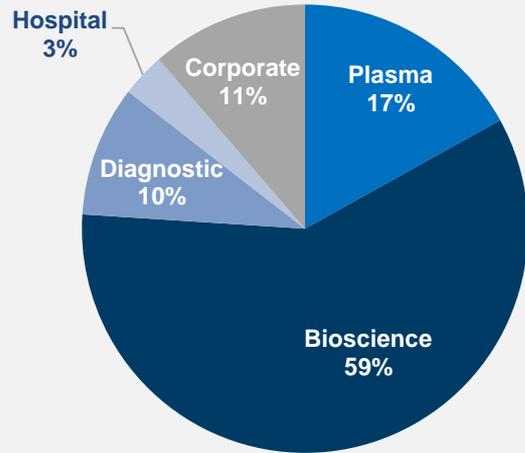
Daniel Fleta
Chief Industrial Officer

GRIFOLS

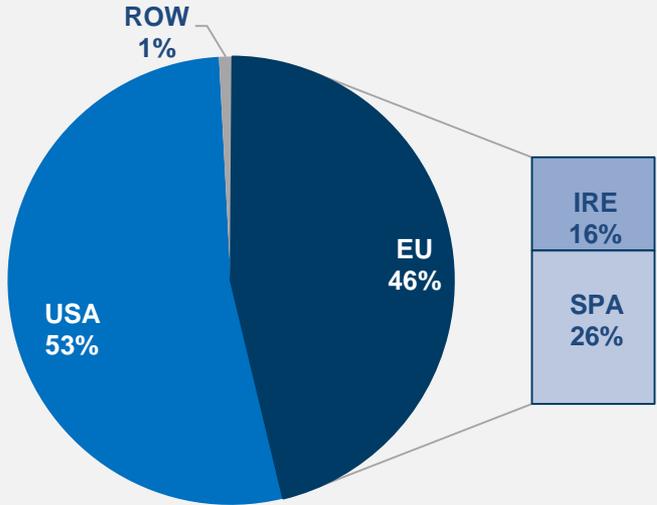
Capital Investments Plan for 2019 – Investing for Growth

Anticipating Future Market Needs

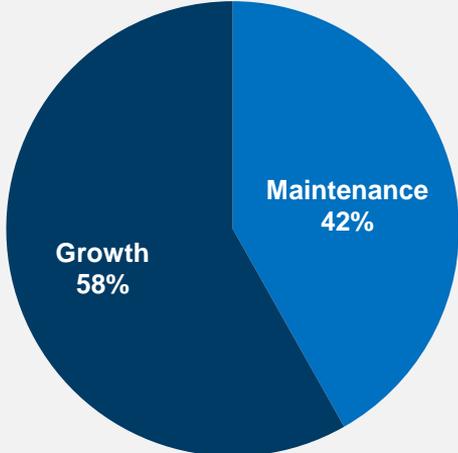
By Division



By Region



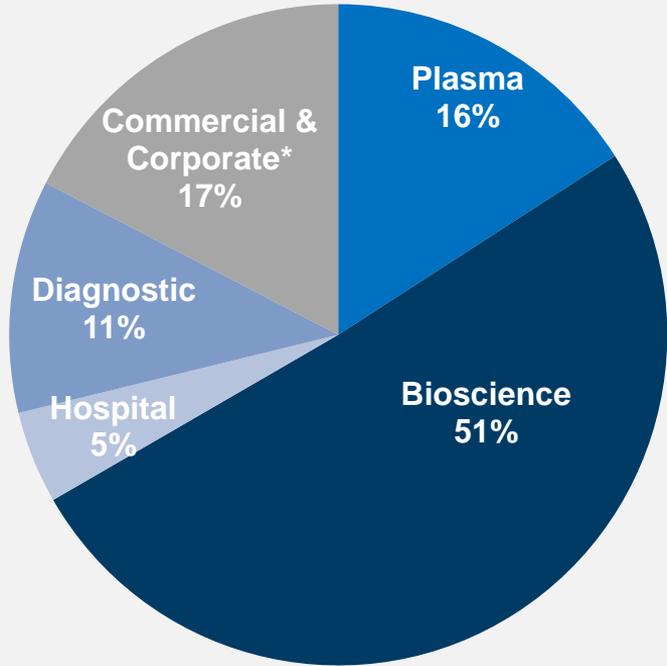
Growth & Maintenance



Capital Allocation 2018-2022

Aimed to Meet Growing Demand

1,400 [€]MM



**Includes land and common infrastructures*

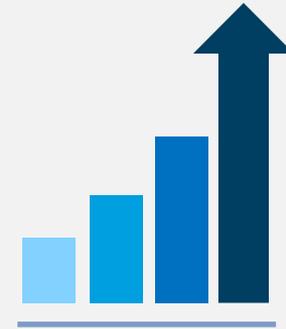
Capital Investment Program

Planning for Growth and Leveraging Internal Strengths

ONE GRIFOLS Projects

**ONE
GRIFOLS**

Business Growth Projects



Diagnostic

Manufacturing Expansion- San Diego, CA

Consolidation of NAT Reagents Manufacturing Operations



19[€]_{MM}



Diagnostic

- New facility is located in a nearby 7,000 m² standalone building
- This new facility completes the manufacturing operations spin-off from Hologic achieving a higher manufacturing efficiency and improving the product quality
- The new building paves the way for future DX (NAT, IH) growth on the site in further execution phases



Immunoassay Manufacturing Operations, Emeryville, CA

CMF Consolidates and Streamlines Immunoassay Manufacturing



Diagnostic

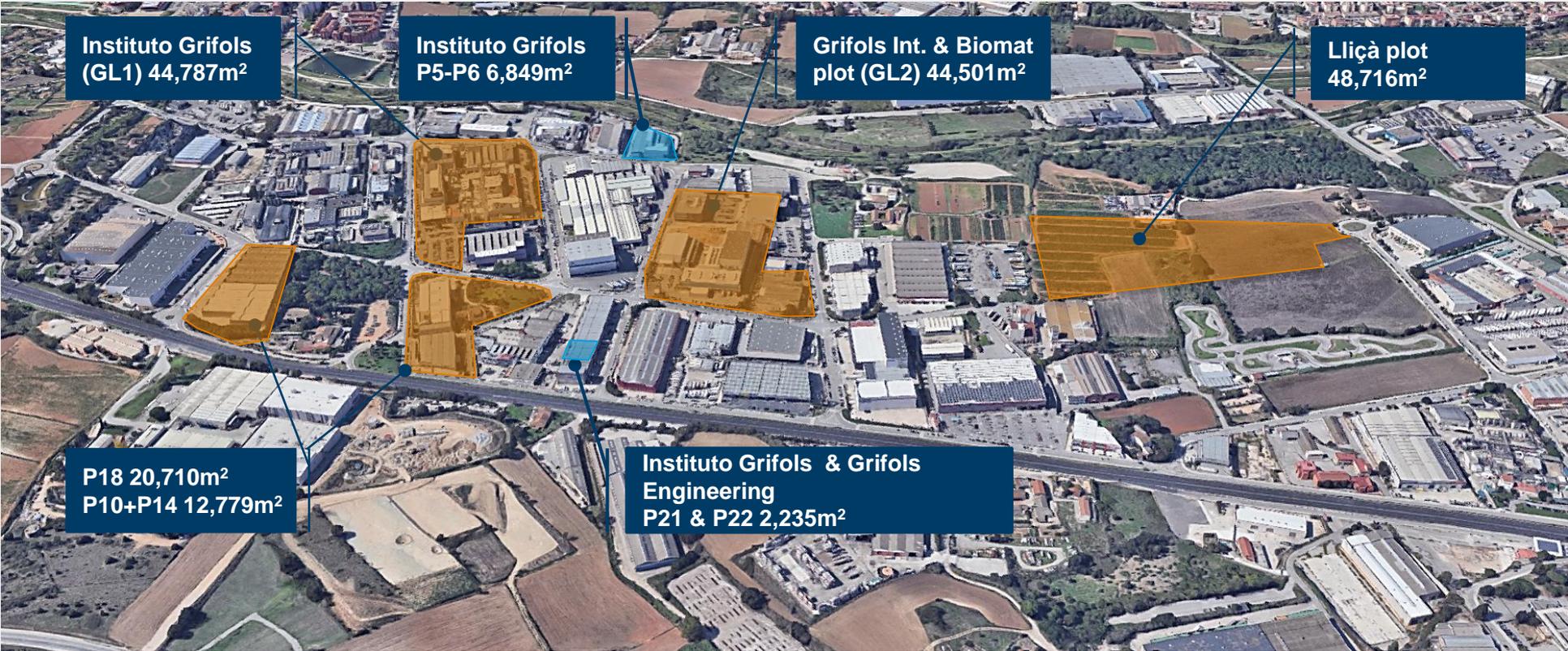


- CMF consolidates all EMV manufacturing operations in a single building, allowing to exit leased properties and reducing site running costs
- The new facility provides enough resources to double the current production capacity for future growth
- New production platform based on mammalian cells culture to develop new antigens and offer specialized GMP CDMO services to third parties



Parets North and Lliçà (Barcelona), Spain

Current and Future Expansion



Instituto Grifols
(GL1) 44,787m²

Instituto Grifols
P5-P6 6,849m²

Grifols Int. & Biomat
plot (GL2) 44,501m²

Lliçà plot
48,716m²

P18 20,710m²
P10+P14 12,779m²

Instituto Grifols & Grifols
Engineering
P21 & P22 2,235m²



50€MM*

Manufacturing Expansion – Lliçà (Barcelona), Spain

Adjacent to Parets Site

Diagnostic



- Acquisition of a new land plot of 49,716m² in Lliçà, close to the main manufacturing site to expand Diagnostic and Bioscience industrial divisions
- New instruments manufacturing plant will vacate spaces in P4, enabling expansion of reagent- manufacturing capacities. First phase will double the current manufacturing capacity for both reagents and instruments



*Includes land and common infrastructures

Hospital

Plastic Injection Revamping in Murcia, Spain

Ensuring the Supply of Key Consumables for All Divisions



10[€]MM



Hospital

- Cross-divisional project to ensure supply consistency for the business
- Additional manufacturing and assembly capacities for:
 - Bioscience: albumin in bags, Fibrinsealant holders, anticoagulant
 - DX: Q Coagulometer cells and racks, BCS
 - Hospital: Fleboflex Luer, Kiro Fill and Oncology disposables



Anticoagulant and Saline EB3 Line BCN, Spain

Vertical Integration With Plasma Procurement and Hospital



6 € MM



- New fully automated FFS line will provide additional capacity for U.S. IV solutions, as well as production capabilities for new product releases:

- anticoagulant solutions
- saline with Luer lock for  and pharmacy compounding



Bioscience Bag Forming Expansion - Murcia, Spain

Hospital and Bioscience



2 € MM



Hospital

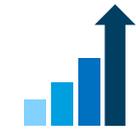
- Fully automated robotic forming line for biological bags with multiple port/connector configurations
- This line will further expand Grifols' capacity to produce Albumin in bags and IVIG in the future
- 2,500 BPH capacity (15MMB/year)
- Bag formats: 50, 100, 250 and 500 mL



Bioscience

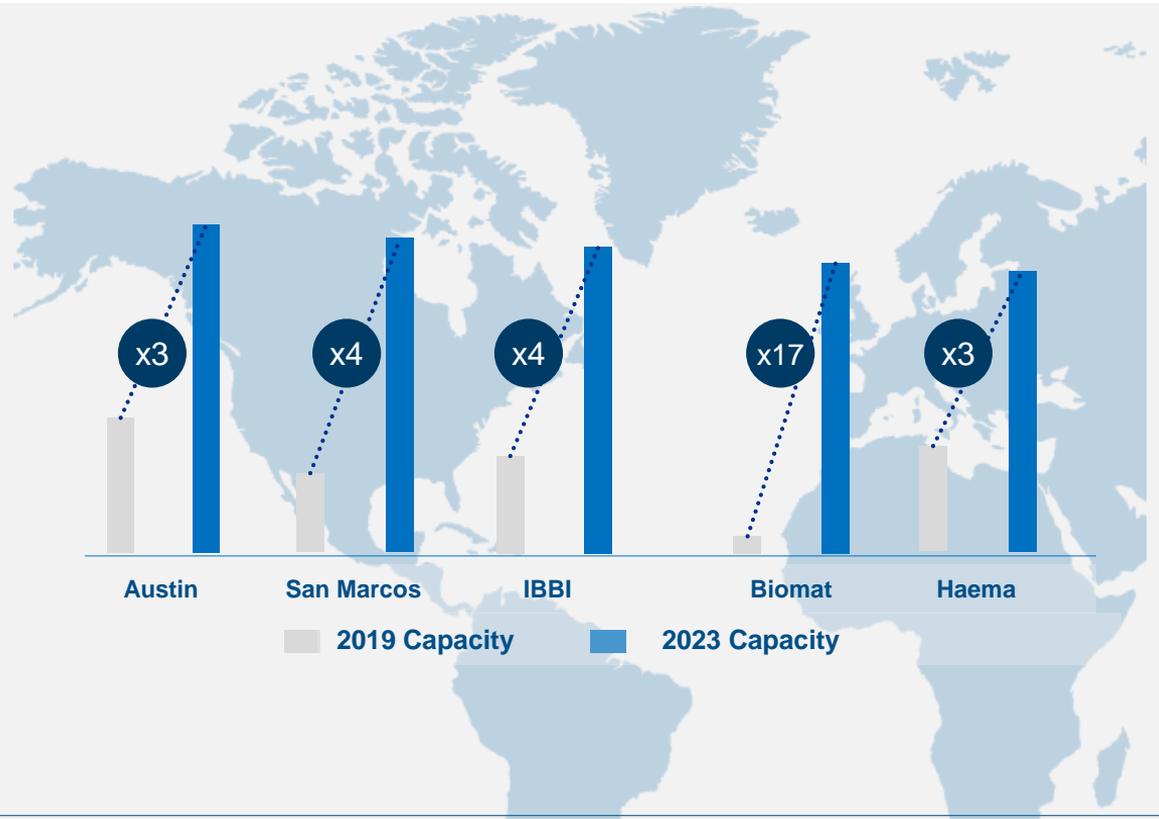
Global Plasma Testing Labs Expansion: Capacities

Ensuring Access to High-Quality Plasma



50€MM

Bioscience



New Fractionation Building – Clayton, NC

Expanding Our Fractionation Capacity to 19 million liters



Bioscience

6 MML	3,825 m ³
120MM €	1,900 Tn
2 Trains	80,000 m ³



Purification and Filling Facility (PFF)- Clayton, NC

The World's First Sterile Filling Facility for IgGs in Bags



Bioscience

6 MML

5,400 m³

140 MM

2,165 Tn

5 Lines

107,000 m³



Albumin in Bags Purification and Filling Plant - Dublin

Increasing the Production Capacity of Albumin in Bags



6 MML

8,300 m³

110 MM €

2,828 Tn

4 Lines

111,420 m³



Fibrin Sealant Plant- Parets, Spain

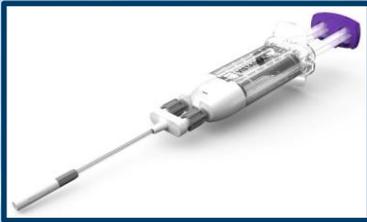
Balancing the Liter of Plasma



30[€]_{MM}



Bioscience



- Phase 1 includes the production of fibrin sealant
- Second phase will include topical thrombin and other projects including fibrin sealant from whole-blood plasma and pediatric fibrin sealant
- 3,600 m²



New Aseptic Filling Facility - Parets, Spain

Immediate Response to Market Needs



Bioscience

8 € MM

- Leveraging available production areas and infrastructures
- New aseptic filling and freeze-drying areas for new FVIII HC and Lyo Thrombin
- Proprietary GSF® technology for aseptic filling
- 1,200 m²



Key Takeaways

Key Takeaways

Strengthening Competitive Advantage

- **Strategic advantage**

Having our own engineering company allows us to build cutting-edge facilities leveraging the market's most competitive investment costs and in the shortest time to market

- **Technology leadership**

Grifols' know-how and experience in developing industrial solutions and facilities positions Grifols as a global technological reference in the sector

- **One Grifols**

Grifols' divisional portfolio has been strategically designed and streamlined to leverage capabilities, resources and expertise and vertically integrate critical supplies and operations

- **Consistent execution**

Long-range production plan is progressing as expected. Protein-purification and fill-and-finish investments are moving forward, keeping up with the growth in fractionation capacities and in alignment with marketing and commercial demands



Investor and Analyst Meeting

North Carolina
June 5-6, 2019

GRIFOLS



Development of Protein Therapies

Bioscience Research and Development Pipeline

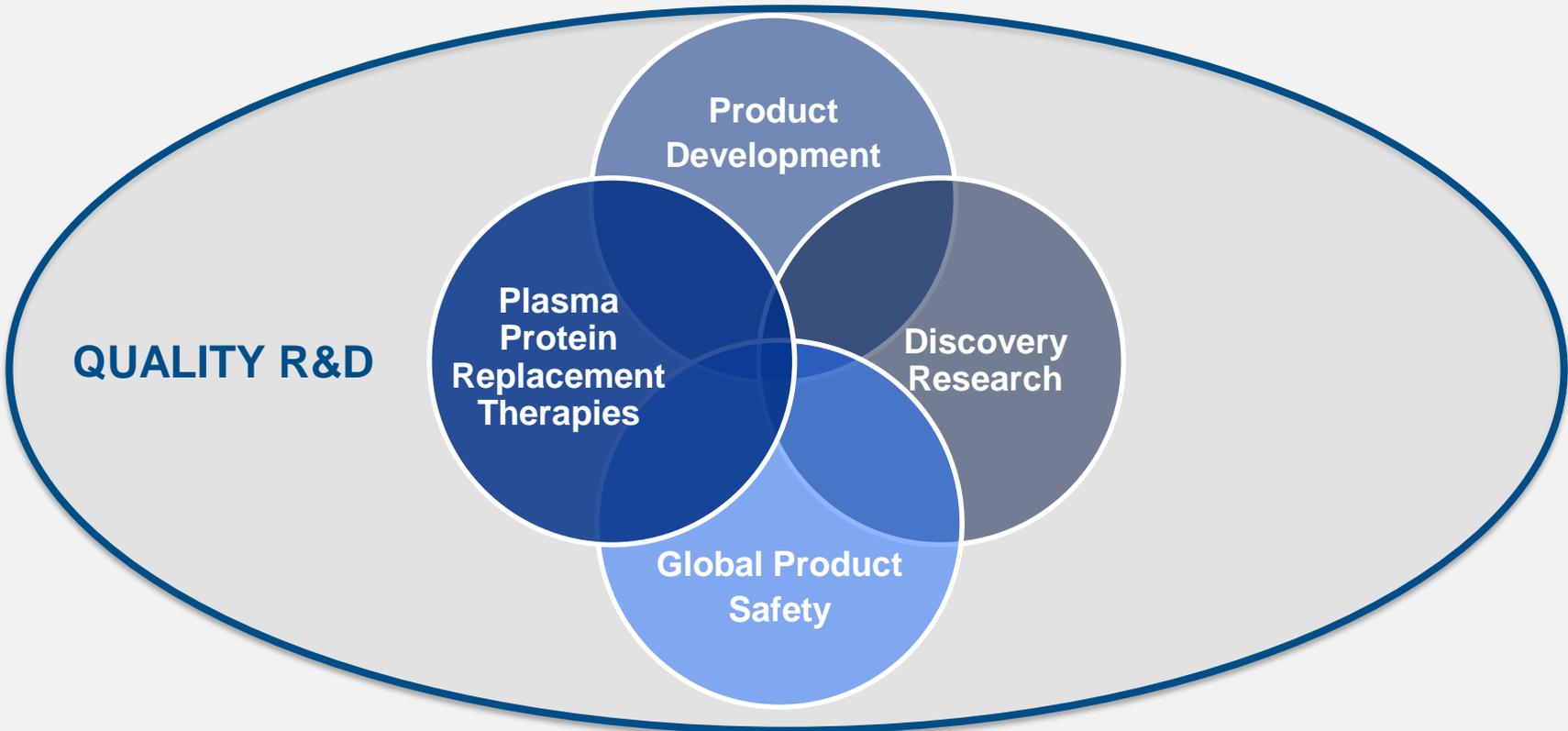
Todd Willis, PhD
VP, Discovery Research

GRIFOLS

R&D Bioscience Industrial Group

Bioscience R&D Organization

R&D Departments Located in Barcelona, Los Angeles and North Carolina



Bioscience R&D Organization

Product Development Core Expertise



Product Development

Process Development and Technology

- Process development and formulation
- Process scale-up and transfer to Manufacturing
- Clinical manufacturing (cGMP)

Bioanalytics

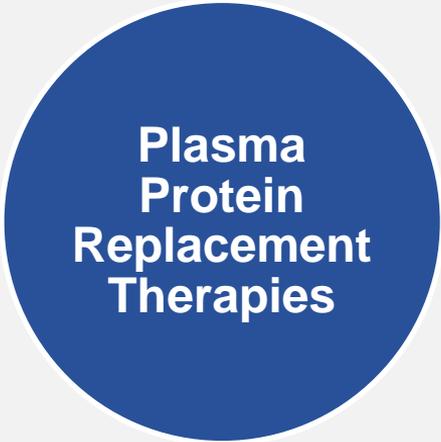
- Process / product characterization
- Assay development, validation, and transfer to QC
- Clinical assay support (immunogenicity)
- Extractable and leachable (E&L) studies

Development Stability

- Intermediate and product stability

Bioscience R&D Organization

Plasma Protein Replacement Core Expertise



Plasma Protein Replacement Therapies

Plasma Protein Replacement Therapies

- Focus on treatment of complex, multifactorial disorders with combination therapies consisting of plasmapheresis and plasma protein replacement
- Collaboration of internal expertise in plasmapheresis and plasma protein therapeutics with key opinion leaders in targeted therapeutic areas
- Movement from treatment of rare disease to management of prevalent diseases

Bioscience R&D Organization

Global Product Safety Core Expertise



Toxicology

- Board-certified toxicologists
- Design and execute GLP compliant IND-enabling toxicology studies
- Safety evaluation of data from E&L studies

Pathogen Safety

- Assess and validate virus/prion clearance capacity of purification processes
- Optimization of pathogen safety steps during process development
- Development of methods to measure viral infectivity, neutralization, antibody content and binding
- BSL 3 containment lab in North Carolina

Bioscience R&D Organization

Discovery Research Core Expertise



Discovery
Research

Deep knowledge of protein biochemistry and purification sufficient to generate innovated project ideas, new IP, and guidance and oversight of external collaborations

In vivo Pharmacology

- In-house animal model development
- External CRO oversight of animal studies
- Expertise in PK and PD of plasma and recombinant proteins

In vitro Pharmacology

- Molecular analysis of gene expression
- Cell-based assay formats
- Cellular expression of proteins

Bioscience Industrial Group

Key Licensures and R&D Development Pipeline

Bioscience R&D

Recent Licenses 2014 - 2018

2014	2015	2016	2017	2018
Gamunex® -C Phase IV (KIDS)	Gamunex® Nanofiltration EU	Gamunex® Nanofiltration U.S.	Prolastin® -C Liquid®	GamaSTAN® PK Study (Phase IV)
Alphanate® 2000 IU Vial	Prolastin® EU (inclusion of fractionation at IG)	Flebogamma® DIF 10% - ITP	Fibrin Sealant U.S.	HyperRAB® & GamaSTAN® New Process
Gamunex® 40g Vial			Fibrin Sealant EU	Plastem®
Prolastin® EU (transfer to BCN)			HepB new pediatric syringe	
Fractionation NFF - GT			IGIM (HepA spec. / rev. dosing)	
Fractionation IV – double scale IG			IGIM anti-D/T alternate syringes - EU	

Bioscience R&D

Key 2H 2018 R&D Highlights

Immune globulin
subcutaneous
20% - U.S.
submitted

25% Albumin in
Flexible container
– U.S. submitted

AMBAR
presentation of
results

VISTASEAL[®] -
Ethicon (Fibrin
Sealant new
container) – U.S.
submitted

Bioscience R&D Development Pipeline – June 2019

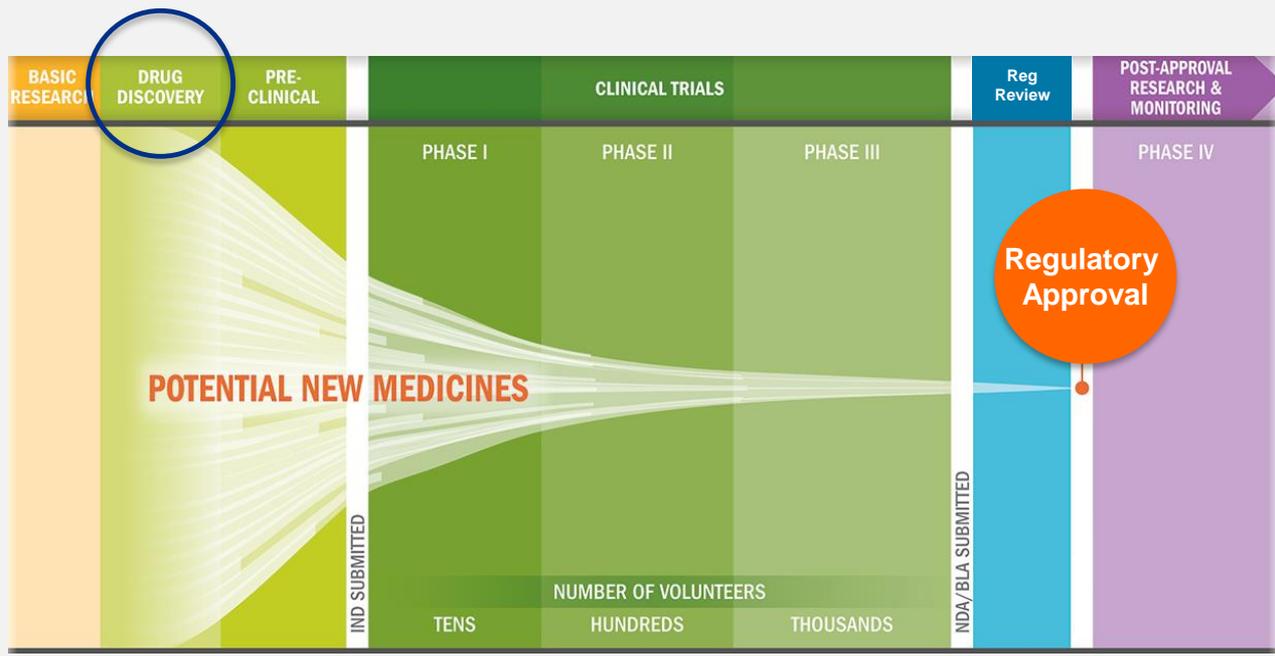
<i>Protein</i>	<i>Preclinical</i>	<i>Clinical Non-pivotal</i>	<i>Clinical Pivotal</i>	<i>Life Cycle Management</i>	<i>Regulatory Review</i>
<i>Albumin</i>	New Formulations		Alzheimer's Disease (<i>AMBAR</i>)	Albumin in Bags	
			Albumin in Liver Failure (<i>APACHE</i>)		
			Albumin in Cirrhosis (<i>PRECIOSA</i>)		
<i>Ig</i>	Anti-Infective	Myasthenia Gravis (MG) Maintenance	MG Exacerbations	900 IU HyperRAB®	20% IGSC US
	Gamunex® New Process		20% IGSC EU	IGIM-C Stage 2 (Tet, Rhod, Hep B)	
			20% IGSC Flex Dose & Daily Push		
			Flebogamma PPS	Gamunex in Bags	
<i>Alpha-1</i>	Prolastin® C Concentrated			Prolastin®-C Liquid New Vials	Project Japan (in preparation)
				Prolastin-C Phase IV	
<i>Factor VIII</i>				FVIII/VWF Reduced Volume	
<i>PPF</i>				Plasmanate® MP	
				Plasmanate® in Bags	
<i>Fibrinogen</i>			Fibrin Sealant Pediatric Study		
			IV Fibrinogen		

The Research Pipeline

Bioscience Discovery Research

Discovery Research

General R&D Product Development Funnel



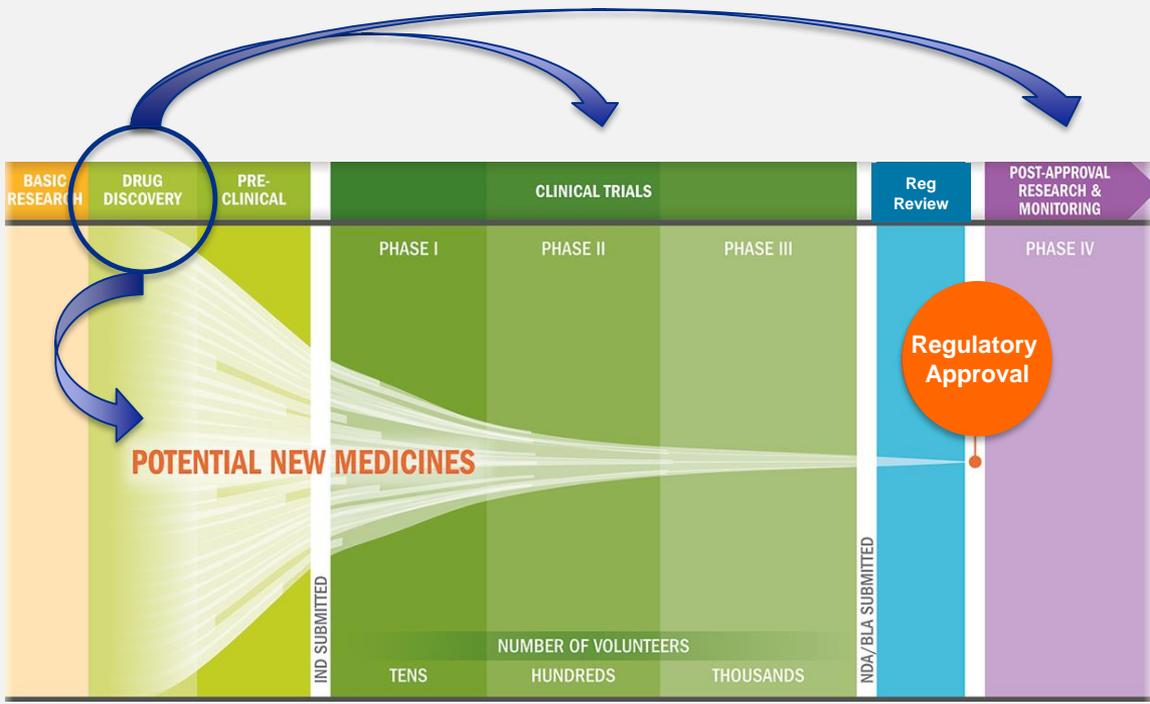
Key: IND: Investigational New Drug Application, NDA: New Drug Application, BLA: Biologics License Application

http://www.phrma.org/sites/default/files/pdf/rd_brochure_022307.pdf

Discovery Research

How we Operate

- **Proof-of-concept** studies to demonstrate feasibility (does it work?)
- **Mechanism-of-action** studies conducted at a molecular level (how does it work?)
- To optimized capabilities, research studies support multiple phases - **early research, clinical trials, and post approval**



Discovery Research

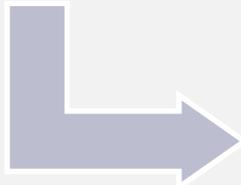
General Strategy

Focus

Key Drivers

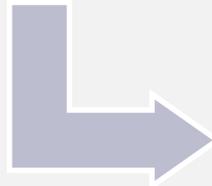
- First in Class
- BioBettors
- Expansion
- Balancing the Litter

As long as a medical need exists, no protein therapeutic (**recombinant or plasma-derived**) or therapeutic indication is off limits



Accelerate

- Capitalize on **internal research** expertise across the organization
- Leverage **external research** partners / advisors
- Integrate **artificial intelligence** (IBM Watson Drug Discovery)



Execute

- **Proof-of-concept** studies
- **Mechanism-of-action** studies
- **Quick kills &** concentrate resources on “wins”

Goals Achieved Through Internal and External Partners

Sample of Partners

External Experts



External Collaborations



Outsourced Analysis



One Grifols

- R&D
- Clinical
- Marketing
- Medical Affairs
- Diagnostics
- Biomat
- Hospital

Key Strategic Research Partners

- Discovery of rare, **high-affinity antibody** candidates diverse human repertoire
- Identify most **efficacious antibodies** through massively parallel bioassays that screen millions of antibodies at a time

Plasma proteins for treatment of age-related disorders – “Healthy Aging”



- Decoding the plasma proteome during **healthy aging** and contrasting it to disease states
- Identifying **plasma protein fractions to treat complex diseases** with multiple mechanism of actions



Recombinant polyclonal platform for diseases that can be treated with neutralizing antibodies

GIANT INNOVATION

Plasma proteins to prevent and/or stop bleeding during surgical procedures



a Johnson & Johnson company

Building the Research Pipeline

Four Primary Drivers



Innovative protein entities

- Capitalize on unique plasma protein properties, their modifications, and protein combinations
- Utilize latest scientific technologies to reveal connections and relationships between plasma proteins and disease
- Exploit utilization of process waste streams



Best in class therapies

- Improve product attributes to enhance safety, efficacy, stability, half-life, convenience, and bioavailability
- Investigate new routes of product administration
 - subcutaneous
 - intradermal
 - aerosol



New indications and improve position of current products

- Capitalize on emerging technologies (AI) and scientific advancements
- Conduct PoC studies in relevant therapeutic areas
- Partner with key opinion leaders in target therapeutic areas



Opportunities to develop commercial plasma-derived proteins outside of current portfolio

- Create innovative approaches to
 - reduce development time line and manufacturing cost
 - Identify new potential indications

Building the Research Pipeline

First in Class



Key Areas of Research

- Anti-infective with broad microbial recognition and synergistic efficacy with standard of care treatments
 - First anti-infective protein to enter IND-enabling toxicology studies
 - Proof-of-concept studies underway for second microbial target
- Novel neuroprotective protein(s) for treatment of cognitive disorders (Alzheimer's Disease, Parkinson's Disease)
 - Research conducted with internal R&D and in-conjunction with external partners

Building the Research Pipeline

BioBetter

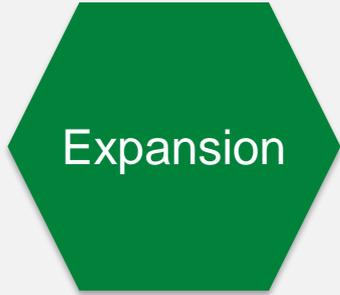


Key Areas of Research

- Modulation of autoimmunity
 - Proof-of-concept studies with potentially high efficacy antibodies and comparison to licensed IgG products
- New product formulations
 - Proprietary formulations to maintain desired product attributes and improve clinical outcome in treatment of Alzheimer's Disease and liver disease (cirrhosis)
 - Alternative routes of delivery (subcutaneous and intradermal)
 - New product formulation with an alternative route of delivery to enter IND-enabling toxicology studies

Building the Research Pipeline

Expansion



Key Areas of Research

- FVIII
 - Concomitant use of Alphanate[®] / Koate[®] with Emicizumab (Hemlibra[®]), supporting concomitant use of these products
 - Protective effect of VWF towards inhibitor reactivity of FVIII products
- Fibrin Sealant (Fibrinogen and Thrombin) in tissue engineering and surgery
- Albumin as a active protein therapeutic in the treatment of Alzheimer's Disease and liver disease

Albumin Treatment for Alzheimer's Disease



**Albumin
as active
ingredient**

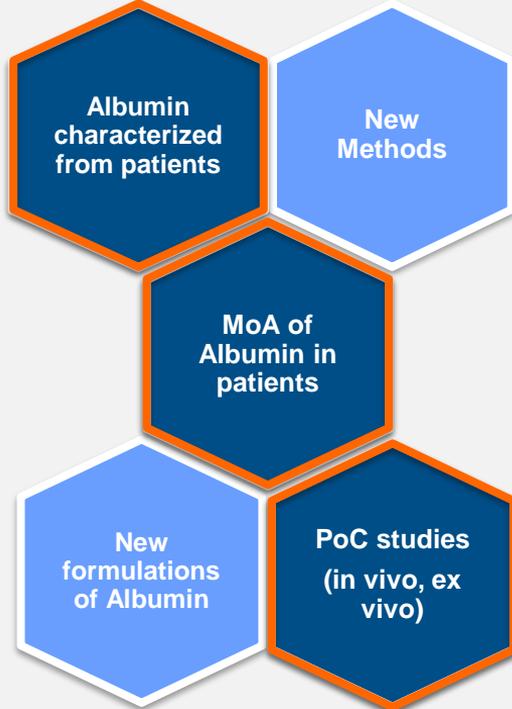
Albumin Treatment for Cirrhosis

PRECIOSA-
translational
studies

and

ALADDIN
STUDY

+



Albumin
as active
ingredient

Building the Research Pipeline

Balancing the Liter



Balancing
the Liter

Key Area of Research

- Identify key commercial plasma-derived proteins and indications outside of current Grifols product portfolio to Balance the Liter of plasma
- **Create new opportunities**
 - Introduce new technologies to reduce development and production costs
 - Collaborate with internal partners (Regulatory and Clinical) to optimize regulatory path for product licensure
 - Collaborate with strategic external partners (Alkahest, Ethicon,...) to identify new potential indications

Summary of Research Pipeline by Therapeutic Area

First In Class

Expansion

BioBetter

Balancing the Liter

Therapeutic Area

Coagulation / Hemostasis	Liver Failure	Tissue Engineering	BioSurgery	Infection	Immunology	Cognitive Disorders	Pulmonology
pdFVIII + Hemlibra	New Formulations	BioInk	Transplantation	Emerging Pathogens	Autoimmunity	Alzheimer's Disease	New Formulations
New Plasma Protein Opportunities	Cirrhosis		Sealent		New Plasma Protein Opportunity	Parkinson's Disease	
						New Formulations	

alzheimer
management
by albumin
replacement



AMBAR: Grifols Alzheimer trial

Up-to-Date Clinical and Biomarker Results

Antonio Paez, MD

Alzheimer's Research Group. Medical & Technical Director

GRIFOLS

- 15 years ago we learned that most amyloid-beta ($A\beta$) circulating in plasma was bound to Albumin.
- A clinical program of Plasma Exchange (PE, Plasmapheresis with Albumin replacement) was initiated in mild-to-moderate AD.
- Pilot and phase II studies with PE showed a decrease in plasma $A\beta$ and an increase in CSF $A\beta$ *.
- Signals of clinical and functional neuroimaging benefit *.
- Post-hoc basic research analyses on Albumin have shown an increase of oxidized and glycated forms in plasma and markedly in CSF in AD patients **.

* Boada M et al. *Drug News Perspect.* 2009; 22(6):325-39
Boada M et al. *J Alzheimers Dis.* 2017; 56(1):129-143
Cuberas-Borrós G et al. *J Alzheimers Dis.* 2018; 61(1):321-332

**Costa et al. *J Alzheimers Dis.* 2018;63(4):1395-1404
**Costa et al. submitted to JPAD

AMBAR Eligibility Criteria

 Age: 55-85 years

 Probable AD
(NINCDS-ADRDA criteria)

 MMSE score: 18-26

 Stable treatment (3 months):
AChEIs and/or memantine

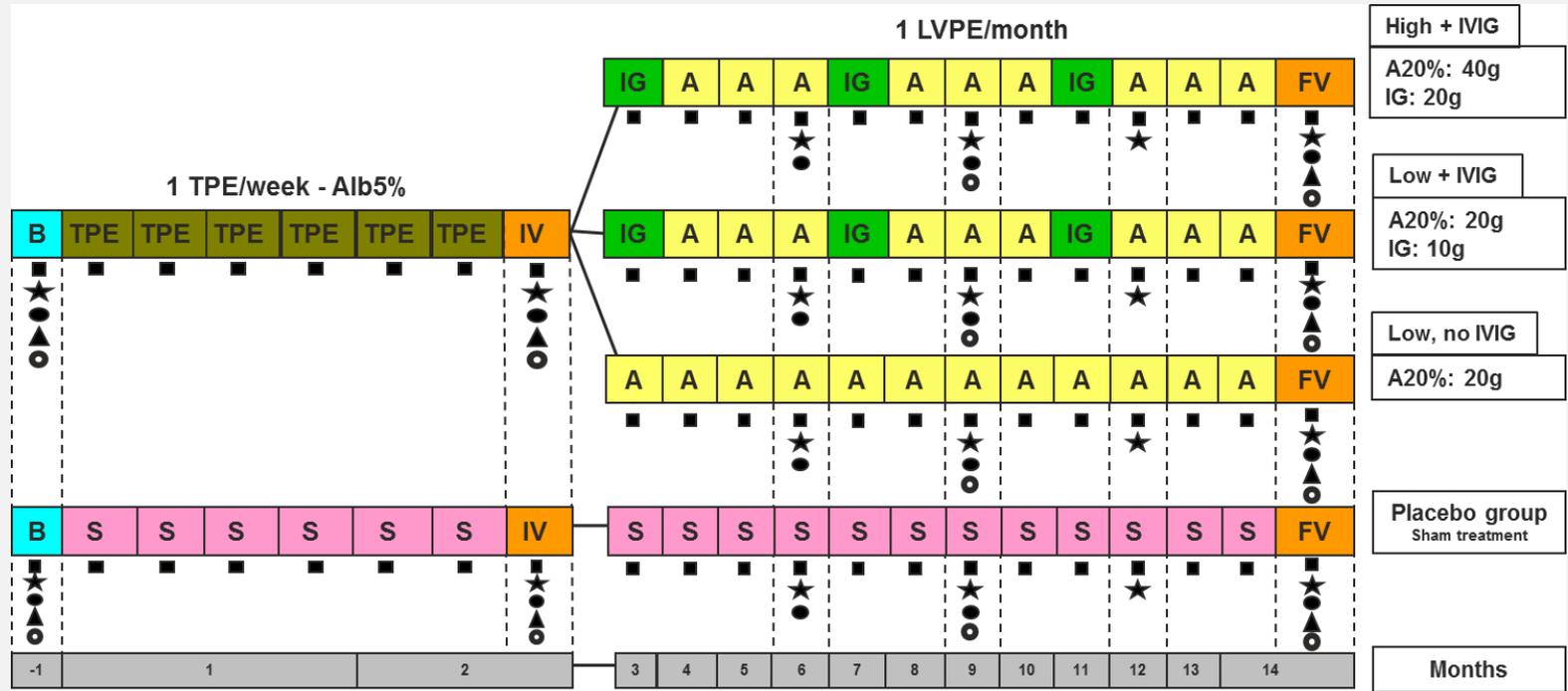
 CAT or MRI (12 months)

 Stable caregiver

Mild: 22-26
Moderate: 18-21

- **Conventional Therapeutic Plasma Exchange (TPE)**
 - 1 plasma volume processed
 - Albumin replacement (Albutein®): 125-150g
- **Low Volume Plasma Exchange (LVPE)**
 - New modality of PE developed by Grifols for this trial as maintenance therapy
 - Plasma volume processed similar to that of a plasma donation
 - Albumin (Albutein®) replacement (less volume infused): 20-40g. IVIG (Flebogamma DIF®) / 4 months: 10-20g
- **Placebo**
 - Simulated procedure (sham) for both TPE and LVPE. Blind for patient, caregiver and rater
 - Devices working in a close circuit manner with colored fluids mimicking plasma and patients falsely connected to devices

AMBAR Schematic



TPE: Total Plasma Exchange IG: Flebogamma DIF 5% (IGIV)
 LVPE: Low Volume Plasma Exchange A: Albutein 5% - 20% (Albumin)

■ : AD Biomarkers ▲ : Lumbar Puncture ○ : FDG-PET
 ★ : Neuropsychological Tests ● : MRI

• Co-Primary outcomes

- ADAS-Cog: Change from baseline to 14 months
- ADCS-ADL: Change from baseline to 14 months

Presented at CTAD'18

• Secondary endpoints

- MMSE, NPS, NPI, CDR-SB, ADCS-CGIC, CSDD, C-SSRS, QoL-AD, RUD-Lite®
- Changes in $A\beta_{40}$ and $A\beta_{42}$ in plasma and **CSF**
- Changes in Tau and P-Tau in **CSF**
- Changes in brain volume by MRI
- Changes in brain activity by FDG-PET

AD/PD'19 update

• Safety endpoints

- AEs and SAEs associated with plasma exchange

**Presented at CTAD'18
+ AD/PD'19 update**

- **Main population**
 - mITT: patients undergoing at least 1 TPE
- **Pre-specified primary analyses (MMRM)**
 - mITT: 3 treatment arms vs. placebo
 - mITT: all patients vs. placebo (all patients share the same plasma removal component of the treatment)
 - “Mild AD” (baseline MMSE 22-26) and “Moderate AD” (baseline MMSE 18-21) vs. placebo



ELSEVIER



Alzheimer's & Dementia: Translational Research & Clinical Interventions 5 (2019) 61-69

Alzheimer's
&
Dementia

Featured Article

Plasma exchange for Alzheimer's disease Management by Albumin Replacement (AMBAR) trial: Study design and progress

Mercè Boada^{a,b}, Oscar López^c, Laura Núñez^d, Zbigniew M. Szczepiorkowski^e,
Mireia Torres^d, Carlota Grifols^d, Antonio Páez^{d,*}

^aResearch Center and Memory Clinic, Fundació ACE, Institut Català de Neurociències Aplicades, Barcelona, Spain

^bFacultat de Medicina i Ciències de la Salut, Universitat Internacional de Catalunya, Barcelona, Spain

^cDepartments of Neurology and Psychiatry, University of Pittsburgh School of Medicine, Pittsburgh, PA, USA

^dBioscience Research Group. Grifols S.A., Barcelona, Spain

^eDepartment of Pathology and Laboratory Medicine, Dartmouth Hitchcock Medical Center, Lebanon, NH, USA

Patient and Site Disposition

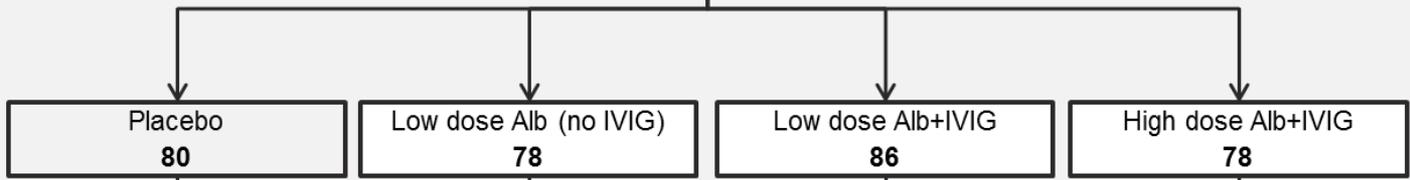
Sites: **41**
 Spain: **19** (n=232)
 USA: **22** (n=264)

496 Screened

149 (30%) Screening failures

347 (70%) Randomized

25 (7%) No therapy



322 Evaluable:
90 (28%) Withdrawal
 31 (9.6%) AE
 37 (11.5%) ICF
 5 (1.6%) PV
 5 (1.6%) LoFU
 12 (3.7%) Other
232 (72%) Completed

Completed

Placebo
64 (80%)

Low dose Alb (no IVIG)
61 (78%)

Low dose Alb+IVIG
56 (65%)

High dose Alb+IVIG
51 (65%)

PE: Plasma Exchange
 PV: Protocol violation

AE: Adverse Event
 LoFU: Lost of Follow-up

ICF: Informed Consent Form

Demographics: All Patients

alzheimer
management
by albumin
replacement



	Placebo (N=80)	Low albumin, no IVIG (N=78)	Low albumin + IVIG (N=86)	High albumin + IVIG (N=78)	Total (N=322)
Age (yrs.) Mean (SD)	68.44 (8.38)	68.47 (7.48)	69.47 (6.92)	69.54 (7.90)	68.99 (7.66)
Age Group (n, %)					
<65	29 (36.3)	26 (33.3)	17 (19.8)	22 (28.2)	94 (29.2)
65-75	33 (41.3)	37 (47.4)	52 (60.5)	35 (44.9)	157 (48.8)
>75	18 (22.5)	15 (19.2)	17 (19.8)	21 (26.9)	71 (22.0)
Sex (n, %)					
Male	44 (55.0)	35 (44.9)	38 (44.2)	31 (39.7)	148 (46.0)
Female	36 (45.0)	43 (55.1)	48 (55.8)	47 (60.3)	174 (54.0)

Demographics: Mild (MMSE 22-26)

	Placebo (N=44)	Low albumin, no IVIG (N=32)	Low albumin + IVIG (N=49)	High albumin + IVIG (N=36)	Total (N=161)
Age (yrs.) Mean (SD)	68.11 (7.89)	69.97 (6.36)	70.16 (6.39)	68.76 (7.91)	69.27 (7.16)
Age Group (n, %)					
<65	15 (34.1)	8 (25.0)	8 (16.3)	11 (30.6)	42 (26.1)
65-75	19 (43.2)	17 (53.1)	31 (63.3)	17 (47.2)	84 (52.2)
>75	10 (22.7)	7 (21.9)	10 (20.4)	8 (22.2)	35 (21.7)
Sex (n, %)					
Male	24 (54.5)	16 (50.0)	24 (49.0)	20 (55.6)	84 (52.2)
Female	20 (45.5)	16 (50.0)	25 (51.0)	16 (44.4)	77 (47.8)

Demographics: Moderate (MMSE 18-21)

alzheimer
management
by albumin
replacement



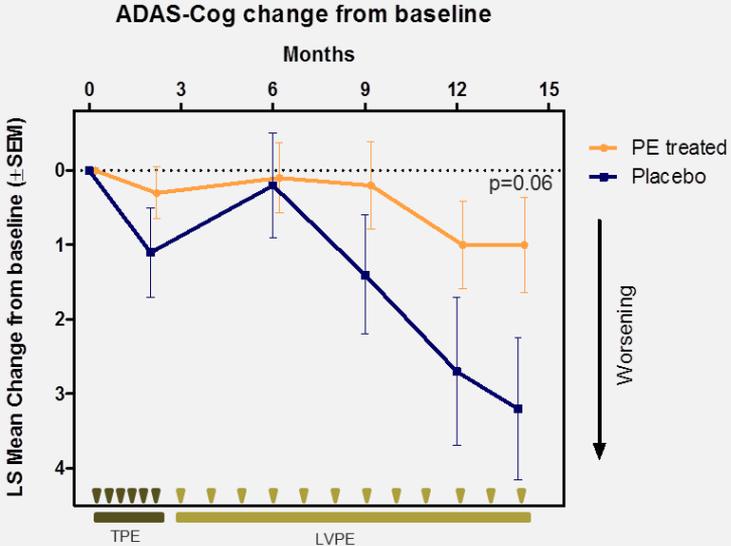
	Placebo (N=35)	Low Dose, no IVIG (N=46)	Low Dose + IVIG (N=37)	High Dose + IVIG (N=42)	Total (N=160)
Age (yrs.) Mean (SD)	69.1 (1.52)	67.43 (1.19)	68.54 (1.25)	70.12 (1.22)	68.76 (0.64)
Age Group (n, %)					
<65	13 (37.1)	18 (39.1)	9 (24.3)	11 (26.2)	51 (31.9)
65-75	14 (40.0)	20 (43.5)	21 (56.8)	18 (42.9)	73 (45.6)
>75	8 (22.9)	8 (17.4)	7 (18.9)	13 (31.0)	36 (22.5)
Sex (n, %)					
Male	19 (54.3)	19 (41.3)	14 (37.8)	11 (26.2)	63 (39.4)
Female	16 (45.7)	27 (58.7)	23 (62.2)	31 (73.8)	97 (60.6)



Primary Results: Global Cognition and Function

Global Cognition (ADAS-Cog): All patients

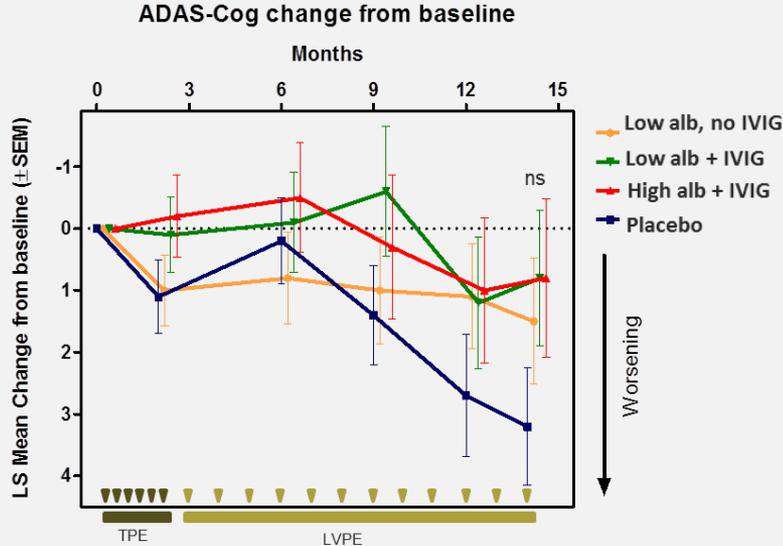
Combined arm



	PE treated —	Placebo —
Change from baseline	1.0	3.2
Diff. vs. Placebo	-2.1	-
p-value	§ 0.06	-
Less decline	66 %	-

N = 322

Treatment arms



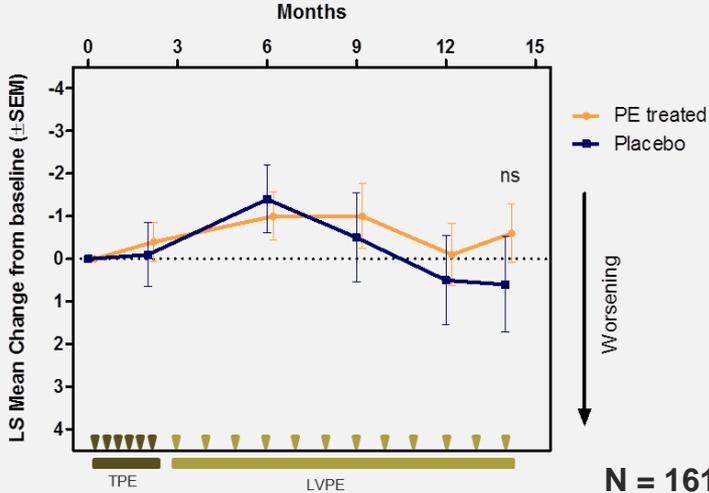
	Low alb, no IVIG —	Low alb + IVIG —	High alb + IVIG —	Placebo —
Change from baseline	1.5	0.8	0.8	3.2
Diff. vs. Placebo	-1.6	-2.4	-2.4	-
p-value (adj. mult. testing)	0.247	0.215	0.215	-
Less decline	50 %	75 %	75 %	-

N = 322

Global Cognition (ADAS-Cog): Mild

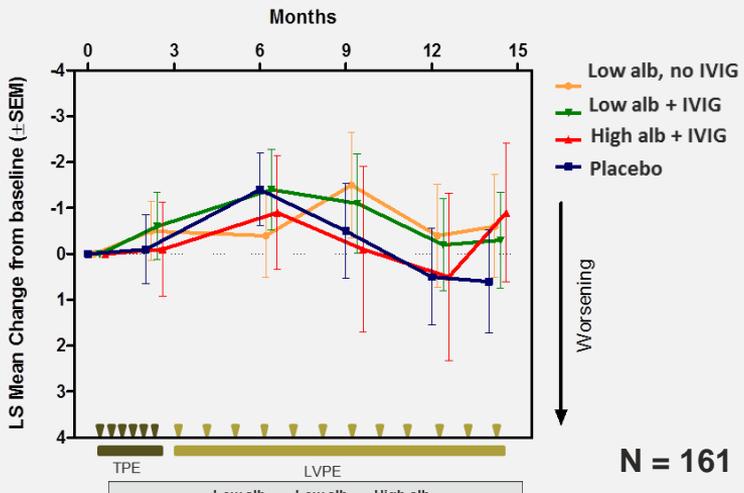
Combined arm

ADAS-Cog change from baseline (MMSE 22-26)



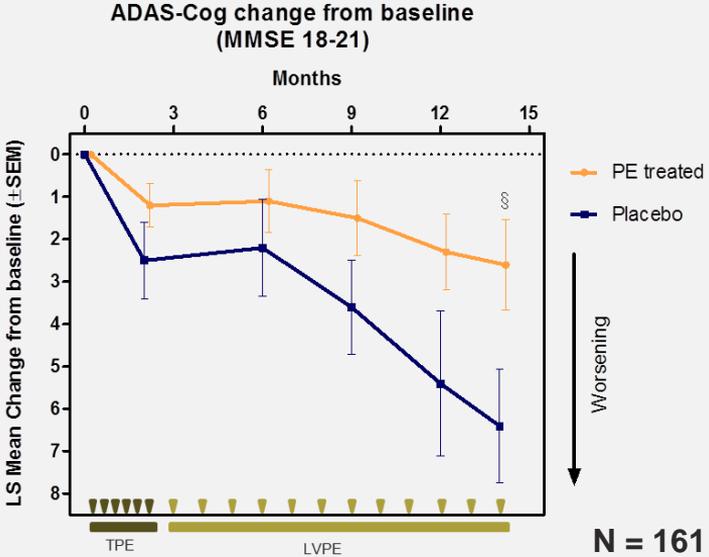
Treatment arms

ADAS-Cog change from baseline (MMSE 22-26)



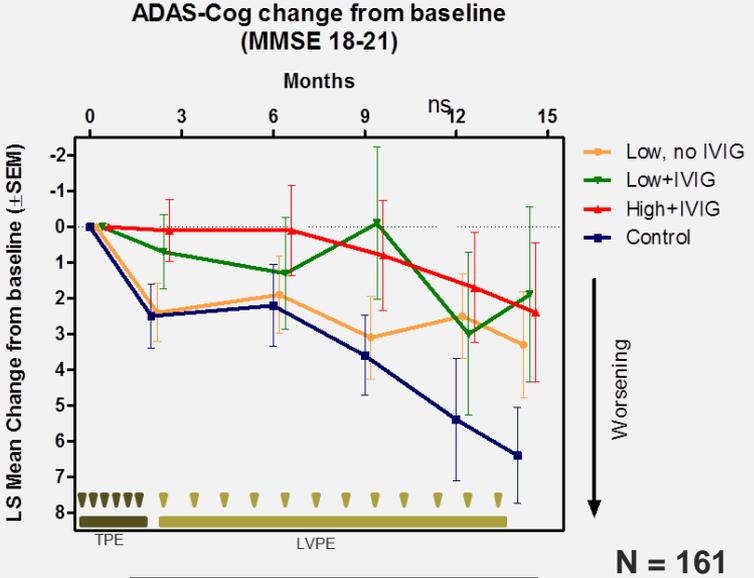
Global Cognition (ADAS-Cog): Moderate

Combined arm



	PE treated	Placebo
Change from baseline	2.6	6.4
Diff. vs. Placebo	-3.9	-
p-value	§ 0.05	-
Less decline	61 %	-

Treatment arms

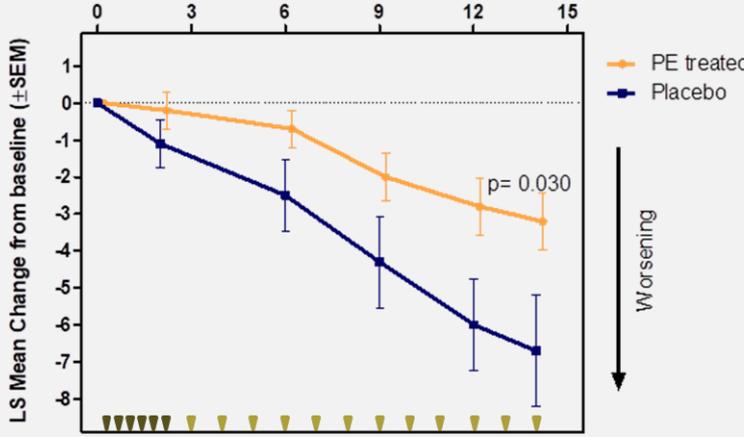


	Low alb, no IVIG	Low alb + IVIG	High alb + IVIG	Placebo
Change from baseline	3.3	1.9	2.4	6.4
Diff. vs. Placebo	-3.1	-4.5	-4.0	-
p-value (adj. mult. testing)	0.177	0.177	0.177	-
Less decline	48 %	70 %	63 %	-

Global Function (ADCS-ADL): All Patients

Combined arm

ADCS-ADL change from baseline
 Months

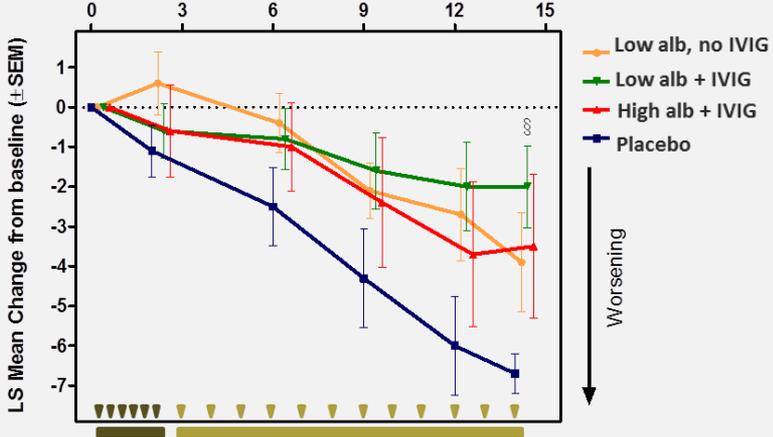


N = 322

	PE treated	Placebo
Change from baseline	-3.2	-6.7
Diff. vs. Placebo	3.5	-
p-value	* 0.03	-
Less decline	52 %	-

Treatment arms

ADCS-ADL change from baseline
 Months



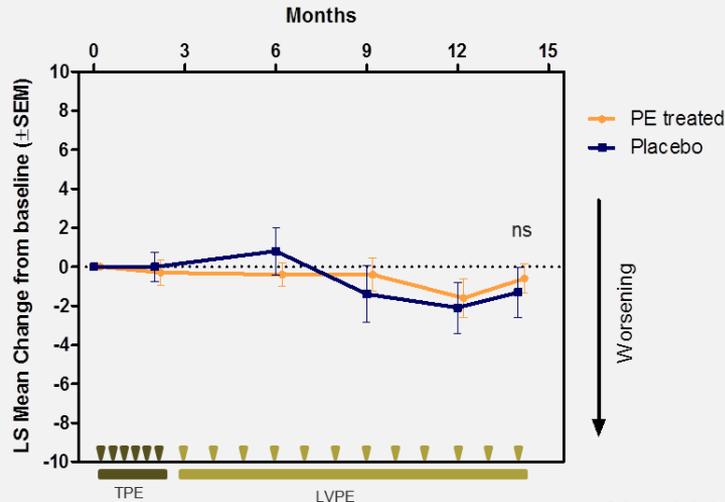
N = 322

	Low alb, no IVIG	Low alb + IVIG	High alb + IVIG	Placebo
Change from baseline	-3.9	-2.0	-3.5	-6.7
Diff. vs. Placebo	2.8	4.7	3.1	-
p-value (adj. mult. testing)	0.163	§ 0.056	0.163	-
Less decline	42 %	70 %	46 %	-

Global Function (ADCS-ADL): Mild

Combined arm

ADCS-ADL change from baseline (MMSE 22-26)

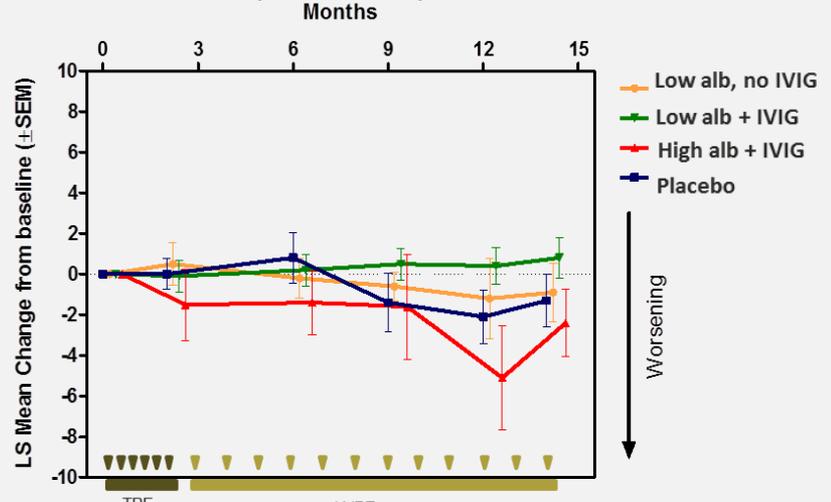


N = 161

	PE treated	Placebo
Change from baseline	-0.6	-1.3
Diff. vs. Placebo	0.7	-
p-value	0.664	-
Less decline	-	-

Treatment arms

ADCS-ADL change from baseline (MMSE 22-26)



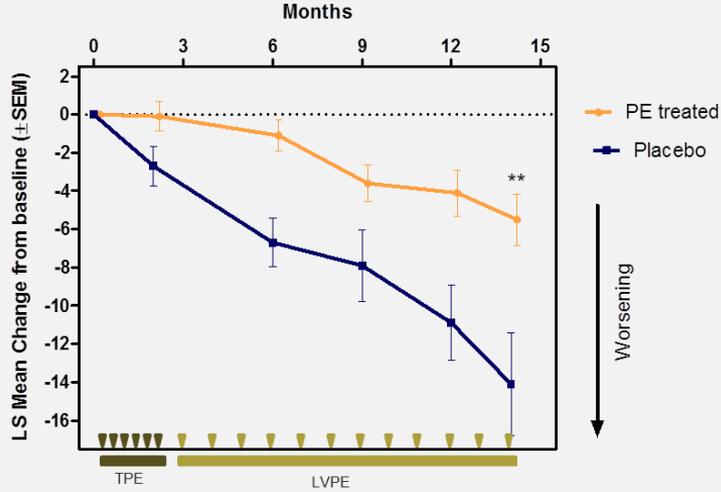
N = 161

	Low alb, no IVIG	Low alb + IVIG	High alb + IVIG	Placebo
Change from baseline	-0.9	0.8	-2.4	-1.3
Diff. vs. Placebo	0.3	2.1	-1.1	-
p-value (adj. mult. testing)	0.869	0.792	0.869	-
Less decline	-	-	-	-

Global Function (ADCS-ADL): Moderate

Combined arm

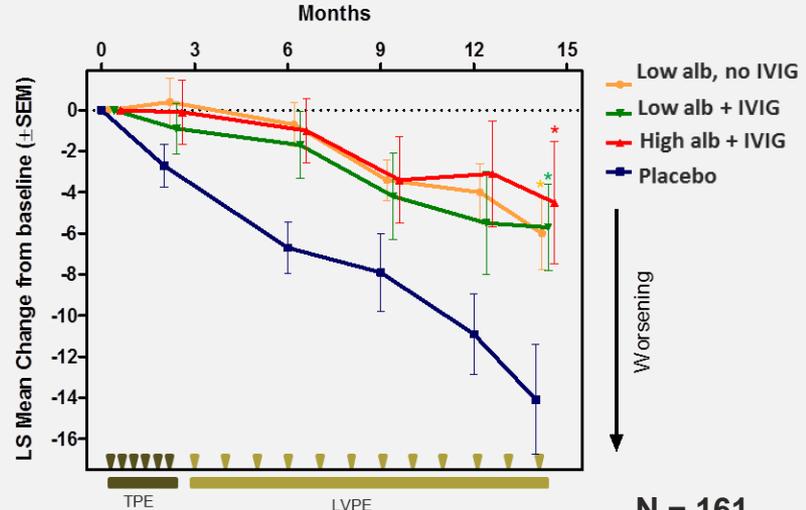
ADCS-ADL change from baseline (MMSE 18-21)



N = 161

Treatment arms

ADCS-ADL change from baseline (MMSE 18-21)

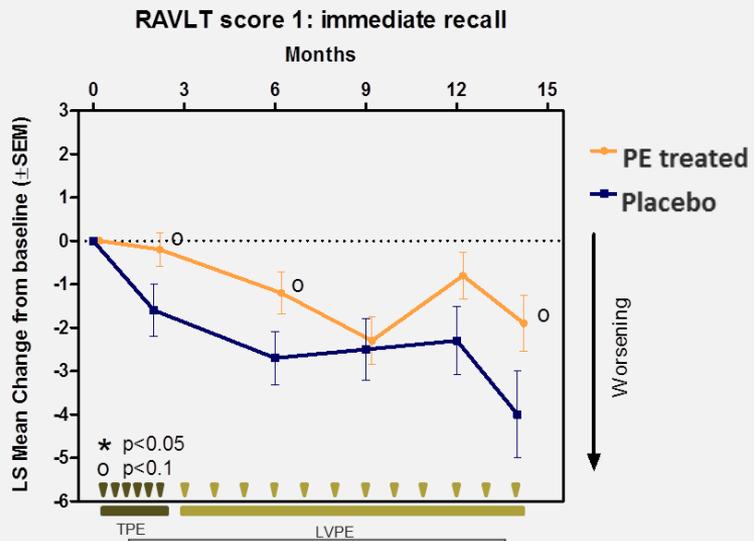


N = 161

Secondary Clinical Endpoints

Memory (Verbal learning): All patients

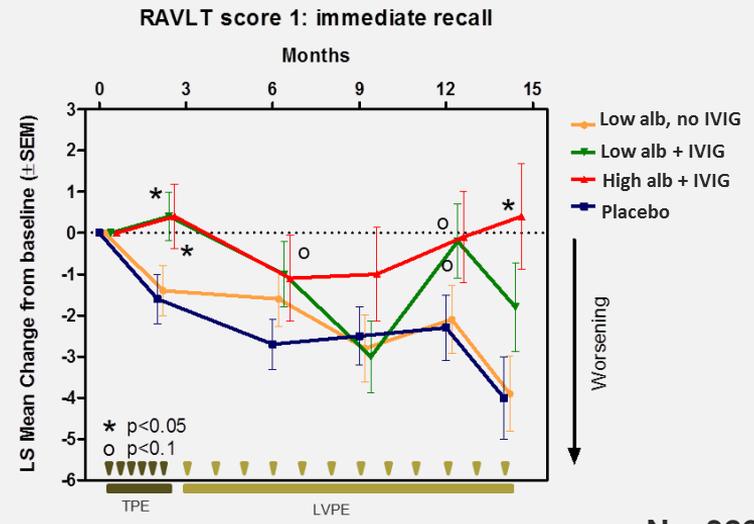
Combined arm



N = 322

	PE treated	Placebo
Change from baseline	-1.9	-4.0
Diff. vs. Placebo	2.2	-
p-value	0.073	-
Less decline	55 %	-

Treatment arms

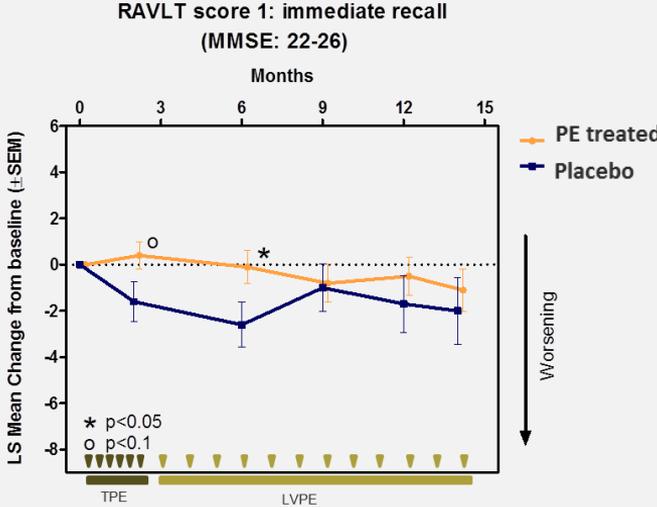


N = 322

	Low alb, no IVIG	Low alb + IVIG	High alb + IVIG	Placebo
Change from baseline	-3.9	-1.8	0.4	-4.0
Diff. vs. Placebo	0.2	2.2	4.4	-
p-value	0.915	0.131	0.004	-
Improv.	0 X	0.6 X	1.1 X	-

Memory (Verbal learning): Mild

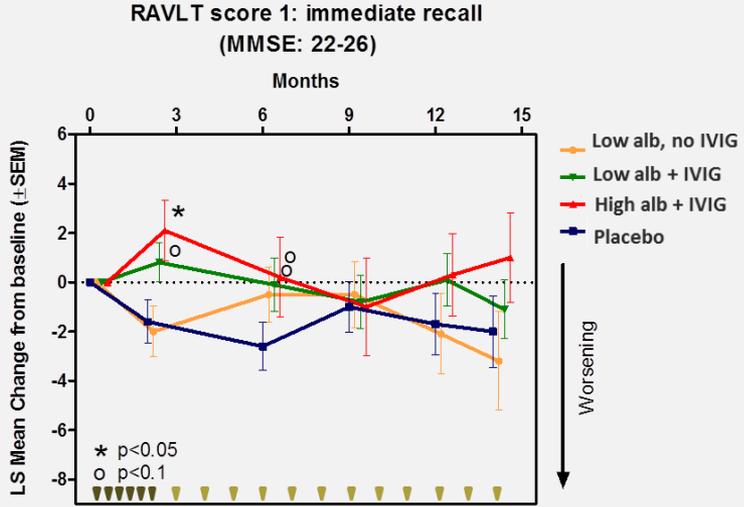
Combined arm



N = 161

	PE treated	Placebo
Change from baseline	-1.1	-2.0
Diff. vs. Placebo	0.9	-
p-value	0.600	-
Less decline	45 %	-

Treatment arms

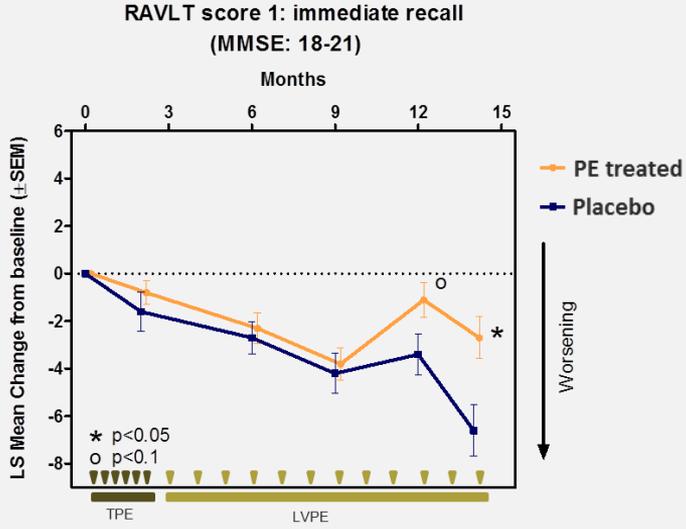


N = 161

	Low alb, no IVIG	Low alb + IVIG	High alb + IVIG	Placebo
Change from baseline	-3.2	-1.1	1.0	-2.0
Diff. vs. Placebo	-1.2	0.9	3.0	-
p-value	0.596	0.663	0.194	-
Improv.	-	0.5 X	1.5 X	-

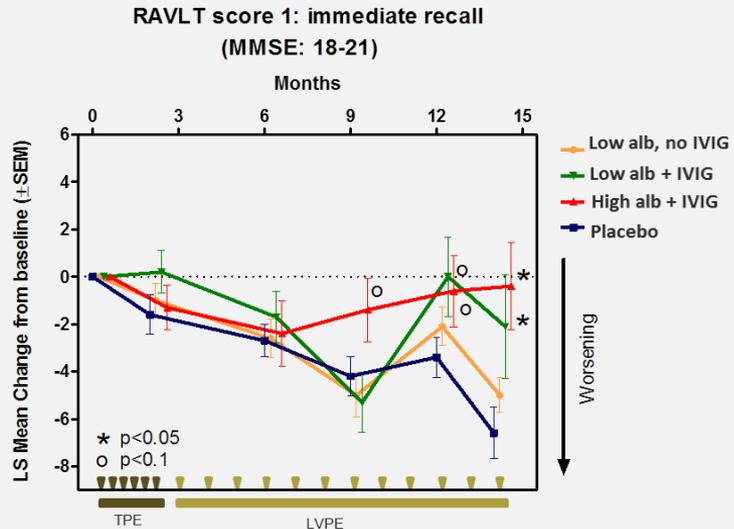
Memory (Verbal learning): Moderate

Combined arm



N = 161

Treatment arms

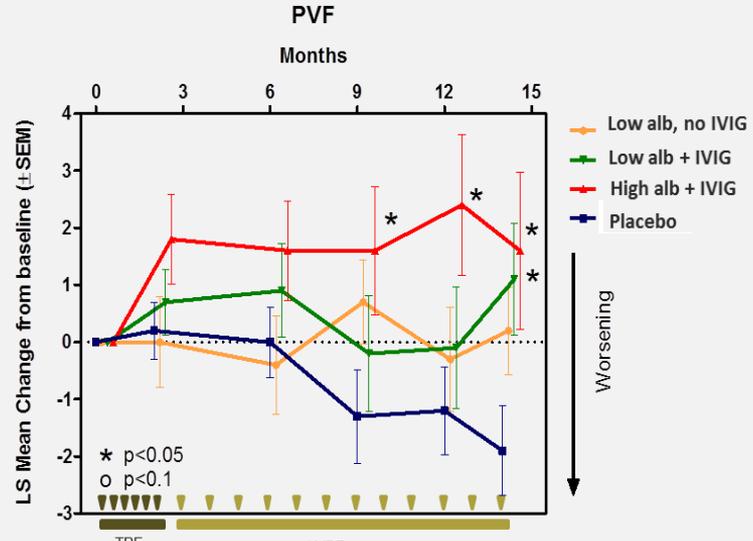
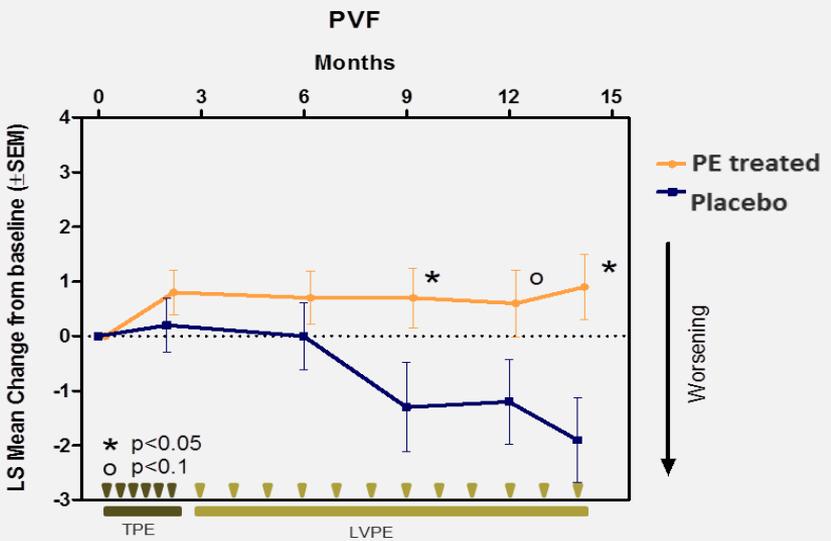


N = 161

Language (Verbal fluency): All patients

Combined arm

Treatment arms



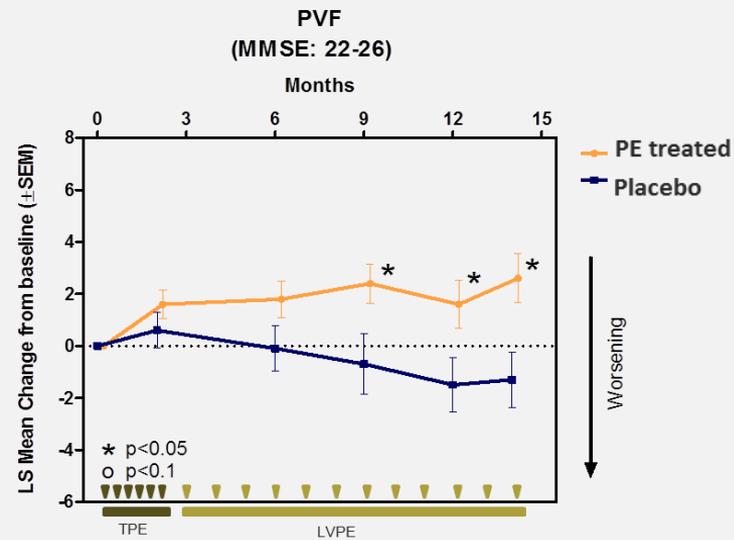
	PE treated	Placebo
Change from baseline	0.9	-1.9
Diff. vs. Placebo	2.8	-
p-value	0.007	-
Improv.	1.5 X	-

N = 322

	Low alb, no IVIG	Low alb + IVIG	High alb + IVIG	Placebo
Change from baseline	0.2	1.1	1.6	-1.9
Diff. vs. Placebo	2.0	3.0	3.5	-
p-value	0.106	0.022	0.008	-
Improv.	1.1 X	1.6 X	1.8 X	-

N = 322

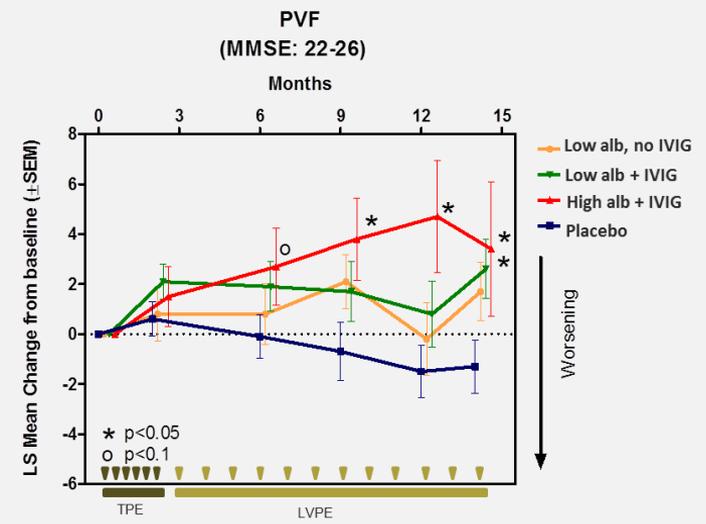
Language (Verbal Fluency): Mild Combined arm



	PE treated —▲—	Placebo —■—
Change from baseline	2.6	-1.3
Diff. vs. Placebo	3.8	-
p-value	0.013	-
Improv.	3 X	-

N = 161

Treatment arms

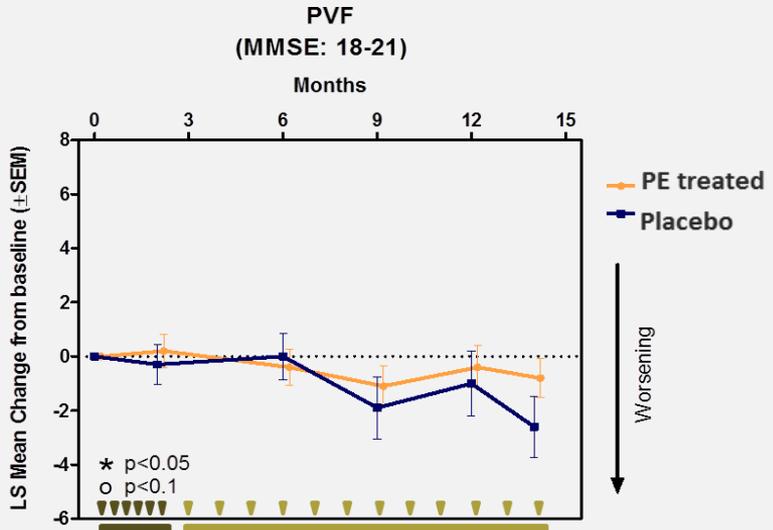


	Low alb, no IVIG —▲—	Low alb + IVIG —■—	High alb + IVIG —◆—	Placebo —■—
Change from baseline	1.7	2.6	3.4	-1.3
Diff. vs. Placebo	3.0	3.9	4.7	-
p-value	0.141	0.036	0.025	-
Improv.	2.3 X	3 X	3.6 X	-

N = 161

Language (Verbal Fluency): Moderate

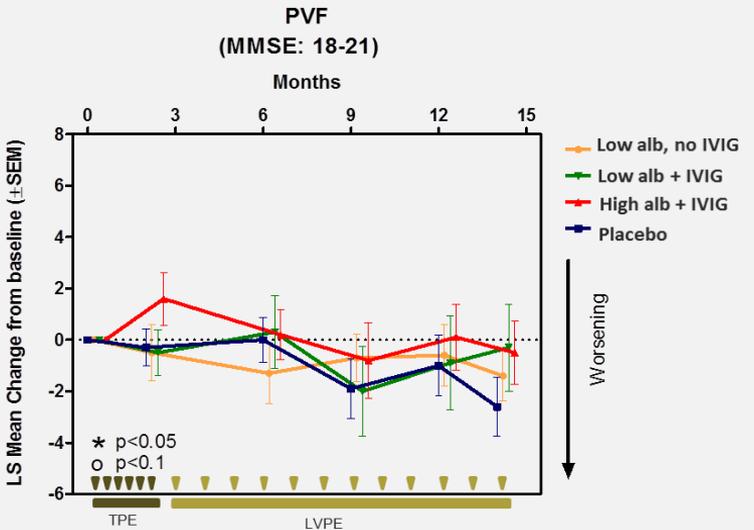
Combined arm



N = 161

	PE treated —	Placebo —
Change from baseline	-0.8	-2.6
Diff. vs. Placebo	1.7	-
p-value	0.194	-
Less decline	65 %	-

Treatment arms

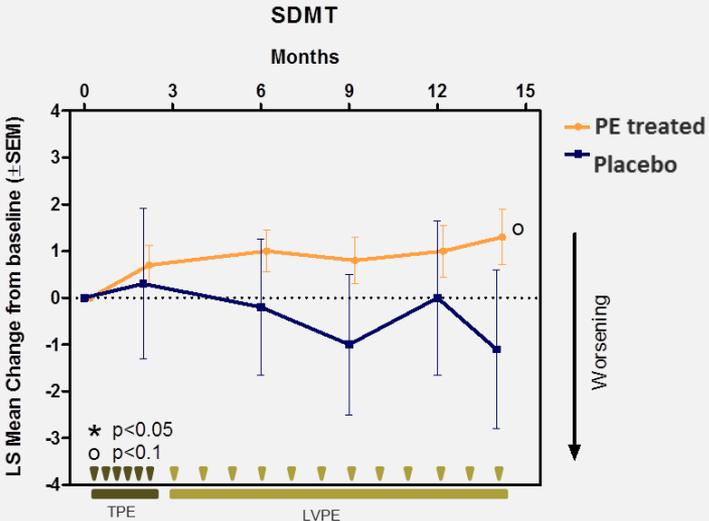


N = 161

	Low alb, no IVIG —	Low alb + IVIG —	High alb + IVIG —	Placebo —
Change from baseline	-1.4	-0.3	-0.5	-2.6
Diff. vs. Placebo	1.2	2.2	2.1	-
p-value	0.441	0.213	0.200	-
Less decline	46 %	85 %	81 %	-

Executive Function (Processing Speed): All Patients

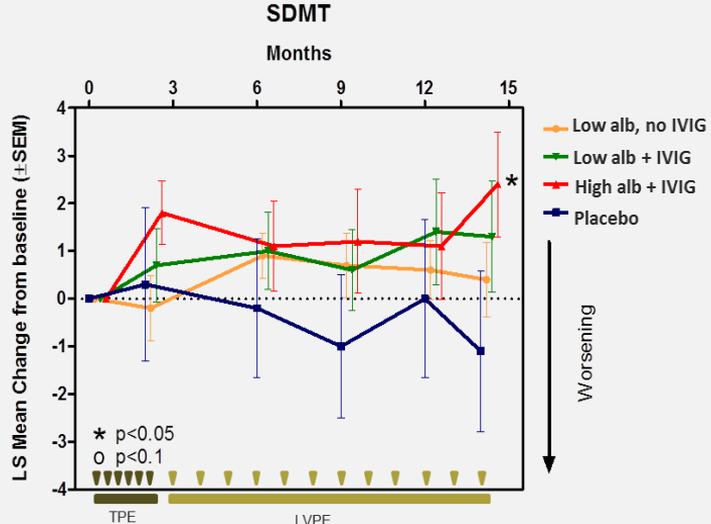
Combined arm



N = 322

	PE treated —○—	Placebo —■—
Change from baseline	1.3	-1.1
Diff. vs. Placebo	2.4	-
p-value	0.054	-
Improv.	2.2 X	-

Treatment arms



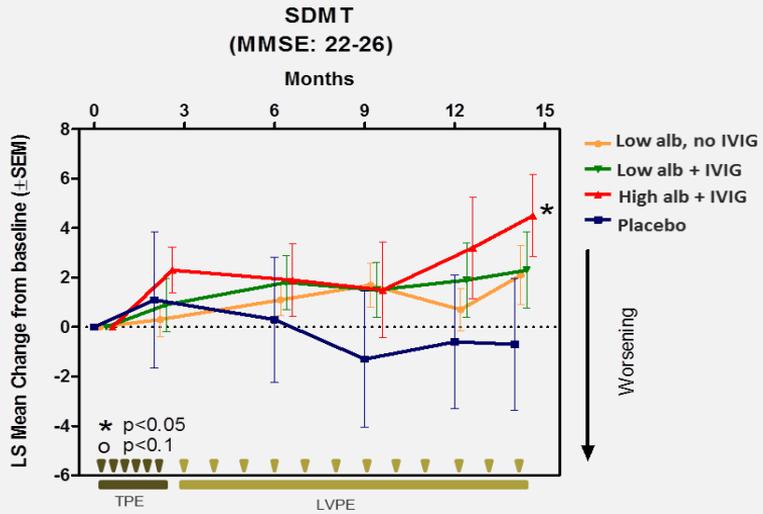
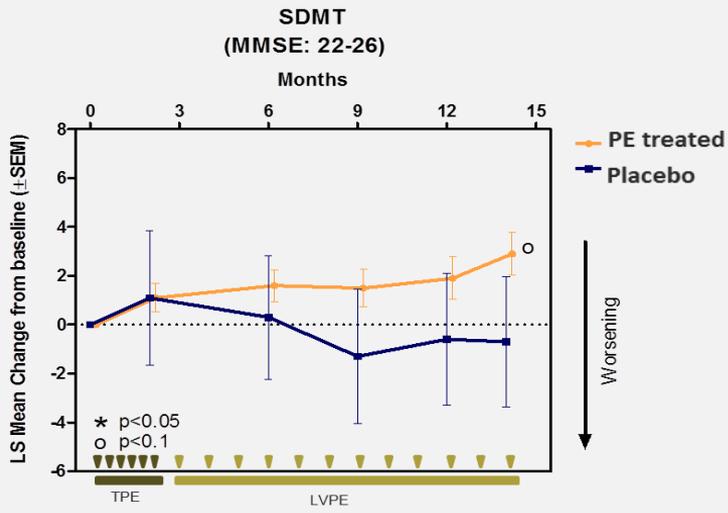
N = 322

	Low alb, no IVIG —○—	Low alb + IVIG —■—	High alb + IVIG —▲—	Placebo —◆—
Change from baseline	0.4	1.3	2.4	-1.1
Diff. vs. Placebo	1.5	2.4	3.5	-
p-value	0.313	0.119	0.030	-
Improv.	1.4 X	2.2 X	3.2 X	-

Executive Function (Processing Speed): Mild

Combined arm

Treatment arms



	PE treated	Placebo
Change from baseline	2.9	-0.7
Diff. vs. Placebo	3.6	-
p-value	0.055	-
Improv.	5.1 X	-

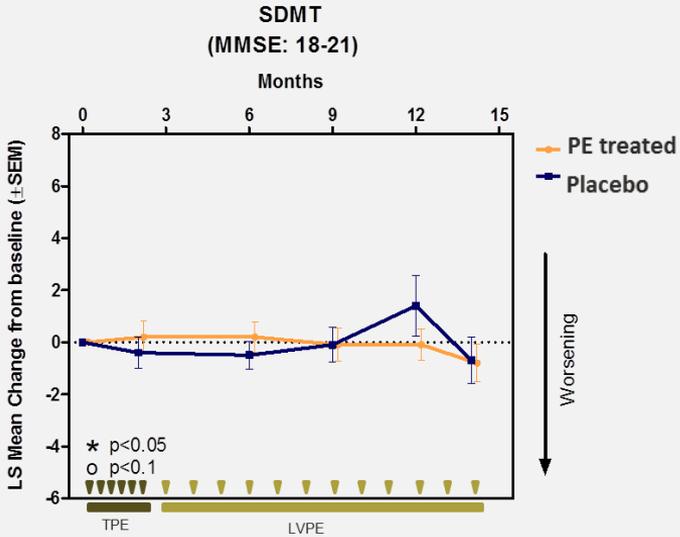
N = 160

	Low alb, no IVIG	Low alb + IVIG	High alb + IVIG	Placebo
Change from baseline	2.1	2.3	4.5	-0.7
Diff. vs. Placebo	2.9	3.0	5.2	-
p-value	0.244	0.173	0.039	-
Improv.	4.1 X	4.3 X	7.4 X	-

N = 160

Executive Function (Processing Speed): Moderate

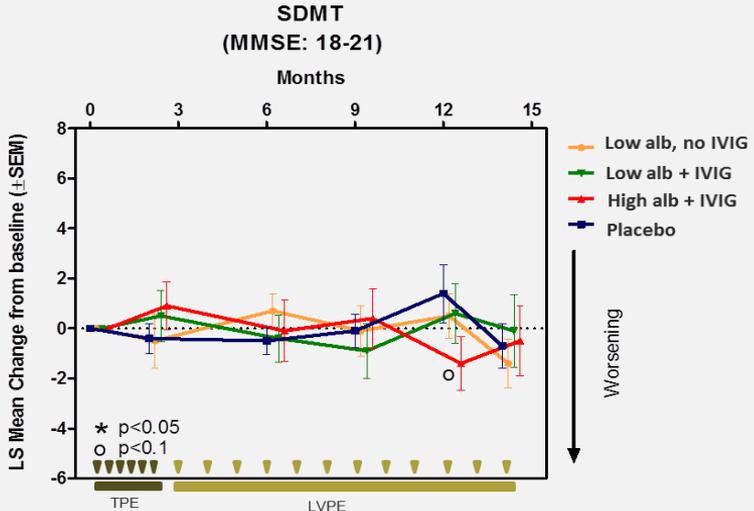
Combined arm



	PE treated	Placebo
Change from baseline	-0.8	-0.7
Diff. vs. Placebo	-0.1	-
p-value	0.931	-
Less decline	-	-

N = 151

Treatment arms

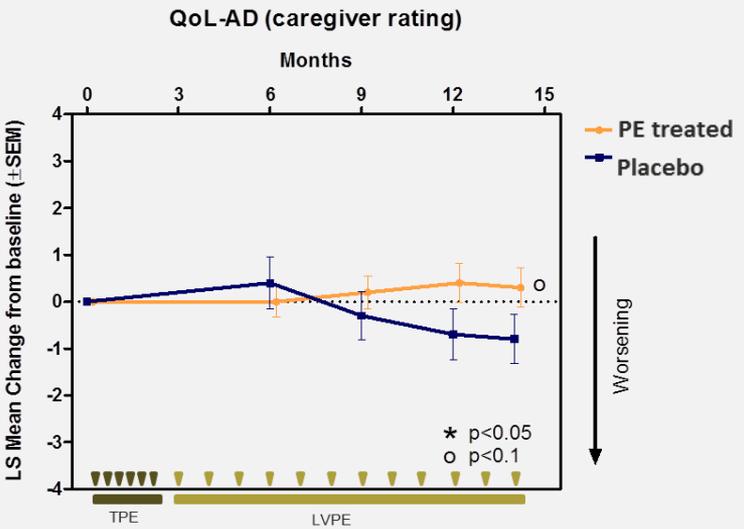


	Low alb, no IVIG	Low alb + IVIG	High alb + IVIG	Placebo
Change from baseline	-1.4	-0.1	-0.5	-0.7
Diff. vs. Placebo	-0.7	0.6	0.2	-
p-value	0.658	0.757	0.910	-
Less decline	-	86 %	29 %	-

N = 151

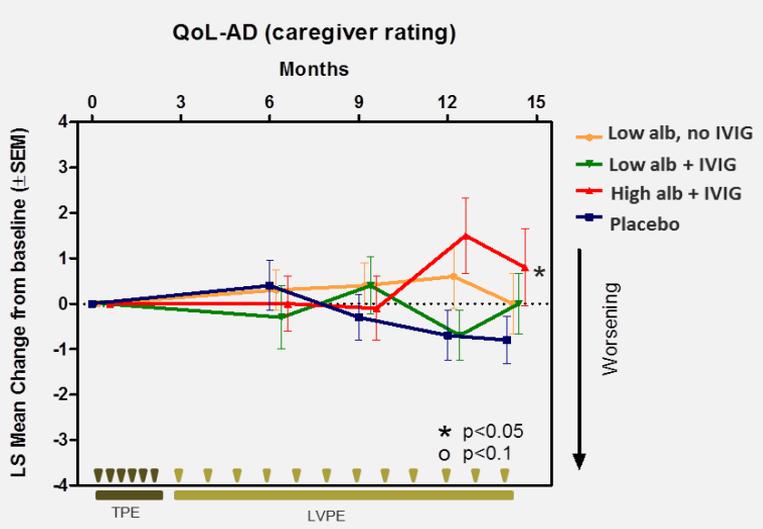
Quality of Life (Caregiver Rating): All Patients

Combined arm



N = 322

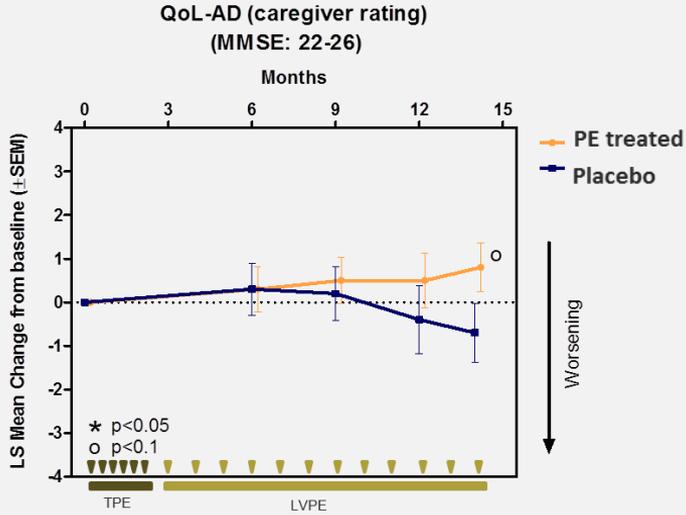
Treatment arms



N = 322

Quality of Life (Caregiver Rating): Mild

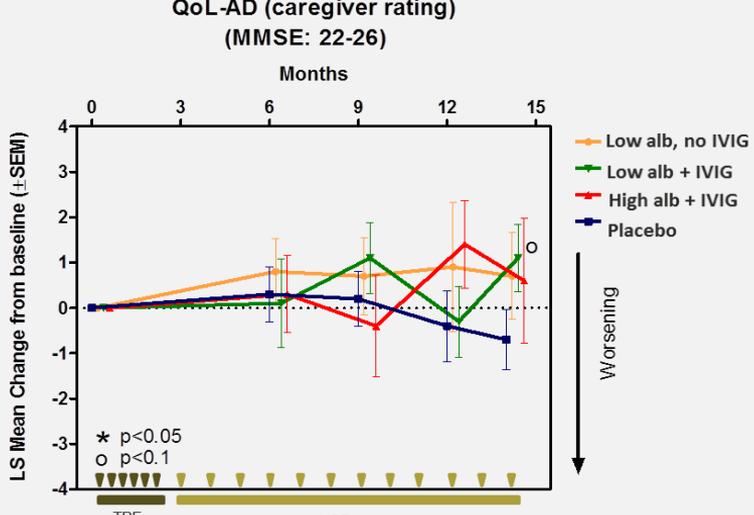
Combined arm



	PE treated	Placebo
Change from baseline	0.8	-0.7
Diff. vs. Placebo	1.5	-
p-value	0.073	-
Improv.	2.1 X	-

N = 156

Treatment arms



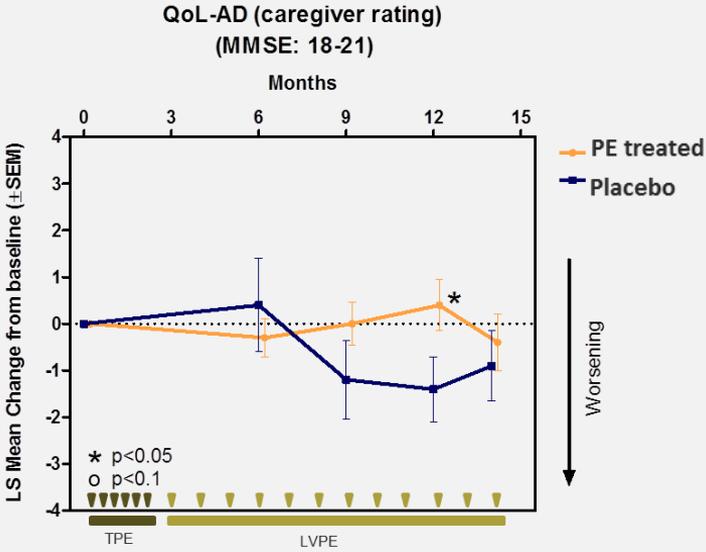
	Low alb, no IVIG	Low alb + IVIG	High alb + IVIG	Placebo
Change from baseline	0.7	1.1	0.6	-0.7
Diff. vs. Placebo	1.4	1.8	1.3	-
p-value	0.204	0.085	0.264	-
Improv.	2 X	2.6 X	1.9 X	-

N = 156

Quality of Life (Caregiver Rating): Moderate



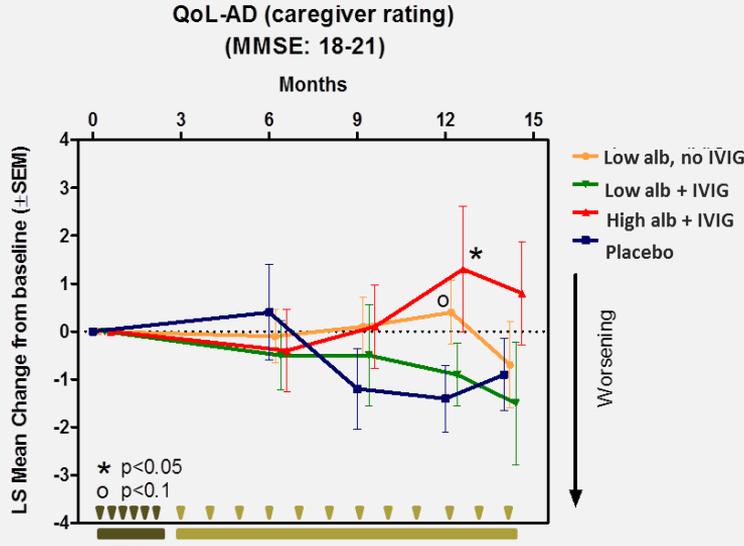
Combined arm



N = 156

	PE treated	Placebo
Change from baseline	-0.4	-0.9
Diff. vs. Placebo	0.5	-
p-value	0.639	-
Less decline	56 %	-

Treatment arms



N = 156

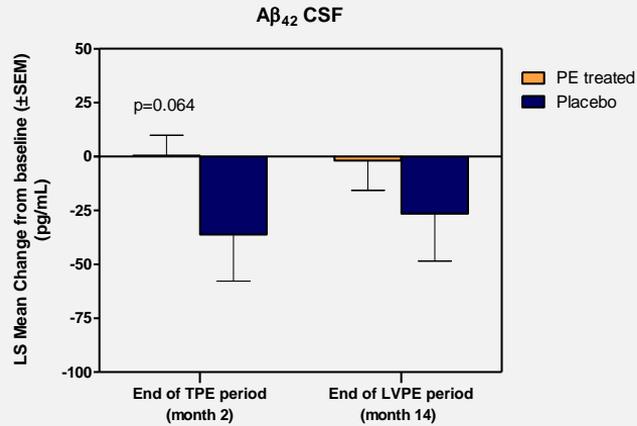
	Low alb, no IVIG	Low alb + IVIG	High alb + IVIG	Placebo
Change from baseline	-0.7	-1.5	0.8	-0.9
Diff. vs. Placebo	0.2	-0.6	1.6	-
p-value	0.857	0.644	0.181	-
Improv.	0.2 X	-	1.8 X	-

- **Analyses ongoing:**
 - NAB (NAB Naming Test)
 - CSDD (Cornell Scale for Depression in Dementia)
 - NPI (Neuropsychiatric Inventory)
 - CDR-Sb (Clinical Dementia Rating, Sum of boxes)
 - ADCS-CGIC (Clinical Global Impression of Change)
 - C-SSRS (Columbia Suicide Severity Rating Scale)
 - Neuroimaging analyses (MRI and PET)

CSF Biomarkers

$A\beta_{42}$, Tau and P-Tau

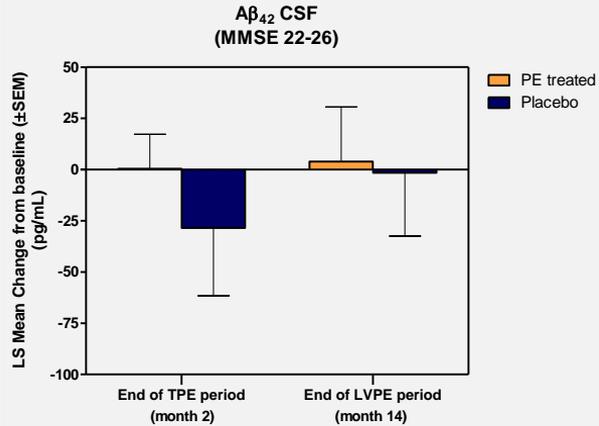
All treated patients



N = 299

TPE: Therapeutic Plasma Exchange

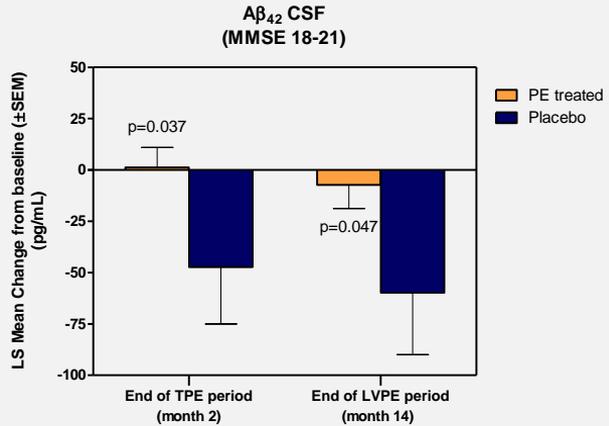
Mild (MMSE 22-26)



N = 145

LVPE: Low Volume Plasma Exchange

Moderate (MMSE 18-21)

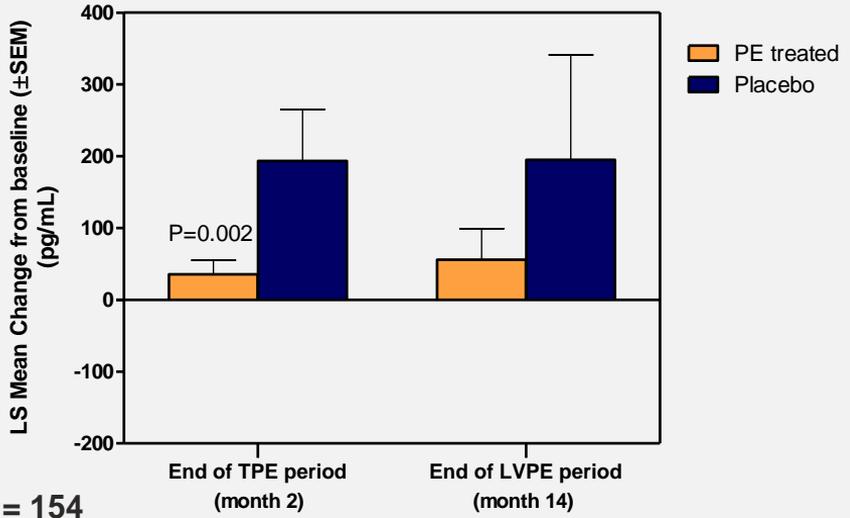


N = 154

CSF Tau: Moderate (MMSE 18-21)

Total Tau

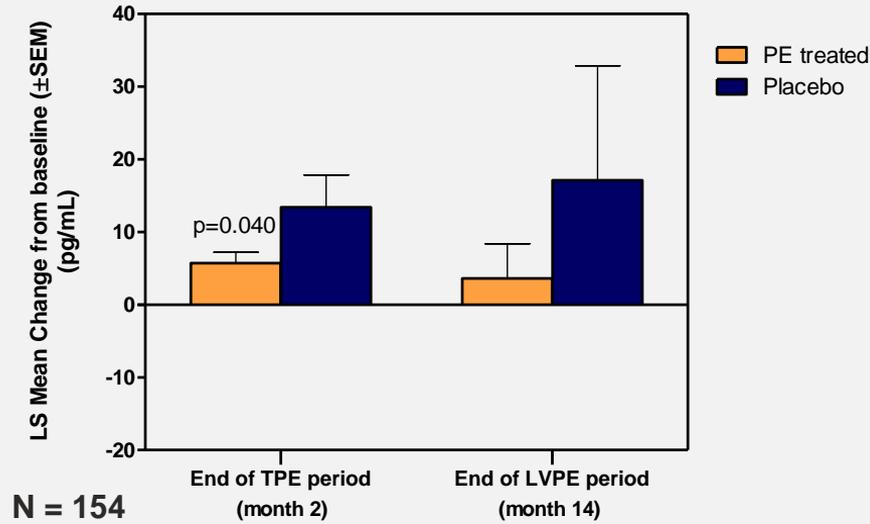
Tau CSF (MMSE 18-21)



TPE: Therapeutic Plasma Exchange

P- Tau

P-Tau CSF (MMSE 18-21)



LVPE: Low Volume Plasma Exchange



Safety

Adverse Events (AEs)

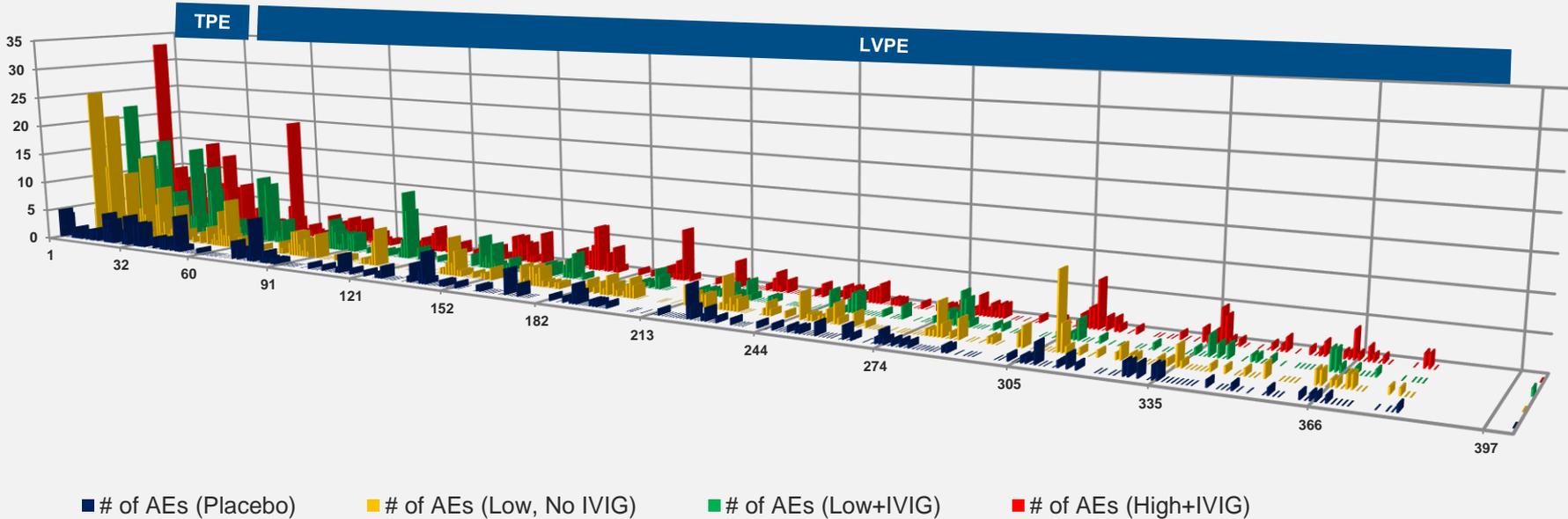
Most Frequent AEs Related with PE

	Total	Placebo	Low, no IVIG	Low + IVIG	High + IVIG
Total PE	4709	1223	1207	1180	1099
TPE	1718	435	430	448	405
LVPE	2991	788	777	732	694
	PEs with AE, n (% of PE)				
Anaemia	43 (0.9)	2 (0.2)	13 (1.1)	16 (1.4)	12 (1.1)
Catheter local reactions	119 (2.5)	0	43 (3.6)	31 (2.6)	45 (4.1)
Catheter / Device infection	15 (0.3)	0	7 (0.6)	5 (0.4)	3 (0.3)
Muscle spasms	49 (1.0)	0	16 (1.3)	4 (0.3)	29 (2.6)
Dizziness	30 (0.6)	1 (0.1)	8 (0.7)	13 (1.1)	8 (0.7)
Headache	11 (0.2)	3 (0.2)	4 (0.3)	2 (0.2)	2 (0.2)
Paraesthesia	28 (0.6)	0	16 (1.3)	1 (0.1)	11 (1.0)
Presyncope	28 (0.6)	1 (0.1)	8 (0.7)	14 (1.2)	5 (0.5)
Syncope	11 (0.2)	0	4 (0.3)	3 (0.3)	4 (0.4)
Hypotension	102 (2.2)	0	37 (3.1)	37 (3.1)	28 (2.5)

	Total (N=322)	Placebo (N=79)	Low, no IVIG (N=78)	Low + IVIG (N=86)	High + IVIG (N=79)
Total PE	4709	1223	1207	1180	1099
TPE	1718	435	430	448	405
LVPE	2991	788	777	732	694
Total of Infections	159	38	52	37	32
Patients with infections	147	33	49	34	31
% of patients with infections	N/A	41.8	62.8	39.5	39.2
Infections per 100 patients	N/A	48.1	66.7	43.0	40.5

AEs: “Manhattan” Chart

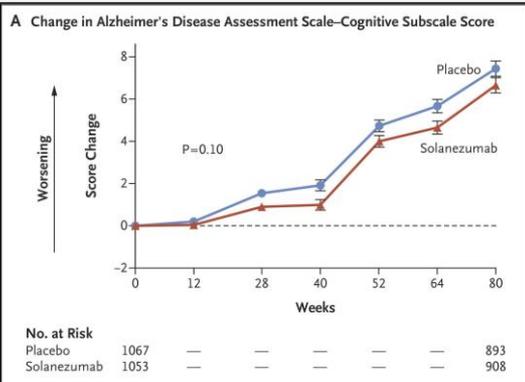
Distribution of Aes
(Treatments vs. Control)



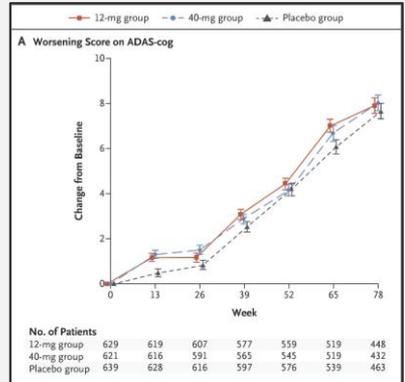
TPE: Therapeutic Plasma Exchange

LVPE: Low Volume Plasma Exchange

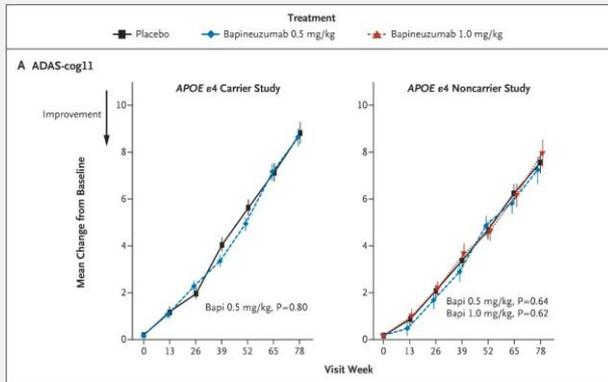
Recent BACE and Mab Programs Discontinued due to Lack of Efficacy vs. AMBAR: ADAS-Cog



↑ Worsening

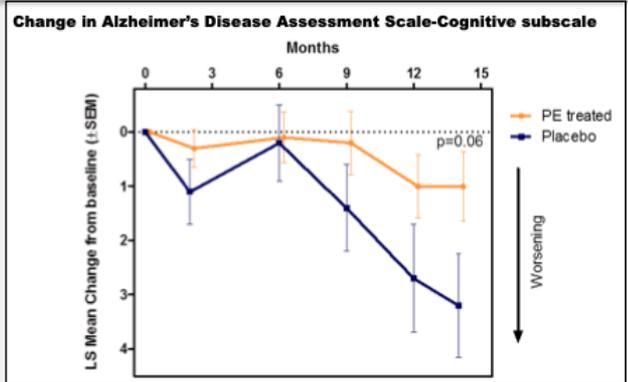


↑ Worsening



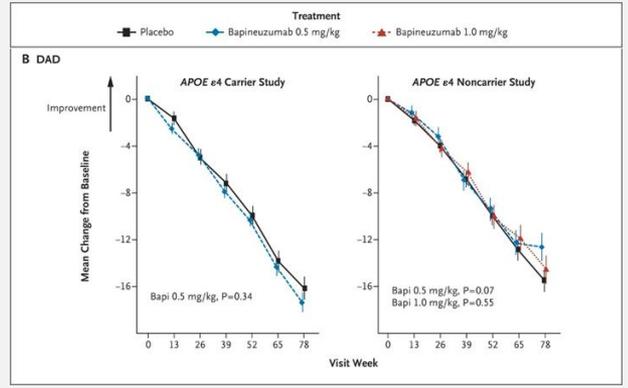
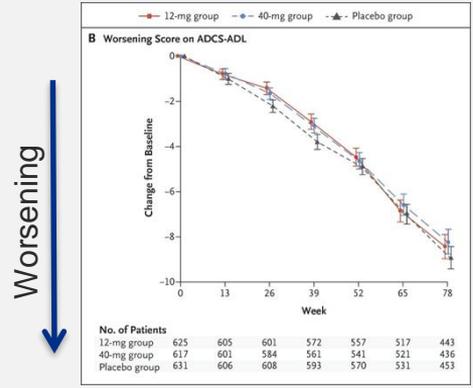
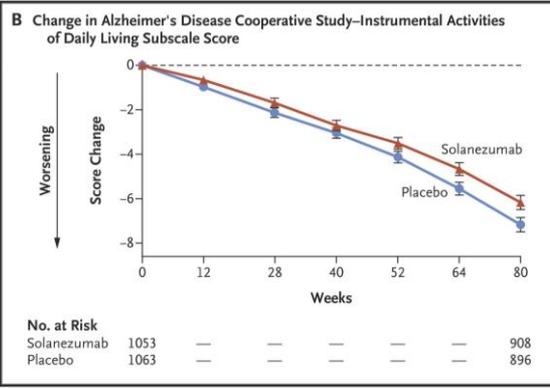
AMBAR

↓ Worsening

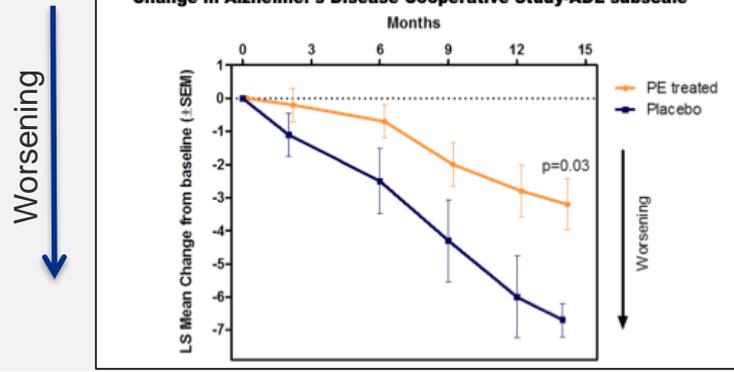


↓ Worsening

Recent BACE and Mab Programs Discontinued due to Lack of Efficacy vs. AMBAR: ADCS-ADL



AMBAR



- **Primary endpoints:**

- Mild AD: No decline, neither active nor placebo
- Moderate AD: 61% statistically significant less decline in both ADAS-Cog and ADCS-ADL of treated patients as compared with placebo at 14 months
All three treatment arms statistically different from placebo (ADCS-ADL)

- **Secondary endpoints:**

- All-patient analysis: statistically significant **improvement** in memory, language, processing speed and QoL (caregiver) of High-Albumin+IVIG arm compared with placebo at 14 months
- Mild AD: statistically significant **improvement** in language and processing speed and of High-Albumin+IVIG arm
Borderline significance in QoL (caregiver)
- Moderate AD: statistically significant **improvement** in memory and QoL (caregiver) of High-Albumin+IVIG arm

Key Messages: Safety and Feasibility

- **Feasible: 4,709 procedures**
 - 1,223 sham; 3,486 real
 - 1,718 TPE; 2,991 LVPE
- **72 % of patients completed the study**
- **AE rate seems to depend on volume infused and IVIG dose, as expected**
- **Low rate of plasma exchange procedures related with AEs**
- **Safety conclusion:** PE, both TPE and LVPE, was safe, well tolerated and feasible in mild-to-moderate AD patients, with a 72% of patients completing the study

- **Biomarkers:**

- CSF A β ₄₂: stabilization in the treated patients and decline in placebo arm particularly for moderate AD
- CSF Tau and P-Tau: less increase in the treated patients compared to placebo particularly for moderate AD

- **Infections:**

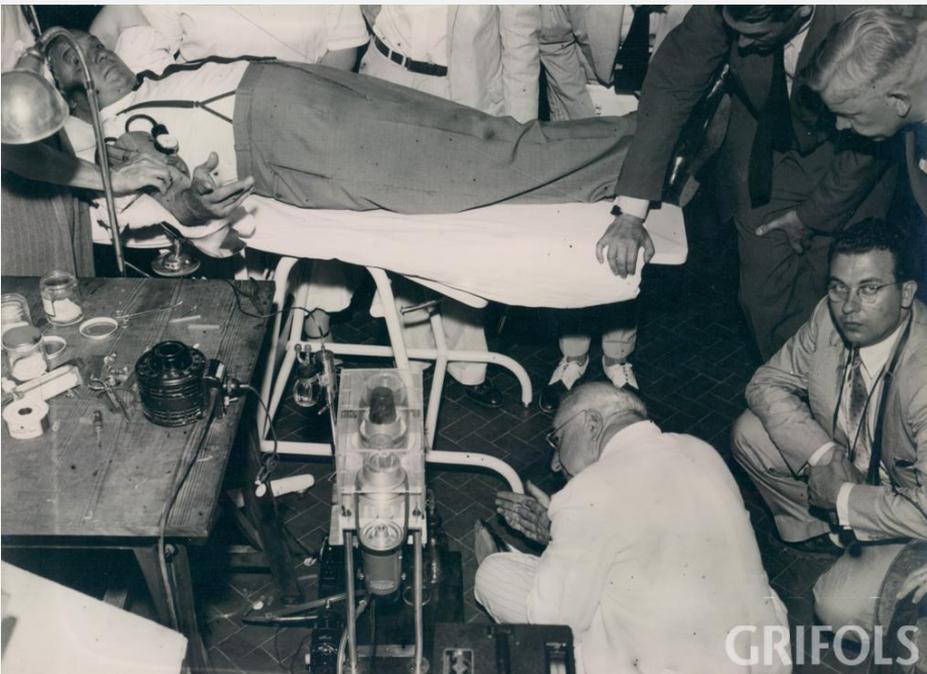
- Patients treated with plasmapheresis without IVIG had more infections than those treated with IVIG and also than those in the placebo arm
- The rate of infections not related with catheter was lower in patients receiving IVIG



**We are Profoundly Grateful to the Patients
and Families that Have Kindly Participated
in the AMBAR Clinical Trial**

Thanks to the Pioneers...

alzheimer
management
by albumin
replacement



GRIFOLS

IV CONGRESSO INTERNACIONAL
DE TRANSFUÇÕES DE SANGUE

•
III CURSO INTERNACIONAL DE
MEDICINA E CIRURGIA DE URGÊNCIA

•
I EXPOSIÇÃO MUNDIAL DO SANGUE

•
I COLOQUIO DE HEMATOLOGIA
AFRICANA



LISBOA · 23 A 29 DE JULHO DE 1951

Dr. E. DE MORAIS & T. DE SOUSA SOBRINHO (Porto)

Deux cas de purpura thrombopénique guéris par transfusion sanguine intrasternal
Two cases of thrombocytopenic purpura cured by intra sternal blood transfusion
Dois casos de purpura trombopénica curados por hemotransfusão esternal

Dr. A. LESSA & A. DE SOUSA (Lisboa)

Démonstration clinique et radiologique des possibilités de transfusion par voie osseuse
Clinical and roentgenological demonstration of the possibilities of transfusion in the bone-marrow
Demonstração clínica e radiológica das possibilidades da via óssea

Dr. J. MASSONS & W. OPPENHEIMER (Barcelona)

La plasmatherapie heterologe en Pédiatrie
Heterologous plasma transfusion, in Pediatrics
A plasmoterapia heterologa em Pediatria

Dr. A. P. FRANCO (Lisboa)

Étude hemathologique d'un cas de maladie hemolytique du nouveau-né, à la première grossesse, du à l'incompatibilité Rh
Haematological study of a case of Hemolytic Disease of the new-born in the first pregnancy, due to the Rh incompatibility
Estudo hematológico dum caso de doença hemolitica de recém-nascido, devido à incompatibilidade Rh em primeira gestação.

Dr. J. A. GRIFFOLS-LUCAS (Barcelona)

La plasmapherèse chez l'homme, avec un rapport sur la première série des cas
Plasmaphoresis in man. Report of the first series of cases
Plasmoforese no homem. Noticia da primeira série de casos

Dr. J. WILLENEGGER (Basileia)

Nouvelles rscherches sur le donneur universel dit dangereux
New researches on the universal blood donor known as dangerous donor
Novas pesquisas sobre o dador universal considerado perigoso

- 18 -



Investor and Analyst Meeting

North Carolina
June 5-6, 2019

GRIFOLS



Bioscience R&D & Clayton Facilities Tours

Todd Willis & Daniel Fleta

GRIFOLS

Bioscience R&D Facilities Tour

Bioscience R&D – RTP

Facilities and Organization



30,000 ft² state-of-the art R&D facility

- Open lab concept to maximize space
- Specialized areas for bench-scale and macro-bench processing, filling suite, and cell culture rooms
- BSL-3 facility and containment practices for handling Risk Group 3 pathogens



- 90 scientists and support staff
 - Product Development
 - Bioanalytics
 - Process Development
 - Product Safety
 - Toxicology
 - Pathogen Safety
 - Discovery Research
 - Quality R&D

Clayton Facilities Tour

Clayton Facilities Tour

Safety Guidelines

We will split into 4 groups to facilitate the tour. Please stay with your group

When walking on an area with metal grating, please stay on the designated pathway

Watch your step, especially on transitions between different surfaces

Please do not touch anything as many of the systems are energized

Please feel free to ask questions

Clayton Facilities Tour

Tour Route

New Fractionation Building:

- 6MM Liter plasma / year capacity
- Construction complete during 1Q 2019, start up in progress
- Features latest version of Automatic Bottle Opener ABO₆

Ebola IGIV facility:

- Totally isolated facility for processing plasma to final container
- Batch size is 75L of plasma

Clayton Facilities Tour

New Fractionation Building General Information



- **Surface:** 85,000 sq.ft. building area
- **Capacity:** 6MM Liters plasma/ yr capacity
- **Execution:** Two production trains with 16 vessels per train and eight buffer vessels
- **Floors:** Two production floors with an interstitial areas above each floor

Clayton Facilities Tour

New Fractionation Building General Information



- **Most recent version of Grifols Engineering Automatic Bottle Opener**
 - Automated de-palletizing, loading and re-palletizing
 - Includes RFID tracking capability
 - Throughput rate of 1,250 bottles/hour
- **Reactors** integration in the clean room. Grifols patented method for installation of vessels in the clean room
- **Process rooms** with daylight for operators working environment convenience
- **Filter presses** with CIP system built-in
- **Central buffer** preparation area for both trains

Clayton Facilities Tour

Convalescent Plasma Immunoglobulin Facility



Clayton Facilities Tour

Convalescent Plasma Immunoglobulin Facility

- Design and construction of a Plasma Fractionation and IGIV purification facility + filling and conditioning segregated
- Batch Size 75 Liters in bags of aprox.500ml plasma from donors with anti-ebola antibodies
- 300gr Gamunex[®] will be manufactured by batch
- Production capacity of up to 3 batched per week
- IGIV filling at 10% using Gri-Fill[®] technology in 100 ml bags (30 bags)
- The facility will also have labelling, packaging and warehouse previous to sending

Clayton Facilities Tour

Convalescent Plasma Immunoglobulin Facility

Plant

Total Structure area: 1,300m²

Clean Rooms, QC Lab & Lockers: 427m²

Total Clean Rooms 241m²

52 tons structural steel

Equipment

4 Units HVAC + 1 Steam generator

2 Chillers(5 C and -25 C⁰)

1 Plant water treatment & Osmosis

1 Autoclave + 1 Liquid sterilizer HWFI loop/tank

The construction started in January 2015 and finished in October 2015





GRIFOLS

Investor and Analyst Meeting

**North Carolina
June 5-6, 2019**

Investor and Analyst Meeting

June 5-6, 2019

June 5 – Clayton, NC		June 5 – Clayton, NC		June 6 – Raleigh, NC	
7:30	<i>Pick-up from recommended hotels</i>	2:00-2:45	Novel Plasma Therapies Development <i>T. Willis</i>	7:30	<i>Pick-up from recommended hotels</i>
8:30-9:00	<i>Registration and welcome</i>	2:45-3:30	AMBAR: Grifols' Alzheimer Trial <i>A. Paez</i>	8:30-9:30	R&D Tour
9:00-9:30	Introduction <i>R. Grífols</i>	3:30-4:00	<i>Break</i>	9:30-10:15	China: Facing the Opportunity <i>A. Martinez</i>
9:30-11:30	Commercial Strategies <i>L. Morgan/J. Abelson/ C. Schroeder/R. Jagt</i>	4:00-4:30	Q&A	10:15-10:45	Digital Innovation <i>X. Sueiras</i>
11:30-12:00	<i>Break</i>	4:30-5:00	Tour Introductions	10:45-11:15	<i>Break</i>
12:00-1:00	Industrial Capacity and Plasma Capabilities <i>P. Allen/E. Herrero/D. Fleta</i>	5:00-6:30	Site Tour: New Fractionation Building and Ebola plant	11:15-12:00	Financials <i>A. Arroyo</i>
1:00-2:00	<i>Lunch</i>	7:00	<i>Dinner</i>	12:00-12:30	Grifols: A Socially Responsible Company <i>T. Rione</i>
		10:00	<i>Back to recommended hotels</i>	12:30-12:45	Closing <i>V. Grífols Deu</i>
				12:45-1:15	Q&A
				1:15	<i>Lunch</i>



China: Facing the Opportunity

Grifols Next Growth Engine

Amarant Martinez 马敏伟

VP, China Affairs Office 中国事务办公室副总裁

GRIFOLS

1. China and its Healthcare Market: Key Figures

China is a Strategic Market for Grifols

By 2030, China is Expected to Become #1 Economy in the World⁵

In 2018...

1,415 Million people¹

18.5% of World population¹

15.8% of World Economy¹

+6.6% GDP growth 2018¹

In the World...

55% of ALBUMIN market²

10% of IVIG market²

5% of pdFVIII market²

12.0M of blood donations NAT-tested³

USD310M IH IVD testing market size⁴

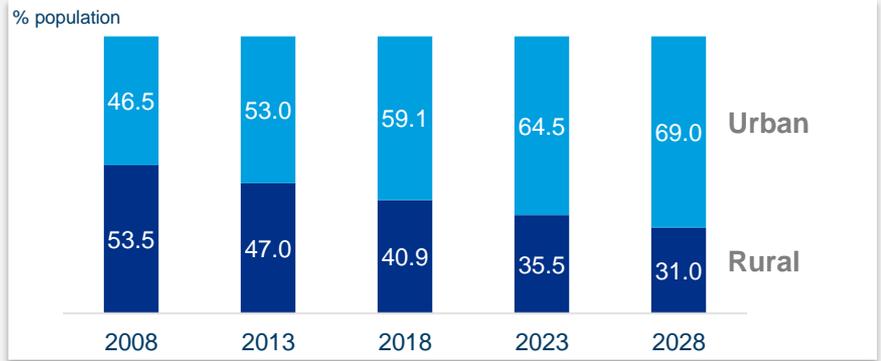
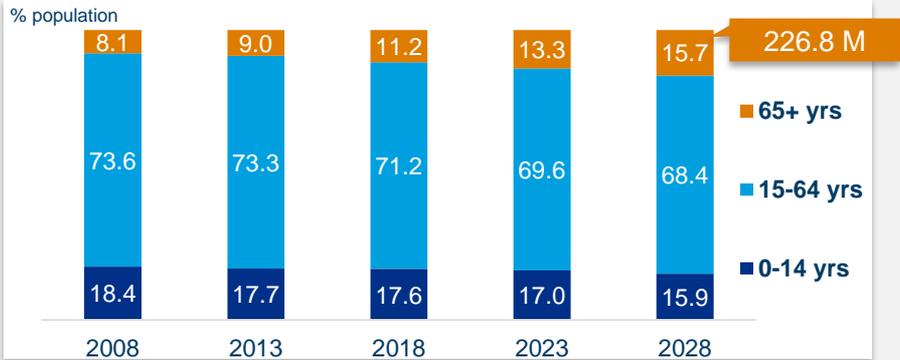
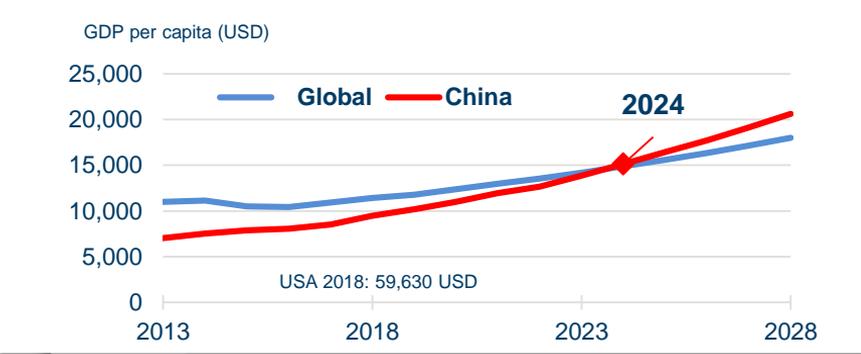
Sources: 1Fitch Solutions;

2 Global Plasma Industry Database 2017 (values); 3 NIFDC 2018; 4 InterChina survey 2017; 5 HSBC

China's Healthcare Market Fundamentals are Strong

Long-Term Sustained Growth and Healthcare Demand

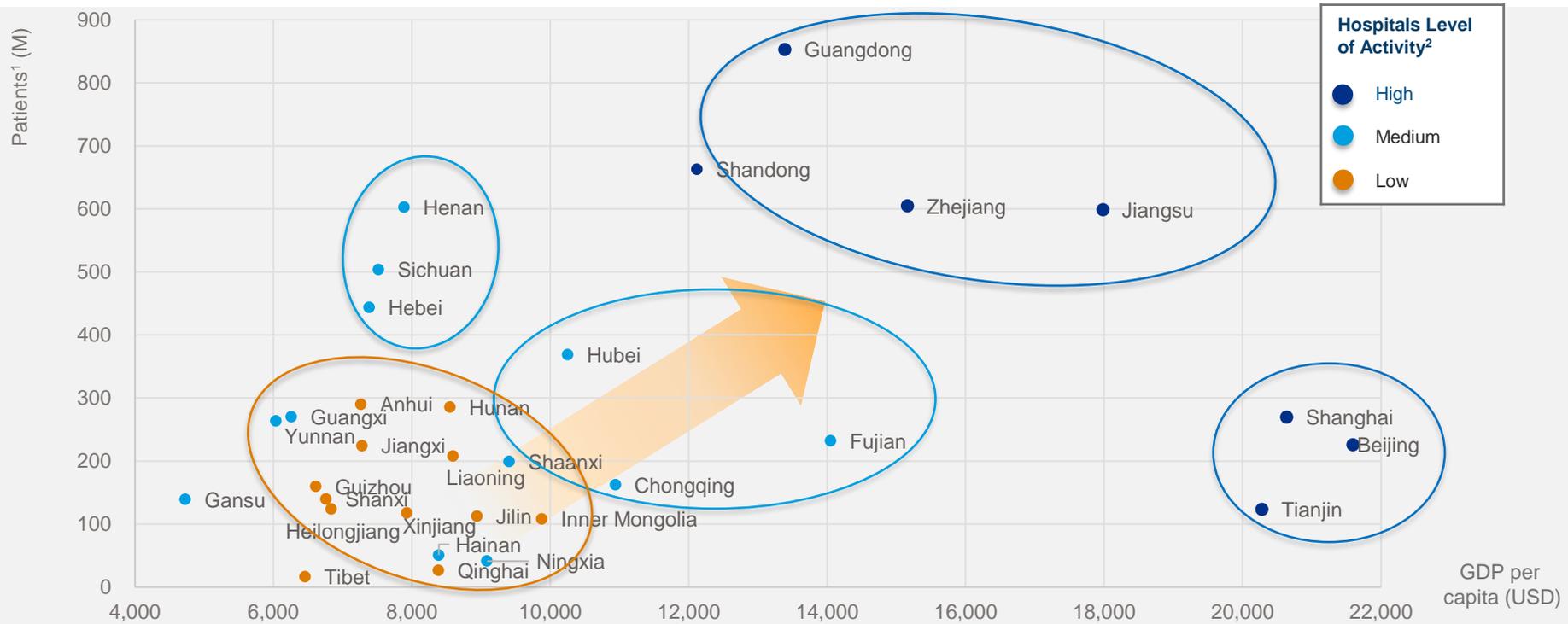
- China's economic development
- Continued expansion of China's healthcare system and medical insurance: Health China 2030
- Raising urbanization levels: 994M in 2028
- Aging population & chronic disease burden



Source: Fitch Solutions

China's Provincial Healthcare Landscape

Clusters: Provinces at Growth Stage Offer Opportunities to Expand into

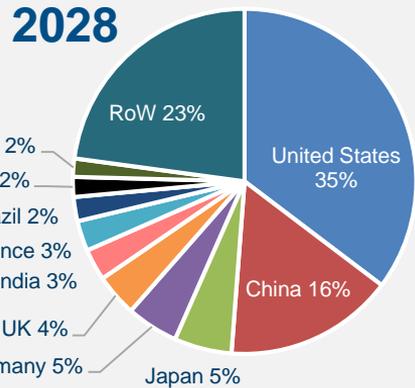
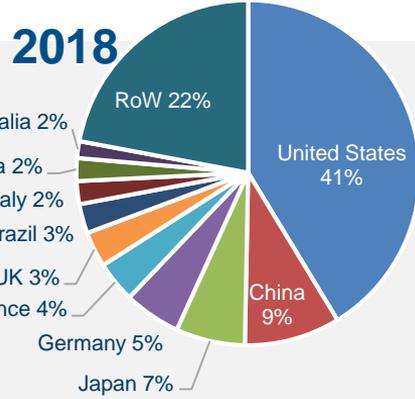
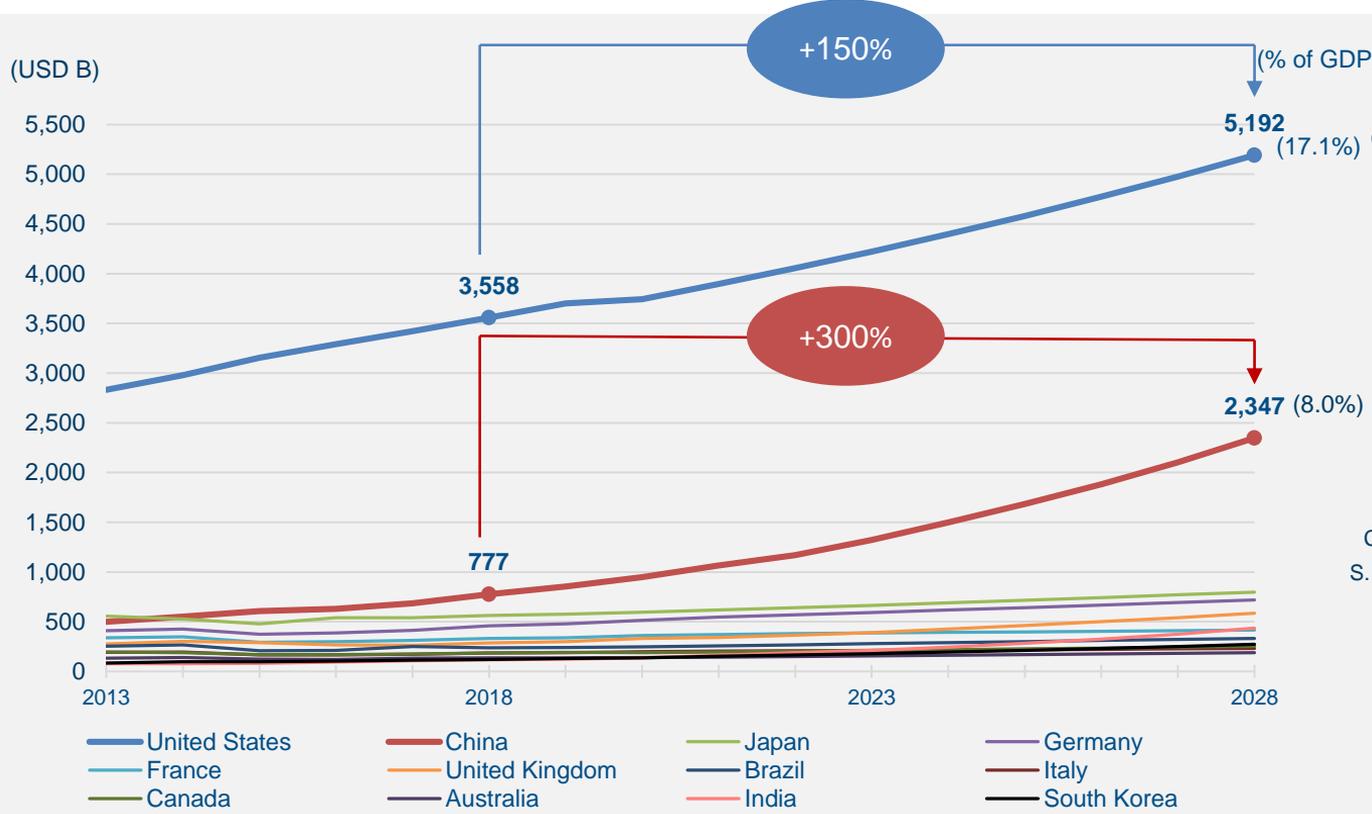


Sources: National Health Commission Year Book 2018; Fitch Solutions

¹ Patients includes out-patient visits & in-patient admissions; ² Hospitals Level of Activity = Patients / Population

Global Health Expenditure

China's Continued Expansion to Reach 16% Global Share by 2028



Source: Fitch Solutions

China as a Leader in Healthcare Digital Transformation

Digital Transformation is a Key Pillar of Grifols Strategy

- **~40%** physicians have used online consultation
- **20 M** active users and **>700 k** registered physicians on top online consultation platforms
- **1.5 M** physicians active on top 3 online platforms
- **63%** vs **37%**: Innovative channels* have overtaken traditional channels when obtaining professional information



- **3.0 M** patients making appointment on top 3 platforms
- **656 k** patients buying drugs on top 3 B2C platforms
- **15.6 M** patients using largest online consultation platform



Sources Kantar Health 2018 Digital Life Physician; China Summit McKinsey Report 2018

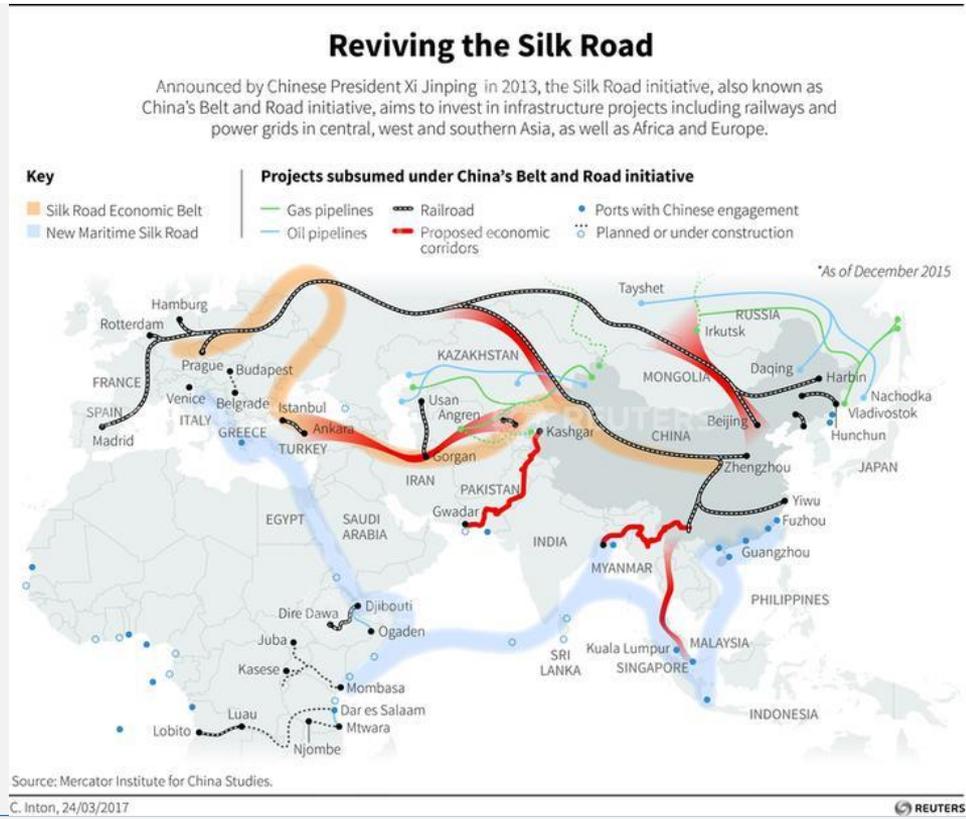
* Innovative channels: social media, online meeting, VC, APP...

2. Grifols Long-Term Commitment to China

China is Going West and Beyond

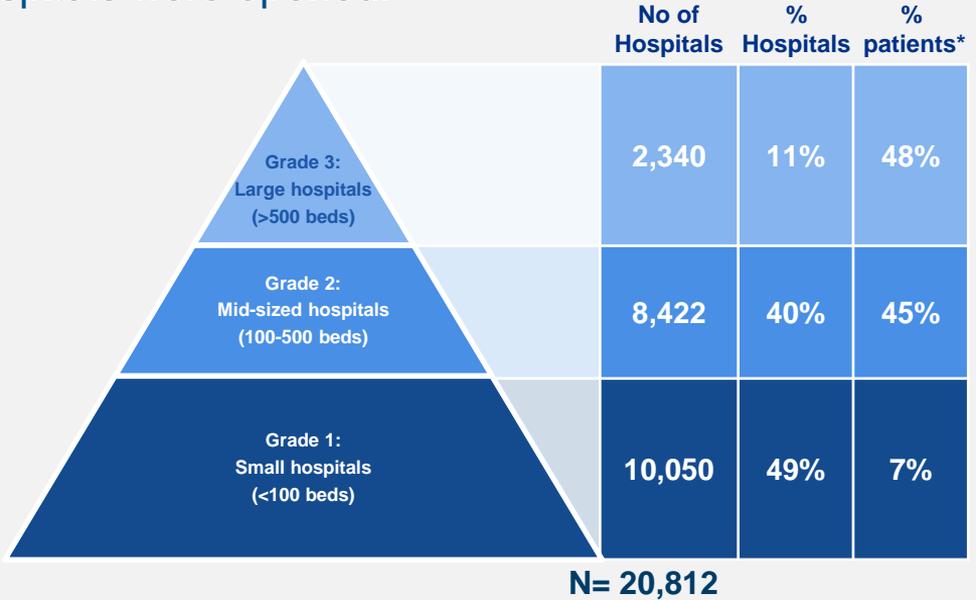
The Belt and Road Initiative (BRI) was Launched in 2013

- Foreign Policy
- 60 countries
- 65% world's population
- 40% Global GDP (2017)
- USD 80 B investment
- USD 6.47 Trillion goods' trade
- Trade routes
- Infrastructure



Continued Reform of the Healthcare System to Improve Access to Care

- Only from Aug 2013 to Nov 2018, 783 new Grade III Hospitals were opened!



Source: National Health Commission Year Book, 2018
*consolidated figure in-patient and out-patient

Government New Policies

National Reimbursement Drug List (NRDL)

National Supplementary Drug List (NSDL)

Volume Based Procurement (4+7; 31 drugs)

GPOs (Guangzhou pilot)

DRGs (Diagnosed Related Groups)

Tiered Care System

Rational Drug Use / Medicine Proportion

Prescription Outflow

Direct to Patients (DTP) Pharmacies

Zero mark-up

Two-Invoice System

Major Advancements in the 2017 NRDL vs. 2009

Dynamic RDL Adjustment is Next, from 2020



中华人民共和国人力资源和社会保障部
Ministry of Human Resources and Social Security of the People's Republic of China

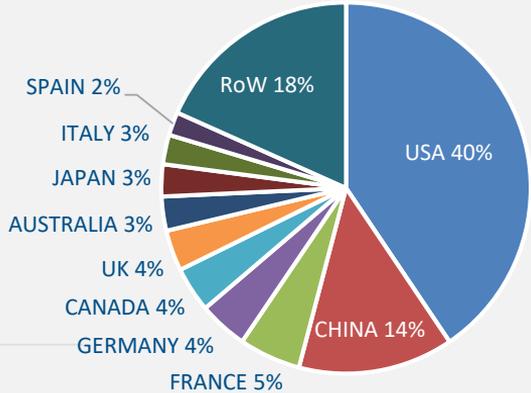
Drug	Class		Indication	
	2009	2017	2009	2017
Albumin	B	B	Emergency treatment; Industrial insurance	Emergency treatment; Critical care; hypoalbuminemia caused by cirrhosis, cancer or hydrothorax and ascites, albumin level lower than 30g/L
IVIG	B	B	Children's severe virus infection; Industrial insurance	Primary Immune Globulin Deficiency; Septicemia of Newborn; Severe Primary Immune Thrombocytopenia; Kawasaki Disease; Generalized Myasthenia Gravis; Acute Guillain-Barre Syndrome
IMIG	B	B	Not indicated	Measles; Preventive treatment of infectious hepatitis
pdFVIII	A (EDL*)	A (EDL)	Prevention and treatment Hemophilia A	Prevention and treatment Hemophilia A
rFVIII	B	B	When hemophiliac presents severe bleeding, and pdFVIII is not available	Paediatric haemophilia A; for adult haemophilia A has bleeding
rFIX	Not included	B	Not indicated	Paediatric haemophilia B; for adult haemophilia B has bleeding
PTC	B	B	Surgical bleeding; bleeding caused by cirrhosis or liver necrosis	Surgical bleeding; or bleeding caused by liver diseases; Haemophilia B; Haemophiliac has FVIII inhibitor
Fibrinogen	B	B	Emergency treatment of hypofibrinogenemia	Active bleeding caused by hypofibrinogenemia
Rabies IG	B	B		
Tetanus IG	B	B		In 2018, Tetanus IG was included in the Essential Drug List

*EDL: Essential Drug List, fully reimbursed

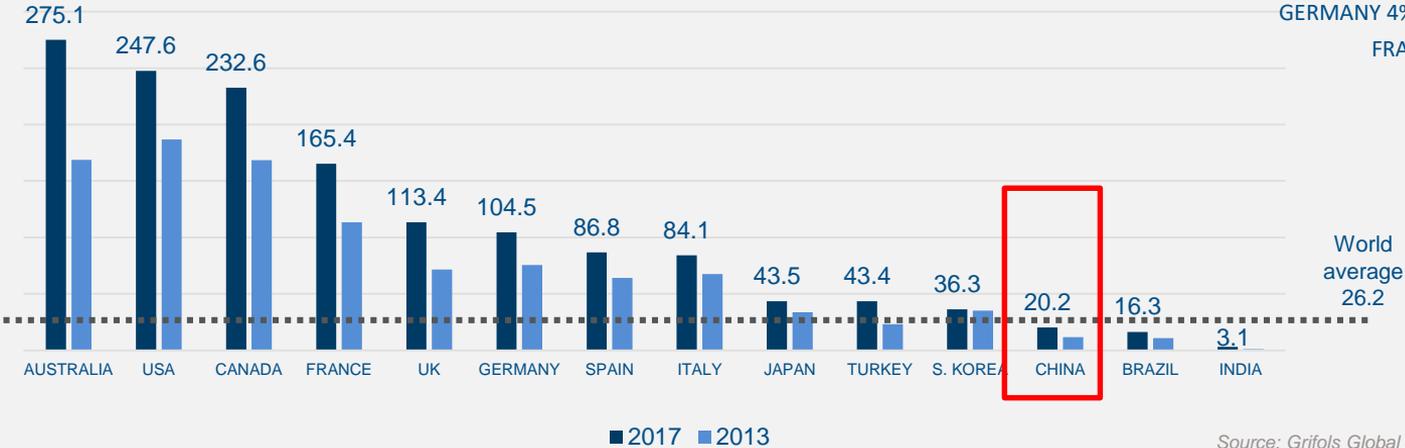
Development of IG Therapies in China

China Stands as the 2nd Worldwide IG Market but Use per Capita Remains Low

- Access to therapies
- Demographic development and clinical use per capita
- Diagnosis and awareness of treatment options and indications
- Chronic conditions regular treatment



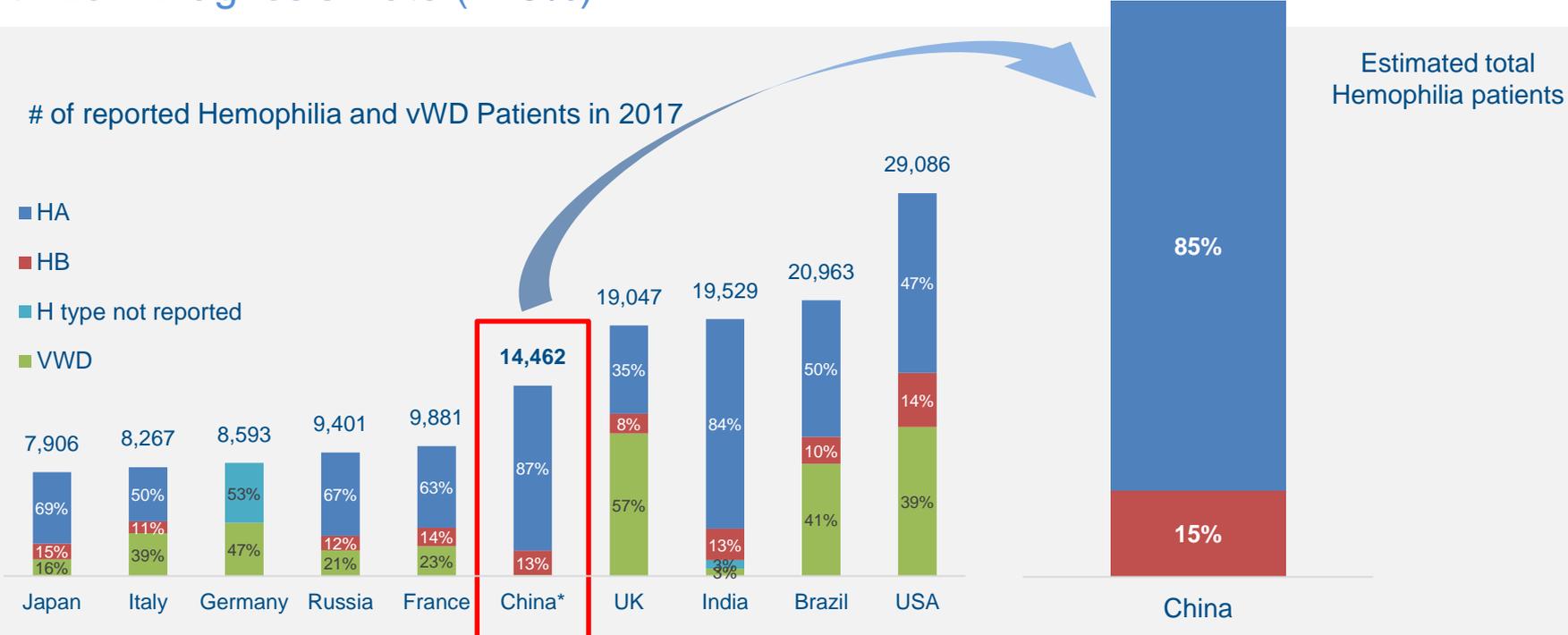
IG consumption per capita (gr/'000 population)



Source: Grifols Global Plasma Database (Ig includes IV and SC)

China has a Large Hemophilia Population

But With Low Diagnosis Rate (~10%)

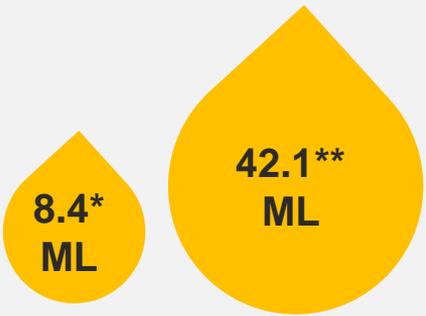
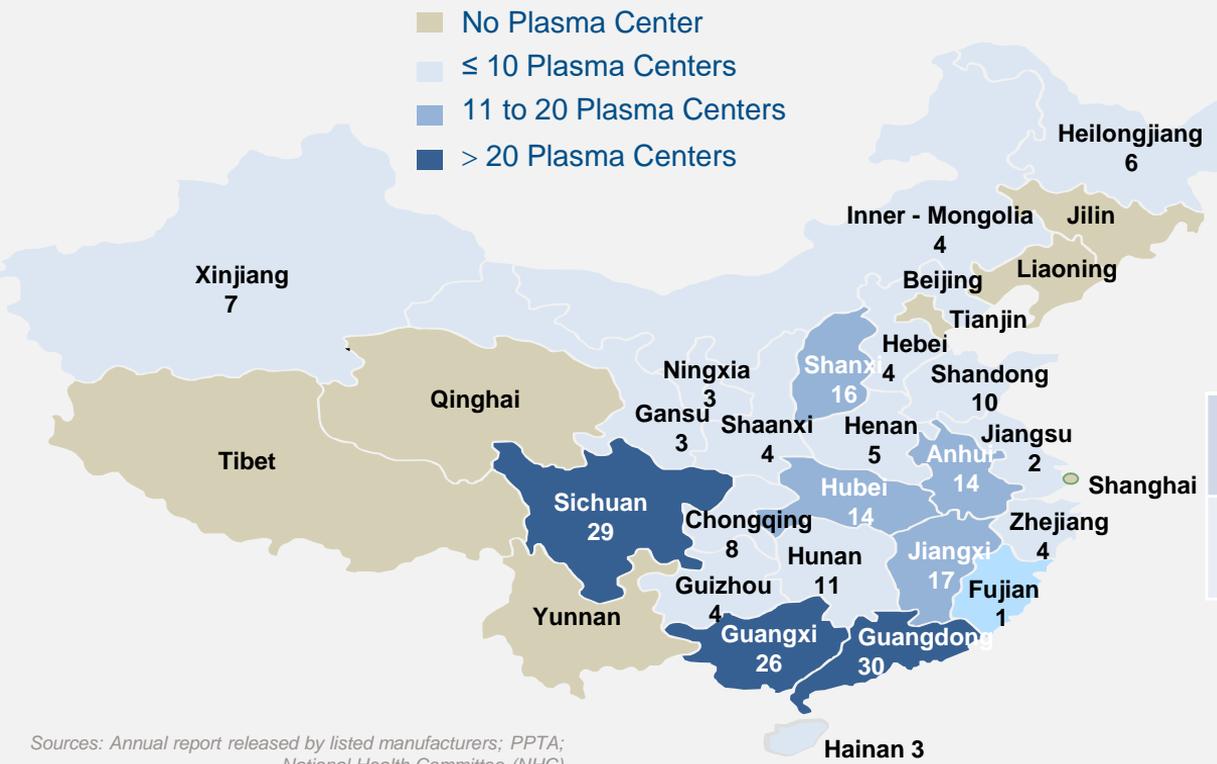


Sources: WFH 2017 (*China 2016 data); InterChina, China Blood Products Landscape Research. February 2018

Mainly occasional and on-demand treatment (92.9%)
FVIII Hospital consumption expected CAGR 2017-2020: +37%

Plasma Procurement Landscape in 2018

We Expect Plasma Collection in China to Continue Expanding



	China	Ex-China
CAGR '13-'18	11.6%	+10.3%
# Centers	245	848

In China, Top 6 players account for 73.8% of Plasma Collection

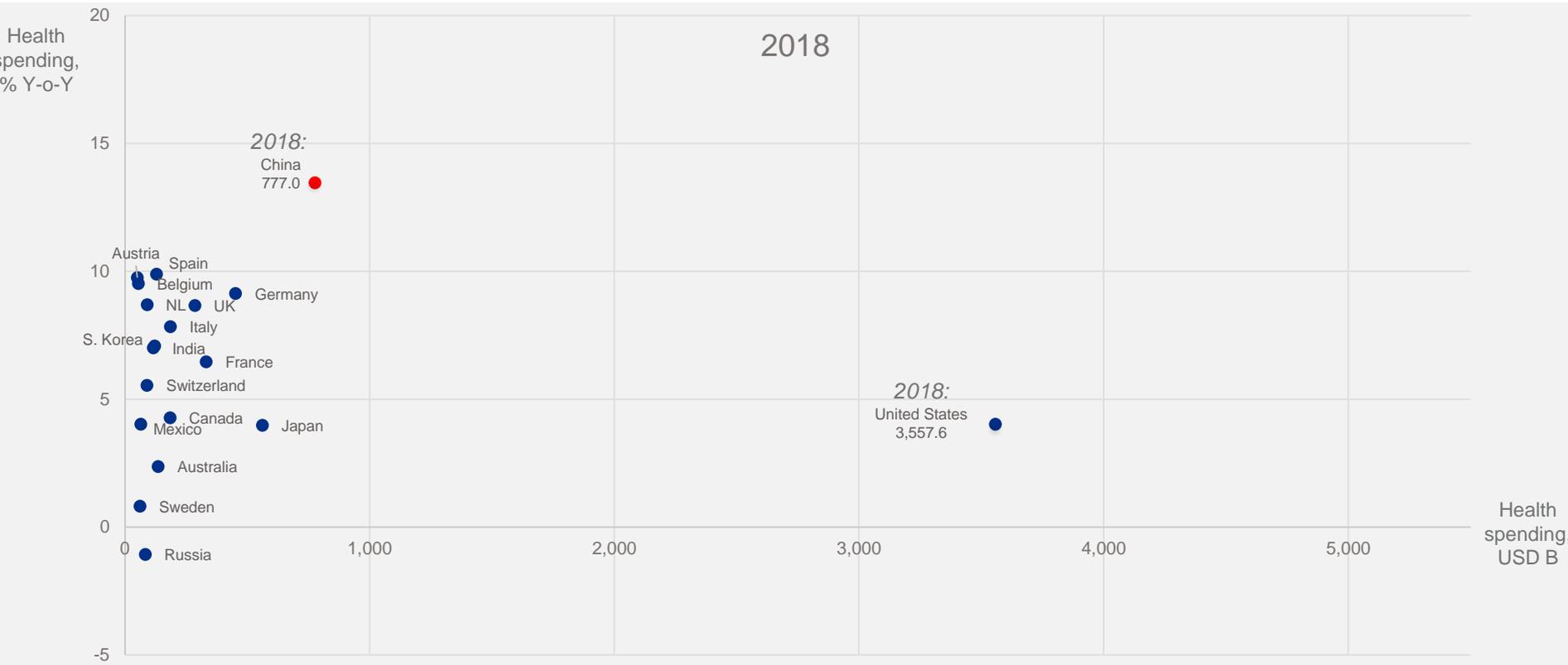
Sources: Annual report released by listed manufacturers; PPTA; National Health Committee (NHC)

*Conversion from 8,622 Tons; **Conversion from 51.7 Million Donations

3. A Unique Opportunity for Grifols Across Bioscience and Diagnostic

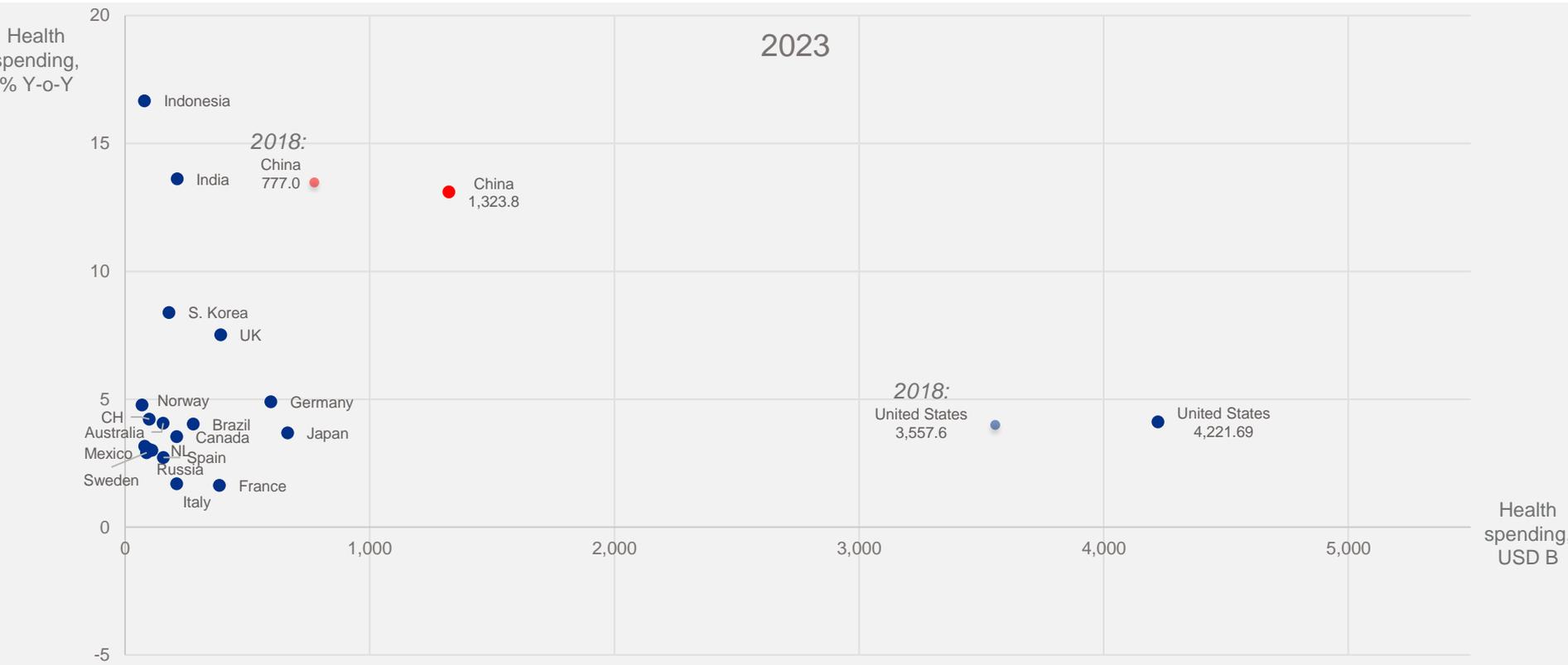
Unparalleled Opportunity In an Untapped Market

2018-2028 China and U.S. at the Forefront with Equal Contribution to Health Spending



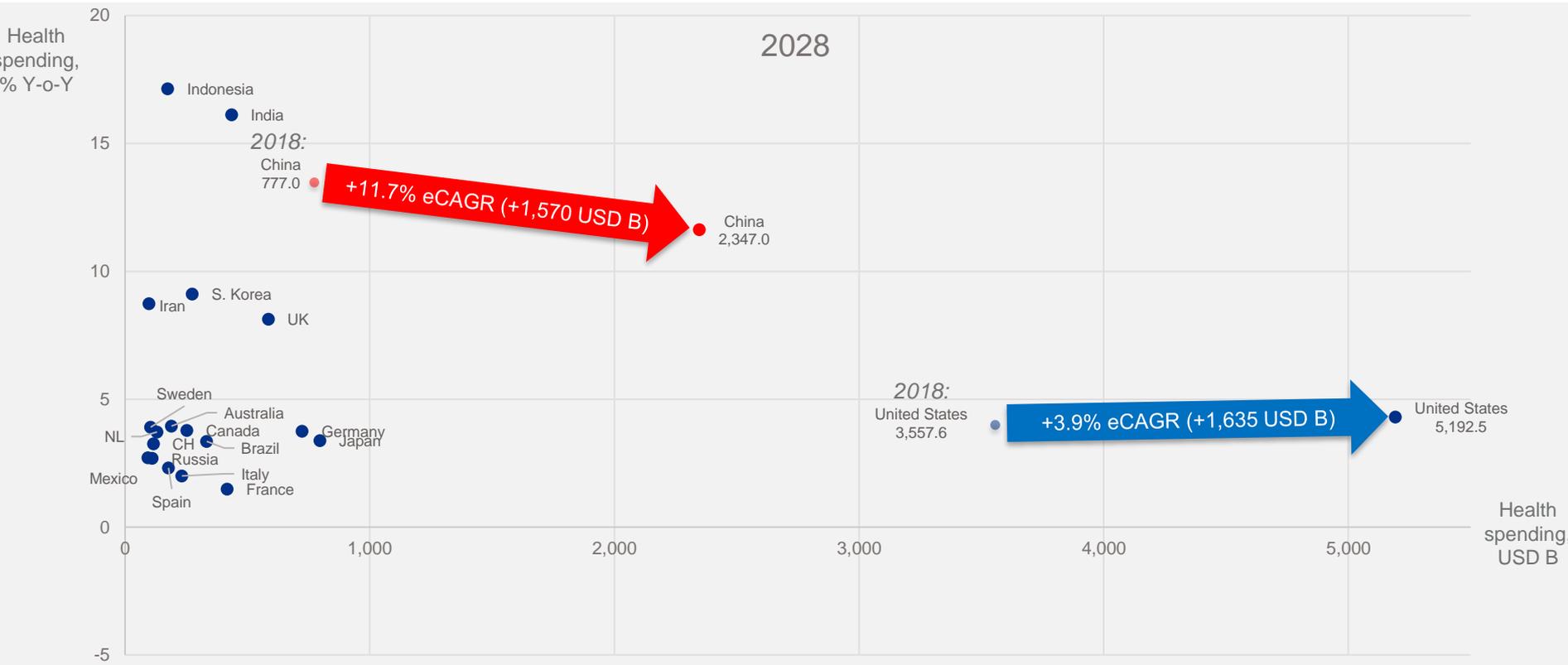
Unparalleled Opportunity In an Untapped Market

2018-2028 China and U.S. at the Forefront with Equal Contribution to Health Spending



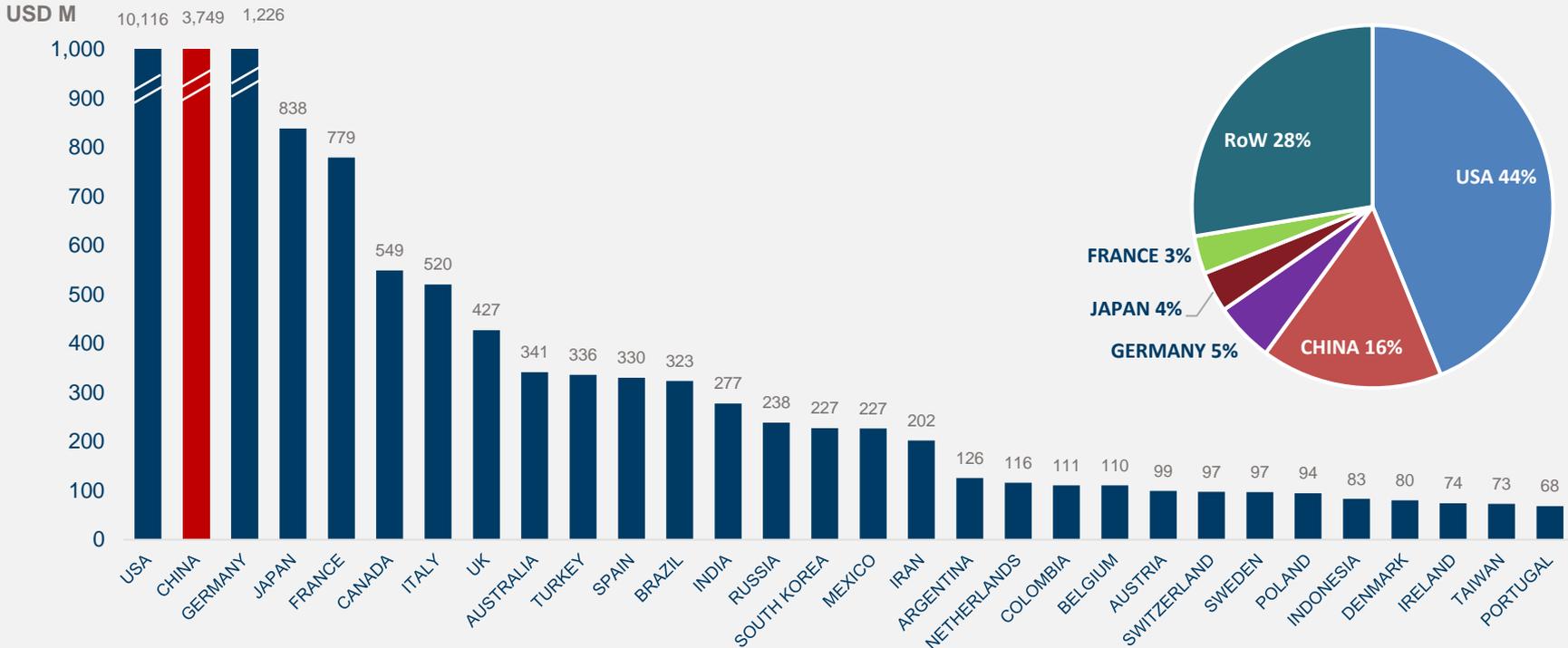
Unparalleled Opportunity In an Untapped Market

2018-2028 China and U.S. at the Forefront with Equal Contribution to Health Spending



The Plasma Market in 2017, Top 30 Countries

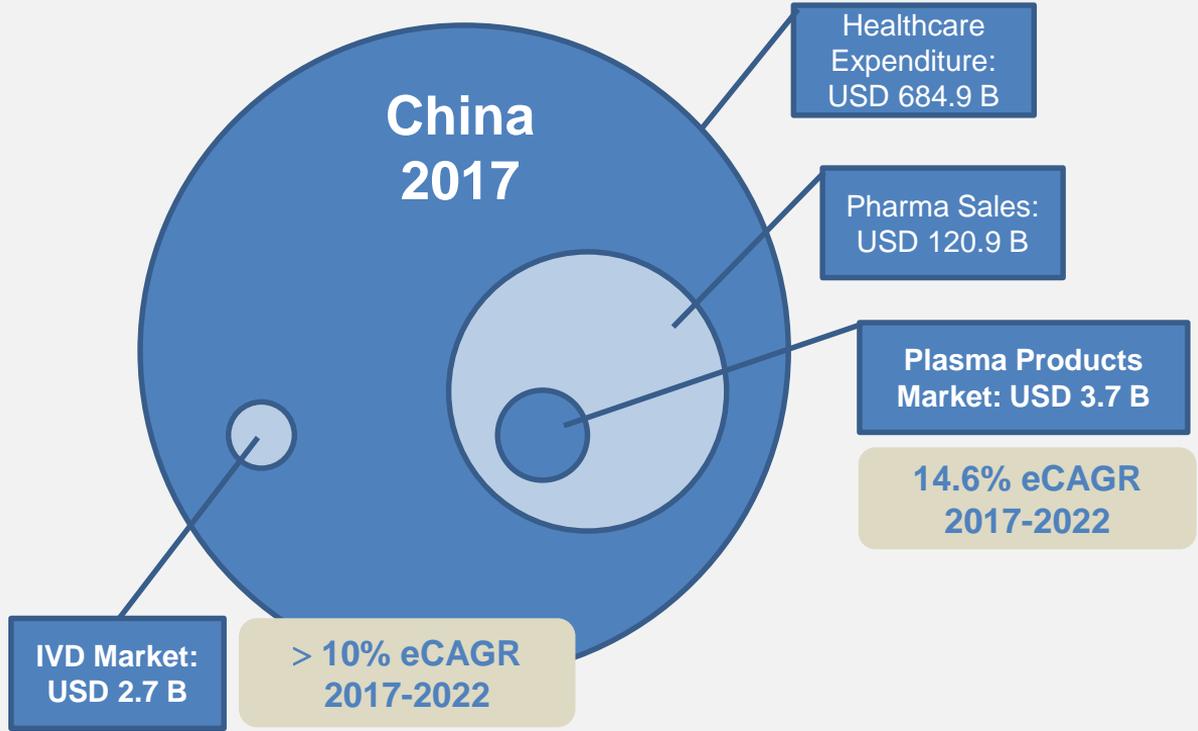
Grifols Currently Can Only Participate in China in the Albumin Business



*USA, China and Germany capped at USD 1.0 B
Source: Grifols Global Plasma Database

China's Healthcare Market

Double Digit Growth in Both Plasma and IVD (2017-2022)



2017

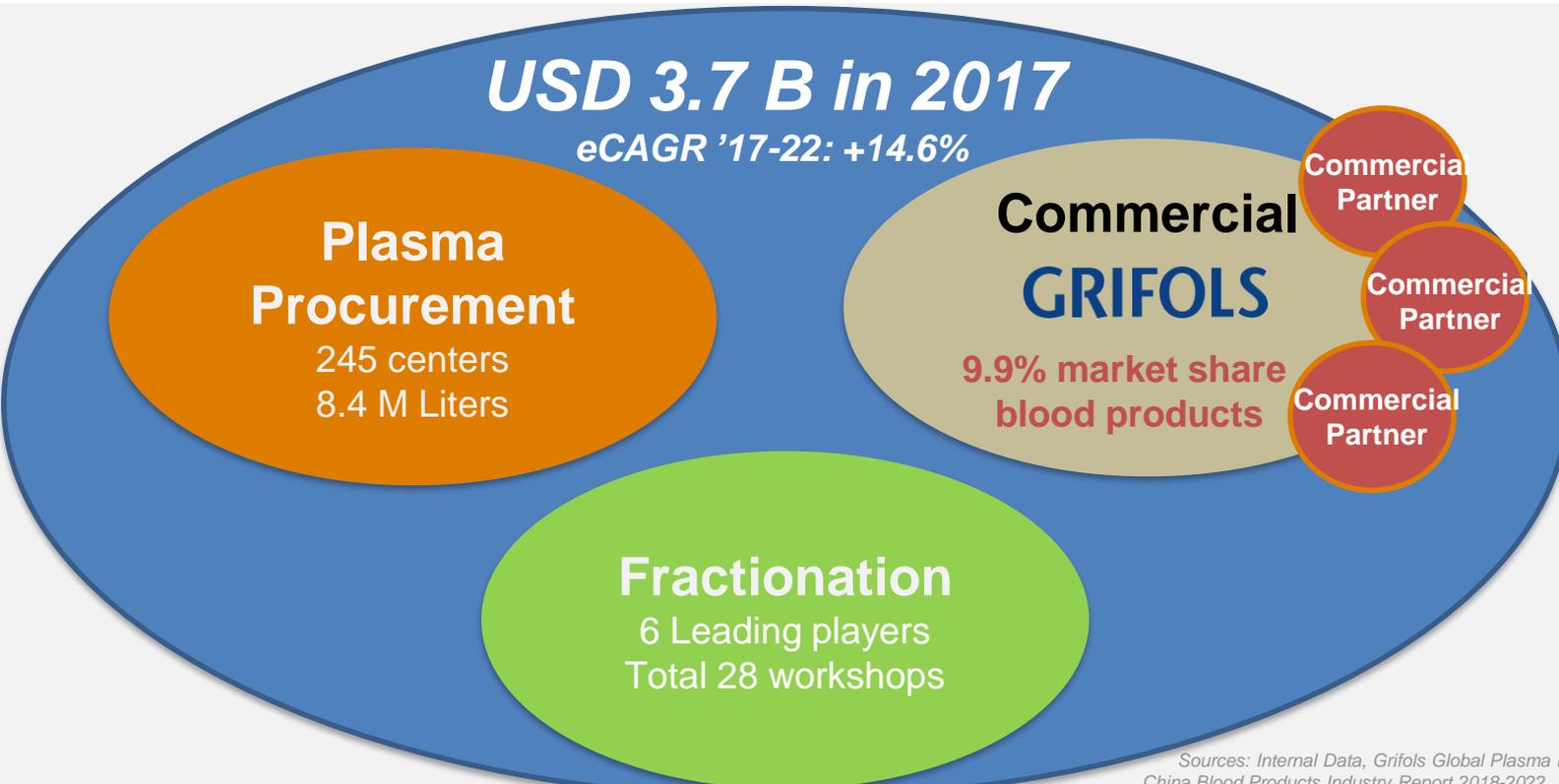
USA (USD B):

Healthcare Expenditure:	3,420.0
Pharma Sales:	353.5
Plasma Products Market:	10.1
IVD Market:	23.2

Sources: Fitch Solutions; Emerging IVD Markets, The Economist Intelligence Unit 2018; IVD Market Report, Markets and Markets, 2016; Grifols Global Plasma Database (2017); China Blood Products Industry Report 2018-2022, ResearchInChina.

China Plasma Space

Grifols to Contribute to the Whole Plasma Value Chain



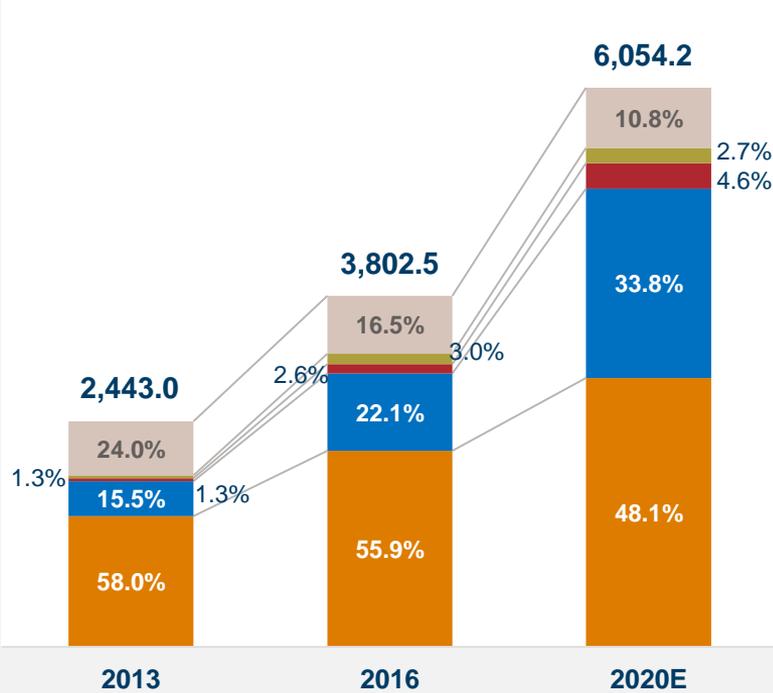
Sources: Internal Data, Grifols Global Plasma Database (2017); China Blood Products Industry Report 2018-2022 ResearchInChina

Commercial Opportunity: Bioscience

High Potential of Coagulation and IVIG Products

- Increased awareness and access to care
- Expanded NRDL implementation
- Hemophilia diagnosis and prophylaxis treatment
- IVIG: Neurology & Rheumatology areas

Blood Products Market 2013-2020E (USD M)



CAGR ('13-'20)

+13.8%

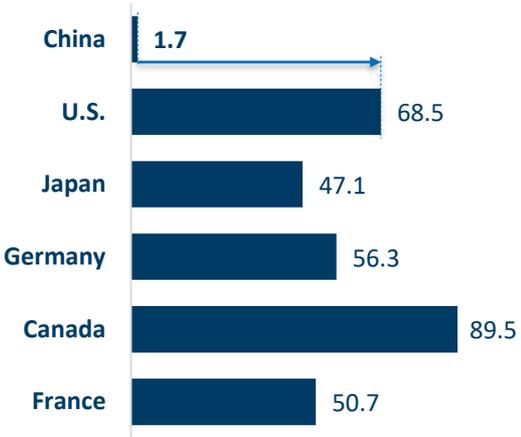
- Others **+1.5%**
- Fibrinogen **+27.2%**
- Factor VIII **+36.1%**
- IVIG **+27.3%**
- Albumin **+10.9%**

Source: InterChina, China Blood Products Landscape Research. February 2018

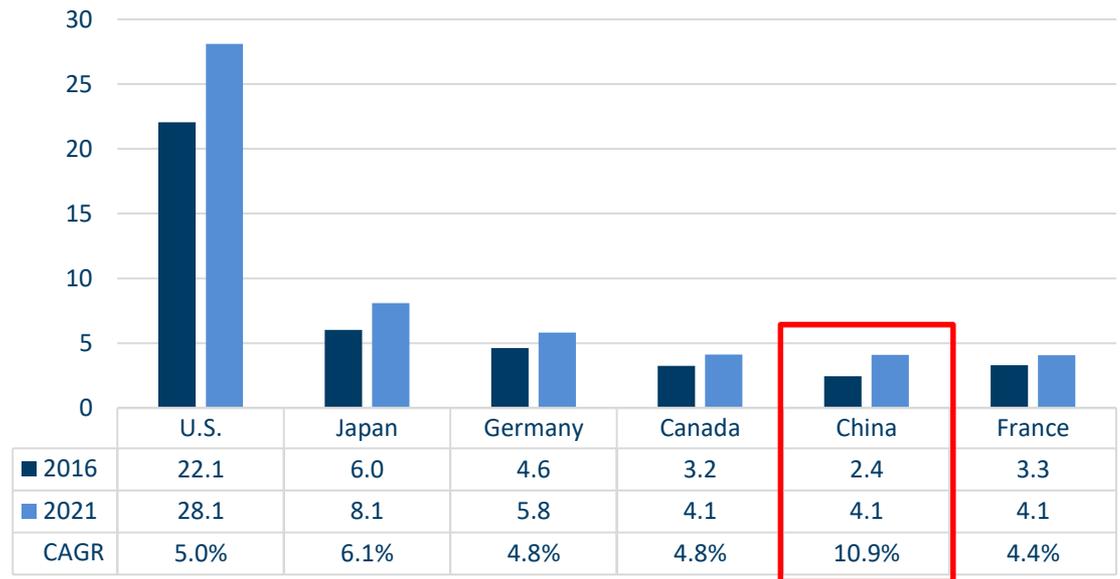
China IVD Market

China is the Fastest Growing IVD Market and Still with Great Potential

Still significant growth potential comparing to developed countries
Annual Per Capita Spending on IVD products, in USD per capita p. a. (2016)



Market Size (USD B)



Sources: IVD Market Report, Markets and Markets, 2016; Fitch Solutions; Internal analysis

The Global Leader in NAT Blood Donor Screening

Significant Business Opportunity from 2020



- China is the fastest growing region in the plasma industry
- Full NAT mandate on plasma donations from 2020 will add +15.5 M plasma donations to be tested
- Viral testing (HAV, Parvo B19) and Emerging pathogens (HEV, Zika and Babesia)

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

4. Shanghai RAAS: The Right Partner

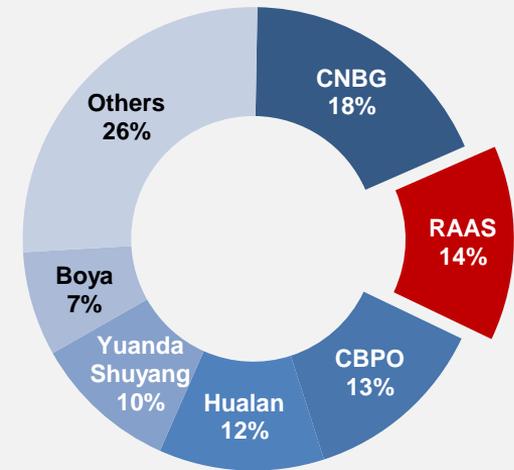
Shanghai RAAS

The Right Partner



- 2nd company in plasma collection volume in China
- 41 plasma centers across 11 provinces
- 1993, Shanghai RAAS becomes licensee of New York Blood center's S/D virus inactivation technology
- First company in China to adopt NAT testing, since 1995. NAT performed at three different times from the collection to the final product
- Shanghai RAAS and Grifols operations are truly complementary in China
- High potential for value creation

8,622 tons of plasma collected in China in 2018



Source: Company's Annual Reports; Internal Analysis

	 RAAS	 CBPO	 CNBG	 Hualan	 Shanxi Kangbao	 Yuanda Shuyang	 Boya	 Shuanglin	 Weiguang	 Nanyue	 Da'an & Wellen
Human Albumin	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Freeze-dried Human Serum Albumin			✓								
IVIG	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Freeze-dried IVIG	✓		✓		✓		✓		✓		✓
IMIG	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Hepatitis B IG	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Lyophilized Hepatitis B IG			✓								
Intravenous Hepatitis B IG						✓					
Freeze-dried Intravenous Hepatitis B IG			✓								
Rabies IG	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Tetanus IG	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
Histamine IG			✓			✓			✓		
Human Coagulation FVIII	✓	✓	✓	✓							
Fibrinogen	✓	✓	✓	✓			✓		✓		
Fibrin Sealant	✓			✓							
Human Prothrombin Complex	✓	✓	✓	✓							
Lyophilized Thrombin	✓			✓							
Total N Products	12	9	14	11	7	8	7	6	9	6	7

*CBPO: China Biologic Products, including Shandong Taibang and Guizhou Taibang, CNBG: China National Biotechnology Group, including Shanghai, Wuhan, Lanzhou, Guizhou (former Guizhou Zhongtai) Institutes and Rongsheng, RAAS: Shanghai RAAS, Tonrol, Zhengzhou RAAS and Zhejiang Haikang.

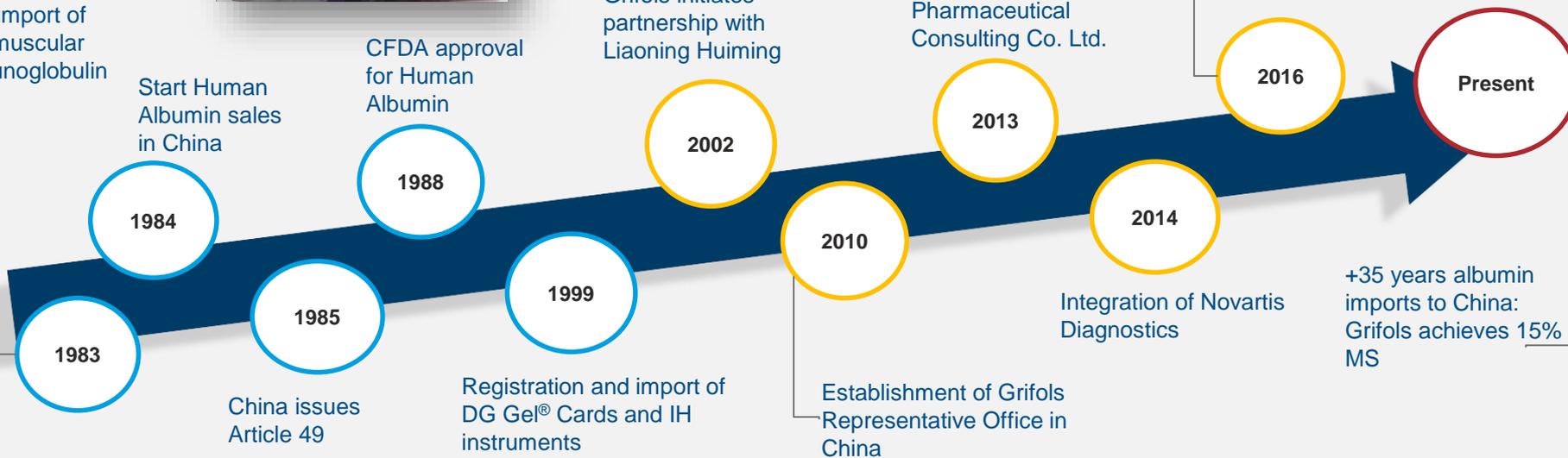
5. Execution is Key: Creation of China Affairs Office

Grifols in China: 35+ Years of History

Dr. Victor Grifols Lucas on a commercial visit to China 1984



First import of Intramuscular Immunoglobulin



Set up Grifols Pharmaceutical Technology Shanghai Co. Ltd. and Beijing branch (2018)

Set up Grifols Pharmaceutical Consulting Co. Ltd.

Grifols initiates partnership with Liaoning Huiming

CFDA approval for Human Albumin

Start Human Albumin sales in China

+35 years albumin imports to China: Grifols achieves 15% MS

Establishment of Grifols Representative Office in China

Registration and import of DG Gel® Cards and IH instruments

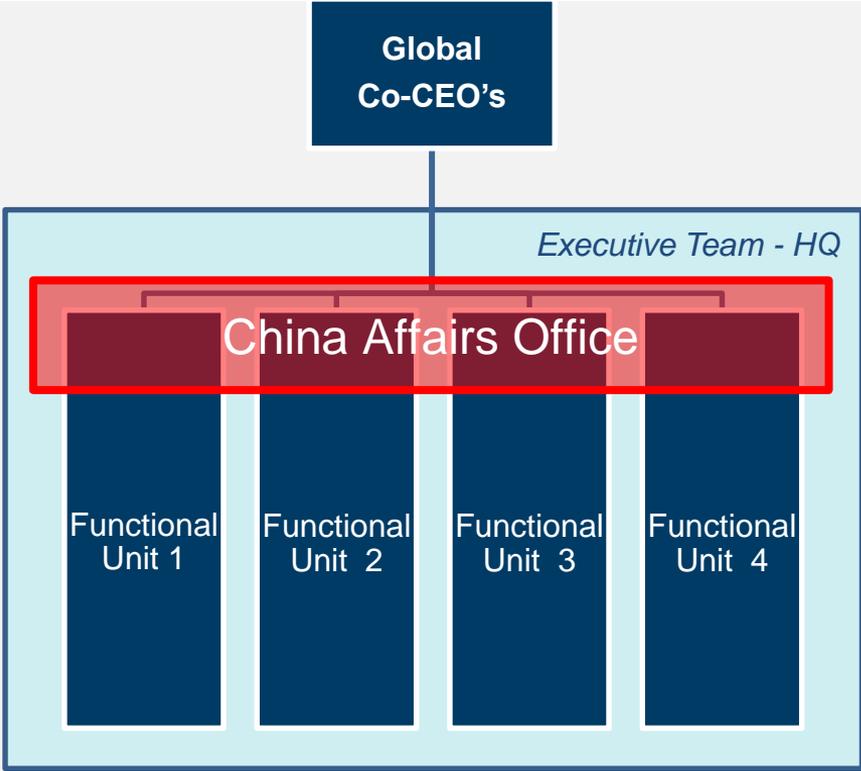
China issues Article 49

Integration of Novartis Diagnostics

China Affairs Office

Grifols is Ready and Has Its Own Model to Ensure Success

- Creation of the China Affairs Office
- Reporting to the Company's CEO's
- Global alignment and execution under ONE Grifols concept
- Collaborative and agile
- The right people with the right experience in China since 1983
- Long-term focus



Grifols in China

With the Right Partner

- Bring innovative therapies to the Chinese patients
- World-class medical education in chronic and rare diseases
- Grifols Engineering expertise in biopharmaceutical engineering and consultancy to develop best-in-class industrial facilities
- Vertical integration with our Grifols NAT systems and broader virus detection platform
- With Grifols' partner, creation of a leading Industrial and Commercial platform, realizing the full potential of the Alliance and setting the ground for future expansion



Key Takeaways

China: Facing the Opportunity

Key Takeaways

China: Facing the Opportunity

- China as a **driver of the worldwide healthcare expenditure** with equal contribution to growth as the U.S. **Strong healthcare fundamentals** and continuous expansion of **access to care**
- China offers **unparalleled opportunities across Bioscience and Diagnostic** to become the **next growth engine for Grifols**
- Grifols has a **long-term commitment to China**
- Shanghai RAAS: the **right partner**
- **Execution is the Key: Grifols is ready and has its own model to ensure success and capture the significant opportunity**



Digital Innovation

Focus on Optimization and Thoughtful Transformation

Xavier Sueiras
Chief IT Officer

GRIFOLS

Digital Innovation

Core Pillars

- Digital Innovation is not new for Grifols
- With our new organization, Grifols is moving to the next level
- Digital optimization and transformation to boost business growth
- Our culture will drive our future

Digital Innovation

Solid Foundation

- Strong technology team
- Core skills and business knowledge
- High expertise in develop internal and external/commercial solutions
- Experts on service transformation/organizations integration
- Reliable background on digitalization projects execution
- Powerful partnership ecosystem

375



**Boosting efficient, agile, and innovative services and technology solutions for...
22,000+ users in 30 countries; 290+ donor centers; 13 manufacturing facilities; and more...**

Digital Background

March'82
New business line
introducing
Computers and
Software



Es
previsto e
de equino
esperaba, el
nueva Linea
actual, como
como Staff o
Jose Garcia
estas líneas
Jose Luis Ar
de consullor.

Pa
trasladamos a
Parola (luga
fotografias
socio los ofrecemos y todos Votos.

Pero... tenemos mas cosas que
ofrecer! En primer lugar, el ordenador ya no
es unicamente el Computador, es tambien un
nuevo Sistema Computador de aspecto y forma
profesional que nos permitira abordar empresas
mas ambiciosas, dadas sus superiores



GRI-CEL *GRI-CEL informática* American Hospital Supply Corp.

Digital Innovation

What Is the Difference Today?

Multiple technologies that once combined allows exponential change

Big Data & Advanced Analytics

Internet of Things

Artificial Intelligence

Robotics & Process Automation – Block Chain, etc.

and... CULTURE



Digital Innovation

Innovation Models



Digital Innovation

Digital Business Transformation Approach

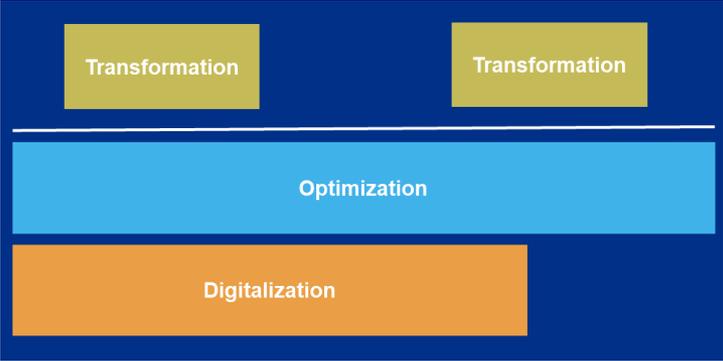
Mission

Build digital capabilities to deliver better outcomes, explore new areas to play in and capture new sources of value

Ambition

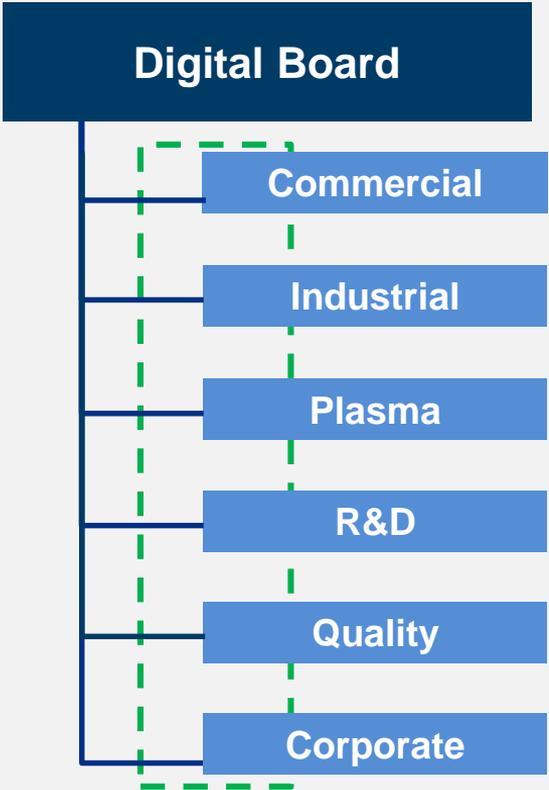
- Improve customer/patient/donor/employee experience
- Optimize operations efficiency/productivity
- Add value to our products/services changing the go-to-market model
- Unlock new value sources

Roadmap



Digital Innovation

Digital Board will Orchestrate the Grifols Digital Transformation



Digital Transformation Teams (DTTs)

- **Define Grifols Digital Approach and Goals**
- **Prioritize digital initiatives** based on DTTs input
- **Ensure experience sharing and cross-collaboration**
- Promote Digital Innovation Culture

- **Recommend digital proposals within each area**
 - Identify short term **opportunities** and full potential
 - Organize **discovery sessions**
 - **Develop proposal and present to the Digital Board**
- **Coordinate digital initiatives within their area**

Digital Innovation

Digital Board will Orchestrate the Grifols Digital Transformation

Digital Transformation Teams (DTTs)



Digital Innovation

Key Initiatives

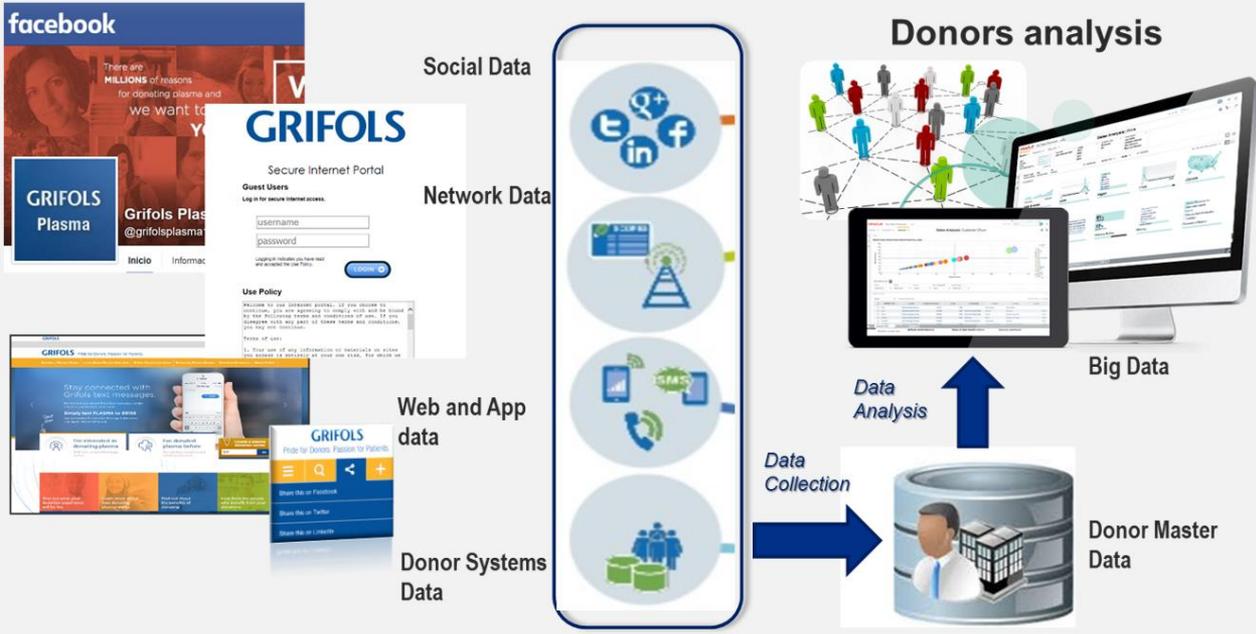
Currently 40 initiatives on-going



Digital Innovation

Key Initiatives: Improve Customer/Patient/Donor/Employee Experience

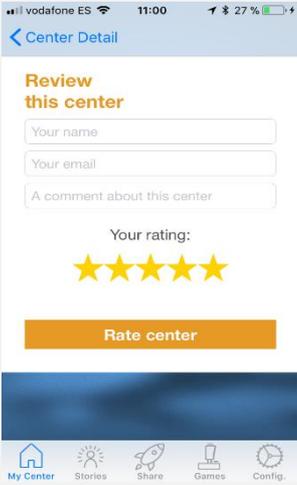
Improve Knowledge of Donors Digitalization to Improve Donor Experience



Digital Innovation

Key Initiatives: Improve Customer/Patient/Donor/Employee Experience

Personalized Interactions



Digital Innovation

Key Initiatives: Optimize Operations Efficiency/Productivity

GDS GRIFOLS DONATION SYSTEM

Biomat USA Launches Grifols Donation System

Publicado por Corporate Comms el 5 de septiembre, 2018

U.S. Department of Health and Human Services
FDA U.S. FOOD & DRUG ADMINISTRATION

Vaccines, Blood & Biologics

BK180240 - GDS (Grifols Donation System), version 1.0

Resources for You

- Cleared (510k) Submissions with Supporting Documents - 2018
- 510(k) Blood Establishment Computer Software - 2018

510(k) Number: BK180240
Applicant: Biomat USA, Inc.
Device Name: GDS (Grifols Donation System), version 1.0
Decision Date: 11/5/2018

Digitalization of Donor Centre Operations with Grifols Donation System

- Donor Experience
- Operations Efficiencies
- Enterprise Digital Twin

Digital Innovation

Key Initiatives: Optimize Operations Efficiency/Productivity



Data Analytics and Machine Learning

- Supply Chain Optimization
- Manufacturing Process Optimization
- Connected Factory
- Predictive Maintenance



Virtual and Augmented Reality Technology for:

- Technical service remote assistance
- Employee Training
- Engineering Design

Digital Innovation

Key Initiatives: Optimize Operations Efficiency/Productivity



Robotic Process Automation, Smart Workflows, Character Recognition and Natural Language Tools

- Automate routine tasks through existing interfaces (e.g., data extraction and cleaning)
- Integrate groups of tasks performed by humans & machines (e.g., calculating and applying allocations)
- Conversion of analog inputs into digital data (e.g., performing 2/3 way invoice matches)
- Create seamless interactions between humans & machines (e.g., chatbots for customer service)
- Digital Workplace for employees

Blockchain technology discovery initiative with SAP Consortium



Digital Innovation

Key Initiatives: Add Value to our Products/Services Changing the Go-to-Market Model



Robust ecosystem including software, services and devices focused on Hospital needs

- Improving security and quality
- Creating efficiencies (automation and data value)
- Integration and connectivity



Digital Innovation

Key Initiatives: Add Value to our Products/Services Changing the Go-to-Market Model



Middleware Platform for Blood and Plasma Screening in Laboratories

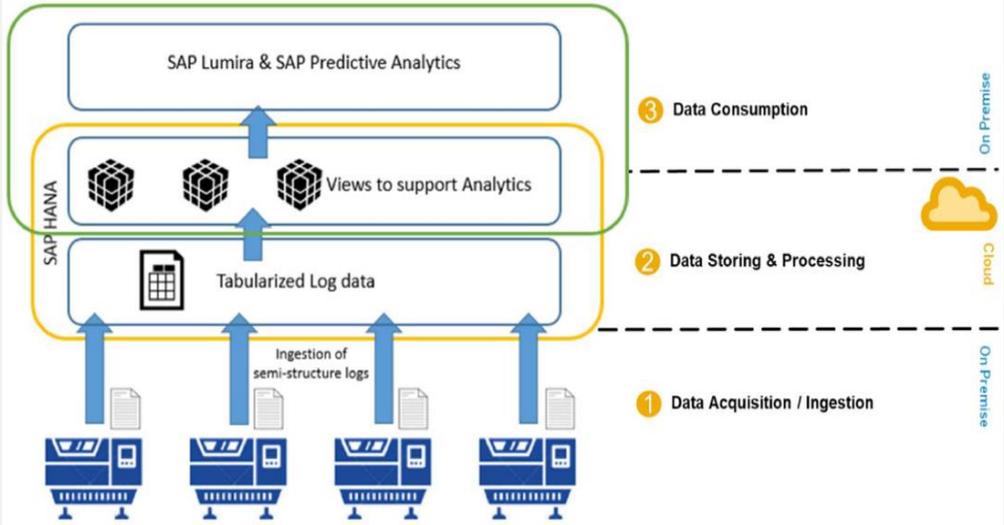
- Optimize Labs Operations
- Increase Quality Processes
 - Increased Traceability
 - Streamlined Results Management
- User Satisfaction (easy to use - easy to train)



Digital Innovation

Key Initiatives: Add Value to our Products/Services Changing the Go-to-Market Model

Diagnostics Instruments: Connected devices and data analytics



- Customer satisfaction and reliability
- Reduce ownership cost
- Field crew efficiency



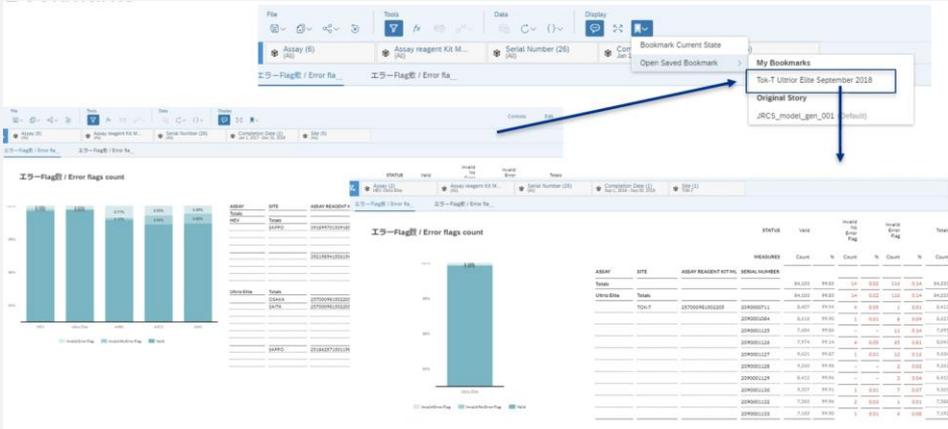
Digital Innovation

Key Initiatives: Add Value to our Products/Services Changing the Go-to-Market Model



Japan Red Cross Analytics Services

- Convert data into knowledge
- Improve testing outcomes and instruments performance
- Add value which help Grifols to differentiate and enhance relationships



Digital Innovation

Key Initiatives: Unlock New Value Sources

R&D drug and treatment discovery

- Identification of new protein entities
- Identification of new indications for our current products



Artificial Intelligence to evaluate both structured (clinical data) and non-structured information (manuscripts, patents, etc.)

Digital Innovation

It is Not Only About Technology

- Grifols Digital Day & Grifols Digital Talks
- Collaboration space
- Innovation space
- Co-innovation programs



Key Takeaways

Digital Innovation

Key Takeaways

- Digital Innovation is not new for Grifols
- With our new organization, Grifols is moving to the next level
- Digital optimization and transformation to boost business growth
- Our culture will drive our future



Financials

Continuous Focus on Long-Term Growth

Alfredo Arroyo

Chief Financial Officer

GRIFOLS

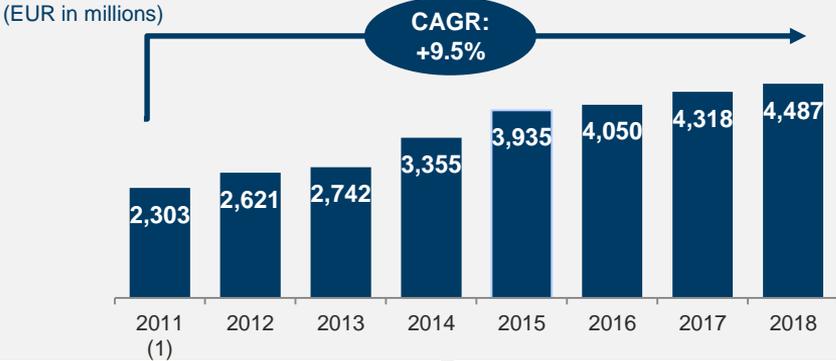
A Compelling Investment

A Compelling Investment

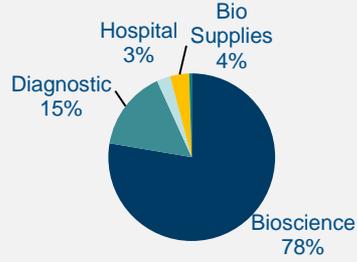
Positioned to Support Long-Term Growth

- Global presence with a diversified revenue base and solid upward growth
- Demonstrated ability to successfully grow businesses both organically and through acquisitions
- Significant value creation through acquisitions
- Poised to increase its exposure to the fast-growing Chinese market
- Leading player in plasma-derivatives industry
- Vertically integrated business model

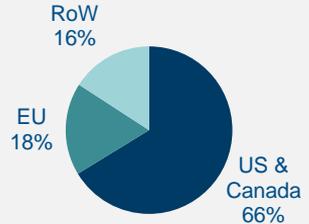
Grifols' revenue evolution



By division⁽²⁾



By region⁽²⁾



1. 2011 figures are pro forma for Talecris acquisition.
2.- Net revenue breakdown based on FY2018 reported figures

A Compelling Investment

Positioned to Support Long-Term Growth through Innovation

- Grifols has been firmly committed to innovation since its foundation
- In 2018, Grifols intensified its net R+D+i investments by 15% at cc to EUR 291M¹. This investment represents 6.5% of revenues
- More than EUR 1,350M invested in R+D+i over the last 5 years
- Grifols advocates an integrated R+D+i strategy that comprises both in-house initiatives and external projects in investee companies whose research complements its core business
- Grifols earned the distinction as one of the top 1,000 global firms that dedicate the most resources to R+D in “2018 Global Innovation 1000” by Strategy&, the consulting arm of PwC

1. Taking into account net investments for both internal and external research initiatives

A Compelling Investment

Positioned to Support Long-Term Growth through Global Expansion

- Strategically, Grifols seeks to strengthening its presence in China as a key global market
- Grifols' first commercial operations in China began back in the 1980's, and today it represents one of the major markets for Albumin
- The strategic alliance with Shanghai RAAS pursues to boost growth of its plasma-derived products and diagnostic solutions in China
- This agreement is an important step forward in Grifols' sustainable growth and long-term strategy, generating value for all of its divisions

Financial Highlights for 2018

Results Performance in 2018

Financial Highlights

Sales
EUR 4.5 billion

Operating Growth
+9.2%

EBITDA
EUR 1.2 billion

**Adjusted Net
Profit**
EUR 681 million

**Net Operating
Cash Flow**
EUR 962 million

- Strong operating sales growth driven by robust performance of Bioscience
- Reported growth in all divisions and geographic regions
- Substantial FX headwinds impacting top line (EUR 227 million)
- Margins impacted by higher plasma costs as a result of both organic and inorganic efforts, to fulfill the continued demand for its plasma-derived therapies
- Record-high dividend payout of EUR 279 million
- Leverage management remains among the company's top priorities

Results Performance in 2018 - Bioscience

Strong Sales Performance Driven by Volume and Price



- Robust sales of the main plasma proteins
- Solid demand for immunoglobulins in the U.S. and some EU markets, and alpha-1 antitrypsin sales remain strong in core markets
- Higher sales volume and positive pricing environment
- The renewal processes of certain licenses in China suffered delays in the last quarter of 2018, impacting sales growth and inventory

Results Performance in 2018 - Diagnostic

Performance Driven by NAT Technology and Blood Typing



- Higher NAT solutions sales were primarily fueled by an increase in plasma donations and the growing use of the Zika-virus screening test (Procleix[®] Zika Virus)
- Strong sales for NAT solutions in Latin America, Poland and Indonesia, in addition to the U.S.
- Continued efforts in the Middle East
- The blood-typing line notably contributed to the overall performance, particularly in the U.S. and in core markets in Latin America, Europe, and Saudi Arabia

Results Performance in 2018 - Hospital

Double-digit Growth Driven by Strong Performance in the U.S.



- Sales of all business lines grew in 2018, especially the Pharmatech line in the U.S. market. A key strategic area for future growth including MedKeeper and Kiro Oncology products
- The division also reported higher IV solutions sales, especially the physiological saline solution manufactured in the Murcia (Spain) plant

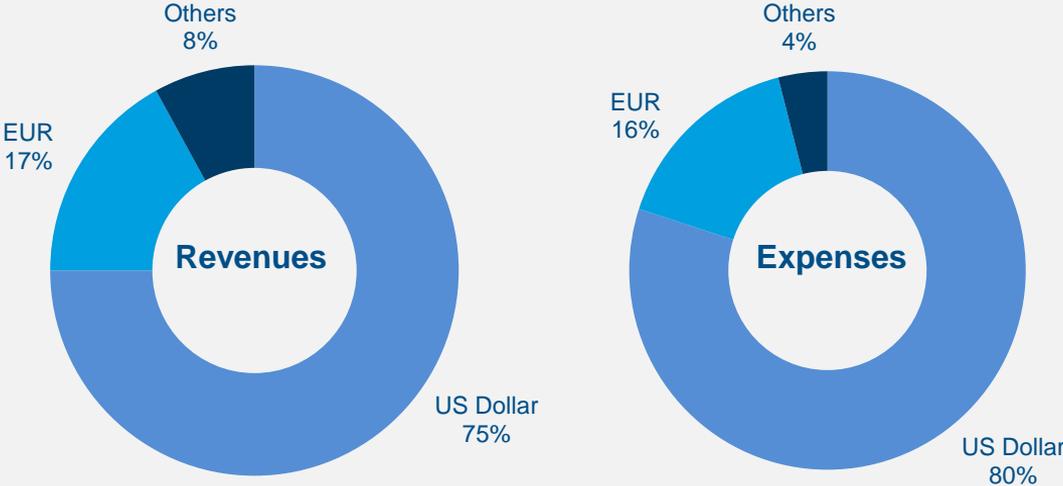
Delivering on our ambitions in 2019

- Strong organic growth in all geographic regions
- Bioscience: Robust sales growth; cost per liter of plasma stable driven by higher plasma collections; new product launches; and margins improvements
- Inventory build-up as a key pillar of strategic growth
- Diagnostic: Extended contracts with 6 top accounts. Maintaining market share
- Hospital: Focus on execution leveraging on the U.S. market
- Successful closing of strategic acquisitions, integration well on track
- Substantial progress in implementation of strategic initiatives
- Expected FX tailwind

FX Tailwind

Backed on Natural Hedging

P&L Currency Exposure



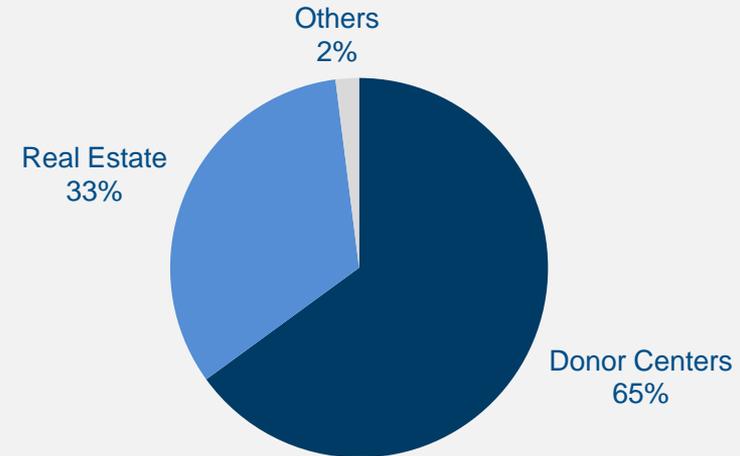
Applying IFRS 16: Major Impacts

IFRS 16: Major Impacts on Balance Sheet and P&L

Lessee Accounting

- Single model for lease accounting by lessees
- Recognition a right-of-use asset (ROU) representing its right of use the underlying asset throughout the lease term and a lease liability representing its obligation to make future lease payments
- The ROU is measured at cost less accumulated depreciation
- Impact in P/L due to change in the nature of expenses. Lease cost replaced by: depreciation of right of use assets and interest on lease liabilities
- No impact on net cash flow. Shift form cash flows from operating activities to cash flows from financing activities
- As per the financial covenant, no impact on leverage ratio

Leases Breakdown



IFRS 16: Major Impacts on Balance Sheet and P&L

Lessee Accounting

Balance Sheet

March 31, 2019

ASSETS (right-of-use)

EUR 690M

DEBT (lease liability)

EUR 711M

P&L

Estimates for FY2019¹ (In EUR million)

+ Lease expense	56
= EBITDA	56
- Higher Depreciation	-58
= EBIT	+2
- Interest Expenses	-30
Profit Before Taxes	-28

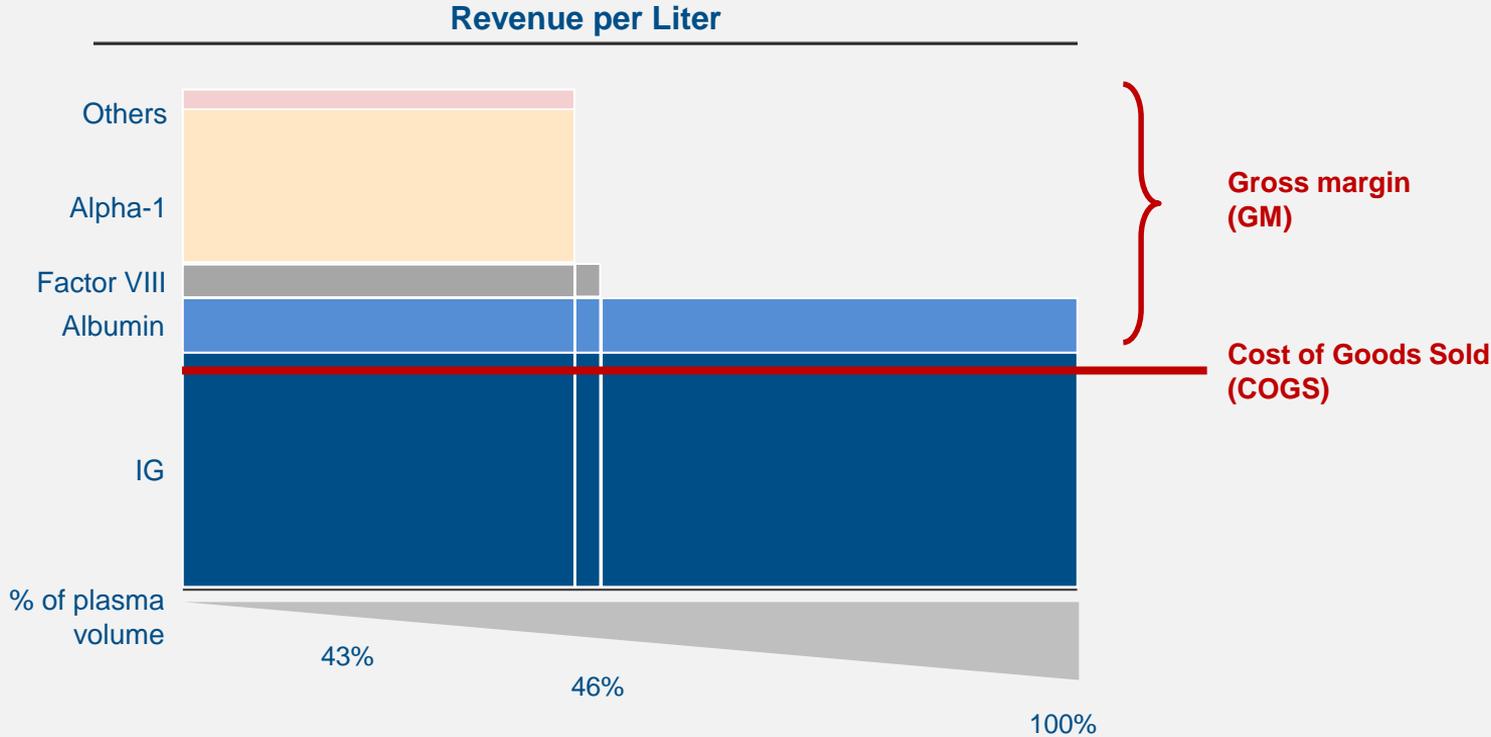
1. FY2019 estimated based on 1Q 2019A. Ex-rate USD-EUR 1,15

Plasma Economics

Plasma Economics

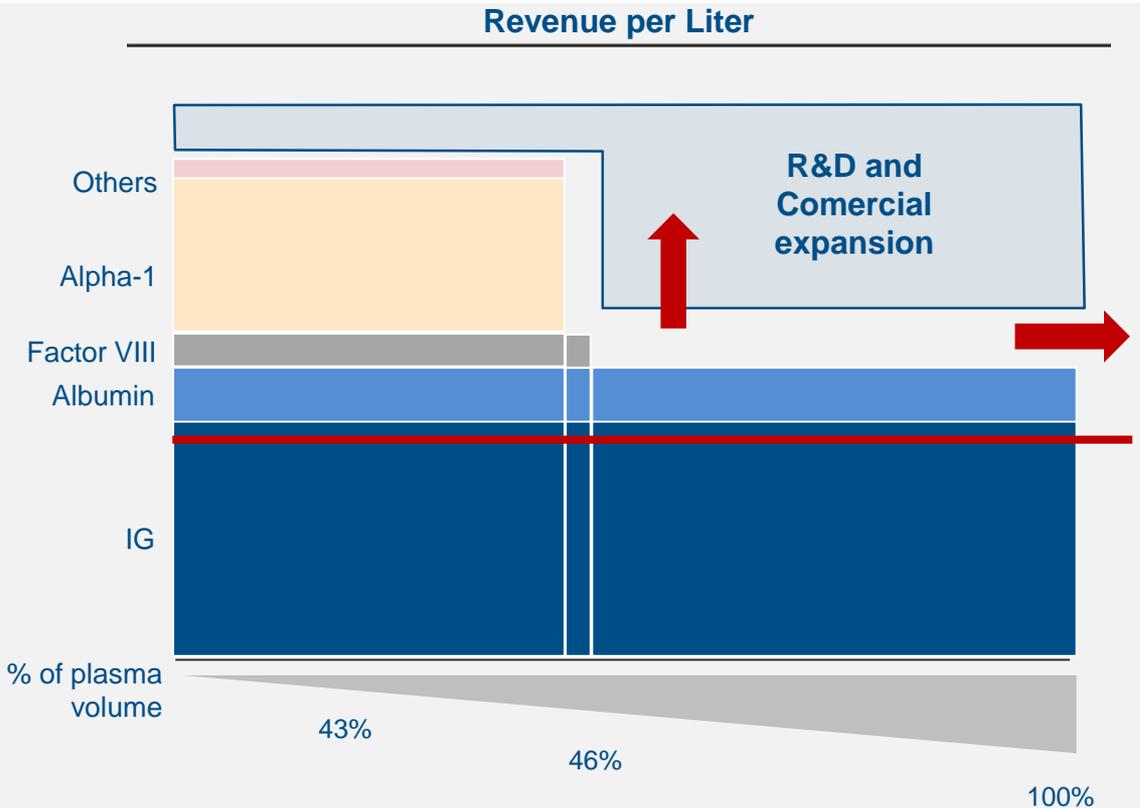
For illustrative purposes

The Paradigm of Balancing the Liter



Balancing the liter

Maximizing the Grifols' Gross Margin and Profit



- ### Strategy
- Broad portfolio and optimizing pricing mix
 - Accelerate Alpha-1 growth
 - Geographic expansion of pdFVIII
 - Accelerate R&D output to support business growth
 - New indications for existing proteins (AMBAR)
 - New plasma proteins
 - Business development through collaboration and licensing agreements
 - Effective cost management

Capital Allocation

Capital Allocation Supports Growth

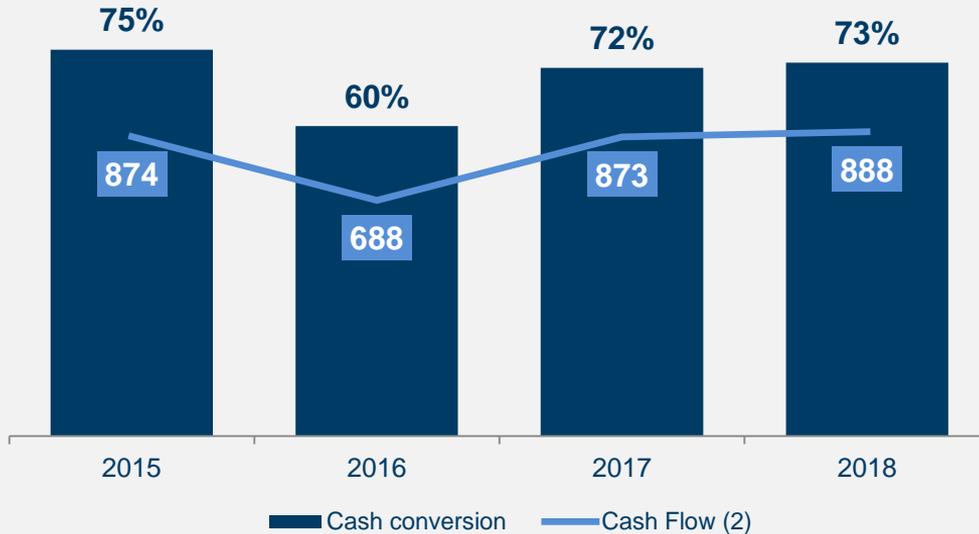
Capital Discipline Focused on Creating Value



Strong Cash Flow Generation

High Conversion of EBITDA Into Cash Flow^{1,2}

(EUR in millions)



- Strong net cash flow from operating activities of EUR 962M, up from the average in 2014-2018 period
- Continued focus on cash flow from operating activities expansion driven by working capital management, operating performance and disciplined CAPEX

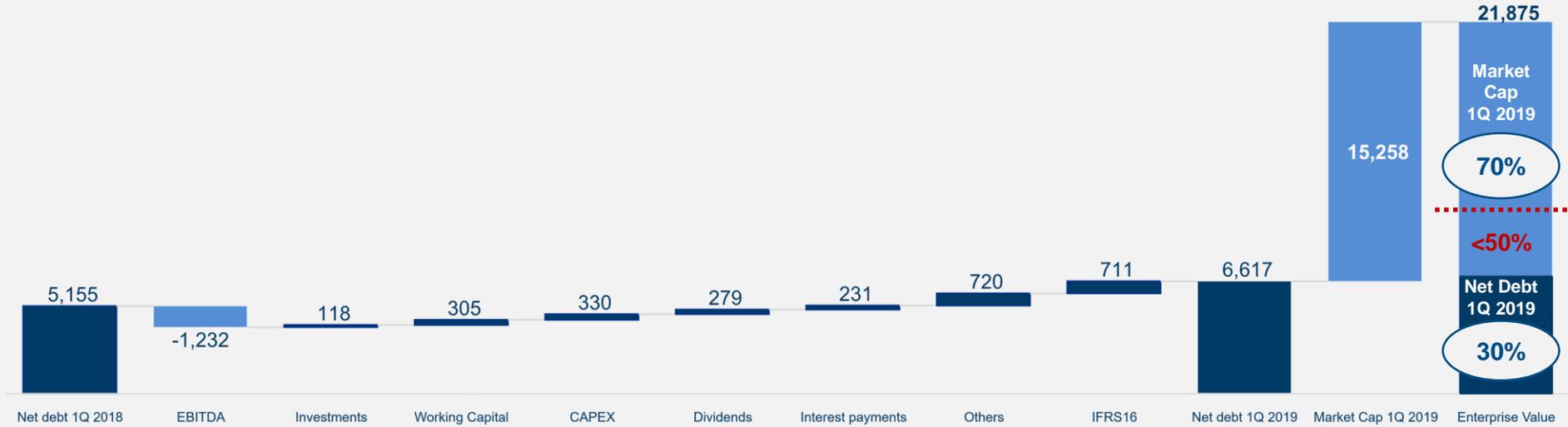
1.- Cash flow conversion defined as $(EBITDA - Capex - Change in Working Capital) / EBITDA$

2.- Cash flow defined as $EBITDA - Capex - Change in Working Capital$

Capital Structure Breakdown

Debt to EV Ratio Enables Balance Sheet Flexibility. Deleveraging remains a priority

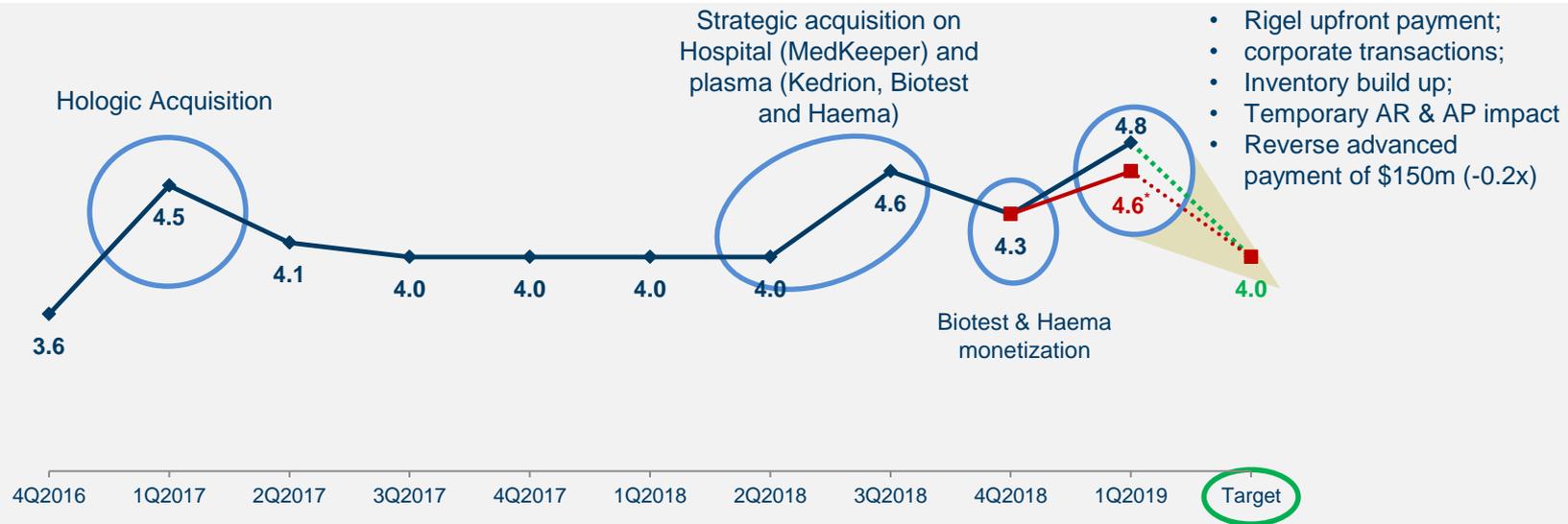
(EUR in millions)



Market cap source: Bloomberg at March 31, 2019

Evolution of Leverage Ratio

Strategic Investments Lead Higher Leverage Ratio. Deleveraging Remains a Priority



Continued focus on strong cash flow generation

Leverage management remains among the company's top priorities

Our target leverage ratio is below 4.0

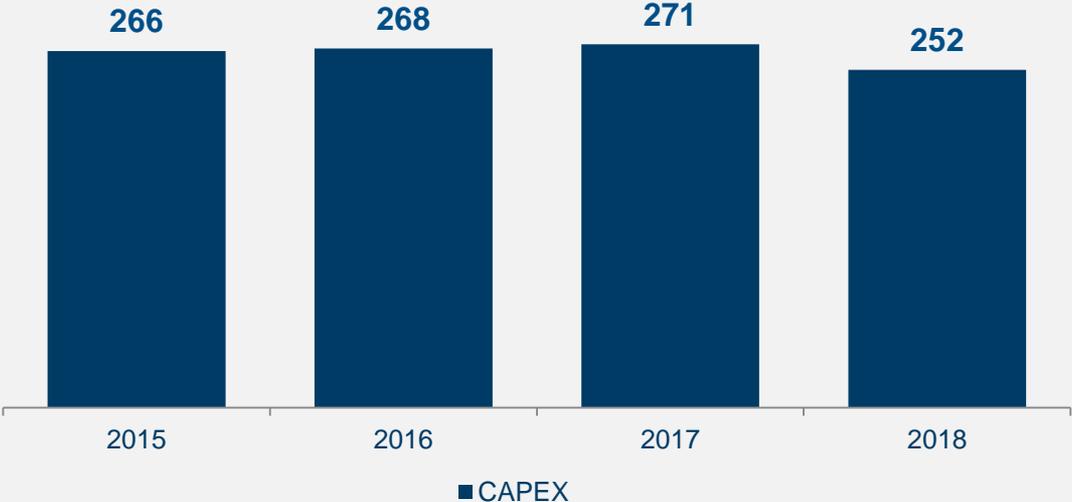
*Leverage Ratio defined as Net Financial Debt to EBITDA excluding any IFRS 16 impact
 * 4.6x excludes payment of \$150m*

CAPEX Continues to Support Long-Term Growth

Allocating EUR 1,400M over 2018-2022

(EUR in millions)

TOTAL INVESTMENT: EUR +1bn



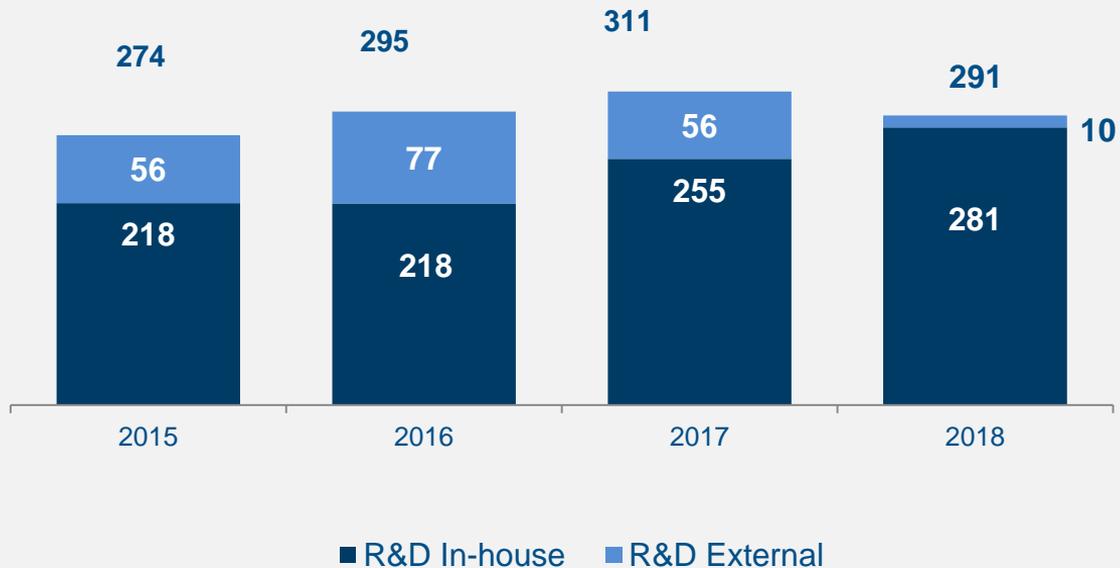
- Significant investments to support growth initiatives and innovation
- Continued emphasis on execution and capital allocation efficacy and return

R&D Continues to Support Long-Term Growth

Commitment to an Integrated Approach

(EUR in millions)

TOTAL INVESTMENT: EUR +1.1bn



- R&D drives long-term growth and profitability
- Includes strategic collaborations: leveraging internal and external expertise

Strategic Investment to Secure Growth

Haema and Biotest Transactions

Rationale

- To monetize recent acquisitions since there are still significant 3rd party supply agreements in place
- To strength the financial position while reducing financial leverage

Key terms

- Same price, terms and conditions existing at the time of Grifols acquisition (June 8 and August 2018)
- Call option to re-acquire exclusively and irrevocably at any time and at original acquisition price
- Current plasma agreements remain in place, extended to 30 years

Strategic Investment to Secure Growth

Haema and Biotest Transactions

Accounting treatment

- Transaction that results in change of ownership interest while retaining control
- Call Option >> potential voting rights >> control >> consolidation
- Full consolidation (P&L and BS) reversed in minorities

Business Management Agreement

- Covers all the existing key management services provided by Group companies
- Term in line with Plasma Supply Agreement at 30 years

Grifols Next Growth Engine

Strategic Alliance with Shanghai RAAS (SRAAS) in China

Key Transaction^(*) Terms

- Grifols will contribute 45% economic rights in Grifols Diagnostic Solutions (GDS) Group into SRAAS and 40% voting rights in GDS
- In exchange, Grifols will acquire 26.2% stake in SRAAS (voting and economic rights);
- **Grifols' protections as shareholder include:**
 - Grifols will have the right to appoint 2 non-independent directors, out of 6 non-independent directors and 3 independent directors existing in SRAAS in total at the board of directors;
 - SRAAS articles of association will include 75% reinforced quorum to issue shares, disposal of material assets, mergers and modify the articles of associations (Grifols having veto on all these);
 - Grifols will have a right of first refusal upon sale of shares of Creat and pre-emption rights on issuance of new shares in SRAAS, to avoid dilution

Grifols Next Growth Engine

Strategic Alliance with Shanghai RAAS (SRAAS) in China

Key Transaction^(*) Terms

- Grifols and SRAAS will enter into an **exclusive Strategic Alliance Agreement** whereby:
 - Grifols and SRAAS shall enter into a Quality Agreement to set up high International quality standards;
 - To appoint a quality person and manufacturing person to follow compliance with such agreed quality agreement;
 - SRAAS become the exclusive distributor of Grifols in China;
 - In exchange of royalties to be agreed upon, Grifols shall provide technology owned or controlled by Grifols to SRAAS for use in China;
 - Grifols shall provide engineering services to SRAAS in exchange of fees to be agreed upon; and
 - SRAAS commits to use GDS NAT technology in its plasma collection business

Grifols Next Growth Engine

Strategic Alliance with Shanghai RAAS (SRAAS) in China

Key Transaction^(*) Terms

- Shanghai RAAS will have the right to appoint 1 director at GDS and will have similar antidilution protections as Grifols in SRAAS;
- Creat will be prevented from selling its stake in SRAAS to a competitor of Grifols and Grifols will be prevented from selling its stake in GDS to any Chinese entity

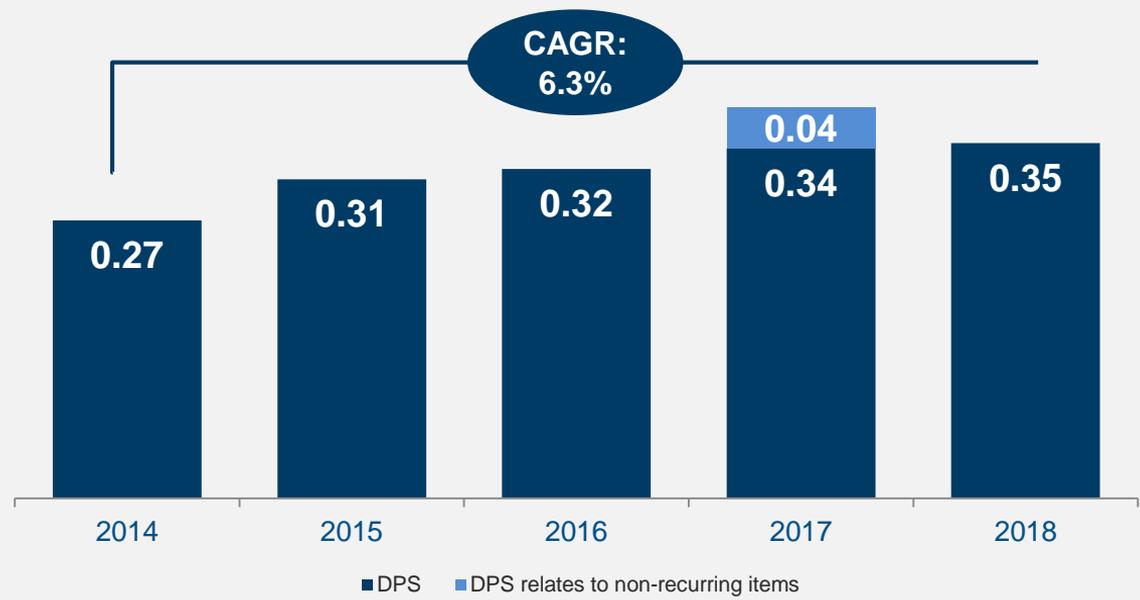
Accounting treatment

- **Grifols will fully consolidate GDS Group**, adjusting the 45% of GDS as a minority;
- **Grifols will include the 26.2% of SRAAS net profit at EBITDA level**

Return to Shareholders

Sharing success with shareholders

(EUR per share)



- Strong earnings profile
- Accumulated annual dividend up by 6.3% over the last 5 years
- More than EUR 1,000M returned to shareholders over the last 5 years
- Pay-out ratio 40% of reported consolidated profits

Key Takeaways

Key Takeaways

Continuous Focus on Long-Term Growth

- Continued support to fund **long-term growth**
- Steady focus on **business fundamentals** and **global expansion**
- **Capital allocation** efficient and focused on strategic opportunities, industrial and plasma capacity needs and R&D initiatives
- Working capital management to optimize growth while **maximizing cash flow generation**
- Expected gradual **reduction of leverage ratio** to c.4.5x by 2019; while target is set to below 4.0x. Company is very mindful of its leverage – **remains a key priority**
- **Shanghai RAAS**: the right partner and agreement into the fastest-growing market to create long-term value
- **Constant shareholders reward** through 40% pay-out



Grifols: a Socially Responsible Company **Within Grifols' DNA Since Our Origins**

Teresa Rioné
VP, Corporate Communications

GRIFOLS

Grifols: A Socially Responsible Company

“The right to live in society entails the duty to work to improve it.”

Josep Antoni Grífols i Roig, 1976



Grifols: A Socially Responsible Company



Grifols: A Socially Responsible Company

“At Grifols, we believe in responsible management to generate social, economic and environmental value.”

Raimon Grífols Roura
Víctor Grífols Deu
2018



Grifols: A Socially Responsible Company

MISSION

Our mission is to improve the health and well-being of patients around the world

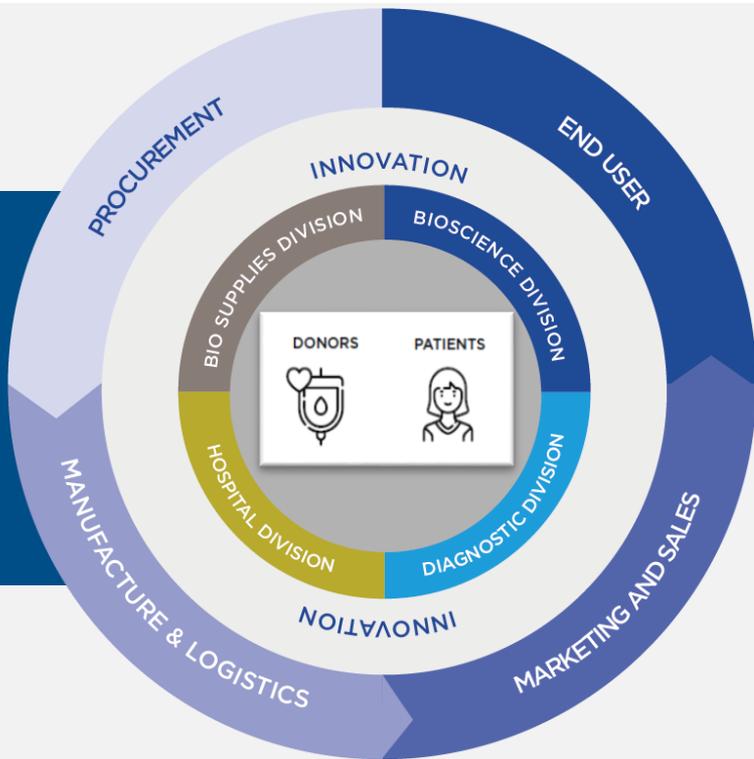
VISION

We strive to be a global leader in our markets and a constant industry reference for innovation, quality and safety

Grifols: A Socially Responsible Company

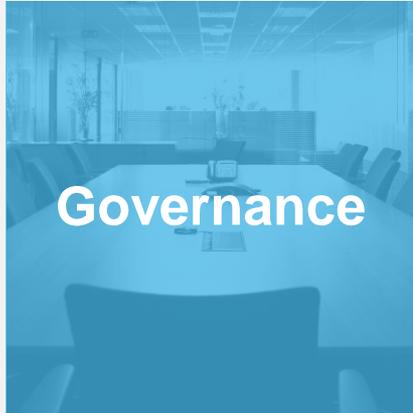
Donors and Patients at the Heart of Grifols' Business Model

**Corporate Social Responsibility
is part of the Grifols' Business Model**



Corporate Social Responsibility

Key Areas

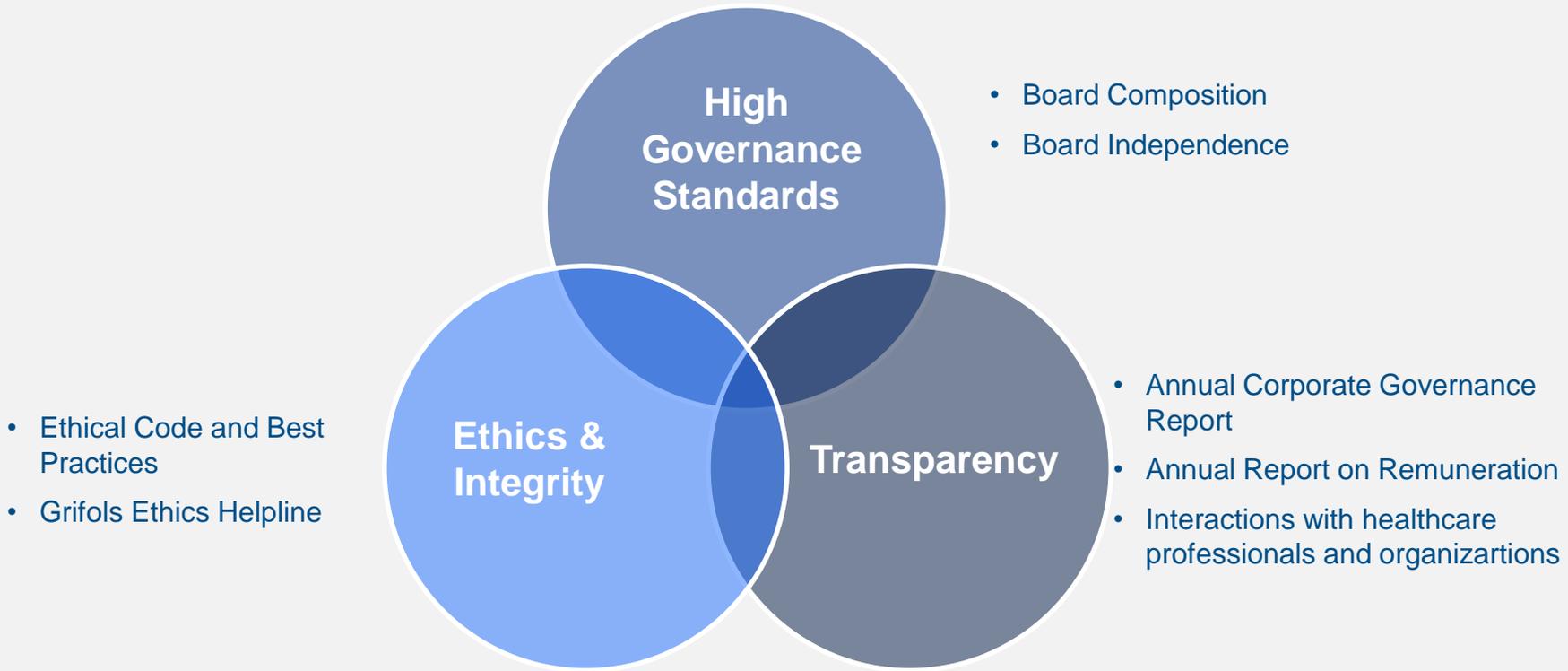


Corporate Social Responsibility



Corporate Social Responsibility

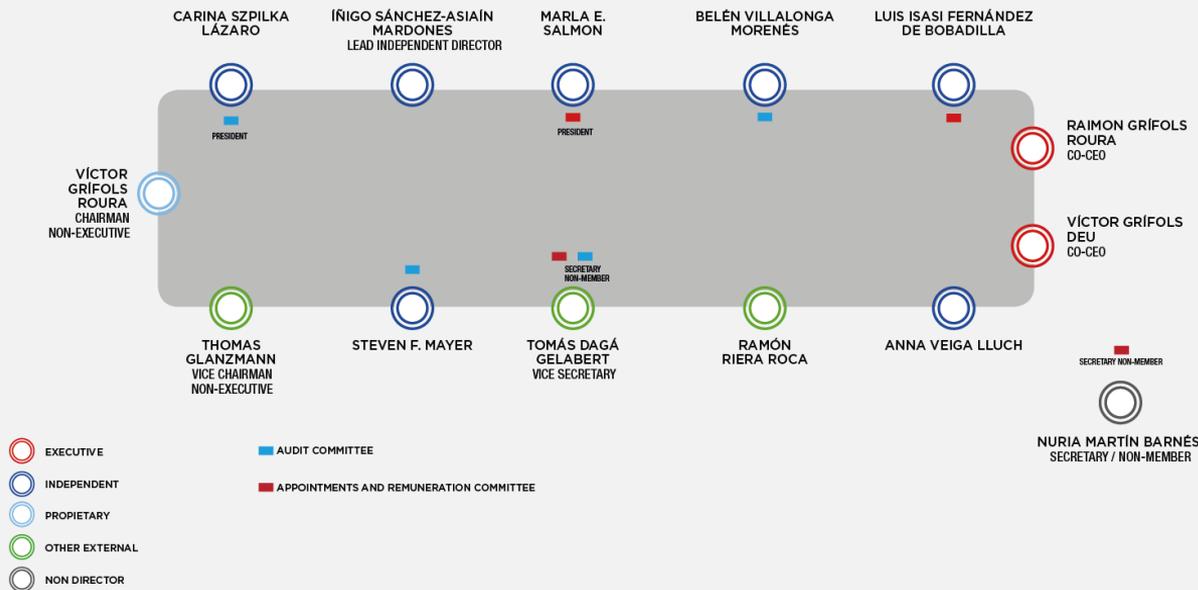
Key Principles



Corporate Governance

High Governance Standards: Composition of Board of Directors

GRIFOLS' BOARD OF DIRECTORS AS OF DECEMBER 31, 2018



Diverse and well-balanced Board:

- Even distribution by **number of years** on Board (31% 1-3 years, 38% 4-10 years, 31% +10 years)
- 31% of Board members are **women**
- Board members represented in all **age groups** (39% aged <55, 46% aged 55-65, 15% aged >65)
- Diverse **professional experience** and career paths (financial, healthcare, research, law)

Corporate Governance

High Governance Standards: Independence

Boards of Directors

Differentiated roles of President and CEOs

Lead Independent Director

85% Non-Executive

>50% Independent

Board of Directors' Committees

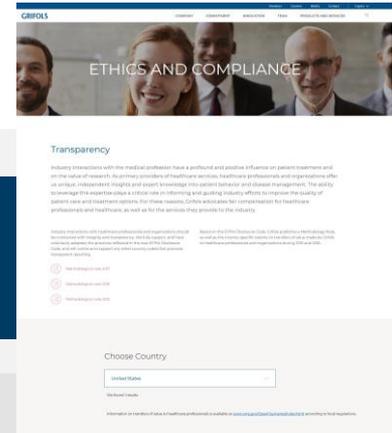
Independent President

Non-Executive only

≥2 out of 3 Independent

Corporate Governance

Transparency: Our Commitments Beyond Compliance



Interactions with Healthcare Professionals and Organizations

The United States

- Sunshine Act

2019 Plans:

- New Transparency Training Program (Employees)
- Quarterly sub-certification process

EU countries

- All relevant country-specific transparency standards
- Practices voluntarily adopted
 - EFPIA Disclosure Code
 - MedTech Europe - Code of Business Practice
 - Grifols Global Compliance Program

Corporate Governance

Ethics & Integrity: Robust Corporate Policies

Code of Ethics

Code of Conduct

Anti-Corruption

Crime Prevention

Privacy & Data Protection

Tax Compliance

Directors' Remuneration

Communication with Financial Markets

Risk Control & Management

Diversity & Equality

Corporate Governance

Ethics & Integrity: Our Commitments Beyond Legal Compliance

Compliance Function

- Ensures Grifols complies with all applicable anticorruption laws, rules and regulations
- Applies best practices within the organization
- Strict and immediate response to possible violations

Employee Training and Helpline

- Employees are trained in anticorruption practices
- Grifols Ethics Helpline to confidentially raise concerns of non-compliance or misconduct

Third Party Anticorruption Management Practices

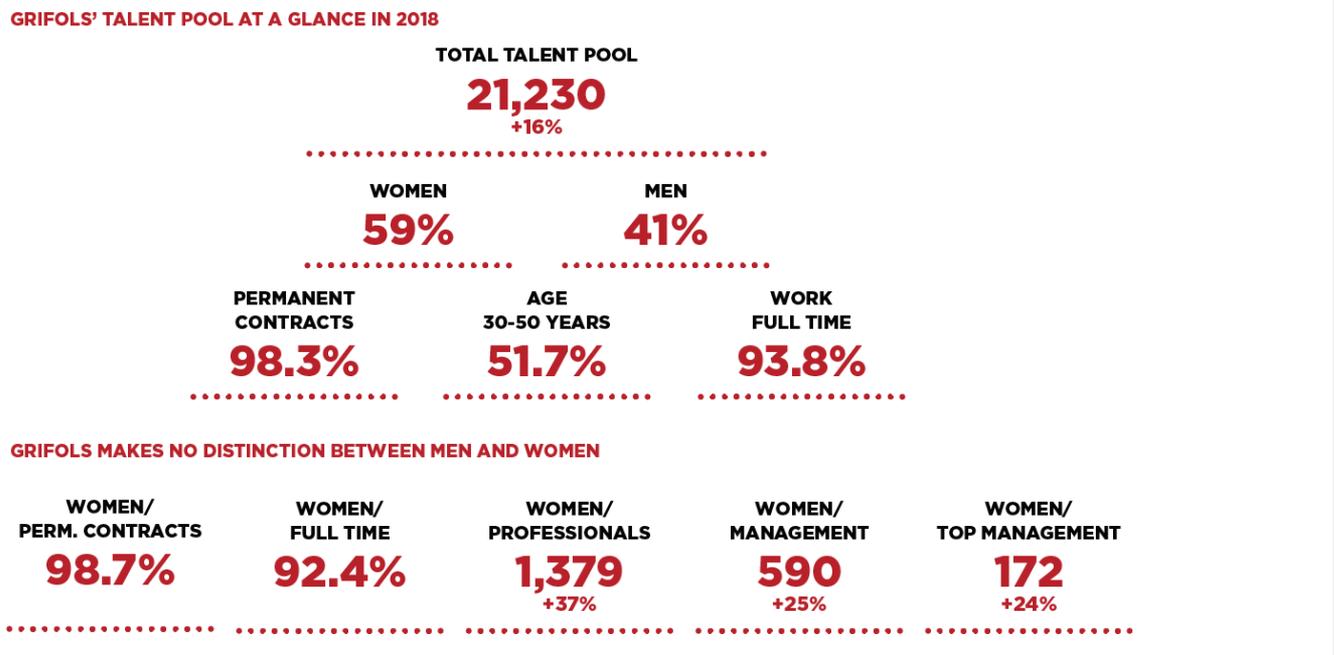
- Exhaustive screening
- Due Diligence
- Ethical standards and monitoring

Corporate Social Responsibility



Employees

Diversity, Inclusion, Equal Opportunities and Non-Discrimination



Grifols has reduced the gender pay gap, which is below international benchmarks in all professional categories

Employees

Talent Attraction and Retention

Strong Corporate Values



Continuous Training and Development



Competitive Remuneration package

Career Development Opportunities

Annual and Systematic Performance review

Employees

Talent Development



Continuous Training and Development

- Leadership Development
 - Executive Education Programs (ESADE, Georgetown)
- Ongoing Professional Development
 - Grifols Academy Programs
- Onboarding Programs

2.5 million hours
Total training in 2018

138 hours
Training per employee in 2018

Employees

Talent Development



THE GRIFOLS ACADEMY PROFESSIONAL DEVELOPMENT

- Training and professional development for Grifols employees.
- Aimed at strengthening specific competencies and fostering Grifols' corporate culture.
- Programs fall into three core areas: scientific-technical knowledge, skills development and leadership competencies.



THE GRIFOLS ACADEMY PLASMAPHERESIS

- Offers advanced training on all plasmapheresis procedures; collection, analysis and control of plasma; manufacture of plasma-derived medicines and other ethical and quality issues framed within the area of human health.
- Allows the company to transmit its knowledge, standardize procedures and increase employee engagement, while fostering its corporate culture in Grifols' U.S.-based facilities.



THE GRIFOLS ACADEMY TRANSFUSION MEDICINE

- Offers educational programs on transfusion medicine to global professionals.
- Designed to enhance patient care by contributing to the advancement of knowledge in this field.

Corporate Social Responsibility



Environment

Recognized for our Sustainability Initiatives



Carbon Disclosure Project
Businesses leading on Managing Climate Change (level B)



FTSE4Good Index
Companies that meet globally recognized Corporate Responsibility Standards



ISO 14001 Certified
International Standards for Effective Environmental Management



LEED
Clayton Plant recognition for its sustainable design in two new buildings

Environment

Environmental Management



ENVIRONMENTAL POLICY

Defines the company-wide principles and commitments common to the entire company aimed at monitoring and improving Grifols' environmental impact.



ENERGY POLICY

Defines the company-wide principles to the entire company to optimize its energy resources.



CORPORATE ENVIRONMENT MANUAL

Reference manual applicable to all ISO-14001-certified manufacturing facilities or in process. It serves as a reference manual for the company's environmental performance.



ENVIRONMENTAL PROGRAM

Defines the specific action lines for each business area. The 2017-2019 Environmental Program is currently in force.



ENVIRONMENTAL COMMITTEES

Monitor the environmental management system of all Grifols' companies. Among other functions, they monitor the progress of environmental objectives, review of follow-up indicators, application of corrective measures and compliance with current legislation and identification of opportunities for improvement.

18 million euros allocated to environmental initiatives in 2018

Environment

Our Commitments – Key Achievements in 2019



Clayton Facilities

2019 “ZERO WASTE TO LANDFILL” GOLD CERTIFICATION

- **Zero Waste Policy** in place
- **Over 99%** waste recovery
- **Only 5%** of incineration with energy recovery



Environment

Our Commitments



RENEWABLE
ENERGY

Directive (EU) 2018/2001

On the promotion of the use of energy from renewable sources

2030 target: $\geq 32\%$ of energy sources must be renewable in the EU

We are already **investing in renewable energy sources:**

- A new onsite photovoltaic generation plant in Murcia (Spain)
- Establishing PPAs (Power Purchase Agreement) in order to gradually shift towards green energy.

Grifols is committed to continue investing in environmental sustainability beyond the international regulatory requirements

Corporate Social Responsibility



Social

Transparency



**Patient
Organizations**



**Local
Communities
Plasma Donor
Centers**



Research



Foundations



Special Projects

33.3 million euros allocated to social initiatives in 2018

Social

Our Commitments with Patients

Educational Programs

For patients and their families

- **U.S. Patient Community Open Houses**
- **ES** Alpha-1 antitrypsin deficiency **Organization awareness** trekking experience

Support and Patient Care

ALFACARE, a patient-assistance program for patients with alpha-1 antitrypsin deficiency in Spain

- Personalized Support (emotional, psychological)
- Complements Standard Care

Similar programs have been rolled out in other countries (US, DE, CA)

Access to Treatment

U.S. PatientCare Program for Patients with Hemophilia or Primary Immunodeficiency (since 2006)

25 million International Units of **Clotting factor** donated to **WFH Humanitarian Aid Program** in 2018

- Treatment for **6,000 patients** per year until 2021

Social

Our Commitments with Plasma Donors and Local Communities

Plasma Donors - Recognition

- Compensation for **Donors' time and commitment**
- **Same Remuneration for All Donors** (no age, weight or gender distinction)
- Complete **Health Screening**
- **Plasma Possibilities Program** (waiving fee for Charity Organizations) – since 2017

Local Communities - Activities

Focus Areas



Feeding our communities

- Food Drives
- Volunteer hours
- Feed the troops



Raising awareness

- Races
- Supporting neighbor organizations
- Plasma education



Supporting our schools

- School supplies drives
- Sponsorships
- Career days



Fundraising

- Plasma Possibilities donor fundraising program
- Support of Direct Relief

3,000 community activities in 2018

Facts & Figures



Social

Awards

Research



GRIFOLS
SCIENTIFIC
AWARDS

Grifols has a long-standing commitment to the scientific community and promotes awards in research related to our core business areas

Martín Villar **Haemostasis** Awards

SPIN, Scientific Progress **Immunoglobulins** In Neurology Award

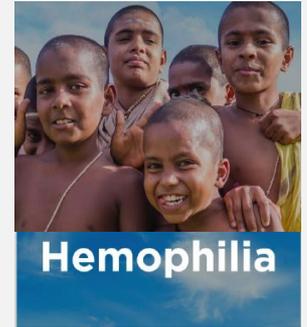
ALTA, **Alpha-1-antitrypsin** Laurell's Training Award

Albus, **Albumin** Awards Program

GATRA*, Grifols **Antithrombin** Research Awards

** There were no GATRA granted in 2018*

Awareness

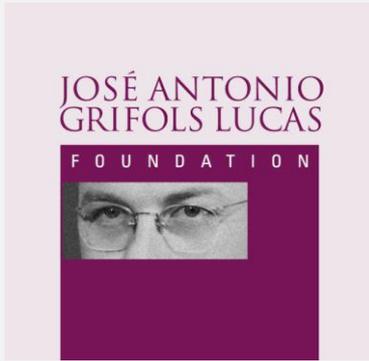


Grifols supports education and access to treatment in developing countries

- Outreach diagnosis
- Improve education
- Facilitate access to treatment

Social

Foundations



The Foundation pays tribute to the memory of Dr. José Antonio Grifols Lucas, who developed the plasmapheresis technique, and recognizes the indispensable value of the donors.

José Antonio Grifols Lucas Foundation **contributes to the communities** where Grifols operates its plasma donation centers **through health, wellbeing and educational programs.**

Social

Foundations



The Víctor Grífols i Lucas Foundation was established in 1998 to spark cross-disciplinary debate on **bioethics**.

The Foundation seeks to foster **ethical attitudes and create new ideas** and insights in organizations, companies and professionals in the field of human health.

Main activities include conferences, seminars and courses as forums to exchange different perspectives.

Social Foundations



GLI
Global Laboratory Initiative



RAI
Child Nutrition Support Program



SIT
Health Innovation and Therapies



PCI
International Partnership Program

Fundación Probitas was created in 2008 to leverage **Grifols' expertise in the healthcare field and contribute to enhancing medical care in areas with limited resources.**

Probitas **combines in-house programs and external collaborations** with NGOs in the humanitarian sector (Spanish Red Cross, Save the Children, World Food Program).

0.7% of Grifols corporate profits go to support this private foundation.



+

GRIFOLS

EBOLA PROJECT Anti-Ebola IVIG

- **Collaborative effort** among Grifols, Probitas, and Liberian scientists at the National Public Health Institute of Liberia to **obtain plasma from Ebola survivors to produce anti-Ebola immunoglobulin.**
- Grifols built a first-of-its-kind modular plasma donation center in Monrovia, Liberia.



Corporate Social Responsibility

Within Grifols' DNA since our origins

22

YEARS OF

GRIFOLS
MUSEUM

Heritage

10

YEARS OF

JOSÉ ANTONIO
GRIFOLS I LUCAS
FOUNDATION

Donors

21

YEARS OF

VÍCTOR GRIFOLS
I LUCAS FOUNDATION

Ethics

10

YEARS OF

PROBITAS
FOUNDATION

Social



Executing a New Chapter of Continued Growth and Success

Víctor Grífols Deu
Co-CEO

GRÍFOLS

Executing a New Chapter of Continued Growth and Success

OVER THE PAST TWO YEARS, EVERY DECISION HAS BEEN A BUILDING BLOCK THAT HAS PAVED OUR WAY INTO THE FUTURE...



...WE BELIEVE EVERYTHING IS NOW IN PLACE, NOW IS A MATTER OF RIGHT EXECUTION...

Key priorities moving forward

Hospital Strategy
Now it is just a matter of the right execution

Diagnostic Strategy
Now it is just a matter of the right execution

Bioscience Strategy
Now it is just a matter of the right execution

ONE GRIFOLS

...TO ENSURE OUR CONTINUED GROWTH & SUCCESS

Corporate Focus areas

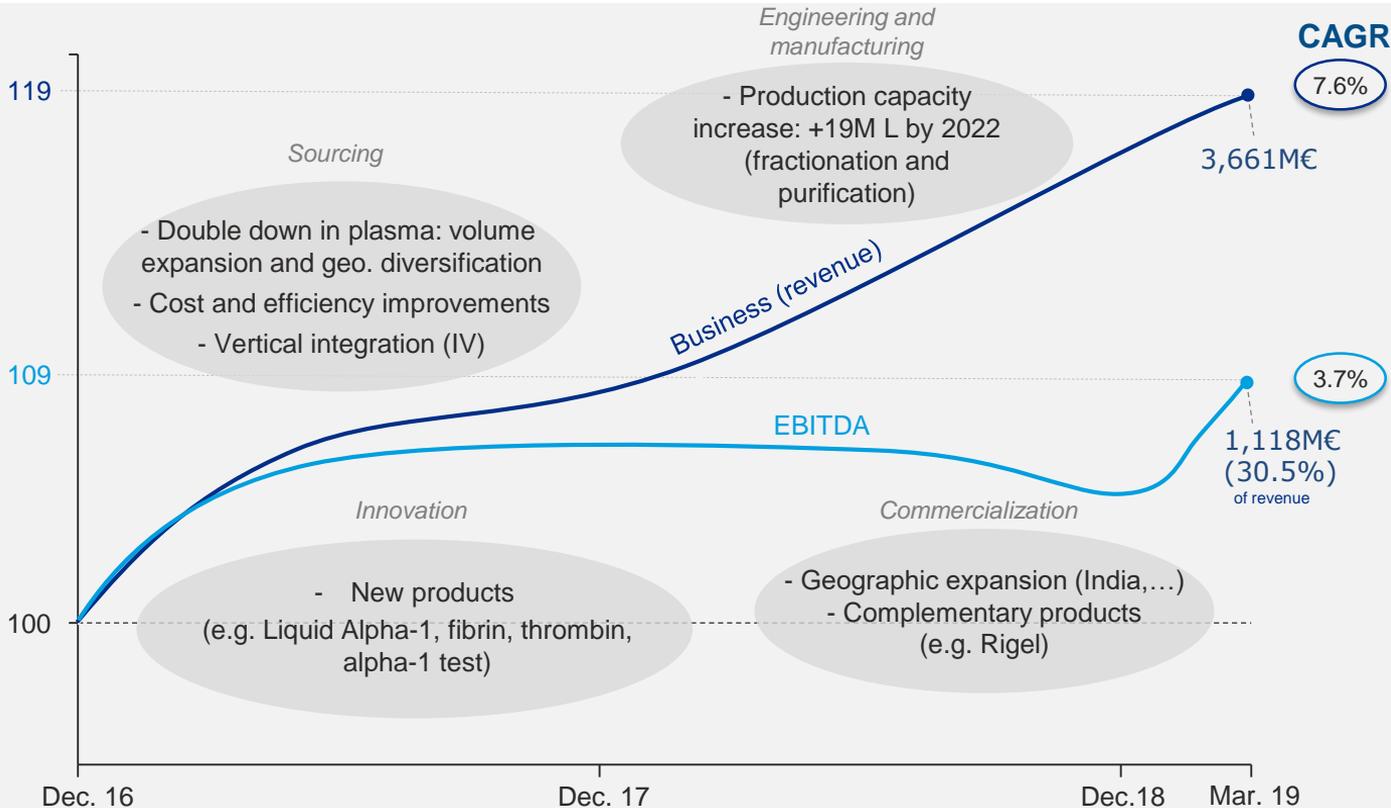
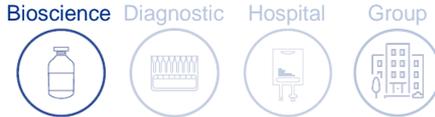
Corporate Strategy

There are a set of focus areas in which we need to focus moving forward

ONE GRIFOLS

One Grifols	Business Optimization	Innovation Performance	Customer Centricity	Digital	Talent
Operate as one company and leverage on capabilities to unlock synergies	Identify inefficiencies to improve productivity and optimize value	Leverage technological advancements to deliver innovative solutions and transformational breakthrough	Enhance organization value focus on meeting and exceeding customer needs to build sustainable competitive advantage	Build digital capabilities to deliver better outcomes	Ensure that we have the right talent in the right places and develop our people to play in and identify new sources of value

Business Evolution – Bioscience (LTM, at CC)¹

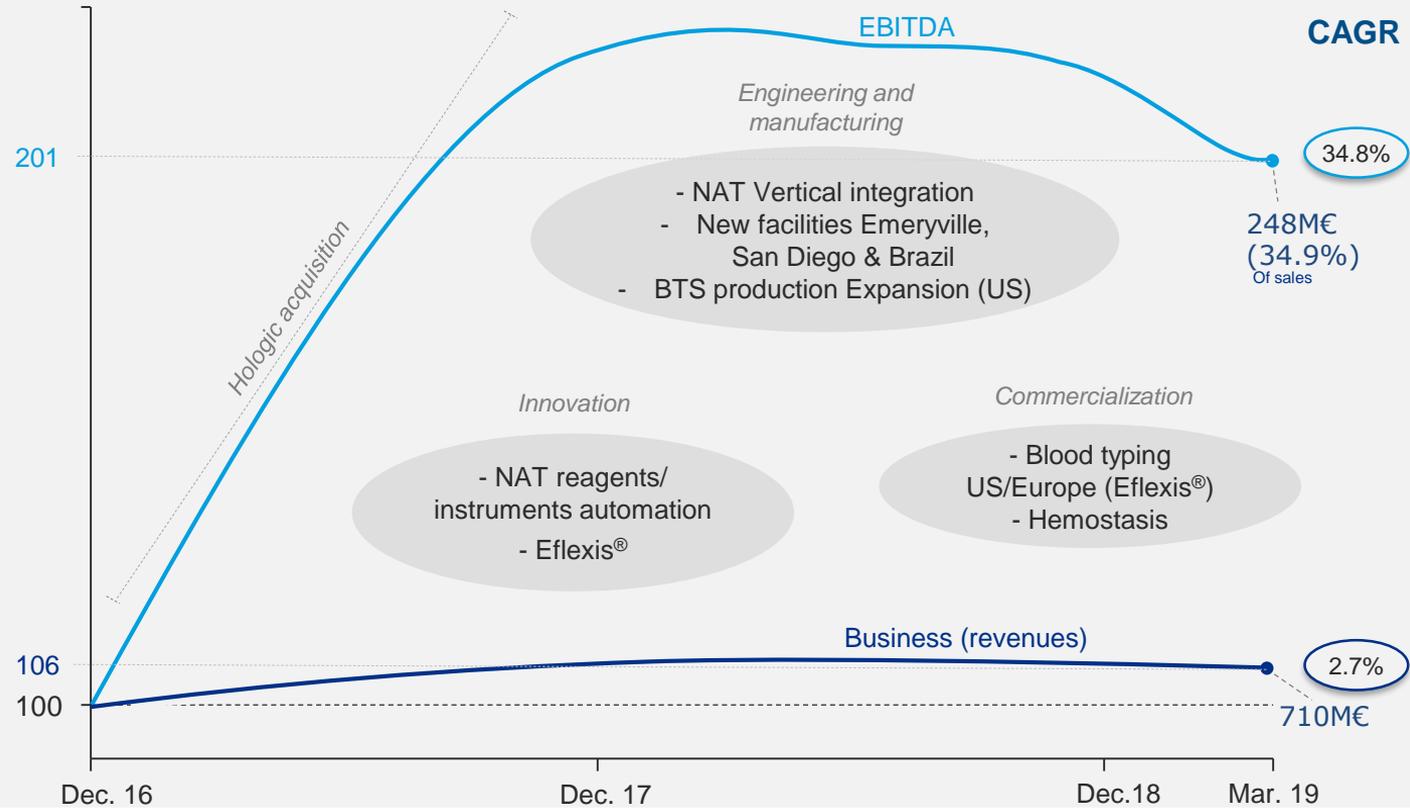


Current actions with future impact

- 2019 ...
- China**
 - PPR Therapies: AMBAR, Liver,...**
 - New indications and proteins (e.g. GigaGen, Alkahest)**
 - Broaden portfolio of complementary products**
 - Continuous liter optimization**
 - Continuous capacity increase: Plasma volume/ Production**

¹. Reported figures. Excluding plasma sales to 3rd parties

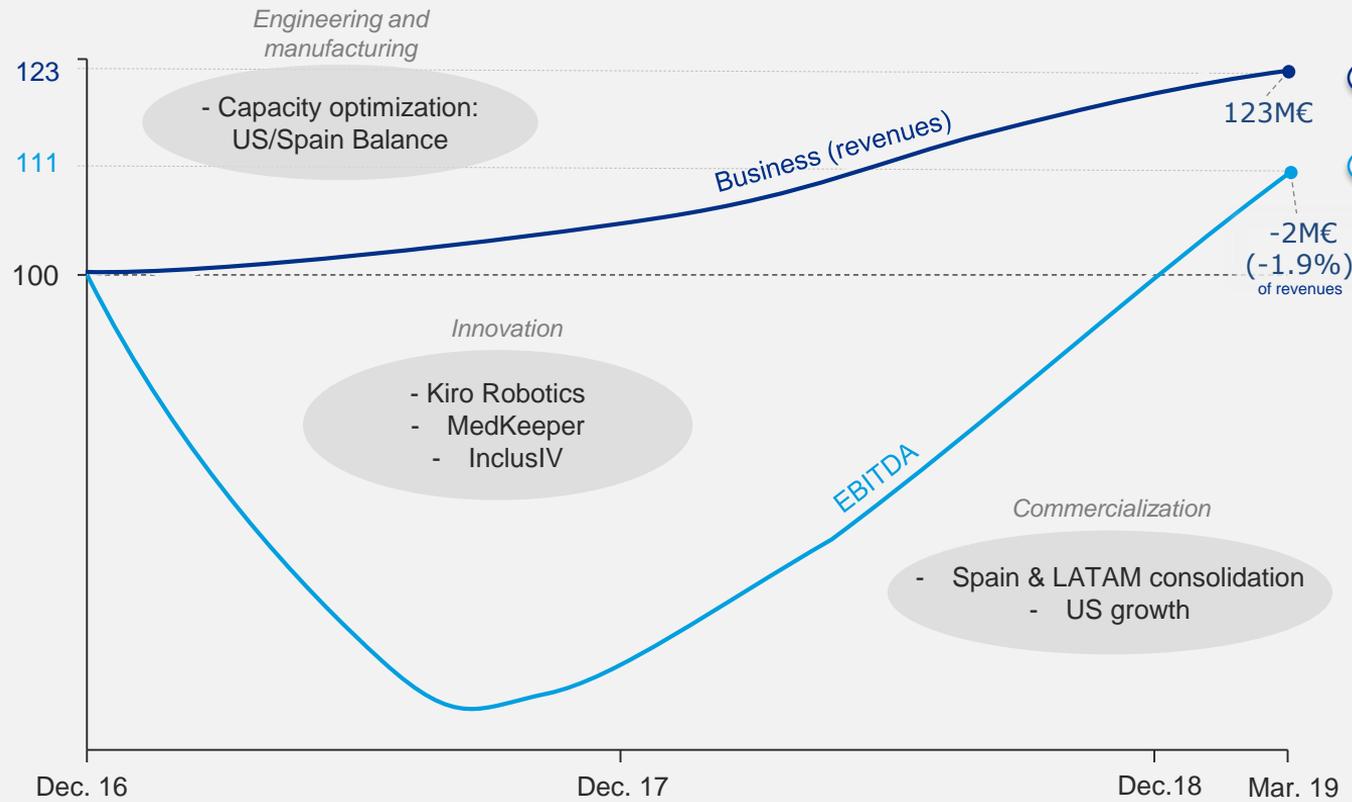
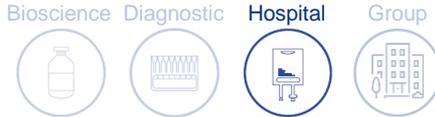
Business Evolution – Diagnostic (LTM, at CC)¹



Current actions with future impact

- 2019 ...
-  **NAT: grow plasma business**
 -  **China and rest of Asia**
 -  **Blood typing geo. expansion**
 -  **Operational optimization (e.g. technical service)**
 -  **Innovation (e.g. Singulex)**

Business Evolution – Hospital (LTM, at CC)¹



Engineering and manufacturing

- Capacity optimization: US/Spain Balance

Innovation

- Kiro Robotics
- MedKeeper
- InclusIV

Commercialization

- Spain & LATAM consolidation
- US growth

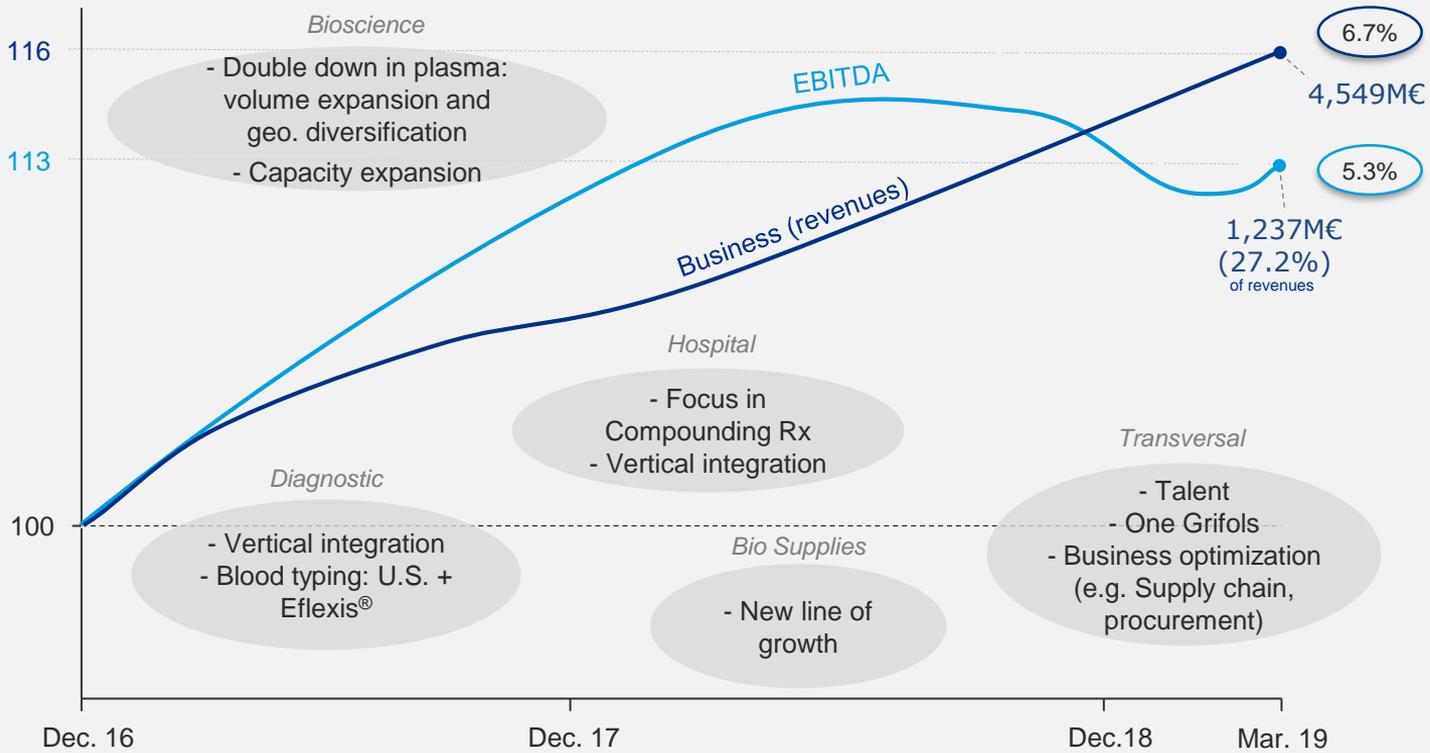
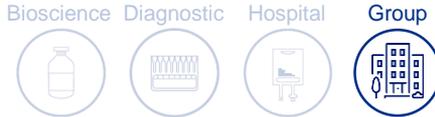
CAGR
9.3%

4.7%

Current actions with future impact

- 2019 ...
- ↑ Increase vertical integration: AC
- ✓ Focus in Compounding Rx in U.S.
- Build products and solutions alongside with customer (e.g. IV compounding)
- Best-in class: Rapid product testing & prototyping

Business Evolution – Group (LTM, at CC)¹



Current actions with future impact

- Continuous capacity leadership**
- Leading in innovation (PPR Therapies)**
- China**
- Digitalization**



Investor and Analyst Meeting

North Carolina
June 5-6, 2019

GRIFOLS