

# 2021 Investor and Analyst Day

June 3, 2021

# GRIFOLS

基立福

جريفولز



15 YEARS  
STOCK MARKET  
2006-2021

# Disclaimer

This document has been prepared by GRIFOLS, S.A. (GRIFOLS or the “Company”) exclusively for use during the 2021 Investor and Analyst Day on June 3, 2021. 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 pro forma 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.

# 2021 Investor and Analyst Day

## Agenda

3:00 - 3:05pm

Welcome

3:05 - 3:15pm

Introductory Remarks

*Raimon Grífols*

3:15 - 3:35pm

Plasma Supply and Manufacturing

*Eduardo Herrero*

3:35 - 4:50pm

Innovation Strategy

*Albert Grífols Coma-Cros, José Terencio, Karoly Nikolich, Joana Sàbat, Antonio Martínez*

4:50 - 5:20pm

Customer Centricity

*Lafmin Morgan*

5:20 - 5:35pm

Break

5:35 - 6:05pm

New Business Models

*Daniel Fleta, Amarant Martínez, Joel Abelson*

6:05 - 6:25pm

Finance

*Alfredo Arroyo*

6:25 - 6:45pm

Environmental, Social and Governance

*Thomas Glanzmann, Nuria Pascual*

6:45 - 7:00pm

Final Remarks

*Víctor Grífols Deu*

7:00 - 7:30pm

Q&A

7:30pm

Closing

2021

Investor &  
Analyst  
Day  
June 21

# Introductory Remarks

## Building Upon Our Core Commitments

*Raimon Grífols – Co-CEO*

GRIFOLS

基立福

جرىفولز

# Grifols Proved Its Resilience and Commitment in 2020 by...

2020

- ✓ Overcoming adversity and adapting to change
- ✓ Expressing our gratitude to our 24,000 employees for their commitment and dedication
- ✓ Strengthening our commitment to patients by ensuring continuous delivery of their treatments
- ✓ Recognizing more than ever the generosity of donors for their ongoing contribution toward enhancing people's health and well-being
- ✓ Driving our expansion plan and helping countries achieve plasma self-sufficiency
- ✓ Accelerating our efforts to innovate

# ...and Doubling Our Efforts in Three Core Areas



The Importance of  
**Plasma**



Strengthening Our  
**Fundamentals**



Committed to  
**Sustainability**

# 2020: Emphasizing the Importance of Plasma

## A Global Model of Sustainable Plasma



⚠️ Only **29%** of countries **obtain** their **hemoderivatives through nationally collected plasma** (WHO)

⚠️ Since 2010 global plasma collections are growing but **U.S. dependency has also been increasing** (MRB)

⚠️ In 2019, **68%** of total plasma collected comes from U.S. (from the 57% in 2010) (MRB)

⚠️ In Europe, **self-sufficiency levels short fall by 40%** (1)



Grifols promotes  
new business models



GRIFOLS

基立福

جريفولز

2021

Investor &  
Analyst  
Day  
June 21

# Plasmatology

First Scientific Journal Dedicated to Plasma Science



*Plasmatology* aspires to become **a scientific point of reference in the field of plasma science**

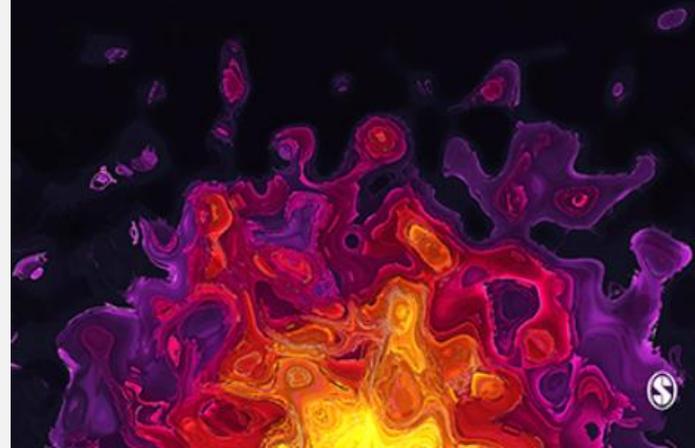
It gathers all research, from **basic research** to **clinical application**

eISSN: 2634-8535

[journals.sagepub.com/home/bdx](http://journals.sagepub.com/home/bdx)

# Plasmatology

The Journal of Blood Plasma Science



GRIFOLS

基立福

جريفولز

# Strengthening Our Fundamentals

## Efforts to Secure Plasma Supply and Promote Our Innovation Strategy



**Collaborating with national health systems**  
to help them achieve self-sufficiency and better  
serve patients



Hungary  
**7+ plasma centers**

**Enhancing Egypt's healthcare infrastructure**  
with the construction of  
manufacturing installations  
and **20 plasma centers**  
(2H 2021)

**Consolidating our position in China, a market with tremendous growth potential**



**Acquisition of remaining equity (55%)**  
Q3 2020



**Acquisition of remaining equity (56%)**  
Q1 2021

- Latest plasma centers transactions
- New business models

# Grifols Continues Its Path of Sustainable Growth

Global Century-Old Company Built On Strong Values and Ethical Principles



Corporate Headquarters

1

Industrial Facilities

16 4

R&D Centers

12

Bioscience Division Centers

5

Diagnostic Division Centers

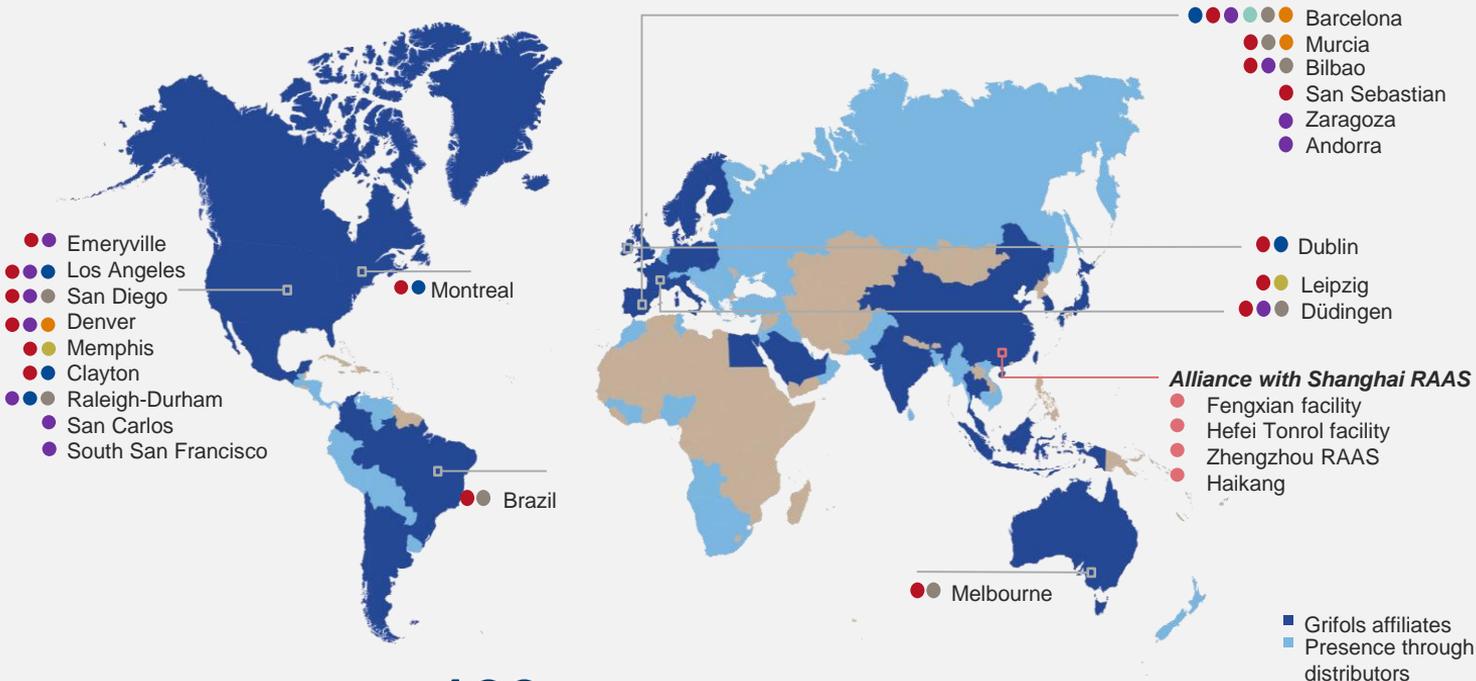
8

Hospital Division Centers

3

Bio Supplies Division Centers

2



Operations in **100+** countries

Subsidiaries in **30+** countries

# Sustainability: A Strategic Pillar

## Reinforcing Our Governance and Sustainability Strategy



### Creation of...

#### Sustainability Committee

- Establish the **core environmental, social and governance principles and commitments** in our business model
- Oversee the **integration of financial and non-financial information** in our ESG initiatives

#### Sustainability Policy

### ... to continue driving our sustainability strategy

*Grounded on 4 pillars*



Integrated in our corporate strategy

2021

Investor &  
Analyst  
Day  
June 21

# Plasma Supply and Manufacturing

Accelerating the Execution of Our Expansion Plan

*Eduardo Herrero – President, Bioscience Industrial Group*

GRIFOLS

基立福

جرىفولز

2021

Investor &  
Analyst  
Day  
June 21

# 1

## Plasma Operations

GRIFOLS

基立福

جرىفولز

# Plasma Supply: Leveraging Grifols' Competitive Advantage

## Key Drivers to Support Further Growth

Strengthening a **global plasma-center network** to ensure plasma supply and promote **long-term sustainable growth**

1

### Plasma Center Capacity

Sustainable **plasma collection growth** and **expansion** with the highest standards of quality and safety



2

### Diversification

**Strategic alliances and joint ventures** to reinforce Grifols' global expansion



3

### Business Optimization

Pursuit of **business excellence** through technology investments and ongoing improvements

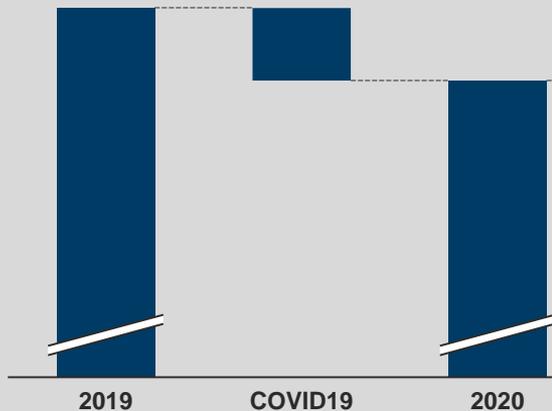
DONOR HUB<sup>o</sup>

  
Less paperwork. More time for donors.

# Plasma Supply: Leveraging Grifols' Competitive Advantage

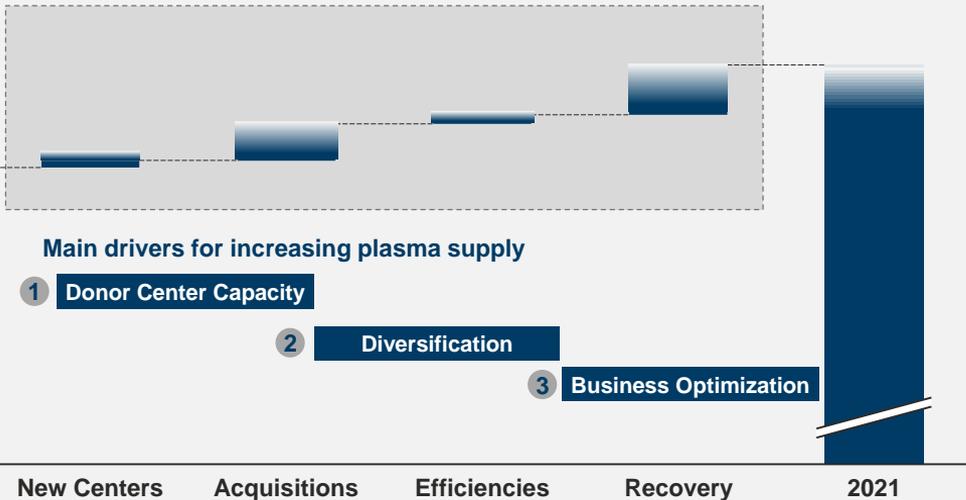
## Multilevel Strategy to Increase Plasma Supply

Volume (Liters of plasma)



→ -15% →

Despite a **significant downturn** in Q2 2020 followed by a gradual recovery, Grifols was able to limit its **plasma supply impact to 15%**



Main drivers for increasing plasma supply

- 1 Donor Center Capacity
- 2 Diversification
- 3 Business Optimization

New Centers Acquisitions Efficiencies Recovery 2021

Grifols advances the **execution of its expansion plan** aimed at expanding its plasma collections levels:

- Acquisition of plasma centers in the U.S. and EU
- Opening of new donor centers

**Donations** per donor center **increase annually** as technology and standardization optimize processes

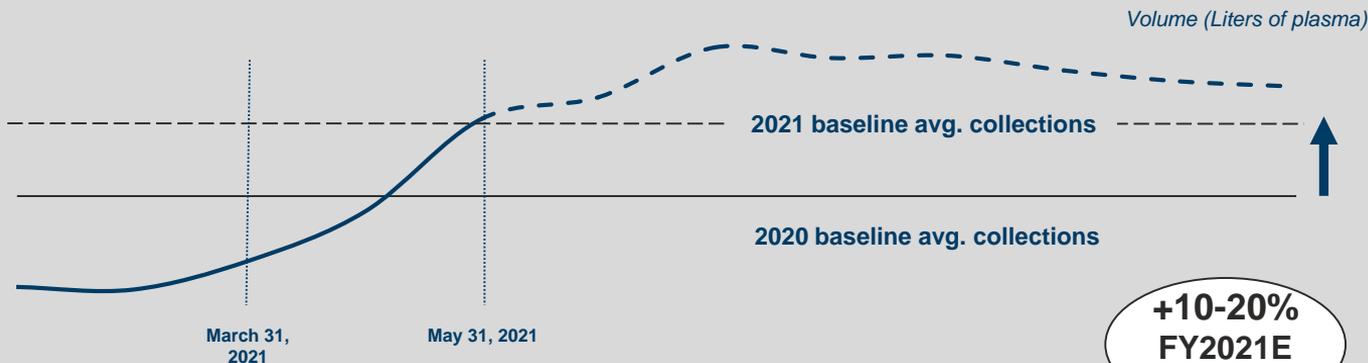
# U.S. and European Plasma Collections in 2021

Solid Rebound in Germany. Steady Recovery in U.S. Since April



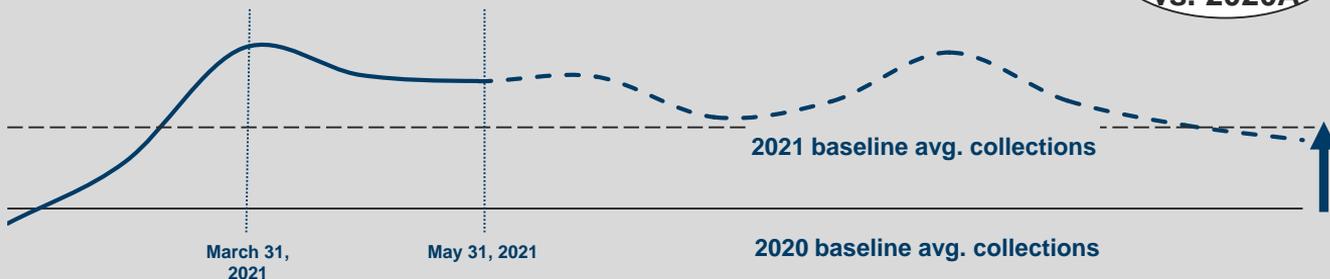
## U.S. Plasma Collections

U.S. Collections vs PY20 (%)



## Europe Plasma Collections

Europe Collections vs PY20 (%)

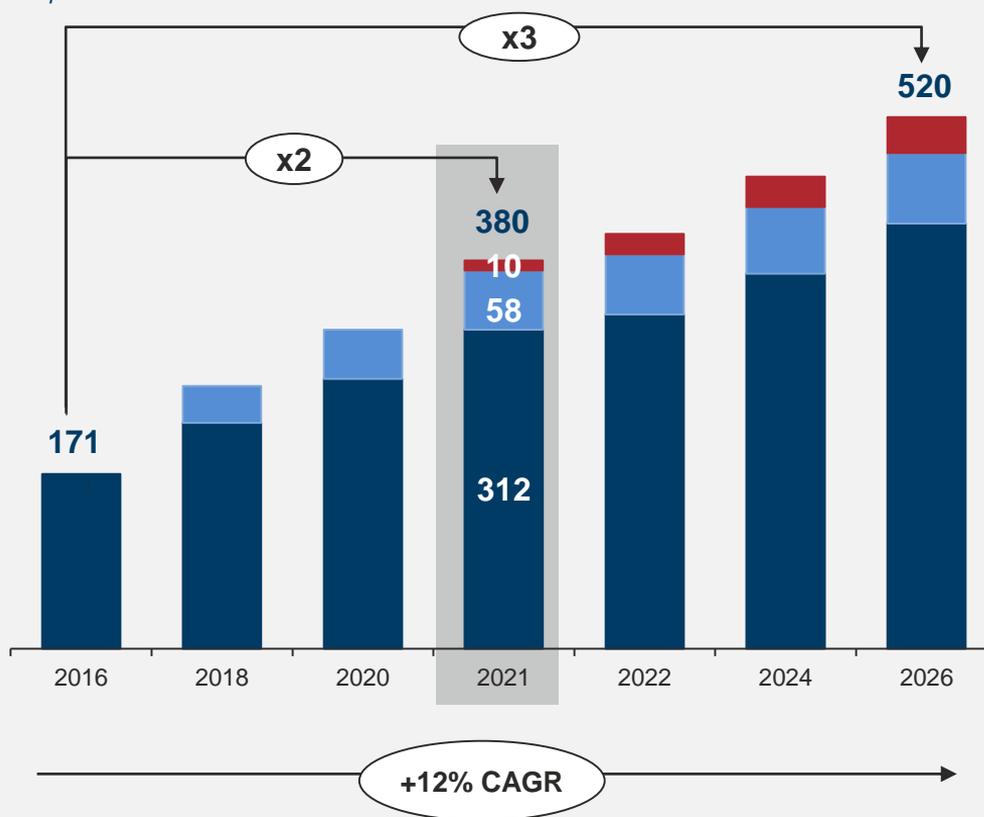


- Exhaustive safety measures to reduce donor fear factor have contributed to collections recovery
- Plasma supply has been supported by acquisitions, new center openings and contracts negotiations
- Global plasma awareness, acquisitions and donor marketing and recruitment campaigns have attracted new donor profiles

# Strengthening Grifols' Plasma-Center Network

## Advancing the Execution of the Expansion Plan

Number of plasma centers



- Execution plasma expansion plan since 2016
- Number of plasma centers have duplicated over the last 5 years and continue to grow
- **More than 500 centers by 2025**
- **Expansion and diversification plans** are ambitious and represent one of Grifols' main priorities in plasma supply
- **Third-party supply agreements** in the EU and U.S. to secure additional reliable plasma source

# Global Footprint to Support Sustainable Growth

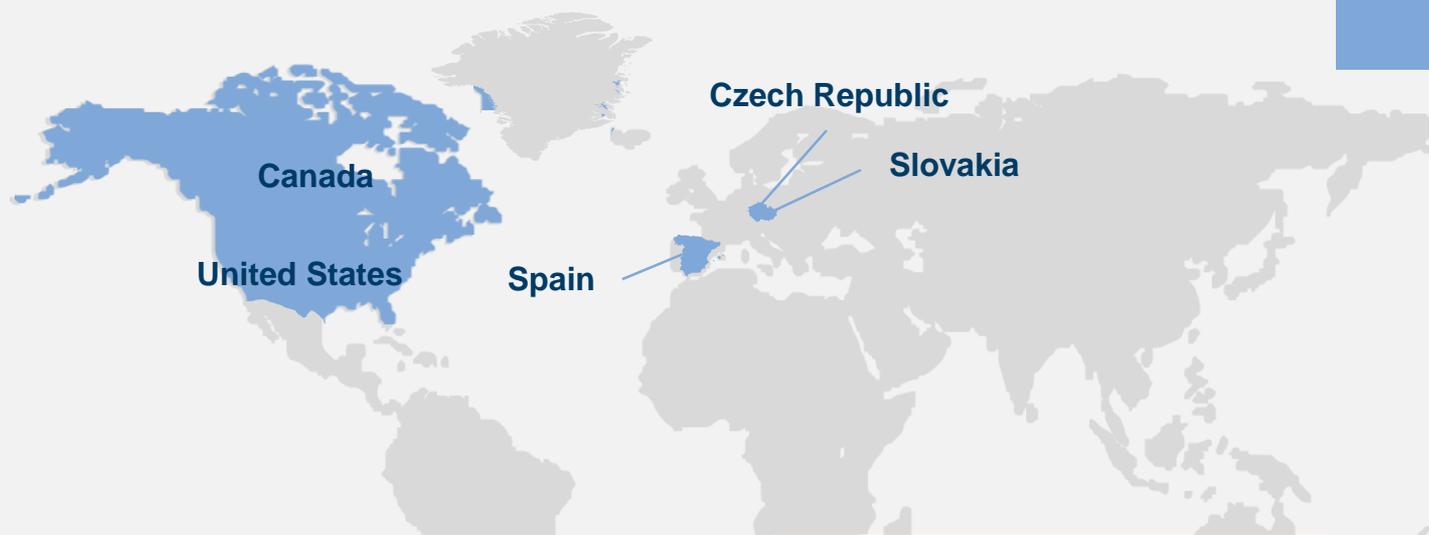
## Expanding and Diversifying Grifols' Presence

Plasma Center Capacity

Diversification

Business Optimization

2017



### Plasma Collection

#### Plasma Centers

 **190**

### Agreements

 ~25 locations

**9 locations** 

 **6 locations**

**18 locations** 

# Global Footprint to Support Sustainable Growth

## Expanding and Diversifying Grifols' Presence

2021



### Strategic Alliances and JVs

-  Shanghai RAAS (26.2%):  
41 plasma centers
-  GEPD<sup>1</sup> (49%):  
20 plasma centers

1. GEPD = Grifols Egypt for Plasma Derivatives

### Plasma Centers

370 plasma centers

-  312
-  48
-  7
-  3

### Agreements

-  ~25 locations
-  8 locations
-  4 locations
-  11 locations
-  27 locations

# Global Footprint to Support Sustainable Growth

## Expanding and Diversifying Grifols' Presence

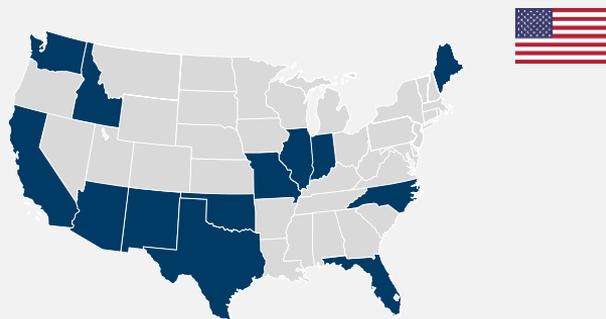
Plasma Center  
Capacity

Diversification

Business  
Optimization

### Recent Plasma Supply Transactions

#### 43 Plasma Centers Across 13 States

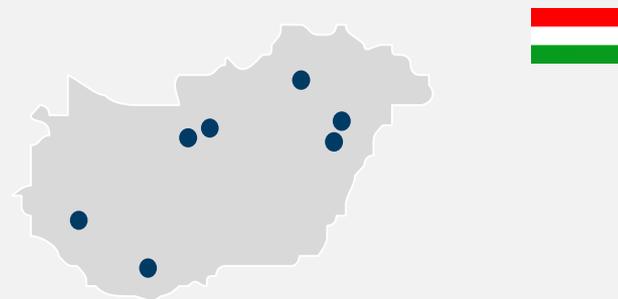


Grifols continues to expand and diversify its U.S.-based plasma-center network

Leveraging mature and licensed centers leads to an immediate increase in plasma supply

Through these acquisitions, Grifols broadens its footprint to new states and regions

#### 7 Plasma Centers in Hungary



Grifols continues to expand and diversify its access to European plasma adding plasma centers from Hungary

This transaction strengthens Grifols' leadership in Europe in terms of geographic scope and use of EU-approved plasma

# Global Footprint to Support Sustainable Growth

## Expanding and Diversifying Grifols' Presence

Plasma Center  
Capacity

Diversification

Business  
Optimization

### Strategic Alliance with SRAAS (closed in 2020)

- No plasma centers
- ≤ 10 plasma centers
- 11 to 20 plasma centers
- +20 plasma centers



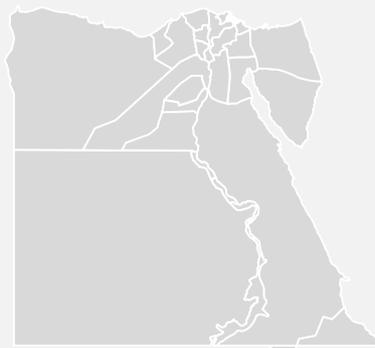
**41 centers in  
11 provinces**

Plasma Centers	CHINA	SRAAS
Operating	270 <sub>(1)</sub>	38 <sub>(3)</sub>
Under Construction	20 <sub>(2)</sub>	3
<b>Total</b>	<b>290</b>	<b>41</b>

Source: Reports released by manufacturers. Updated on Apr. 26, 2021

(1) Includes 26 branch centers; (2) includes 2 branch centers; (3) includes 1 branch center

### Joint Venture with Egyptian Government (2020)



## GRIFOLS EGYPT FOR PLASMA DERIVATIVES

Bolster **presence in the  
Middle East and Africa**

Access to new sources of  
plasma to **reduce  
dependency  
on U.S. plasma**

**20 plasma collection centers (1ML/year)**

#### Manufacturing facilities:

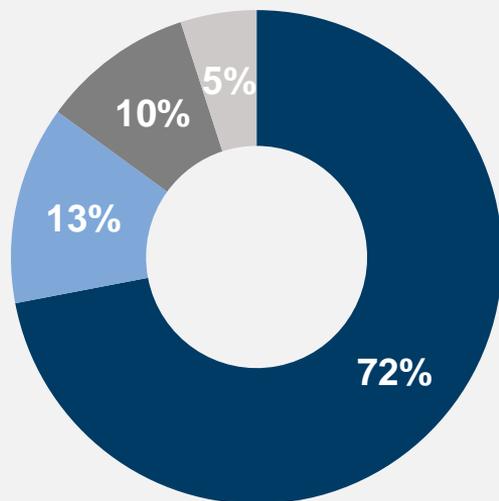
- Fractionation plant (1ML/year Capacity)
- Purification and fill-and-finish plant
- Plasma and final-product warehouse
- Plasma and product quality control lab

# Global Footprint to Support Sustainable Growth

## Diversification Supports Business Continuity

### Grifols Global Presence by 2022

450 Plasma Centers<sup>1</sup>



■ USA ■ EU ■ China ■ Egypt

### Strategy

- Global footprint and global expansion
- Diversification by:
  - Opening plasma donation centers in new countries
  - Strategic alliances
  - Joint ventures
- Organic and inorganic growth
- New market opportunities
- Increasing presence in the US by acquisitions and new centers

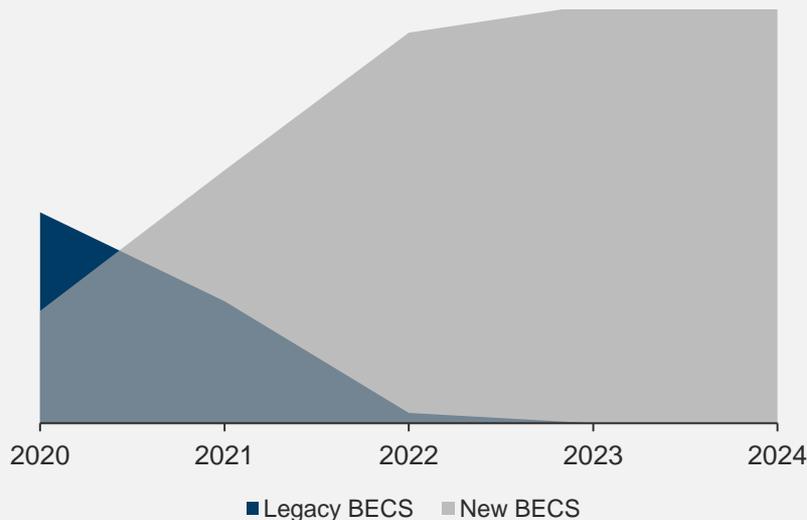
<sup>1</sup> Includes SRAAS plasma centers and Grifols Egypt (JV)

# Leveraging Technology to Optimize Efficiencies

## Digital Transformation

### Digital Transformation

#### BECS Migration



### ✓ Benefits

#### Increase business process optimization while improving the donor experience through...

- Paperless donor record
- Automated manufacturing records using handheld computing devices
- Streamlined process flows and reduction of manual verification steps thanks to software automation
- Labor optimization via paperless and process automation

#### Process improvements to enhance the donor experience

- New plasmapheresis device to decrease the donation cycle time and increase yield
- Donor screening devices that reduce cycle time and allow for automated data entry

# Leveraging Technology to Optimize Efficiencies

## Integrated Technology to Enhance Donor Experience



Information from nearly  
**1 million active donors**

**DONOR HUB**<sup>®</sup>  
Grifolplasma.com

Plasma-center personnel  
engage with donors  
Over **220K donors registered**  
in Donor Hub



**+13 million emails**  
**+100k text messages** and  
**push notifications** sent  
to donors



Automated **marketing**  
**campaigns** and **multiple**  
**digital and tech tools**

### Donor Segmentation



### Benefits

- More new donors
- Increasing plasma donations
- Loyalty and satisfaction
- Diversification
- Process efficiency
- Greater awareness and education
- Reliable and intuitive process

# Leveraging Technology to Optimize Efficiencies

## Process Enhancement

### One Grifols

- Grifols' own production anticoagulant sodium citrate is being rolled out in Grifols' plasma-center network
- Grifols 0.9% sodium chloride is being used in own plasma-centers network



### Fleet Management

- Plans to open concept centers in new areas in 2021 and beyond
- Establish Grifols' standards in acquired centers and increase average volume



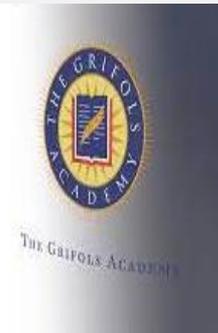
### Testing Optimization

- Grifols' lab testing capacity aligned to support growth (36M+ samples in 2023)
- All U.S. NAT test labs in GDS
- Efforts to optimize testing to increase yield (2ml/donation)
- Significant reduction test turn-around times (~48 hrs)



### Talent Development

- Academy continues to deliver virtual programs during Covid-19
- 300+ graduates from Academy's leadership development program
- 19,000+ eLearnings and 30,000 training hours since the establishment of the Academy (2009)



# Leveraging Technology to Optimize Efficiencies

## Digital Transformation

### Logistics Management System



- **New enhanced global plasma management system** to benefit all Grifols Plasma Logistics centers
- Process optimization and greater efficiencies by scaling it up across all centers

### Grifols Testing Lab System



- Consolidate all plasma laboratory screening processes into **one new corporate/global laboratory information management system**
- This global system will cover end-to-end plasma laboratory processes

### Grifols Navigation System



GRIFOLS  
NAVIGATION  
SYSTEM

- **Grifols' own donor center software** management system
- Manages donor center activities such as donor and unit suitability and shipments

### Artificial Intelligence

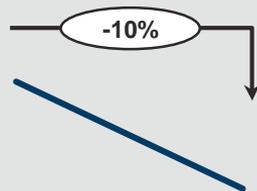


- **Establish optimal levels of commitment compensation** based on analytics and market environment
- Leveraging AI tools to set an adequate volume of plasma donations **to meet future demand**

# Leveraging Technology to Optimize Efficiencies

## Expected Improvements Derived From Business Optimization

### Qualified Donor Flow Time



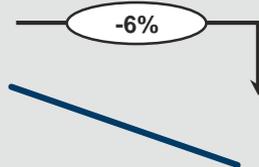
2019

2023

Qualified donor flow time expected to shorten as a result of new technology enhancements:

- Legacy **BECS** transitioned out
- Electronic System **Appointment**
- **Donor visibility** for upcoming donations

### Cost per Liter<sup>1</sup>



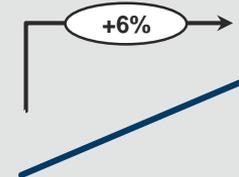
2019

2023

Effectiveness and efficiency initiatives have led to a **lower cost per liter** due to:

- Better balance of labor
- Efficiency gain in **donor registration process**
- **Paperless process**

### Average Liter per Center



2019

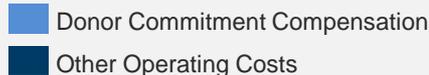
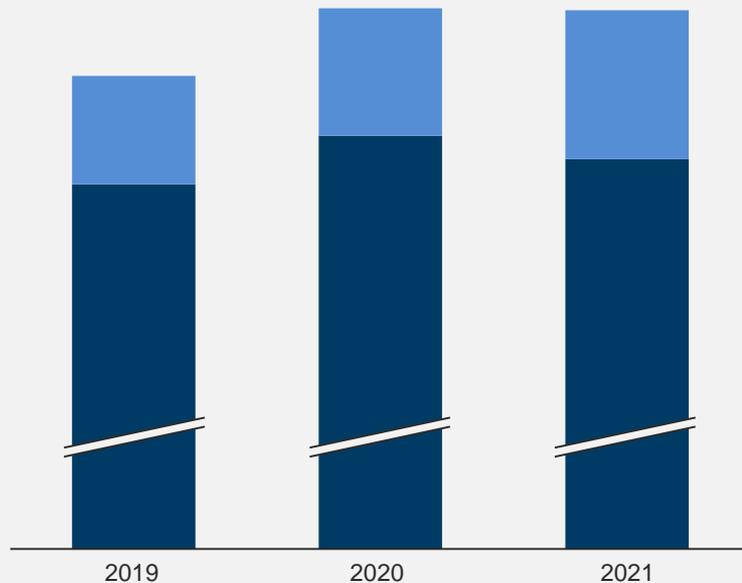
2023

Average liters of plasma per centers are increasing as a result of **technology** to capture **higher yield**

# Donor Commitment Compensation Impact

## Leveraging Other Costs

### Cost per Liter (CPL)



### Donor Commitment Compensation

Donor commitment compensation increased in 2020 to recognize donor loyalty, COVID-19 challenges and better compete in the current plasma market

Compensation increase does not imply the same increase on total cost due to the weight of different drivers

Donor commitment compensation represents ~25% of total CPL

Grifols leverages other costs in 2021 to partially offset the donor commitment compensation levels

2021

Investor &  
Analyst  
Day  
June 21

# 2

## Manufacturing

GRIFOLS

基立福

جريفولز

# Efficient Inventory Management Ensured Ongoing Operations

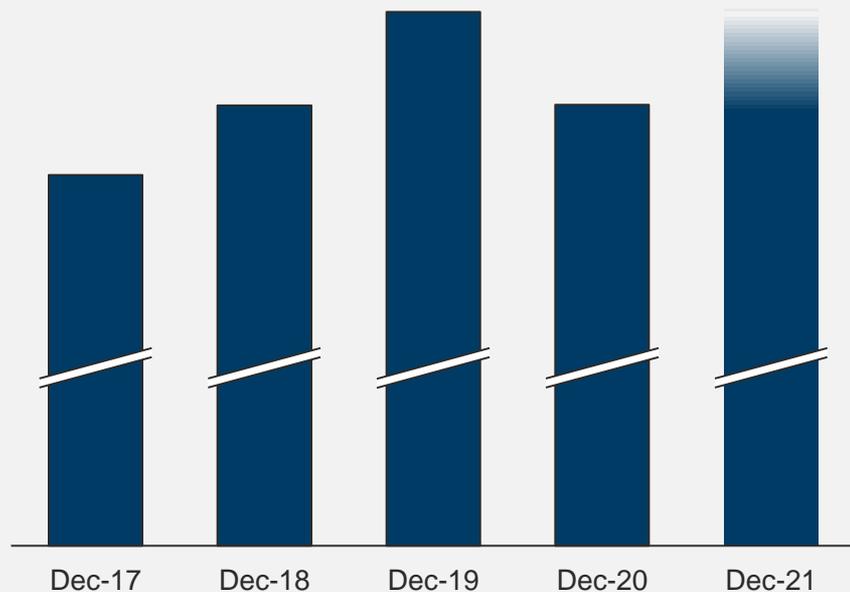
## Inventory Levels to Rebound in 2H 2021

Thanks to strong inventory management policies, Grifols was able to build a significant **stockpile of the main 4 proteins and plasma** over the last 4 years and partially offset the 2020 impact

This position ensures product delivery by enabling an **agile response to market variability** and uncertainties

**Inventory levels** are expected to grow **by the end of 2021**

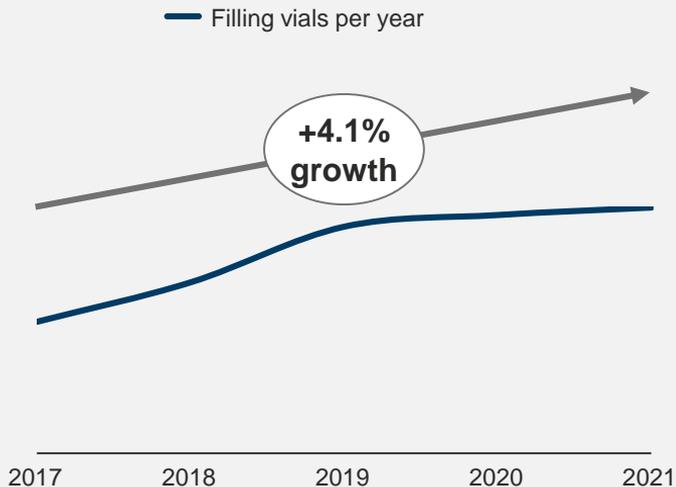
Total Inventory in Liters



# Strong Inventory Position and Efficient Supply Chain

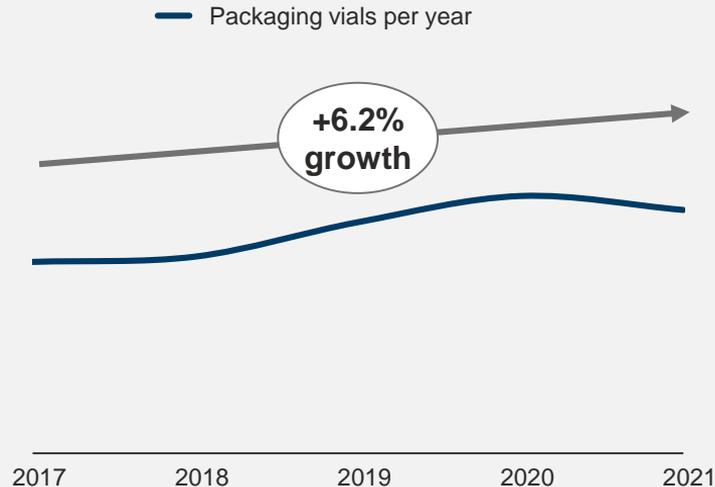
## Operations Supports Product Delivery

### Grifols' Filling Operations



- Filling vials per year has been on the rise since 2017
- This trend is evidence of the robust inventory management in place

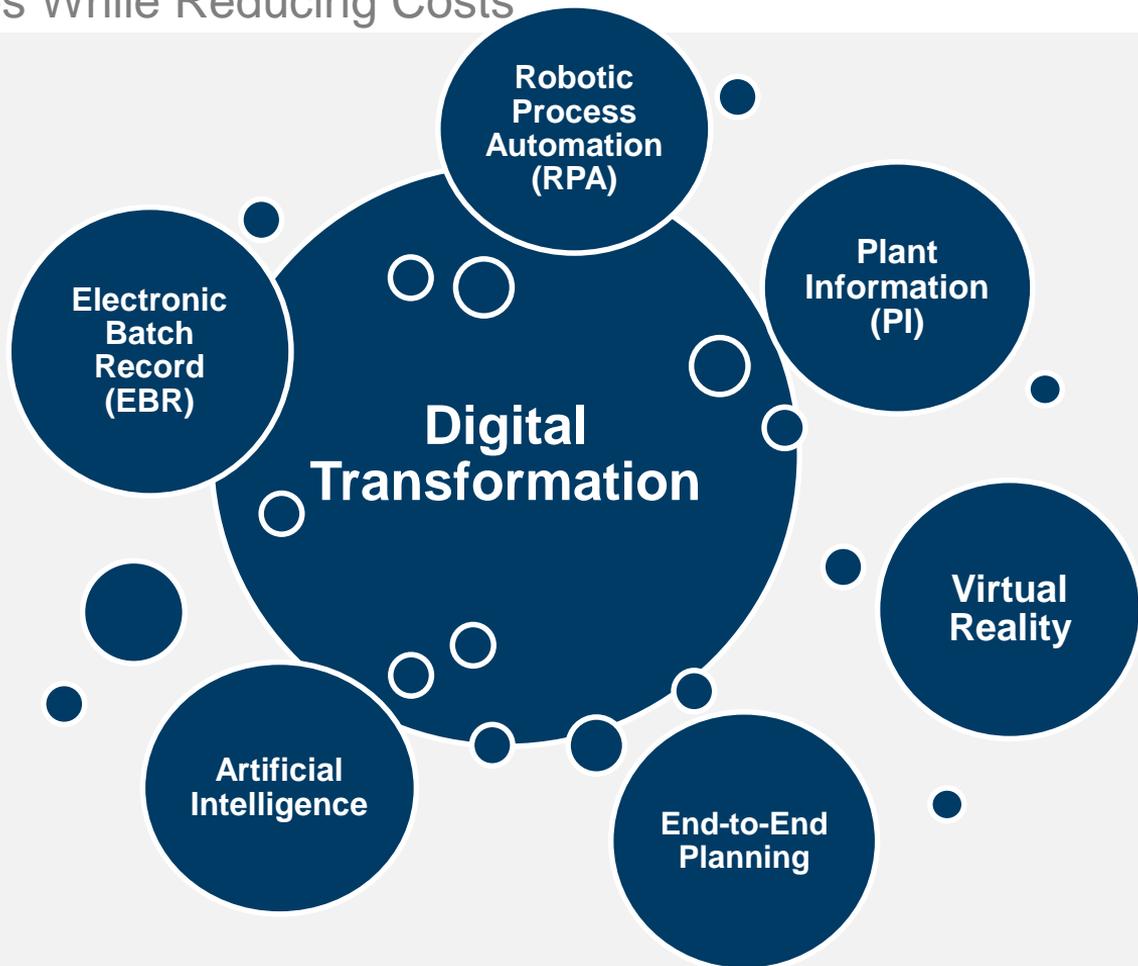
### Grifols' Packaging Operations



- Packaging vials per year has increased since 2017
- Trend continues to show strong growth

# Digital Transformation 2019-2023

Gaining Efficiencies While Reducing Costs



# Digital Transformation 2019-2023

## End-to-End Integrated Planning (E2E)

- Supply chain improvement through coordination and automation of the process

## Electronic Batch Record (EBR)

- Electronic batch record with workflow enforcement, electronic workflow for approval of batch documentation (paperless)

## Plant Information (PI)

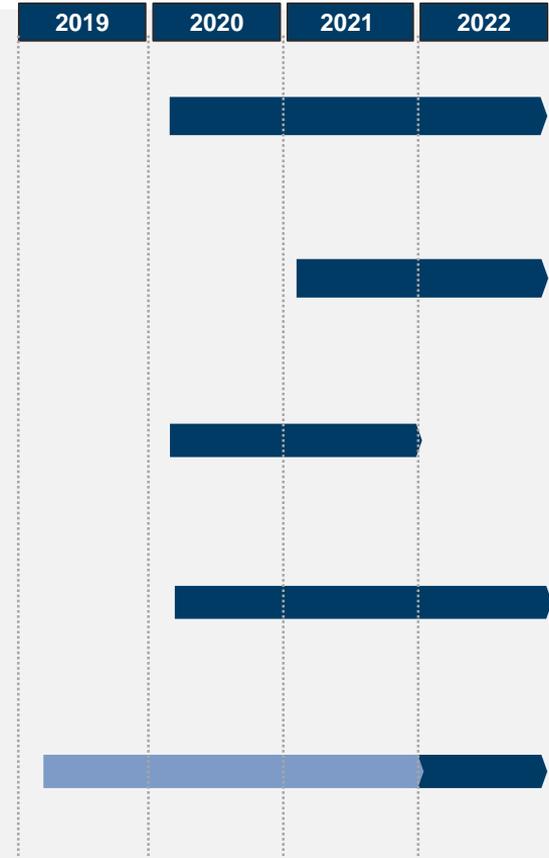
- Capture information across the whole site, real-time visibility across production lines

## Virtual Reality

- Virtual reality to support industrial processes including training and virtual tours

## Artificial Intelligence<sup>1</sup>

- Application of AI-based behavioral models and supercomputing designs to increase yield in all steps of downstream



<sup>1</sup>External support until 2021. To start developing internal functional capability in 2022

# Key Takeaways

## Accelerating the Execution of Our Expansion Plan

Grifols continues to reinforce its **global plasma-center network** to secure plasma supply and support **long-term sustainable growth**

Grifols advances **the execution of its plasma expansion and plan** through **diversified organic** and **inorganic growth**, as well as **optimized efficiencies**

**Business optimization thanks to technology** enhancements including **digitalization** and a **fully integrated supply chain**

**Innovation-led improvements** will drive growth of plasma supply

**Robust inventory management** has ensured essential product deliveries and greater efficiencies

**Solid recovery** expected throughout 2021

GRIFOLS

基立福

جريفولز

# Innovation Strategy

## Expanding Our Reach: Disease Management Beyond Plasma-Derived Therapies

*Albert Grífols Coma-Cros – Chief Scientific Innovation Officer*

*Karoly Nikolich – Alkahest's CEO*

*José Terencio – VP Innovation*

*Joana Sàbat – VP Bioscience Global Marketing*

*Antonio Martínez – President Diagnostic Scientific & R&D*

2021

Investor &  
Analyst  
Day  
June 21

1

# Accelerating Grifols' Innovation Through A New Leadership

GRIFOLS

基立福

جريفولز

# Expanding Grifols' Global Innovation Footprint

## Setting Three Large Hubs



### **i** Hub SF Area, CA

Emeryville,  
San Carlos &  
South San  
Francisco, CA  
Bioscience  
and Diagnostic

LA, San Diego,  
CA Bioscience  
and Diagnostic

### **i** Hub RTP, NC

Research  
Triangle Park,  
NC  
Bioscience

Dublin  
Bioscience

Andorra  
Immunology

Düdingen, Switzerland  
Diagnostic

### **i** Hub Europe

Barcelona, Bilbao and  
Zaragoza, Spain  
Bioscience and Diagnostic

**12**  
*R&D sites*

**1,100+**  
*employees*

**+30%**  
*investment*  
*last 3 years*



**€1,500M+**  
*investment over*  
*the last 5 years*

# Grifols' Therapeutic Areas and Platforms

## A Pioneering Ecosystem to Promote Knowledge and New Opportunities

### Therapeutic Areas

 <b>Neurology</b>	 <b>Infectious Diseases</b>
 <b>Immunology</b>	 <b>Hematology</b>
 <b>Hepatology &amp; Intensive Care</b>	 <b>Pulmonology</b>
	 <b>Ophthalmology</b>

### Platforms - Technologies

Plasma Proteomics, Fractionation & Purification	Immune repertoire capture and analysis
Single-cell transcriptomics	Machine learning for target discovery
Neuronal functional assay platform	Therapeutic target selection and validation
Mammalian cell line for site-directed integration	Polyclonal recombinant expression & manufacturing
Artificial Intelligence informatics	Antibody therapeutics

Small molecule therapeutics

### Innovation Ecosystem



# Scientific Innovation Office

Integrating Internal and External Innovation



**Albert Grífols Coma-Cros**  
**Chief Scientific Innovation Officer**



**Vicente Blanquer**  
**VP R&D &  
Regulatory affairs**



**Karoly Nikolich**  
**CEO Alkahest**



**José Terencio**  
**VP Innovation,  
Grifols Innovation  
and New  
Technologies  
(GIANT)**



**Eva Bastida**  
**VP Scientific &  
Medical Affairs**



**Matt Murawski**  
**VP Bioscience/  
Diagnostic  
Scientific  
Development**

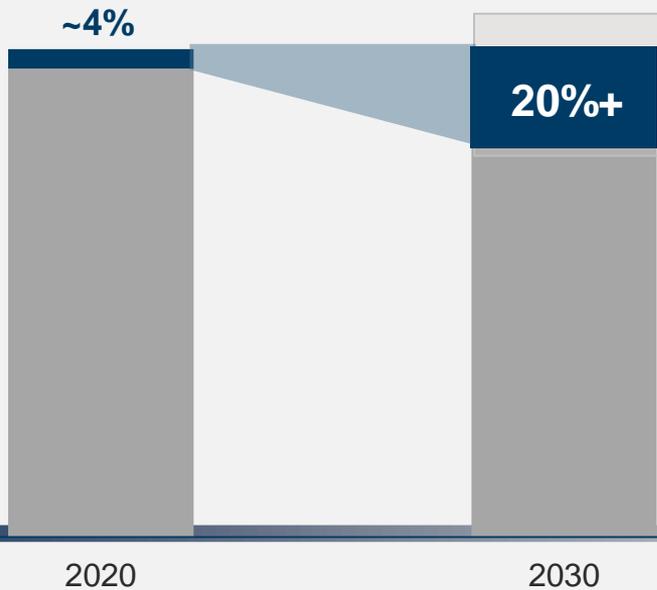


**Séamus McCooey**  
**Director Global  
Intellectual  
Property**

# Grifols' Innovation Ambition

## Sizable, Diversified, Steady Revenue Contribution

### Revenue from new product launches



Patient centricity



Focus on **therapeutic areas**



Progressively incorporating **non-plasma assets** to **balance** our **plasma portfolio**



Incorporation of **technological platforms** which create **synergies** accelerating internal R&D projects



Holistic approach combining both **internal and external capabilities**

and beyond

# Grifols' Innovation Ambition

Sizable, Diversified, Steady Revenue Contribution

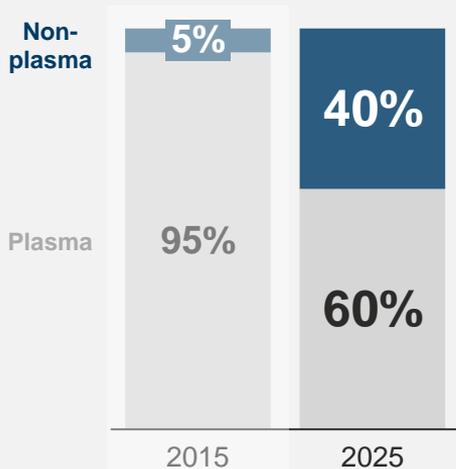
## By Product

### Guidance

Diversify in Non-plasma, while keeping Plasma in the core

- **Late-stage** assets synergistic with **commercial** capabilities
- **Early-stage** assets in winning platforms to build non-plasma capabilities

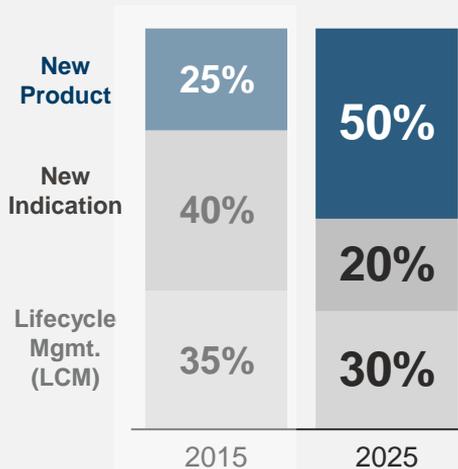
### R&D investment distribution (includes Internal & External)



## By Category

Accelerate investment in New Products and Indications

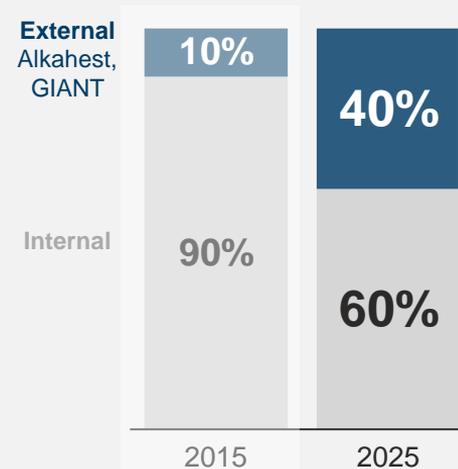
R&D to move focus from LCM to New Product/Indications



## By Source

Leverage External Innovation to build long-term capabilities in new fields (therapeutic areas, platforms)

- **Licensing in & licensing out**



# A Pipeline to Achieve a Risk-value Balanced Portfolio

## Delivering A Comprehensive Pipeline to Support Our Patients

	Discovery	Pre-Clinical	Phase 1	Phase 2	Phase 3	Phase 4 / Regulatory	LCM
 Immunology	2 GRI programs 1 GIGA program	rSCIG Spike in PdIG with enriched libraries (PID)		SCIG/IVIG SIDs-CLL	IVIG-PEG	Xembify® Europe Xembify® Bi-weekly dose	Xembify® Prefilled syringes
 Hepatology	2 GRI programs				Albumin 20% ACLF (APACHE) Albumin 5% Decompensated Cirrhosis (PRECIOSA)		FlexBag® US FlexBag® EUR
 Pulmonology		Alpha-1 AT Non-cystic fibrosis bronchiectasis		Alpha-1 AT 15% (SC) AAT deficiency		Prolastin-C® EUR (SPARTA)	Prolastin® EU 4-5gr vials
 Haematology	2 GRI programs	ATIII New indication Fibrinogen Acquired Deficiency			Fostamatinib*** AIHA indication Fibrinogen Congenital Deficiency and severe hypofibrinogen		
 Ophthalmology / Others	6 GRI programs 3 ALK programs 2 GIGA programs	GIGA 564 Anti-CTLA-4 Oncology		AKST4290 & DR	Fibrin Sealant Biosurgery pediatric Use		
 Infectious Diseases	4 GRI programs 2 GIGA programs	IgM Bacteremia HIV Antibody HIV** GIGA 2070 COVID-19	GIGA 2050 COVID-19				
 Neurology	3 GRI programs 5 ALK programs			GRF6019 AD GRF6021 PD with Dementia	ABvac40 AD AKST4290 PD		

# Caption



**Commercial**



**R&D**

2021

Investor &  
Analyst  
Day  
June 21



# 2

## Changing the Course in Neurology

GRIFOLS

基立福

جرىفولز

# Dementia: A Global Challenge, a Personal Reality

## Increasing Incidence of Dementia



**Dementia** involves loss of memory, language, problem-solving and other thinking abilities that are severe enough to **interfere with daily life**



“One of the **major challenges** of our generation”

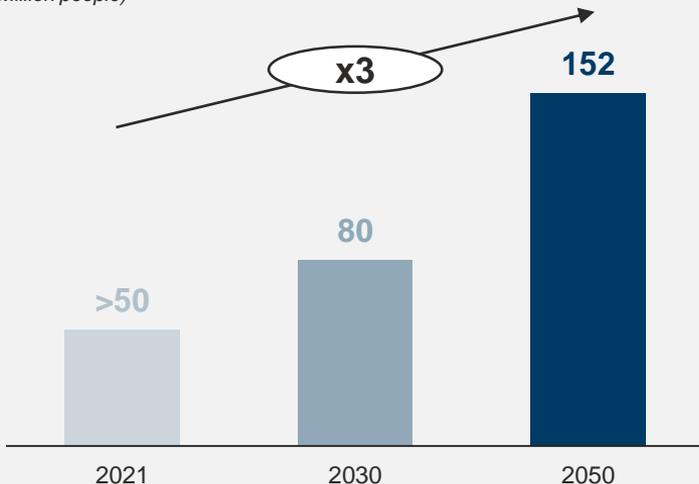


We are facing a global challenge **to find a cure, improve treatment**, and ensure enough resources to enable people to live well with dementia



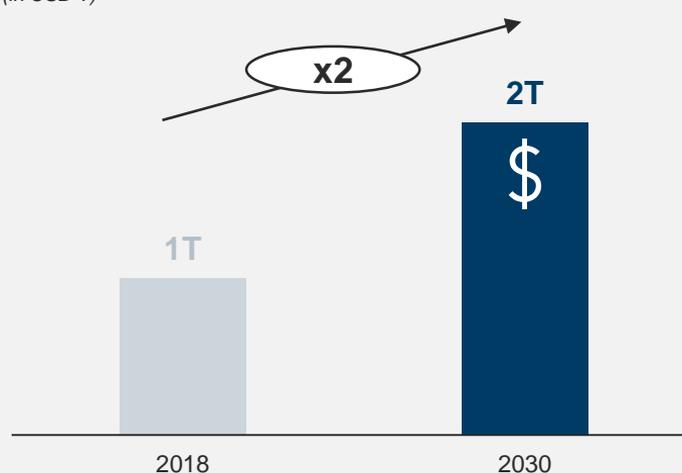
**Dementia Incidence Worldwide**

(in Million people)



**Dementia Total Costs**

(in USD T)



# Slowing Down Alzheimer's Progression: An Urgent Unmet Need

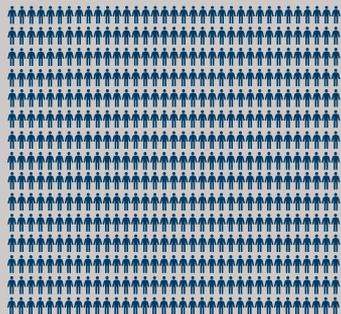
## 5<sup>th</sup> Leading Cause of Death in the World



- i** **Alzheimer's worsens over time.** It is a **progressive disease**, where dementia symptoms gradually worsen over a number of years
- !** **No current cure**, but treatments for symptoms are available and research continues

### Worldwide Prevalence

**>35 million**  
patients 



### % of Dementia Cases

Accounts for  
**60-70%**  
dementia  
cases



### By Age

Majority are  
**>65y/o**

but...

**200,000**   
 **<65 y/o have**  
**younger-onset**  
**AD**



### Mortality

**5<sup>th</sup>**  
leading cause  
of mortality



# Slowing Down Parkinson's Progression: An Urgent Unmet Need

## Seeking New Mechanisms and Agents Without Burdensome Side Effects



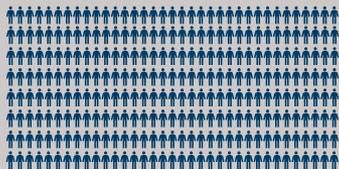
- i** **Parkinson Disease Dementia (PDD)** is a **complex neurodegenerative disorder** where each patient experience different combination of motor and non-motor symptoms
- !** **Current treatments address symptoms only** and late stage pipeline unlikely to change treatments algorithm

### Worldwide Prevalence

**>10 million**  
patients 

prevalence of dementia  
a in Parkinson Disease  
is close to

**30%**



### Increasing Trend

**Prevalence  
growing**

due to aging population  
and longer disease  
duration



### By Gender

**Men are  
more likely**  
to have PDD



**x1.5**

### Total Costs

**\$52 billion**  
**/year**

healthcare costs in  
the U.S.



# Holistic Approach to These Urgent Unmet Needs

## Our Innovation Strategy in Neurodegenerative Diseases (ND)



		Strategy Focus
	<b>Diseases</b>	Understanding the molecular basis of ND and those related with aging
	<b>Mechanism of Action (MoA)</b>	<p><b>Disease-modifying therapies</b></p> <p>VS.</p> <p><b>Treating symptoms</b></p>
	<b>Products</b>	Antibody, small molecules, RNA-based drugs, plasma-derived drugs, etc... to be developed according to the validated therapeutic target

# R&D Efforts Covering the Whole Development Path

## Our Innovation Strategy in Neurodegenerative Diseases (ND)



### Discovery

#### Plasma Proteome Chronokines

Understanding of **plasma at the molecular level** in healthy and disease states

#### Discovery of **Chronokines**

proteins with biological impact changing with age

**Expanding a pipeline** of therapeutic plasma fractions, small molecules, antibodies

Explore **therapeutic benefit** of plasma proteins in a wide range of CNS<sup>1</sup> disorders

### Clinical Development Programs

#### Plasma Fractions & Small Molecules

**GRF-6019**

**GRF-6021**

Proprietary plasma fraction inducing neurogenesis  
**2 clinical programs** in AD and PD patients with dementia in **phase II**

**ASKT-4290**

Small molecule, antagonist of CCR3  
in PD patients in **phase II**

#### Active Immunotherapy

**Aβvac40**

vaccine against Aβ40

Placebo-controlled **AB1601** trial in **120 very early AD and MCI<sup>2</sup>** patients in **phase II**



#### Two Pillar Strategy

**Plasmapheresis**  
+  
**Albumin replacement**

**Remove toxic moieties** from systemic and brain compartments

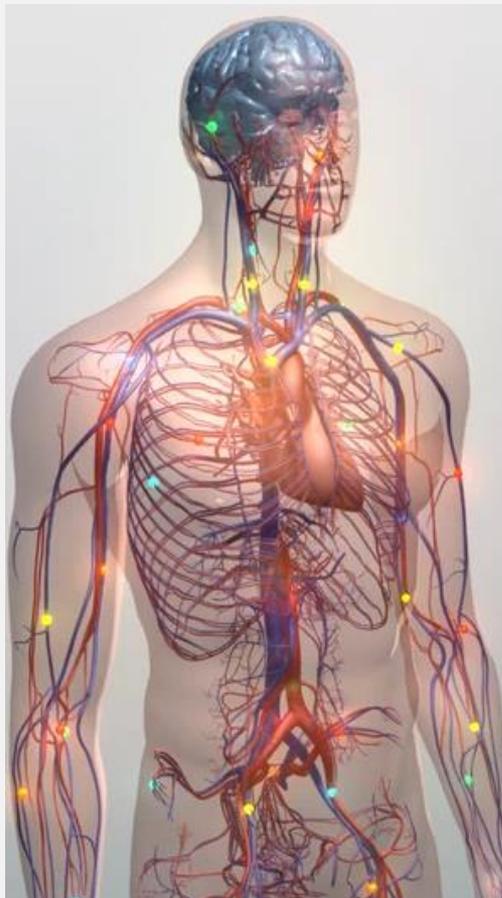
**Restore pharmacological properties** of Albumin

**Reference centers**

<sup>1</sup> Central Nervous System; <sup>2</sup> Mild Cognitive Impairment

# Plasma Is the Body's Highway of Communication

The Language of this Communication Encodes Health and Disease



The Balance in Plasma Proteins **Determines Growth, Tissue Homeostasis, Apoptosis**

We Apply **Rigorous, Innovative Science** to Derive **Breakthrough Therapeutics** from Plasma

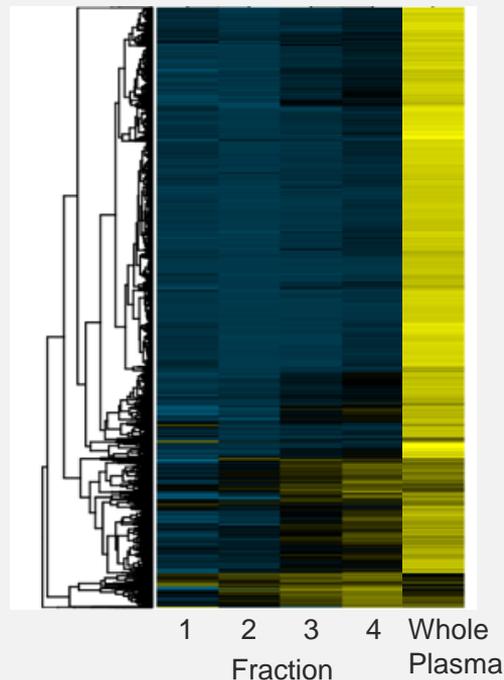
# Plasma Is a Rich Source of Proteins With Therapeutic Potential

## We Are “Molecularizing” Plasma



We identify proteins in plasma that **regulate vital functions in aging and disease**

We have gained an **unprecedented Understanding of Plasma Fractions**



# Our Research Platform

## Understanding Plasma at a Molecular Level



Platform

Protein Validation

Indication Specific Validation

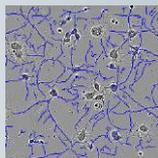
Cohort & Plasma Fraction proteomics



Single cell transcriptomics



Integration with AI and bioinformatics



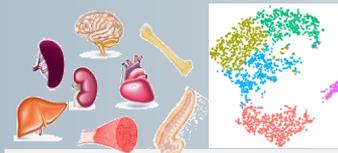
Neurology

Ophthalmology

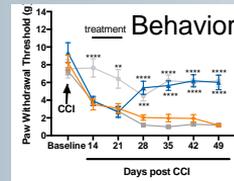
Frailty

Opportunistic

Cutting Edge Functional Readouts



Multi Organ MoA 'omics

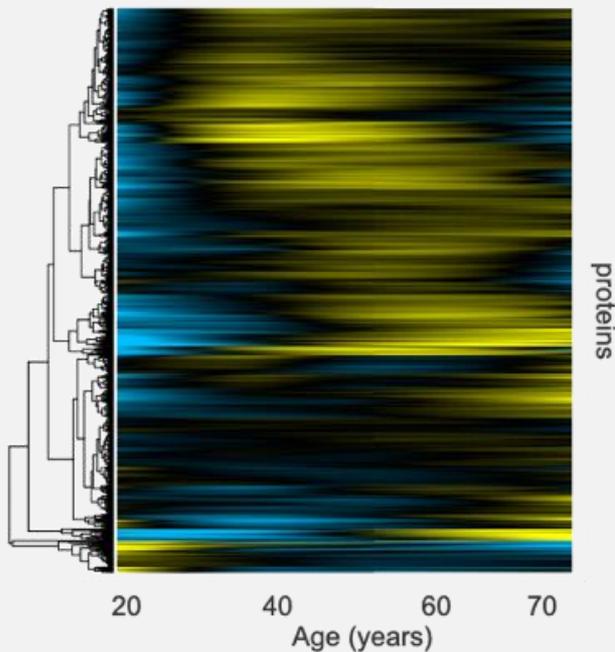


# Plasmatology

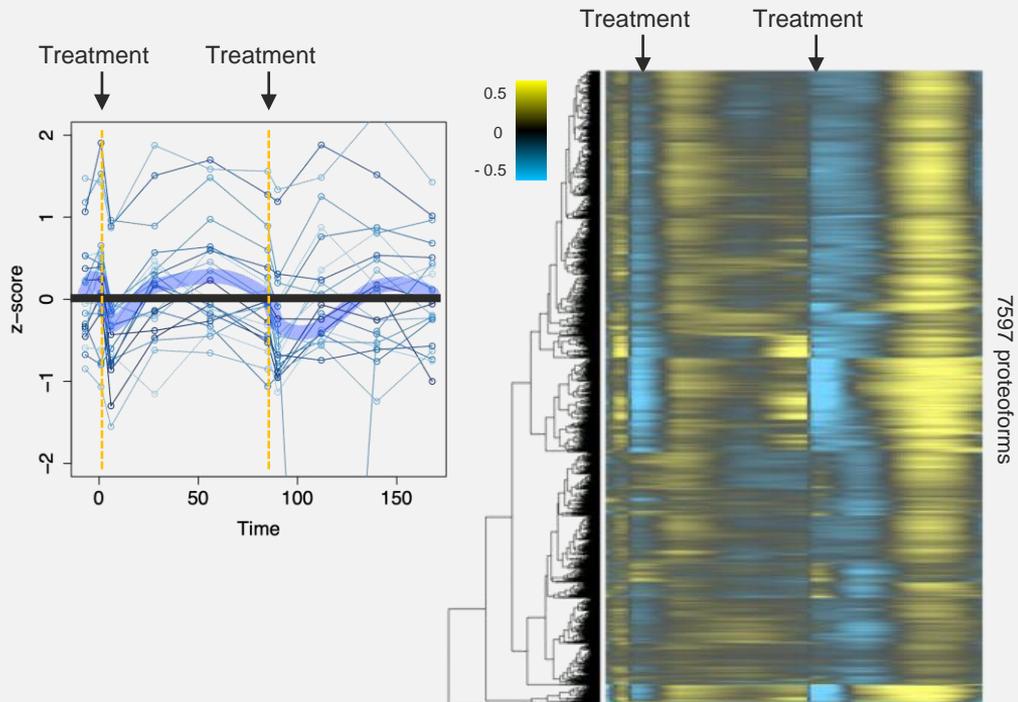
## Innovation From Deep Analysis of the Plasma Proteome



### 1000s of Proteins Across Aging & Diseases

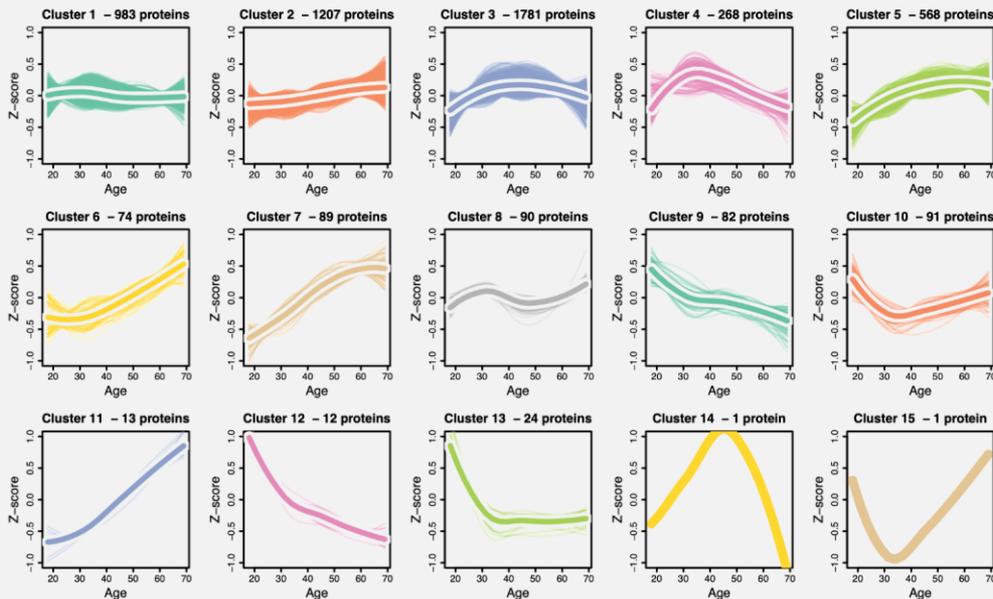


### Alzheimer's disease treatment with plasma protein fraction

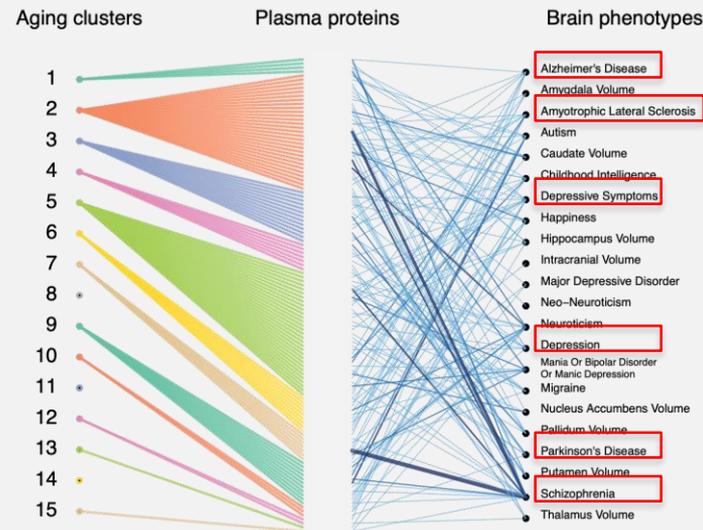


# Molecular Choreography of Aging and Disease

## Decoding Causal Relations of Disease Processes



### Associations with brain phenotypes





### Best-in-class Plasma Proteomics

Most extensive profiling (>10,000 proteins) of healthy aging and diseases

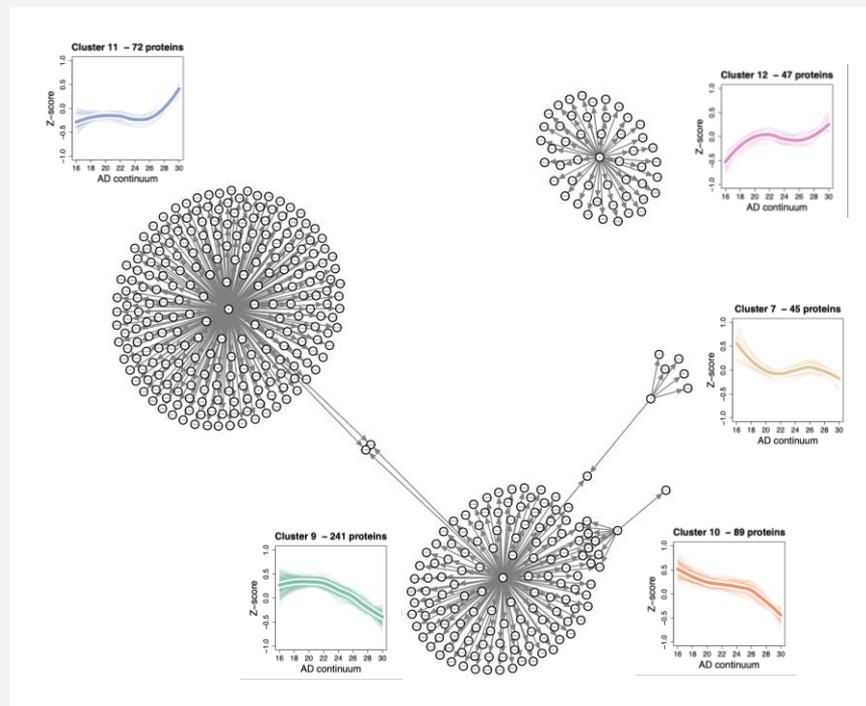
Mass spectrometry, multiple array technologies

### Plasma Fractions & Small Molecules

Differentiation between multiple diseases states (>60)

Increased interpretability of diseases by clustering

### Alzheimer's Disease Associated Proteins



# Plasma Fraction Improves Parkinson's Disease Dementia

## Novel Therapeutic Candidates From Plasma



### Study Design



- Dementia associated with Parkinson's disease
- **Randomized placebo-controlled** study
- **Two dosing periods** of Plasma protein fraction

### Results

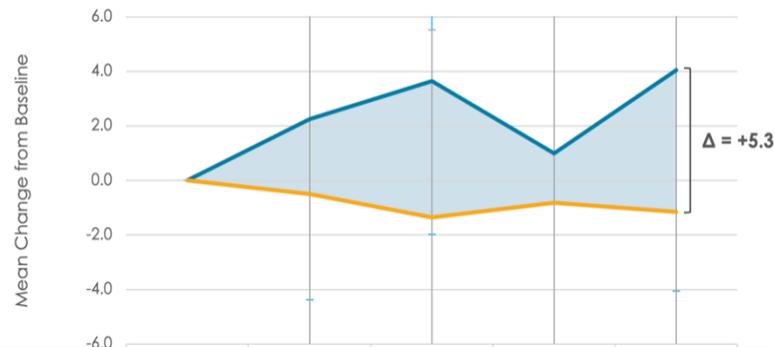
Cognitive functions **improved**

Statistically **meaningful differences** between Plasma Fraction and Placebo

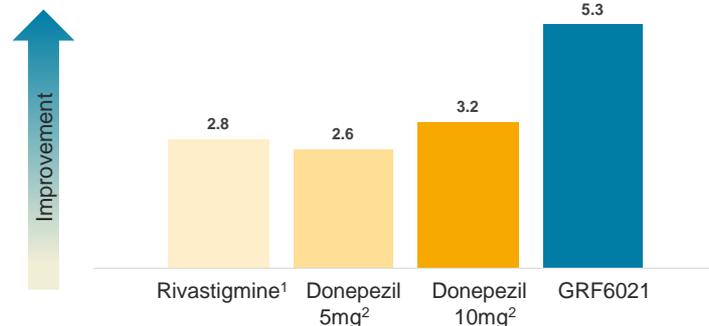
**Safety** and **tolerability** of dosing paradigm **favorable**

**Effect size superior** as compared with currently used cognitive enhancer agents

### GRF6021: D-KEFS Letter Fluency Improvement



### Superior Cognitive Effect to Standard of Care



# Plasma Fraction Improves Mild-to-Moderate Alzheimer's Disease

## Functional Improvements in Cognition and Daily Activities



### Study Design



- Mild to Moderate Alzheimer's Disease (MMSE 12-24)
- Two doses: **100mL and 250mL GRF6019**
- **Two dosing periods** of Plasma protein fraction

### Results

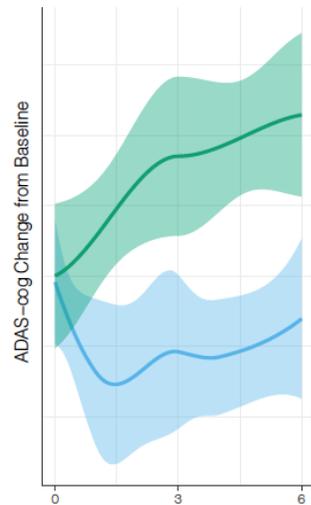
Cognitive and daily activity functions **improved**

**Safety and tolerability of two doses** (100mL and 250mL per day for 5 days) **favorable**

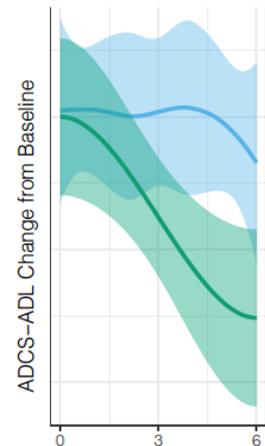
**Cognitive and functional improvements** supported by large number of preclinical mechanistic studies

**Additional placebo-controlled studies** will be required

**Analysis of plasma fractions ongoing**



- ADAS-cog 11 change from baseline
- Comparison to historic controls



- Activities of daily living (ADCS-ADL23) change from baseline
- Comparison to historic controls

# Moving Forward With the AMBAR Project

Plan to Open Reference Centers to Gather RWD<sup>1</sup> on Alzheimer's Disease



alzheimer  
management  
by albumin  
replacement



Based on **current AMBAR data of Plasmapheresis + Albumin replacement**

## Objectives



To implement current AMBAR treatment in selected centers



To create Real World Data (RWD) to produce Real World Evidence (RWE)



To test the model prior to a wider spread

## Sites



■ Site in operation ■ Next candidate countries

<sup>1</sup> Real World Data

2021

Investor &  
Analyst  
Day  
June 21

# Moving Forward With the AMBAR Project



**ace**  
alzheimer  
center  
BARCELONA

alzheimer  
management  
by albumin  
replacement



GRIFOLS

基立福

جريفولز

2021

Investor &  
Analyst  
Day  
June 21



# 3

## Advancing Care in Immunology

GRIFOLS

基立福

جرىفولز

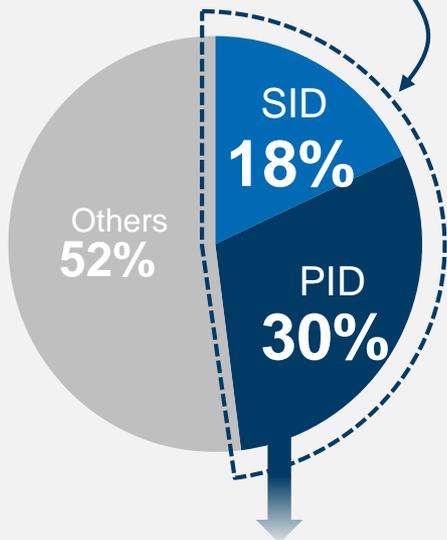
# Primary and Secondary Immunodeficiency Driving IG Demand

## IG Replacement Therapy as the Mainstay Treatment for PID and SID Patients



### IG Use by Indication

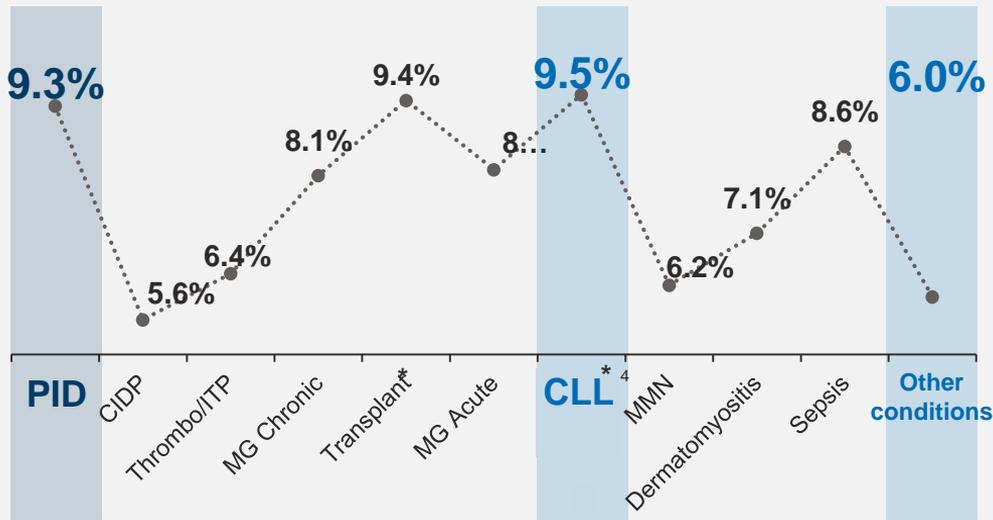
PID and SID make up **48% of IG usage**<sup>1</sup>



**Underdiagnosed by 50%**<sup>2</sup>

### 2018-2025 CAGR by Indication (IG volume)<sup>3</sup>

**Strong growth in PID/SID**, derived from **increasing awareness** and broader risk identification for **PID diagnosis** and new **SID indications**



\*SID to underlying disease or treatment

**<10% eligible CLL patients receive IG therapy**

# Expanding IG Replacement Therapy to Thousands of CLL Patients

## CLL is the Fastest Growing Patient Segment for IG Therapy



**HGG<sup>1</sup> occurs in up to 85% of patients with CLL** (due to malignancy itself and/or treatment)<sup>2,3</sup>



Associated with a **high rate of infections** that account for **>60% mortality**

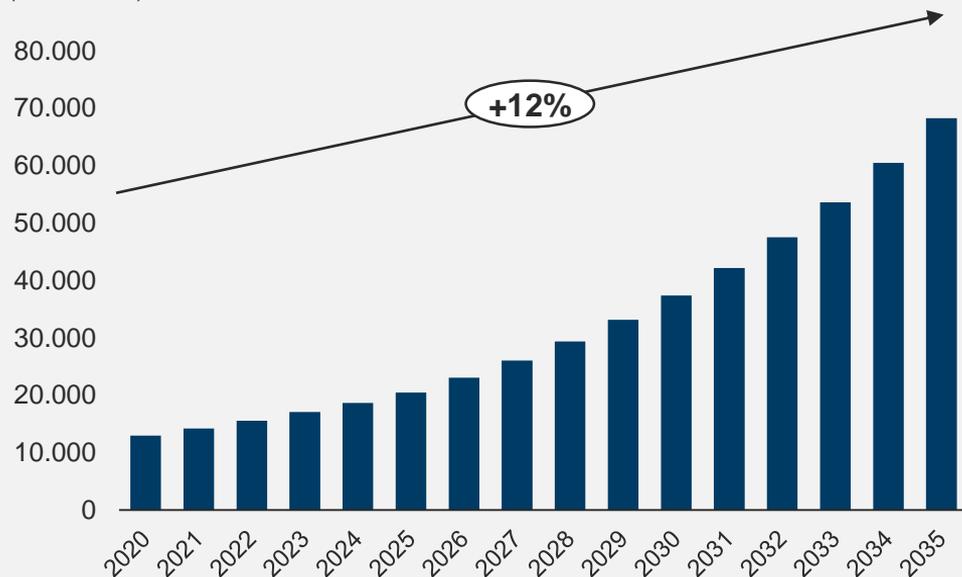
Program to include both IVIG and SCIG for CLL SID **U.S. indication. Unique for SCIG**

Opportunity to add clinical evidence to **differentiate IG portfolio** in markets with approved SID indications

Expected launch: **2026**

### U.S. CLL Patients Forecast <sup>4</sup>

(in Thousands)



**CLL patients prescribed IG therapy expected to grow significantly**

# High Market Potential for Gamunex® and Xembify® in CLL

## Offering CLL Patients Flexibility in Site of Care



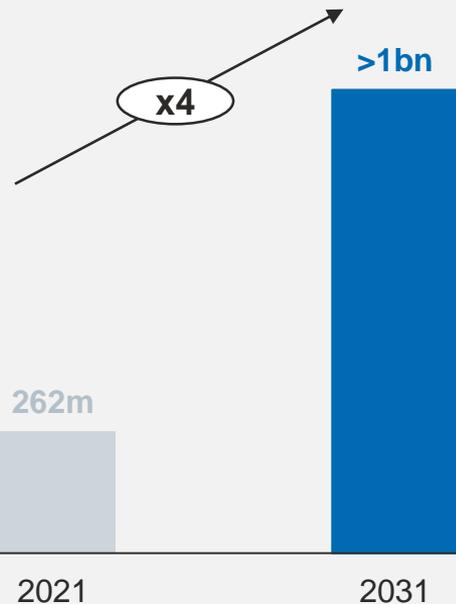
### Leukemia Cases

U.S. Leukemia Prevalence  
**376,508**



(in €)

### U.S. CLL IG Market Potential



# Improving Flexibility and Convenience

## Offering a Better Home Treatment Experience



### Xembify® Pre-filled Syringes

- ✓ Ideal for **self-administration** (manual push) and **compatible with infusion pumps**
- ✓ **Ease of use** and **time-saving** process
- ✓ **Accurate** pre-measured dosing
- ✓ Potentially helping to **reduce medication errors**
- ✓ **Reduces** medical supply **waste**

Expected launch: **2023**



### Xembify® Biweekly Dosing

- ✓ Adds **flexibility** with new dosing regimen option
- ✓ **Faster** infusion rate (60ml/h)
- ✓ Opportunity to **individualize** dosing frequency
- ✓ Potential improvement in patient **quality of life**

Expected launch: **2024**



Offering broader administration options provides a greater opportunity for treatment satisfaction and patient empowerment, which may support high levels of patient compliance

# Advancing Towards Cutting-Edge Delivery Systems

## Smart Pump System

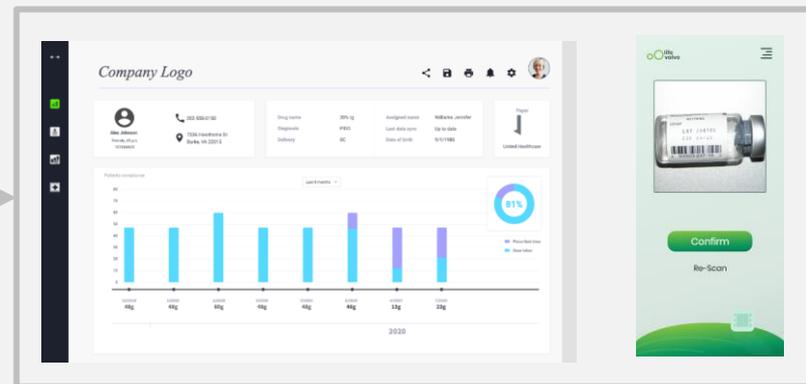


✓ Improving IVIG & SCIG **home infusion** treatment experience

✓ **Simplify** the infusion process, **improve** ease of use, and **add mobility/freedom**

✓ Bluetooth connectivity to an **app/dashboard**

✓ **Superior features** over disposable wearable devices



Expected launch: **2023**

**Opportunity to leverage digital health platform to improve patient outcomes**

2021

Investor &  
Analyst  
Day  
June 21



# 4

## Shaping Cirrhosis Management in Hepatology

GRIFOLS

基立福

جرىفولز

# Combination of Acute Treatment and Long-Term Albumin Use

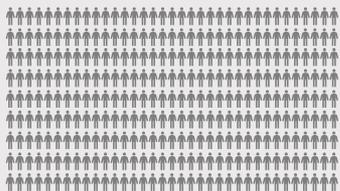
## Our Cirrhosis Management Perspective



### Decompensated Cirrhosis

High prevalence

>14.5 million patients<sup>1</sup>



Quality of life is often poor



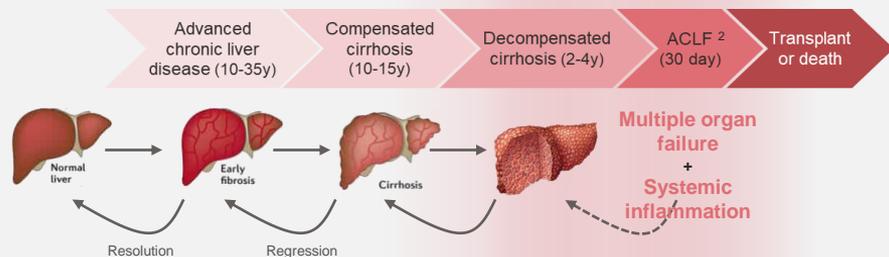
High burden for patients, caregivers and society

Total Costs

>\$9.5 billion /year in the U.S.<sup>3</sup>



Liver transplant is the only procedure available today to avoid further complications and death



Grifols extensive research and clinical program with innovative Albumin treatment approaches offers opportunities to patients by slowing disease progression and bridging for liver transplant

<sup>1</sup> Internal estimates; <sup>2</sup> Acute on chronic liver failure; <sup>3</sup> Volk et al. Hepatol. Comm. VOL. 4, NO. 8, 2020

# Shaping the Future of Albumin

## Our Innovation Strategy in Hepatology



### Albumin

**Most abundant** protein in the body



**Focus of investigation**

for more than **15 years**

### Clinical & non-clinical program

to understand **Albumin's role** in health and disease



these investigations...



Concept of **albumin as a pharmaceutical with a multifactorial Mechanism of Action**

*(focusing in hepatology and other diseases like Alzheimer)*

## Key discoveries in understanding Albumin's therapeutical potential

Albumin is widely used as a volume replacement/expander fluid as a volume replacement/expander fluid<sup>1</sup>

Albumin is shown to be altered in disease<sup>2,3</sup>

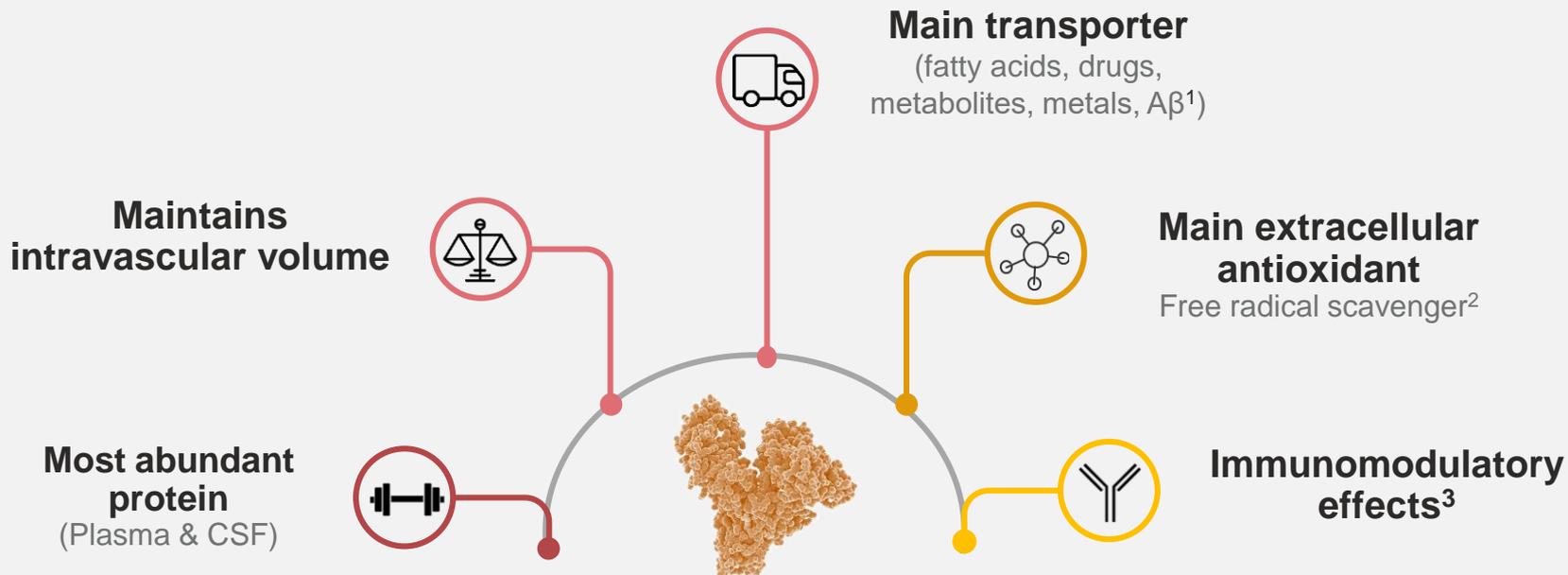
Albumin infusion shows clinical improvement in decompensated cirrhosis<sup>4</sup>

Plasma Protein Replacement with albumin may provide benefits across different diseases<sup>5,6</sup>

Investigations into albumin's potential use as a drug in complex diseases are underway

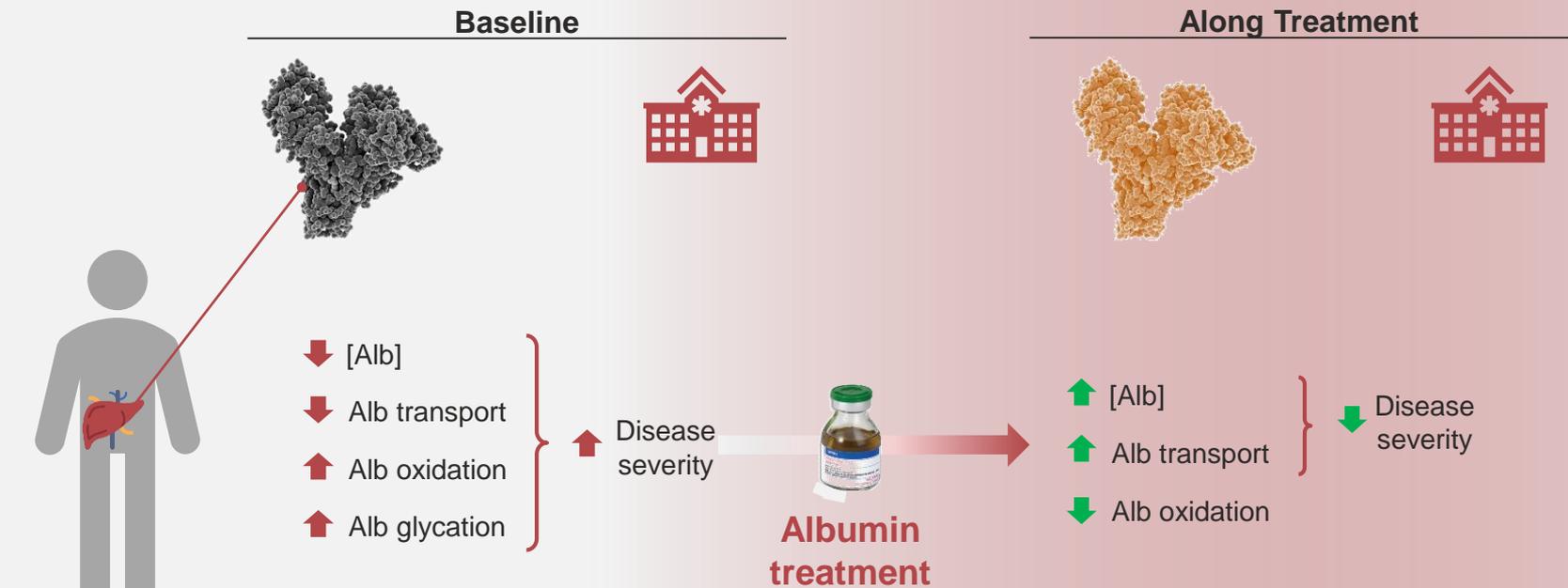
# Exploring the Full Potential of Albumin

## More Than Just a Volume Expander



# Albumin Acts as a Multi-Target Disease-Modifying Agent

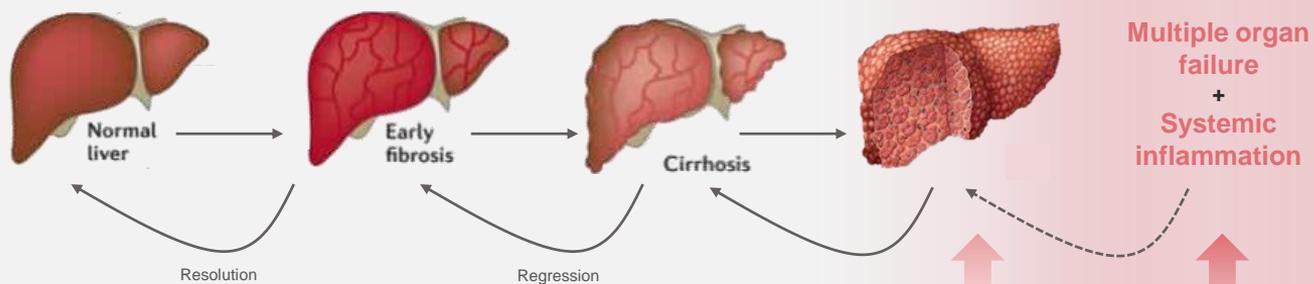
## Its Function Correlates With Clinical Outcomes in Advanced Cirrhosis



\* Decompensated Cirrhosis & ACLF

# Extensive Clinical Program

## Albumin Treatment at Different Stages of Cirrhosis



**preciosa**  
LTA<sup>1</sup> with Albumin 20% (hyperoncotic)

**aladdin**  
**apache** Translational research  
Plasma Protein Replacement plus Albumin 5%

<sup>1</sup> Long-Term Albumin Use

# PRECIOSA Study: LTA Admin. to Revert Cirrhosis Progression

## Prevention of Mortality in Subjects With Decompensated Cirrhosis and Ascites



### Centers and Countries

~40 participating centers



### Status (Apr 2021)

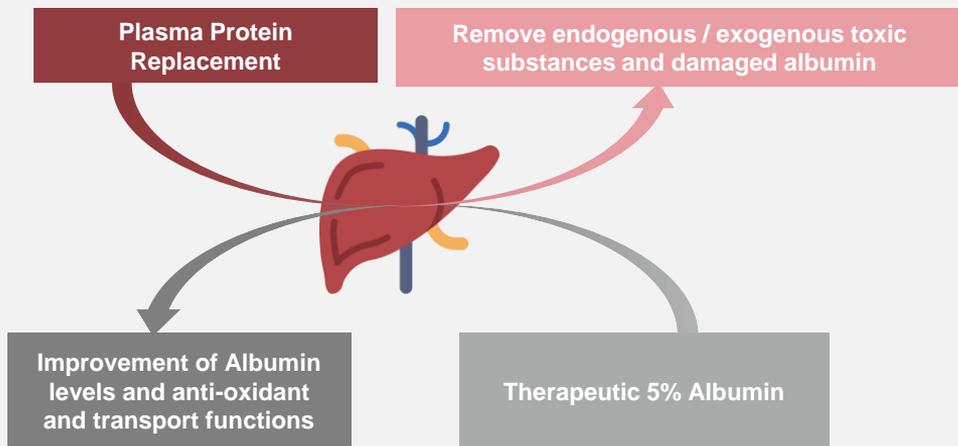
- Est. study end (LPLV): Q1 2023
- Recruitment update: 129 subjects randomized (31%)

# APACHE Study: Bridging Therapy to Liver Transplant

## ALADDIN Study: Understanding Disease Pathogenesis and PE-A 5% MoA



Effects of Plasma Protein Replacement with Human Serum Albumin 5% (PE-A 5%) on Short-term Survival in Subjects with "Acute-On-Chronic Liver Failure" (ACLF) at High Risk of Hospital Mortality



Design	Centers	Status (Apr 2021)
Ph3, 1:1 randomized, multicenter, open label enrolling 380 ACLF subjects (90 days FU): SMT vs SMT + PE A-5%	40 centers from US and 8 EU countries	<ul style="list-style-type: none"> <li>Est. study end (LPLV): 2Q 2022</li> <li>Recruitment update: 109 subjects randomized (29%)</li> </ul>



Translational research project supporting Apache, aim to provide key insights on ACLF and Albumin MoA



Mechanism of systemic inflammation, organ failure and ACLF in cirrhosis

PE A-5% mechanism of action in ACLF

*N = 250 patients from EU participating in APACHE (59 randomized (24%), April 2021)*

# Capturing the Opportunity in Cirrhosis

## Long-Term Albumin Use



**2 out of 3 HCP<sup>1</sup>**

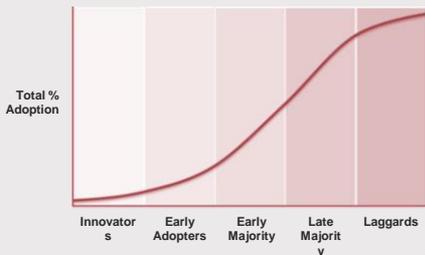
likely to **prescribe LTA** to prevent decompensations according to ANSWER study data (Market research 2020)



Improved overall **survival by +38%**

Reduced cost of hospitalization

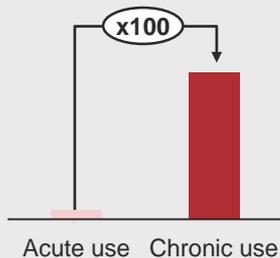
Positive impact on quality of life



**Progressive adoption** expected as **new evidence is provided**



**x100 higher albumin consumption** with Preciosa Protocol compared to acute uses



## Global Opportunity

**>14.5 million** patients



**8-10% target** target population<sup>2</sup>



If **ONLY 10%** of patients were treated based on **PRECIOSA** protocol

**>€400 million**

**+15%** of current **Albumin** market

<sup>1</sup> Healthcare Practitioners; <sup>2</sup> Decompensated cirrhosis with ascites and treated by specialist excluding 20% of patients receiving HCV treatment

2021

Investor &  
Analyst  
Day  
June 21



# 5

## Thriving Against Infectious Diseases

GRIFOLS

基立福

جرىفولز

# Leverage Our Learnings From Prior Efforts

## Permanent Threat of Emerging Pathogens Calls for Developing New Therapies



### Emerging Infectious Diseases (EID)

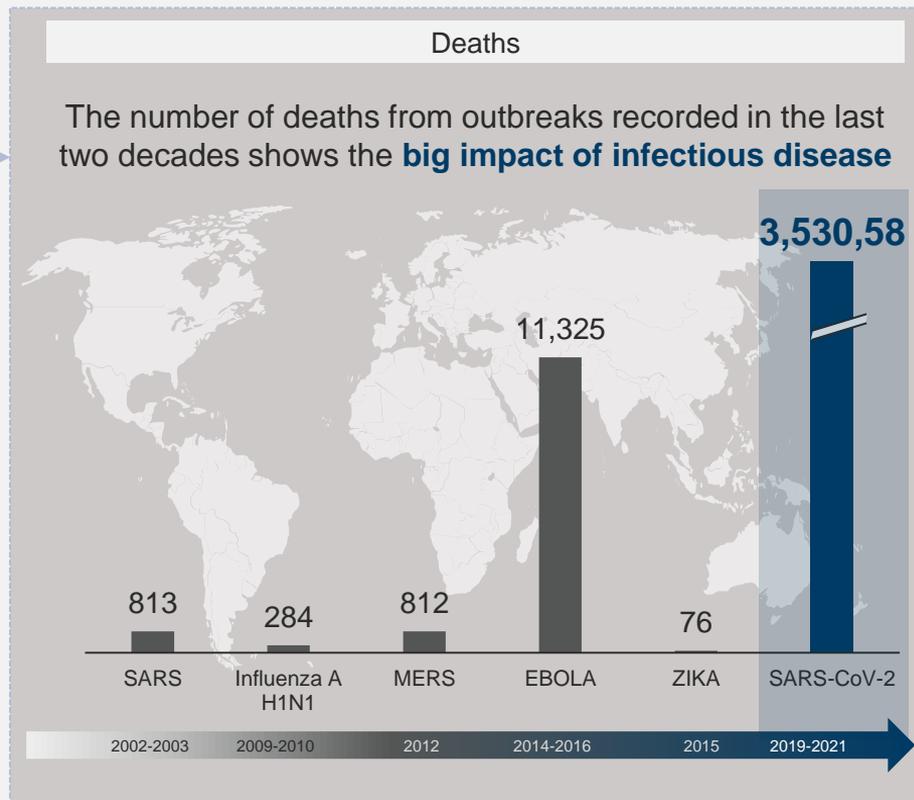


Issue of **global concern** as incidence has increased dramatically in recent years



**Transmission and spread at an unprecedented speed** influenced by human-related factors<sup>1</sup>

- Globalization
- Climate change
- Human-wild animal interface
- Antimicrobial resistance
- Host susceptibility
- Behavior changes



<sup>1</sup>Journal of Physiological Anthropology volume 39, Article number: 29 (2020); <sup>2</sup>[https://www.who.int/csr/sars/country/2003\\_07\\_11/en/](https://www.who.int/csr/sars/country/2003_07_11/en/); <sup>3</sup>The Lancet Infectious Diseases, 12(9), 687-695. doi:10.1016/S1473-3099(12)70121-4; <sup>4</sup><https://www.ecdc.europa.eu/en/middle-east-respiratory-syndrome-coronavirus-mers-cov-situation-update>; <sup>5</sup><https://www.cdc.gov/vhf/ebola/history/2014-2016-outbreak/index.html>; <sup>6</sup>[https://apps.who.int/iris/bitstream/handle/10665/204348/zikasitrep\\_5Feb2016\\_eng.pdf?jsessionid=2E8C110C039D151C1EE6B384A9F064A8?sequence=1](https://apps.who.int/iris/bitstream/handle/10665/204348/zikasitrep_5Feb2016_eng.pdf?jsessionid=2E8C110C039D151C1EE6B384A9F064A8?sequence=1); <sup>7</sup>WHO

# Plasma and Recombinant Polyclonal Immunoglobulins Platforms

## Our Innovation Strategy in Infectious Diseases: Passive Immunization



Address diseases caused by unmet and emergent pathogens



Focus on **development of products to boost the immune system**



Technological platforms

2

1

**Plasma** polyclonal hyperimmunes from convalescent or vaccinated donors

**2 (IV and SC) Anti-COVID-19**  
to be used in **prophylaxis** or **early diagnosed patients**

2

**Recombinant** polyclonal hyperimmunes using GigaGen technology

**GIGA-2050 Anti-COVID-19**  
first polyclonal recombinant hyperimmune to be **tested in humans**

# Plasma Polyclonal Hyperimmunes Platform: Anti-COVID-19

Leveraging Our Capabilities to Fight Against an Emergent Pathogen



## 10% Hyperimmune globulin **IV**

### INSIGHT 012/OTAC

Study to evaluate its Safety and Efficacy in **non-hospitalized patients** with COVID-19

#### Target population



**Non-hospitalized patients age  $\geq 55$**   
with COVID-19 who have had COVID-19  
**symptoms  $\leq 5$  days**

## 20% Hyperimmune globulin **SC**

### C19-IG

Study to evaluate the safety and efficacy in **infected asymptomatic ambulatory outpatients**

#### Target population

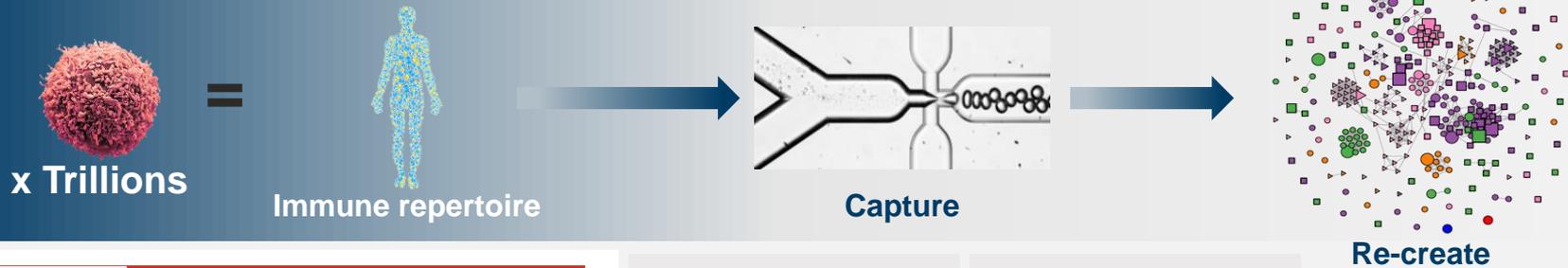


**Ambulatory Asymptomatic patients**  
with confirmed SARS-CoV-2 infection

Platform built from our vast experience in developing immunoglobulins from selected donors against specific pathogens

# Recombinant and Polyclonal Hyperimmunes: GigaGen Platform

## Boost a Novel Method to Generate a Wide Range of Immunoglobulins



nature  
biotechnology

ARTICLES

<https://doi.org/10.1038/s41587-021-00894-8>

Check for updates

### Generation of recombinant hyperimmune globulins from diverse B-cell repertoires

Sheila M. Keating<sup>1,15</sup>, Rena A. Mizrahi<sup>1,15</sup>, Matthew S. Adams<sup>1,14</sup>, Michael A. Asensio<sup>1</sup>, Emily Benzie<sup>1</sup>, Kyle P. Carter<sup>1</sup>, Yao Chiang<sup>1</sup>, Robert C. Edgar<sup>1</sup>, Bishal K. Gautam<sup>1</sup>, Ashley Gras<sup>1</sup>, Jackson Leong<sup>1</sup>, Renee Leong<sup>1</sup>, Yoong Wearn Lim<sup>1</sup>, Vishal A. Manickam<sup>1</sup>, Angelica V. Medina-Cucurella<sup>1</sup>, Ariel R. Niedecken<sup>1</sup>, Jasmeen Saini<sup>1</sup>, Jan Fredrik Simons<sup>1</sup>, Matthew J. Spindler<sup>1</sup>, Kacy Stadtmiller<sup>1</sup>, Brendan Tinsley<sup>1</sup>, Ellen K. Wagner<sup>1</sup>, Nicholas Wayham<sup>1</sup>, LaRee Tracy<sup>2</sup>, Carina Vingsbo Lundberg<sup>3</sup>, Dirk Büsscher<sup>4</sup>, Jose Vicente Terencio<sup>4</sup>, Lucy Roalfe<sup>5</sup>, Emma Pearce<sup>5</sup>, Hayley Richardson<sup>5</sup>, David Goldblatt<sup>6</sup>, Anushka T. Ramjag<sup>6</sup>, Christine V. F. Carrington<sup>6</sup>, Graham Simmons<sup>7</sup>, Marcus O. Muench<sup>7</sup>, Steven M. Chamow<sup>8</sup>, Bryan Monroe<sup>8</sup>, Charles Olson<sup>8</sup>, Thomas H. Oguin<sup>8</sup>, Heather Lynch<sup>9</sup>, Robert Jeanfreau<sup>10</sup>, Rachel A. Mosher<sup>11</sup>, Matthew J. Walch<sup>11</sup>, Christopher R. Bartley<sup>11</sup>, Carl A. Ross<sup>11</sup>, Everett H. Meyer<sup>12,13</sup>, Adam S. Adler<sup>14</sup> and David S. Johnson<sup>1,15</sup>

Plasma-derived polyclonal antibody therapeutics, such as intravenous immunoglobulin, have multiple drawbacks, including low potency, impurities, insufficient supply and batch-to-batch variation. Here we describe a microfluidics and molecular genomics strategy for capturing diverse mammalian antibody repertoires to create recombinant multivalent hyperimmune globulins. Our method generates diverse mixtures of thousands of recombinant antibodies, enriched for specificity and activity against therapeutic targets. Each hyperimmune globulin product comprised thousands to tens of thousands of antibodies derived from convalescent or vaccinated human donors or from immunized mice. Using this approach, we generated hyperimmune globulins with potent neutralizing activity against severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) in under 3 months, Fc-engineered hyperimmune globulins specific for Zika virus that lacked antibody-dependent enhancement of disease, and hyperimmune globulins specific for lung pathogens present in patients with primary immune deficiency. To address the limitations of rabbit-derived anti-thymocyte globulin, we generated a recombinant human version and demonstrated its efficacy in mice against graft-versus-host disease.

Patented microfluidics, molecular biology, and cell engineering processes

Unlimited quantities of the new class of therapeutic can be made from a few donors with potent antibody responses

Donors can be humanized mice, vaccinated donors, or convalescent donors

Antibodies can be engineered for high potency, immune effector activity, long half-life

# GIGA-2050 Allows Clinical Validation of the GigaGen Platform

>12,000 Anti-Coronavirus Antibodies Captured From 16 Convalescent Donors



Manufacture as a recombinant monoclonal antibody (rMAB), regulatory framework generally followed standard rMAB

Acute monkey toxicity study showed **no drug-related events at the highest dose tested** (475 mg drug / kg body weight)

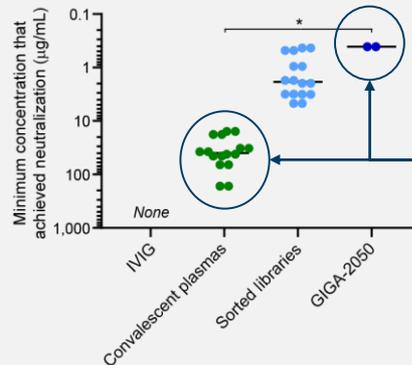
IND reviewed by FDA with no clinical holds

First dose in Phase I clinical study: enrollment ongoing

## Enrichment for neutralizing antibodies

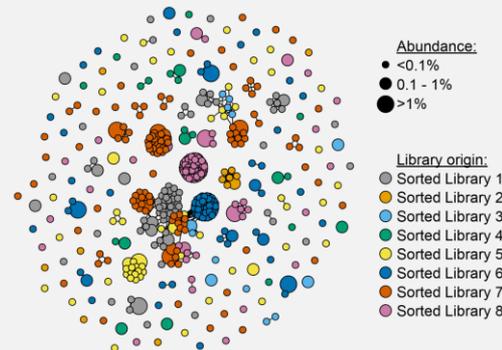
Sorting for binders to SARS-CoV-2 RBD, and removing antibodies that don't bind, reduces diversity but enriches neutralizing titer

## Live SARS-CoV-2 Virus Neutralization



Drug product has **100-fold higher potency than convalescent plasma** from the same donors

## Clustergram of Antibody Sequence Diversity



# Grifols, in the Fight Against Pandemic

## Commitment With Society and the World, Preparing for Future Challenges



as **vaccination progresses**  
number of **COVID-19 new cases** is expected to  
be **significantly reduced**  
in developed economies with massive access to vaccines



Vaccination is still  
well **below**  
herd immunity targets  
(25% of US population  
won't be vaccinated\*)



   
**>14 million**  
new COVID-19 cases  
in 2022

**Grifols is committed to  
society to keep working  
to bring new therapies**

**Not all** countries have **broad access to vaccines**  
**COVID-19 is devastating** in countries like **India**



**New variants**  
that might become **resistant to vaccines**

2021

Investor &  
Analyst  
Day  
June 21



# 6

## Ophthalmology: Expanding Into a New Therapeutic Space

GRIFOLS

基立福

جرىفولز

# New Avenues for Research in nAMD and Diabetic Retinopathy

## Entering Into a New Therapeutic Space



### Neovascular Age-Related Macular Degeneration (nAMD)



**Leading cause of blindness**



aged >60



Current treatment: *Intra-Vitreal Injections (IVT)*

**Expensive & burdensome**



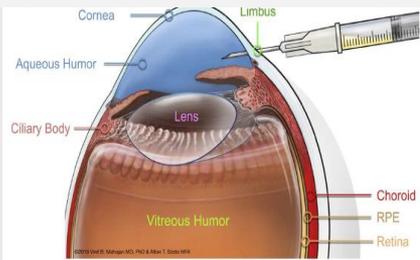
### Significant challenges

- ① Treatment cost
- ② Not all patients respond to treatment
- ③ Frequent office visits
- ④ Poor adherence due to complex drug regimens



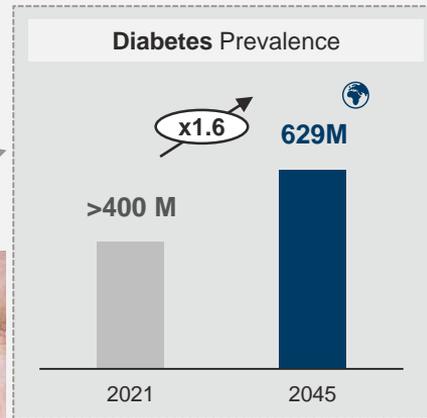
**Outcomes are well below RCTs<sup>1</sup>**

in real world practice



### Diabetic Retinopathy (DR)<sup>2</sup>

**Most common microvascular complication of Diabetes**



**3.2 million** **estimated to be visually impaired**  
as a consequence of DR



**Early detection and treatment**



**prevent 50%- 70%**  
of its associated blindness

<sup>1</sup> Randomized Controlled Trial; <sup>2</sup> Joseph M. Coney, MD Am J Manag Care. 2019;25:S311-S316

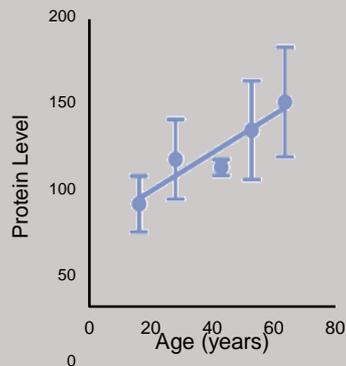
# AKST4290: Blocking Eotaxin-Mediated Inflammation

## Potent CCR3 Inhibitor for Multiple Therapeutic Indications



### Chronokine Target: Eotaxin

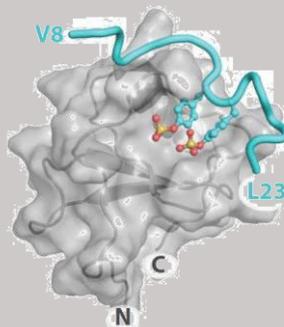
*Increased in Age & Disease*



### Receptor (GPCR): CCR3

*In Eosinophils, Endothelial cells, T cells & Monocytes*

#### CCL11:CCR3



### Therapeutic Treatment: AKST4290

*Normalization of Inflammatory & Immunomodulatory Cascades*

- ✓ **Decreased Infiltration** of Immune Cells (macrophages, t-cells, eosinophils)
- ✓ **Reduced microgliosis**
- ✓ **Downregulated** Inflammatory Cytokines

# Blocking Eotaxin-CCR3 Signaling Reduces Retinal Inflammation

## Addressing AMD and Diabetic Retinopathy



**Eotaxin/CCR3 Binding increases**

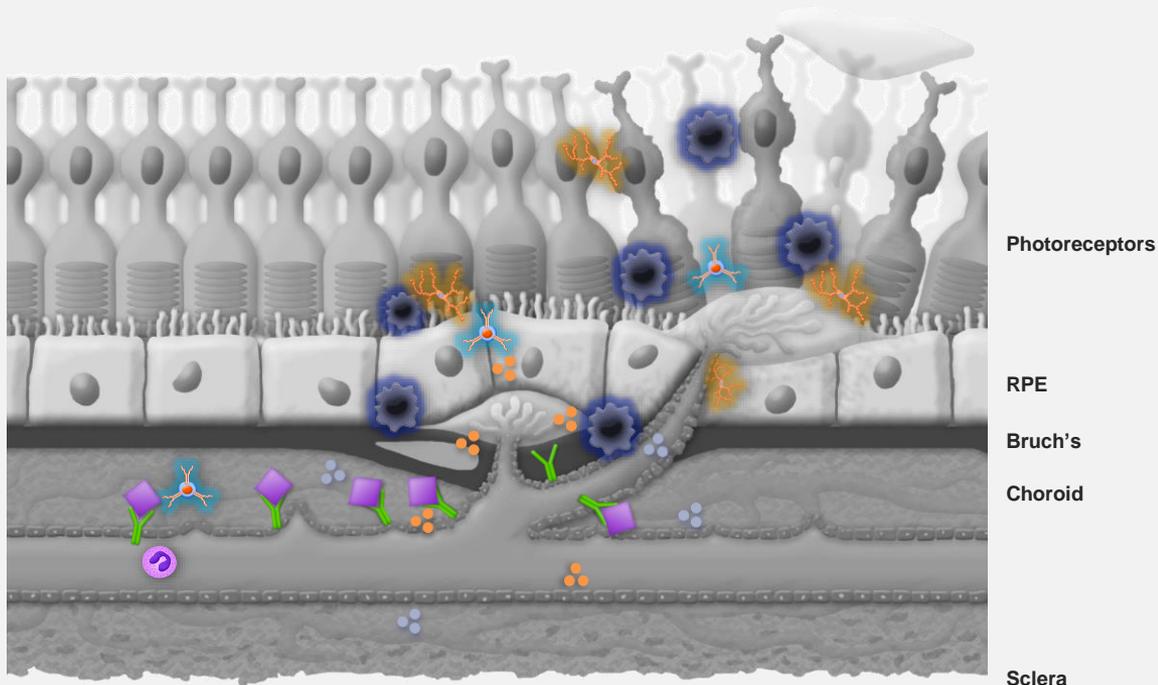
Membrane Permeability/Degradation

Immune Cell Recruitment

Cytokine Upregulation



**Heightened Neuroinflammation & Neurodegeneration**

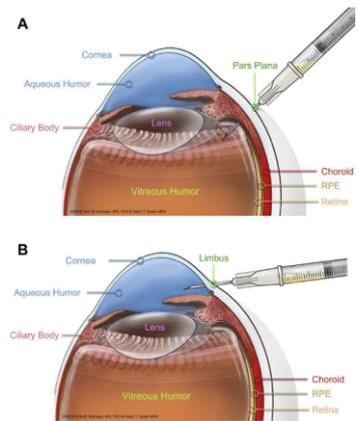
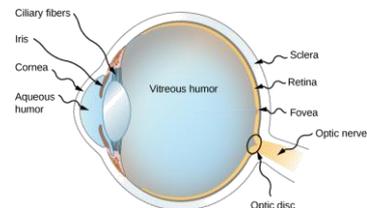
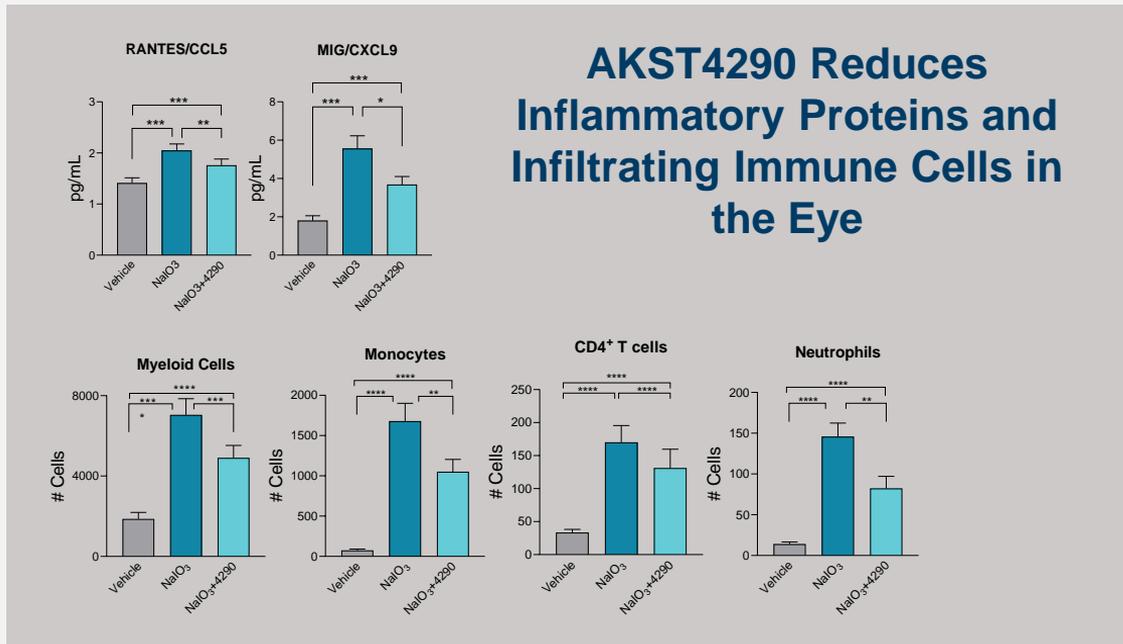


# AKST4290 Reduces Inflammation in the Eye

New Insights Into the Pathology of Eye Diseases: Cytokines and Immune Cells



Inflammatory Proteins from Circulating Plasma **Accumulate in the Eye**



Personalized Proteomics for Precision Health: Identifying Biomarkers of Vitreoretinal Disease

Gabriel Velez<sup>1,3</sup>, Peter H. Tang<sup>1,2,4</sup>, Thiago Cabral<sup>1,7</sup>, Galaxy Y. Cho<sup>8,10</sup>, Daniel A. Machlab<sup>1,2</sup>, Stephen H. Tsang<sup>9,11</sup>, Alexander G. Bassuk<sup>1,2</sup>, and Vinit B. Mahajan<sup>1,2,4</sup>

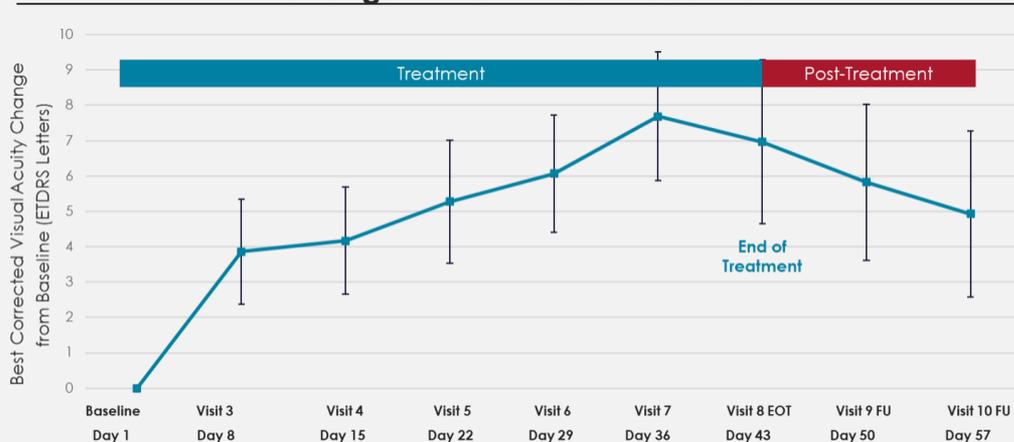
translational vision science & technology- 2020

# Positive Phase 2a in Age-Related Macular Degeneration

## nAMD Patients Treated With Oral AKST4290



### Change in BCVA from Baseline



Naïve patients (201)	Mean (Median)	N (%)
Overall BCVA Gain	+7.0 (8)	29 (100%)
“Responders” ≥5 Letter BCVA Gain	+14.9 (11.5)	16 (55%)
≥10 Letter BCVA Gain	+17.3 (15.5)	12 (41%)
≥15 Letter BCVA Gain	+23.2 (22)	6 (21%)
RPE-DH Change	-79.3 (31)	19 (66%)*
CST Change	-13.9 (-4)	29 (100%)

\* 19 of 29 subjects with RPE Detachment

- ✓ **Strong improvement in Best Corrected Visual Acuity:** similar to standard of care aVEGF<sup>1</sup> injections into the eye
- ✓ Oral agent a **substantial advancement** compared to the high treatment burden of current intravitreal aVEGF

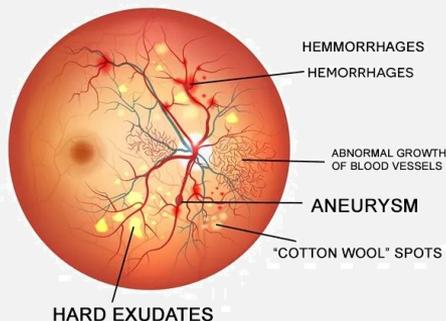
# Diabetic Retinopathy: A Major Unmet Medical Need

An Oral Treatment Would Be Highly Desirable



## Manifestations of DR

### DIABETIC RETINOPATHY



## Characteristics and Progression of DR

### Diabetic Retinopathy Severity SCALE (DRSS)

CORRESPONDING DR STAGE	DR absent	Micro-aneurysms only	Mild NPDR	Moderate NPDR	Moderately Severe NPDR	Severe NPDR	PDR is characterized by neovascularization of the disc and/or retina, vitreous hemorrhage, preretinal hemorrhage, which become more severe as levels advance		
DESCRIPTION	Absence of microaneurysms or other characteristics	Microaneurysms only; other characteristics absent	One or more: venous loops, hard exudates, soft exudates, retinal hemorrhages; other characteristics questionable or absent	More extensive hemorrhages and microaneurysms than Mild NPDR, OR definite Intra-retinal microvascular abnormalities (IRMA)	Both Moderate NPDR characteristics plus more extensive IRMA, more severe hemorrhages and microaneurysms, or definite venous beading	More extensive characteristics than moderately severe NPDR but without neovascularization of disc or retina			
VISION LOSS	10	20	35	43	47	53	Mild PDR 60, 61	Moderate PDR 65	High-risk PDR 71, 75

(Images courtesy of Regeneron)

## Phase 2 study in Diabetic Retinopathy (DR) with AKST4290

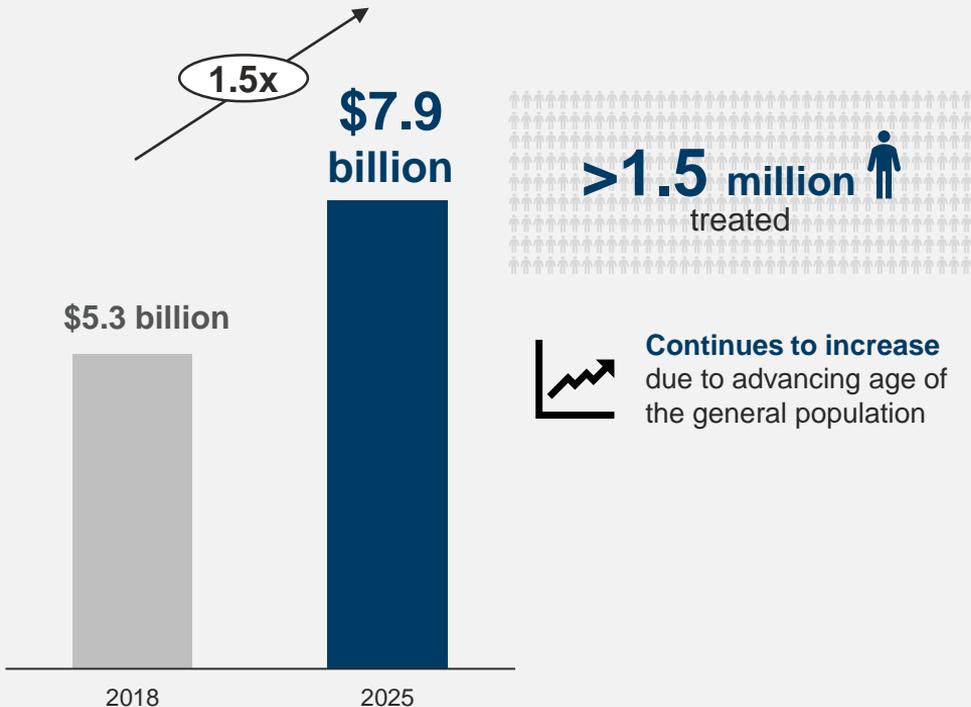
- CAPRI: A Double-Masked, Placebo-Controlled Study to Evaluate the Efficacy of Oral AKST4290 in Participants with Moderately Severe to Severe Diabetic Retinopathy
- N = 80; Randomization = 1:1 (AKST4290 400 mg BID: placebo to match); at 25 US sites
- Dose = 400mg BID (orally) for 24 weeks treatment
- Rationale: AKST4290 improved vision in AMD patients and may also have a similar effect in DR
- Anti-inflammatory activity of the compound would slow or block the progression of the pathology of DR

# Meeting the Challenge and Addressing the Opportunity

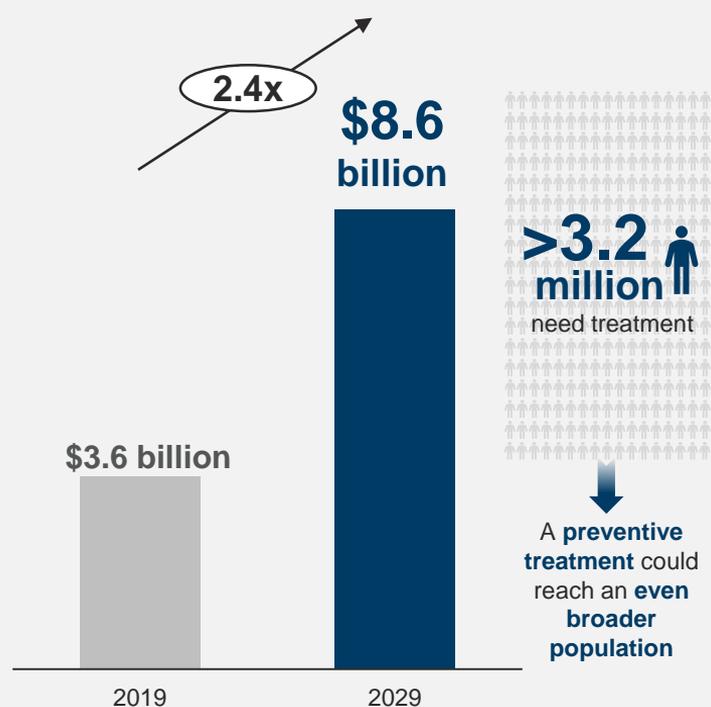
## Entering a Large and Growing Market



### Neovascular Age-Related Macular Degeneration (nAMD)



### Diabetic Retinopathy (DR)



Data from US, EU4, UK and JP

Data from US, EU4, UK, JP, Australia and China

Source: Global data, nAMD and DR Global Drug Forecast and Market Analysis

2021

Investor &  
Analyst  
Day  
June 21

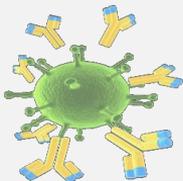
# 7

## Continuous Developments in Diagnostics

GRIFOLS

基立福

جرىفولز



### Immunoematology

#### DG Gel

New Antisera development

New gel card DG Gel DC Scan Plus testing



#### Multicard

Extended phenotyping



#### Drug Interference Solution

Kit to resolve daratumumab interference for cancer patients



### Immunoassays for donor screening

#### Ultrasensitive SMC Assays in development

Discriminatory Multiplex: HIV/HCV, HBsAg

HBcore	Chagas	HTLV
Syphilis	CMV	HBsAg Confirmatory

#### High throughput analyzer in development

### Clinical Diagnostics

#### SARS CoV2 Antibody Test CE Marked

#### Promonitor – Biological Drug Monitoring

Promonitor Quick Anti-IFX & IFX

Promonitor Quick Anti-ADL & ADL



### Recombinant Proteins

#### Grifols Portfolio (internal customers)

Screening/Diagnostics	Therapeutics
<ul style="list-style-type: none"> <li>IAs for Donor Screening</li> <li>Immunoematology</li> </ul>	<ul style="list-style-type: none"> <li>Alkahest (Neurodegeneration)</li> <li>Biosciences (SARS-CoV2)</li> </ul>

#### CDMO Opportunities (external customers)

# Contract Development & Manufacturing at Grifols, Emeryville

## Recombinant Protein Excellence in Microbial and Mammalian Systems

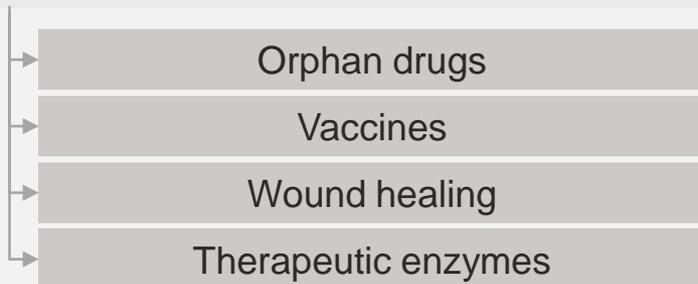


**CHIRON®**  
RECOMBINANT  
PROTEINS

Combining the Chiron legacy of recombinant expression innovation with Grifols quality and excellence



### Current Active Projects



### Broad Range of Services for Therapeutic and Diagnostic Projects

#### Research

Molecular and process design to make novel proteins



Assay development to support new medicines

#### Development

Process development and optimization to improve yields and generate efficiencies



#### Production

Material production for toxicology, formulation studies, clinical trials and GMP commercial production

### Continually expanding and adding new capabilities...

- New Pilot Plant for scale-up and GxP material production
- New hosts to expand options in mammalian and yeast expression
- New single-use equipment for fermentation and purification



### NAT Donor Screening

#### Lab Automation

Panther ART: to support greater lab automation and efficiency

Improved middleware

#### Other New Procleix® Assays

Babesia assay: CE Marked (Jan 2021)

Plasmodium assay: in development

#### New Multiplex Procleix® Assays

UltrioPlex® E assay

ArboPlex® assay



# New Multiplex Assays for NAT Blood Screening

## New Solutions to Enhance Testing Efficiency and Blood Safety



### Assays on Procleix® Panther system recently launched or under development

Procleix® UltrioPlex E assay: results for 5 viruses into single reaction:  
HIV-1, HIV-2, HCV, HBV, and HEV

HIV-1

HIV-2

Procleix® ArboPlex Assay: results for 5 arthropod-borne viruses (or “arboviruses”) into a single reaction: West Nile, Usutu, chikungunya, dengue, and Zika viruses

HCV

HBV

Other multiplex assay concepts in feasibility

HEV

IC

### Multiplex format offers significant advantages to both customers and Grifols

Increases laboratory efficiency:

- Same labor and instrument needs for delivery of more results faster
- No need to manage multiple assay kits; reduction in waste (tips/other disposables and liquid waste)

Increases production efficiency by combining manufacturing operations



# Diagnostics R&D Areas of Focus

## Nucleic Acids



### NAT Donor Screening

#### Lab Automation

Panther ART: to support greater lab automation and efficiency

Improved middleware

#### Other New Procleix® Assays

Babesia assay: CE Marked (Jan 2021)

Plasmodium assay: in development

#### New Multiplex Procleix® Assays

Ultrio® Plex E assay

ArboPlex® assay



### Clinical Diagnostics

#### Infectious Diseases

Procleix® SARS-CoV-2 assay

# Grifols Diagnostics Rapid Response to Pandemic

## Procleix® SARS-CoV-2 Assay Developed in <3 Months



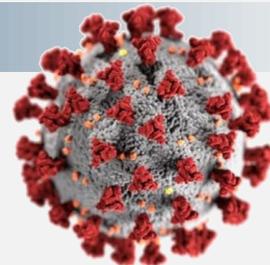
### Highly sensitive and specific detection of SARS-CoV-2 RNA

CE marked: May 2020

Assay runs on fully automated Procleix® Panther system

Among most sensitive EUA NATs according to results from testing FDA SARS-CoV-2 Reference Panel

Our ultra-high sensitivity and long experience in donors testing allows testing in pools of samples improving efficiency



SARS-CoV-2

### Over 10 million tests manufactured in San Diego

### Test is widely used in select EU under license agreement and U.S. markets

EU<sup>1</sup>: as an aid in diagnosis of COVID-19 (respiratory specimen testing)

US: organ/tissue donor screening to support transplant safety

Grifols' employee testing



Procleix® Panther System

<sup>1</sup> Under a license agreement with a third party

# Collaboration Made SARS-CoV-2 Assay Project a Success!



## R&D Sites



### Hub SF Area, CA

**Emeryville, San Carlos & South San Francisco, CA**  
Bioscience and Diagnostic



**Dublin**  
Bioscience

**Andorra**  
Immunology

**Düdingen, Switzerland**  
Diagnostic

### Hub Europe

**Barcelona, Bilbao and Zaragoza, Spain**  
Bioscience and Diagnostic



### Hub RTP, NC

**Research Triangle Park, NC**  
Bioscience



**LA, San Diego, CA**  
Bioscience and Diagnostic

# Diagnostics R&D Areas of Focus

## Nucleic Acids



### NAT Donor Screening

#### Lab Automation

Panther ART: to support greater lab automation and efficiency

Improved middleware

#### Other New Procleix® Assays

Babesia assay: CE Marked (Jan 2021)

Plasmodium assay: in development

#### New Multiplex Procleix® Assays

UltrioPlex® E assay

ArboPlex® assay



### Clinical Diagnostics

#### Infectious Diseases

Procleix® SARS-CoV-2 assay

#### Specialty/Genetic Testing

Development of GRIFOLS Genetic Service for A1AT Deficiency testing, direct to patients (Over-The-Counter)

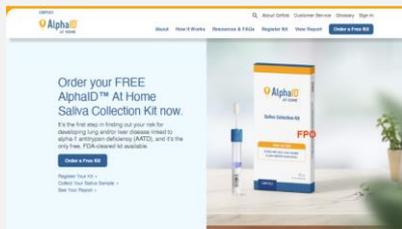


# Expanding AlphaID™ Testing to OTC Consumer Program

## Gain FDA Clearance for AlphaID™ at Home



### AlphaID™ At Home Genetic Health Risk Service Website



Order online AlphaID™ at Home

### AlphaID™ At Home Saliva Collection Kit



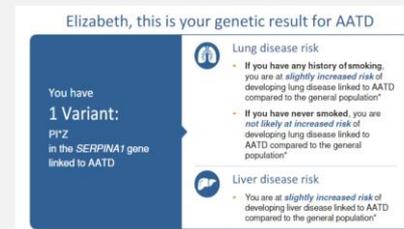
Use AlphaID™ At Home Saliva Collection Kit at home

### A1AT Genotyping Test for OTC



Ship saliva collection device with collected sample to lab

### Genetic Health Risk Service Result Report



Access report online via secure patient portal

**Over-the-Counter (OTC) Innovative Solution to expand the U.S. screening program**



### Stage 1

Nov 19

### Stage 2

Feb 20

Ad Board

FDA Presub

### Stage 3

Dec 20

### Stage 4

May 21

Jul 21

#### Refine Result Reports to improve comprehension

Educational module



5 Types of reports



#### Test Result Reports & Questionnaires



- 4 batches of 10 individuals
- Retrospective think-a-loud interviews
- Michigan area
- Online interviews (pandemia)



#### Finalize Result Reports & Comprehension Study Protocol

#### Two rounds of interviews

80 interviews

125 interviews

- Pilot study of stage 4
- Representing U.S population



#### User Comprehension Study

#### Stage 4:

500 interviews

- 100 individuals x report
- Representing U.S population

≥90% comprehension score for each domain

- ✓ Purpose
- ✓ Results
- ✓ Limitations
- ✓ Next Steps



# Our Goal Remains Firm

## Accelerate Diagnosis to Stop Genetic Emphysema's Progression



is helping to accelerate diagnosis and is the basis for innovative testing strategies



### Grifols WW Testing Program



**>850,000**  
**tests**  
performed



**>190,000**  
deficient patients  
found



**>15,000**  
severe patients  
diagnosed



# Continuous Developments in Alpha-1 Diagnosis

## Self-Testing Will Provide Benefits for Patients and HCPs



 **AlphaID™**

Allows for **further developments** that would accelerate testing by better **addressing customers needs**

### Self-Testing, Multiple Benefits ✓



**Patients**



**Maximize DTC**  
campaigns potential



**Empower**  
COPD  
patients



**Simplify Alpha-1**  
Dx process



**HCPs**



**Reduce Alpha1**  
screening workload



**Enable**  
**Telemedicine** related  
tools



**Facilitate** familiar  
screening

# Market Size Opportunity

## For Selected Projects

0-500M  
USD500-1,000M  
USD1,000-3,000M  
USD>3,000M  
USD

	Product	Indication	Market Size
<b>Immunology</b>	<b>SCIG / IVIG</b>	SIDs-CLL	
<b>Hepatology</b>	<b>Albumin</b>	ACLF	
		LTA Cirrhosis	
<b>Pulmonology</b>	<b>Alpha-1 AT</b>	Non-CF Bronchiectasis	
<b>Haematology</b>	<b>Fostamatinib</b>	AIHA	
	<b>Fibrinogen</b>	Acquired Deficiency	
	<b>ATIII</b>	New indication	(each)
<b>Ophthalmology / Others</b>	<b>HIV Antibody</b>	HIV	
	<b>AKST4290</b>	nAMD & DR	
<b>Infectious Diseases</b>	<b>GIGA 564</b>	Anti-CTLA-4 Oncology	(each)
	<b>IgM</b>	Bacteremia	
<b>Neurology</b>	<b>GIGA2050</b>	COVID-19	
	<b>GRF6019</b>	Alzheimer's Disease	
	<b>AKST4290</b>	Parkinson's Disease with Dementia	
	<b>ABvac40</b>	Alzheimer's Disease	
	<b>GRF6021</b>	Parkinson's Disease	(each)

# Key Takeaways

## Expanding Our Reach: Disease Management Beyond Plasma-Derived Therapies

**New leadership and governance** to effectively foster and support breakthrough innovation

Executing on our **Innovation Strategy** within and outside the plasma space to achieve a more **risk-value balanced portfolio**

Focus on **high prevalence and transformational therapies** that meet global challenges with huge untapped potential

Transforming disease management in **Neurology, Ophthalmology** and **Infectious Diseases** through innovative platforms led by **Alkahest** and **GigaGen**

Exploring large opportunities on plasma: **sharpen focus on CLL**; shaping **cirrhosis treatments** and accelerating **alpha-1 diagnostic**

Strengthening **pipeline in Diagnostic** across the value chain and **new diseases**

# Customer Centricity

**Showing Strength and Successfully Managing Adversity**

*Lafmin Morgan – Chief Commercial Officer*

# Pandemic Impact on Healthcare

## Short-Term Impacts Continue in 2021, but Receding



### Patients

**Diagnosis visits** remain 12% **below 2019** baseline, generating a **-3,8% gap in Px**<sup>1</sup>

**Elective procedures** still remain 15% **below 2019** levels<sup>1</sup>



### Healthcare Providers

Biopharma **in-person patient visits were up 17% in March'21** with all specialties increasing<sup>1</sup>

Total **prescriptions** recovering compared with 2020 (+6%)<sup>1</sup>



### Hospitals & Institutions

**Lab testing** (all settings) still below 2019<sup>2</sup>

The pandemic could cause U.S. hospitals to face **between \$53 billion and \$122 billion** in revenue loss this year<sup>3</sup>



### Commercial Interactions

Perceived value of 1-1 VC vs. in-person has fallen; both **Specialists and PCPs now want more in-person**<sup>1</sup>

Total Biopharma **details increased 13% in March'21** rising to 93% of baseline<sup>1</sup>

# Pandemic Impact on Healthcare

## Patients Are Facing Additional Challenges



Alpha-1 patients



PID/SID patients



ITP patients



COVID-19 patients



### Patients at increased risk of COVID-19 severe illness

coping with additional challenges on top of their conditions...

Isolation and  
Uncertainty

Therapy administration

Follow up and  
monitoring: labs tests,  
follow up visits. Etc.

# Pandemic Impact on Healthcare

Providing Support, Bringing New Therapies and Looking for New Solutions



## Alpha-1 patients

**Patient Support Programs**  
(US, EU and LATAM)

**Home Infusion**

**AlphaID™ in patient hands**



## PID/SID patients

**Xembify® launch in the US**

**Continuous support to patients groups**



## ITP patients

**Launch of Tavlesse® just after COVID-19 wave 1**



## COVID-19 patients

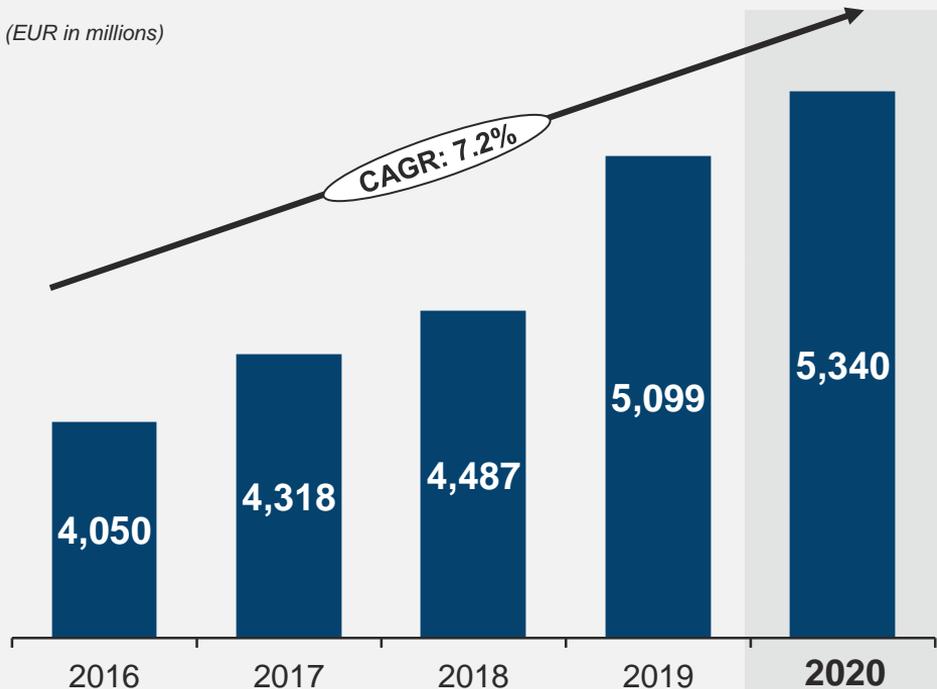
**Development and launch of TMA in <3 months**

**R&D of therapies to fight against COVID-19**

# Demonstrating Resilience and Commitment to Sustainable Growth

## Increasing Our Revenues in This Extraordinary Context

(EUR in millions)



Contributions from **new products**

**>50%** revenue growth

# Continue Introducing Innovations to Address Customer Needs

## Contributions From New Products >50% of Revenue Growth in 2020

**Xembify**  
Immune Globulin  
Subcutaneous (Human), 20%



**XEMBIFY—A proven option  
for people living with PI**

Keeping you protected throughout the day

### VistaSeal™ Fibrin Sealant (Human)



Provides sustained hemostasis

VISTASEAL has been demonstrated to sustain hemostasis even in high-risk patients (friable tissues, anticoagulants, antiplatelets, and coagulopathies)<sup>2,3,4</sup>

### Procleix Panther System Featuring ART

The Procleix Panther system featuring ART provides enhanced levels of automation for laboratories in a compact footprint without compromising throughput. It combines the proven and reliable performance of the Procleix Panther system with software and hardware improvements, to build upon the preferred\* NAT screening solution. Innovative optional components, such as full track connectivity and remote monitoring, can be installed to optimize variable workflow needs now or in the future.



ULTRIO PLEX E

**Albutein**  
Human Albumin **FlexBag**



- New flexible container to complement vials and broaden Grifols offering to customers
- US launch in 2021

### Procleix Ultrio Elite Assay

Single-tube, highly sensitive detection of HIV-1 RNA, HIV-2 RNA, HCV RNA, and HBV DNA in blood and plasma donations.

### Procleix Assays

Procleix assays expand blood screening with a comprehensive NAT assay portfolio.

The NAT solutions portfolio provides screening of: HIV-1, HIV-2, HCV, HBV, WNV, Parvovirus B19, HAV, HEV, Dengue, Zika, SARS-CoV-2, and Babesia.



2021

Investor &  
Analyst  
Day  
June 21

1

# Bioscience

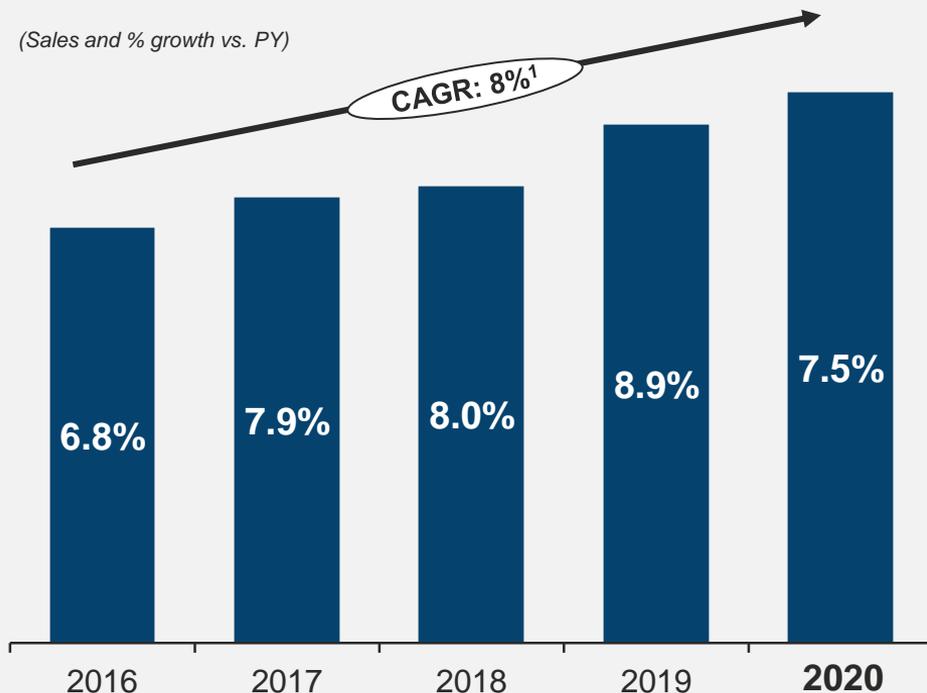
GRIFOLS

基立福

جریفولز

# Robust Demand and Launch of New Products Bolster Bioscience

Revenues Reach EUR 4,241M With a 8% CAGR



Sustained Quarter over  
Quarter growth for more than  
**40** consecutive quarters

2021

Investor &  
Analyst  
Day  
June 21



**Long Term Trends  
Continue to Support the Return  
to Strong Growth**

GRIFOLS

基立福

جريفولز

# Pulmonology: Our Goal Remains Firm

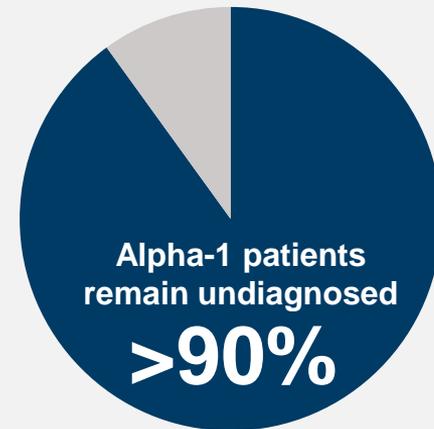
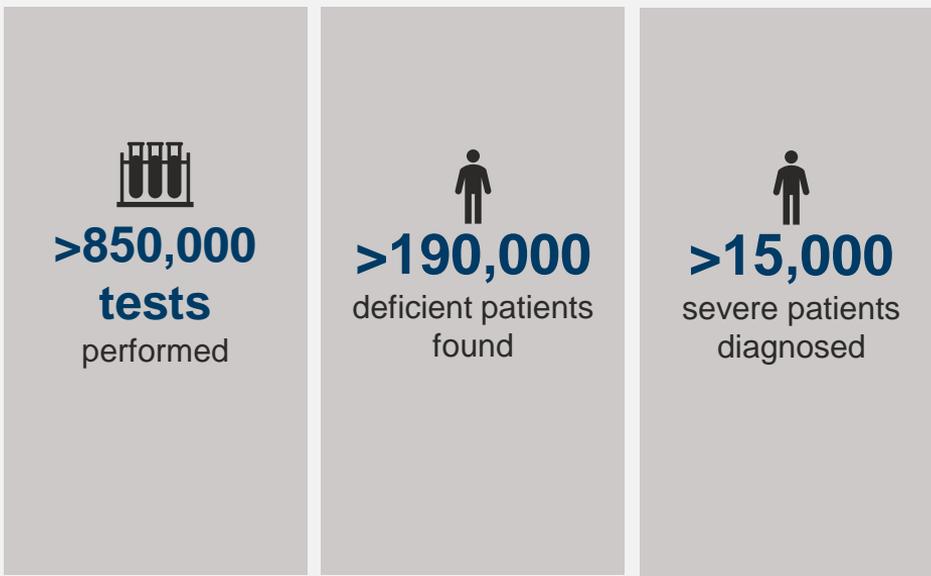
## Accelerate Diagnosis and Stopping Genetic Emphysema's Progression



is helping to accelerate diagnosis and is the base for innovative testing strategies



### Grifols WW Testing Program

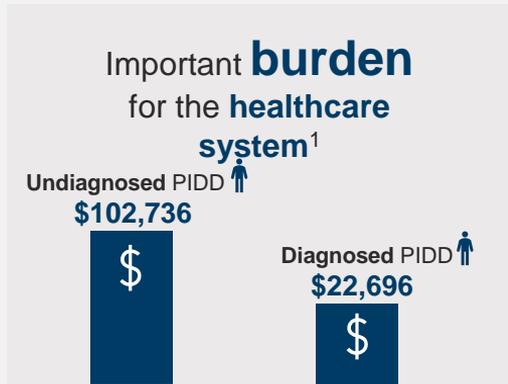
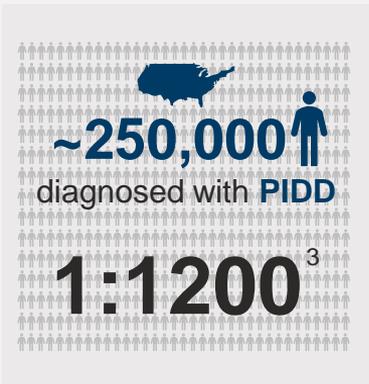


# Immunology: The First Step to Help Patients is Diagnosis

## NIH Estimates 500,000 Undiagnosed PIDD Patients in the US<sup>1</sup>

### DIAGNOSIS

Average PIDD diagnosis still takes **12.4 years**<sup>2</sup>



Grifols is **uniquely positioned** to leverage our expertise in IG replacement therapy and diagnostics to improve the rate and time to an appropriate PIDD diagnosis

<sup>1</sup> Modell V. Immunol Res. 2007;38(1-3):43-47; <sup>2</sup> Routes J, et al. J Clin Immunol. 2016;36:450-461. <sup>3</sup>Boyle JM, Buckley RH. J Clin Immunol. 2007;27(5):497-502; <sup>4</sup> French MA, Tangye SG. J Infect Dis. 2019;jiz230. doi:10.1093/infdis/jiz230; <sup>5</sup> Bonilla FA, et al. J Allergy Clin Immunol. 2015;136(5):1186-1205.e1-78

# Immunology: SID Market Keeps Growing

## Significant Room to Continue Helping Patients with SIDs

### NEW USES AND INDICATIONS

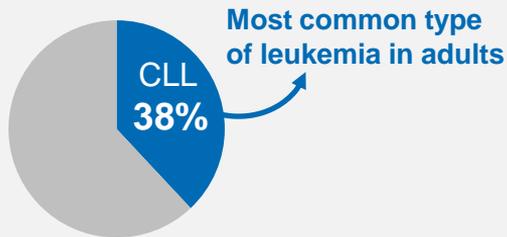
### SID market continues to grow in hematological malignancies and beyond



Driven by...

- Increased use of SID-inducing medication in both oncological and autoimmune indications
- Extended survival rates of cancer patients

### Chronic Lymphocytic Leukemia (CLL) and Hypogammaglobulinemia (HGG)



**HGG** occurs in **up to 85%** of patients at some point (due to malignancy itself and/or treatment)<sup>2,3</sup>



Grifols has a clinical development plan for HGG and CLL, as part of our **continued commitment to SIDs patients**

Infections are major cause of death in **25% to 50%** of patients with CLL<sup>3</sup>

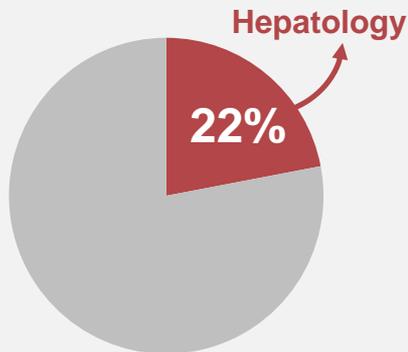
<sup>1</sup> US PPTA Distribution Data.; <sup>2</sup> Friman V et al. Hematol Oncol. 2016;1-12: doi 10.1002/hon.2323. [Epub ahead of print]; <sup>3</sup> Seppänen M. Clin Exp Immunol. 2014;178(Suppl 1):10-13. SID: Secondary Immune Deficiency (not an FDA approved indication in the U.S.)

# Intensive Care and Hepatology

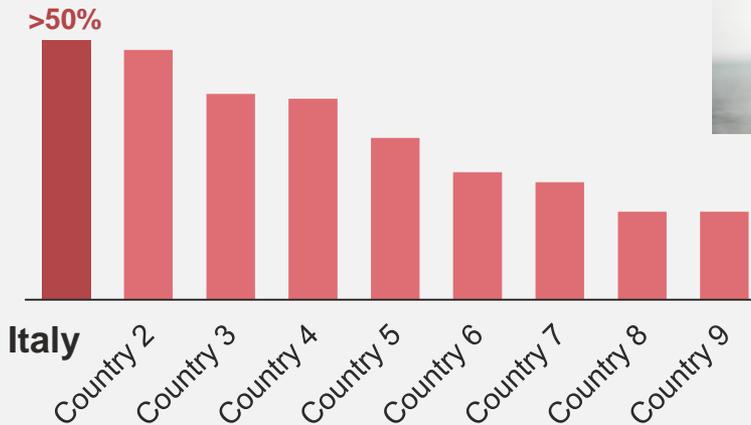
## The Use of Albumin in Liver Disease Will Become a Key Growth Driver

### NEW USES AND INDICATIONS

2019 Albumin Category Use



Albumin use in Hepatology (%)



highest albumin consumption per capita

driven by Albumin Chronic use adoption in decompensated cirrhosis



There is **no treatment** for decompensated cirrhosis **other than liver transplant**

# Immunology and Neurology

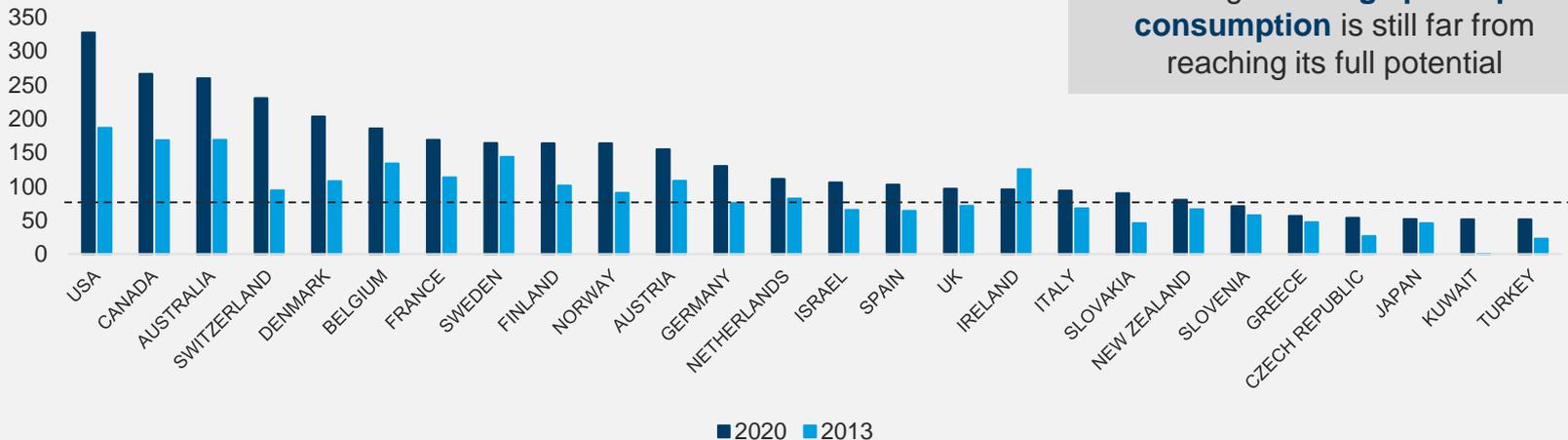
## IgG per Capita Consumption Growth in the Coming Years

EXPANSION

Raising awareness on PIDD diagnosis and treatment

Growing uses and indications in SIDs

2013-2020 per capita consumption (g/000 Population) for top markets worldwide



# Xembify<sup>®</sup>, Expanding Grifols IG Portfolio

## Aiming to Meet the Large, Unmet Medical Need in PIDD

### NEW PRODUCTS

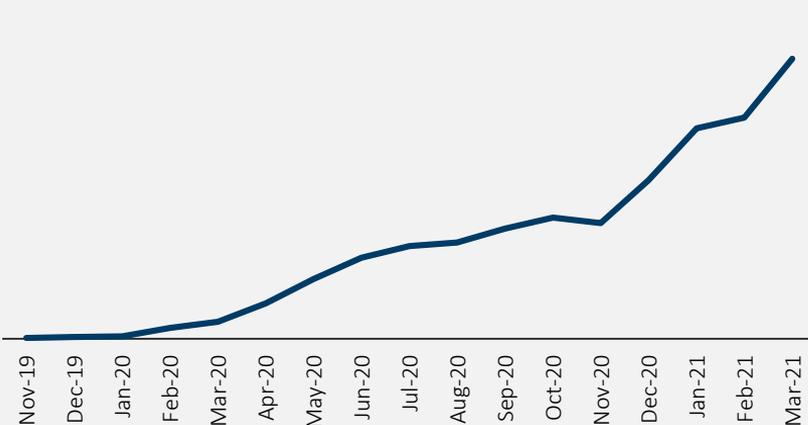
### Xembify<sup>®</sup> U.S. Sales Volume Since Launch

Xembify<sup>®</sup> sees **growth in Q1 2021** through an **accelerated base of patients and prescribers**, paving the way for continuity and further adoption in 2021

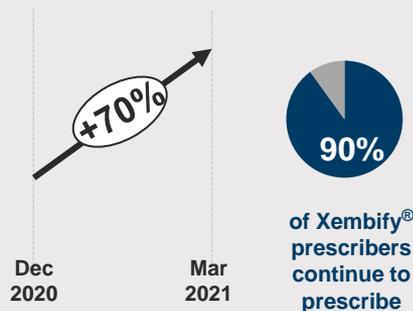


**10-15%** of Grifols global IG sales will be Xembify<sup>®</sup>

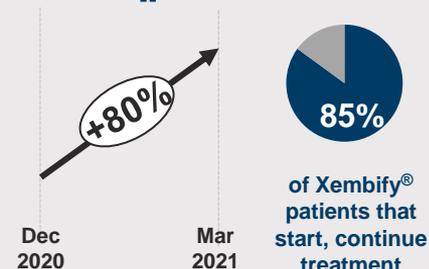
2025



### Prescribers



### Patients



# Pandemic Has Not Been an Obstacle

## Continue to Bring New Therapies for Chronic ITP Patients\*

### NEW PRODUCTS

### Tavlesse® GER Sales Volume since Launch

Tavlesse® has been **successfully launched in Q3 2020** in UK and Germany

**Tavlesse**™  
Film-coated tablets  
fostamatinib  
disodium hexahydrate  
**Protect. Defend. Care.**



**Achieved targets**  
through to Q1 2021 for  
UK and Germany



**Continuing  
P&R<sup>1</sup> process**  
in Germany



**Continuing HTA<sup>2</sup> and  
subsequent  
reimbursement** in UK



**Launch timelines in  
progress for further 8  
EU countries** in  
Q3 and Q4 2021



2021

Investor &  
Analyst  
Day  
June 21

# Addressing Customer Needs Strengthening Our Market Position

GRIFOLS

基立福

جرىفولز

# Maintaining 2<sup>nd</sup> Market Position in IVIG and IVIG+SCIG Market

## Delivering on Our Promises

In the face of increasingly tough competition (SCIG products) years ago **we committed to keep outperforming**

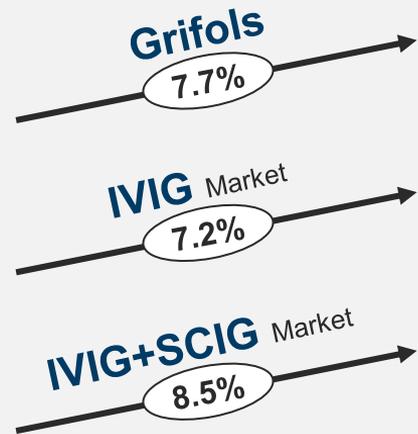
Xembify<sup>®</sup> launch and customer centric developments will allow us **to keep strengthening our market position**

**Grifols IVIG growth vs. SCIG + IVIG market growth ('15-'19)**

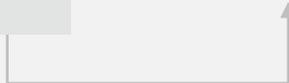
(in Million grams)



**CAGRs**



We maintain our **2<sup>nd</sup> Market position** in the IVIG market and even considering the IVIG + SCIG market



# Alpha-1 Strong 70% Market Share Despite of Years of Competition

Our Solid Customer Centric Mindset is Key

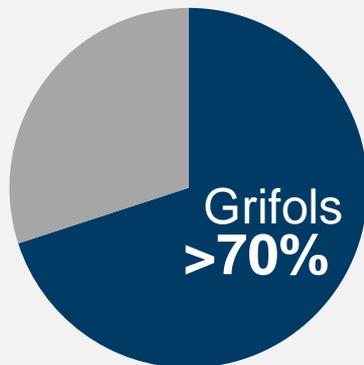
A strong customer centric mindset has permitted Grifols to improve market share in the middle of the global pandemic

Reliable Supply

Patient Support

Testing Continued  
Innovation

Alpha-1 antitrypsin Market 2020



## Sustained and reliable product supply

Important Alpha-1 product shortage from competitor in Q4'20 - Q1'21 challenged treatment continuity of hundreds of patients in EU during pandemic



Grifols, the Global Alpha-1 leader, **was ready** to immediately put in place all efforts thus guaranteeing therapy to patients

# Alpha-1 Strong 70% Market Share Despite of Years of Competition

Our Solid Customer Centric Mindset is Key

A strong customer centric mindset has permitted Grifols to improve market share in the middle of the global pandemic

Reliable Supply

**Patient Support**

Testing Continued  
Innovation



Patient disease management programs provide personalized care and home infusion, a vital resource during COVID-19

Ensuring treatment continuity with Home Infusion services

Supporting beyond treatment...

Psychological support

Virtual monographic trainings on "new normality"

Virtual meetings with HCPs and other patients

# Alpha-1 Strong 70% Market Share Despite of Years of Competition

Our Solid Customer Centric Mindset is Key

A strong customer centric mindset has permitted Grifols to improve market share in the middle of the global pandemic

Reliable Supply

Patient Support

Testing Continued  
Innovation



1991  
Finger stick  
dry blood spot



2013  
Alphakit®  
QuickScreen



2018  
AlphaID™  
Cheek Swab



We offer multiple Alpha-1 testing solutions, addressing different customers needs when they more need it

Alphakit™ online  
orders grew  
significantly in  
2020



AlphaID™  
approved to be  
used in patients  
hands under HCP  
supervision (Spain)

# Novel Partnership Journey to Build on Complementarity

**2016**

First meeting  
between  
Grifols &  
Ethicon

Successful wet  
lab testing of  
VeraSeal®



**2018**

Joint product/project  
development work  
continues

**2020**

Vistaseal™ U.S.: Launch  
completed

Vistaseal™ – OUS launch

2<sup>nd</sup> Ethicon Plasma  
Protein - FDA approval

**2022**

Vistaseal™ launches  
complete

Fibrin Sealant capacity  
expansion

Agreements  
signed  
**2017**

Vistaseal™  
U.S. market  
launch  
**2019**



Globalization of  
VeraSeal®  
**2021**

2021

Investor &  
Analyst  
Day  
June 21

# 2

## Diagnostic

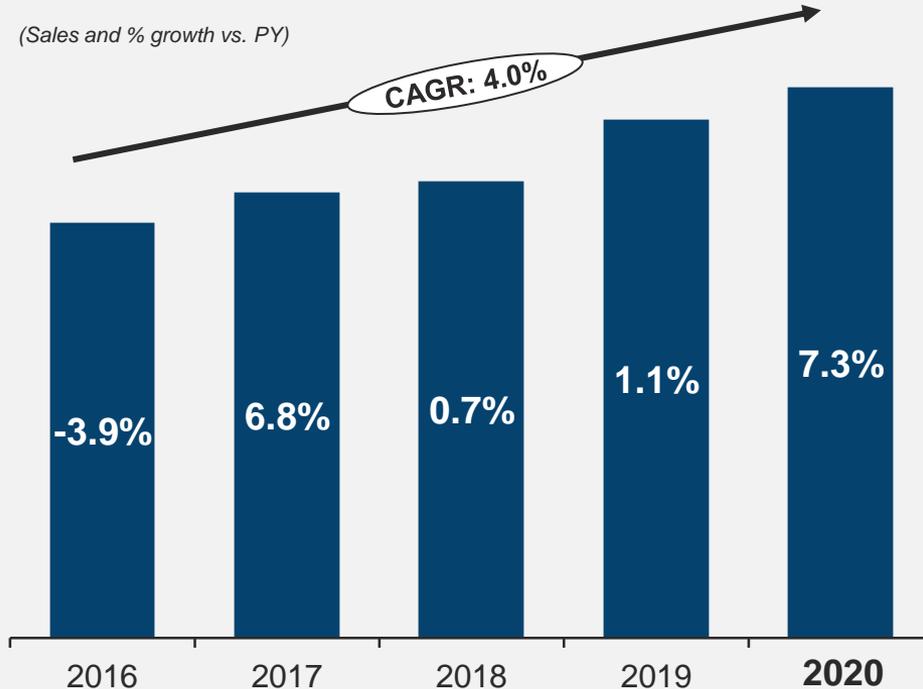
GRIFOLS

基立福

جريفولز

# The Diagnostic Division Reported €776M Over 2020

## Sustainable Growth Over the Last 5 Years



**Strong resilient businesses**

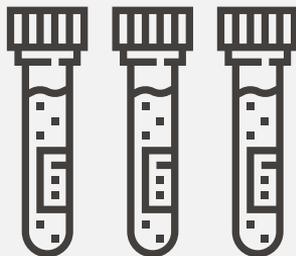
**COVID-19 TMA test addressing a medical emergency**

**Grifols continues to extend partnerships with top customers in the world** *(Korean Red Cross)*

# Global Leader in Blood Donor Screening

## Plasma Testing Poised for Strong Growth

### Blood donations tested



# 36M



# 70+

donations tested  
every minute with  
a Procleix® assay\*



# 200+

people impacted  
every minute\*

### Plasma donations

We are **converting all**  
**Grifols testing locations to**  
**Procleix® Instruments and**  
**Assays**

Recent plasma center  
acquisitions **fueling growth**  
**prospects**

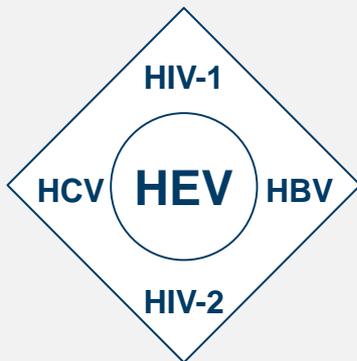
# Milestones and Innovations for Our Customers

## Our Innovation Strategy Delivering on the Future Needs of Transfusion Patients

### Panther® Art



### Ultrio® Plex E



### Babesia



### Menu Expansion

## Bloodstream

### ARBOVIRUSES

ZIKA                  WNV  
 CHIKUNGUNYA  
 DENGUE          USUTU

### PLASMODIUM

### Complement Tests



# Customer Value Marketing – UltrioPlex E

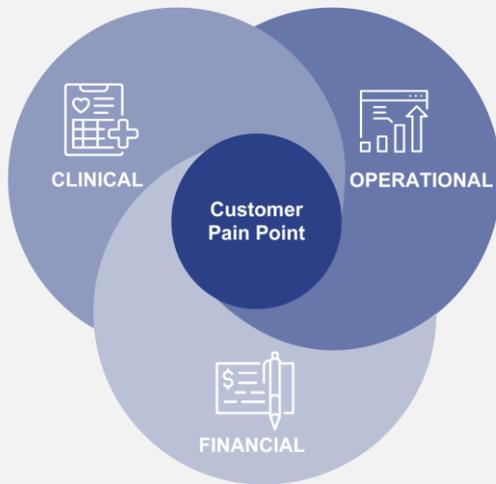
## Making an Impact in Blood Banks Operation

*Hepatitis E virus (HEV) is one of the leading causes of acute viral hepatitis worldwide*

*HEV-RNA screening of blood donations implemented in eight EU countries*

*Incidence of HEV infection in Europe over 10 years has grown by ten times*

**20M**  
HEV INFECTIONS  
WORLDWIDE



Reduction of  
NAT Tests



Free Floor  
Lab Space



Faster Release of  
Results



Free Floor  
and Save Costs



Free-up Lab Staff



Gain Storage  
Space



Reduce  
Environmental Impact



Reduction of Lab  
Staff Costs



Save Energy



Go Green  
and Save Costs



# Execution Focused on Customers Continues to Fuel Growth

Continuous Success Across All Customer Segments With Highest Customer Loyalty

## Instruments placements

# 700+

**Erytra-Eflexis®**

Since launch on Q2 2017

## Customer retention rate

# +96%

**Erytra-Eflexis®**

Since launch on Q2 2017

## Opportunities

# 180+

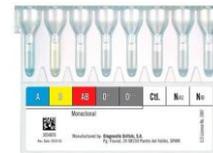
**Opportunities  
Won in 2020**

## Competitive conversions

# +55%



## Comprehensive Portfolio



2021

Investor &  
Analyst  
Day  
June 21

3

Hospital

GRIFOLS

基立福

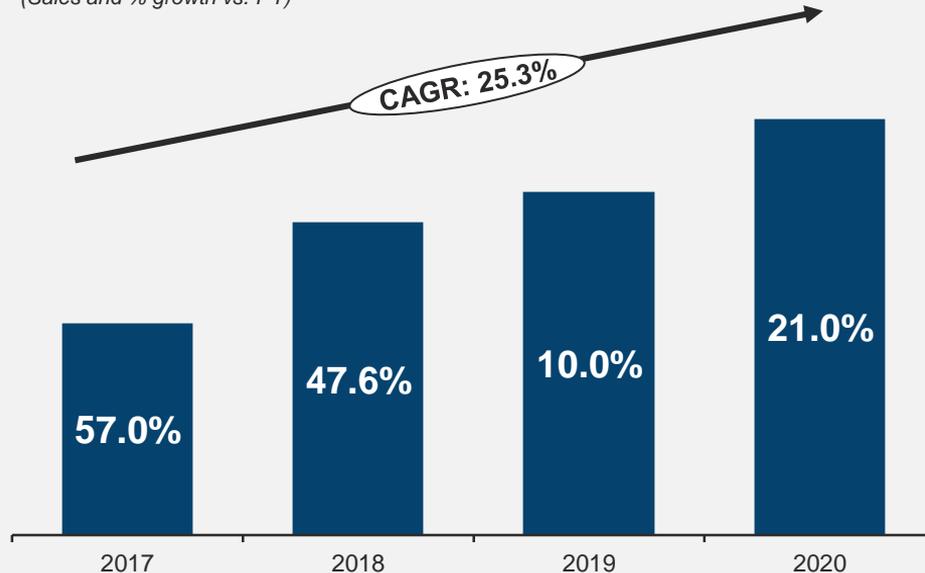
جرىفولز

# Weathering the Storm in 2020

## COVID-19 Challenges Impacted Performance With a Few Important Exceptions

### MedKeeper Sales

(Sales and % growth vs. PY)



**Hospitals have been significantly impacted by COVID-19** driving decline in Hospital Division revenues in 2020

Pharmatech business was impacted with **complex projects being delayed**. As a result, **Pharmatech revenue declined 11.8% in 2020** after two consecutive years of strong double digit growth

**PharmacyKeeper** achieved **strong growth** in 2020

# Providing Life-Sustaining Products and Technology for Patients and Pharmacy Solutions During the Pandemic

We remain a leader for IV Fluids in Iberia, helping to ensure hospitalized patients receive needed sterile IV solutions

Grifols rapidly implemented medication control technology in new treatment centers deployed during the outbreak in Spain

In the U.S., 93,000 compounded sterile preparations are made every day with the help of PharmacyKeeper

When significant logistical challenges arose for distributing vaccines within hospitals PharmacyKeeper enhanced its industry award winning\* IVWF software, to help optimize dispensing for patients



2021

Investor &  
Analyst  
Day  
June 21

# 4

## Bio Supplies

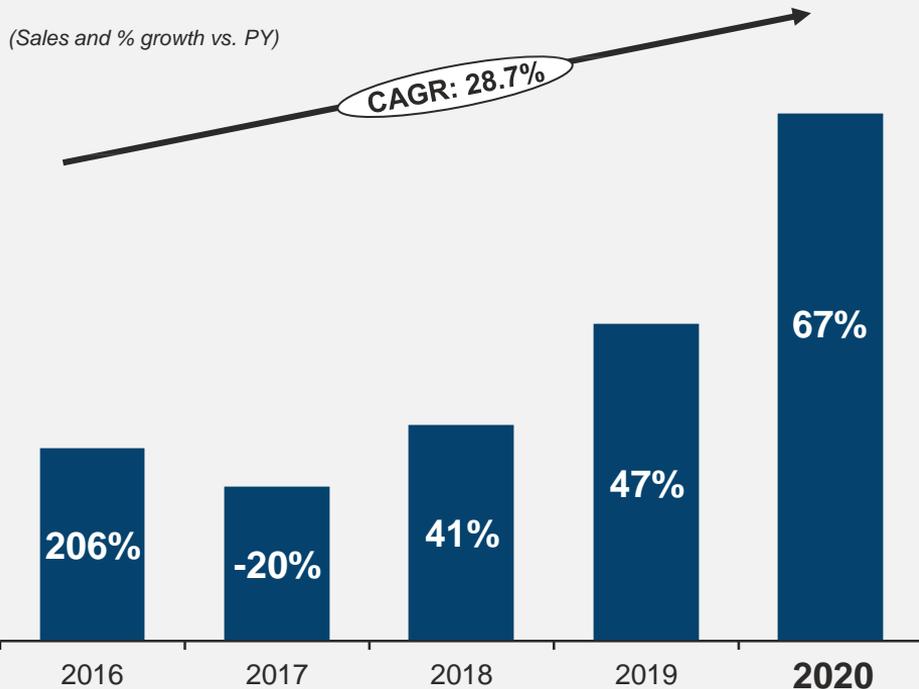
GRIFOLS

基立福

جرىفولز

# Bio Supplies Diversifies the Revenue Base

## Successful Business Expansion Over the Last 4 Years



Provide **additional value** to Grifols products

**Vertical Integration** supporting Grifols divisions

Become a **leading supplier of Biological Materials** for the IVD Industry

# Bio Supplies Commercial Grows by Double Digits

Building the Pillars to Assure Excellence in Long-Term Partnerships

## Biopharma



Provide **additional value to Grifols** proteins in niche markets

## Diagnostic



**Vertical integration** for Diagnostic IH by supplying blood components as raw material while providing **additional value** to non-suitable for fractionation plasma

## High growth expectations driven by...

**Several companies** using Grifols excipients in clinical trials

**New industry applications** for current portfolio

**New products**

# Key Takeaways

## Showing Strength and Successfully Managing Adversity

**Customer and patient centricity** has allowed us to be prepared for the future

Grifols grew in 2020, with **50% contribution to growth from new products** and achieving **40 consecutive quarters growing QoQ**

**Long-term trends** remain robust for Bioscience

**Demonstrated ability to succeed** in competitive markets

**Long-term trends** also support growth in **Diagnostic and Hospital** divisions

**Bio Supplies** is a **growing high-margin business**, significantly contributing to the development of new drugs and products

# Grifols, Along the Journey

## Grifols is Uniquely Positioned to Help Patients and HCPs Along All the Way



 **190k+**  
AATD diagnosed  
patients worldwide

**7/10**  
blood donations in N.A  
are tested using systems  
and assays developed by  
**Grifols Diagnostics**

**Commitment**  
with patients with  
decompensated liver  
cirrhosis



**25%**  
of CDP patients  
**rely** on Grifols



# 2021 Investor and Analyst Day

June 3, 2021

# GRIFOLS

基立福

جريفولز



15 YEARS  
STOCK MARKET  
2006-2021

2021

Investor &  
Analyst  
Day  
June 21

# New Business Models

## Advocating Patients' Needs Through a Sustainable Global Plasma Model

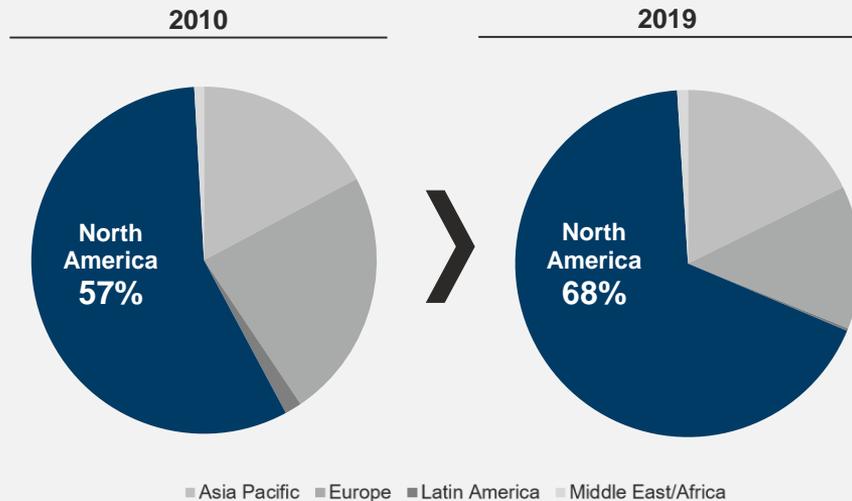
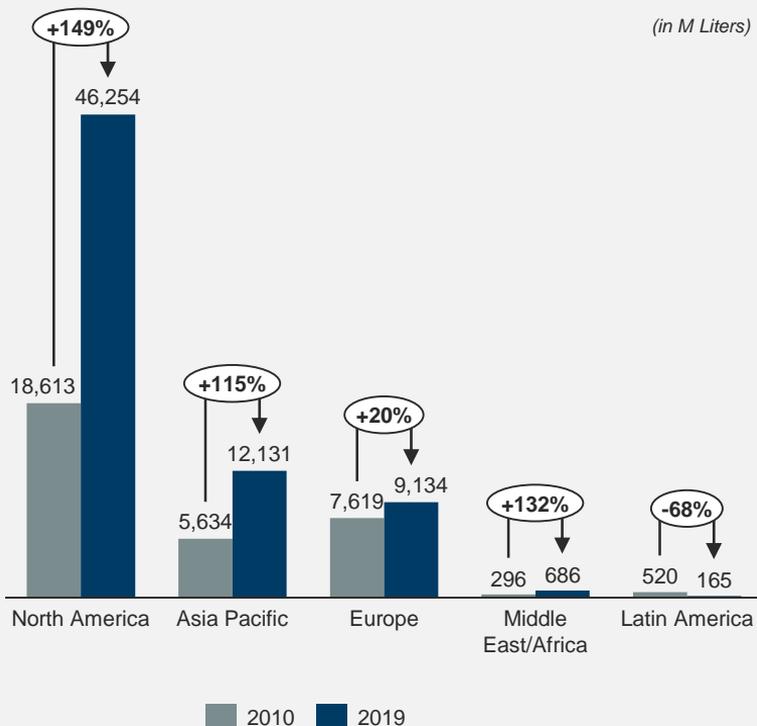
*Daniel Fleta – Chief Industrial Officer*

GRIFOLS

基立福

جريفولز

# Global Dependency on U.S. Plasma



**U.S. plasma collections are increasing at a faster rate than the global market**

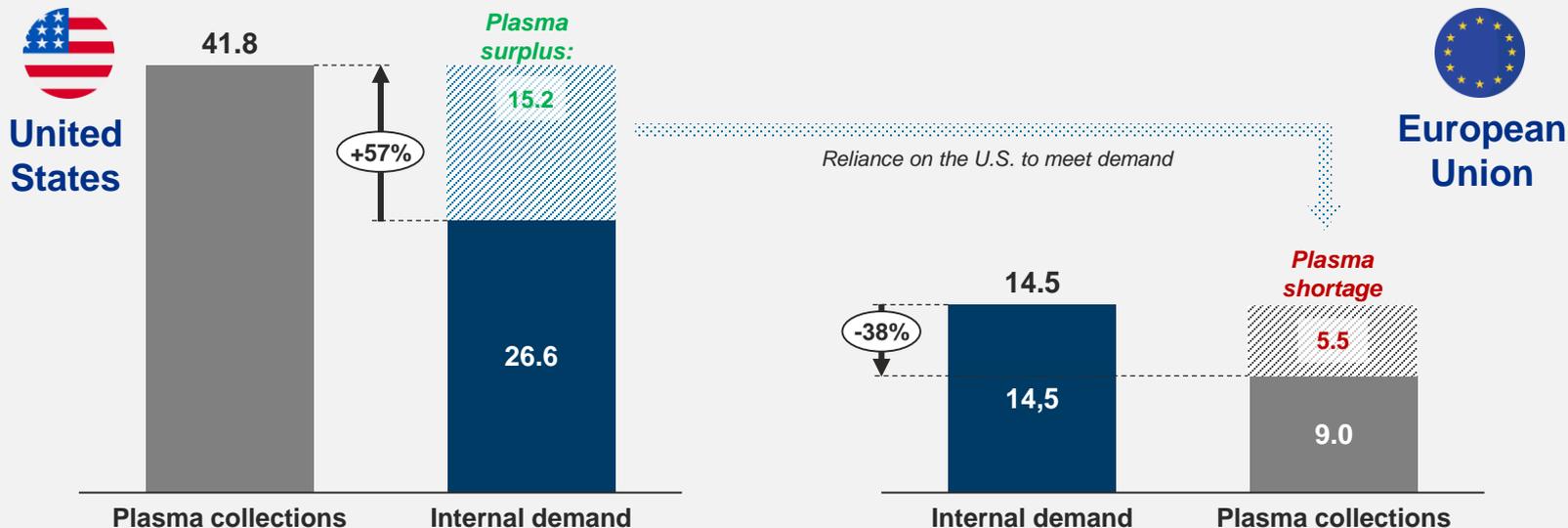
# The U.S. Leads Global Plasma Collections

		Plasma Collections (M L/year)	Liters per 1,000 population	Population (M)
	<b>U.S.</b>	45.9	138.7	331.0
	<b>Austria, Czechia, Germany, Hungary</b>	5.2	46.1	112.8
	<b>Rest of Europe</b>	3.9	6.1	634.3
	<b>Canada*</b>	0.3	8.8	37.7
	<b>China</b>	8.9	6.2	1,433.8
	<b>Egypt</b>	-	-	100.3

Sources: "UN World Population Prospects 2019 Data Booklet"; "Plasma Collections 2019" and "MRB 2019 Global Blood & Plasma Collections Report."  
Calculation from "Protecting Access to Immune Globulins for Canadians: Final Report of the Expert Panel," Health Canada, 2018.

# Global Dependency on U.S. Plasma

2018 IgG Plasma Usage vs. Plasma Collected (millions of liters)



**If current landscape remains unchanged, the plasma surplus will grow in the U.S. while deficits will increase in other regions, particularly in Europe**

# Higher Demand for Plasma Driven by Healthcare Systems Development, New Indications and Higher-Prevalence Diseases

## Worldwide Prevalence\*

### Hematology

#### Coagulation Factors

- Hemophilia
- Von Willebrand disease

**+1.1M** People with Haemophilia<sup>1</sup>

### Pulmonology

#### Alpha-1

- Alpha-1-antitrypsin deficiency

**+185k** People with severe AATD<sup>2</sup>

### Cirrhosis & Sepsis

#### Albumin

- Chronic liver disease & cirrhosis
- Sepsis
- General and cardiac surgery
- Others including plasmapheresis, burns

**+14.5M** People with cirrhosis<sup>3</sup>

**+49M** People with sepsis<sup>5</sup>

### Immunology & Neurology

#### Immunoglobulins

- Exposure to rabies, tetanus, hepatitis A / B
- PID - Primary immunodeficiency disease
- CIDP - Chronic inflammatory demyelinating polyneuropathy

**+6M** People with PID<sup>4</sup>

## Diagnosis and prescriptions are increasing

### Albumin – Alzheimer's and Cirrhosis

Alzheimer's & Dementia<sup>®</sup>  
THE JOURNAL OF THE ALZHEIMER'S ASSOCIATION

A randomized, controlled clinical trial of plasma exchange with albumin replacement for Alzheimer's disease: Primary results of the AMBAR Study

### Ig – Secondary Immunodeficiencies (i.e. Oncology)

BioFocus Industry Insight

Secondary Antibody Deficiency:  
A Key Driver of IG Demand

### Other indications

Fight emerging virus i.e. Ebola, COVID-19

\*Total Prevalence calculations over 5,360,680 World Population >18years – Source UN World Population Prospects 2019\_DataBooklet.

<sup>1</sup> World Federation of Haemophilia; <sup>2</sup> Grifols patient counts (last update 10MAY2020); assume 50% of patients diagnoses receive treatment based in market knowledge and affiliate input. COPD Prev 10-18%; COPD, Diagnosis 10-50%; <sup>3</sup> Burden of Cirrhosis on Patients and Caregivers, 2020; ;

<sup>4</sup> National Institute of Allergy and Infectious Diseases. Primary immune deficiency diseases (PIDDs). [niaid.nih.gov/diseases-conditions/primary-immune-deficiency-diseases-PIDDs](https://niaid.nih.gov/diseases-conditions/primary-immune-deficiency-diseases-PIDDs) Accessed June 30, 2020; <sup>5</sup> <https://www.who.int/news-room/fact-sheets/detail/sepsis>

# Grifols Value Proposition for Plasma Self-Sufficiency Projects

## Exceptional Synergies to Unlock the Potential of Strategic Projects



### Tech.Transf. & EPCM Capabilities Grifols Engineering

- Multidisciplinary and highly qualified team providing complete turnkey solutions from conceptual design to facility management and operation
- Proprietary technology development
- Optimization of CAPEX and control of cost, timing and quality

### Patients at the Core Safety & Quality Long-term Partner

- Commitment to patients extending access to plasma therapies worldwide
- Products quality and safety are in the foreground built on the solid foundation of a reliable plasma supply
- Comprehensive portfolio of products and instruments to ensure quality; from plasma testing solutions to DC consumables manufacturing

### Local Presence, Global Reach Unique Approach to Geographies

- Geographically focused strategy
- Partners as diverse as needed: Private or public sector
- China Affairs Office: a successful model

# Egypt

## Clearing the Path Towards Self-Sufficiency

*Daniel Fleta – Chief Industrial Officer*

# Egypt at a Glance 2020



102 million inhabitants



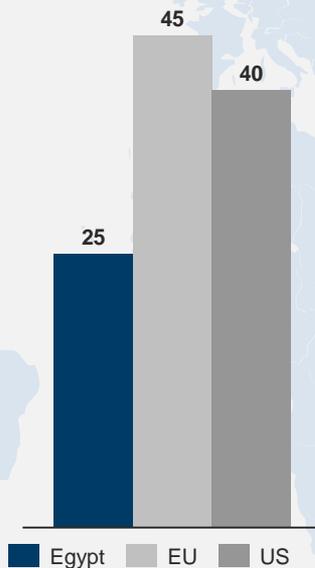
Population growth  
2 M/year



GDP growth  
3.6%

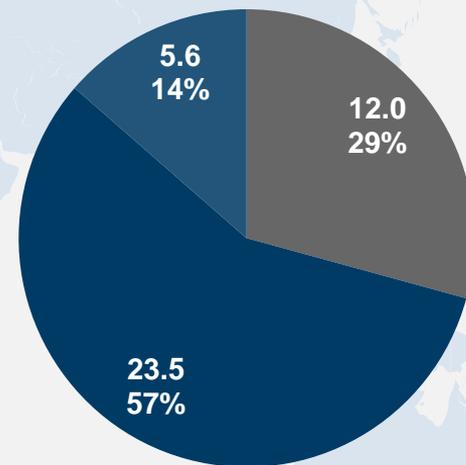
Source: Egyptian Ministry of Planning and development

## Median Age



## 2019 Plasma Derived Products Market value

\$m Revenues



■ IVIG   ■ Albumin   ■ Pd FVIII

Source: MRB THE PLASMA PROTEINS MARKET IN EGYPT 2019

# Strengthening Egypt's Healthcare System and Self-Sufficiency

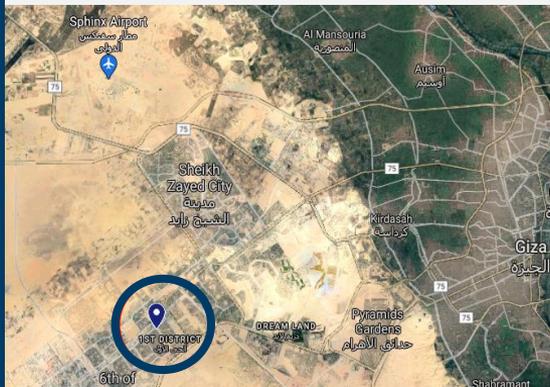
Grifols Engineering, Industrial and Quality Expertise Offer a Unique Opportunity



**Grifols will have total management oversight for the design and construction of facilities, operations, quality and safety to guarantee self-sufficiency of world-class plasma products**



# October 6<sup>th</sup> Plasma-Donor Center



Plot area: 5,100 m<sup>2</sup>

- Paved area: 2,763 m<sup>2</sup>
- Green area: 500 m<sup>2</sup>
- Footprint main bldg. and ancillary: 1,836 m<sup>2</sup>



## Scope

Donor center, plasma testing labs, plasma freezers warehouse, Grifols Academy for Plasmapheresis and plasma ops. offices

# Egyptian Manufacturing Site

## Medical City Development Plan in New Capital City

### New Capital City Highlights



Size 170,000 Acres



Fully digitalized &  
connected to  
Industrial Zone



Green city:  
Max. 40% bldg.  
60% green field



# Manufacturing Site Location



## Capacity 1 Million

Liters of Plasma (expandable)

Fractionation, purification and fill-and-finish of:

- Coagulation factors
- Gammaglobulins
- Albumin

## Scope

Plasma logistics center, labs, vivarium, R&D, common areas, warehouses, utilities and manufacturing plants

2021

Investor &  
Analyst  
Day  
June 21

# Manufacturing Plant



27,000 m<sup>3</sup> 

8,500 Tn 

322,500 m<sup>3</sup> 

105,000 m<sup>2</sup> 

Side View

GRIFOLS

基立福

جريفولز

# Key Takeaways

## Clearing the Path Towards Self-Sufficiency

Global plasma collections are growing but the **U.S. dependency is also increasing**

**Higher demand of PDMP** due to healthcare systems development, better diagnosis, new indications and clinical trials to treat high-prevalence diseases

Egypt offers growth potential as a **fast-growing and developing nation** and **leading regional supplier to the Middle East and Africa**

**Clear willingness of the Egyptian government to set a legislative framework** that promotes the viability and sustainability of this project

**Grifols Industrial through Grifols Engineering** is uniquely poised to offer cutting-edge turnkey solutions

**Free up plasma and manufacturing capacity** to serve other growing markets

# China

**Progressing on Our Strategic Alliance Under a  
Successful New Business Model**

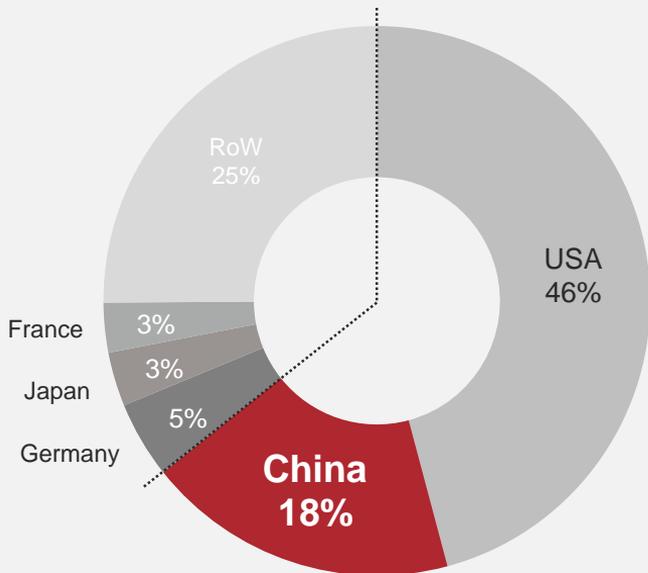
*Amarant Martínez – VP China Affairs Office*

# Great Potential on a 10-Year Horizon

## At the Forefront of Global Health Spending

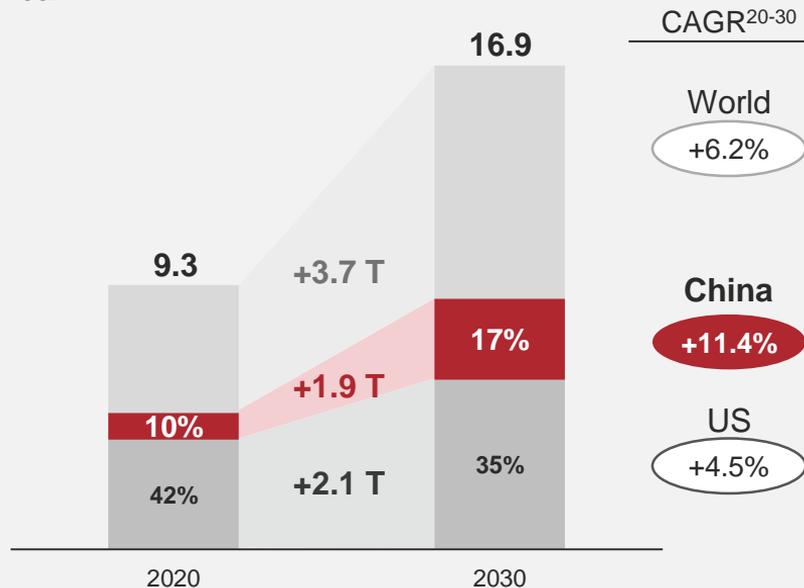
Plasma Protein Market in 2019

USD 27.3 billion



Global Health Spending: 2020 vs. 2030

USD Tr



China is the only country expected to achieve **double-digit growth over the next 10 years**

# SRAAS Successfully Weathered COVID-19

Limiting Plasma Collections Impact to -2.0% vs. -9.3% of the Industry

Plasma Collections by Company in 2020

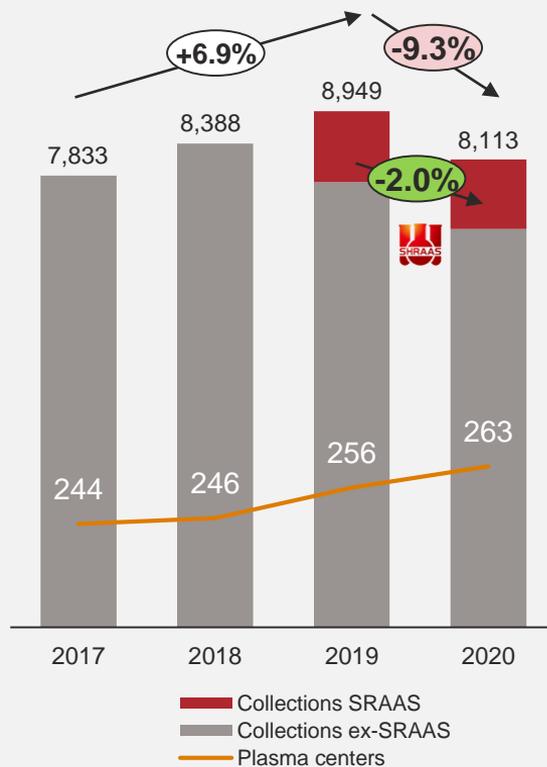


**#2 in China**  
**+100 bps vs 2019**

**41 plasma centers**

**38 plasma centers +  
3 under construction**  
(2 centers opened in last 6 months)

Overall Industry Plasma Collections ('000L)



✓ China continues working towards **self-sufficiency** as a long-term objective

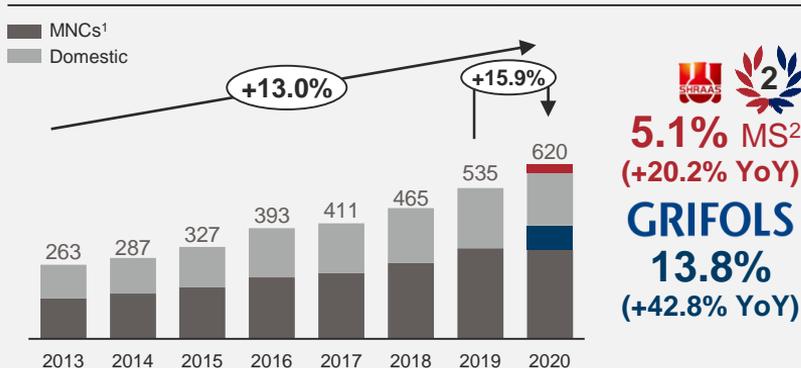
✓ We expect a **steady increase of registered donors** and number of **plasma centers**

✓ **Ongoing reforms** to ease restrictions on household registration (Hukou) has the potential to **expand donor base**

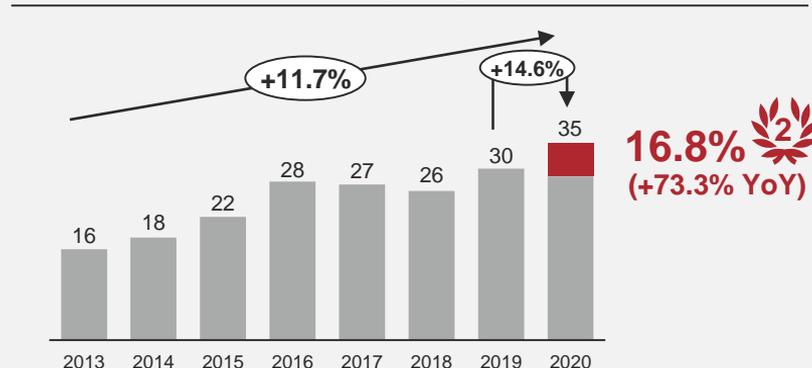
# Sustained Double-Digit Growth Adds USD 500M+ Each Year

## Leveraging Our Capabilities to Become Leaders in Albumin and IG

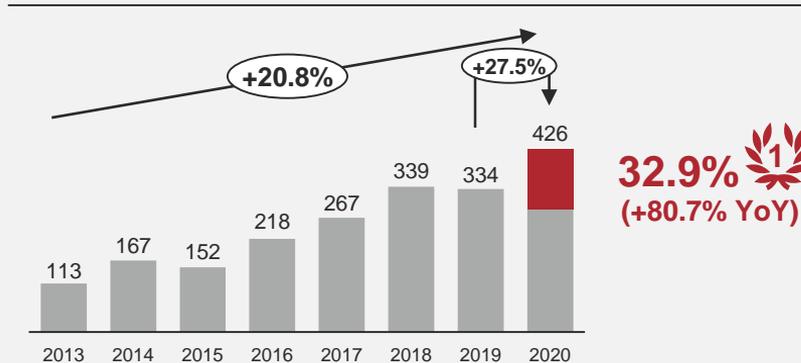
Albumin (tons)



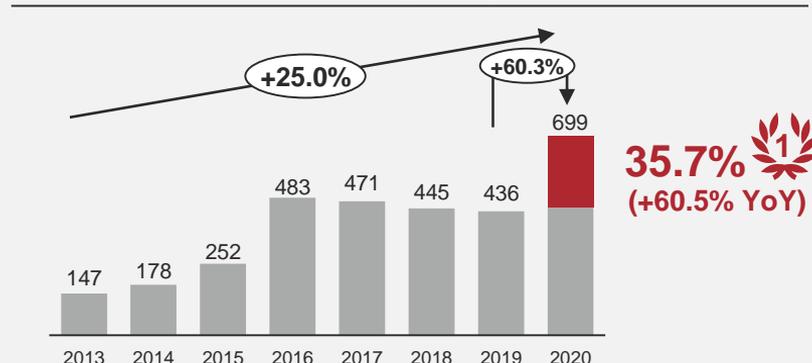
IG (tons)



pdFVIII (M IU)



Fibrinogen (kg)



GRIFOLS

基立福

جریفولز

<sup>1</sup> Multinational corporations; <sup>2</sup> Market share; Source: Institutes of Food and Drug Control.

# Bioscience Commercial Platform Under SRAAS

From Third-Party Distribution Model to Strategic Partnership With Leading Manufacturer

## Key Features

- ✓ Integrated commercial platform
- ✓ Direct-to-customer model
- ✓ Control of sales flow and channel
- ✓ Agility

## Execution in 2021



Contributing to

Comprehensive portfolio



Full geographical reach, extensive coverage & expanded customer base

## 11 categories

Albumin	FVIII
IVIG	PCC
IMIG	Fibrinogen
Hep B IG	Thrombin
Tetanus IG	Fibrin Sealant
Rabies IG	



- Commercial team: 250+ FTEs
- Direct Sales & Distribution Management
- Hyperimmunoglobulins marketed directly to the CDCs
- 500+ Commercial Partners
- 6,500+ Retail Pharmacies
- 700+ Grade III Hospitals
- 2,500+ Grade II Hospitals

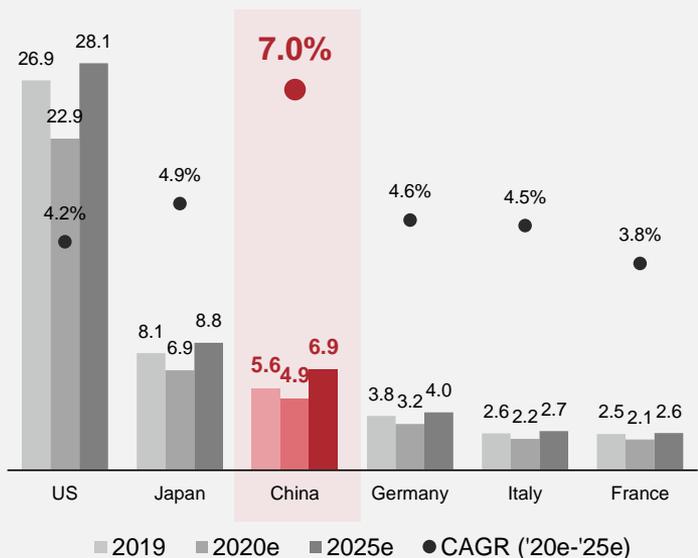


# Fastest Growing IVD Market With Great Potential

## Implementing the Go-Direct Model

### In-Vitro Diagnostics Market

USD



**1<sup>st</sup> step: Reorganization of internal operations** by shifting from current partners towards integrated commercial model

Phased implementation of **NAT solutions at SRAAS facilities** (pool of 96)

Portfolio expansion under assessment:

- **Ultrio Plex E (HEV, HIV-1, HIV-2, HCV, HBV)**
- **New DG Gel Cards**



**Advancing towards a Diagnostic integrated model for blood and plasma screening**

# China: A Dynamic Innovation Ecosystem

## Capitalizing on New Opportunities

	<p><b>“2021-2030 Alzheimer's Disease Prevention and Treatment Work Plan”</b></p> <p><i>To reach highest rate of: AD prevention and treatment awareness rate; services network; elderly cognitive function screening rate</i></p>	<div style="display: flex; align-items: center; justify-content: space-around;"> <div style="text-align: center;"> <p>2020</p> <p>&gt;10M patients</p> </div>  <div style="text-align: center;"> <p>2050</p> <p>&gt;30M patients</p> </div> </div> <ul style="list-style-type: none"> <li>• <b>Center of Excellence</b> at Great Bay Area, partnering with leading institutions. Concept matches with country approach</li> <li>• <b>Group of Experts</b></li> <li>• <b>Clinical Program</b> to generate real-world data and address aspects of indications, reimbursement and guidelines</li> </ul>
<p><b>Centralized Testing</b></p>	<p>Successful SRAAS Pilots according to <b>Provincial Health Commission requirements</b></p>	<p>Supporting authorities with Grifols' <b>full-range capabilities</b></p> 
<p><b>R&amp;D</b></p>	<p>SRAAS development of <b>IVIG 10%</b> and <b>SCIG 20%</b></p>	
<p><b>Others</b></p>	<p>Take <b>Innovation Beyond Plasma</b> to China</p>	 

# Key Takeaways

## Progressing on Our Strategic Alliance Under a Successful New Business Model

**Unparalleled growth potential** across divisions

**Excellent performance** amid these challenging times

Continue **delivering on execution** in the second year of the alliance

**Robust capabilities and broader portfolio** through the integrated Bioscience commercial platform under SRAAS

Advancing towards a **Diagnostic integrated model**

**Innovation as a key element** within the alliance

# Canada

**Leveraging Our Experience and Capabilities to  
Meet the Needs of National Customers**

*Joel Abelson – President Bioscience Commercial*

# Grifols is Well-Positioned to Meet Canada's Needs

## GRIFOLS

Deep experience in the **Canadian market**, with more than 30 years as the **primary fractionator for Canada's blood operators**

Only **large-scale domestic manufacturing facility** and uniquely positioned for continued growth across **full platform of service offerings**



Grifols Montreal Facility

One of the **highest IG usage per capita** with one of the **lowest plasma donation rates**

The pandemic heightened the **urgency** for **plasma self-sufficiency**/domestic production

Grifols is supporting Canada's path towards self-sufficiency by partnering with Canadian Blood Services to enhance security of supply in a novel proof-of-concept partnership model



GRIFOLS

基立福

جريفولز

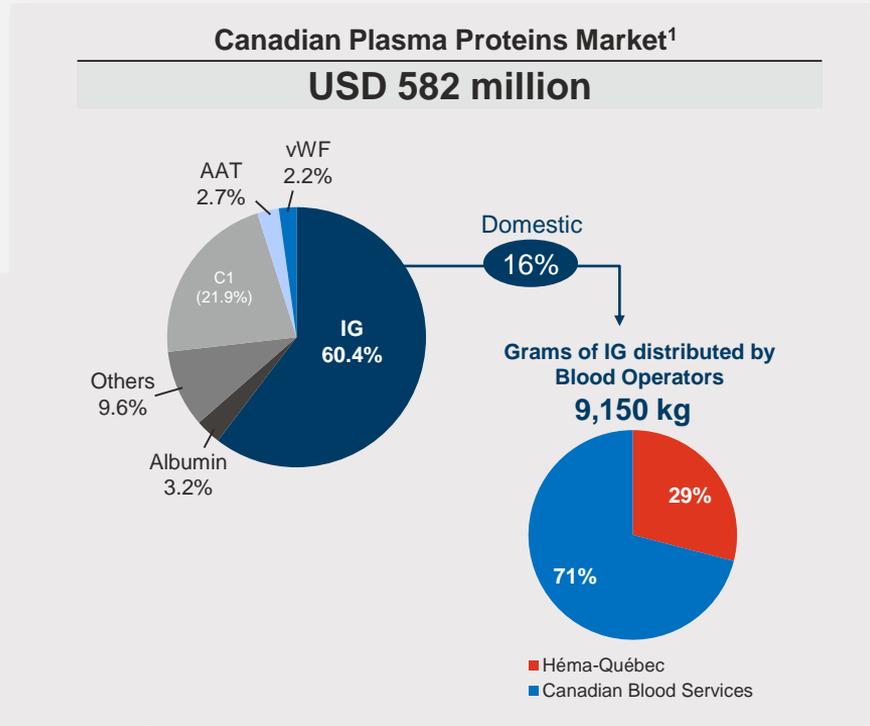
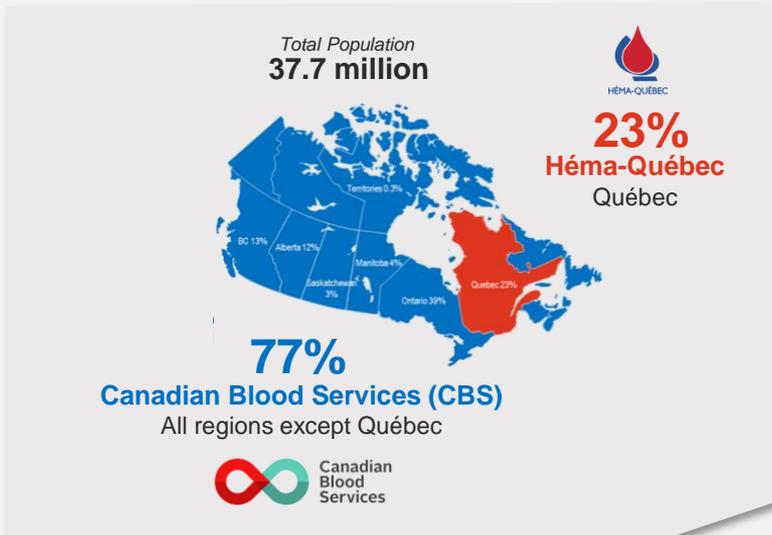
# Building On A Legacy

Over 30 Year History as the Primary Fractionator for Canada's Blood Operators

## Canada's Blood Operators

### Canadian Blood Services and Héma-Québec

- **Accountable** to Canadians for a **safe, secure blood system**
- Funded by the provincial and territorial Ministries of Health
- **Responsible for procurement of plasma derived medicines**



Source: Market research Bureau, Canada 2019/20, Statistics Canada  
<sup>1</sup> Without recombinant factors (period 2019/20)

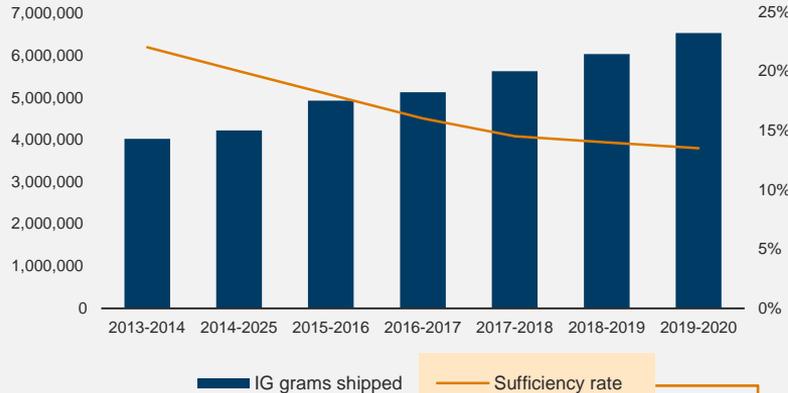
# Plasma Opportunity in Canada

One of the Highest IG per Capita. One of the Lowest Plasma Donation Rates

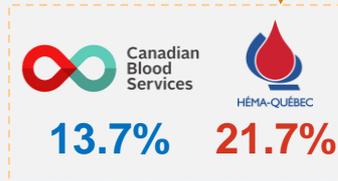
Canada is one of the highest users of Ig per capita...

**243g per 1,000 population** (CBS figures)

IG grams shipped and rate of sufficiency



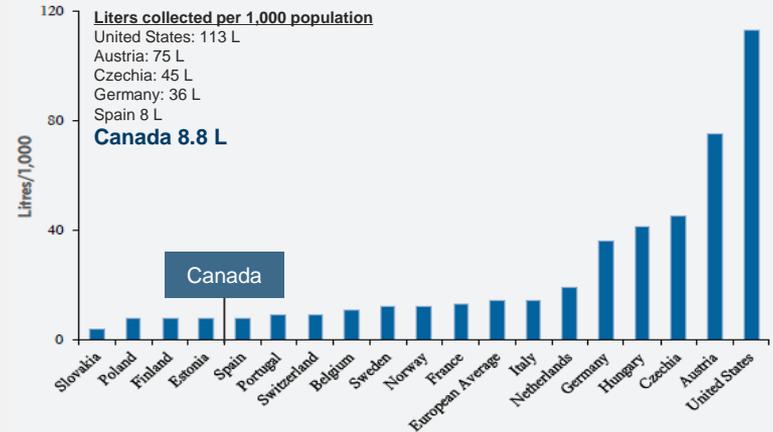
Risk modeling suggests **50% target for IG sufficiency to meet needs of critical patient groups** (for which no alternative exists)



... but has one of the lowest plasma donation rates

**8.8L collected per 1,000 population**

(2017 data)



- Canada's plasma volumes sent for fractionation are **primarily from recovered plasma**
- **Few source plasma (apheresis) collection centers have been established** (non-remunerated model)

Sources: Bédard, J.P. (2020) "Navigating Complexity: Ensuring Security of Supply." Canadian Blood Services, Jaworski, P. (2020) "Bloody Well Pay Them: The Case for Voluntary Remunerated Plasma." Adam Smith Research Trust, Medical Research Bureau, Canada 2019/20. Calculation from 'Protecting Access to Immune Globulins for Canadians – Final Report of the Expert Panel. Health Canada. 2018.

# On the Path Towards Self-Sufficiency

## Enhancing Domestic Supply Security Through Partnership With CBS



Lethbridge, Alberta

Kelowna, British Columbia

Sudbury, Ontario

**Sudbury's center is the first of three new Canadian Blood Services** dedicated plasma-donor centers that are opening across Canada. First announced in August 2019, these donor centers represent a **proof-of-concept approach** aimed at offering an **optimized collections model that leverages Canadian Blood Services' extensive expertise and industry best practices for plasma collection.**

## State-of-the-art plasma donor center opens in Sudbury

Media Release

December 16, 2020

*“Through a unique consultative partnership, we have had the opportunity to learn from the best practices Grifols has refined to improve and streamline our plasma collections in our new plasma donor centres. As the national blood authority, Canadian Blood Services will continue to deliver on our mandate to support patients by operating the national blood system guided by the principles outlined by Justice Horace Krever.”*

**Jean-Paul Bédard, Vice-President Plasma Operations, Canadian Blood Services**

*“Grifols, with more than three decades providing trusted plasma medicines to Canadians, is extremely pleased to deepen its relationship with Canadian Blood Services to expand Canada's plasma-collection infrastructure to meet the growing demand for plasma therapies and enhance the health and quality of life of the Canadian patients who depend on them.”*

**Joel Abelson, President Grifols' Bioscience Commercial Division**

# Key Takeaways

## Leveraging Our Experience and Capabilities to Meet the Needs of National Customers

**Grifols' is committed to helping countries reach self-sufficiency of plasma-derived medicines**

For **30+ years**, Grifols has been the primary fractionator of Canadian plasma under **contract manufacturing services**

**Strengthening Grifols' presence in Canada**, building on a **legacy of partnership** in Canada's blood system

**Market opportunity** as demand continues to grow and **IG use per capita is one of the highest in the world**

**Only large-scale domestic** manufacturing facility

**Uniquely positioned** for continued growth across **full platform of service offerings**

# Finance

**Driving Resource Allocation to Support Further  
Growth and Profitability**

*Alfredo Arroyo – Chief Financial Officer*

2021

Investor &  
Analyst  
Day  
June 21

# 1

## Delivering on Our Commitments

GRIFOLS

基立福

جرىفولز

# Delivering on Our Commitments

## 2020 IAD Key Takeaways



Driving **long-term sustainable growth** across all divisions



Reinforcing our **international expansion** through SRAAS in China and **alliances** in Canada and Egypt



**Increasing plasma supply** through **organic** and **inorganic** initiatives



**Integrated innovation** efforts as a core **strategic pillar**



Continuous **CAPEX** to support future growth



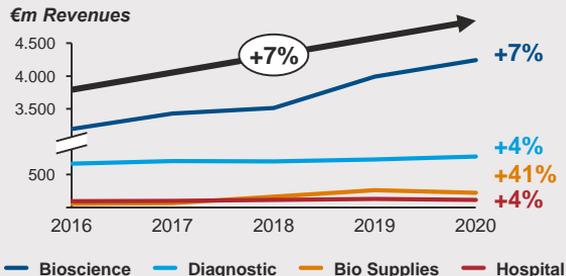
**Deleveraging** and **securing liquidity** remain key priorities

# Delivering on Our Commitments

## 2020 IAD Key Takeaways



Driving **long-term sustainable growth** across all divisions



Reinforcing our **international expansion** through SRAAS in China and **alliances** in Canada and Egypt

Since last IAD...



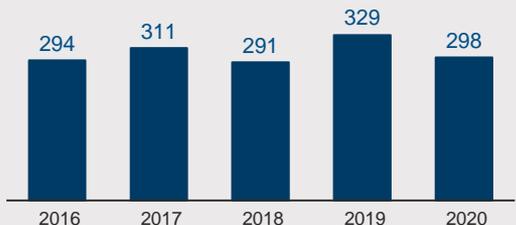
Increasing **plasma supply** through **organic** and **inorganic** initiatives

Since last IAD...



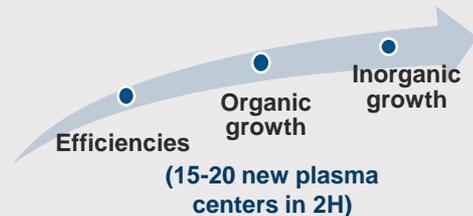
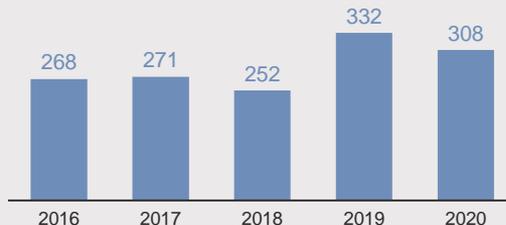
**Integrated innovation** efforts as a core **strategic pillar**

€1,500m+ in innovation over the last 5 years



Continuous **CAPEX** to support future growth

€1,400m+ in CAPEX over the last 5 years



**Deleveraging** and **securing liquidity** remain key priorities (March '21 up to EUR 1bn+)

2021

Investor &  
Analyst  
Day  
June 21

# 2

## Proven Resilience During Unprecedented Times

GRIFOLS

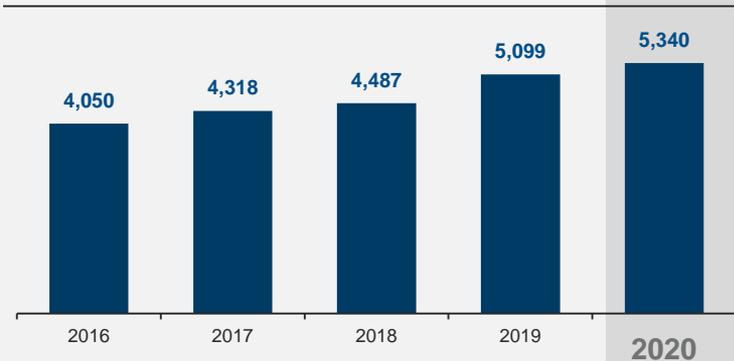
基立福

جرىفولز

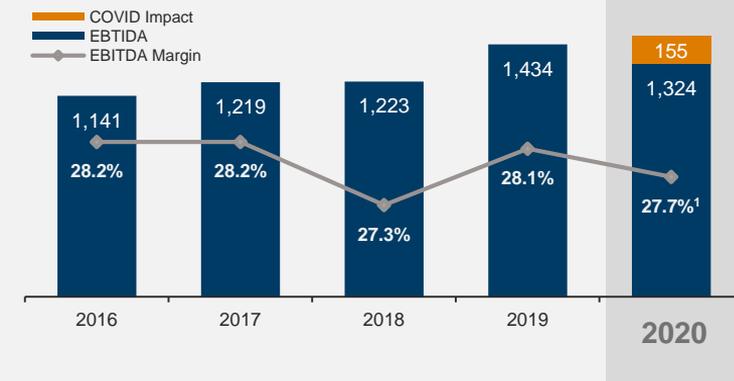
# Proven Resilience During Unprecedented Times

## 2020 COVID Impacts

Revenues (€M)



EBITDA Reported (€M)



### Most significant impacts on EBITDA 2020 (€M)

Impact	Value (€M)
Cost containment plan	+112
Sub-activity costs	-205
NAT COVID test	+49
Lower Bioscience sales	-111

EUR -155m

### Impact in P&L 2020

- | Impact  | Value (€M) |
|---|------------|
| Price increases (mid-single digit growth)                                 | +          |
| 50% of revenue growth from new product launches                           | +          |
| Bioscience topline performance impacted in Q4 by lower plasma collections | -          |
| Cost per liter increase   | -          |

¹ Excluding COVID-19 impact on EBITDA and considering reported sales

# Proven Resilience During Unprecedented Times

## 2021 COVID Impacts

### Estimated Impact in P&L for 2021

+

- **Price increases** (mid-single digit growth)
- **Product mix** including recent product launches
- Expected **sales rebound in the last part of 2021** thanks to sustained solid demand and recovery in plasma collections
- **Optimization and efficiencies:** Continuation of most of the 2020 cost containment measures in 2021 and beyond
- **Larger contribution from SRAAS**

-

- **Bioscience topline performance impacted** by lower plasma collections
- **Cost per liter increase** derived from higher donor fees and fixed costs under absorption
- **R&D efforts** stemming from the integration and development of new acquisitions

**Solid Fundamentals: 2021 still some challenges. 2022 back on track**

2021

Investor &  
Analyst  
Day  
June 21

# 3

## Key Drivers to Support Further Growth and Profitability

GRIFOLS

基立福

جرىفولز

# Key Drivers to Support Further Growth and Profitability

## Fit for Growth

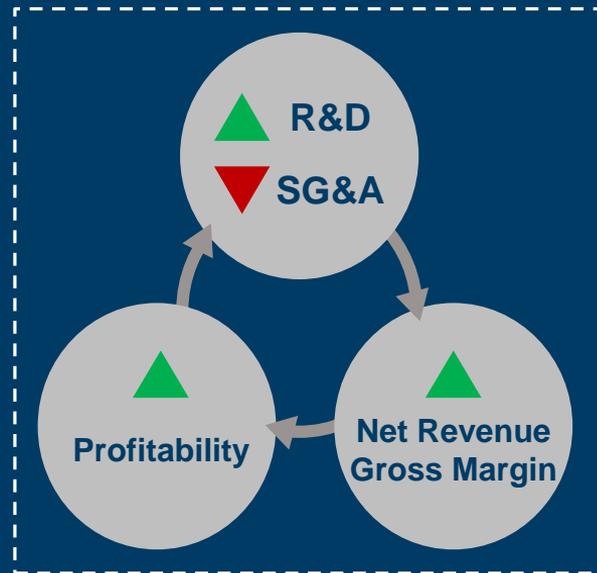
**Structural  
costs  
optimization plan**

**Divest  
non-strategic  
business lines**

**Deleveraging**

**Innovation**

### Virtuous Cycle



# Cost Optimization and Divest Non-Strategic Lines

## Resetting Cost Base to Promote Innovation

### Structural Cost Optimization Plan

- Identified further cost reduction opportunities
- Maintain **EUR c.100m in annual run-rate cost savings**
- Targeted **administrative and support functions**, as well as other **non-strategic activities**

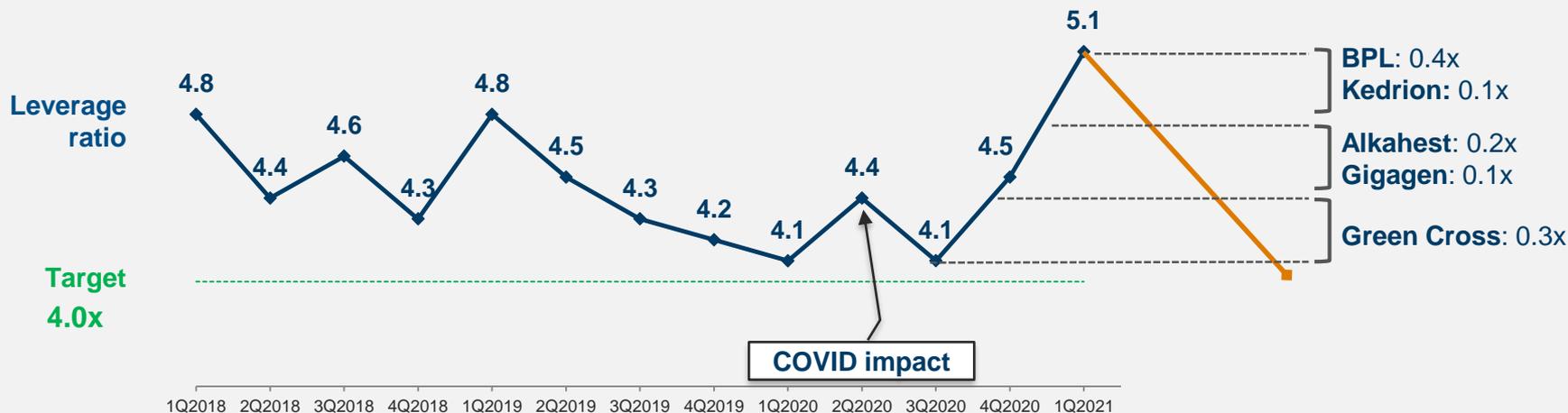
### Divest Non-Strategic Business Lines

- Driving improved focus on **capital allocation** on core divisions/business lines
- Active efforts to divest **non-strategic business lines**
- Each division will contribute to **value creation**

**Increasing Profitability Through Driving Innovation**

# Focus on Deleveraging and Securing Liquidity

## Strategic Investments Led to a Higher Leverage Ratio



Debt and leverage ratio remain a key priority

Efforts to reduce debt without missing strategic opportunities

Securing liquidity

2021

Investor &  
Analyst  
Day  
June 21

# 4

## M&A to Support Growth and Profitability

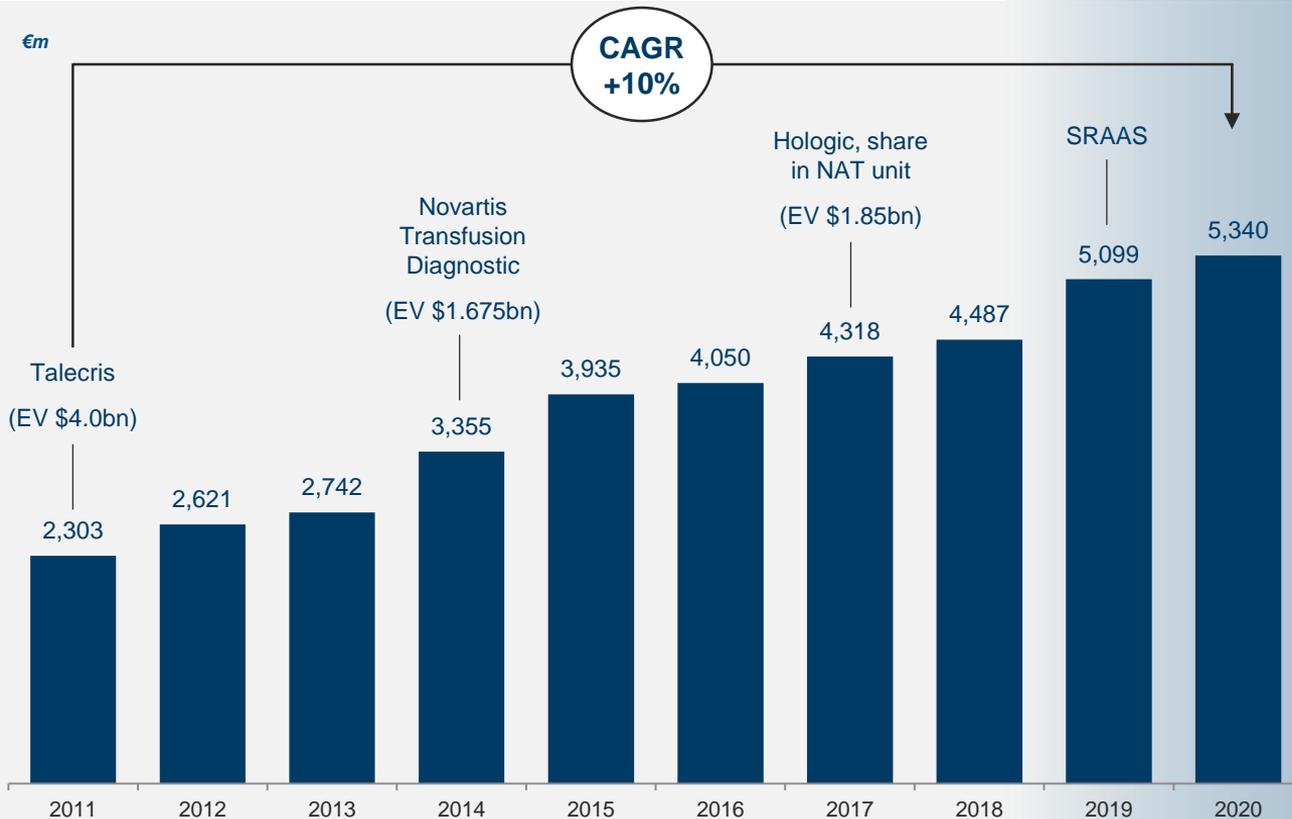
GRIFOLS

基立福

جرىفولز

# Successful Track Record to Support Growth

## Demonstrated Ability to Successfully Expand



### 2016-2020 Acquisitions

**Interstate Blood Bank (IBBI)**  
(100%)

**KedPlasma**  
6 plasma centers in the U.S.

**Access Biologicals** (49%)

**Kiro Grifols** (90%)

**Haema** (100%)

**Biotest**  
24 plasma centers in the U.S.

**MedKeeper** (100%)

**Alkahest** (100%)

**Green Cross (Korea)**  
Fractionation facility in Canada and 11 centers in the U.S.

**Alliance with Egyptian government**

**BPL & Kedrion**  
32 plasma centers in the U.S.

**GigaGen** (100%)

# Securing Our Plasma Supply

## Consolidating Our Competitive Advantage

**Increase Grifols' plasma supply and expand, diversify and reinforce our plasma-center network**



**Acquisition of  
11 plasma centers  
from Green Cross**

Q4 2020

- **11 U.S.-based plasma centers** that obtain **350k liters** of plasma/year
- **USD 90 million**



**Acquisition of  
25 plasma centers  
from BPL**

Q1 2021

- **25 U.S.-based plasma centers** that obtain **1m liters** of plasma/year
- **USD 370 million**



**Acquisition of  
7 plasma centers  
from Kedrion**

Q2 2021

- **7 U.S.-based plasma centers** that obtain **240k liters** of plasma/year
- **USD 55 million**

**Plasma Supply  
Agreement in  
Hungary**

Q1 2021

- **7 Hungary-based plasma centers** that obtain **120k liters** of plasma/year

# Enhancing Our Innovation Strategy

## Integrating Alkahest and GigaGen

Diversifying and reinforcing our pipeline by exploring solutions beyond plasma in order to accelerate our plan for sustained margin expansion



Acquisition of the remaining  
55% equity of GigaGen

September 7, 2020

- Its protein-targeted assets and **non-plasma derived therapeutics projects** can help Grifols **diversify** while retaining its focus on the science of plasma
- **USD 146 million**



Acquisition of the remaining  
56% stake of GigaGen

March 9, 2021

- Acquisition of the remaining **56% share capital** of the U.S. biopharmaceutical company
- **USD 80 million**

# Global Expansion Through New Business Models

## Canada, Egypt and China Lead the Way

**Multi-level approach to enter new markets and become a reliable long-term partner while helping countries bolster their self-sufficiency**



**Closing of the acquisition of Green Cross fractionation plant in Canada**

*October 1, 2020*

- **Fractionation plant** with a **1.5m-liter annual capacity** and **two purification plants**
- Grifols is now the **only large-scale commercial manufacturer of plasma products in Canada**
- **USD 370 million**

**Strategic alliance with the Egyptian government**

*November 24, 2020*

- **Strategic agreement** to develop the local plasma-derived therapies market by **opening 20 plasma centers** and **building production facilities in Egypt**
- The plasma centers will initially collect around **600k liters plasma/year**. The plant will have a fractionation capacity of up to **1m liters/year**

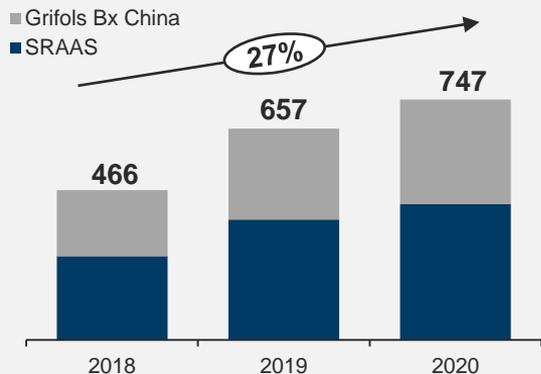


# SRAAS Continues to Outperform

## Delivering Solid Performance

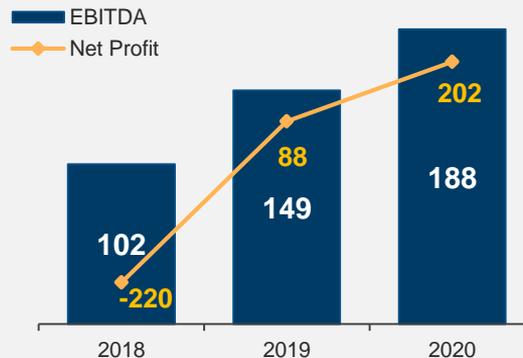
### SRAAS + Grifols Bioscience in China<sup>1</sup> (\$M)

#### Revenue Trend

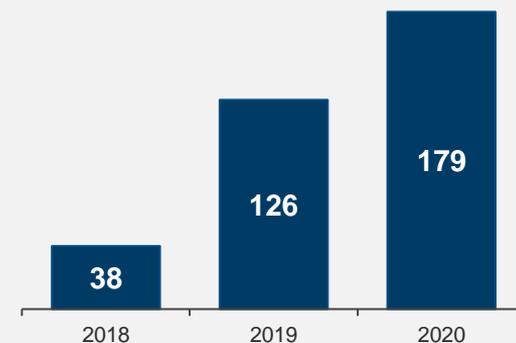


### SRAAS (\$M)

#### EBITDA and Net Profit Trend



#### Operating Cash Flow



#### P&L Variations

	(\$M)	2019	Variation vs. 2018	2020	Variation vs. 2019 <sup>2</sup>
Revenue		374	+43%	422	+7%
EBITDA		149	+45%	188	+20%
Margin		40%		45%	
Net Profit		88	+\$307m	202	+118%
Margin		24%		48%	

- Unparalleled **short-, mid- and long-term growth opportunity**
- China is Grifols' **third-largest sales market**, representing its leading market for albumin and third most important market for the Diagnostic Division
- High potential for **value creation** thanks to **synergies**
- **Strong cash flow generation**; no debt
- **SRAAS has become the exclusive distributor of Grifols' plasma-derived products in China**, with a robust sales network of 500+ distributors

<sup>1</sup> Includes China, Hong Kong SAR, Taiwan and Macao SAR; <sup>2</sup> Growth rate based on currency consistency assumption

# Enhancing Investor Communications



## ESG

Clear focus on **ESG and integrated reporting**

Further promote our **transparency on ESG-oriented initiatives**

Recognized among the **world's most sustainable companies**: DJSI, Euronext Vigeo, FTSE4Good, Bloomberg Gender Equality Index and S&P Global Ratings



## Fluid and Transparent Communications

**Fluid and transparent communications** are crucial, especially during these unprecedented times

Grifols is intensifying its efforts to maintain a **reinforced constant dialogue with stakeholders**



## Earnings Releases

In light of the recently issued norm by the Spanish Law and embraced by the Spanish Stock Exchange (CNMV) and the fact that Grifols' performance is not quarterly driven, the company will henceforth release its earnings results on a **half year basis**

# Key Takeaways

## Driving Resource Allocation to Support Further Growth and Profitability

Streamlined focus on **value creation** fundamentals

Active efforts to **divest non-strategic line of businesses**

**Increasing profitability** through driving **innovation**

**Deleveraging** and **liquidity** remain a key priority

Successful track record of **organic and inorganic growth**

Clear **focus on ESG** and **integrated reporting**  
**Half Year earnings release**

# Environmental, Social and Governance

## Shaping the Industry's Sustainability Standards

***Thomas Glanzmann*** – Vice-Chairman of Grifols' Board of Directors  
and Chairman of Grifols' Sustainability Committee

***Nuria Pascual*** – VP Corporate Treasury & Investor Relations Officer

2021

Investor &  
Analyst  
Day  
June 21

# 1

## Building on Our Heritage to Foster Sustainability as a Strategic Pillar

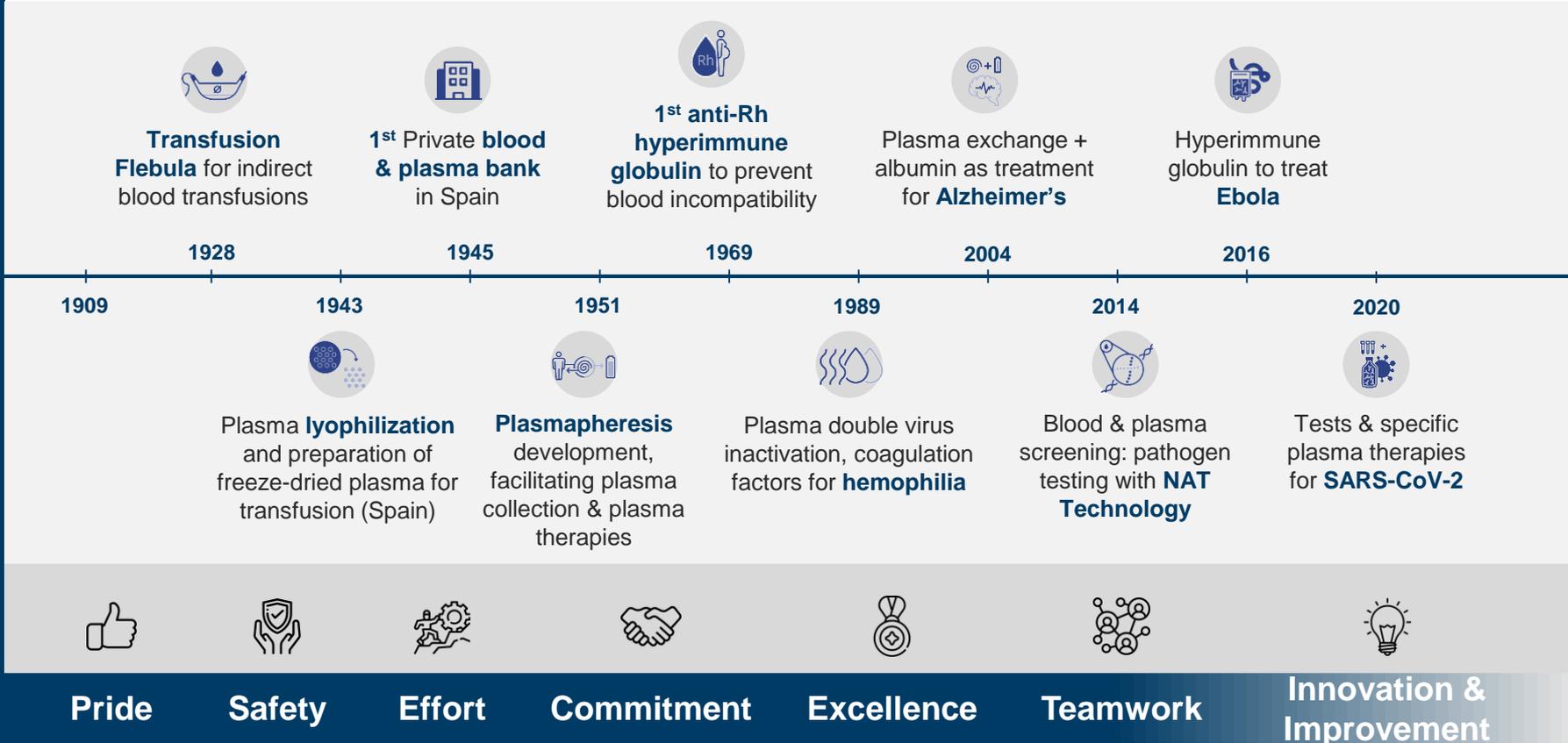
GRIFOLS

基立福

جرىفولز

# Sustainability in Our DNA Since 1909...

## Built Historically on Our Strong Corporate Values



Pride



Safety



Effort



Commitment



Excellence



Teamwork

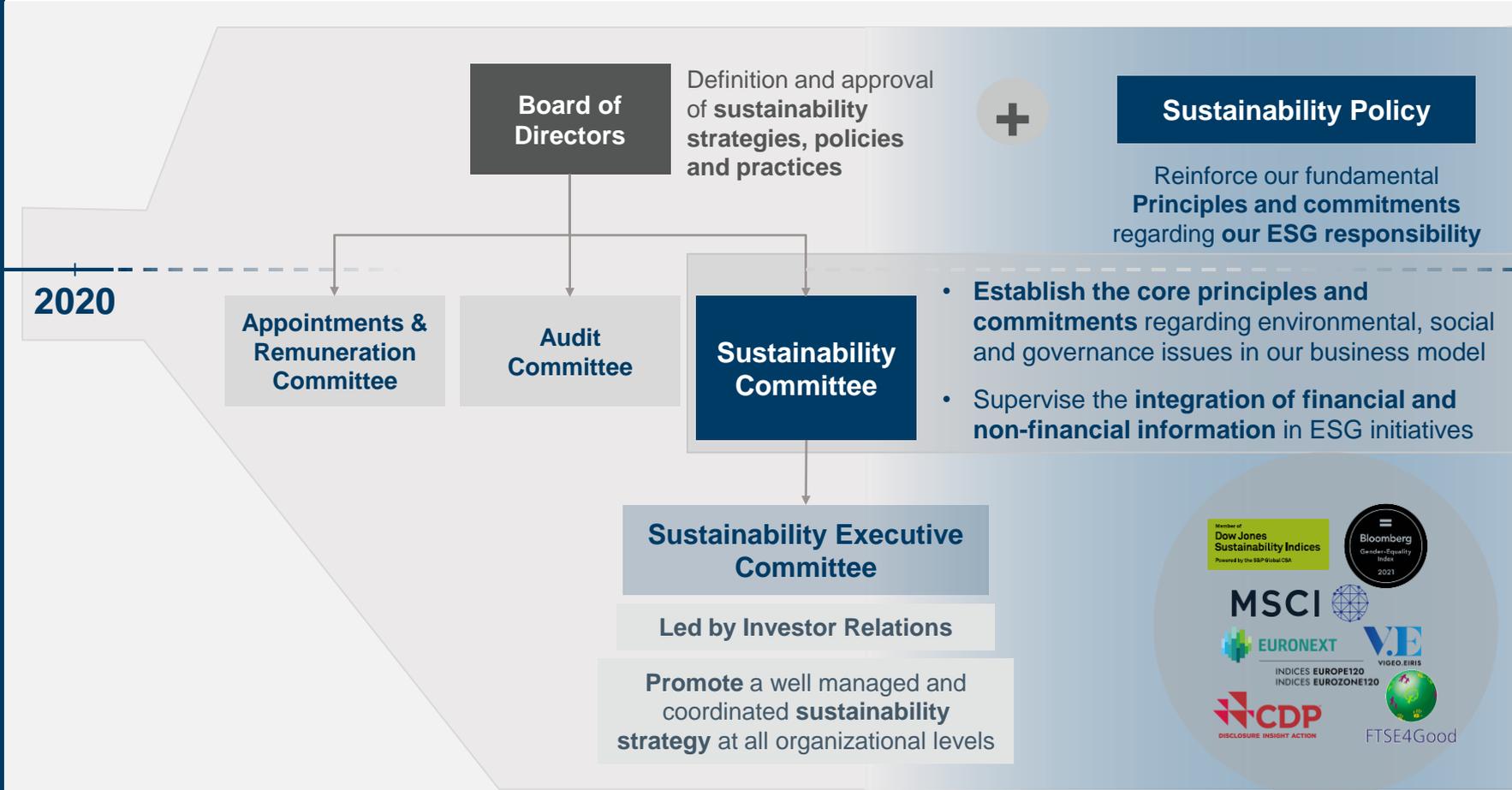


Innovation & Improvement

### Our Core Values

# ... Strengthened Through Our Governance

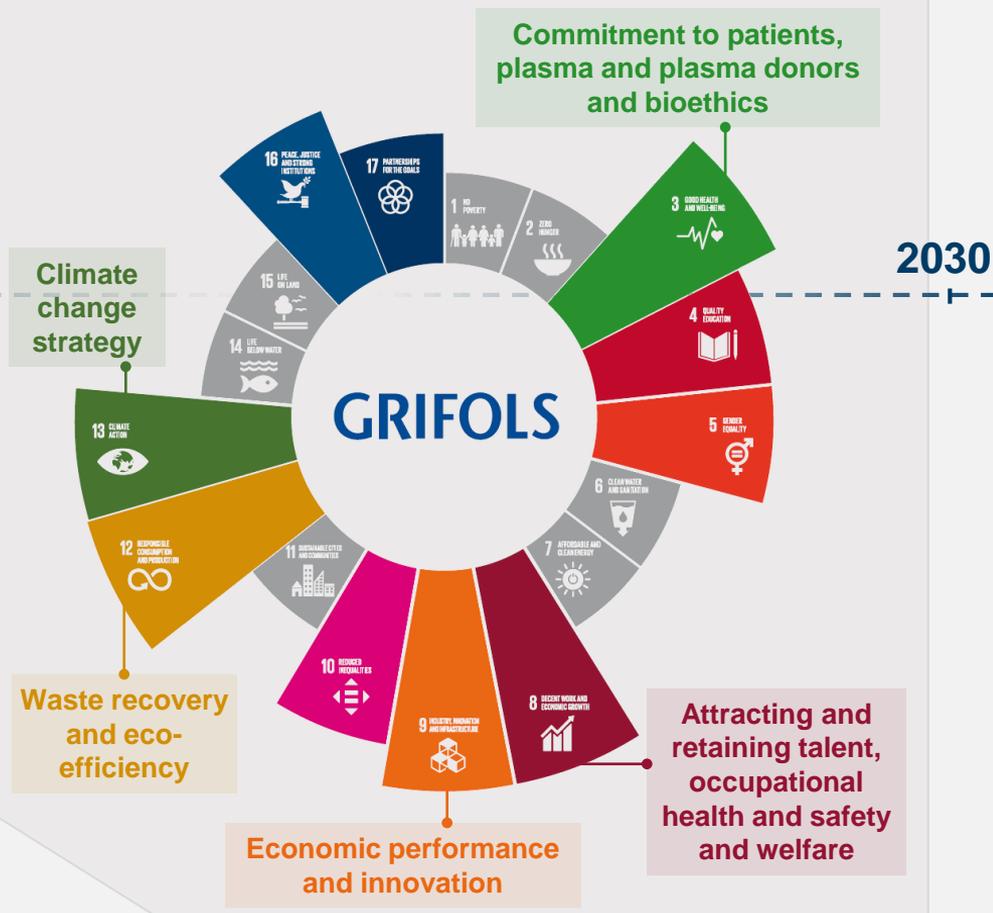
Commitment Based on Ethical Leadership and Internationally Recognized



# Integrating Sustainability in Our Strategy

## On the Path Towards 2030 and Beyond Led by Our 4 Pillars

### Sustainability Plan grounded on 4 pillars



2021

Investor &  
Analyst  
Day  
June 21

# 2

## Sustainability Plan: Our Commitments

GRIFOLS

基立福

جرىفولز

# Sustainability Plan: Our Commitments



**Our People**



**Commitment to  
Donors and  
Patients**



**Impact on  
Society**



**Environmental  
responsibility**

# Our People Is Our Top Priority

## Our Commitment Promotes Equality, Diversity, Inclusion and Development



Continued efforts to promote **effective equality**



Offer a **professional development** fostering **continuous training**



Ensure the ongoing **improvement of its occupational health, well-being and safety**



Reflect a **diverse and inclusive company**



**Encourage teamwork** to drive innovation by sharing insights and experiences



**Offer competitive pay packages** and properly compensate employees

# Our People Is Our Top Priority

## Equal Opportunities, Diversity and Professional Development



### Workforce at Grifols



Diverse and inclusive company



### Ongoing efforts to effectively promote equality



2.2%  
U.S.

3.1%  
Spain

1.3%  
Germany

**62%**  
of promotions are women



### Professional development model focused on strengths and areas for growth



THE GRIFOLS ACADEMY  
PROFESSIONAL DEVELOPMENT



THE GRIFOLS ACADEMY  
PLASMAPHERESIS



THE GRIFOLS ACADEMY  
IMMUNOHEMATOLOGY

Continuous training adapted to the needs of each employee



64%



36%



# Commitment to Donors and Patients

## Ensuring Non-Discrimination and Donor Health, Safety and Well-Being



**Non-discrimination** on the basis of **gender, race, ethnicity or socioeconomic status**



**Compensation policy** applies **equally** to all donors



**No distinction** is made with regard to the **volume of plasma** collected or **donors' weight**



**Same quality and safety criteria** applied in all Grifols plasma centers and for all donors



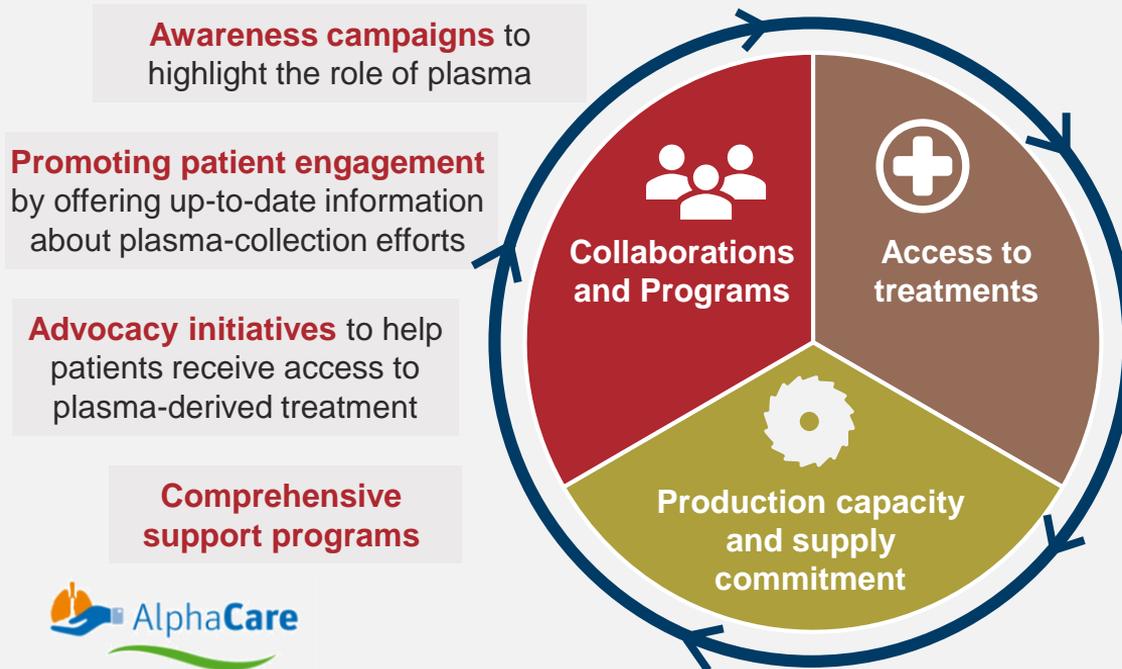
Our donation centers adhere to the **highest quality and safety standards to guarantee donors' health**



**Protecting the health, safety, well-being and dignity** of plasma donors is critical

# Commitment to Donors and Patients

## Grifols' Commitment to Patients is Based on Three Pillars



**Price-setting policy** grounded on two core principles:

- 1 Cost should never be an obstacle** to receiving optimal treatment
- 2 Price should guarantee** long-term sustainability and reinforce commitment to innovate

### PatientCare programs

>€11 m of plasma-derived medicines donated in 2020

Grifols has made **strategic investments** in recent years to **increase its access to plasma** and led other initiatives to **ensure an uninterrupted supply** of plasma-derived medicines throughout 2020

# Commitment to Donors and Patients

## Our Sustainable Business Model Pursues Social Value



# €6.2bn

Total Social Value Impact

# 2.1x

Social Value Ratio

### Donors



## €1,828M



Physical and psychological well-being



Educational expenses



Financial stability



Healthier lives

### Community



## €722M



Healthcare access



Economic impact in donor communities

### Patients (1)



## €3,636M



Improvement in Quality of Life

(1) Corresponds to the high end of the sensitivity analysis performed

# Our Contribution to Social Progress

## Social Action Plan



### Education



Help promote **access to education** and **equality of opportunities** in communities where Grifols operates

**Contribute to driving positive change:** gender equality, ethics and values



### Health and Well-being



**Promote** and **improve access** to healthcare

**Direct and foundation-led initiatives**

**Promote science** as a driver of positive change



### Local Development



Build close ties in **donor communities** and **areas** where production facilities are located

**Community programs** in other countries and **humanitarian aid**



### Environment



Contribute to **recover** and **enhance natural and environmental patrimony**

**Direct initiatives** and **joint projects** in collaboration with nature conservation associations

# Our Contribution to Social Progress

## Creating Value Beyond Financial Performance



### Grifols' Socio-Economic Contributions

2015-2020

2020



**€43bn**

Total economic impact



**+44k**

New jobs

**€7.5bn**

Total **economic impact**

**x1.8**

Grifols' contributions **double its impact** in the U.S. economy

**140k**

Total **jobs**

**X6.2**

Grifols **generates 6.1 jobs** in the U.S. for every one job it creates

# Environmental Responsibility

## Our Six Commitments for 2030



### Emissions Reduction

Reduce greenhouse gas emissions per unit of production by

**40%**

PROGRESS IN 2020

**20%**



### Energy Efficiency

Increase energy efficiency per unit of production

**15%**

PROGRESS IN 2020

**63%**



### Renewable Energies

Consume 70% of electricity from renewable sources

**70%**

PROGRESS IN 2020

**5.4%**



### Decarbonization

Facilitate **decarbonization** in **business travel** and **employee commutes**



### Circular Economy

**Continue to implement measures** in every stage of the operational life cycle



### Protect Biodiversity

Protect biodiversity and promote CO<sub>2</sub> capture on our properties through the **Grifols Wildlife Program**

# Key Takeaways

## Shaping the Industry's Sustainability Standards

Since our **beginnings in 1909**, we have continually strengthened our **commitment to generate social impact**

Our commitment promotes **equality, diversity, inclusion** and **talent development**

**Non-discrimination** and **measures** to ensure **donors' health, safety and well-being**

Supporting patients through **access to treatment, awareness campaigns** and **support programs**

**Creating social value** beyond financial performance

**Significant progress** on **2030 environmental targets**

# Final Remarks

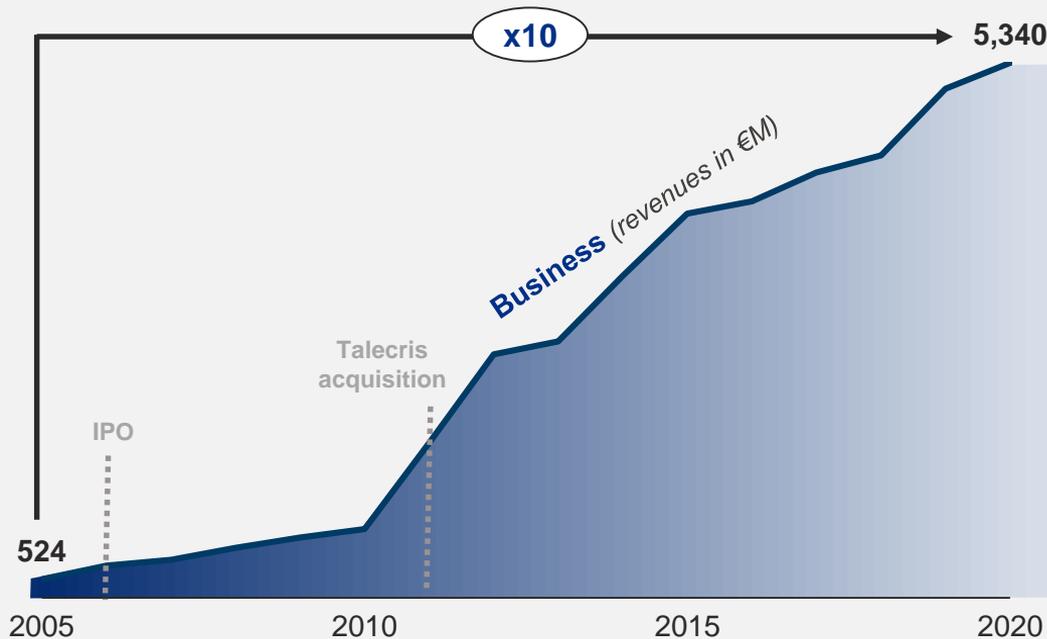
**Innovation at the Core of Our Decisions to Drive  
Profitable Growth**

*Víctor Grífols Deu – Co-CEO*

# Excelling in Grifols' Core Pillars

Since 2005, We Have Excelled in 3 Core Pillars Leading to a 10 Fold Growth

Focus in excelling in 3 out of 4 pillars



Plasma Procurement



Engineering & Manufacturing



Commercialization / Global Expansion

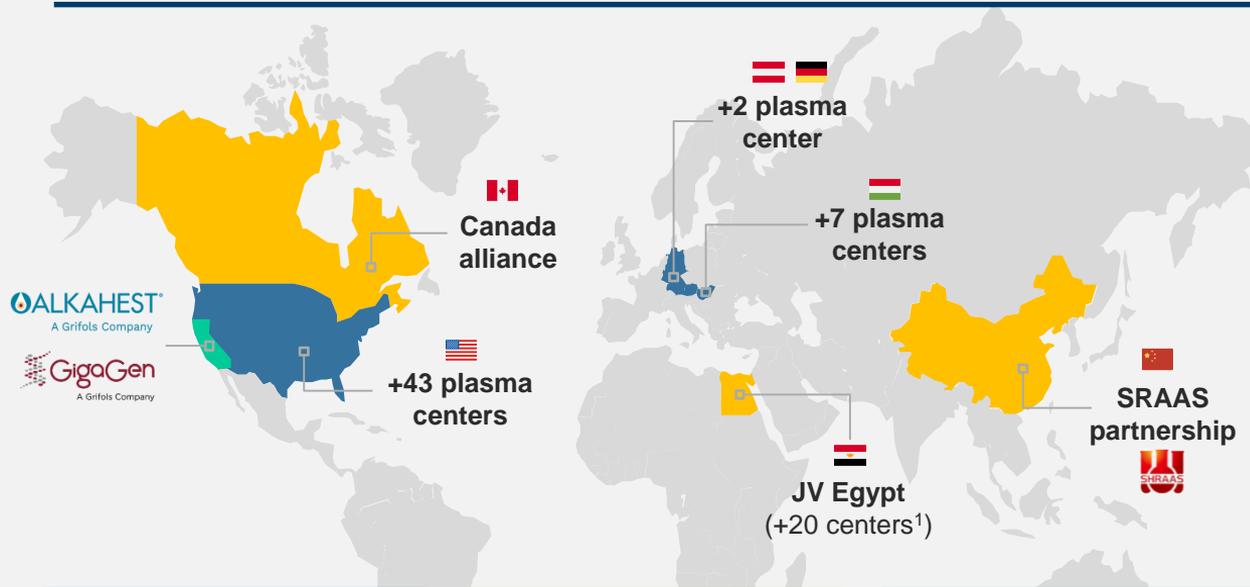


Innovation

# A Solid Basis

## Emerging Stronger From the Pandemic; Results to Start Paying Off in the Short-term

### Recent activity to reinforce core business



**ALKAHEST**  
A Grifols Company

**GigaGen**  
A Grifols Company



### Margin improvement

- Continue with structural costs optimization plan
- Divest non-strategic business lines

**Increasing plasma supply**  
(~80 centers<sup>2</sup>)

**Expanding globally & evolving industry paradigm**

**Expanding innovation ecosystem with new and powerful platforms**

<sup>1</sup> 10 of 20 centers to be opened during 2021; <sup>2</sup> Total DCs opened from 2020 Q4 until end of 2021

# Innovation

Collecting Results From New Innovation Approach While Paving the Way for the Future

## Recent innovation results

**50% of 2020 growth ...**

Internal plasma  
innovation



Plasma  
innovation  
out licensed



Non-plasma  
innovation in  
licensed



Diagnostics  
Innovation



+

## Foundations for innovation as growth engine



**New Scientific Innovation Organization**



**Expand towards a holistic approach in our core therapeutic areas**  
*(Internal, External, Plasma, Non-plasma)*



**Powerful legacy & promising platforms**

**GRIFOLS**



**ALKAHEST**  
A Grifols Company

**GigoGen**  
A Grifols Company

**... and still in ramp-up stage**

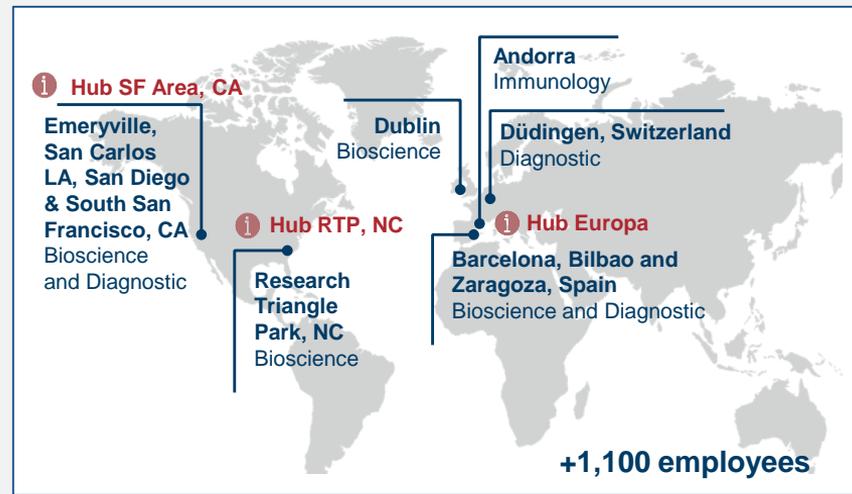
# Innovation

## A Global Ecosystem to Deliver Value in Our Core Therapeutic Areas

### New Ecosystem



### Footprint



### Therapeutic areas

**Immunology & Infectious Diseases**

**Neurology**

**Pulmonology**

**Hepatology & Intensive Care**

**Hematology**

**Ophthalmology** *New Addition*

# Innovation Ambition

## Innovation to Drive Profitable Growth

 **Structural costs optimization plan**

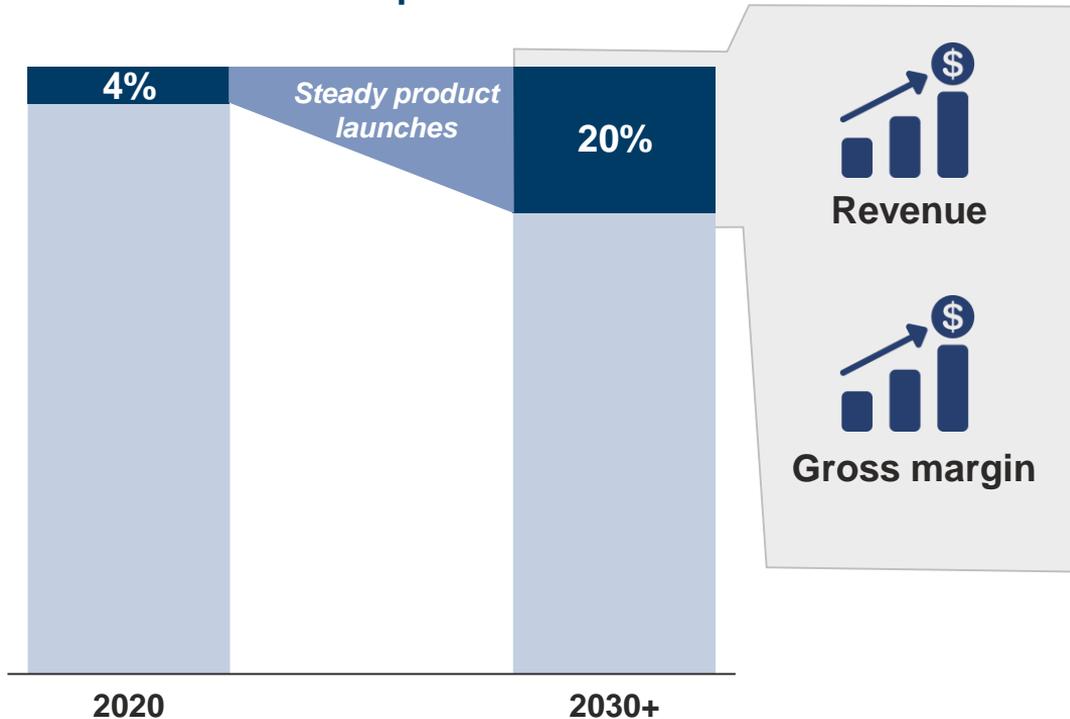
 **Divesting non-strategic business lines**

 **Project prioritization**

Sources to fund innovation

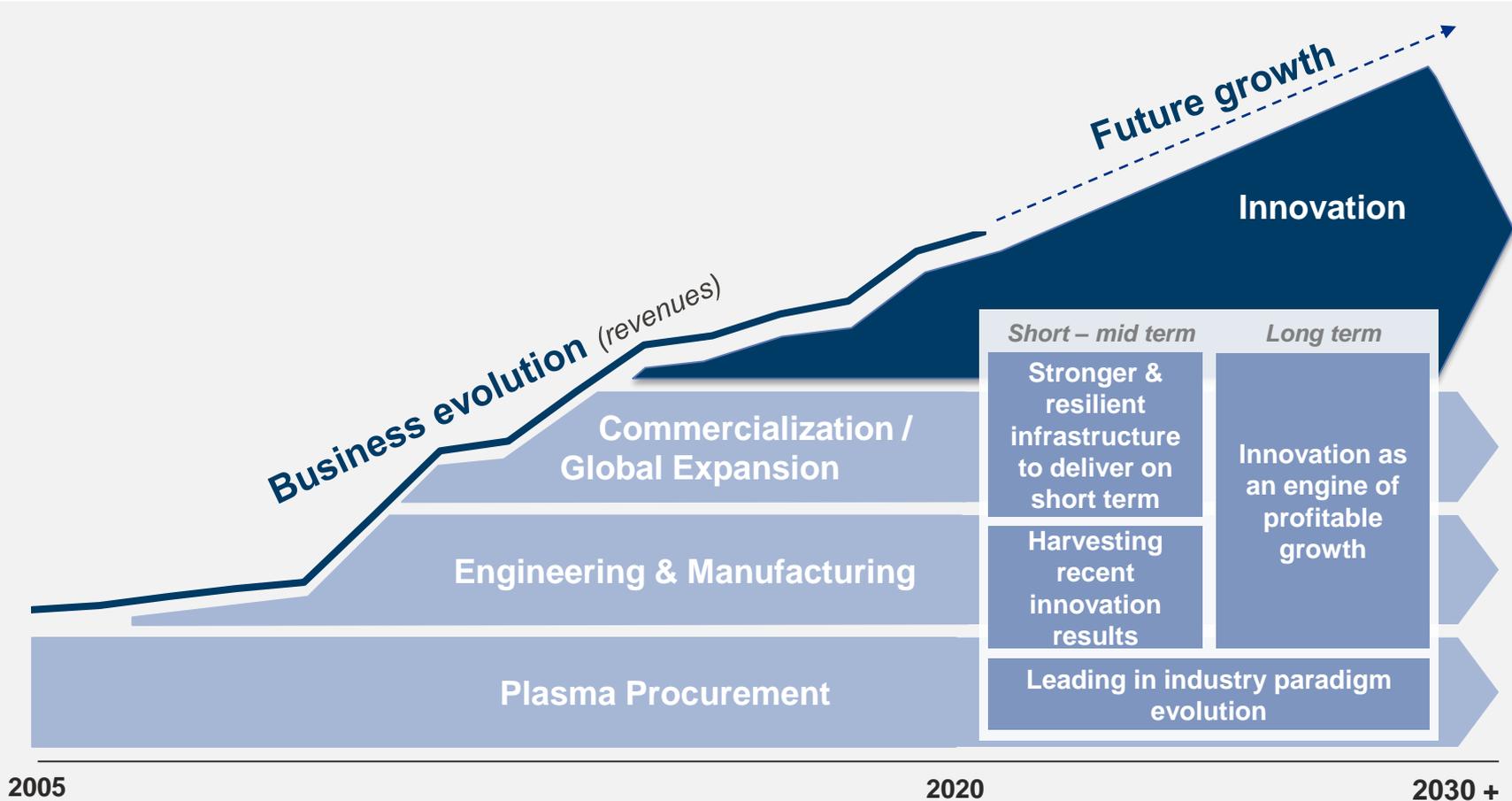


### Revenues from new product launches



# Innovation

## Moving Forward, Innovation Will Be the Engine of Profitable Growth



# 2021 Investor and Analyst Day

June 3, 2021

# GRIFOLS

基立福

جريفولز



15 YEARS  
STOCK MARKET  
2006-2021

2021

Investor &  
Analyst  
Day  
June 21

# Glossary

GRIFOLS

基立福

جرىفولز

# Glossary

- **Alpha-1 antitrypsin deficiency (AATD):** Inherited disease characterized by low levels of, or no, alpha-1 antitrypsin (AAT) in the blood. This protein made in the liver, reaches other organs (such as the lungs), after being released into the blood stream, enabling its normal function.
- **Albumin:** The most abundant protein found in plasma (approximately 60% of human plasma). Produced in the liver, it is important in regulating blood volume by maintaining the oncotic pressure of the blood compartment.
- **Alzheimer's disease (AD):** This is the most common form of dementia. This incurable, degenerative, and terminal disease was first described by German psychiatrist and neuropathologist Alois Alzheimer in 1906 and was named after him.
- **American Society for Apheresis (ASFA):** An organization of physicians, scientists, and allied health professionals whose mission is to advance apheresis medicine for patients, donors and practitioners through education, evidence-based practice, research and advocacy
- **Autoimmune disease:** Condition in which the immune system mistakenly attacks healthy cells.
- **Babesiosis/Babesia virus:** Disease caused by microscopic parasites that infect red blood cells.
- **Beta-amyloid:** Protein strongly implicated in Alzheimer's diseases. Beta-amyloid is the main component of certain deposits found in the brains of patients of Alzheimer's disease.
- **CIDP (Chronic Inflammatory Demyelinating Polyneuropathy):** Neurological disorder which causes gradual weakness, numbness, pain in arms and legs and difficulty in walking.
- **Cirrhosis:** Medical condition which is a result of advanced liver disease. It is characterized by the replacement of liver tissue by fibrosis (scar tissue) and regenerative nodules (lumps that occur due to attempted repair of damaged tissue).
- **Chronic Lymphocytic Leukemia (CLL):** a type of cancer of the blood and bone marrow — the spongy tissue inside bones where blood cells are made
- **COVID-19:** Infectious disease caused by a new strain of coronavirus. 'CO' stands for corona, 'VI' for virus, and 'D' for disease.
- **ELISA:** Enzyme-linked immunosorbent assay.
- **EMA:** European Medicines Agency.
- **EPCM:** Engineering, Procurement, Construction Management.
- **Factor VIII or FVIII:** This is an essential blood clotting factor also known as anti-hemophilic factor (AHF). In humans, Factor VIII is encoded by the F8 gene. Defects in this gene results in hemophilia A, a sexlinked disease that occurs predominantly in males. FVIII concentrated from donated blood plasma, or alternatively recombinant FVIII, or rFVIII can be given to hemophiliacs to restore hemostasis.

# Glossary

- **Factor IX:** This is an important blood clotting factor also known as Christmas factor or plasma thromboplastin component (PTC). It is one of the serine proteases of the coagulation system and belongs to the peptidase family S1. In humans, a deficiency of this protein causes hemophilia B, a sex-linked disease that occurs predominantly in males.
- **FDA:** Food and Drug Administration. U.S. Health Authority.
- **Fibrin sealant:** Surgical adhesive material derived from plasma.
- **Fibrinogen:** Coagulation factor found in human plasma crucial for blood clot formation.
- **Fractionation:** Process of separating plasma into its component parts, such as albumin, immunoglobulin, alpha-1 antitrypsin and coagulation factors.
- **HBV:** Hepatitis B Virus.
- **HCV:** Hepatitis C Virus.
- **Hematology:** The study of blood, blood-forming organs, and blood diseases.
- **Hemoderivative:** Proteins obtained by fractionation of human blood plasma. See plasma derived proteins.
- **Hemophilia:** Genetic deficiency characterized by the lack of one of the clotting factors. It has two main variants:
  - **Hemophilia A:** genetic deficiency of coagulation Factor VIII, which causes increased bleeding (usually affects males).
  - **Hemophilia B:** genetic deficiency of coagulation Factor IX.
- **Hemotherapy:** Treatment of a disease using blood, blood components and its derivatives.
- **HEOR:** Health Economics Outcomes Research
- **HIV:** Human Immunodeficiency Virus.
- **Hyperimmune globulin:** class of immunoglobulins prepared in a similar way as for normal human immunoglobulin, except that the donor has high titers of antibody against a specific organism or antigen in their plasma.
- **IA:** Immunoassays. These are systems available in several formats that may be used to detect antibodies, recombinant proteins or a combination of the two.
- **Immunoglobulins:** Also known as antibodies, are proteins derived from plasma. They control the body's immune response. They have multiple indications and some of their main uses are to treat: (i) immune deficiencies, (ii) inflammatory and autoimmune diseases and (iii) acute infections. IVIG is an immunoglobulin administered intravenously that contains IgG (immunoglobulin (antibody) G).

# Glossary

- **Intravenous:** Administration of drugs or fluids directly into a vein.
- **Immunohematology:** A branch of hematology related to the study of recombinant proteins and antibodies and their effects on blood and the relationships between blood disorders and the immune system. Also referred to as Transfusional Medicine – blood bank, its main activities include blood typing, compatibility tests and crossmatching and antibody identification.
- **Immunology:** This is a branch of biomedical science that covers the study of all aspects of the immune system in organisms. It deals with the physiological functioning of the immune system in states of both health and disease; malfunctions (autoimmune diseases, hypersensitivities, immune deficiency, transplant rejection) and the physical, chemical and physiological characteristics of the components of the immune system in vitro, in situ, and in vivo.
- **Immunoglobulin (IgG):** Also known as antibodies, are proteins derived from plasma. They control the body's immune response. They have multiple indications and some of their main uses are to treat: (i) immune deficiencies, (ii) inflammatory and autoimmune diseases and (iii) acute infections. IVIG is an immunoglobulin administered intravenously that contains IgG (immunoglobulin (antibody) G).
- **ITP (Chronic immune thrombocytopenia):** Autoimmune disorder in which patients produce antiplatelet autoantibodies and specialized white blood cells that destroy their blood platelets. This results in a low blood platelet count (thrombocytopenia) that may produce bruising or excessive bleeding.
- **IVD:** In vitro Diagnostic.
- **IV solutions/Intravenous solution:** Medicine or homogeneous mixture of a substance in liquid, enabling it to be infused into the circulatory system through a needle.
- **Molecular Diagnostics:** Discipline that studies genomic (DNA) and proteomic (proteins) expression patterns and uses the information to distinguish between normal, precancerous, and cancerous tissues at the molecular level.
- **Monoclonal antibody (mAb):** Antibody produced by a single clone of cells typically used in immunotherapy (such as in the treatment of autoimmune or inflammatory disorders and cancer), diagnostic testing and cell identification and tracing. Monoclonal antibodies are a cornerstone of immunology and are increasingly coming into use as therapeutic agents.
- **Myasthenia Gravis (MG):** Chronic autoimmune, neuromuscular disease that causes weakness in the skeletal muscles that worsens after periods of activity and improves after periods of rest. These muscles are responsible for functions involving breathing and moving parts of the body.

# Glossary

- **NAT:** Nucleic Acid Amplification Testing.
- **Neovascular Age-Related Macular Degeneration (nAMD):** is a disease that impacts the central area of the retina in the eye, called the macula.
- **Neurology:** Science that deals with the anatomy, functions and organic disorders of nerves and the nervous system.
- **Ophthalmology:** is a branch of medicine and surgery that deals with the diagnosis and treatment of disorders of the eye
- **Pandemic:** The worldwide spread of a new disease.
- **PCR:** Polymerase chain reaction is a method widely used to rapidly make millions to billions of copies of a specific DNA sample, allowing scientists to take a very small sample of DNA and amplify it to a large enough amount to study in detail.
- **pdFVIII:** Plasma-derived Factor VIII.
- **Parkinson Disease Dementia (PDD):** complex neurodegenerative disorder where each patient experience different combination of motor and non-motor symptoms
- **Pharmacovigilance:** Practice of monitoring the effects of medical drugs after they have been licensed for use, especially in order to identify and evaluate previously unreported adverse reactions.
- **Plasma:** Yellow-coloured liquid part of the blood, consisting of a mix of a large number of proteins in solution.
- **Plasma-derived proteins:** Purified plasma proteins with therapeutic properties that are obtained through the fractionation of human plasma. Albumin, immunoglobulins, factor VIII and alpha-1 antitrypsin are the main plasma proteins.
- **Plasmapheresis:** Plasmapheresis is a technique which separates plasma from other blood components, such as red blood cells, platelets and other cells. These unused blood components are suspended in saline solution and immediately reinjected back into the donor. Because the donor is only providing plasma and not whole blood, the recovery process is faster and better tolerated, and the donor is able to make donations more frequently. Plasmapheresis was developed by Jose Antonio Grifols Lucas in the year 1951. It is the only procedure that is capable of obtaining sufficient quantities of plasma to cover the manufacturing needs for the different plasma protein therapies.
- **Plasma Proteomics:** is a term which describes the high-throughput analysis of plasma biomarkers using very powerful, sensitive and specific instruments.
- **PPTA:** Plasma Protein Therapeutics Association.
- **Primary immunodeficiency (PID/PIDD):** Inherited condition where there is an impaired immune response, weakening the immune system and allowing infections and other health problems to occur more easily. It may be in one or more aspects of the immune system.

# Glossary

- **ProlastinR/ProlastinR -C:** This is a concentrated form of alpha-1 antitrypsin (AAT), derived from human plasma and approved only for chronic, or ongoing, replacement therapy in people with genetic AAT deficiency. Given as prescribed, Prolastin raises the levels of AAT in the blood and lungs. Raising the AAT level may help reduce the damage to the lungs caused by destructive enzymes.
- **Pulmonology:** is an area of medicine that focuses on the health of the respiratory system. Pulmonologists treat everything from asthma to tuberculosis.
- **Recombinant:** Protein prepared by recombinant technology, coded by the manipulated gene. Procedures are used to join together segments in a cell-free system (an environment outside a cell organism). They are known as highly potent medicines that are safe from off-target side effects and take a shorter time to develop than small molecules.
- **rFVIII:** Recombinant Factor VIII is the antihemophilic factor A, obtained using recombinant DNA technology. With this technology, pure factor is synthesized in the laboratory instead of being extracted from blood plasma.
- **ROW:** Rest of the World.
- **SARS-CoV-2:** Severe acute respiratory syndrome coronavirus 2 is the strain of coronavirus that causes coronavirus disease 2019 (COVID-19), the respiratory illness responsible for the COVID-19 pandemic.
- **Secondary immunodeficiency (SID) :** Occurs when the immune system is compromised due to an environmental factor. Examples of these outside forces include HIV, chemotherapy, severe burns or malnutrition.
- **SCIG:** Subcutaneous Immunoglobulin
- **Thrombin:** Enzyme that presides over the conversion of a substance called fibrinogen to fibrin, which promotes blood clotting.
- **Transfusion medicine:** Branch of medicine that encompasses among others, immunohematology, blood and plasma screening and blood typing.
- **West Nile Virus (WNV):** Virus transmitted by mosquitoes. Humans are mainly infected through mosquito bites, but infection can occur through organ transplantation and blood.
- **Von Willebrand Disease (vWD):** This is the most common hereditary coagulation abnormality described in humans, although it can also be acquired as a result of other medical conditions. It arises from a qualitative or quantitative deficiency of von Willebrand factor (vWF), a multimeric protein that is required for platelet adhesion.
- **Zika virus:** Infectious disease spread by the bite of an infected Aedes species mosquito.