



R&D Investor Briefing

December 4, 2019

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After struggling for years to get an accurate diagnosis, hereditary angioedema (HAE) patient Kathrin Schoen is working to ensure the next generation of patients doesn't have to wait so long.

Introduction

William Mezzanotte, M.D.

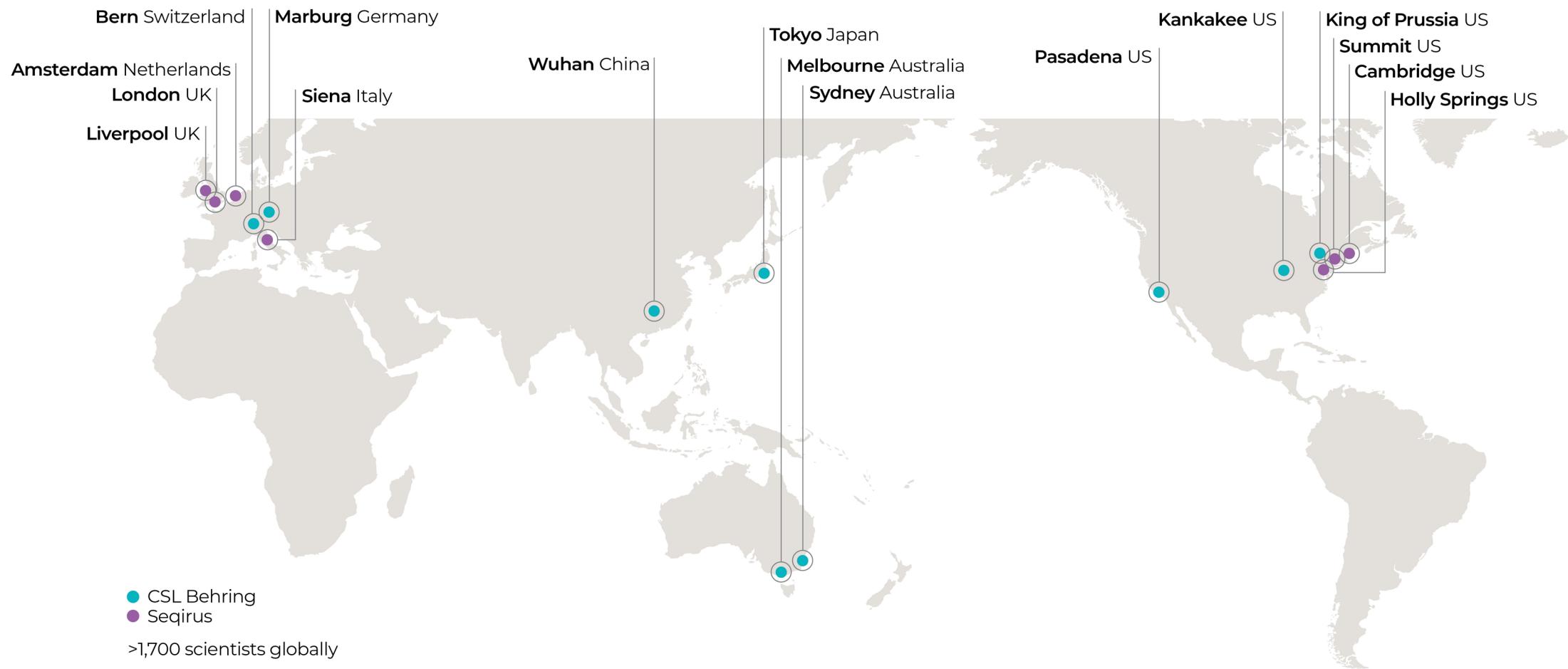
Executive Vice President, Head of Research and Development
CSL Behring



Agenda

Welcome	<i>Mark Dehring</i>
Introduction	<i>Bill Mezzanotte</i>
Research, Gene and Cell Therapy	<i>Andrew Nash</i>
Clinical Development Part 1	<i>Diana Lanchoney</i>
Commercial Part 1	<i>Bill Campbell</i>
Panel Q&A Session	
Break	
Commercial Part 2	<i>Bill Campbell</i>
Sqirus	<i>Russell Basser</i>
Clinical Development Part 2 and Summary	<i>Bill Mezzanotte</i>
Panel Q&A Session	

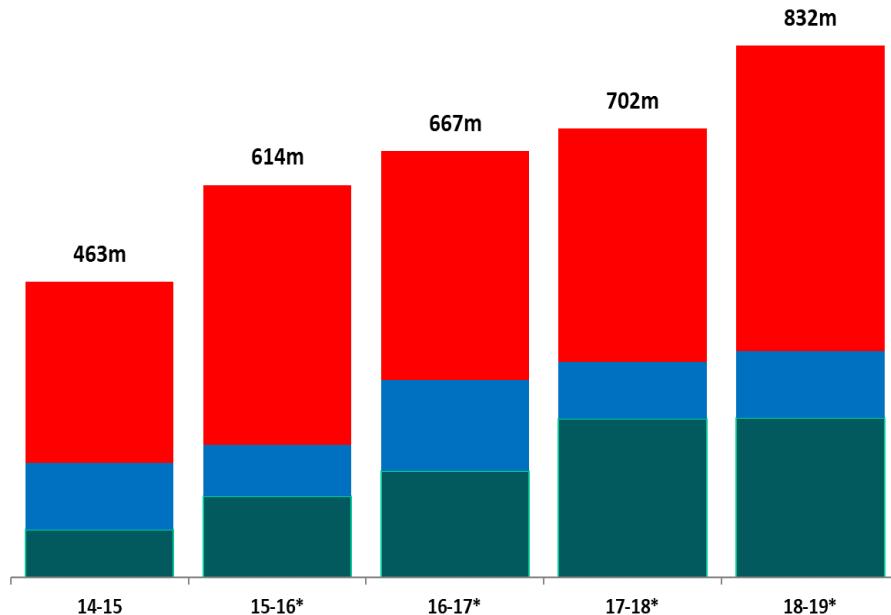
Global Research and Development Footprint



Global Collaborations for Innovation Access



Commitment to Research and Development



New Product Development

activities focus on innovative new therapies for life-threatening diseases

Market Development

strategies seek to bring therapies to new markets and new indications

Life Cycle Management

ensures continuous improvement of existing products

* Includes R&D for CSL Behring and Seqirus.

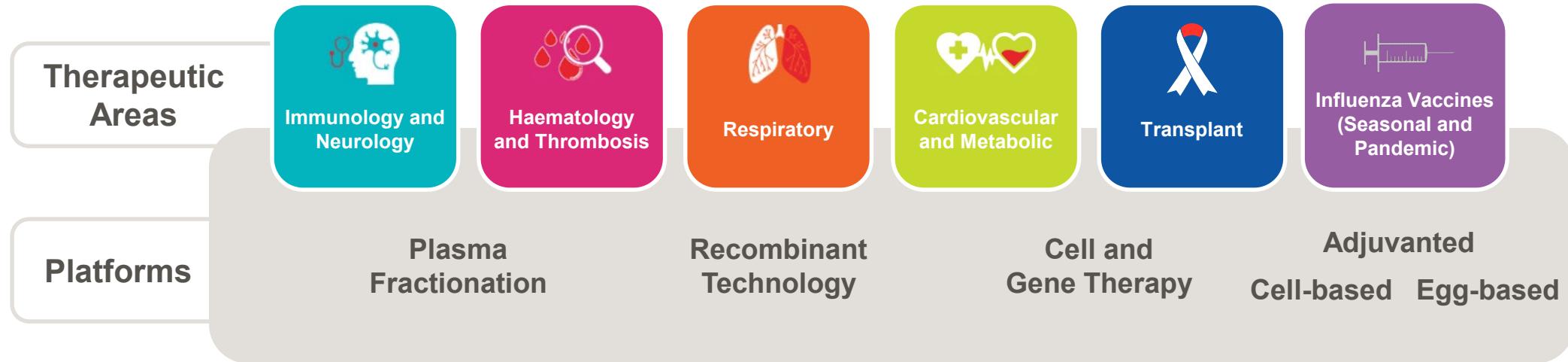
m = US\$ millions

R&D investment ~10-11% global revenue

Active R&D Support for Growth in Plasma Business



Focus Through Our Therapeutic Areas and Platforms



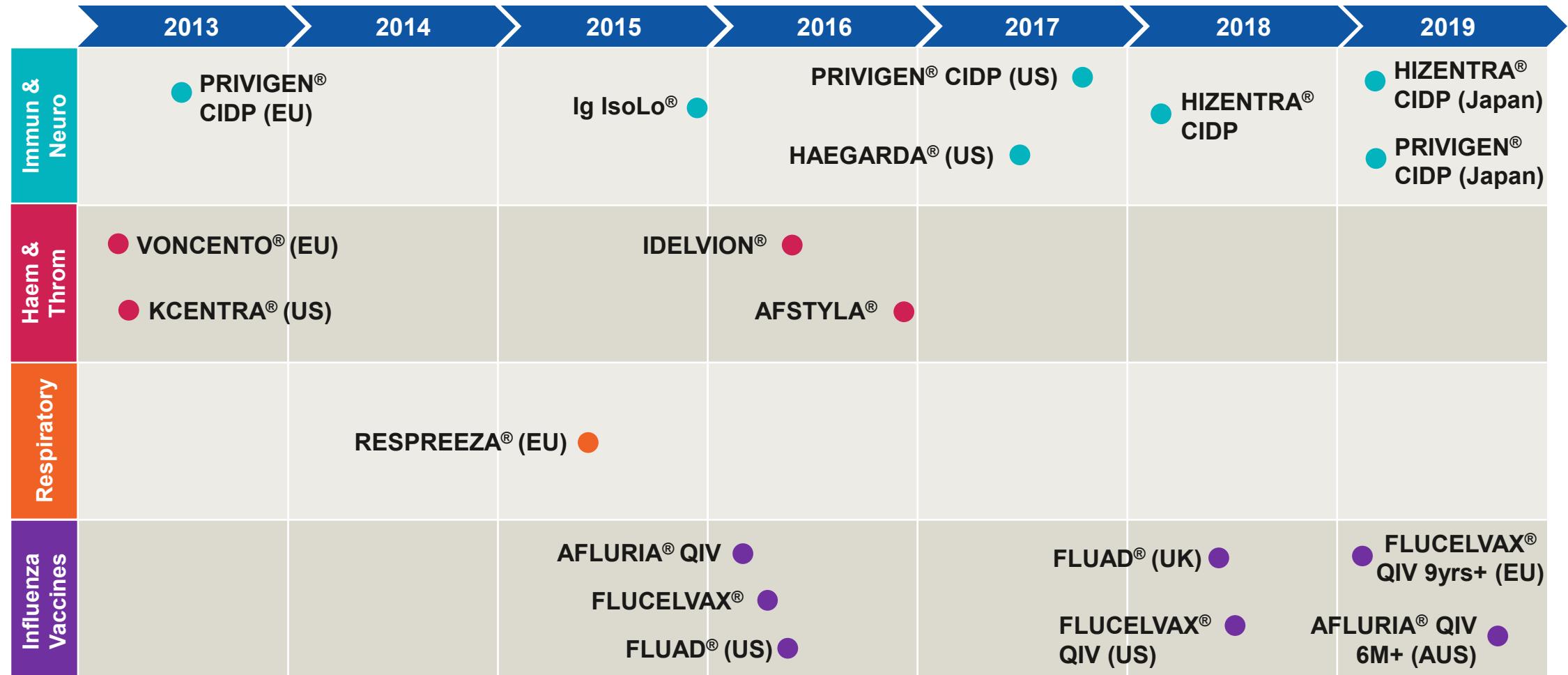
R&D Portfolio – December 2018

PRE-CLINICAL	PHASE I	PHASE II	PHASE III	REGISTRATION	POST-REGISTRATION
CSL200 (CAL-H)SCD	CSL730 rFc Multimer	CSL312 Anti-FXIIa HAE	PRIVIGEN® PID Japan	PRIVIGEN® CIDP Japan	CSL830 C1-INH Subcut EU
CSL889 Hemopexin SCD	CSL324 Anti-G-CSFR	Mavrilimumab GM-CSFR	HIZENTRA® IIM	HIZENTRA® CIDP Japan	PRIVIGEN® CIDP US
CSL787 Nebulised Ig	CSL346 Anti-VEGF-B		CSL630 pdFVIII Ruide	FLUCELVAX® QIV 9yrs+ EU	HIZENTRA® CIDP
CSL311 Anti-Beta Common	CSL334 IL-13R		CSL112 ApoA-I	AFLURIA® QIV 6M-4yrs AUS	HAEGARDA® US
P. gingivalis/POD			Clazakizumab		IDELVION®
			CSL842 C1-INH rAMR		AFSTYLA®
			CSL964 GvHD Prevention		KCENTRA® Japan
			FLUAD® QIV 65yrs+		FLUAD® aTIV 65yrs+
			Pre-Pandemic Vaccine (aH5N1c)		FLUCELVAX® QIV 4yrs+ US
					AFLURIA® QIV 6M+ US

■ Partnered Projects

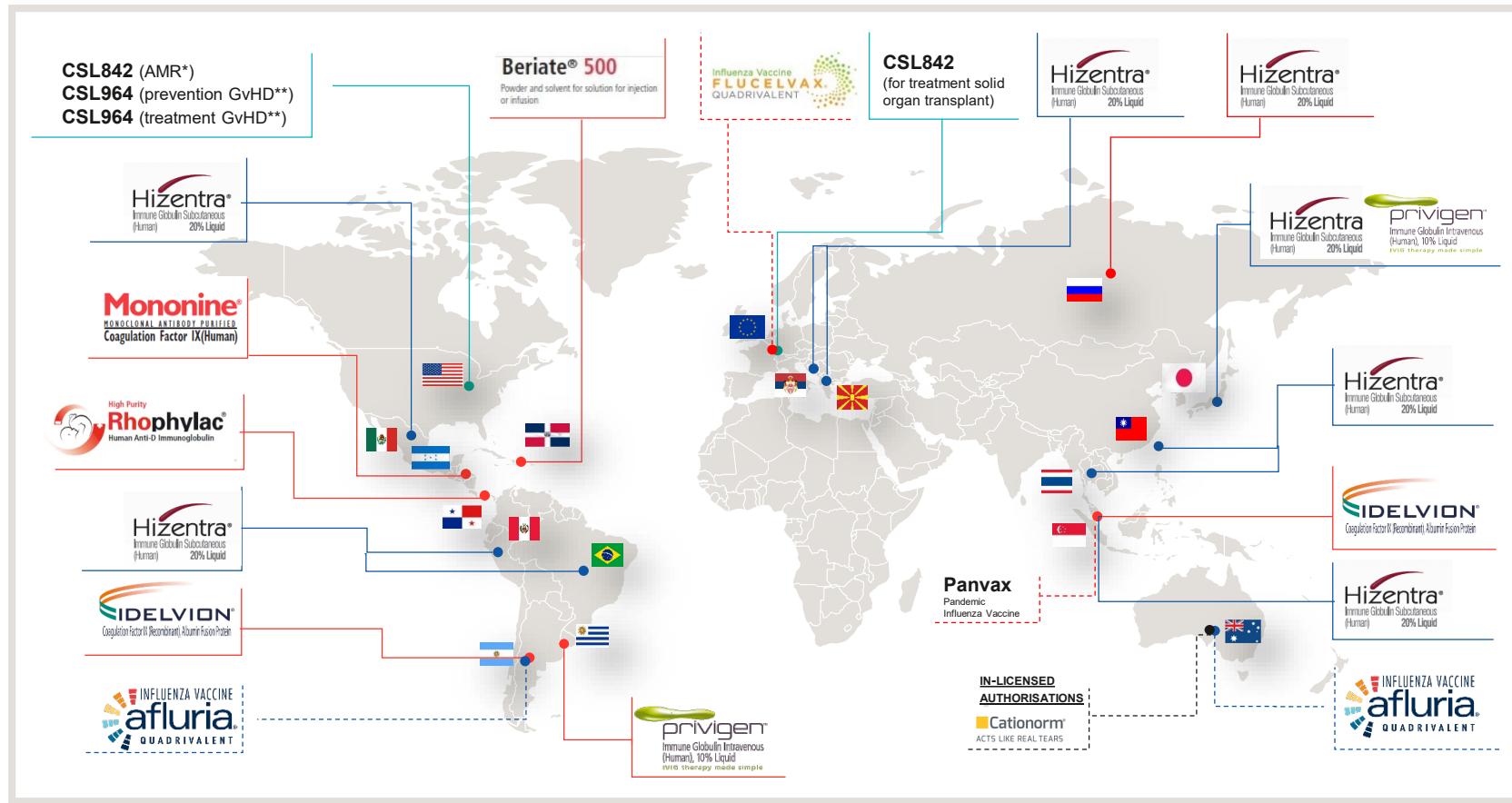
[Immunology and Neurology](#) | [Haematology and Thrombosis](#) | [Respiratory](#) | [Cardiovascular and Metabolic](#) | [Transplant](#) | [Influenza Vaccines](#)

Key Past Launches from R&D Portfolio



Notable Regional Regulatory Approvals

1 Dec 2018 – 20 Nov 2019



Ongoing Activities

CSL Behring

Expanded Label for Enhanced Administration Parameters

Expanded Label for Dosing Every 21 days in Patients ≥12yrs of Age

Geographic Expansion

Geographic Expansion

Special Population Label Expansion

aH5N1c New Registration in US

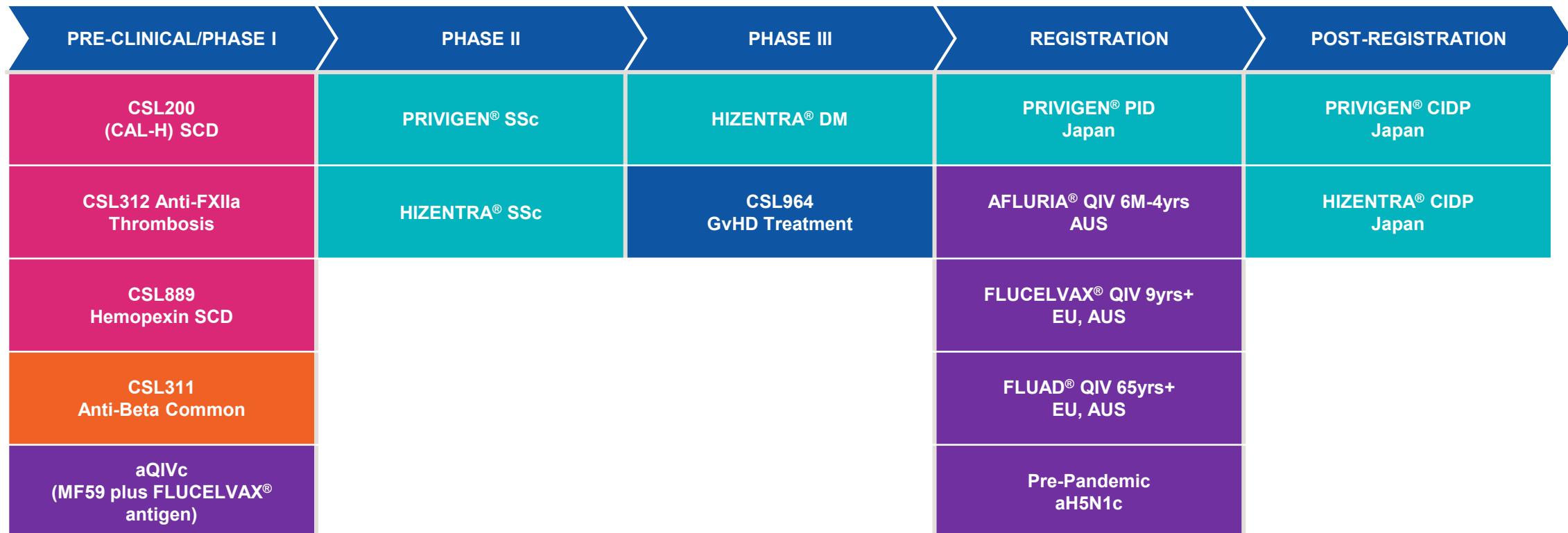
CSL Behring
Seqirus

- New Initial Marketing Authorization Approvals
- New Line Extensions/Indications Approvals
 - CSL Behring: CIDP Indication
 - Seqirus: paediatrics
- Orphan Drug Designation

*AMR - Antibody-Mediated Rejection

**GvHD - Graft vs Host Disease

Clinical Portfolio Progression in 2019



[Immunology and Neurology](#) | [Haematology and Thrombosis](#) | [Respiratory](#) | [Cardiovascular and Metabolic](#) | [Transplant](#) | [Influenza Vaccines](#)

Key Partnerships and Collaborations

PRE-CLINICAL	PHASE I	PHASE II	PHASE III
P. gingivalis/POD 	CSL730 rFc Multimer 	Mavrilimumab GM-CSFR 	Clazakizumab Anti-IL-6 
	CSL334 / ASLAN004 IL-13R 		CSL964 GvHD Treatment 

R&D Portfolio – December 2019

RESEARCH	PRE-CLINICAL	PHASE I	PHASE II	PHASE III	REGISTRATION	POST-REGISTRATION
Discovery Projects	Improved Fibrinogen	CSL730 rFc Multimer	CSL312 Anti-FXIIa HAE	HIZENTRA® DM	PRIVIGEN® PID Japan	CSL830 C1-INH Subcut EU
Discovery Projects	CSL787 Nebulised Ig	CSL324 Anti-G-CSFR	HIZENTRA® SSC	CSL112 ApoA-I	FLUAD® QIV 65yrs+ US/EU/Canada	PRIVIGEN® CIDP US, Japan
Discovery Projects	aQIVc (MF59 plus FLUCELVAX® antigen)	CSL200 (CAL-H) SCD	PRIVIGEN® SSC	Clazakizumab AMR	Pre-Pandemic aH5N1c	HIZENTRA® CIDP US, Japan
Discovery Projects	P. gingivalis/POD	CSL889 Hemopexin SCD	HAEGARDA® Japan	CSL842 C1-INH rAMR		HAEGARDA® US
Discovery Projects		CSL312 Anti-FXIIa Thrombosis	CSL630 pdFVIII Ruide	CSL964 GvHD Prevention		IDELVION®
		CSL311 Anti-Beta Common	Mavrilimumab GM-CSFR	CSL964 GvHD Treatment		AFSTYLA®
		CSL346 Anti-VEGF-B		FLUCELVAX® 6M+		KCENTRA® Japan
		CSL334 / ASLAN004 IL-13R				ZEMAIRA® / RESPREEZA® AAT
						AFLURIA® QIV 6M+ US, AUS

■ Partnered Projects

Immunology and Neurology | Haematology and Thrombosis | Respiratory | Cardiovascular and Metabolic | Transplant | Influenza Vaccines

Research, Gene and Cell Therapy

Dr. Andrew Nash

Senior Vice President, Research
CSL Behring



CSL Research

- **Capabilities and facilities**



Immunology and
Neurology



Haematology
and Thrombosis



Respiratory



Cardiovascular
and Metabolic



Transplant

- **New product opportunities**

- **Plasma** – Haptoglobin for the treatment of Subarachnoid Haemorrhage (SAH)
 - Innosuisse grant awarded to the University Hospital Zürich and CSL Behring in 2017
- **Recombinant** – CSL311 for the treatment of inflammatory disease
- **Gene therapy** – Sickle Cell Disease (CSL200) and immune deficiencies

CSL Research

New Facilities



Bio21 Institute, Melbourne

- ~ 4100m² of lab and office space
- Parkville precinct
- Melbourne University, MRI's
- 4 major teaching hospitals



SITEM*, Bern

- 2000m² of lab and office space
- Bern University and Hospital campus

*SITEM – Swiss Institute for Translational and Entrepreneurial Medicine

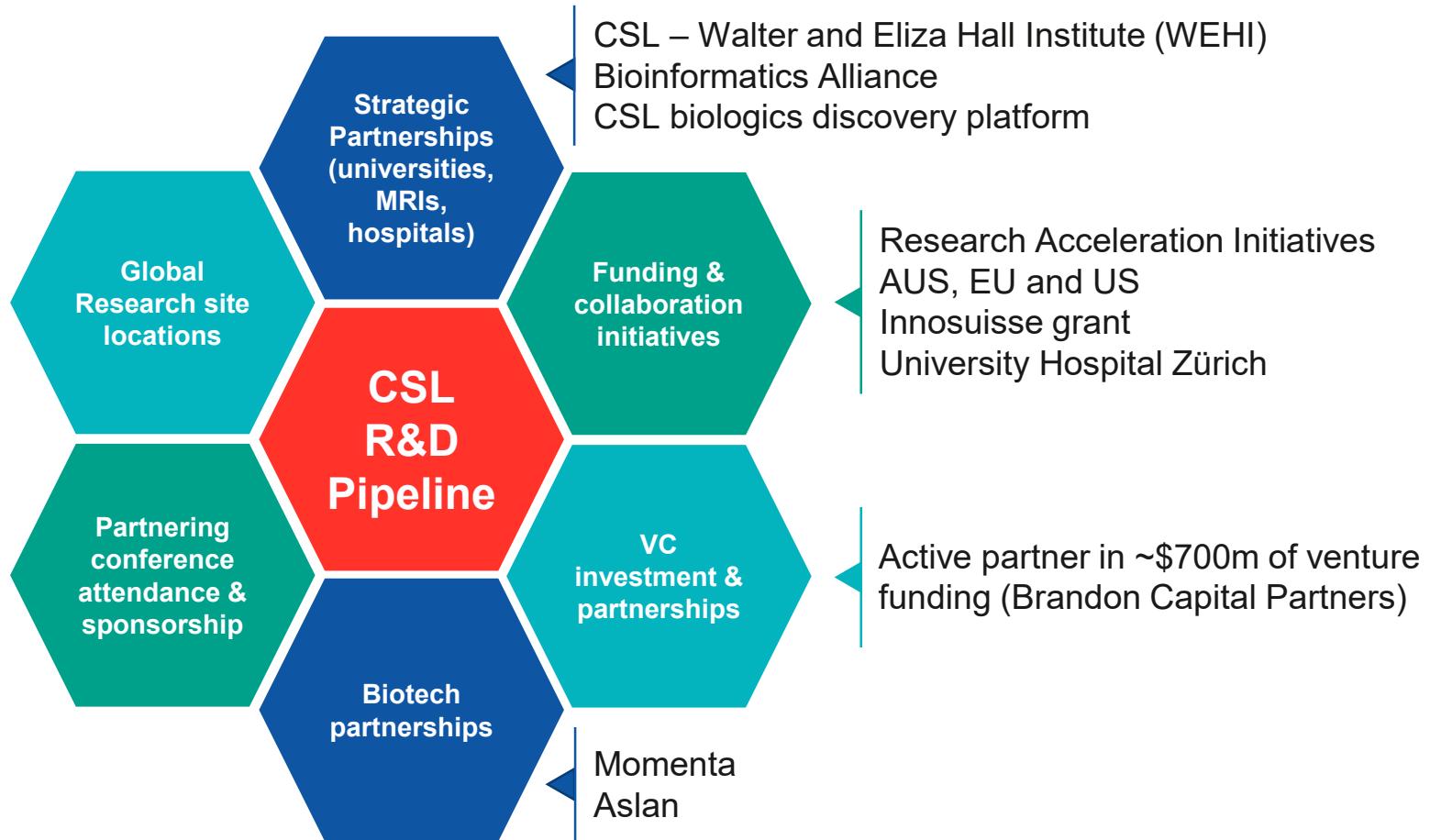


Gene therapy, Pasadena

- Expanding gene therapy expertise
 - Research, QA, cell processing and manufacture
 - Wet-lab space (non-GMP) tripled from 132 to 480 m²
 - GMP space (330 m²) to engineering qualification level

CSL Research

External Innovation Strategy

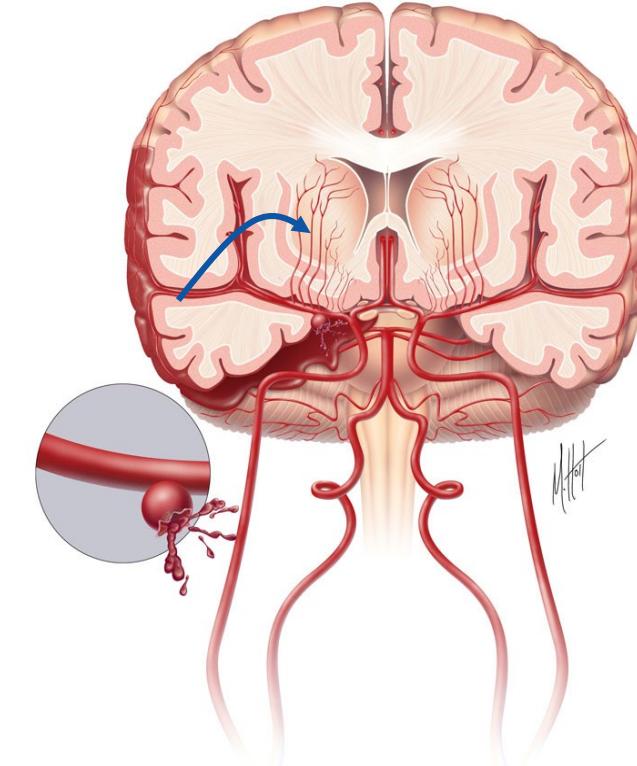


m = AU\$ millions

Haptoglobin for the Treatment of Subarachnoid Haemorrhage (SAH)

Pathophysiology of SAH

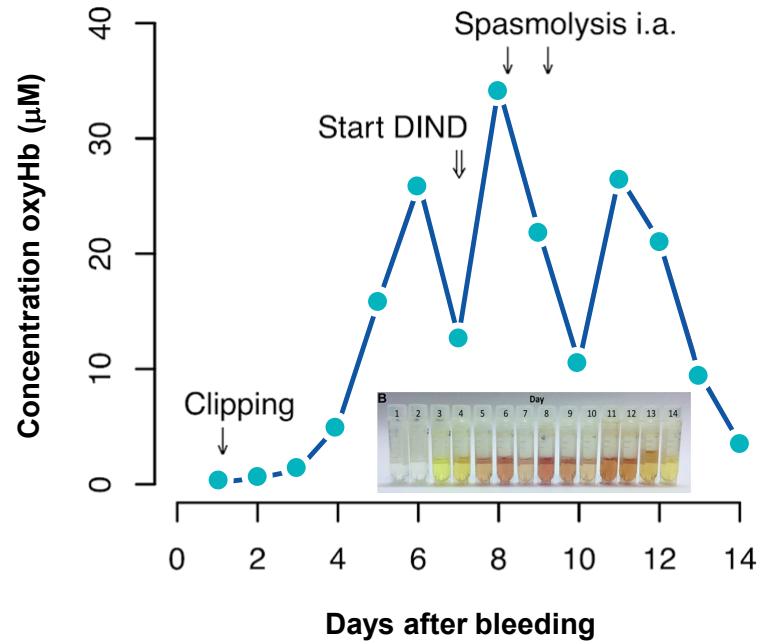
- Acute indication – rupture of an aneurysm in the brain, followed by bleeding and haemolysis within the subarachnoid space
- Survivors of initial bleeding are at risk for Delayed Ischemic Neurological Deficits (DIND)
- High mortality and morbidity
 - 5% of all strokes; high fatality rate
 - Very limited treatment options
- Haemoglobin (Hb) concentrations in cerebral spinal fluid (CSF) correlate with DIND in SAH patients



Source: www.strokecenter.org

Haptoglobin and SAH

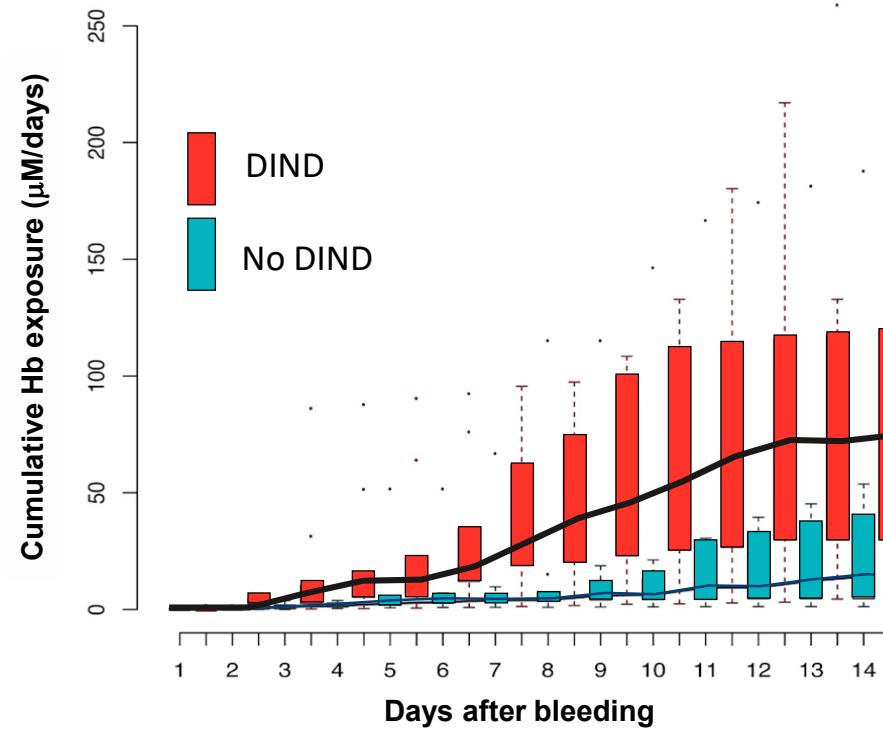
Link Between CSF Hb Levels and DIND



Hb levels in CSF correlate with DIND

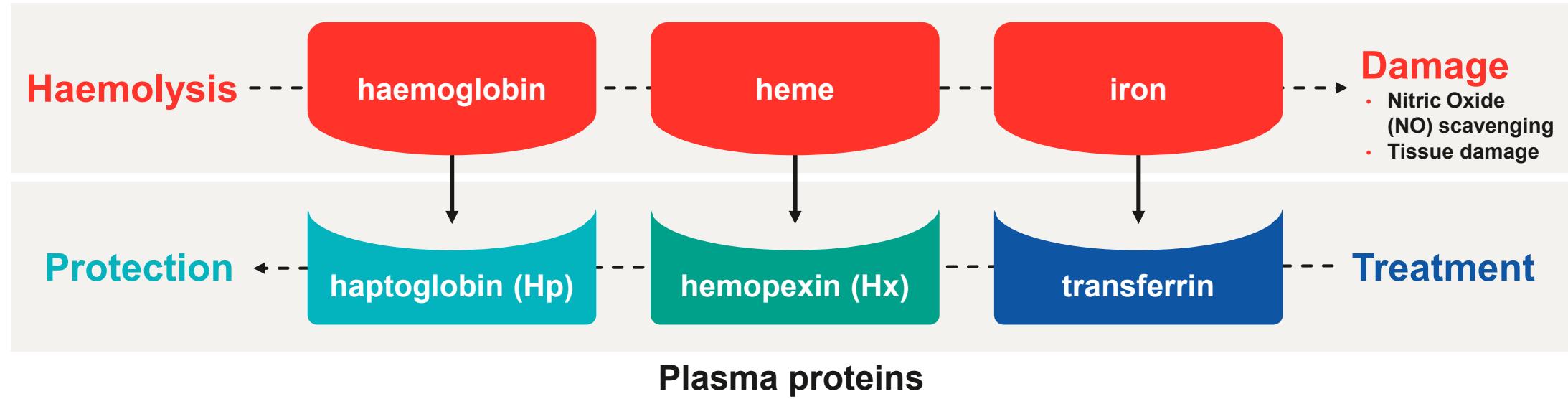
39 year old, right-handed female with thunderclap headache, vomiting and loss of consciousness

Source: Hugelshofer et al. World Neurosurgery 2018



SAH patients (n=18) developing DIND have higher cumulative Hb exposure

How the Body Deals with Toxic Free Haemoglobin (Hb) and Heme



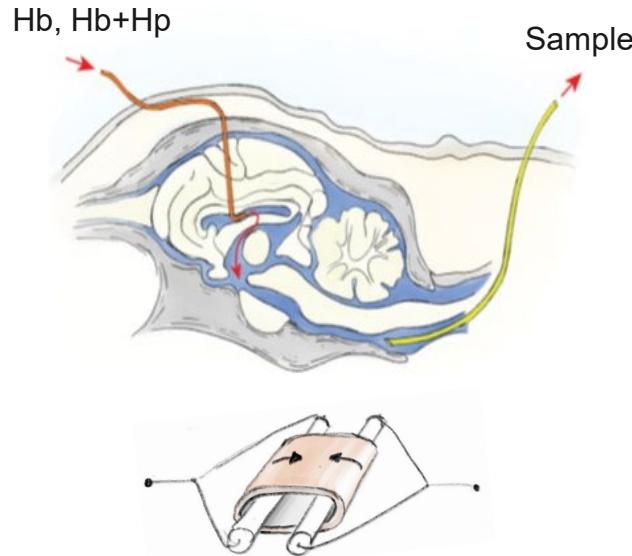
- Opportunities to treat chronic and acute haemolytic disease
- Replacement and/or augmentation therapy

Haptoglobin for the Treatment of SAH

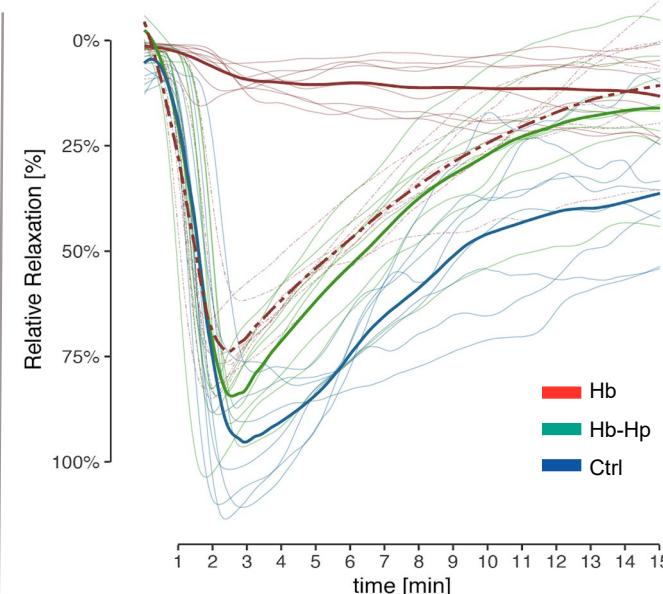
Haptoglobin Prevents Vasospasms Induced by Haemorrhagic CSF – *ex vivo* Functional Assay



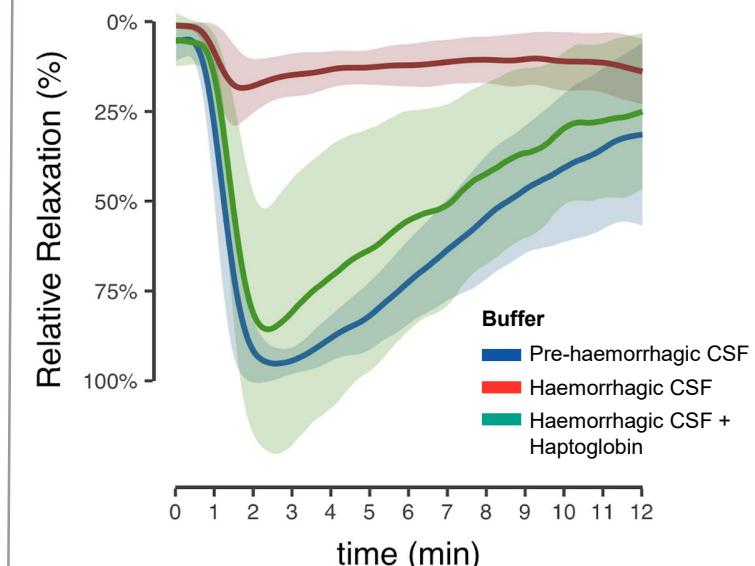
Sheep Model of SAH



CSF From Sheep SAH Model



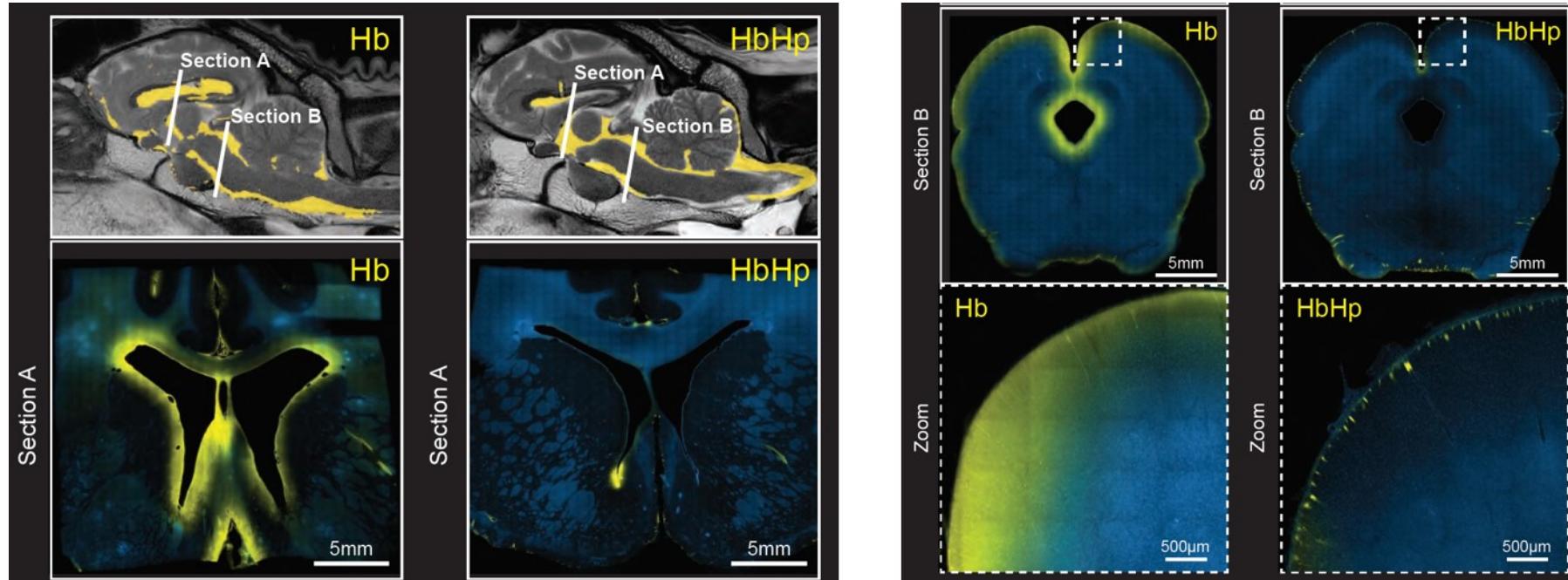
CSF Samples From SAH Patients



Source: J Clin Invest. 2019. <https://doi.org/10.1172/JCI130630>

Haptoglobin for the Treatment of SAH

Haptoglobin Prevents Penetration of Hb into Brain Tissue



Labeled Hb ± haptoglobin was injected into CSF 2 hours before analysis

Source: J Clin Invest. 2019. <https://doi.org/10.1172/JCI130630>

Haptoglobin for the Treatment of SAH

Summary

Haemoglobin

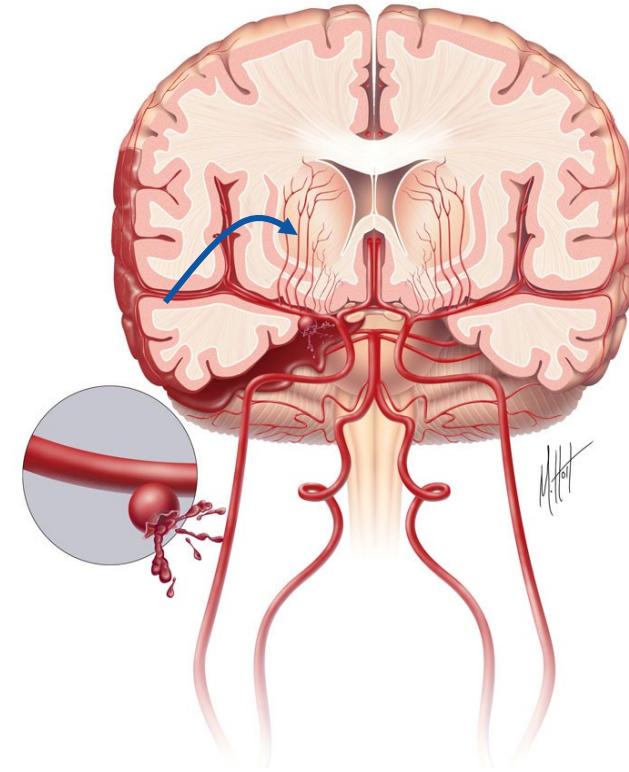
- Concentrations in CSF correlate with DIND in SAH patients
- Rapidly penetrates from CSF into the brain parenchyma
- Induces angiographic vasospasms in 100% of animals

Haptoglobin

- Blocks tissue penetration of cell-free Hb
- Prevents Hb induced vasospasms in *ex vivo* assay
- Prevents Hb induced segmental vasospasm *in vivo*

Current Status - enter development H2 2020

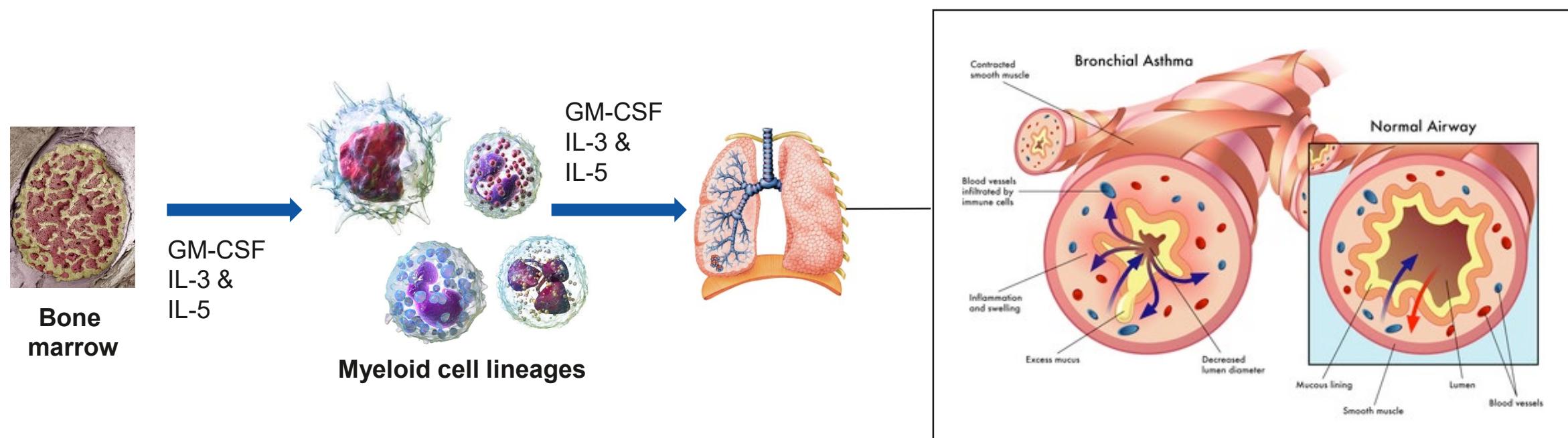
Source: www.strokecenter.org



CSL311 for the Treatment of Airways Inflammation

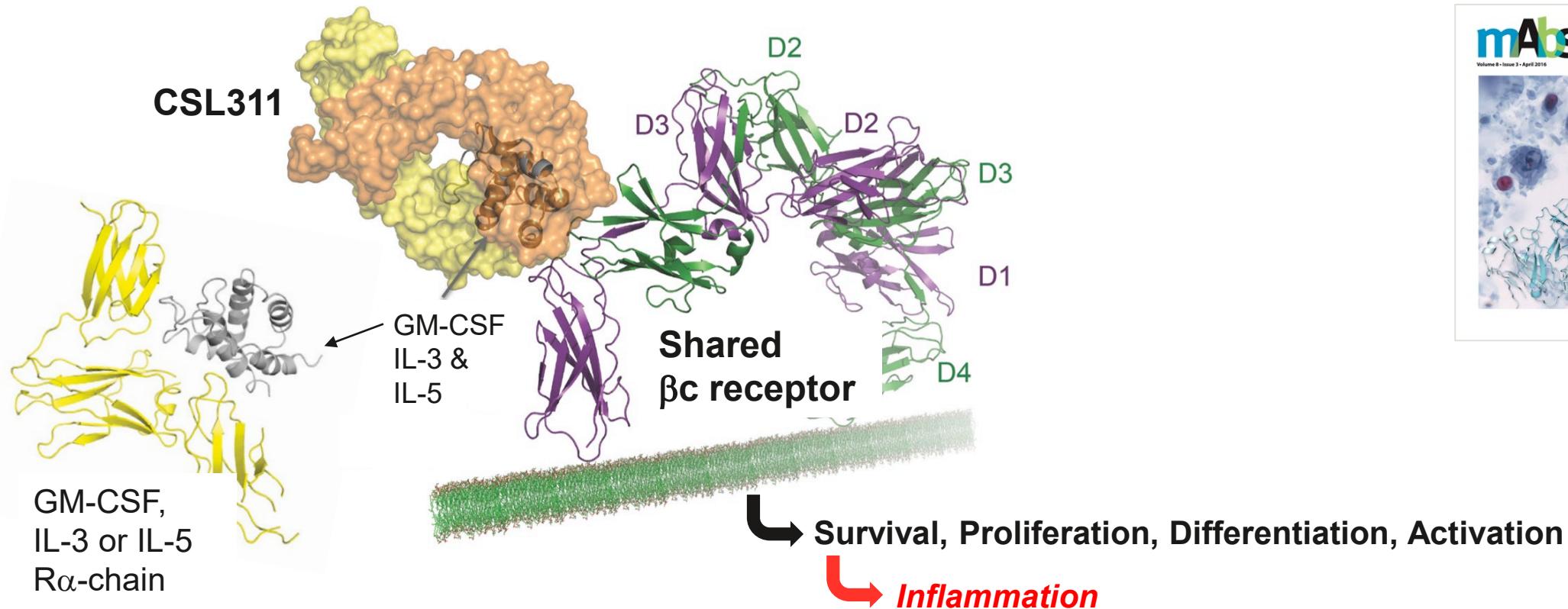
Airways Inflammation

Targeting multiple inflammatory mediators with a single therapeutic



CSL311 for the Treatment of Airways Inflammation

CSL311 Targets Multiple Cytokines via a Shared Receptor

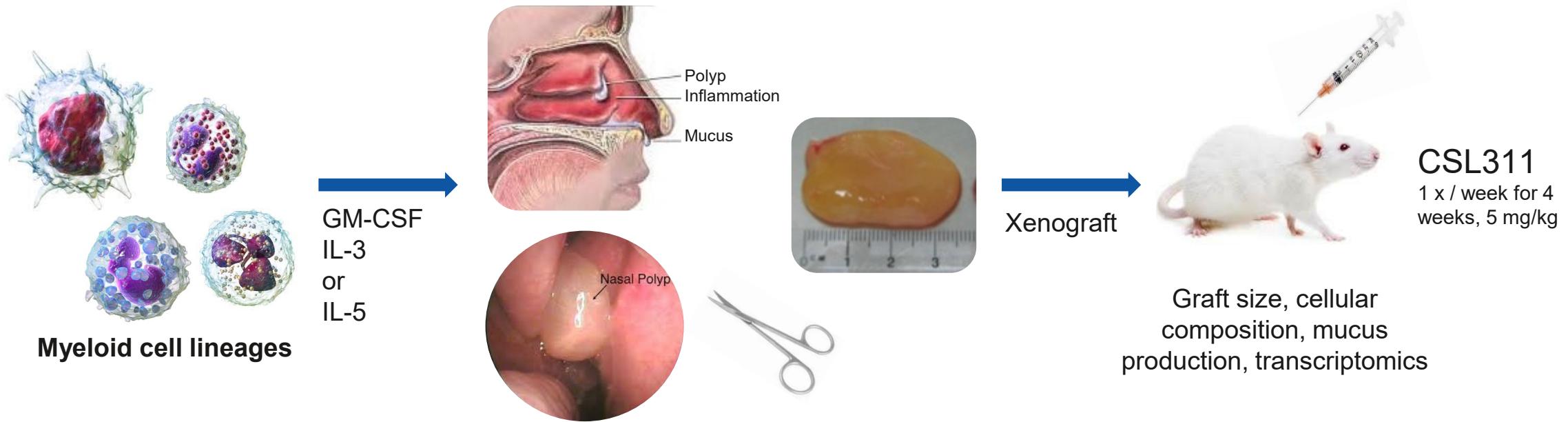


Source: Panousis et al., mAbs 8:436, 20126

CSL311 for the Treatment of Airways Inflammation

In Vivo Efficacy in a Mouse Model of Human Airways Inflammation

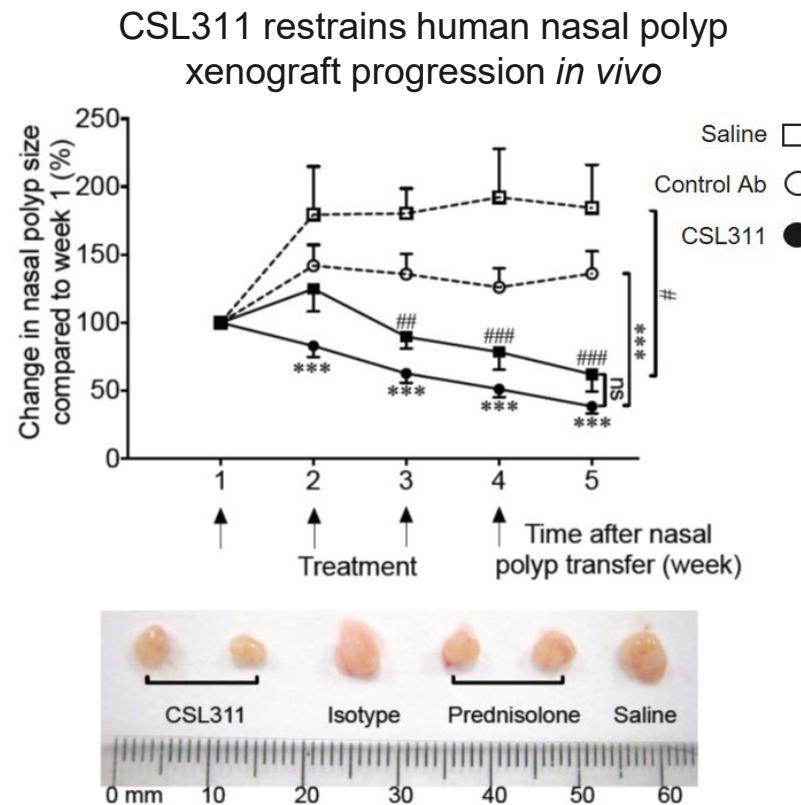
Xenografting human nasal polyps into immunodeficient mice



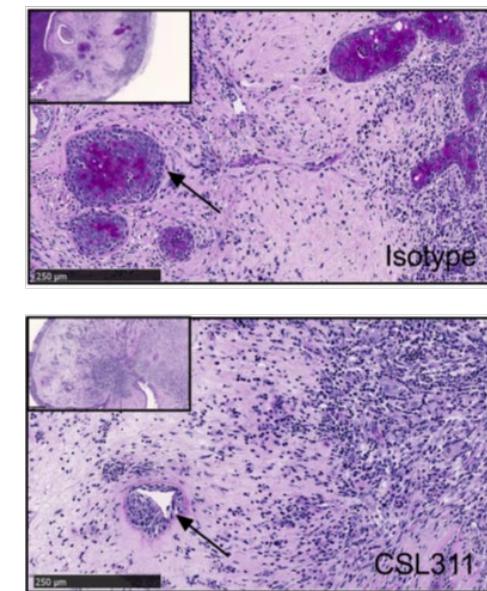
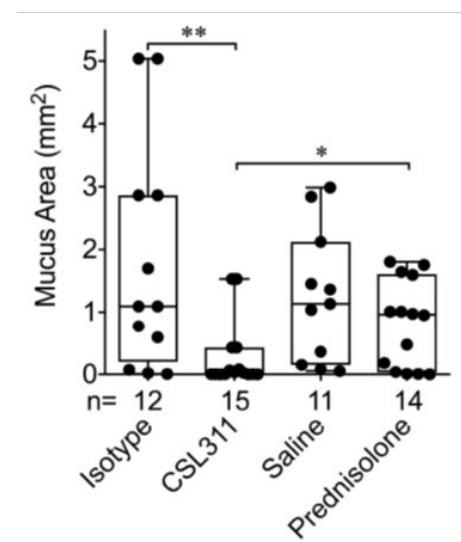
Source: Yip et al., Allergy 2019 Sep 10. doi: 10.1111/all.14041

CSL311 for the Treatment of Airways Inflammation

In Vivo Efficacy – Mouse Model of Human Airways Inflammation



CSL311 treatment reduces mucous gland numbers and mucus production in nasal polyps *in vivo*

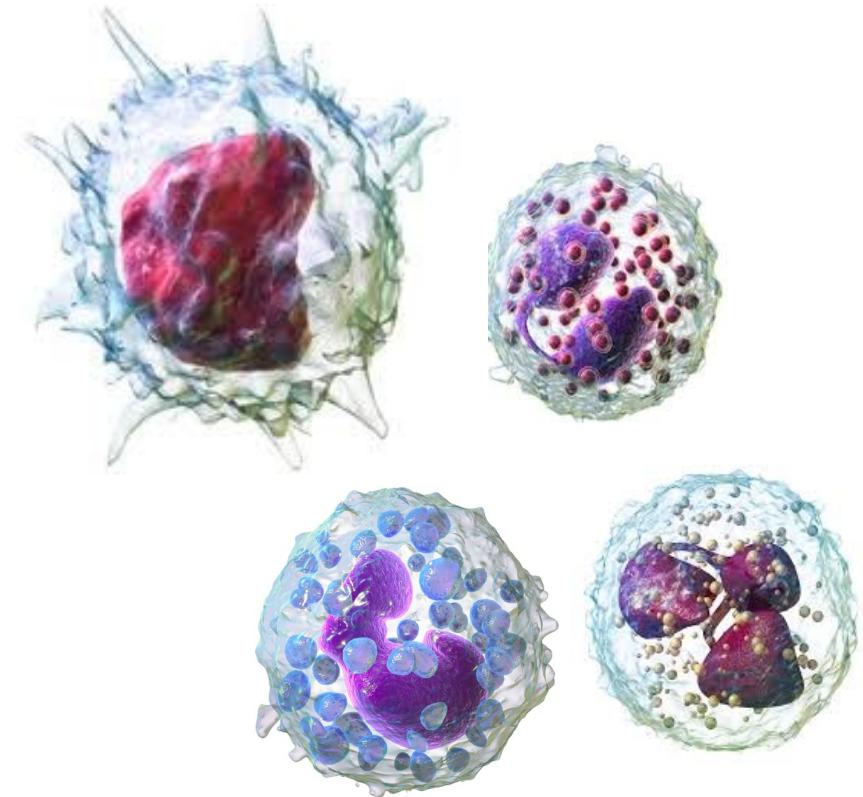


Source: Yip et al., Allergy 2019 Sep 10. doi: 10.1111/all.14041

CSL311 for the Treatment of Airways Inflammation

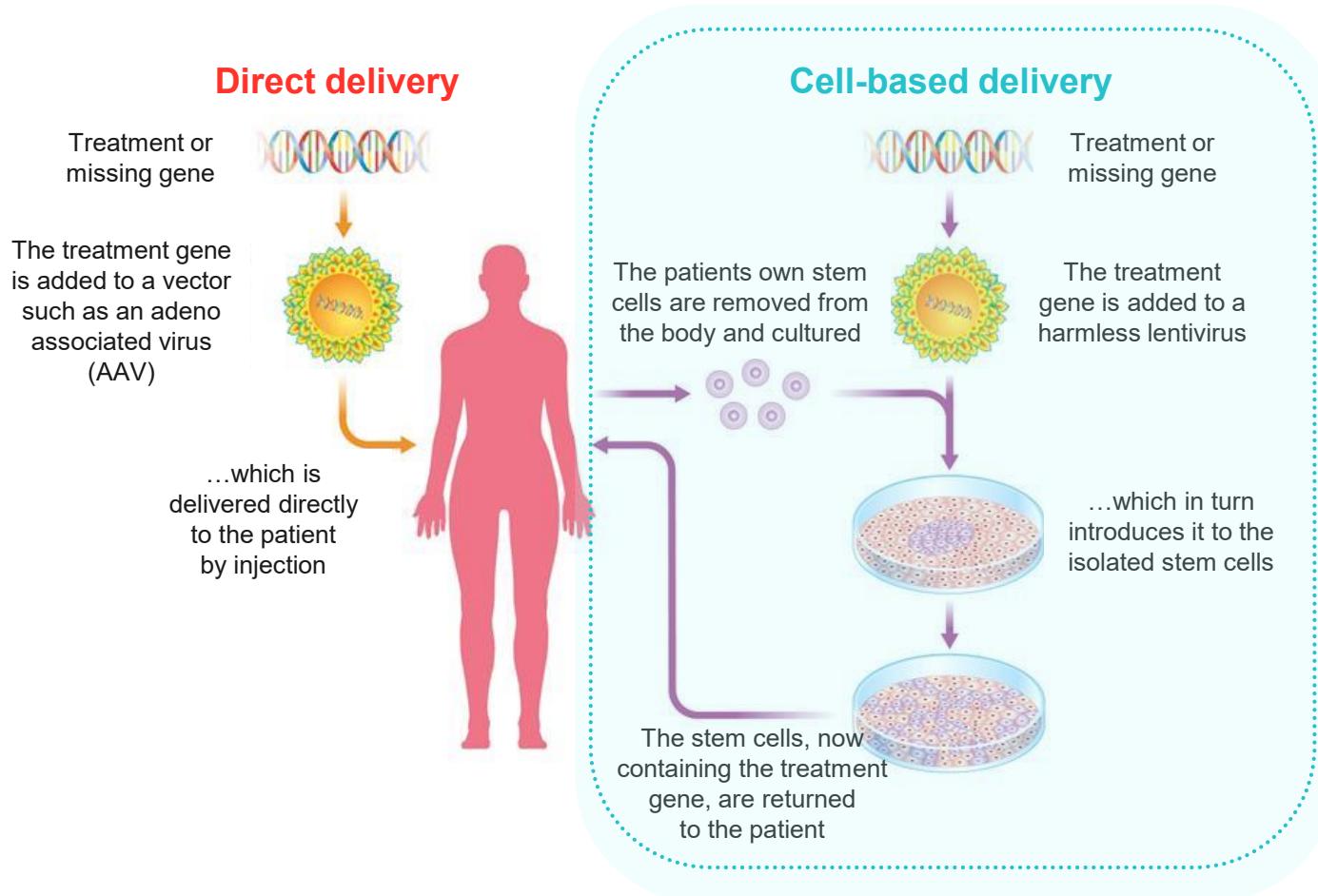
Summary

- CSL311 is a potent antagonist of IL-3, IL-5 and GM-CSF *in vitro*
- CSL311 inhibits the activity of multiple cell types involved in inflammation
- CSL311 demonstrates efficacy in an *in vivo* translational model of airways inflammation
- GLP Toxicology program successfully completed



CSL Gene Therapy

In Vivo vs Ex Vivo Gene Therapy



Cell and Gene Therapy Research and Product Development

- 2+ years post-acquisition of Calimmune
- Integration into CSL R&D complete
- First clinical program recruiting patients
- Pipeline of early stage gene therapy projects

Expertise/Know-how Vector Design



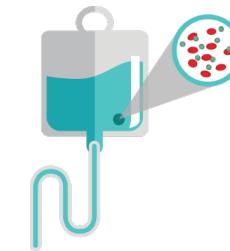
Ability to design and make extremely efficient therapeutic vectors

In Vivo Selection Tool Select+™



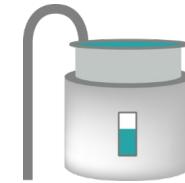
Genetic cassette to render stem cells protected against well-known drug to drive *in vivo* selection

Cell Processing Proprietary Methods



Novel SOPs to achieve high cell yields and standardization of cell product

Lenti Manufacturing Cytegrity™



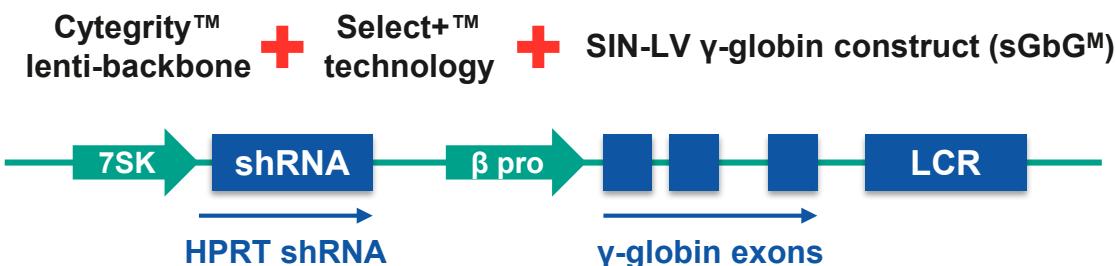
Only large-scale, stable vector production system used clinically

CSL200 for the Treatment of Sickle Cell Disease (SCD)

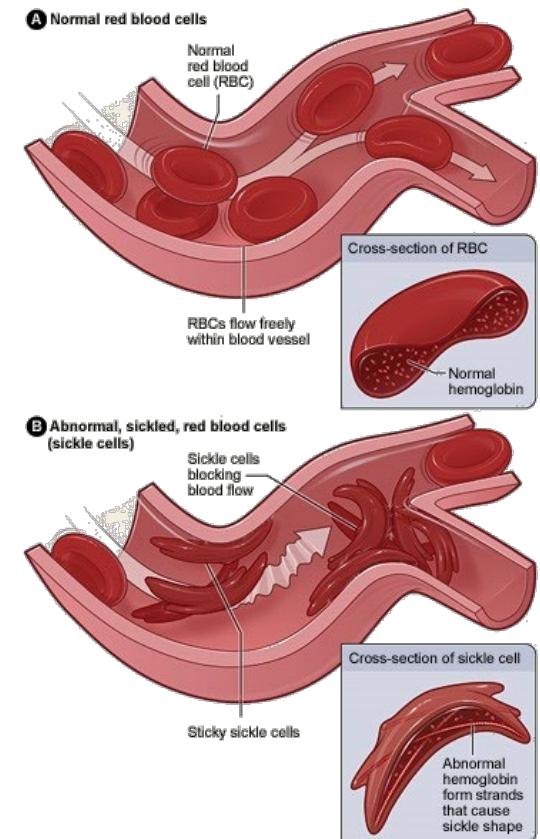
Sickle Cell Disease

- Group of disorders caused by abnormal beta-globin gene resulting in sickled red cells
- High unmet need

CSL200



- CSL200 program aims to provide sufficient functional globin gene to prevent sickling

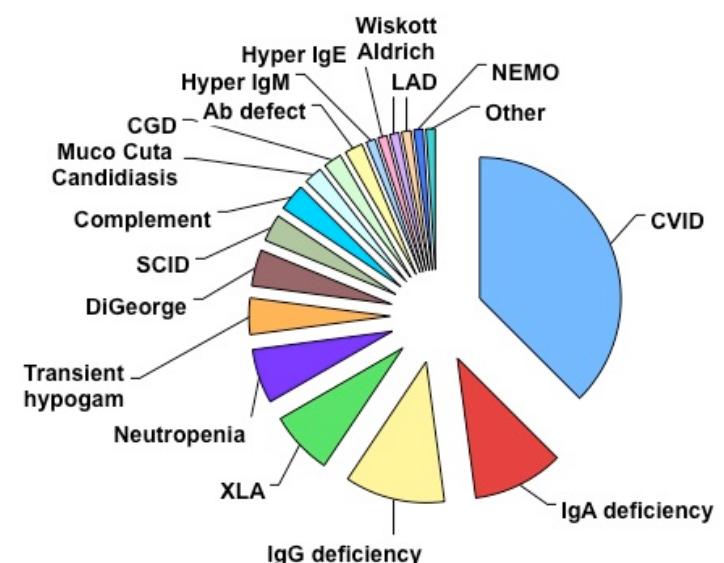


Gene Therapy for Wiskott-Aldrich Syndrome (WAS)

- WAS is a rare X-linked PID (~ 1:100,000 live births)
 - Mutations in the gene that encodes the WAS protein (WASp)
- WAS is exclusively expressed in blood cells and plays a key role in organizing the actin cytoskeleton, signal transduction and terminal differentiation
- WAS is characterised by:
 - Recurrent infections, microthrombocytopenia and eczema
 - An increased risk of autoimmune disorders and malignancy
 - Currently treated with IVIG
- Allogeneic Hematopoietic Stem Cell transplantation (HSCT) is the only available curative treatment

* Source: Icahn School of Medicine at Mt Sinai

Primary Immune Deficiencies*



Gene Therapy for Wiskott-Aldrich Syndrome (WAS)

Design and generation of lentiviral candidates based on our Cytegrity stable producer cell line backbone is in progress



Immunoglobulin Therapy

Mechanism of Action Summary

	Pathogen Neutralisation	Reduction of Pathologic Ig	Complement Scavenging	FcγR Expression Modulation	Immune Cells Modulation	Cytokine Modulation
Ig Therapy	Activity	Activity	Activity	Activity	Activity	Activity
IgG Fc Multimers	No Activity	Possible Activity	Possible Activity	Activity	Activity	Possible Activity
FcRn Binding Agents	No Activity	Activity	No Activity	Possible Activity	No Activity	No Activity

 No Activity  Possible Activity  Activity

CSL Research

- Expanding capacity and capability across global research sites
- Continued investment in external innovation activities
- Leveraging our three strategic platforms across five therapeutic areas
- Continuing to innovate in areas of business strength
- Developing new opportunities in areas of unmet need
- Creating and progressing a sustainable portfolio of early stage opportunities
 - New gene therapy opportunities

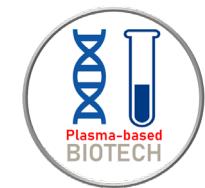
Clinical Development – Part 1

Dr. Diana Lanchoney

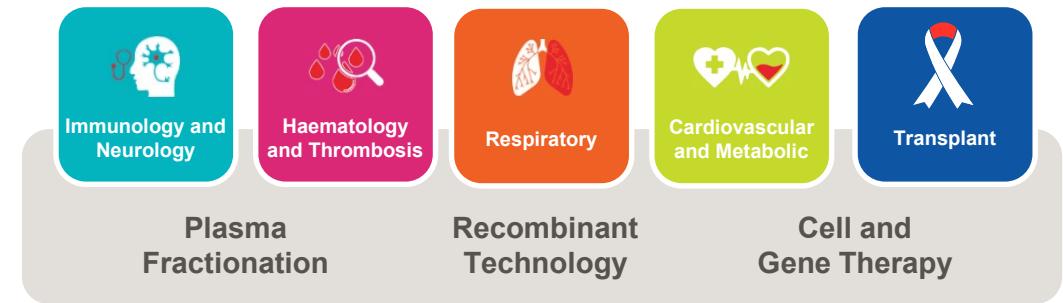
Vice President, Clinical Pharmacology and Translational Development
CSL Behring



CSL Pipeline Progressing into Multiple New Disease Areas Using All Three Product Development Platforms

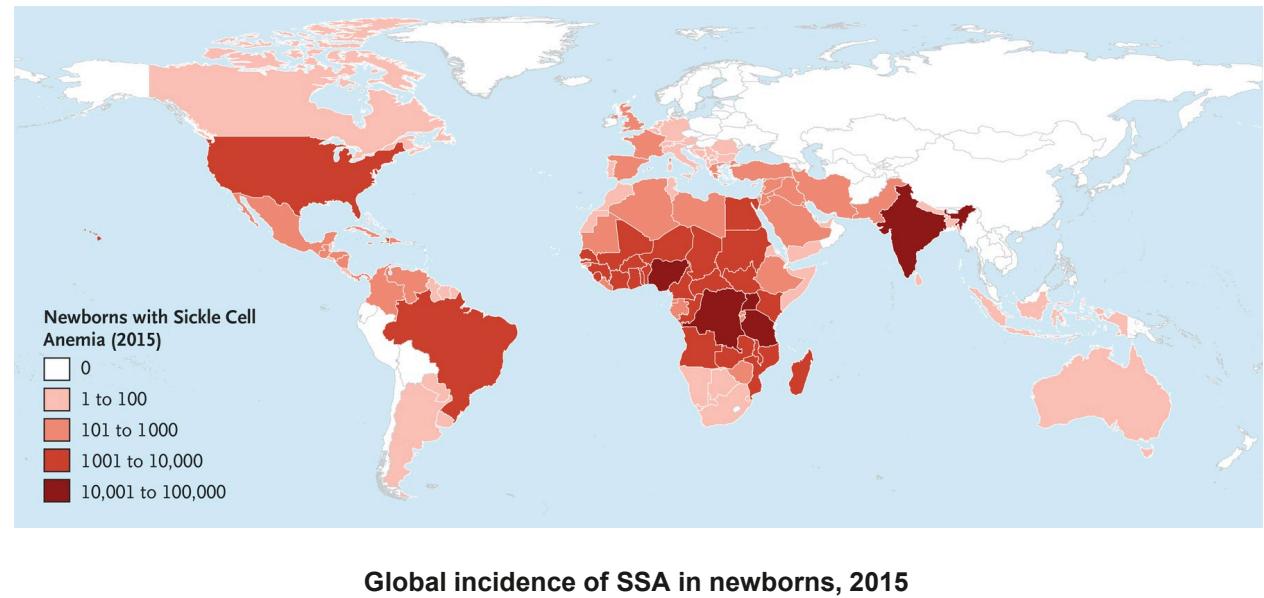


- **Sickle Cell Anemia** – CSL200 (lentiviral stem cell gene therapy),
CSL889 (Hemopexin)
- **Contact Mediated Thrombosis** – Garadacimab (CSL312
Anti-Factor XIIa)
- **Respiratory Disease** – CSL311 (Anti-Beta Common)
- **Diabetic Nephropathy** – CSL346 (Anti-VEGF-B)
- **Neutrophilic Dermatoses** – CSL324 (Anti-GCSF)
- **Systemic Lupus Erythematosus** – CSL362
(Anti-IL-3Ra)
- **Scleroderma** – PRIVIGEN® and HIZENTRA®
- **Dermatomyositis** – HIZENTRA®
- **Hereditary Angioedema** – Garadacimab (Anti-Factor XIIa)



Overview of Sickle Cell Disease (SCD)

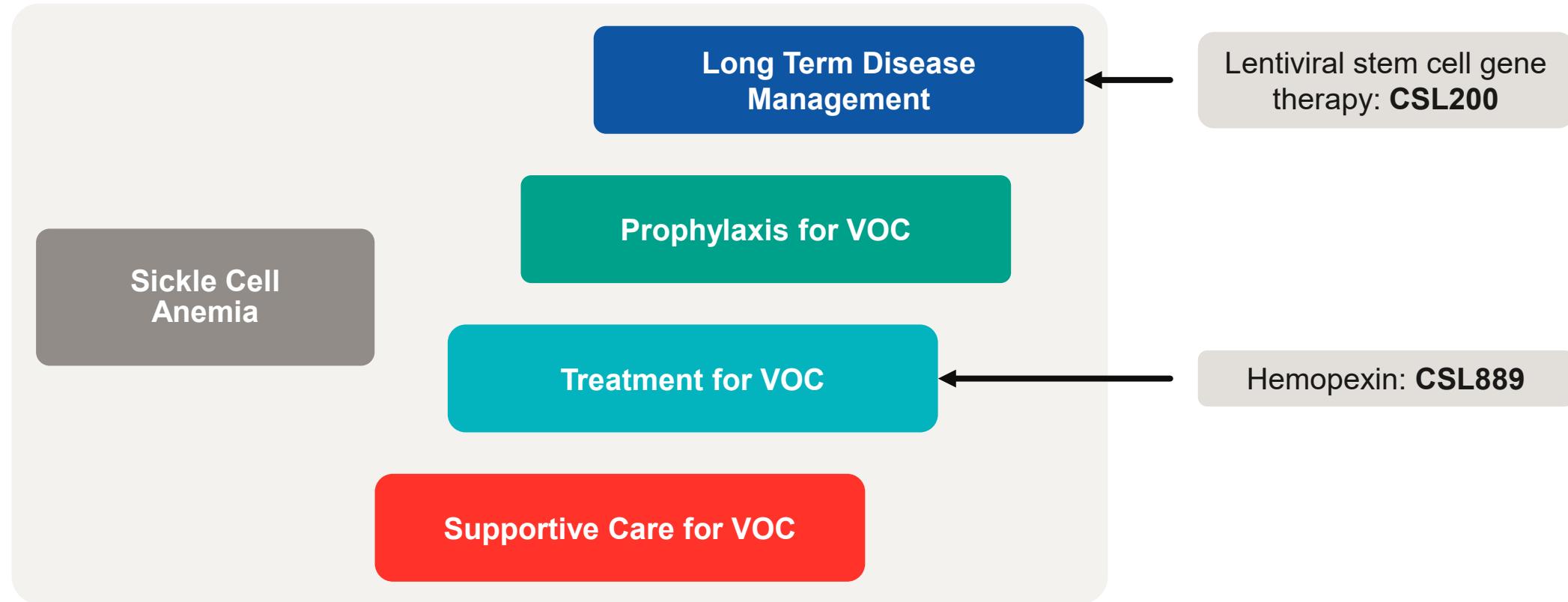
- Missense mutation of the β -globin gene
- Worldwide incidence ~300,000/year (US ~155,000)
- Sickle red blood cells are fragile, prone to endothelial adhesion
- Many downstream consequences
 - Avg. life expectancy 40 - 60yrs
- Vaso-occlusive crisis (VOC): commonly leads to hospitalization



Source: <https://www.nejm.org/doi/full/10.1056/NEJMra1510865>

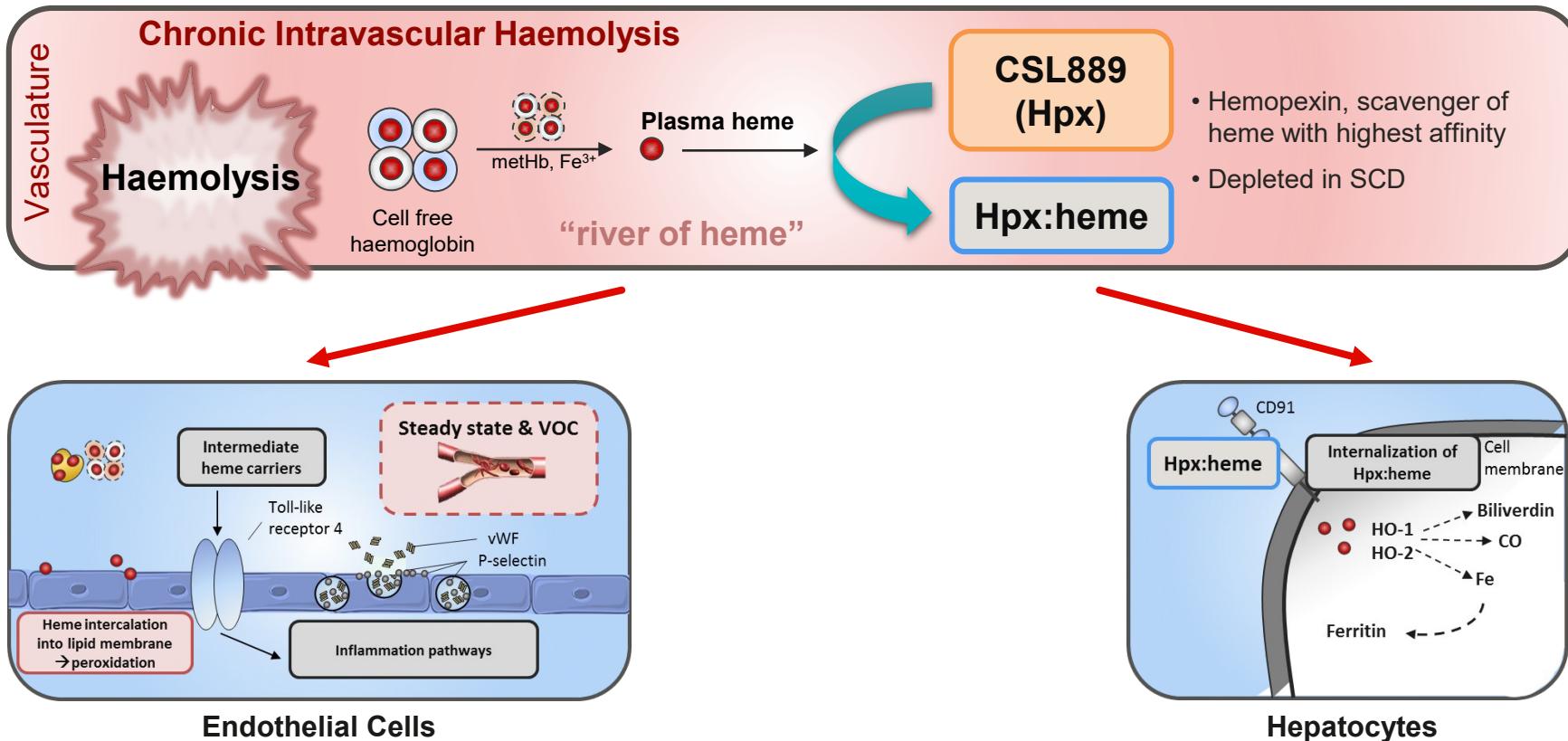
Sickle Cell Anemia

CSL Programs Poised to Evolve the Paradigm



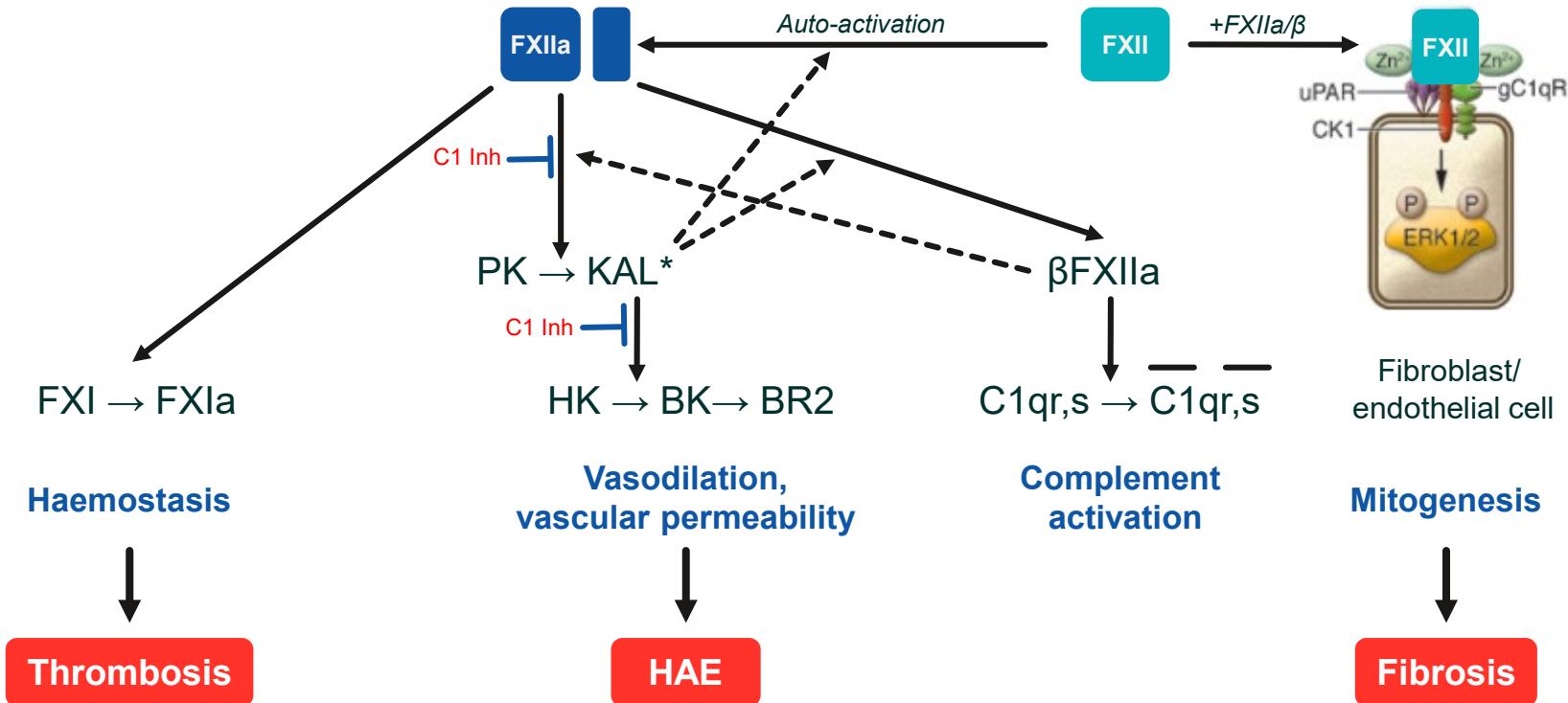
CSL889 Hemopexin

Addresses the Toxic Effects of Free Heme



Garadacimab (CSL312 Anti-Factor XIIa)

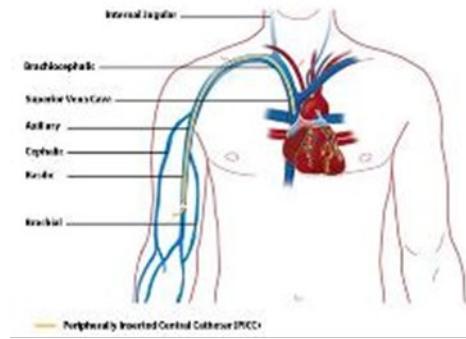
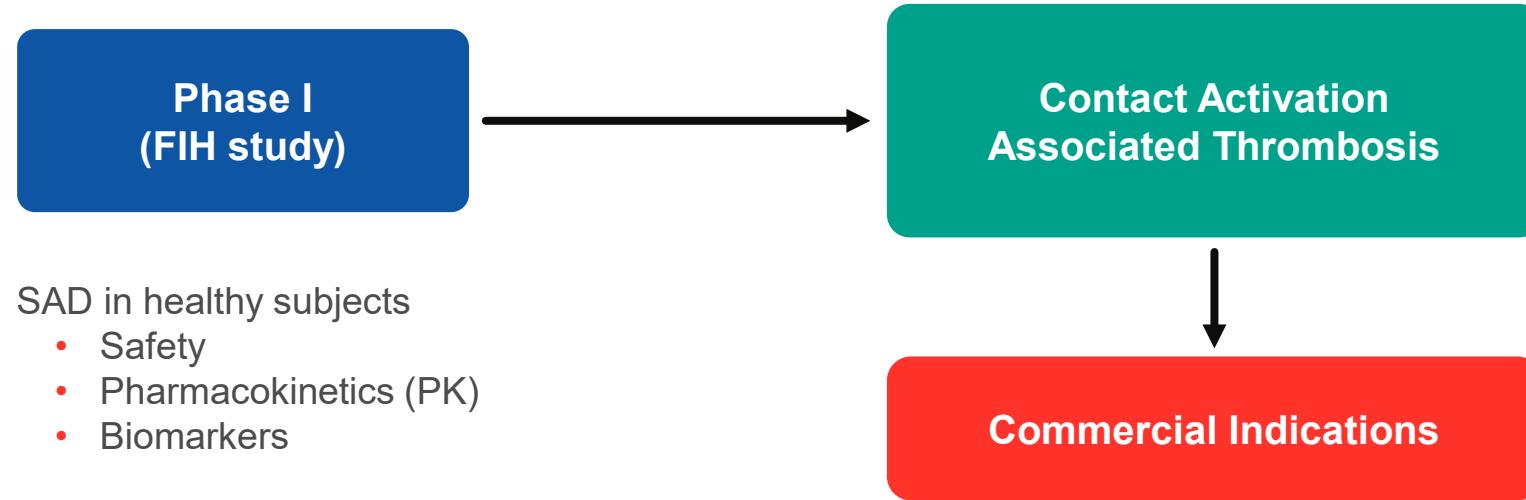
Multiple Potential Indications



Adapted from: Schmaier, AH., J Clin Invest. 2008 Sep 2; 118(9): 3006–3009.

Garadacimab (CSL312) Thrombosis Development Program Overview

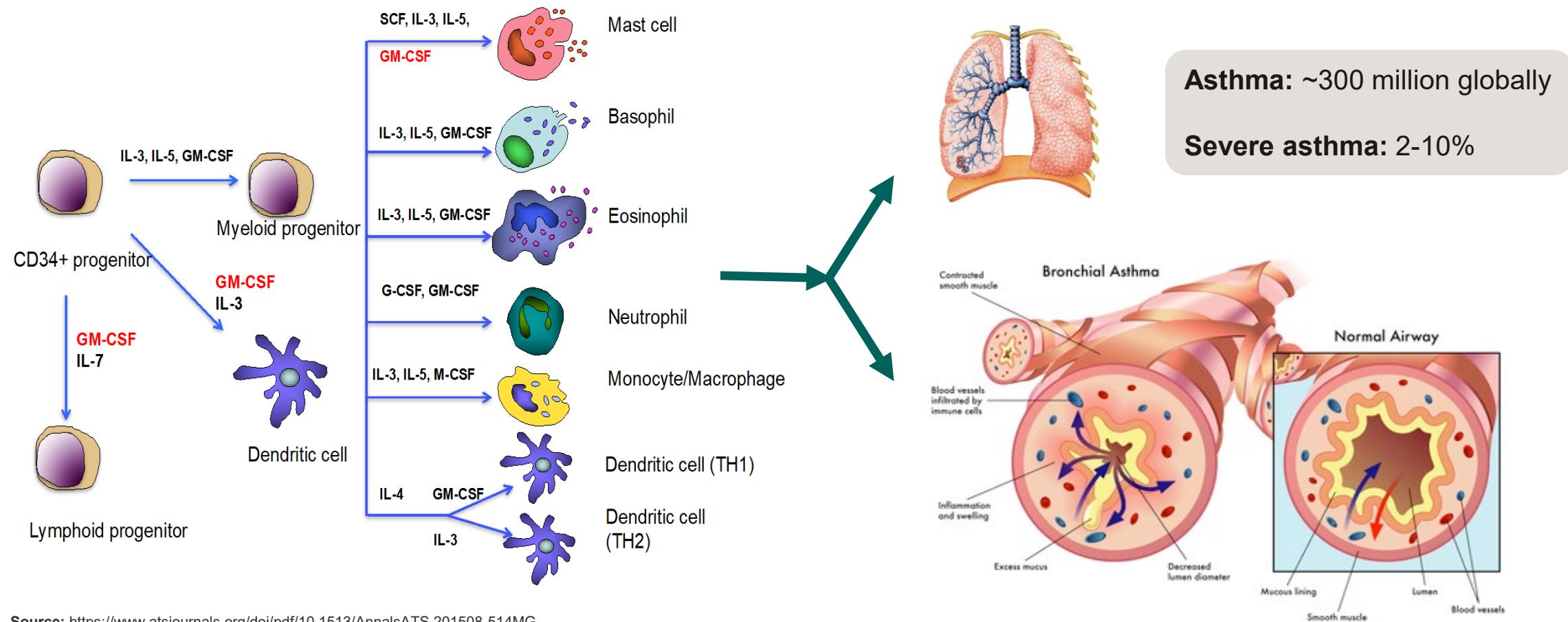
Mechanism to Prevent Contact-Activated Thrombosis Without Bleeding Risk



Peripherally Inserted
Central Catheter (PICC)
Thrombosis

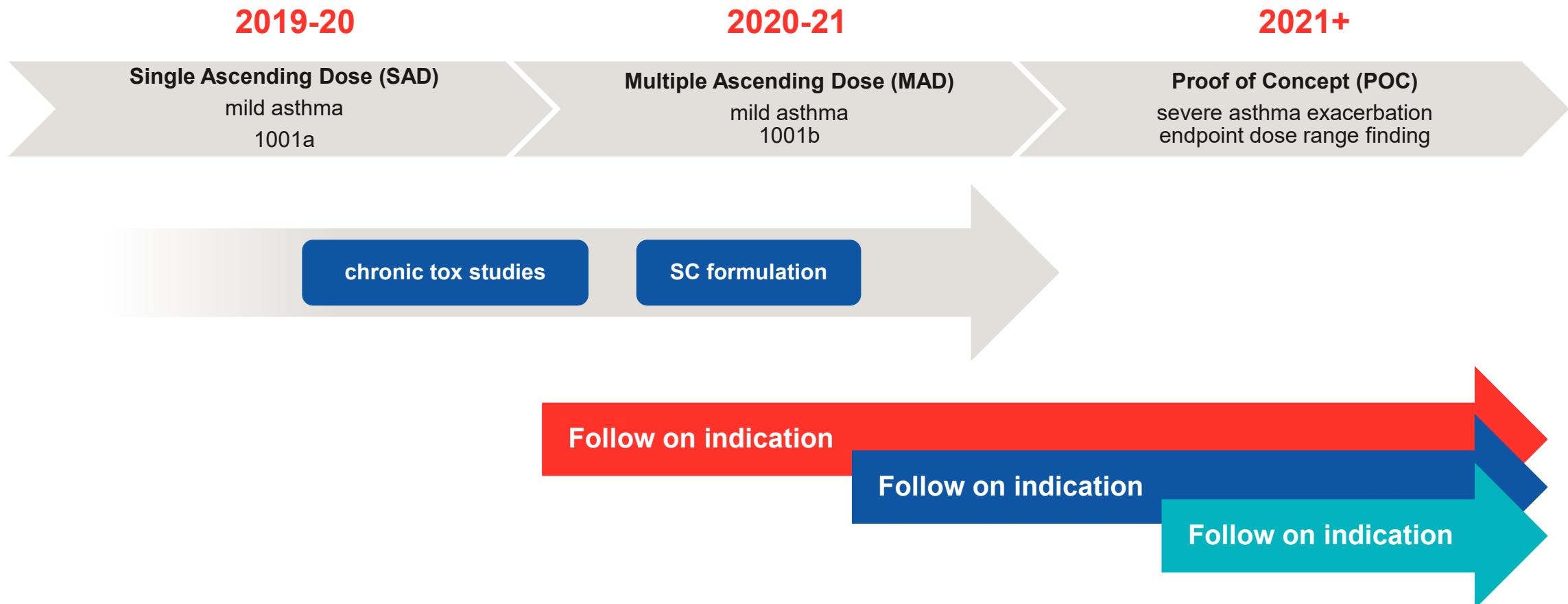
CSL311 Anti-Beta Common

A Broad Mechanism of Action With Potential to Address the Entire Spectrum of Severe Asthma



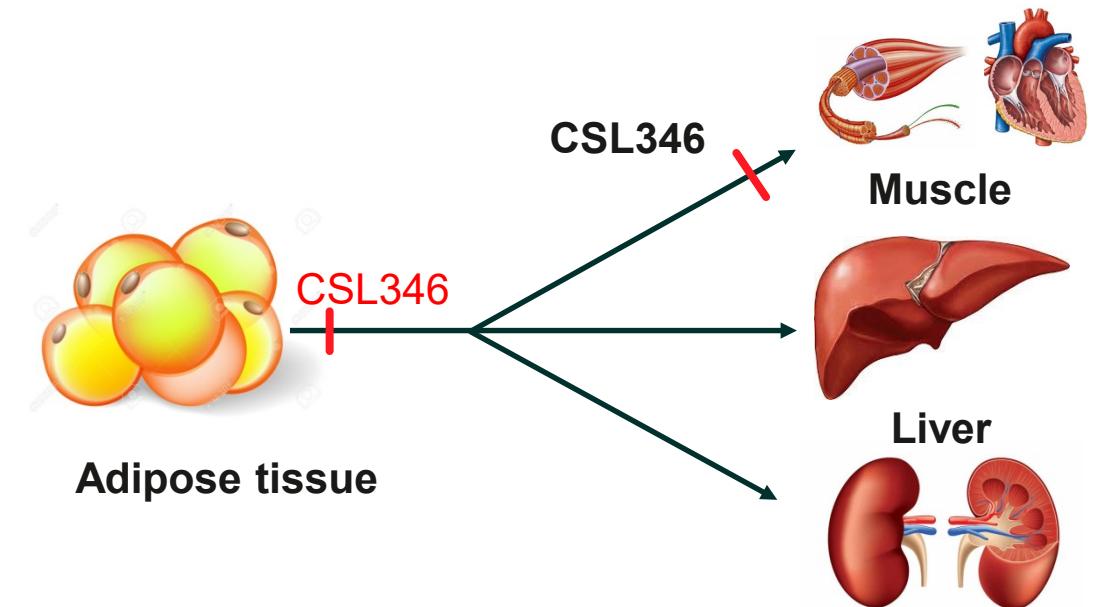
Source: <https://www.atsjournals.org/doi/pdf/10.1513/AnnalsATS.201508-514MG>

CSL311 Phase I Clinical Strategy Informs Early POC Expansion



CSL346 VEGF-B Antagonist

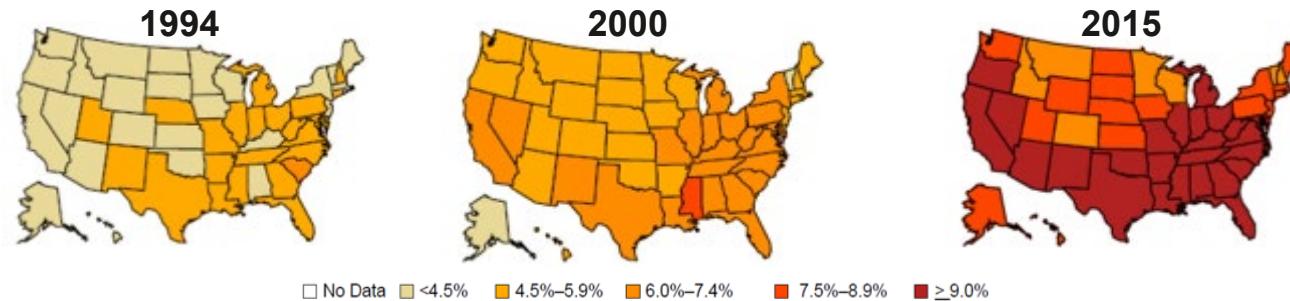
- CSL346 is a novel humanised monoclonal antibody (IgG4) that binds VEGF-B
- Strong renoprotective effects in diabetic kidney disease (DKD) animal models
- Phase II proof of concept study to start in early 2020



Source: <http://dx.doi.org/10.1016/j.cmet.2017.01.004>

Diabetes and Diabetic Kidney Disease

Increasing Prevalence

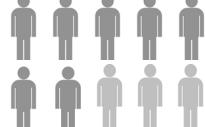


Diabetes accounts for 30-50% of all chronic kidney disease

1 in 3
diabetics develop
DKD over time



70%
among them develop albuminuria
(ACR ≥30 mg/g; ie, incipient/overt nephropathy)



~300,000
People with DKD developed end stage
renal disease (ESRD) in 2015

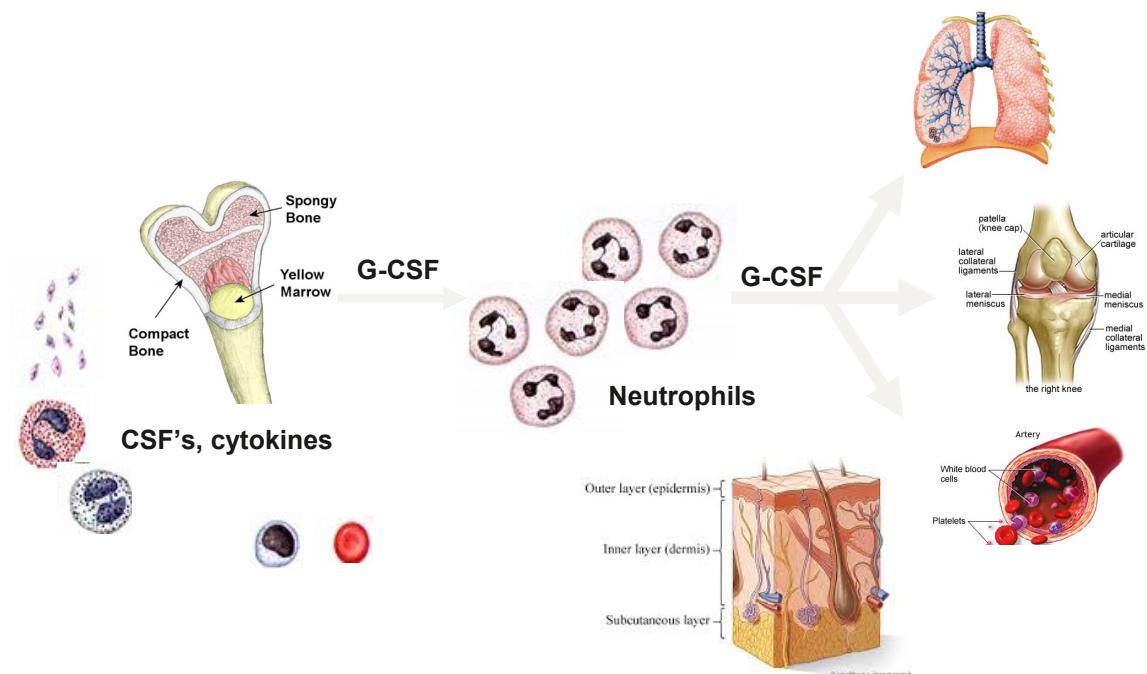


Sources: Map data: CDC Division of Diabetes Translation. US Diabetes Surveillance System (www.cdc.gov/diabetes/data) International Diabetes Federation 2015 Statistics; DN % - Calculated through consolidation of individual country sources. Top 7 markets: US, Japan, German, Italy, Spain, France, UK.
Mayo Clinic; The National Institute of Diabetes and Digestive and Kidney Diseases.
American Diabetes Association; Vecihi Batuman, Diabetic Nephropathy Workup, Medscape; International Diabetes Federation 2015 Statistics.

CSL324 G-CSF Receptor Antagonist

G-CSF, neutrophils and inflammatory disease

- Neutrophils are the most abundant white blood cells (WBC), ~ 10^9 cells / kg body weight leave the bone marrow daily
- Excessive neutrophil production and persistence within tissues leads to chronic inflammation and tissue destruction
- G-CSF plays a key role in neutrophil production, migration, lifespan and activation
- No competitors known to pursue G-CSF inhibition: First-in-Class



CSL324 G-CSF Receptor Antagonist

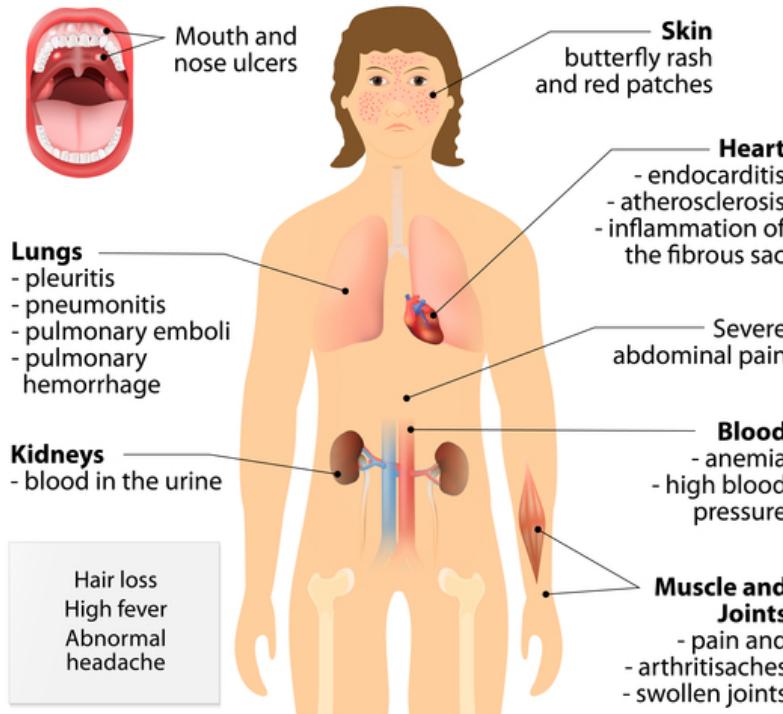
Begins Phase Ib Study in Neutrophilic Dermatoses

- Hidradenitis Suppurativa (HS) and Other Neutrophilic Dermatoses (ND)
 - Hidradenitis Suppurativa – 1% prevalence
 - A disease of hair follicles, immune dysregulation
 - Chronic inflammation, discharge, scarring
 - Growing in prevalence, limited treatments
 - High impact on quality of life
- Phase I FIH trial complete
- Initiation of Phase Ib in HS / ND patients
- Safety, tolerability, pharmacokinetics (PK), pharmacodynamics (PD) and response



Source: <https://rd.springer.com/article/10.1007/s13671-013-0064-8>

Systemic Lupus Erythematosus (SLE)



Disease Features

- Characterised by immunologic abnormalities, complex pathophysiology
- Heterogeneous disease

Symptoms Diagnosis

- Nearly every organ system may be affected
- Diagnosis based on clinical symptoms and laboratory testing

Risk Factors

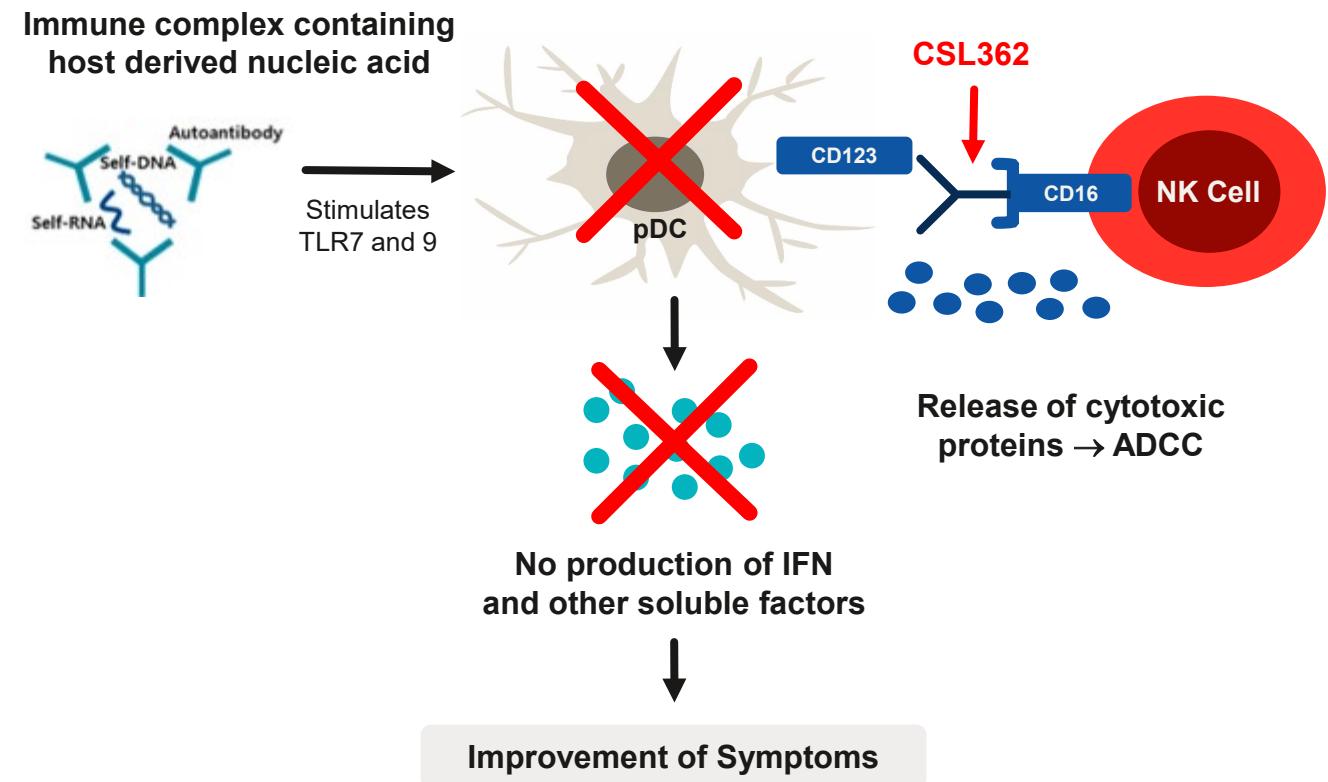
- Women in childbearing years are most common
- Prevalence is higher in non-Caucasian populations

Prognosis

- Survival rate is ~90% at 10 years, driven by organ damage
- Quality of life may be significantly impacted

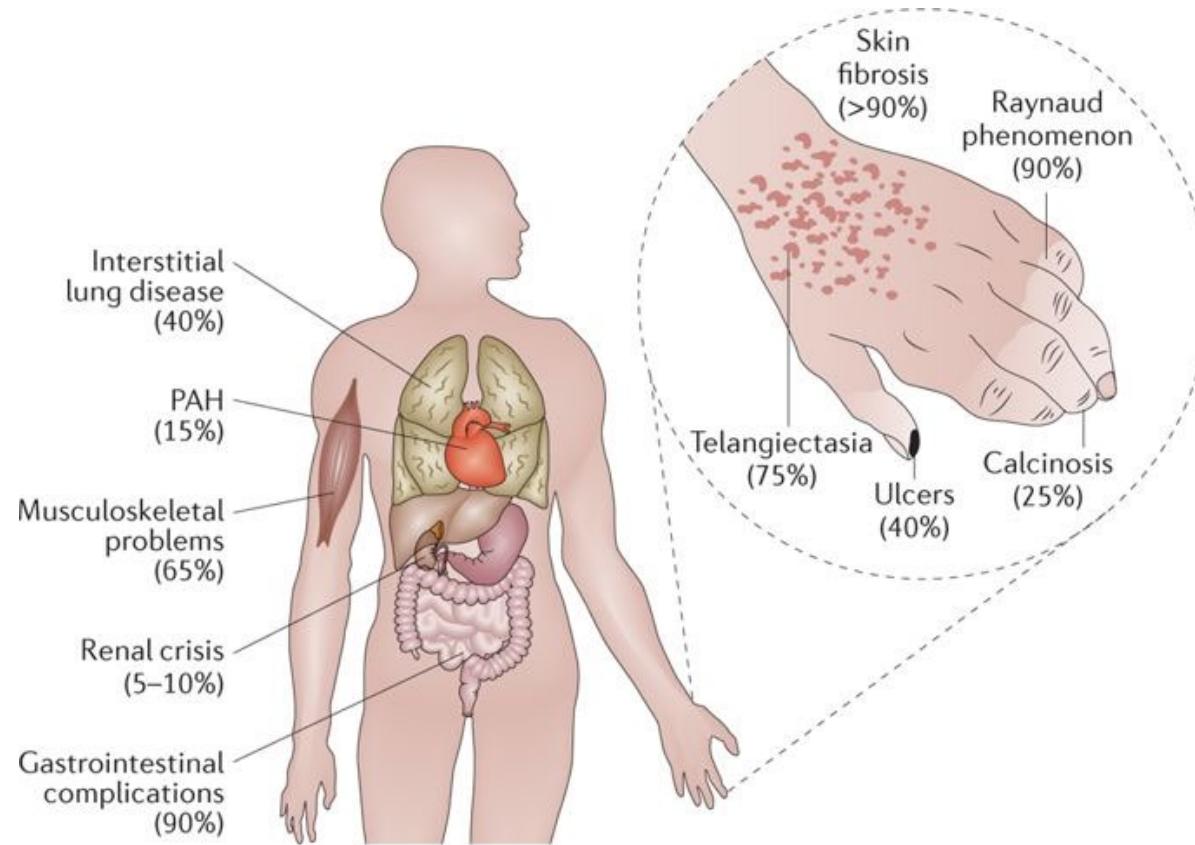
Strong Rationale for CSL362 Anti-IL-3Ra (CD123) in SLE

- Type 1 IFNs known to play a pivotal role in pathogenesis of SLE
- pDCs are the major producer of Type 1 IFNs
- CSL362 ex vivo
 - pDC depletion
 - Reduced interferon (IFN) gene signature
 - Basophil depletion
- Phase Ib in healthy volunteers and SLE patients to start in 1H2020



Systemic Sclerosis (SSc)

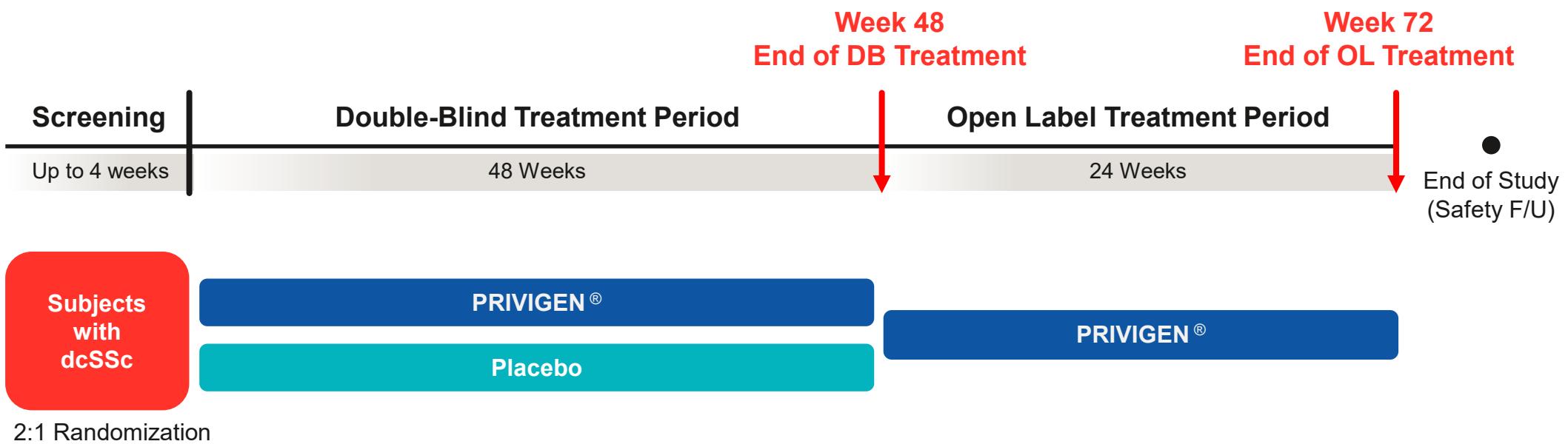
- Most life-threatening rheumatic disease: 10-year cumulative survival is 62.5%
- Limited approved disease modifying agents
- Most treatments aimed at improving symptoms and managing complications
- Prevalence 7 - 43/100,000 (US/EU)



Source: *Nature Reviews Disease Primers* volume 1, Article number: 15002 (2015) Clin Epidemiol. 2019; 11: 257–273

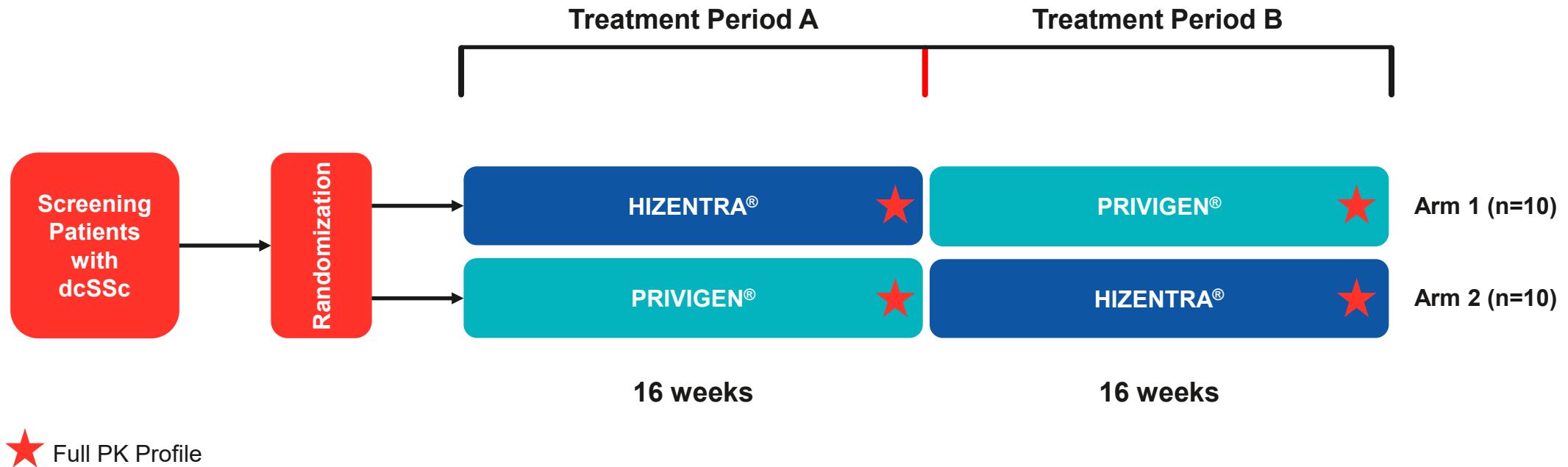
IMPRESS

PRIVIGEN® (IVIG) PhII, Efficacy and Safety Study



SURPASS

HIZENTRA® (SCIG) PIII, Safety and Bioavailability Study in Systemic Sclerosis



Dermatomyositis (DM)

- Rare (2 - 9/100,000), serious, and life-threatening
 - 5-year mortality rate 10-30%
- Rash, muscle weakness, dysphagia, and systemic manifestations (heart, lung, gut, cancer) and specific autoantibodies
- Female predominant, typical onset in adults late 40's – 60's, in children 5 – 15yrs



Heliotrope Rash



Gottron's Papules

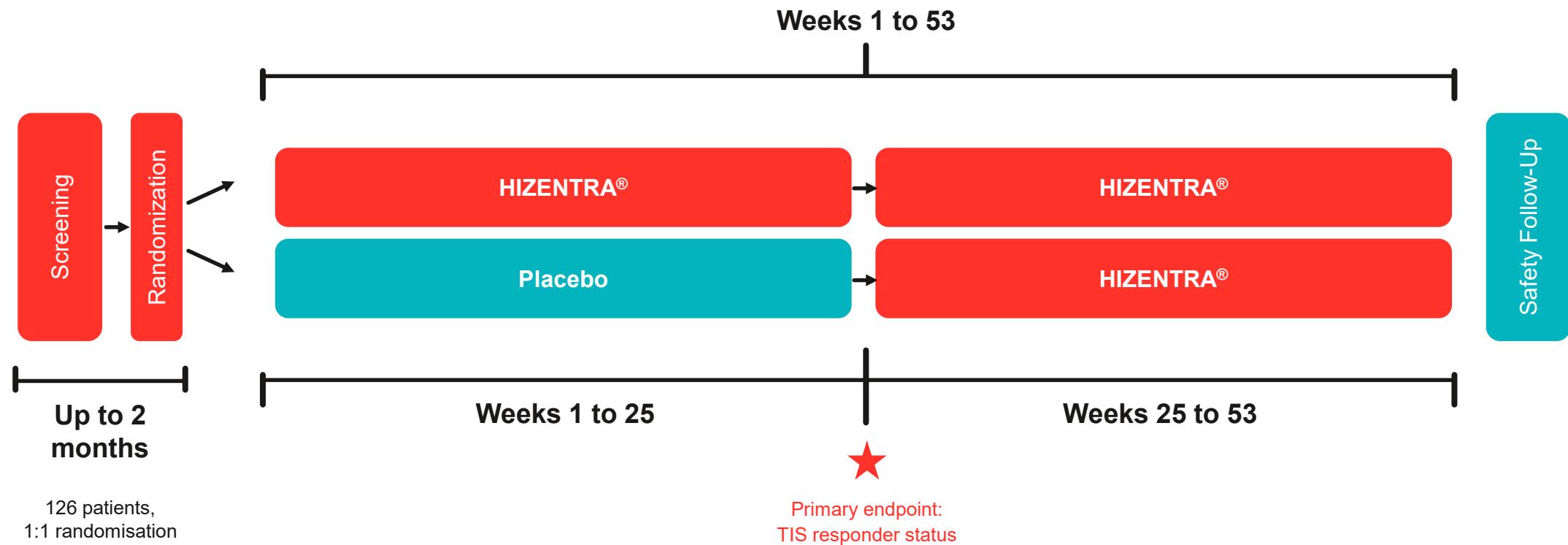


Skin Signs of DM

Sources: <https://www.ncbi.nlm.nih.gov/books/NBK532860/>; (2009) Epidemiology of Dermatomyositis. In: Dermatomyositis. Springer, Berlin, Heidelberg

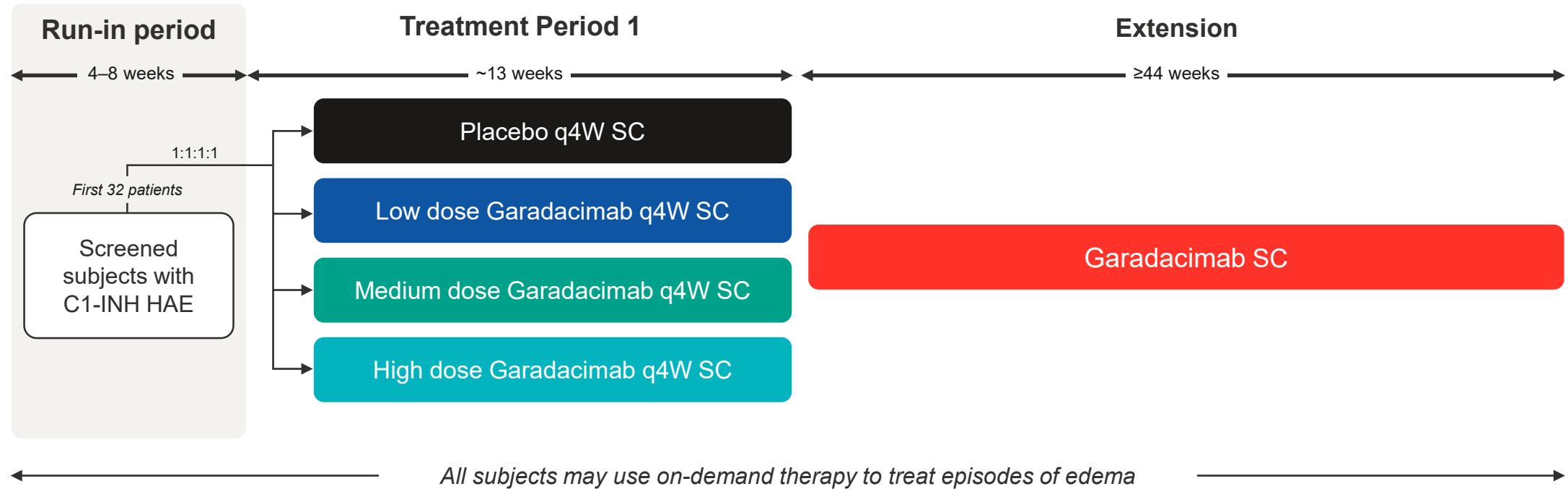
RECLAIM

HIZENTRA® DM Treatment Study Design

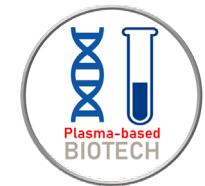


Garadacimab Phase II Hereditary Angioedema (HAE) Study

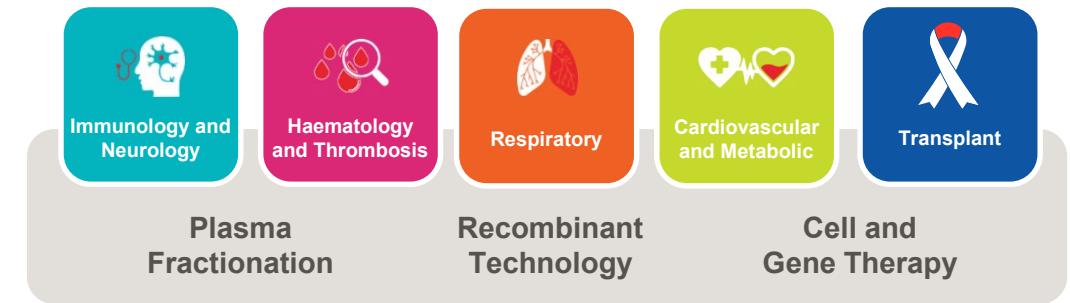
Completed Double Blind Period



CSL Pipeline Progressing into Multiple New Disease Areas Using All Three Product Development Platforms



- **Sickle Cell Anaemia** – CSL200 (lentiviral stem cell gene therapy), CSL889 (Hemopexin)
- **Contact-Mediated Thrombosis** – CSL312 Garadacimab (Anti-Factor XIIa)
- **Respiratory Disease** – CSL311 (Anti-Beta common)
- **Diabetic Nephropathy** – CSL346 (Anti-VEGF-B)
- **Neutrophilic Dermatoses** – CSL324 (Anti-GCSF)
- **Systemic Lupus Erythematosus** – CSL362 (Anti-IL-3Ra)
- **Scleroderma** – PRIVIGEN® and HIZENTRA®
- **Dermatomyositis** – HIZENTRA®
- **Hereditary Angioedema** – CSL312 Garadacimab (Anti-Factor XIIa)



Commercial – Part 1

Mr. Bill Campbell

Executive Vice President and Chief Commercial Officer
CSL Behring



Global Commercial Operations at a Glance



~1,800

Commercial employees



35 Affiliate Offices

Conducting business in **100+ Countries**



US\$7.2

Billion in annual revenue



4 Commercial Regions



5 Therapeutic Areas

FY'19 Highlights



Strong
Business
Performance



Balanced
Regional
Growth:
9% – 17%



Executing to
Plan on New
Launches



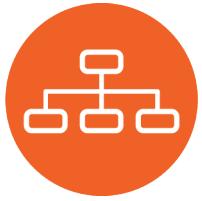
Ig Growth well
Above Market



Expanding
Market
Presence
through New
Affiliates



China GSP
License
Establishment



Implemented
TA Structure /
Model

Strong Demand Across the Portfolio



Ig

- Strong underlying market growth
- Disciplined approach to market expansion
- Growth driven by volume and mix improvements



Coagulation

- Market leadership with IDELVION® in key markets
- Additional launch opportunities for AFSTYLA® / IDELVION®
- Life-cycle expansion (21-day dosing)



Specialty

- New launches with HAEGARDA®
- Continued growth of KCENTRA® in the US

AlbuRx®



Albumin

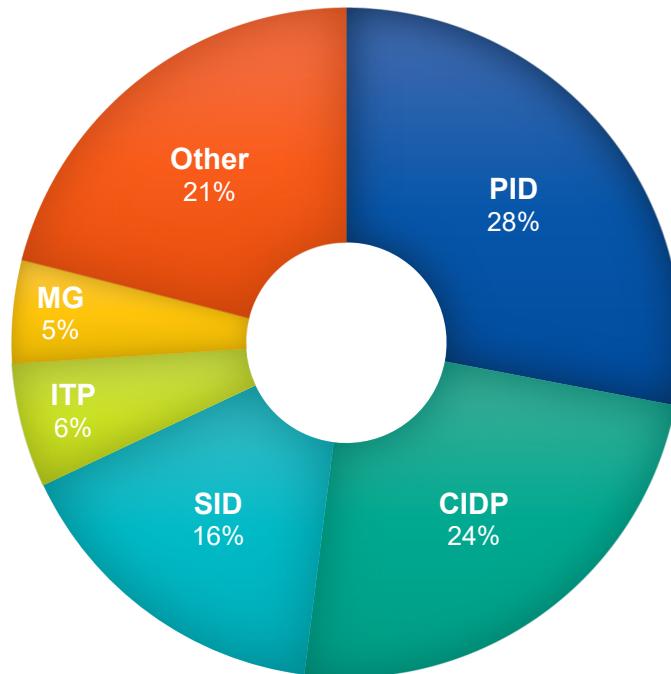
- Disciplined approach in China
- Volume growth in all regions

Immunoglobulin Market

Market Dynamics

- Increasing awareness and diagnosis
- Growth in PID and CIDP
- Expanding usage for SID
- Potential new indications
- Continued market supply tightness

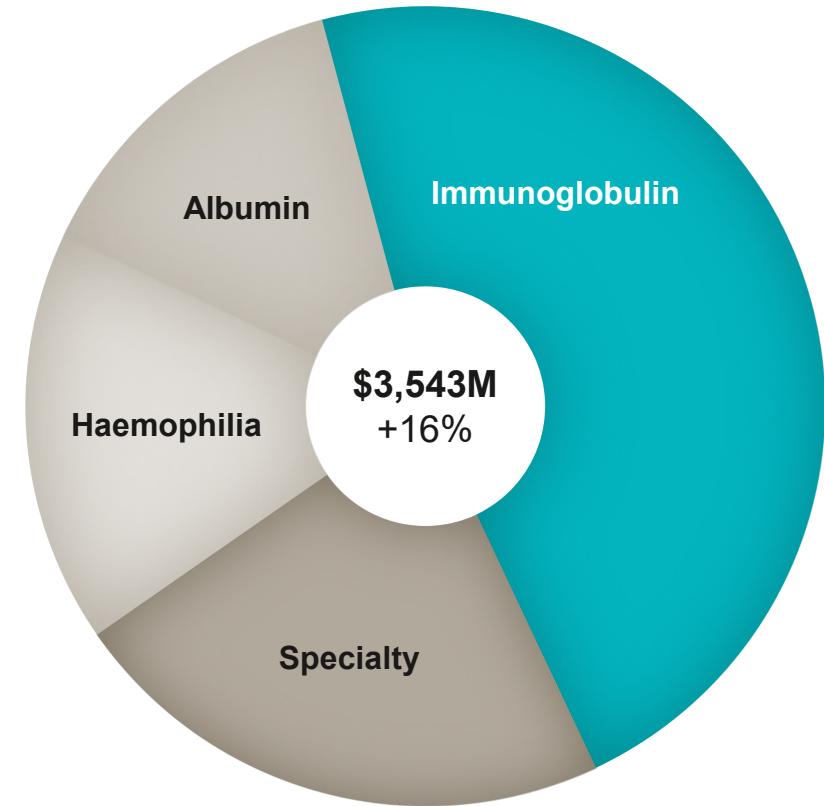
Global IG Volume by Indication 8% Growth



Source: Data on file

Positioned for Continued Growth

- Market Leading Products
- Substantial volume and share growth
- Balanced growth across all regions
- IV and SC for CIDP
- History of Innovation



Source: Data on file
M = US\$ millions

#1 Prescribed IVIG Worldwide

Proven effective and well tolerated in **12+ years**

Used in **>100,000 patients** with chronic disease in the last year

Approved for use in multiple indications

Indications:

EU: PID, SID, ITP, GBS, KD, CIDP, MMN

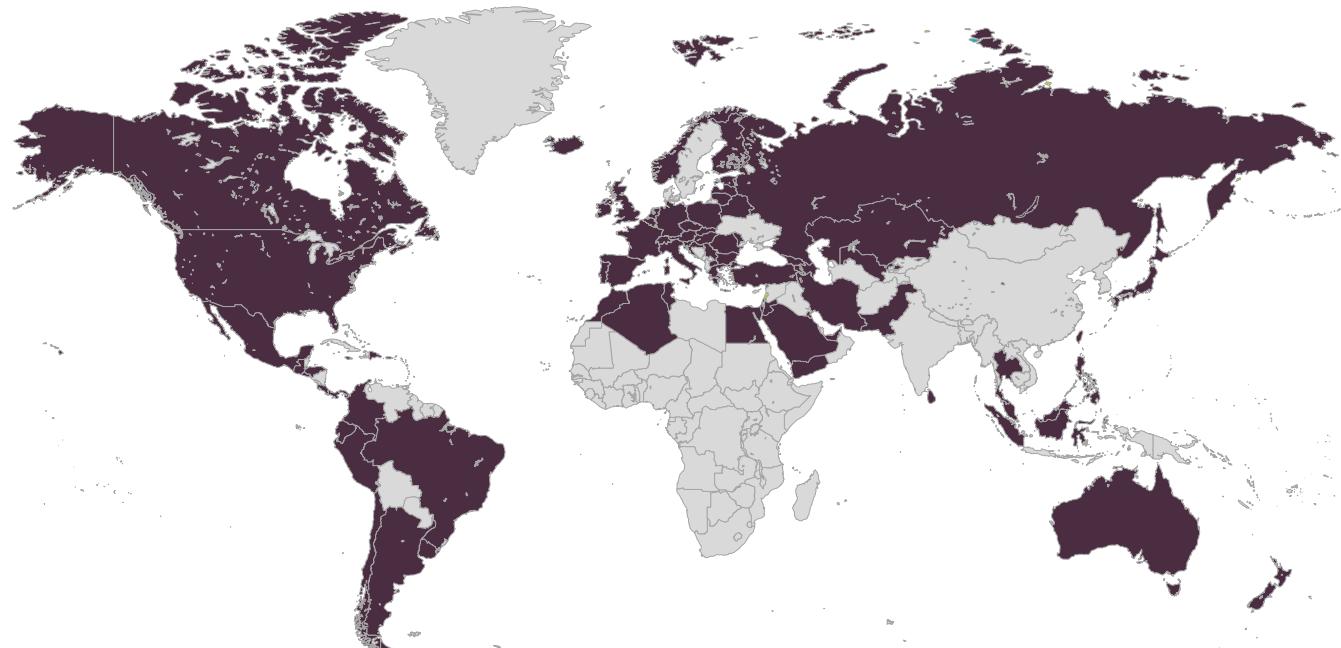
US: PID, ITP, CIDP

CA: PID, SID, ITP, CIDP

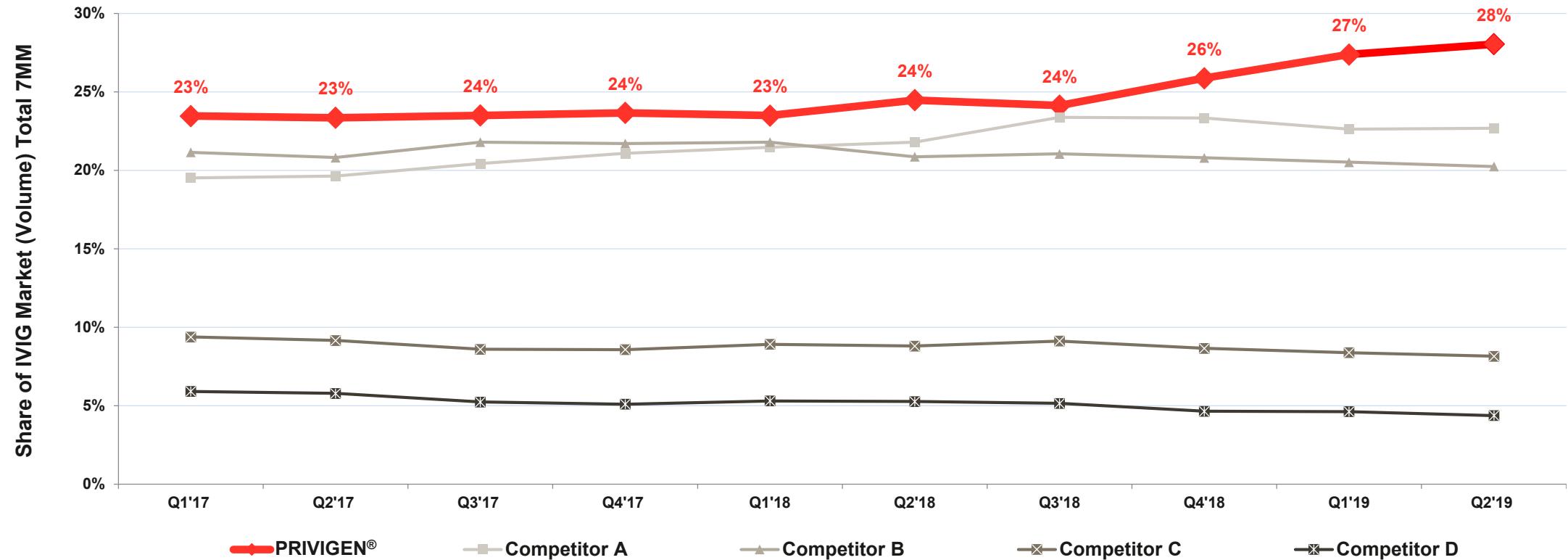
JP: CIDP

AUS: PID, SID, ITP, GBS, CDP, MMN, MG, Lambert-Eaton Myasthenic Syndrome (LEMS), Stiff Person Syndrome (SPS)

Source: Data on file



PRIVIGEN® Performance Through Q2'19



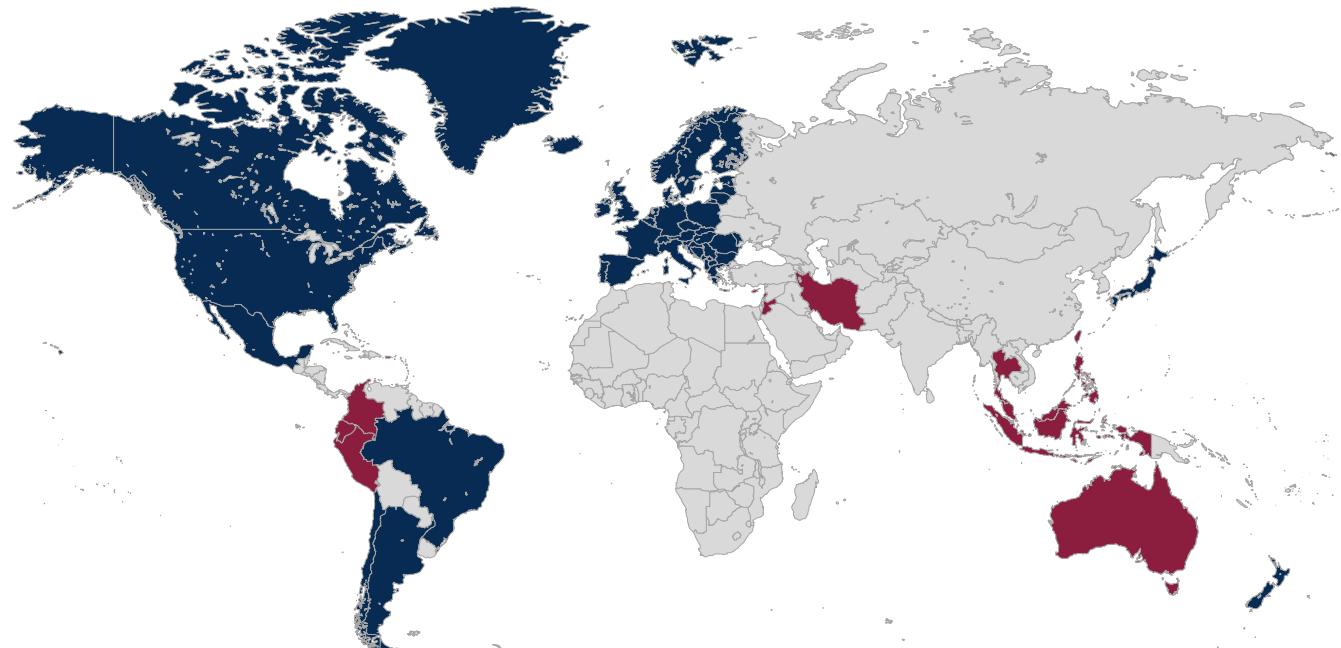
Source: Data on file

Innovator, Market Leader, Most Prescribed SCIG Worldwide

Proven efficacy and tolerability since **2010**

100,000 patient-years of experience

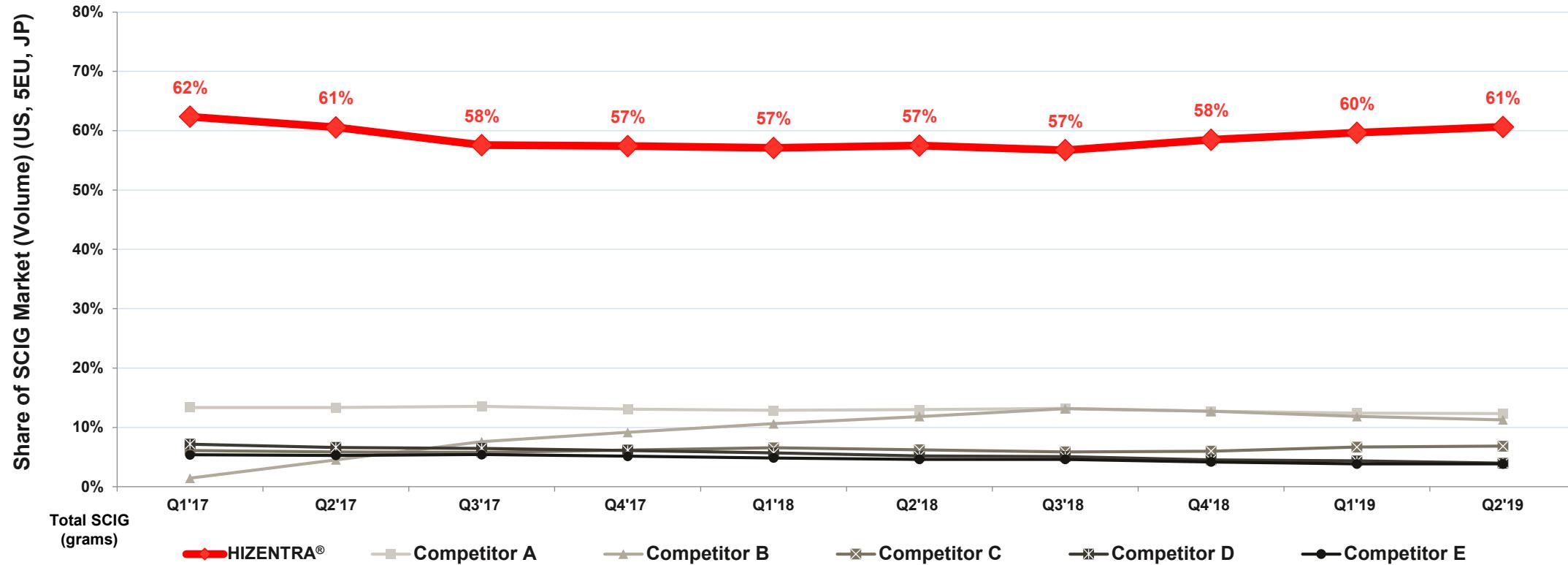
More than **6,000,000** exposures worldwide*



Source: Data on file

*Hizentra® also has SID indication in most countries outside of the US.

HIZENTRA® Undisputed Market Leader in SCIG



Source: Data on file

HIZENTRA® Addresses Unmet Needs in CIDP



Experience IV-related
systemic adverse
reactions

5x as many patients said
they felt fewer side effects
with HIZENTRA®



Seek the flexibility, freedom,
and control
of self-infusing

8x as many patients said
HIZENTRA® offers more
freedom than IVIG

Approved March '18 US & EU
Approved March '19 Japan

Interest & Awareness
Remains High

Market Share Growth With
Both Privigen & Hizentra

Orphan Exclusivity Granted
for Hizentra CIDP



Have venous
access issues

HIZENTRA®
does not require
venous access

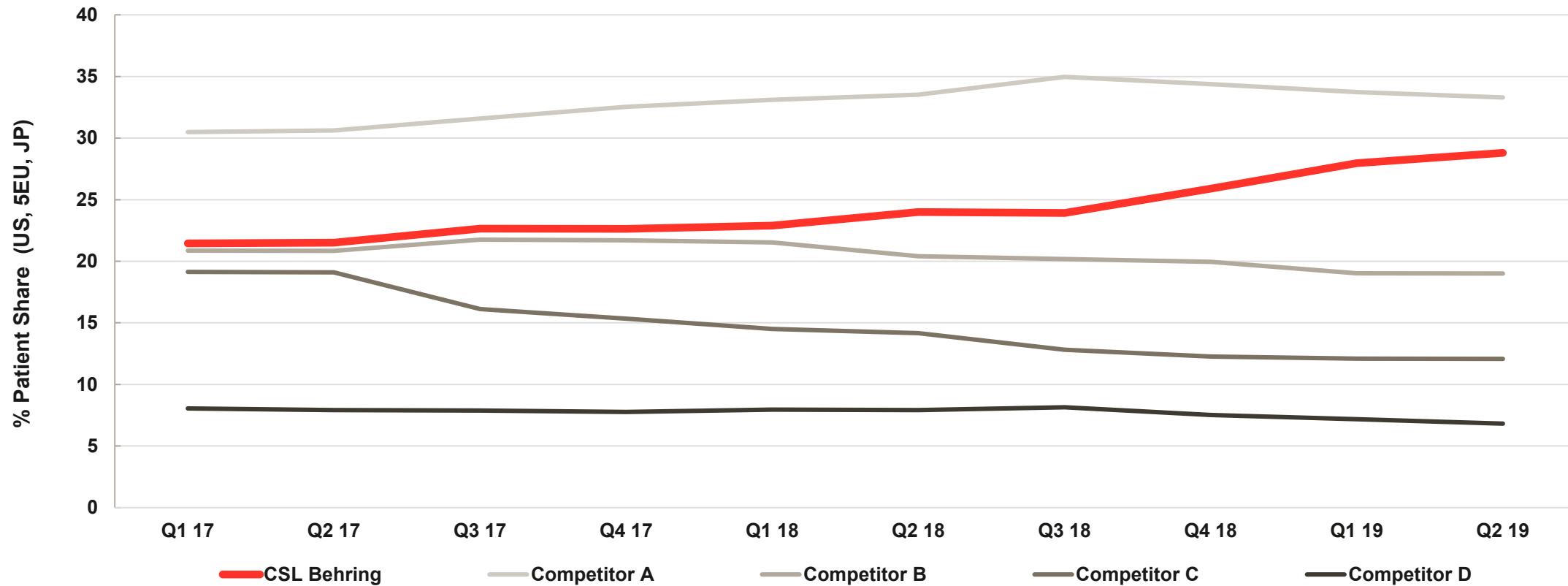


Require more frequent
infusions to manage their
disease

HIZENTRA® provides
steady state Ig levels for
continuous control

Source: Data represents patients reporting a preference between IVIG in the pre-randomised phase and HIZENTRA® in the randomised phase of the phase III study of subcutaneous immunoglobulin for the treatment of chronic inflammatory demyelinating polyneuropathy (CIDP) – the PATH study.

CSL Behring on Track to Become Market Leader in CIDP



Source: Data on file

Market Leadership in Ig Therapy

Past



Present



Future



Panel Q&A Session



Break – 15 minutes



Commercial – Part 2

Mr. Bill Campbell

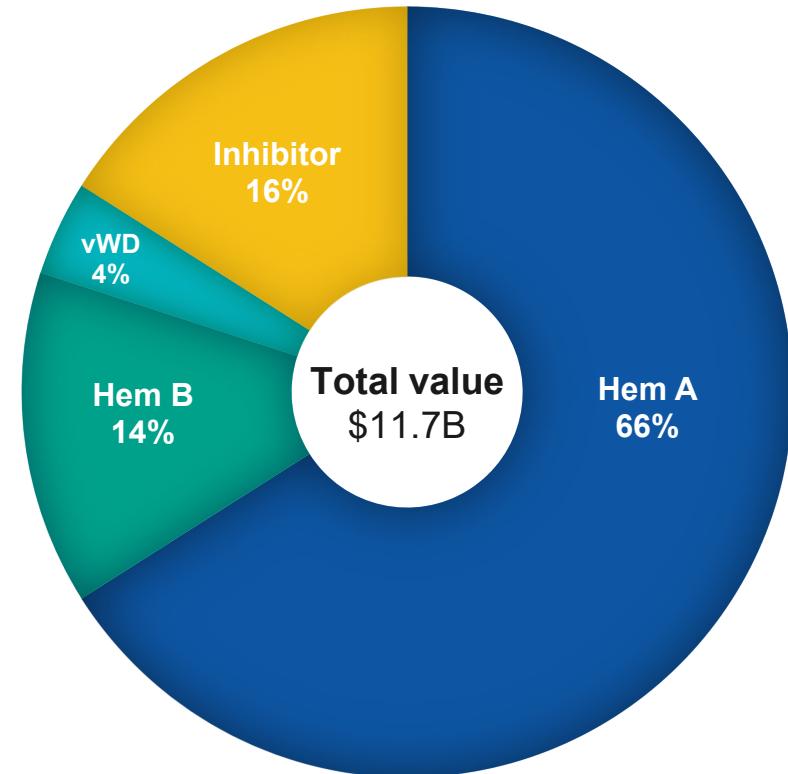
Executive Vice President and Chief Commercial Officer
CSL Behring



Haemophilia Market

Market Dynamics

- New therapies continue to increase competitiveness in Hem A segment
- Patient education about Prophylaxis in Hem B driving utilization of long acting products
- VWD is underserved due to lack of awareness/understanding of the disease



Source: Data on file
B = US\$ billions

Haemophilia Portfolio



Coagulation Factor IX (Recombinant), Albumin Fusion Protein

- 40% growth*
- Continued patient switching
- Additional countries to launch
- 21 day dosing
- Transformational product



- 85% growth*
- Long lasting and reliable bleed protection
- Successful product transition

HELIXATE® phased out

Recombinant Coags +7%*



Von Willebrand factor/factor VIII



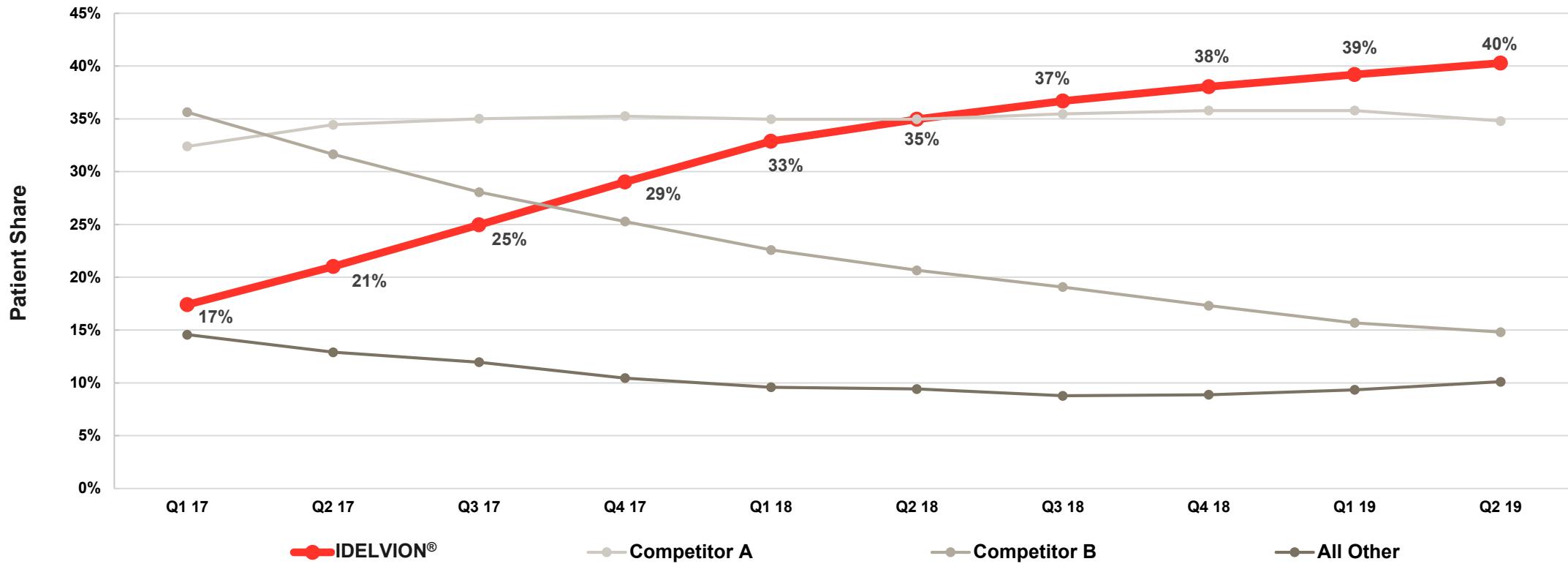
- Leadership position in VWD: 59%^ market share globally

vWD +7.5%*

* Growth percentages shown at constant currency to remove the impact of exchange rate movements, facilitating comparability of operational performance.

[^]Source: Data on File

IDELVION® Prophylaxis Market Leadership



Based on 5 major markets (US, Japan, Germany, Italy and UK) where IDELVION® is reimbursed and commercially available.

Source: Data on File

Positioning AFSTYLA® in a Competitive Market



Higher binding affinity to vWF

- Unique single-chain molecular structure provides increased binding
- Enhanced binding affinity protects AFSTYLA® from degradation, extending time in circulation

2x weekly dosing

- FDA-approved for 2x or 3x weekly dosing
- Factor trough levels above 1.9% with 2x weekly dosing

Excellent bleed protection

- ZERO bleeds (median AsBR*) in all patients, regardless of age and dosing frequency

Low annual consumption

- AFSTYLA® delivers the benefits of an EHL† with the lowest annual consumption

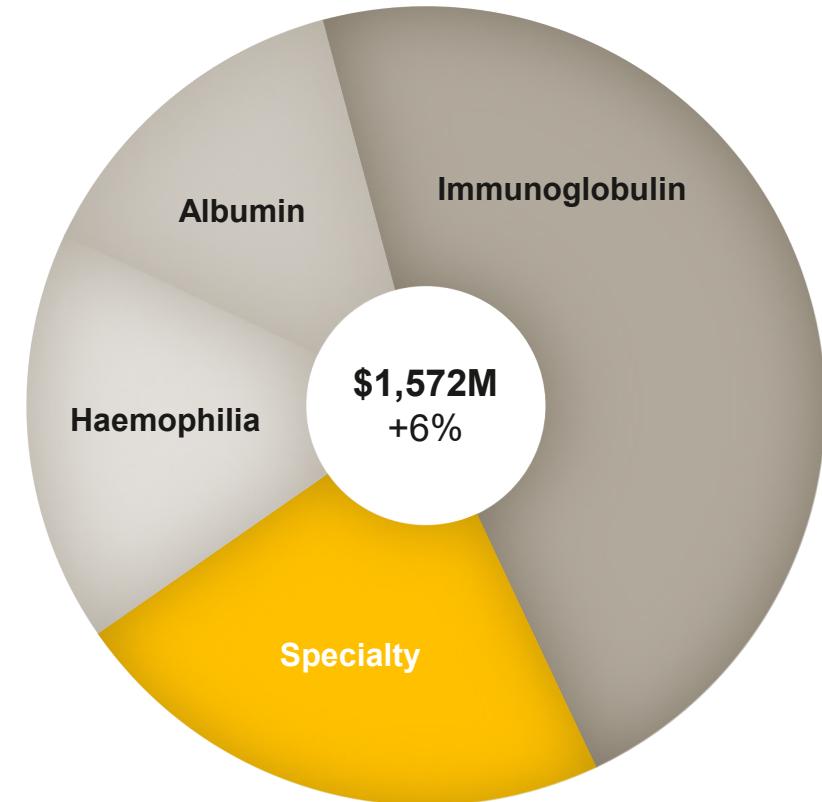
* AsBR: Annualised spontaneous bleeding rate

† EHL: Extended half life

CSL Portfolio: Specialty Products



M = US\$ millions



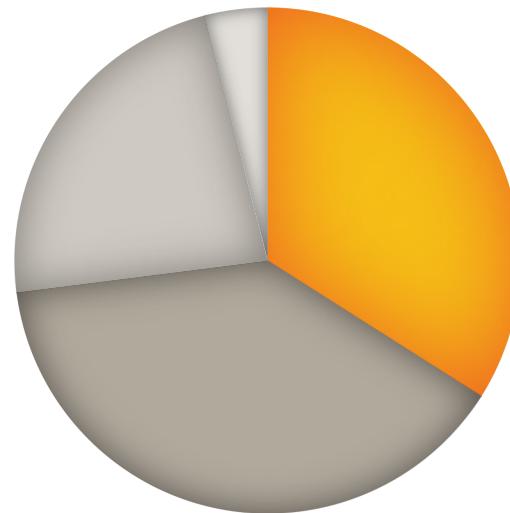
Continued Growth Opportunity for KCENTRA®



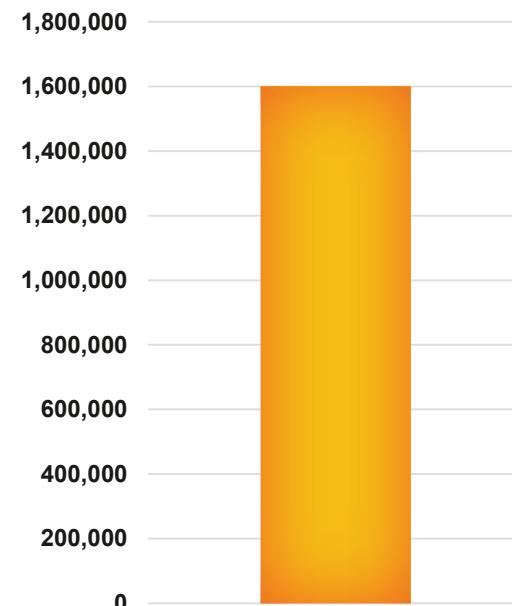
US clinical practice guidelines recommend KCENTRA® over FFP to reverse the effects of Warfarin*

Anticoagulation Market US¹

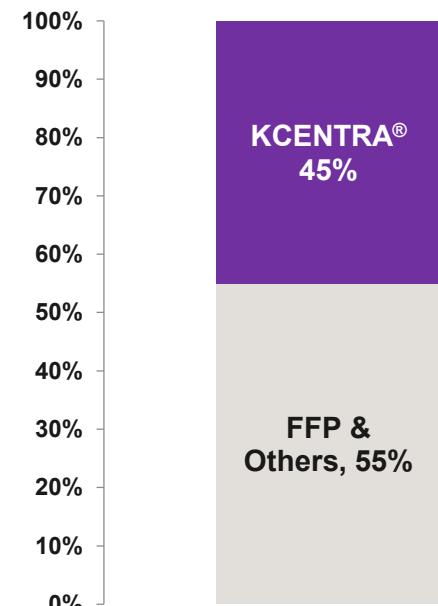
■ Warfarin ■ Product A ■ Product B ■ Other



Warfarin Market US (Patients)¹



Warfarin Reversal Market US²



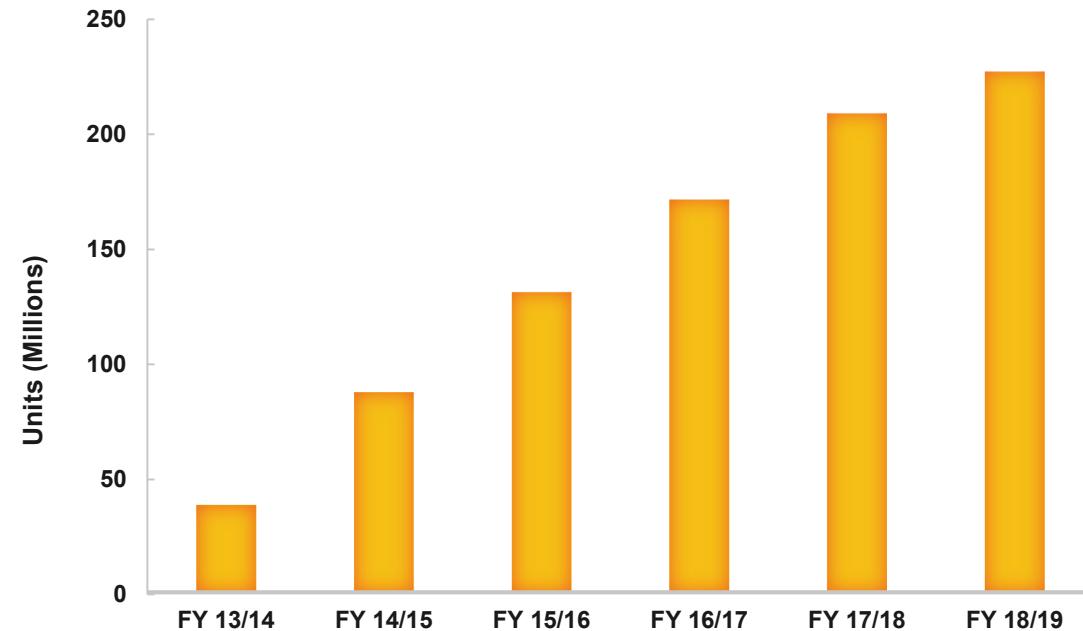
*Neurocritical Care Society, Society of Critical Care Medicine, American College of Cardiology, American College of Chest Physicians, American Society of Gastrointestinal Endoscopy, American College of Surgeons
Sources: 1. Data on File. 2. (RWD) Charge Master Data & Medical History Data.

KCENTRA® Growth in US Since Launch



KCENTRA®

- KCENTRA® remains the first and only FDA approved 4F-PCC for reversing patients on warfarin
- KCENTRA® is supported by multiple clinical guidelines as the preferred reversal agent
- KCENTRA® growth driven by:
 - Penetration within existing large hospital systems
 - Expansion into new regional accounts



Source: Data on file

#1 prescribed therapy in the US for the prevention of HAE attacks

Address C1-INH deficiency with HAEGARDA®

C1-INH has been used in HAE > 35 years

HAEGARDA® reduced HAE attacks by 95%*

Rescue medication use was reduced by >99%†‡¹



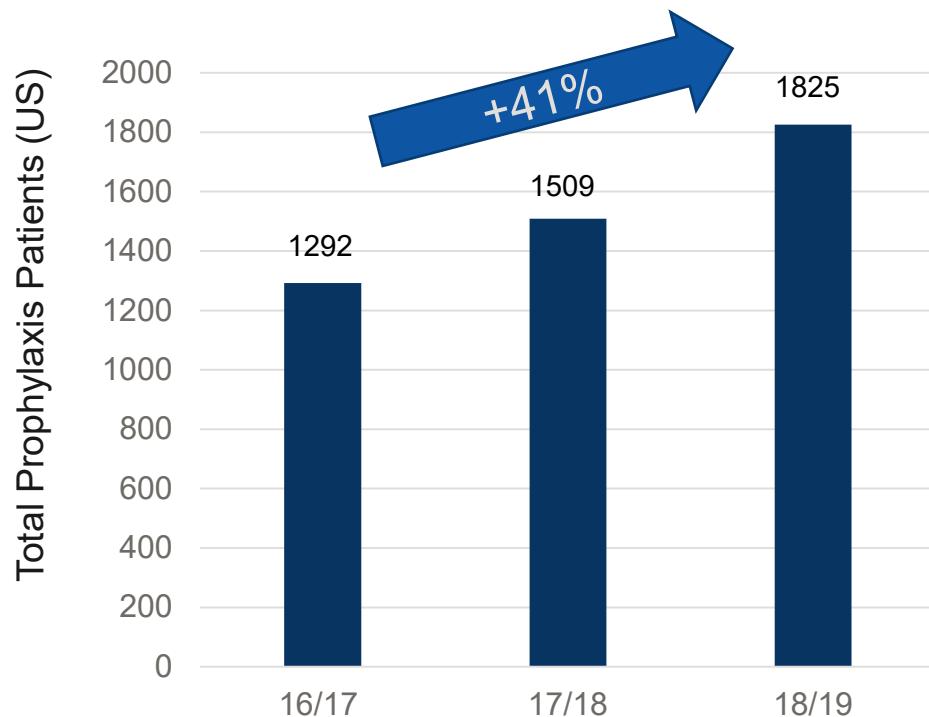
*Median reduction in number of attacks in patients receiving 60 IU/kg of HAEGARDA® vs placebo.

†Median reduction in rescue medication use in patients receiving 60 IU/kg of HAEGARDA® vs placebo.

‡The World Allergy Organization (WAO) guidelines for the management of HAE state that patients should have HAE rescue medication available at all times.

References: 1. Data on file

HAE Prophylaxis Market



Source: Data on file

- HAEGARDA® is the market leader in HAE prophylaxis in the US
- Rapid uptake at launch
- Significant brand loyalty
- Additional capacity to support new launches

Why HAEGARDA®?



HAEGARDA® Patients Rely On C1-INH For Efficacy And Safety



"I've been on HAEGARDA for one year, and I haven't had an attack. It allows me to be more independent, confident, and free because I can take it with me wherever I go and don't have to depend on anyone." – Zahra



"Having a therapy that addresses the root cause of HAE is important to me. It's like filling in the missing puzzle piece of C1-INH my body doesn't make, versus putting a mystery compound in my body." – Cheryl



"For me, I find it's easier to give myself injections at night so it's just part of my routine. And knowing how HAEGARDA works motivates me to take it on schedule."
– Cheryl B-J.

Physicians Highly Satisfied with HAEGARDA®, Delivering On Its Promise of Efficacy With a Known MOA



"People ask about Takhzyro but they're so well controlled on HAEGARDA® that they don't want to take a chance on it"

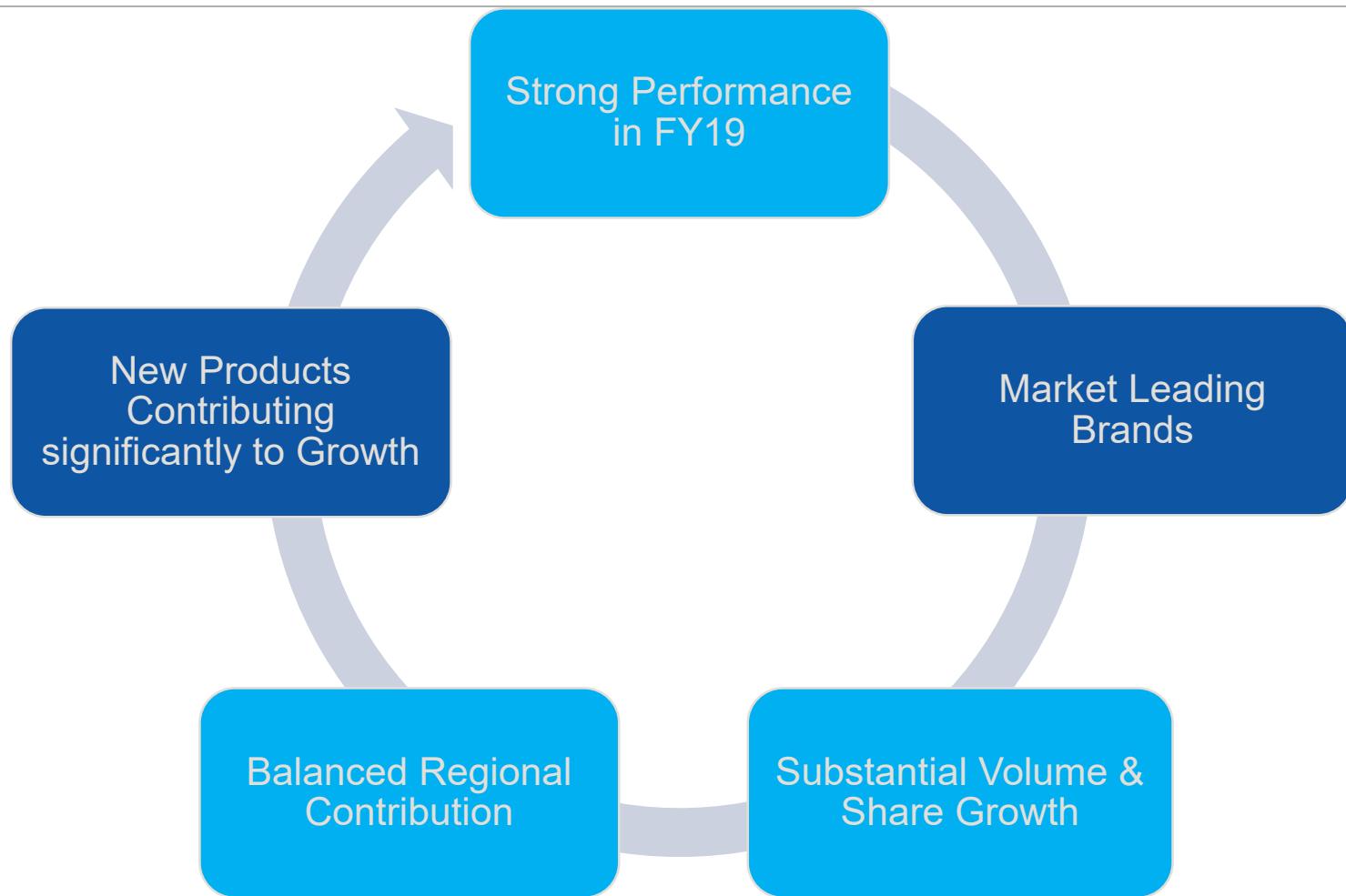
– February 2019 KOL Advisory Board Participant



"HAEGARDA® represents a "natural approach, which some of my female patients prefer"

– February 2019 KOL Advisory Board Participant

Commercial Summary

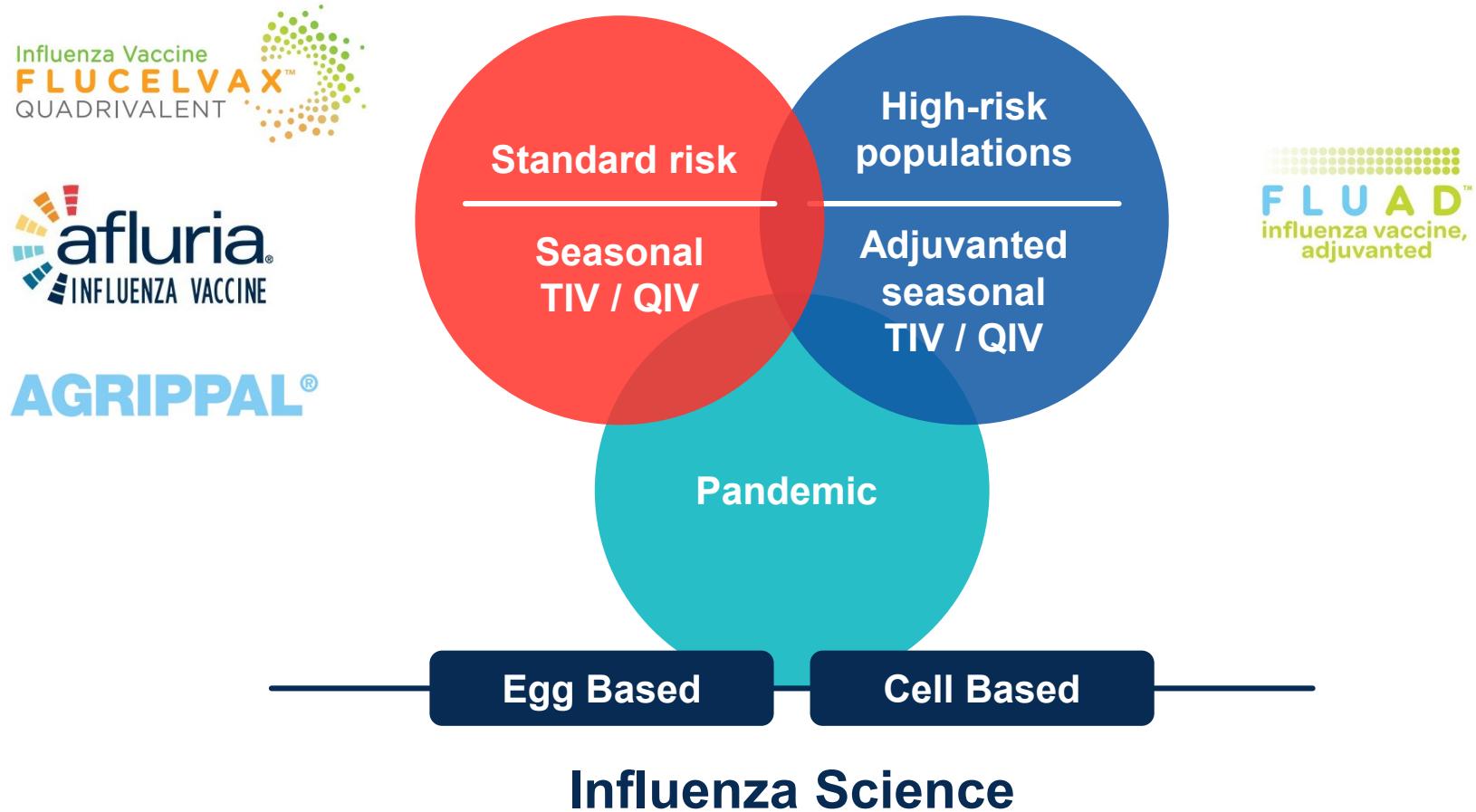


Dr. Russell Basser

Senior Vice President, Research and Development
Seqirus



Seqirus Influenza Vaccines



Milestones in 2019

AFLURIA® QUADRIVALENT

- AUS approval for 6M – 4yrs

FLUCELVAX® QUADRIVALENT

- European approval for 9yrs and older
- Paediatric efficacy study (2 - 17yrs) – met all clinical endpoints
- Canadian approval for 9yrs and older

FLUAD® TRIVALENT

- Strong effectiveness data in UK – again recommended by JCVI for people 65yrs and older

FLUAD® QUADRIVALENT

- AUS approval for 65yrs and older, with positive PBAC recommendation
- Submission of dossier EU

Pre-Pandemic vaccine (MF59-adjuvanted H5N1 cell = aH5N1c)

- US submission

aQIVc (MF59 plus FLUCELVAX® antigen) product development commenced

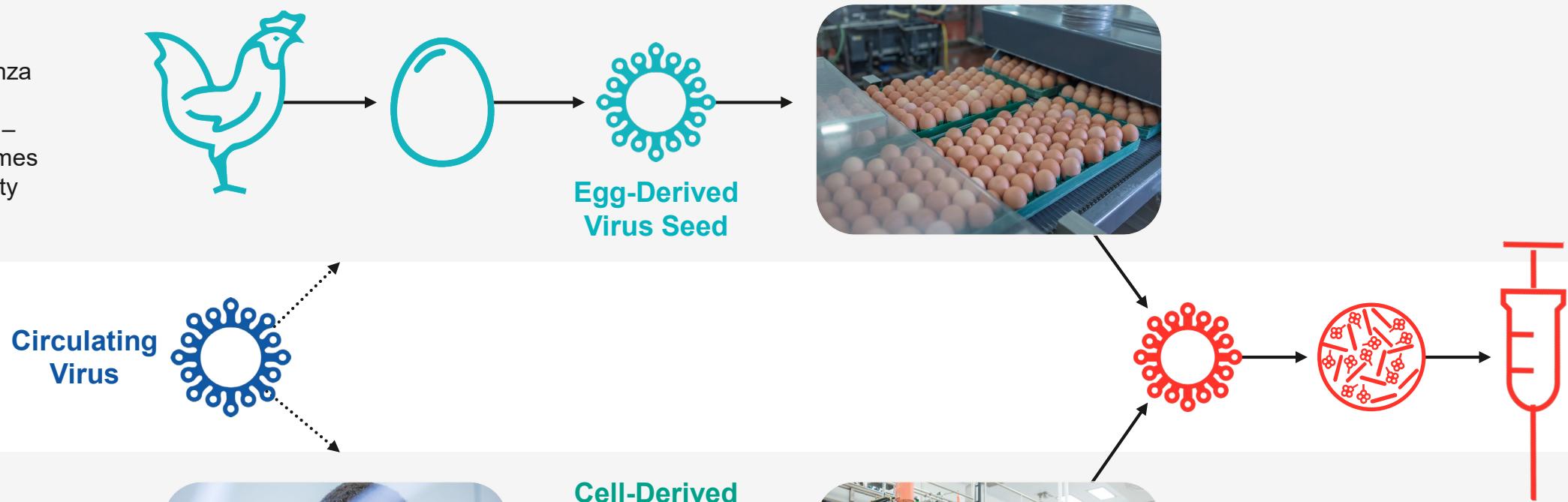
JCVI - Joint Committee on Vaccination and Immunisation



Influenza Vaccine Innovation Through Cell-based Manufacturing

Eggs

- Most influenza vaccines
- Egg supply – long lead times
- Low flexibility

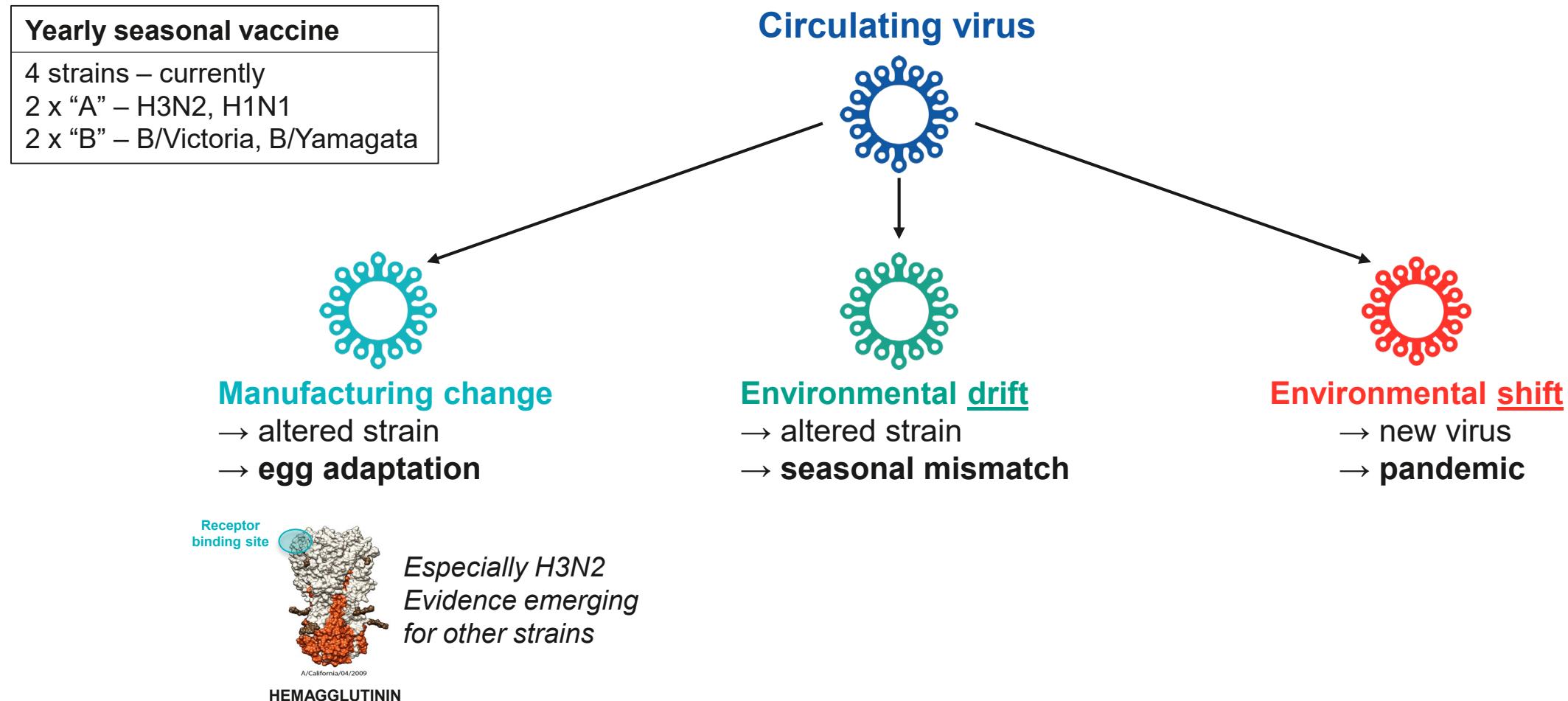


Cell Culture

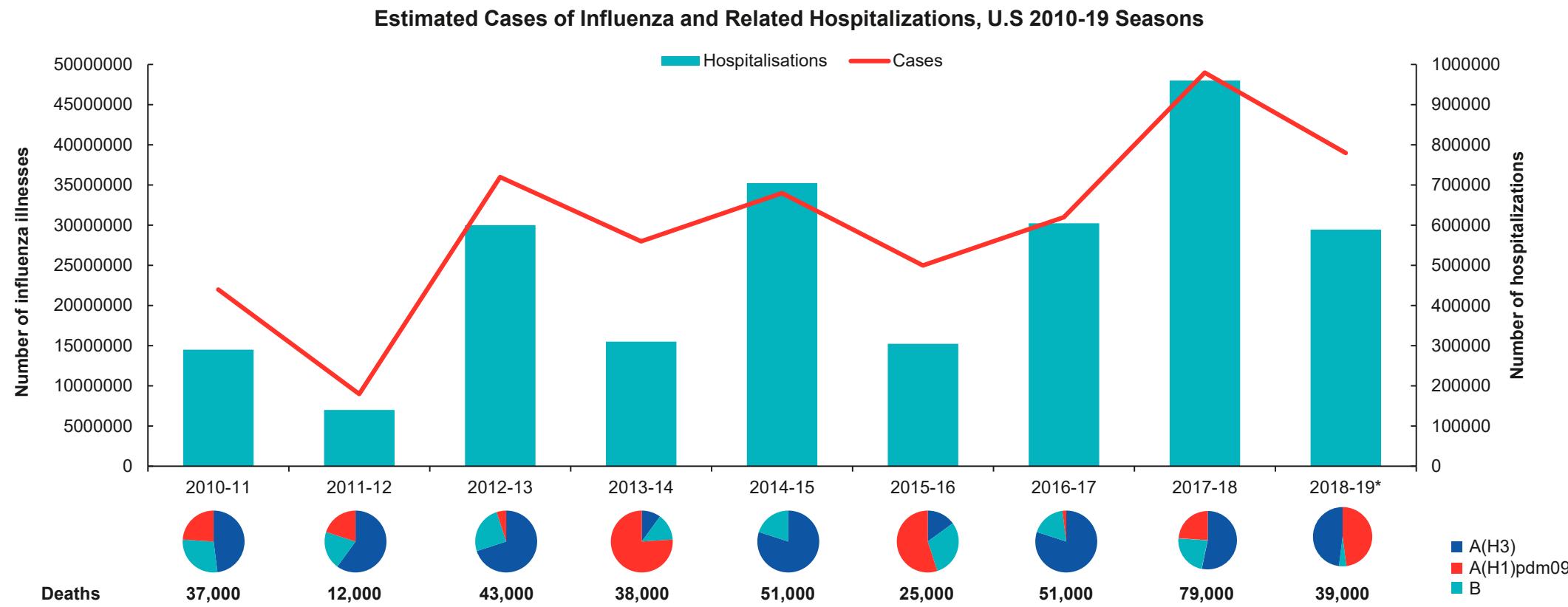
- Closed reactor
- High yield and volume
- Potential for rapid pandemic response

CSL™

Science of Influenza Virus Mutation and the Rationale for Non-egg Vaccines



2018-19 was a Moderate Influenza Season in US (and elsewhere)

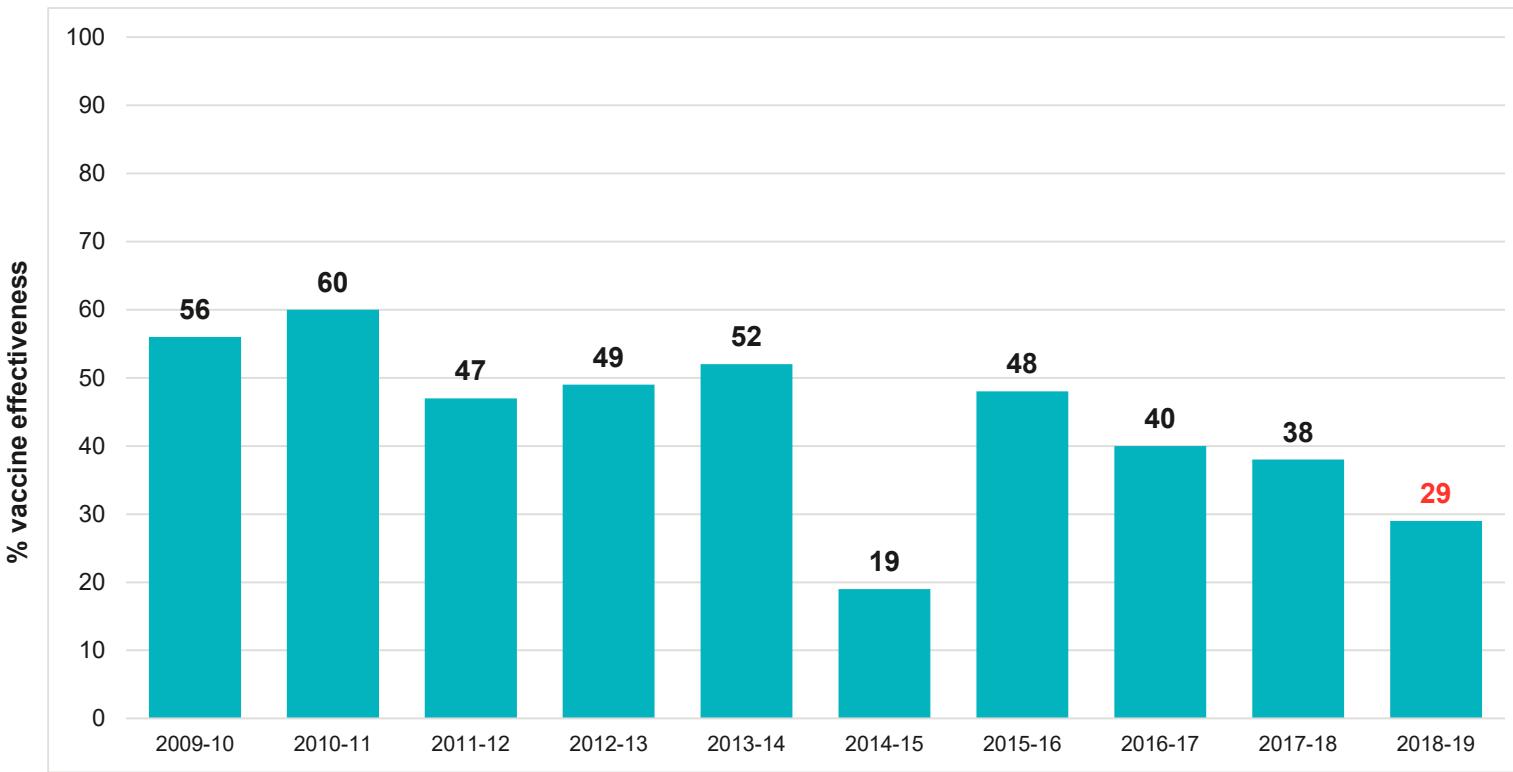


Source: US data from CDC. <https://www.cdc.gov/flu/about/burden/2017-2018.htm>.

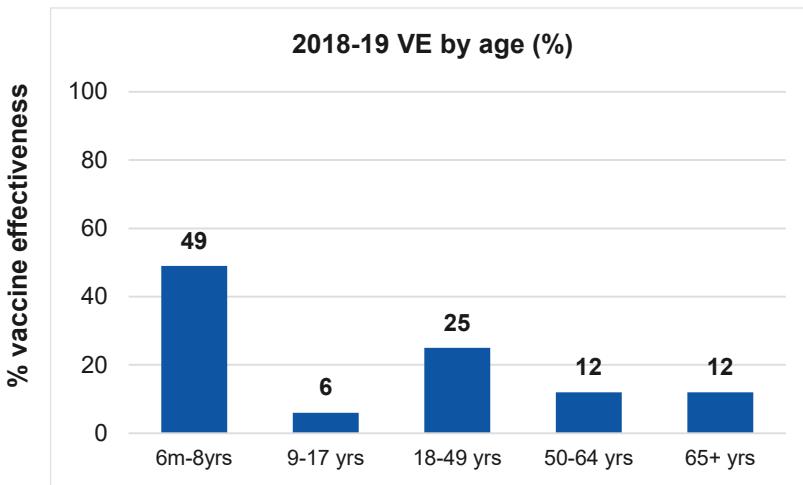
*2018-19 data are current estimates, <https://www.cdc.gov/flu/about/burden/preliminary-in-season-estimates.htm>

Influenza Vaccine Effectiveness Varies by Year and Age

2018-19 affected by strain mismatch due to “drift” in US

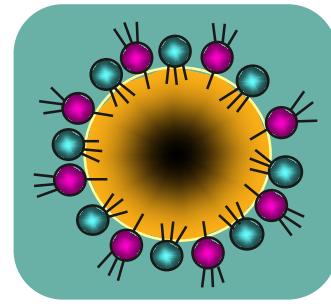
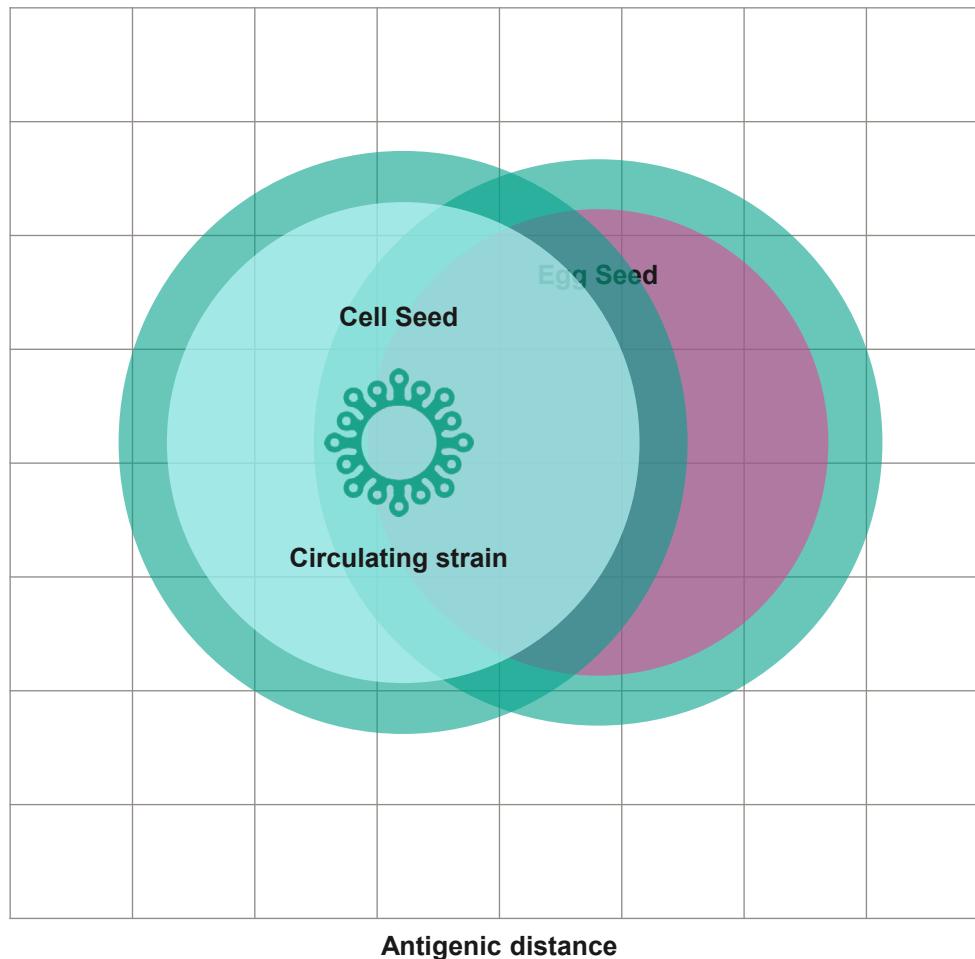


Vaccines least effective in older adults



Source: US VE Network estimates of seasonal influenza vaccine effectiveness. <https://www.cdc.gov/flu/vaccines-work/effectiveness-studies.htm>

Bringing the Benefits of MF59 Adjuvant and Cell-based Vaccine Together - aQIVc



MF59 adjuvant

Increases “breadth”
of immunity

Increases antibody
response

Potential Benefits* of Cell-based Vaccine

- Evidence of egg adaptation strongly supported by non-clinical data[#]
- Studies of *Real World Evidence* from 2017-18 season show benefit of cell-based vs egg-based vaccine in a season dominated by H3N2 strain (~2 of every 4 years)
 - **36% reduction in outpatient Influenza-like Illness** (electronic health record⁺)
 - **11% reduction in influenza-related hospital encounters** (CMS/claims data^{**})
 - 43% reduction in H3N2-related influenza positive hospitalisation in people less than 65yrs old (Kaiser Permanente Southern California[^])
- **Executive Order** from White House September 2019 called for modernisation of influenza vaccines and overhaul of seasonal flu vaccine production

* Superior efficacy has not been demonstrated in RCT

Kishida et al. Clin Vaccine Immunol 2012. PMID 22492743; Raymond, et al. Nat Med 2016. PMID 27820604; Parker et al. J Gen Virol 2016. PMID 26974849; Wu et al. PLoS Pathog 2017. PMID 29059230; Zost, et al. Proc Natl Acad Sci U S A 2017. PMID 29109276; Garretson, et al. Vaccine 2018. PMID 29861178.

+ Boikos et al, US National Foundation for Infectious Disease 2018 Clinical Vaccinology Course, November 2018, (Poster), Bethesda MD.

** Izurieta, et al. J Infect Dis 2019 220(8): 1255-1264.

[^] Bruxvoort KJ et al. Vaccine. 2019 37(39):5807-5811.

Real World Evidence and the Important Impact of FLUAD®

- Recent data comparing **FLUAD®** to non-adjuvanted egg-based vaccines in people 65 years and above
 - US nursing home observational study* in 52,000 residents in 2016-17
 - **6% reduction in all-cause hospitalisation**
 - Public Health England[#] analysis of first season of FLUAD® (2018-19) for older population
 - **30% reduction in influenza-related hospitalisation**
 - 15 year experience in Italy[^] in 43,000 people from 2002 - 2016
 - **39% reduction in hospitalisation due to pneumonia and cardiovascular events**
- **Ongoing recommendation for FLUAD® (TIV) by National Immunisation Advisory Groups in US, UK and Australia for people 65 years and older**
- **Rapid approval and reimbursement support for FLUAD® QIV in Australia – launch 2020**

* Presented at National Foundation for Infectious Diseases, November 2019.

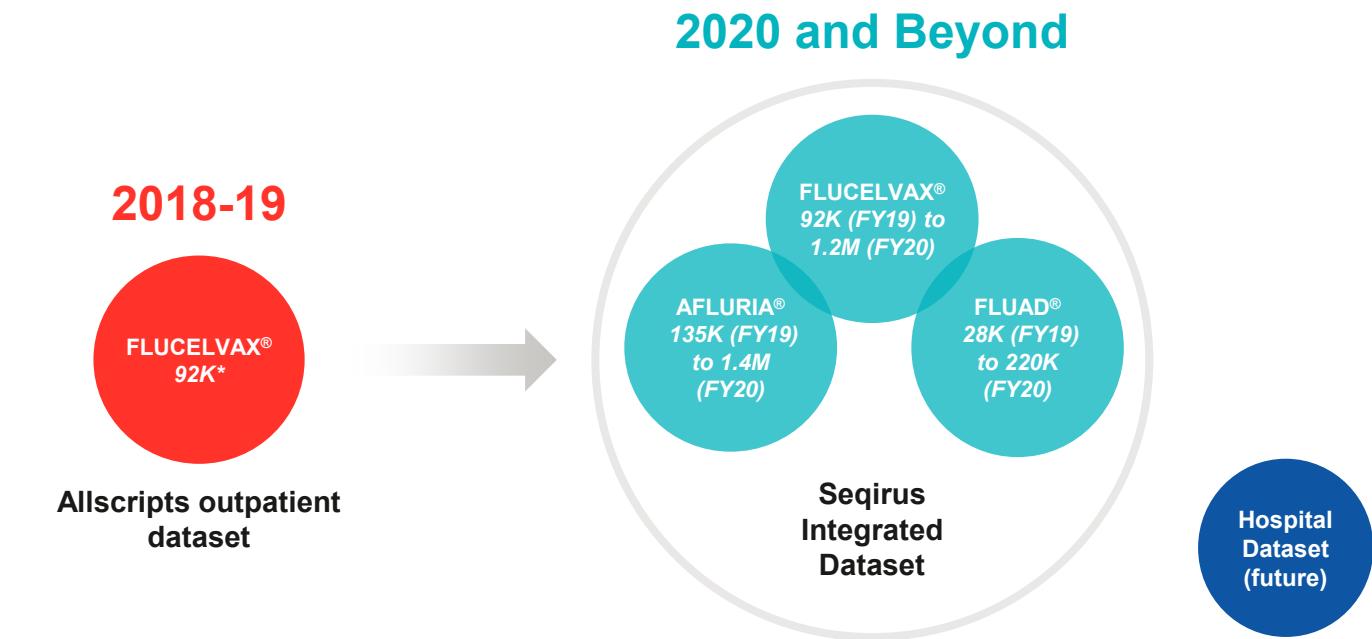
Pebody et al. Vaccine 2019 Oct 22. pii: S0264-410X(19)31405-7. doi: 10.1016/j.vaccine.2019.10.032. [Epub ahead of print]

[^] Lapi, F., et al. Expert Rev Vaccines 2019 18(6): 663-670.

Strengthening the Power of RWE at Seqirus

From Electronic Medical Record to Integrated Understanding

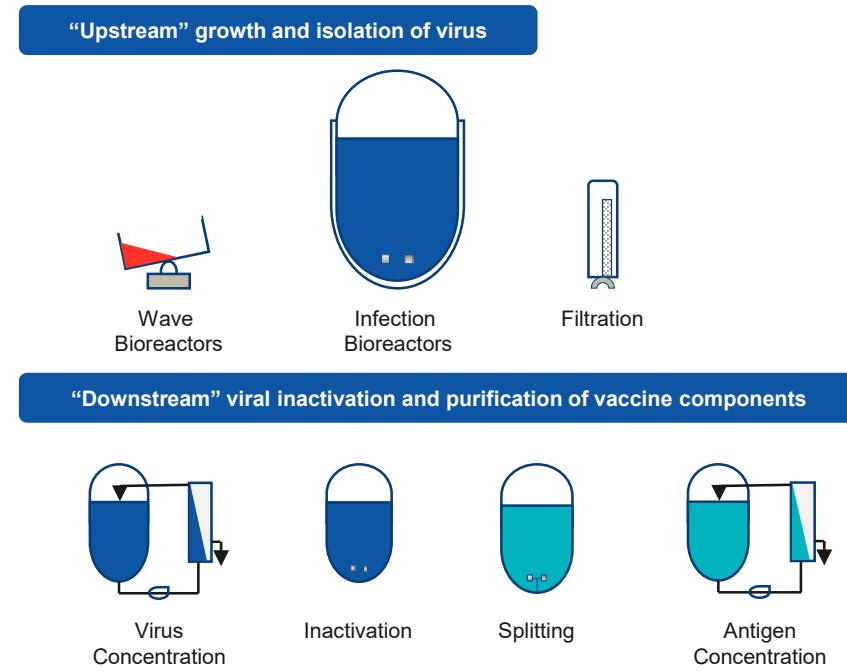
- **Real world evidence (RWE)** is data regarding potential benefits or risks of a vaccine from sources other than traditional randomised clinical trials
- Influences decisions of policy makers, healthcare professionals, Regulatory Agencies (*FDA Framework for RWE Program*, December 2018)



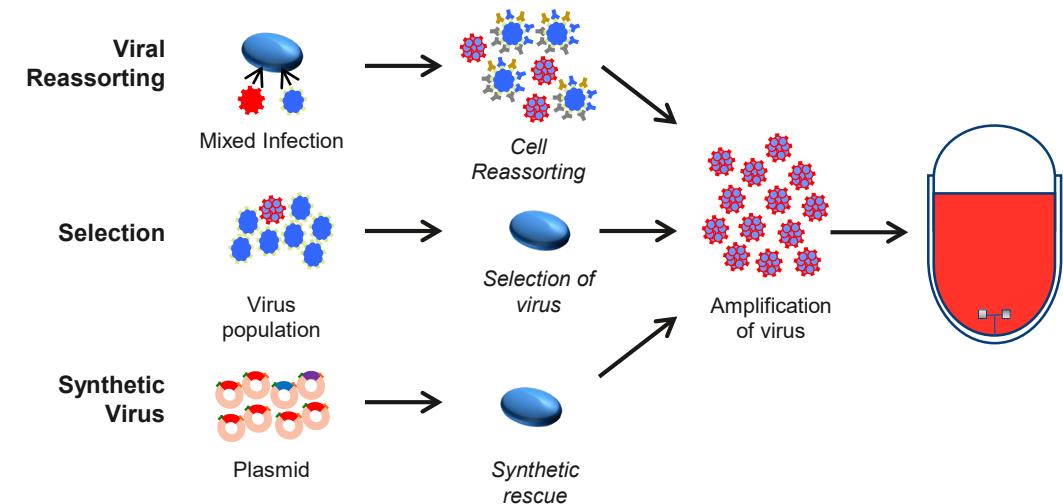
*Refers to number of vaccinated people included in database for which healthcare outcomes can be assessed

Focus on Influenza – Ongoing Process and Seed Innovation

Process Improvement



Seed Innovation



Shift to Differentiated Products is Expected to Drive Future Value Growth

- Global influenza vaccine market volumes between 500-600 million doses
 - 150 million doses distributed in US* in 2018-2019 season
 - Slow future growth, largely due to ageing population
- Seasonal global market value ~US\$4B
- Differentiation a key driver of growth, especially in US – doses shifting to
 - Cell-based vaccines
 - Enhanced vaccines in 65 years and older segment (currently US, UK, AUS, Sth EU)
 - Potential for benefit in infants (6 months - 6 years)
 - Variable pace in geographical uptake

* Source: <https://www.cdc.gov/flu/prevent/vaccine-supply-historical.htm>

Anticipated Milestones in 2020

FLUCELVAX® QUADRIVALENT

- AUS approval
9yrs+
- Clinical study
data
for 6M - 4yrs

FLUAD® QUADRIVALENT

- US approval for
65yrs+
- EU approval for
65yrs+

Pre-Pandemic aH5N1c

- US approval

aQIVc

- Commence
clinical program

Clinical Development – Part 2

William Mezzanotte, M.D.

Executive Vice President, Head of Research and Development
CSL Behring



Investigating the Benefit of Alpha-1 Antitrypsin in Graft vs Host Disease (GvHD)

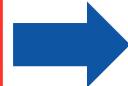
Alpha-1 Antitrypsin (CSL964) for GvHD Prevention

Part 1

Cohorts 1-3
Dose Levels 1-3
Open Label

Part 2

Cohorts 4
Selected Dose
Placebo-controlled



MODULAAATE

Immunomodulation by Alpha-1 Antitrypsin to Enable Prevention of GVHD

Cohort 1 completed

Bone Marrow Transplant Clinical Trial Network Collaborative Study CSL964 for GvHD Treatment

AAT
2x weekly

Placebo

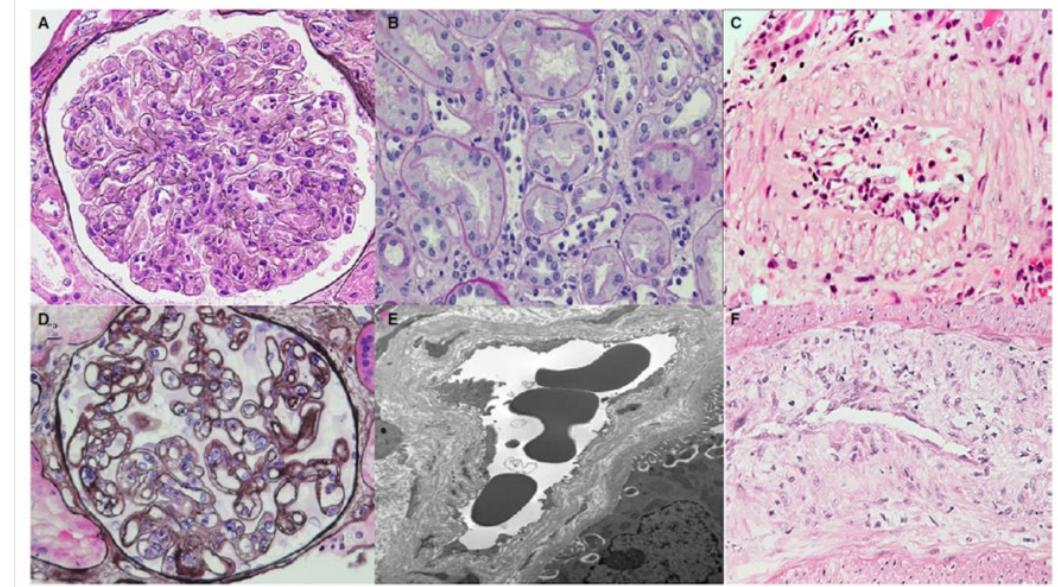
Primary Endpoint at Day 28

Follow up

Study startup activities
commenced

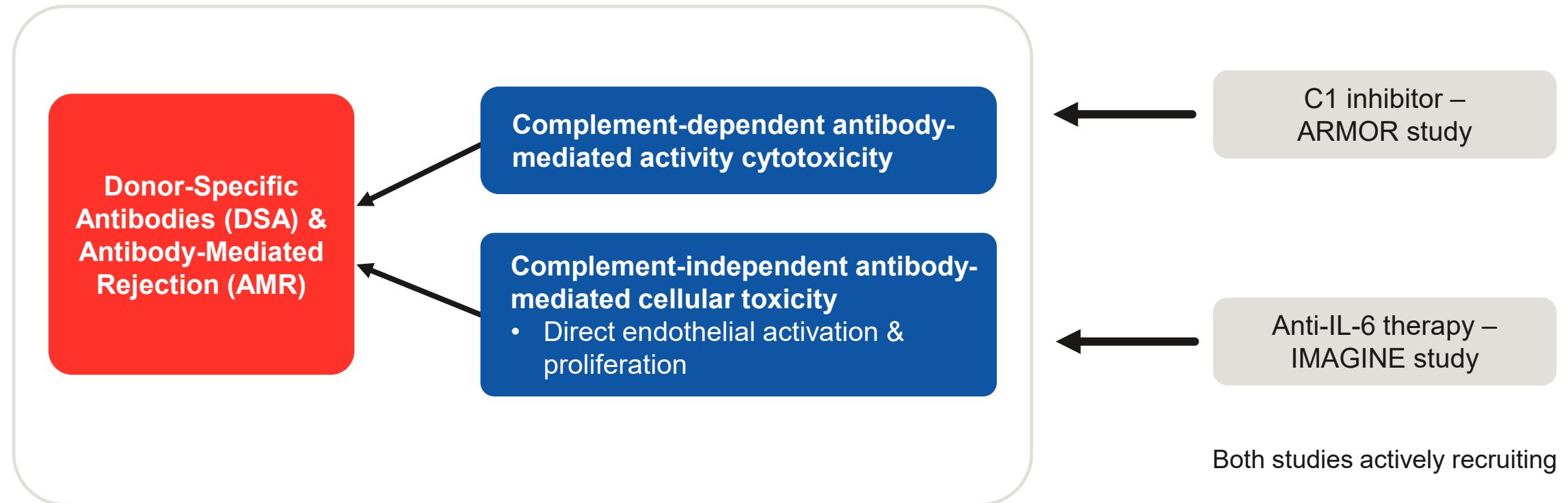
Antibody-Mediated Rejection (AMR) in Renal Allografts

- Development of Donor Specific Antibodies (DSAs)
- Late in the post-transplant period
- Progressive decline in kidney function
- Loss of graft
- No approved therapies
 - Pilot data for C1 inhibitor and anti-IL-6



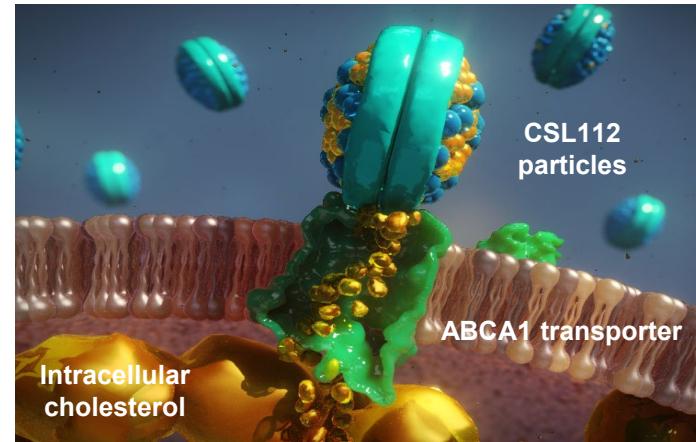
Source: Am J Transplant. 2018; 18:2849-2856

AMR: Complement Dependent and Independent Pathways

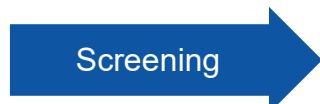


CSL112 ApoA-1

- Study enrolment is active in >45 countries and progressing well
 - PMDA approval for Japan to join trial
- Independent Data Monitoring Committee – no safety concerns
- First futility analysis in 2020

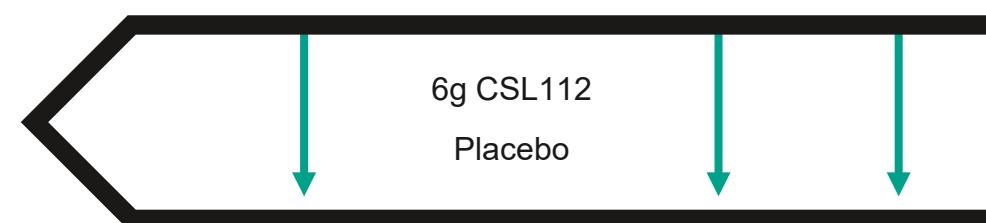


>17,000 AMI subjects
≥18yrs of age with Acute Coronary Syndrome



1° Endpoint : MACE
D90

MACE Follow Up
D180 D365



Summary

William Mezzanotte, M.D.

Executive Vice President, Head of Research and Development
CSL Behring



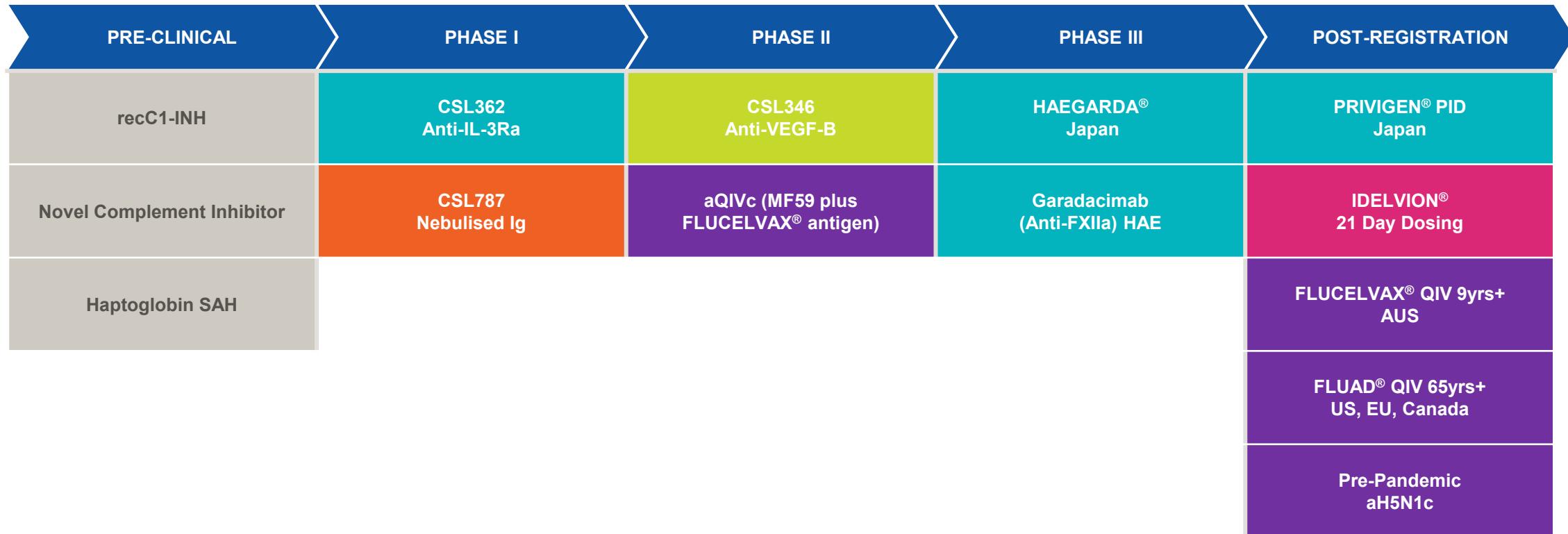
R&D Portfolio – December 2019

RESEARCH	PRE-CLINICAL	PHASE I	PHASE II	PHASE III	REGISTRATION	POST-REGISTRATION
Discovery Projects	Improved Fibrinogen	CSL730 rFc Multimer	CSL312 Anti-FXIIa HAE	HIZENTRA® DM	PRIVIGEN® PID Japan	CSL830 C1-INH Subcut EU
Discovery Projects	CSL787 Nebulised Ig	CSL324 Anti-G-CSFR	HIZENTRA® SSC	CSL112 ApoA-I	FLUAD® QIV 65yrs+ US/EU/Canada	PRIVIGEN® CIDP US, Japan
Discovery Projects	aQIVc (MF59 plus FLUCELVAX® antigen)	CSL200 (CAL-H) SCD	PRIVIGEN® SSC	Clazakizumab AMR	Pre-Pandemic aH5N1c	HIZENTRA® CIDP US, Japan
Discovery Projects	P. gingivalis/POD	CSL889 Hemopexin SCD	HAEGARDA® Japan	CSL842 C1-INH rAMR		HAEGARDA® US
Discovery Projects		CSL312 Anti-FXIIa Thrombosis	CSL630 pdFVIII Ruide	CSL964 GvHD Prevention		IDELVION®
		CSL311 Anti-Beta Common	Mavrilimumab GM-CSFR	CSL964 GvHD Treatment		AFSTYLA®
		CSL346 Anti-VEGF-B		FLUCELVAX® 6M+		KCENTRA® Japan
		CSL334 / ASLAN004 IL-13R				ZEMAIRA® / RESPREEZA® AAT
						AFLURIA® QIV 6M+ US, AUS

■ Partnered Projects

[Immunology and Neurology](#) | [Haematology and Thrombosis](#) | [Respiratory](#) | [Cardiovascular and Metabolic](#) | [Transplant](#) | [Influenza Vaccines](#)

Expected Progress in Next 12 Months



[Immunology and Neurology](#) | [Haematology and Thrombosis](#) | [Respiratory](#) | [Cardiovascular and Metabolic](#) | [Transplant](#) | [Influenza Vaccines](#)

Significant Target Launch Dates

2019	2020	2021-2025	
HIZENTRA® CIDP Japan	PRIVIGEN® PID Japan	Garadacimab (Anti-FXIIa) HAE	Clazakizumab AMR
PRIVIGEN® CIDP Japan	IDELVION® 21 Day Dosing	HIZENTRA® DM	IVIG Kidney AMR
AFLURIA® QIV 6m+ (AUS)	FLUAD® QIV 65yrs+ US, EU	HAEGARDA® Japan	CSL842 C1-INH rAMR
FLUCELVAX® QIV 9yrs+ EU		Improved Fibrinogen	CSL964 GvHD
		FLUCELVAX® 6m+ US, EU, AUS	CSL112 ApoA-I
		aQIVc 50yrs+	

▀ Partnered Projects

Immunology and Neurology | Haematology and Thrombosis | Respiratory | Cardiovascular & Metabolic | Transplant | Influenza Vaccines

2019 Highlights

 Immunology and Neurology	<ul style="list-style-type: none">HIZENTRA® and PRIVIGEN® approved for treatment of Chronic Inflammatory Demyelinating Polyneuropathy (CIDP) in JapanHIZENTRA® granted Orphan Drug Exclusivity for CIDPHIZENTRA® Dermatomyositis (DM) Phase III Study initiatedGaradacimab (Anti-FXIIa) in Hereditary Angioedema (HAE) Phase II double blind period complete
 Haematology and Thrombosis	<ul style="list-style-type: none">CSL200 (CAL-H) in Sickle Cell Disease (SCD) Phase I Study initiatedCSL889 Hemopexin in SCD Phase I Study initiated
 Respiratory	<ul style="list-style-type: none">CSL311 (Anti-Beta Common) Phase I study commencedApproval of convenient single-vial dosing for ZEMAIRA® (Alpha1-Proteinase Inhibitor) in the US
 Cardiovascular and Metabolic	<ul style="list-style-type: none">CSL112 (ApoA-1) Phase III study (AEGIS-II) progressing well with >7000 patients recruitedCSL346 (Anti-VEGF-B) Phase II Diabetic Nephropathy study initiation planned for 1H20
 Transplant	<ul style="list-style-type: none">CSL964 Alpha-1 Antitrypsin (AAT) for prevention of Graft versus Host Disease (GvHD) after Transplantation of Allogenic Hematopoietic Cell Transplantation (HCT) Phase III study actively recruiting and on track
 Influenza Vaccines	<ul style="list-style-type: none">First cell-based quadrivalent seasonal influenza vaccine, FLUCELVAX® TETRA, approved in EuropeAFLURIA® QUAD (quadrivalent influenza vaccine) granted expanded indication for use in children 6M+ in AustraliaaQIVc (MF59 plus FLUCELVAX® antigen) new product development commenced

Panel Q&A Session

