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ASX Announcement

For immediate release

5 December 2018

Annual Research & Development Investor Briefing

Please find attached the presentation and an accompanying media release ahead of the Company's Annual Research & Development Investor Briefing being held today commencing at 9am ADST.

The briefing will be webcast and can be accessed in the 'Investor" section of the website – www.csl.com.au .

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R&D Investor Briefing

December 05, 2018

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Agenda

• Welcome	Mark Dehring
• Introduction and Highlights	Andrew Cuthbertson
• Seqirus	Gregg Sylvester
• Research & Early Development	Andrew Nash
• Commercial Market Overview, Ig & Haemophilia	Bill Campbell
• Q&A	

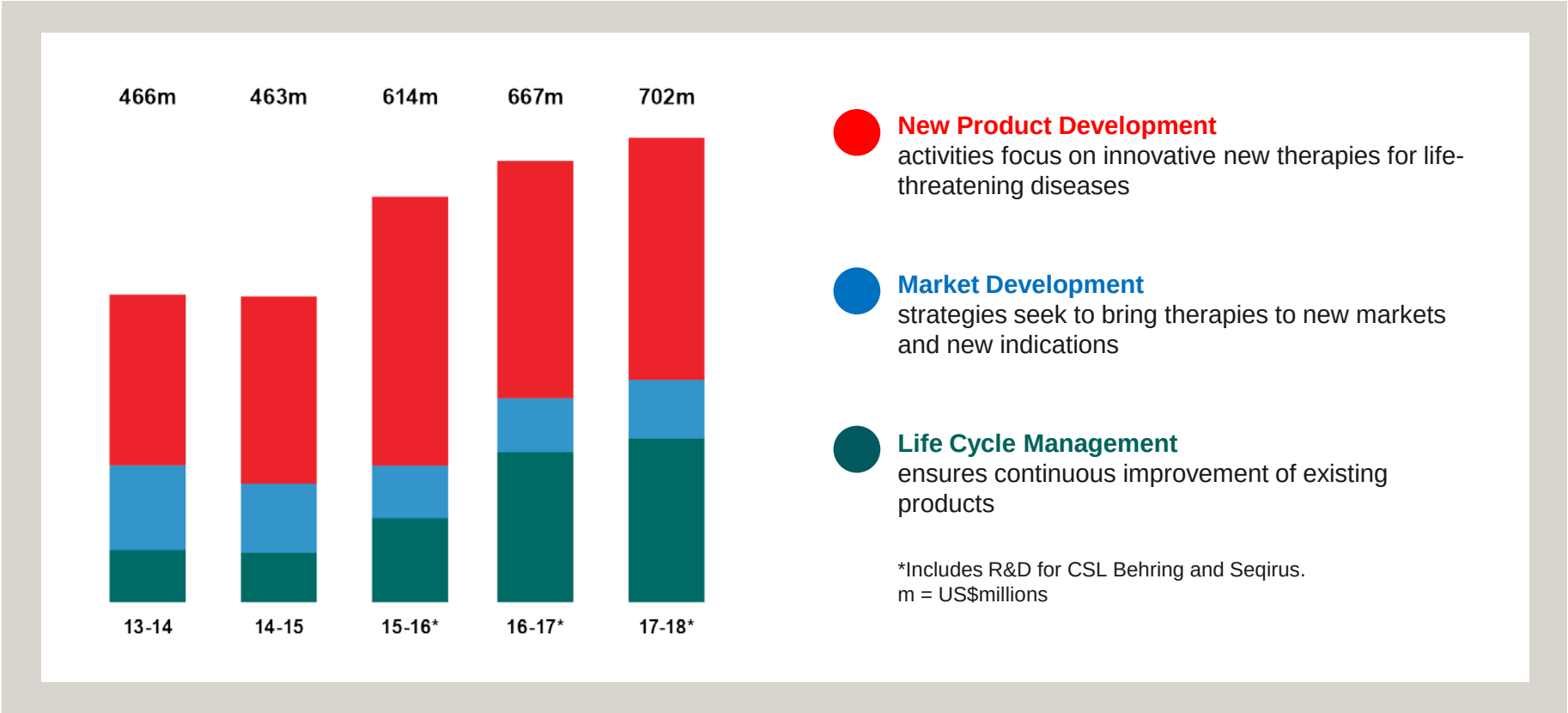
– Break –

• Clinical Development Overview	Bill Mezzanotte
• Commercial Overview Specialty, Transplant, CSL112	Bill Campbell
• Summary	Bill Mezzanotte
• Q&A	

Introduction and Highlights

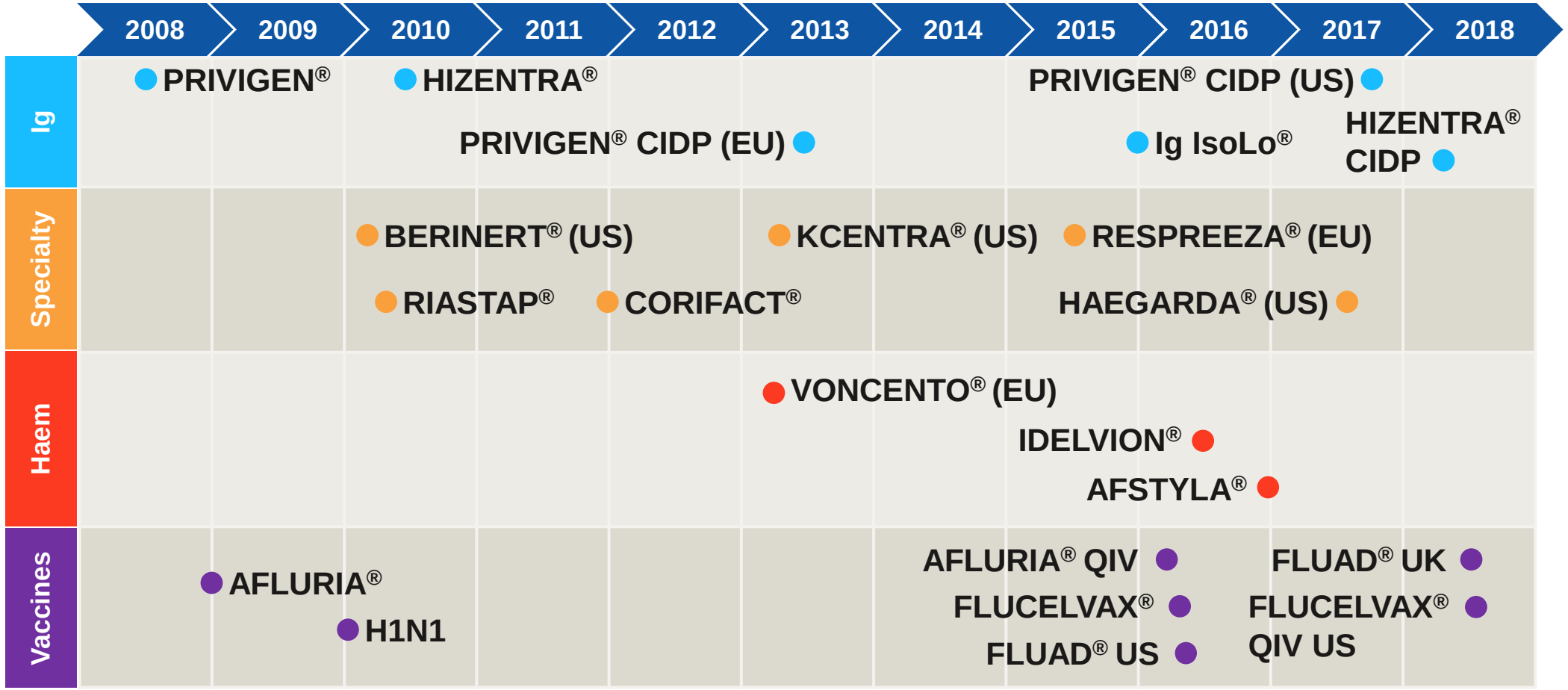
Professor Andrew Cuthbertson AO
Chief Scientific Officer

Commitment to Research and Development

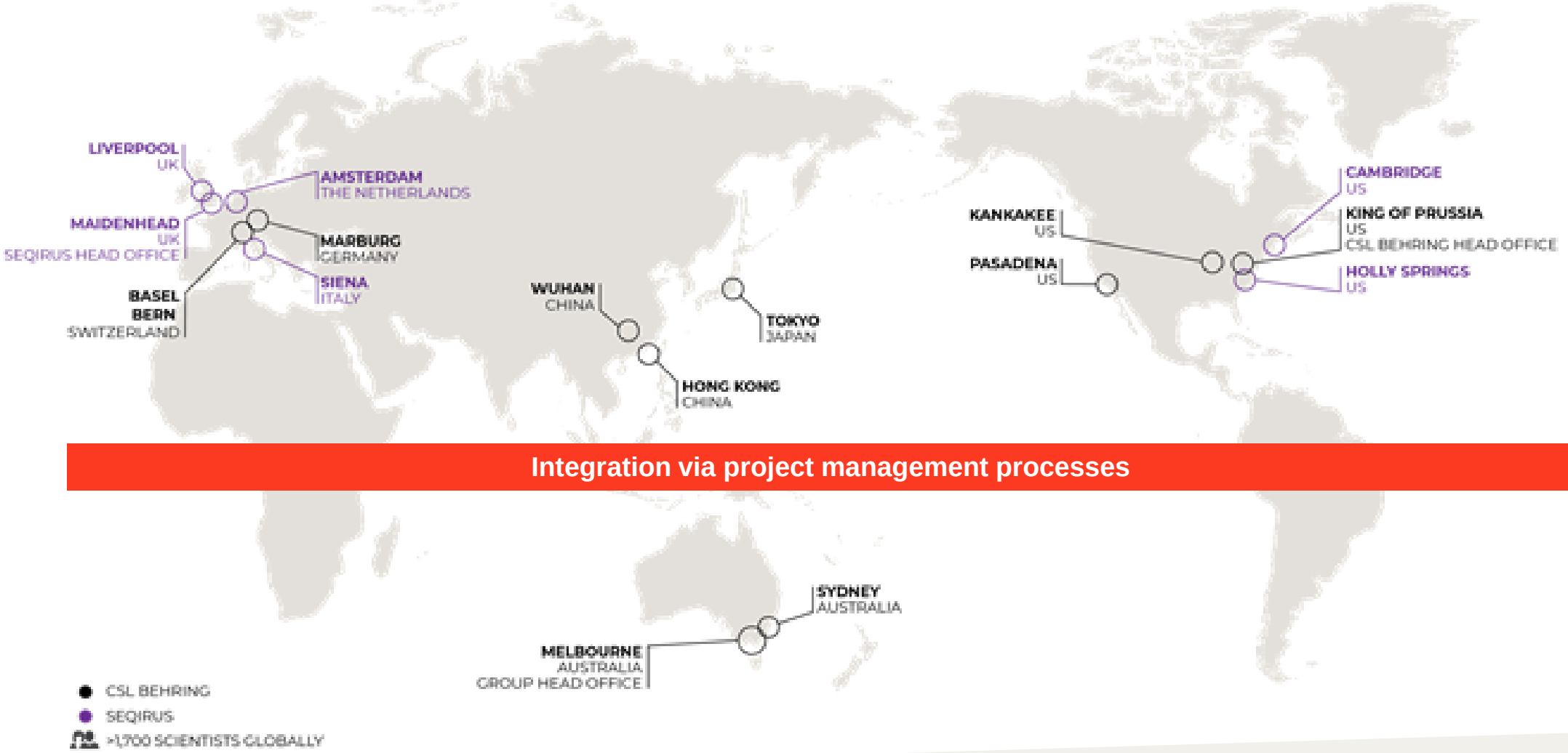


- R&D investment ~10-11% global revenue

Key Past Launches from R&D Portfolio



Leveraging Global Capabilities



Integration via project management processes

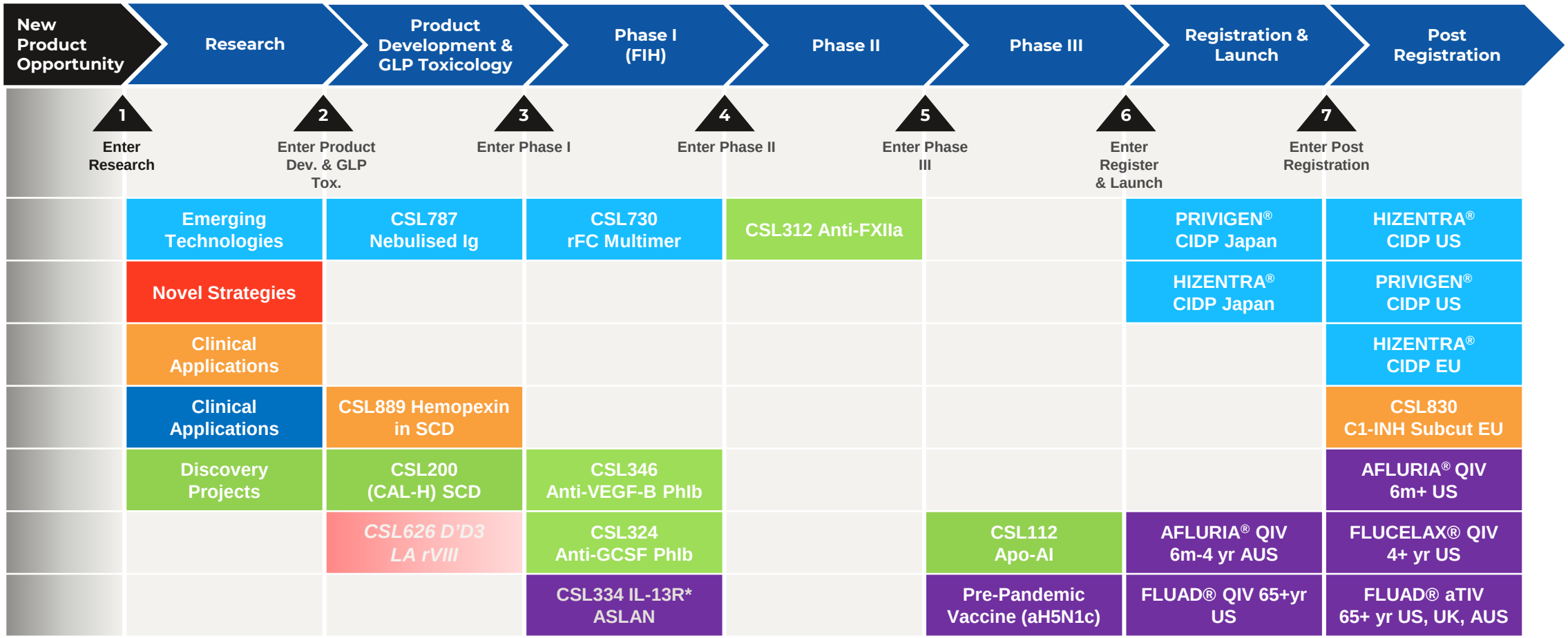
R&D Portfolio - December 2017

	RESEARCH	PRE-CLINICAL	PHASE I	PHASE II	PHASE III	REGISTRATION	COMMERCIAL / PHASE IV
Life Cycle Management / Market Development	Clinical Applications	C1-INH New Indications			PRIVIGEN® Japan	HIZENTRA® CIDP	PRIVIGEN® CIDP US
		Fibrinogen New Formulations			HIZENTRA® IIM		KCENTRA® Japan
		Haptoglobin/ Hemopexin		CSL964 AAT GvHD Prevention		CSL830 C1-INH Subcut EU	HAEGARDA® US
		CSL640 rIX-FP subct			PRIVIGEN® CIDP Japan	AFLURIA® QIV 5-17 AUS	FLUAD® TIV 65+ US, UK
					CSL842 C1-INH AMR		FLUCELAX® QIV 4+ US
							AFLURIA® QIV 5-17 US
New Product Development	Emerging Technologies	CSL730 rFc Multimer			clazakizumab* Transplant		IDELVION®
	Novel Strategies	CSL626 D'D3 LA rVIII	CSL312 Anti-FXIIa	Mavri GM-CSFR-AZ*	pdFVIII Ruide		AFSTYLA®
	Discovery Projects	CSL334 IL-13R* ASLAN	CSL324 Anti-G-CSF				
	Clinical Applications	CSL311 Anti-BC	CSL346 Anti-VEGF-B		CSL112 apo-AI		
		P. gingivalis/POD* OH-CRC					

Core Capabilities: Immunoglobulins | Haemophilia | Specialty Products | Breakthrough Medicines | Vaccines & IP | Transplant

*Partnered Projects

Progress Through Stage Gates in 2018



Core Capabilities: Immunoglobulins | Haemophilia | Specialty Products | Breakthrough Medicines | Transplant | Vaccines & IP

R&D Portfolio - December 2018

	RESEARCH	PRE-CLINICAL	PHASE I	PHASE II	PHASE III	REGISTRATION	COMMERCIAL / PHASE IV
New Product Development	Emerging Technologies	CSL787 Nebulised Ig	CSL730 rFc Multimer	CSL312 Anti-FXIIa in HAE	Clazakizumab* Transplant		IDELVION®
	Novel Strategies	CSL311 Anti-BC	CSL324 Anti-G-CSF	Mavri GM-CSFR*	pdFVIII Ruide		AFSTYLA®
	Discovery Projects	CSL200 (CAL-H) SCD	CSL346 Anti-VEGF-B		CSL112 Apo-AI		FLUAD® aTIV 65+ yr US, UK, AUS
	Haptoglobin	CSL889 Hemopexin in SCD	CSL334 IL-13R* ASLAN		FLUAD QIV 65+ yr		FLUCELAX® QIV 4+ yr US
	Clinical Applications	P. gingivalis/POD* OH-CRC			Pre-Pandemic Vaccine (aH5N1c)		CSL830 C1-INH Subcut EU
Life Cycle Management / Market Development	Clinical Applications	C1-INH New Indications			PRIVIGEN® ID Japan		PRIVIGEN® CIDP US
		Fibrinogen New Formulations			HIZENTRA® IIM	AFLURIA® QIV 6m-4 yr AUS	HIZENTRA® CIDP
					CSL842 C1-INH AMR	PRIVIGEN® CIDP Japan	KCENTRA® Japan
					CSL964 AAT GvHD Prevention	HIZENTRA® CIDP Japan	HAEGARDA® US
							AFLURIA® QIV 6m+ US

Core Capabilities: Immunoglobulins | Haemophilia | Specialty Products | Breakthrough Medicines | Transplant | Vaccines & IP

*Partnered Projects

Seqirus R&D

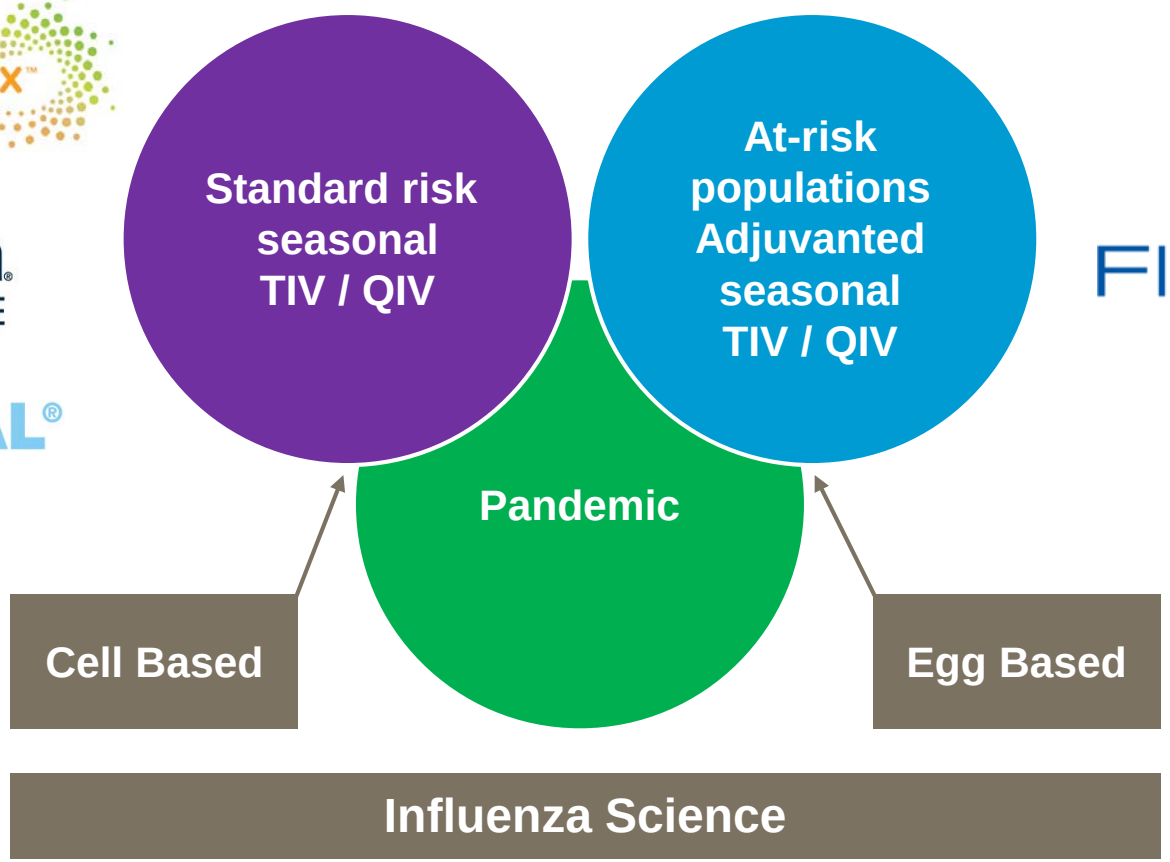
Dr Gregg Sylvester
Vice President Medical Affairs

Seqirus Influenza Vaccines

Influenza Vaccine FLUCELVAX QUADRIVALENT

afluria INFLUENZA VACCINE

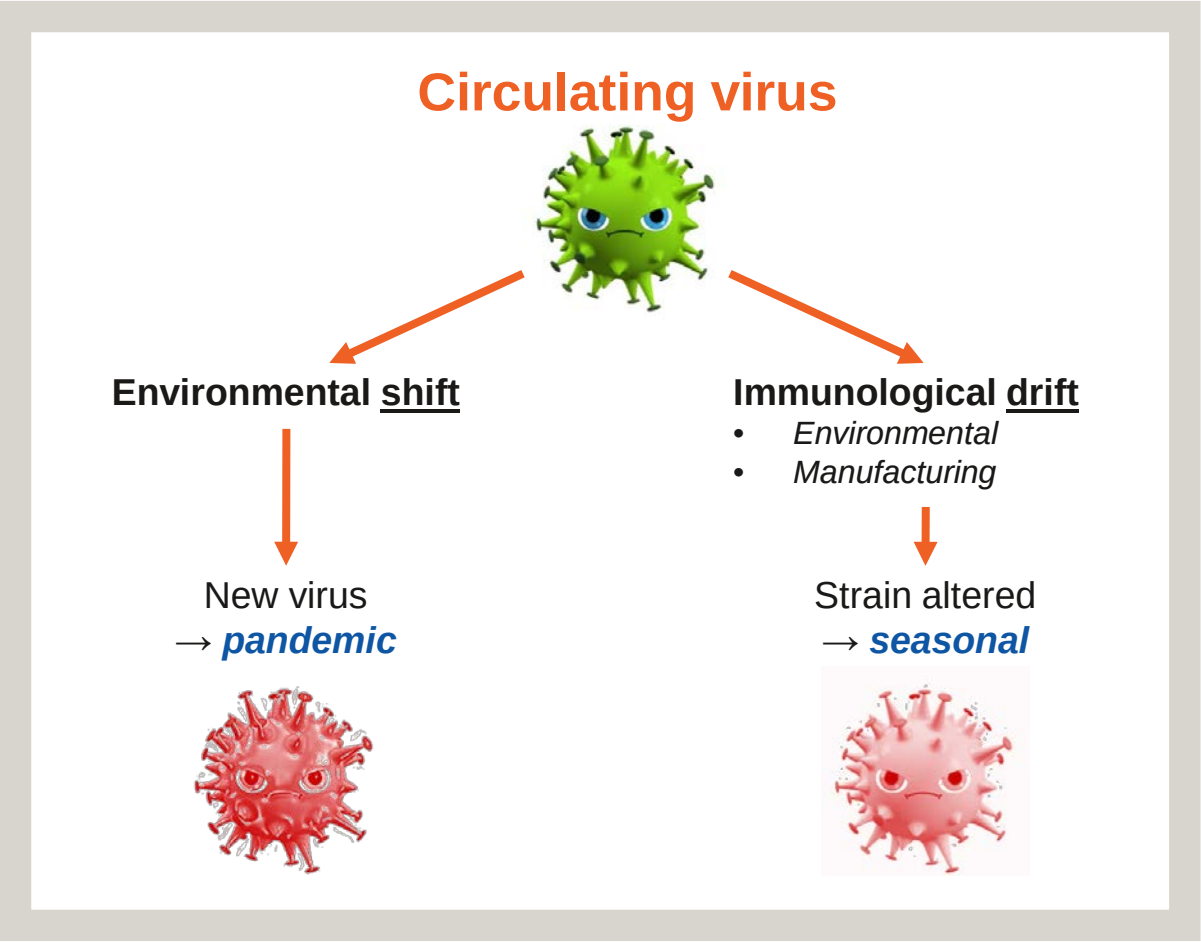
AGRIPPAL®



Fluad®

FLUAD influenza vaccine, adjuvanted

Influenza Viruses Mutate in Various Ways



Yearly seasonal vaccine

4 strains

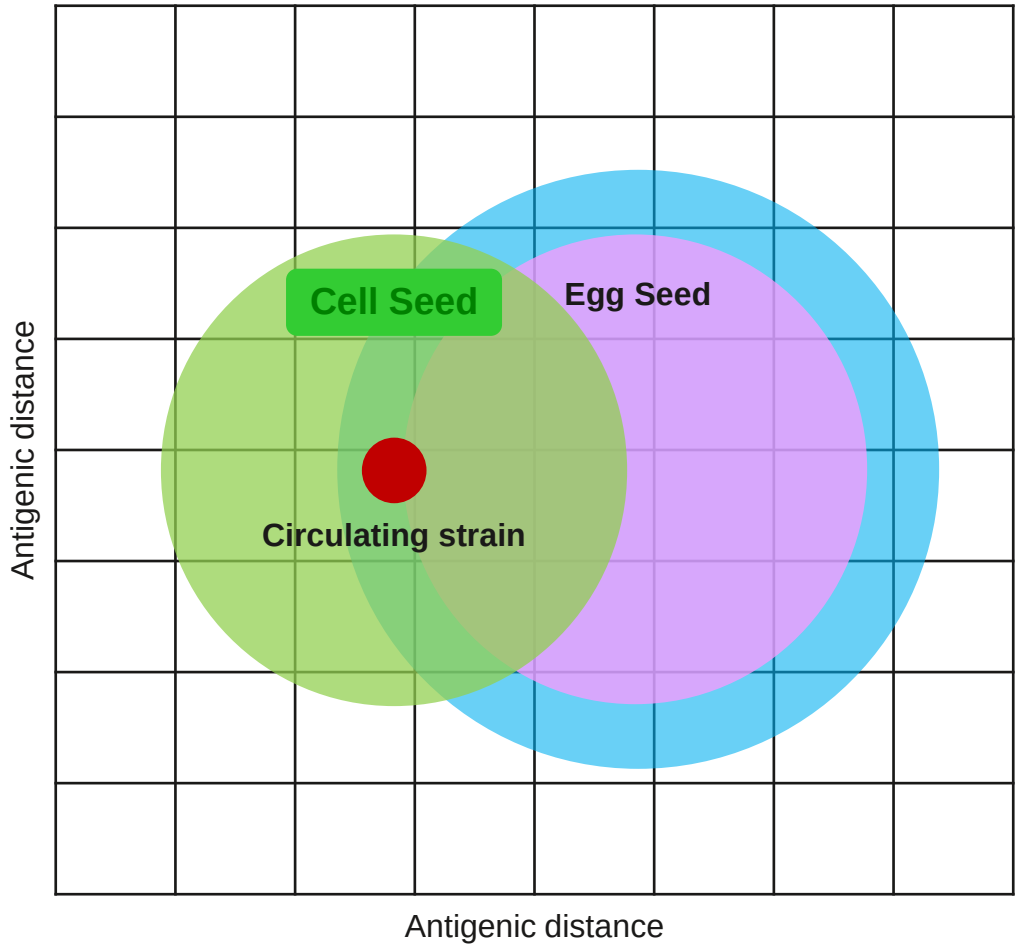
2 x “A” – H3N2, H1N1

2 x “B” – B/Victoria, B/Yamagata

Usually vary season to season

- Southern Hemisphere vs Northern Hemisphere

Seqirus Technologies aim to Enhance Influenza Vaccines

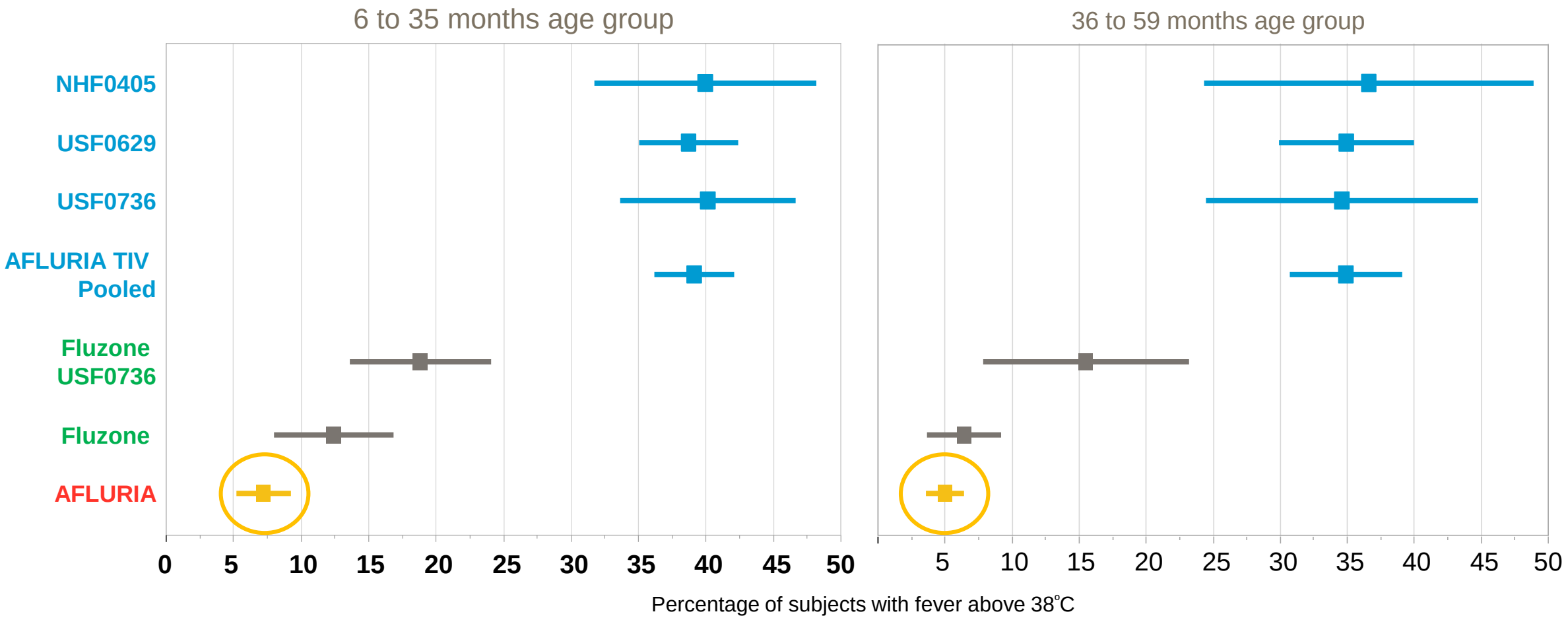


MF59 Adjuvant

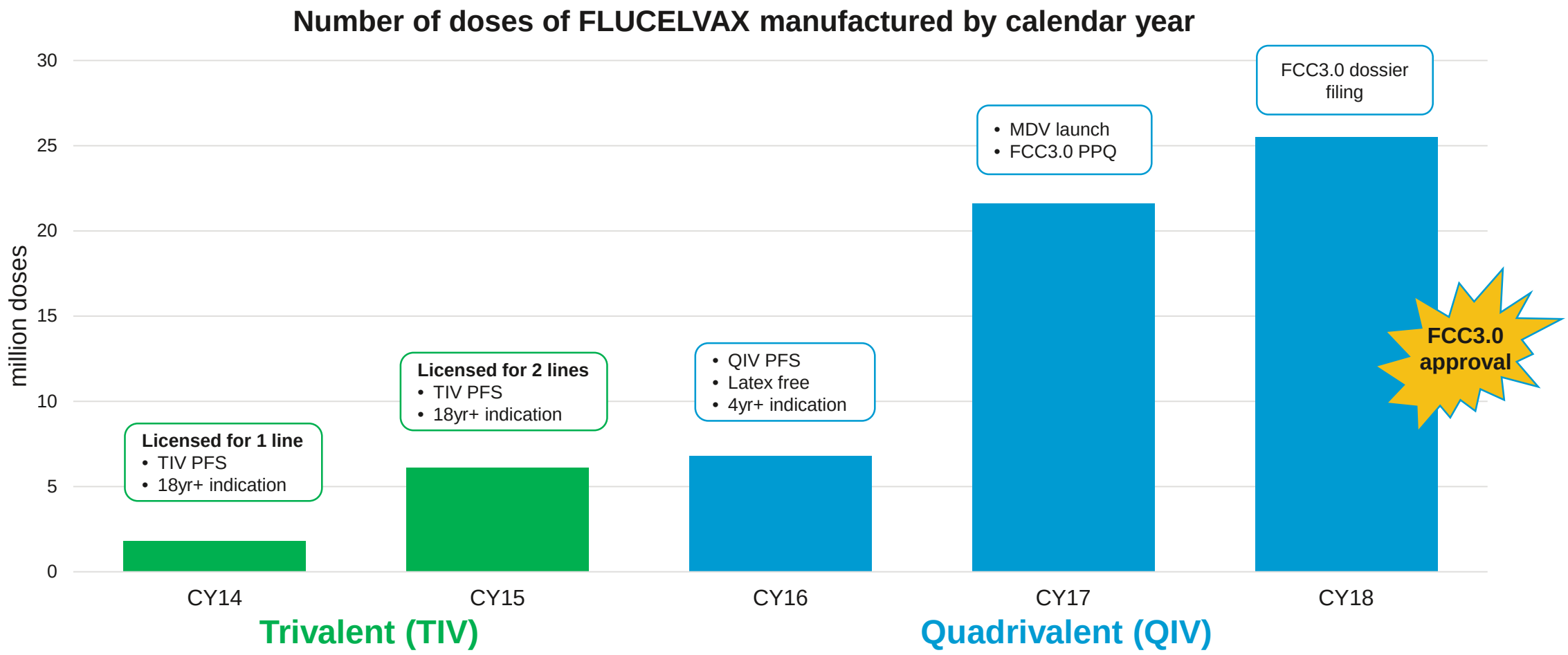
Milestones in 2018

- AFLURIA QIV
  - US approval for 6M-4yrs
- FLUCELVAX QIV
  - US approval of major process improvement (“FCC3.0”)
  - European positive opinion
  - Positive effectiveness data compared with egg-based vaccines in US 2017-18 season
- FLUAD
  - Completion of US registration QIV trial for 65yrs+
  - Positive TIV effectiveness data compared with non-adjuvanted vaccines
- Pre-Pandemic vaccine (MF59-adjuvanted H5N1 cell = aH5N1c)
  - Clinical program completed

Successful completion of AFLURIA QIV program



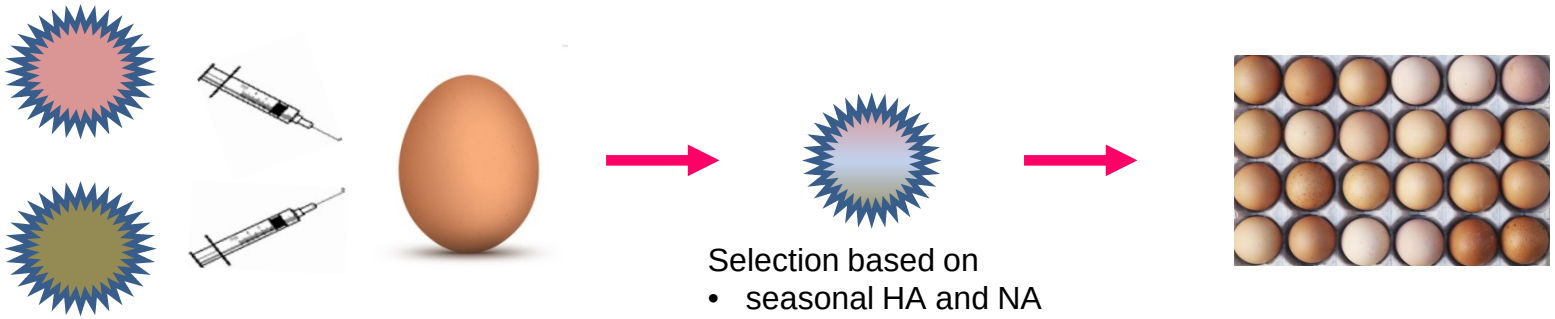
Improvements in FLUCELVAX manufacturing output



Vaccine Seed Adapts to Grow in Eggs

Adaptation Required in Generation of Egg Seed

Seasonal strain

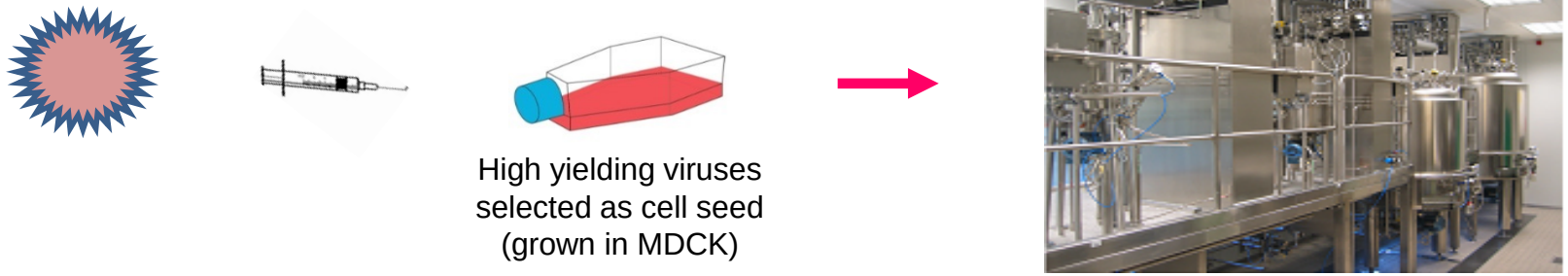


High growth donor strain

Selection based on
- seasonal HA and NA
- high growth properties

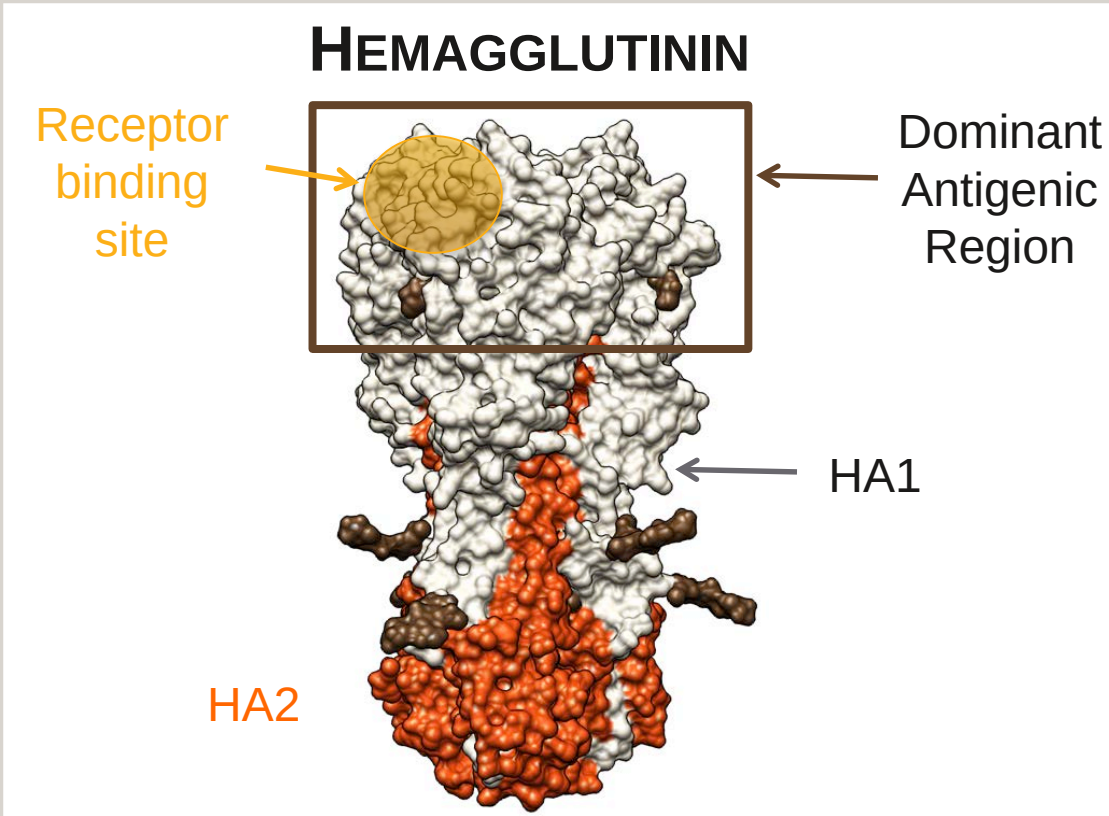
No Adaptation Required in Generation of Cell Seed

Seasonal strain



High yielding viruses selected as cell seed (grown in MDCK)

Science describes specific adaptation required for virus to grow in eggs, especially (but not only) H3N2



Evaluation of Influenza Virus A/H3N2 and B Vaccines on the Basis of Cross-Reactivity of Postvaccination Human Serum Antibodies against Influenza Viruses A/H3N2 and B Isolated in MDCK Cells and Embryonated Hen Eggs

Clinical and Vaccine Immunology June 2012 Volume 19 Number 6

Low 2012–13 Influenza Vaccine Effectiveness Associated with Mutation in the Egg-Adapted H3N2 Vaccine Strain Not Antigenic Drift in Circulating Viruses

PLOS ONE | www.plosone.org March 2014 | Volume 9 | Issue 3 | e92153

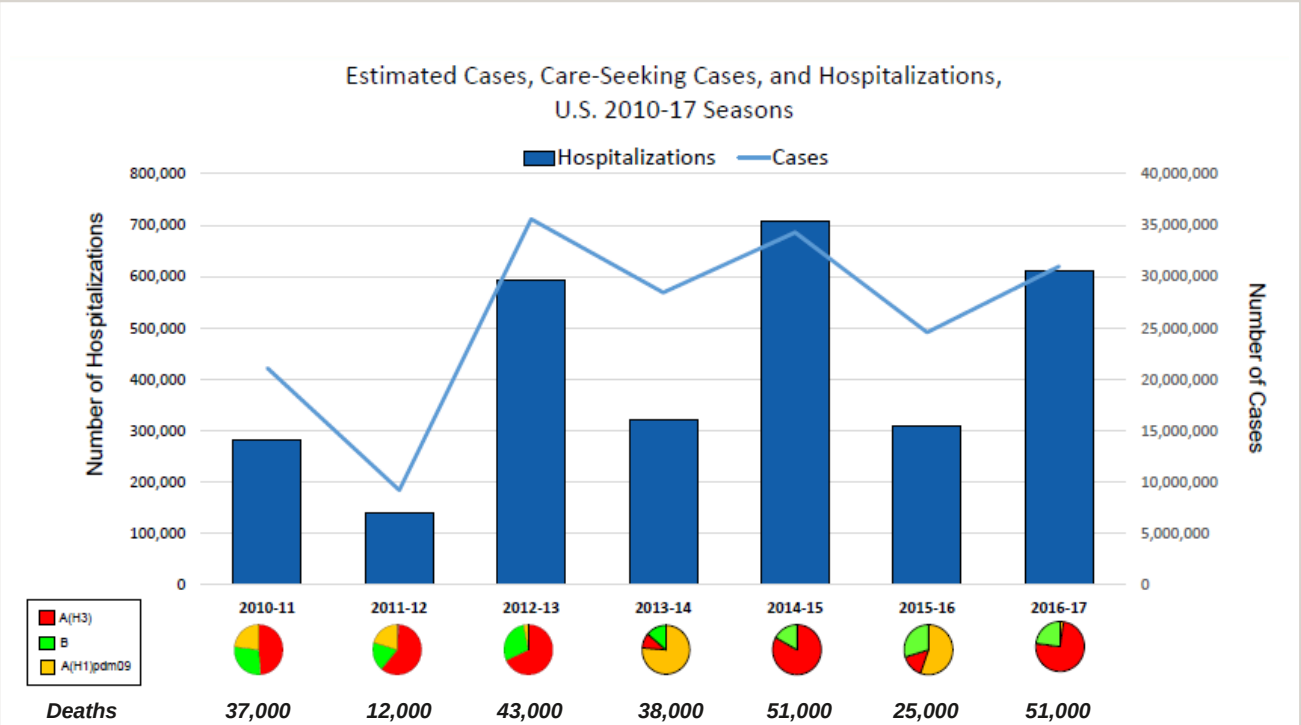
A structural explanation for the low effectiveness of the seasonal influenza H3N2 vaccine

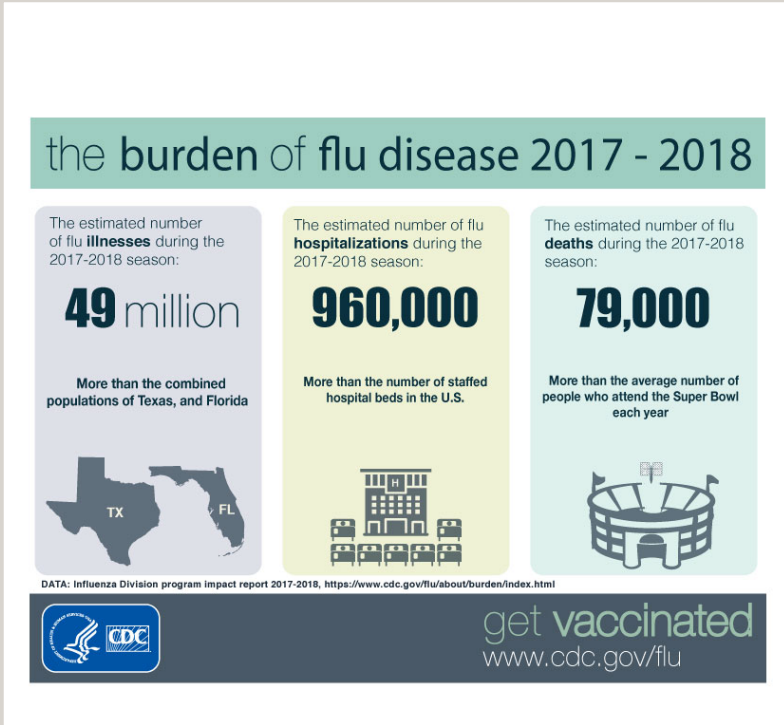
PLOS Pathogens October 23, 2017

Contemporary H3N2 influenza viruses have a glycosylation site that alters binding of antibodies elicited by egg-adapted vaccine strains

www.pnas.org/cgi/doi/10.1073/pnas.1712377114

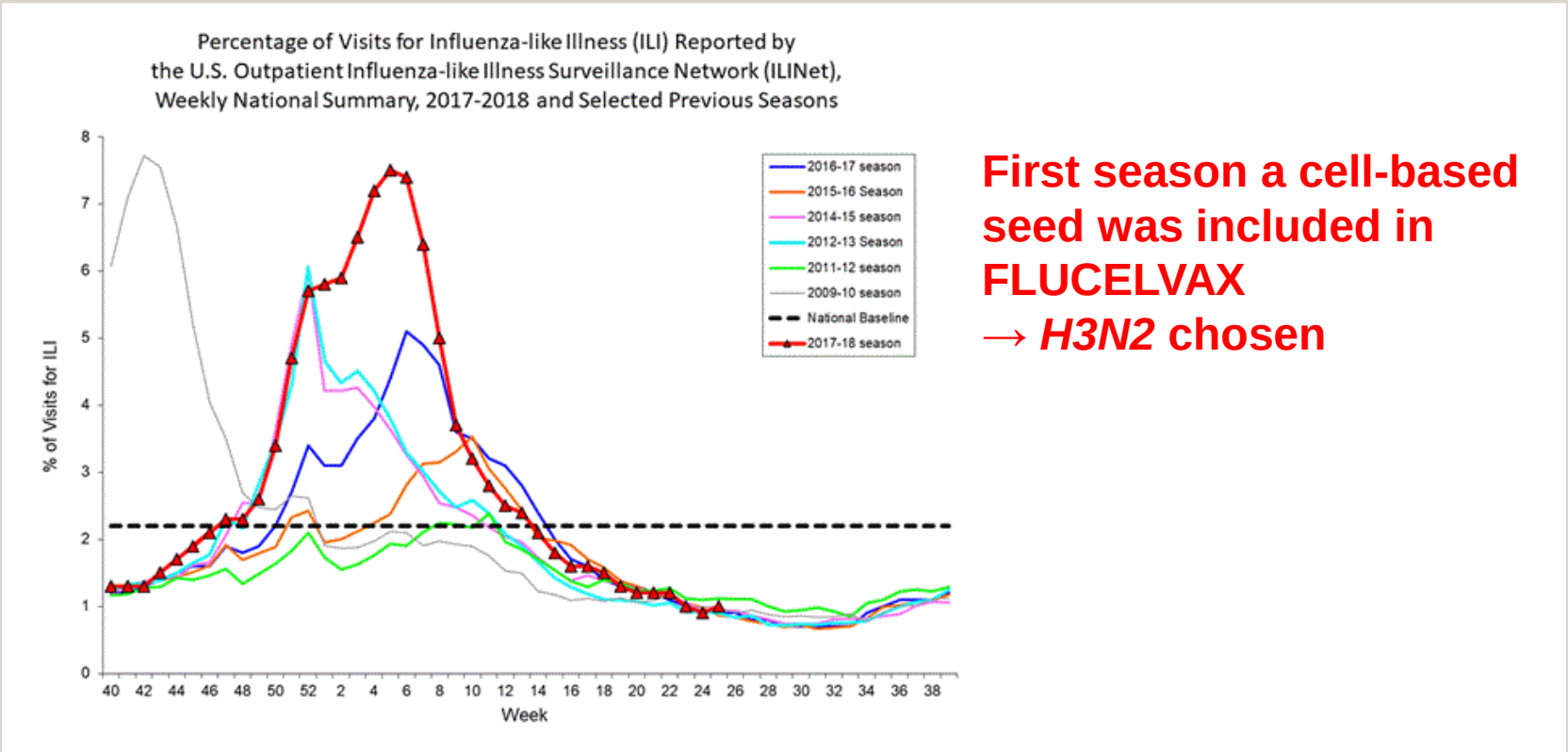
H3N2-dominant seasons occur often and can be associated with a substantial health burden





Source: US data from CDC, available at www.cdc.gov/flu/about/disease/2015-16.htm

US 2017-18 Season was Severe and Dominated by H3N2



First season a cell-based seed was included in FLUCELVAX
→ *H3N2* chosen

Source: Centers for Disease Control and Prevention, National Center for Immunization and Respiratory Diseases (NCIRD); https://www.cdc.gov/flu/weekly/index.htm#OISmap

Big Data to Assess Real World Health Impact of a Vaccine

- **Randomised clinical trials** provide an estimate of **efficacy** in a controlled setting in a *well-defined population*

- **Real world** vaccine **effectiveness** (VE) evaluation addresses the health impact of a vaccine in the *general population*
  - *Relative VE – versus another vaccine*
  - *Absolute VE – versus no vaccine*

- We conducted a retrospective cohort study of relative VE assessment of FLUCELVAX™ QUADRIVALENT with H3N2 cell seed versus egg-based vaccines during the 2017/18 season in the USA using Electronic Medical Records (ALLSCRIPTS)

Note: FLUCELVAX® Quadrivalent was approved by FDA based upon demonstrated non-inferiority relative to FLUCELVAX® trivalent influenza vaccine. There have been no RCT demonstrating clinical superiority compared with egg-based or other influenza vaccines. Real World VE data not for US promotional use.

Relative VE of **cell-** vs **egg-based** vaccines in 2017-18 US Season

- Seqirus data (ALLSCRIPTS)*
  - → 36% (95% CI 26.1, 44.9) reduction in "influenza-like illness"
- FDA data (Centers for Medicare & Medicaid Services)^
  - → 11% (95% CI 7.5, 13.7) reduction in hospital/ER "encounters"
- Nth CA Kaiser Permanente#
  - 8% (NS) reduction in influenza A by lab test (PCR)

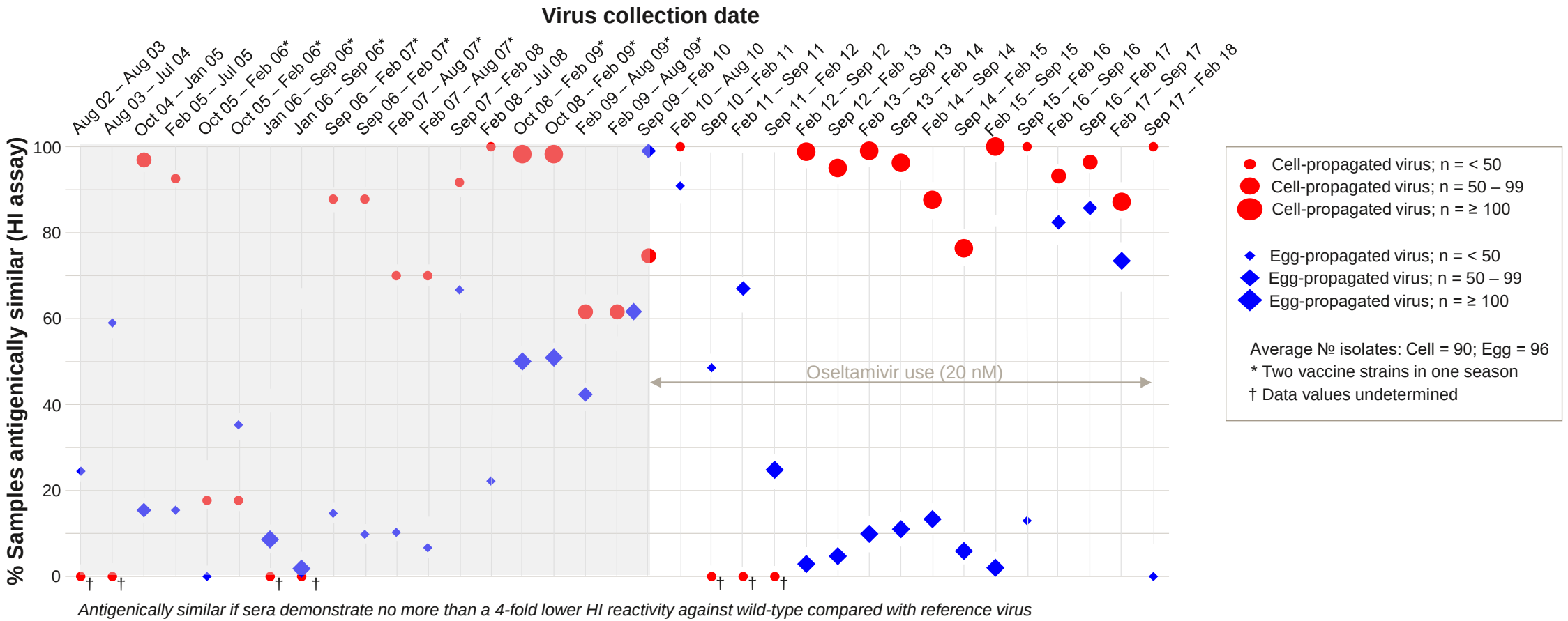
* *Boikos et al, Effectiveness of the Cell Culture- and Egg-Derived, Seasonal Influenza Vaccine during the 2017-2018 Northern Hemisphere Influenza Season, US National Foundation for Infectious Disease 2018 Clinical Vaccinology Course, November 2018,* (Poster), Bethesda MD

^ *Lu et al, Relative effectiveness of cell-cultured versus egg-based influenza vaccines, 2017-18. Advisory* Committee on Immunization Practices June 2018. https://www.cdc.gov/vaccines/acip/meetings/downloads/slides-2018-06/flu-03-Lu-508.pdf. Accessed 28 October 2018

Klein et al, Vaccine Effectiveness of Flucelvax Relative to IIV During the 2017-18 Influenza Season in Northern CA. IDWeek October 2018, San Francisco, CA (Late Breaker 15).

Francis Crick Institute (WHO) 15 year data

Cell- vs **egg-based** “reference virus” similarity to wild-type H3N2

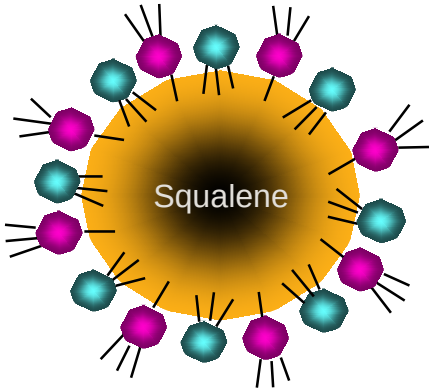


Antigenically similar if sera demonstrate no more than a 4-fold lower HI reactivity against wild-type compared with reference virus

MF59 Adjuvant

- Oil-in-water adjuvant
  - **Seasonal vaccine (FLUAD)** – increased and broader immunogenicity, focussed on people 65yrs and older
  - **Pandemic vaccine** – dose sparing
    - aH5N1c dose 1/12 of that required without adjuvant

Span 85
Tween 80



- *>130 million doses administered – excellent clinical safety*

FLUAD is Gaining Wider Usage for People 65yrs and Older

- Approved in Europe 1997, USA 2015
- Preferential recommendation for population 65years and older in UK & AUS
- Meta-analysis* of published studies (real world data) describes effectiveness of FLUAD in prevention of lab-confirmed influenza and hospitalisation in people 65 years and older

*Domnich et al, *Vaccine* 35:513-520, 2017

Real World Data to Investigate the Potential Benefits of FLUAD

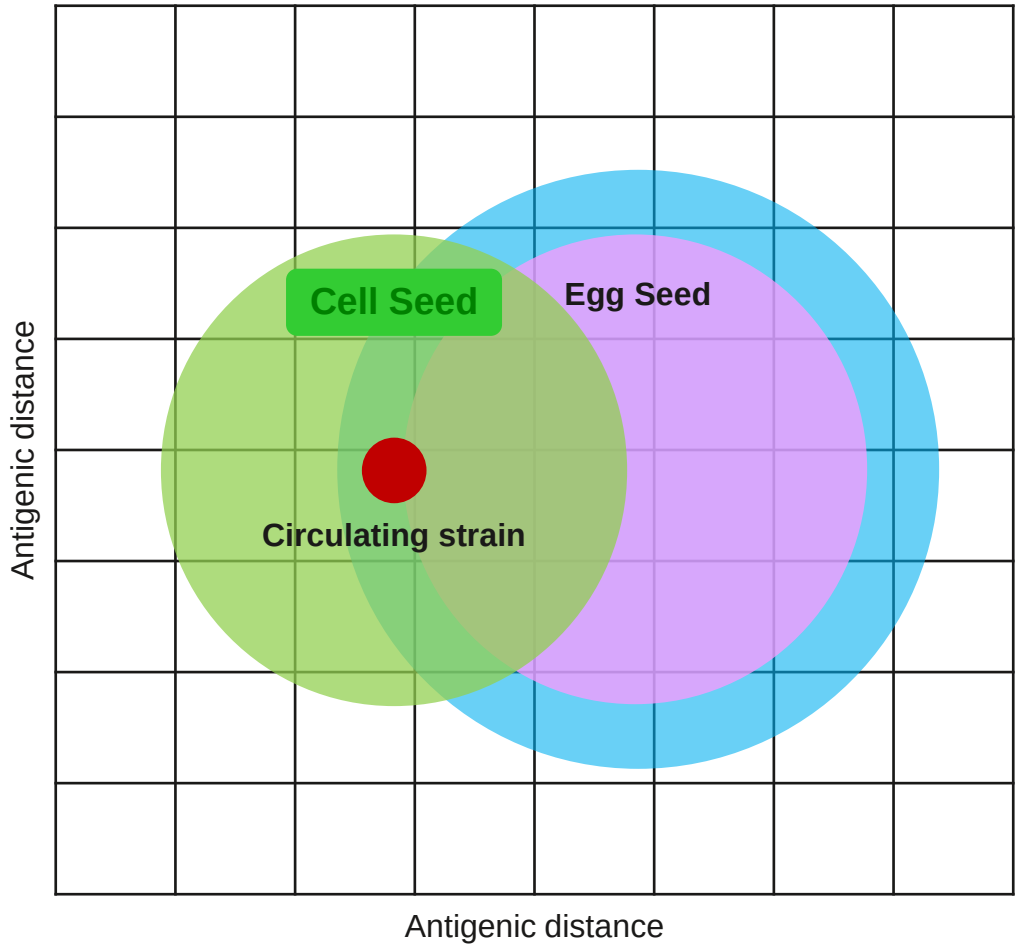
- FDA/CMS (insurance claims) data 2017/18 season
  - FLUAD showed 3% reduction in hospital/ER encounters in mismatch season*
- Cluster Randomised Trial in Nursing Homes during 2016/17 season (interim analysis)
  - FLUAD showed 6% reduction in all-cause hospitalisation in mismatch season^
  - Previous study of similar design by same investigators with Fluzone HD – 6.7% reduction in all-cause hospitalisation in matched season#

* *Lu et al, Relative effectiveness of cell-cultured versus egg-based influenza vaccines, 2017-18. Advisory* Committee on Immunization Practices June 2018. https://www.cdc.gov/vaccines/acip/meetings/downloads/slides-2018-06/flu-03-Lu-508.pdf. Accessed 28 October 2018

^ Gravenstein et al. A cluster-randomized trial of adjuvanted trivalent influenza vaccine vs. standard dose in U.S. nursing homes. IDWeek October 2018, San Francisco, CA (Poster 996)

Gravenstein et al. Comparative effectiveness of high-dose versus standard-dose influenza vaccination on numbers of US nursing home residents admitted to hospital: a cluster-randomised trial. *Lancet Respir Med* 2017 Sep;5(9):738-746.

Seqirus Technologies aim to Enhance Influenza Vaccines



MF59 Adjuvant

Anticipated Milestones in 2019

- AFLURIA QIV
  - AUS approval for 6M-4yrs
- FLUCELVAX QIV
  - European approval for 9yrs+
  - AUS submission
- FLUAD QIV
  - US approval for 65yrs+
  - EU/UK and AUS submissions
- PrePandemic aH5N1c
  - US submission

CSL Behring

Research and Early Development Portfolios

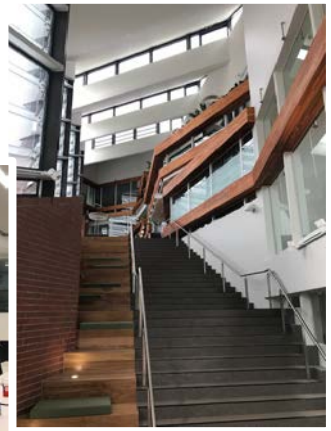
Dr Andrew Nash
Senior Vice President, Research

Research Organisation and Portfolio

- Coordinated global project portfolio

Immunoglobulins	Haemophilia	Specialty Products	Breakthrough Medicines	Transplant

- Bio21(Parkville), Bern and Marburg
- Bio21 expansion completed
- Research capabilities: plasma and recombinant proteins, gene and cell-based therapies



Bio21 expansion

Research Organisation and Portfolio

- Relocation of CSL Research Bern

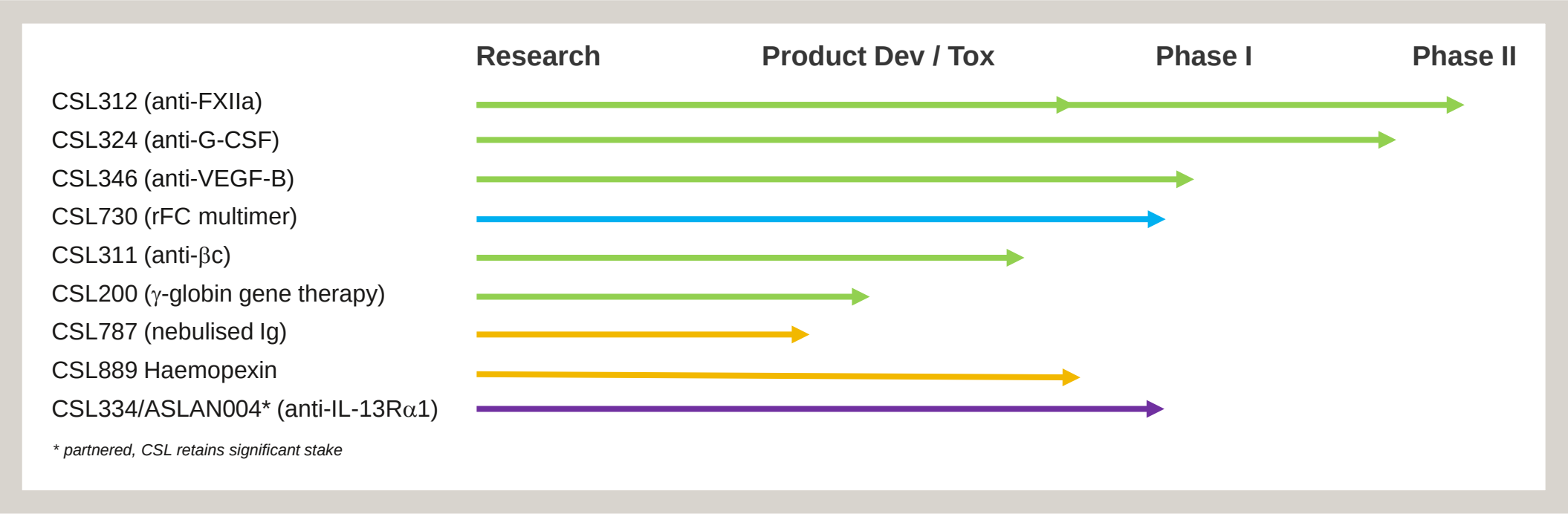
Swiss Institute of Translational and Entrepreneurial Medicine (SITEM)

- Bern University and Hospital Campus
- Translational medicine, Phase I Unit
- Cell and Gene Therapy

Bern relocation / expansion
– completed by H1 2019

Early Development Portfolio

- Portfolio of preclinical and early-mid stage clinical opportunities consistent with CSL commercial objectives
- Delivery of high quality candidates for clinical development

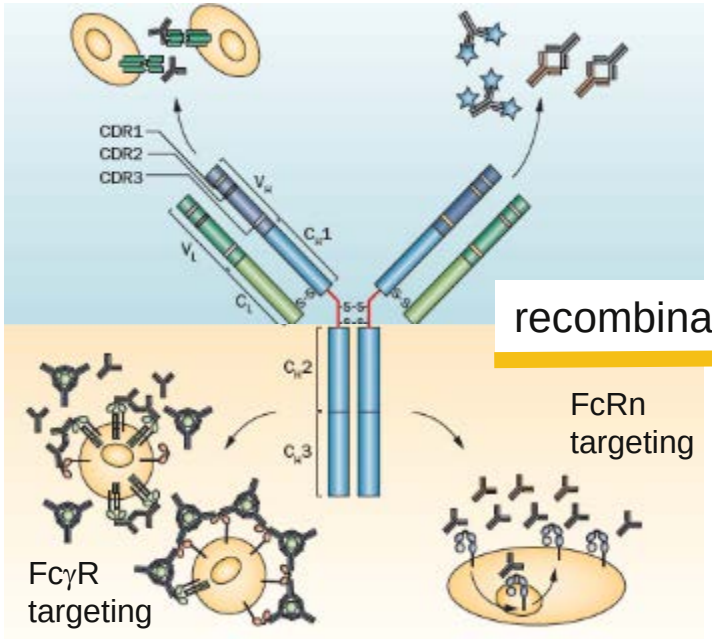


More detail about our pipeline projects can be found here https://www.csl.com/research-and-development/product-pipeline

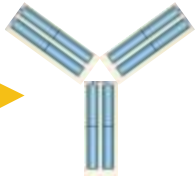
Immunoglobulin Therapy

Ig Fab region
- Immune deficiencies
- Autoimmune conditions

Ig Fc region
- Autoimmune conditions



recombinant Fc multimer – CSL730



Potentially reproduces all
Fc mediated Ig activity

From Lunemann *et al.*, *Nat Rev Immunol* 2015

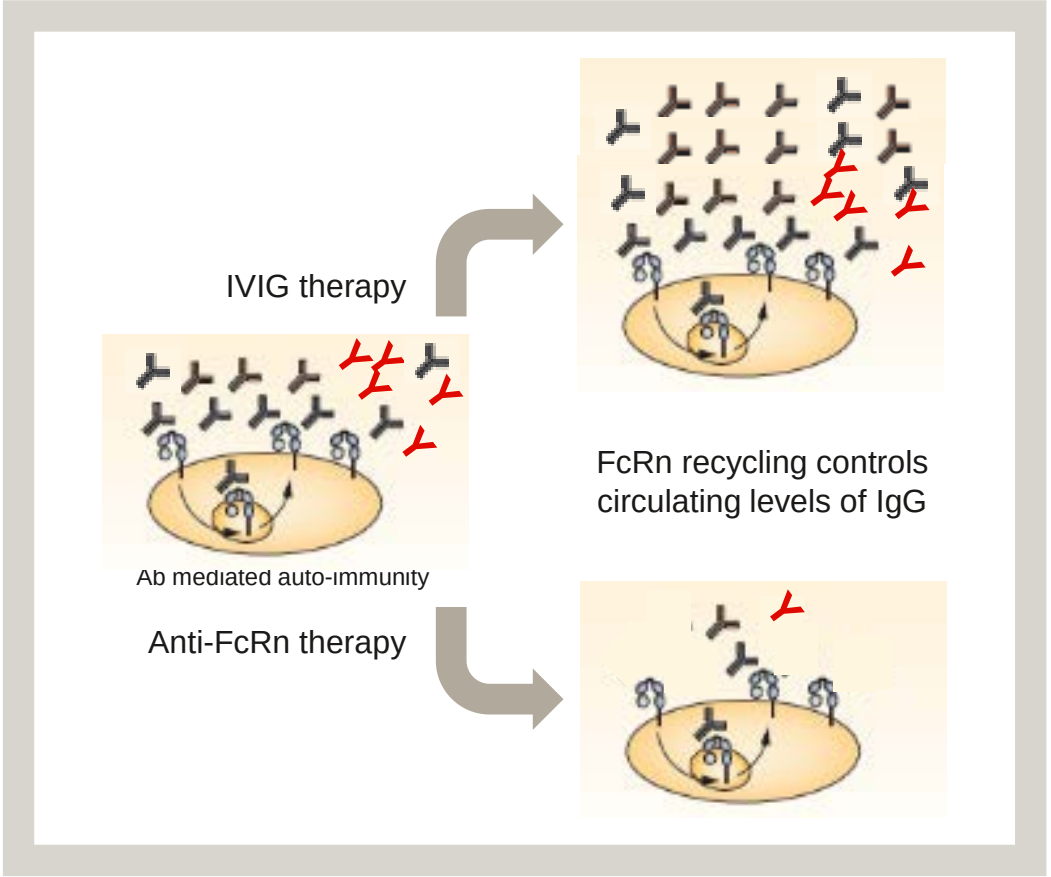
Immunoglobulin Therapy

Targeting FcRn – IG vs. anti-FcRn agents

- IV & SC IG therapy in autoimmune disease
- Increase in total circulating IgG
- Pathogenic auto-antibody IgG out-competed for access to FcRn
- Long term safety established

Anti-FcRn therapy

- Relevant for auto-antibody mediated disease only
- Blocks access of all IgG to FcRn
- Total circulating IgG reduced by up to 80%
- Long term safety implications unclear



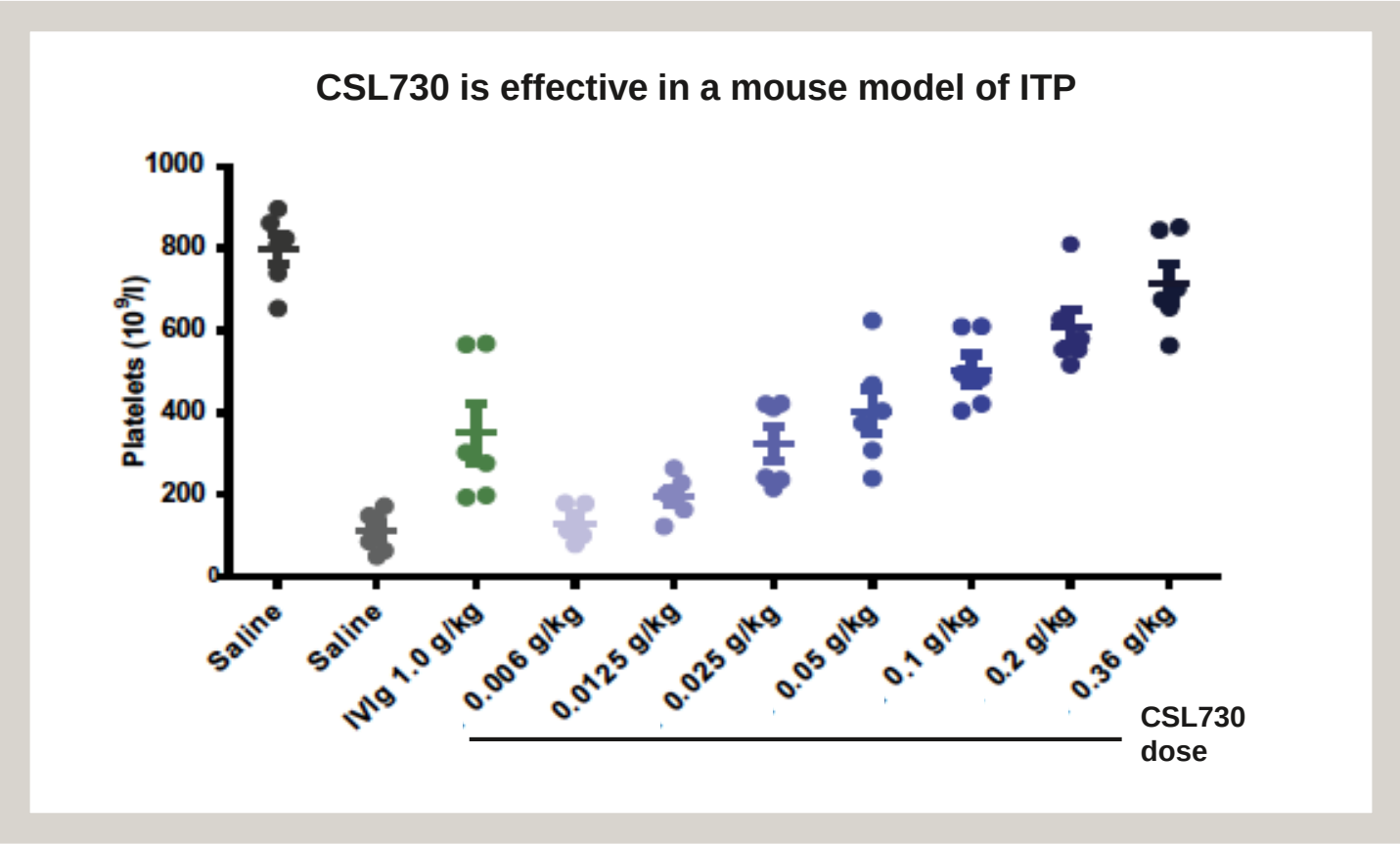
Immunoglobulin Therapy

Mechanism of action summary

	Pathogen Neutralisation	Reduction of Pathologic Ig	Complement Scavenging	FcγR Expression Modulation	Immune Cells Modulation	Cytokine Modulation
Ig Therapy	✓	✓	✓	✓	✓	✓
IgG Fc Multimers	○	✓	✓	✓	✓	✓
FcRn Binding Agents	○	✓	○	✓	○	○

○ No Activity ✓ Possible Activity ✓ Activity

CSL730 – Recombinant Fc Multimer

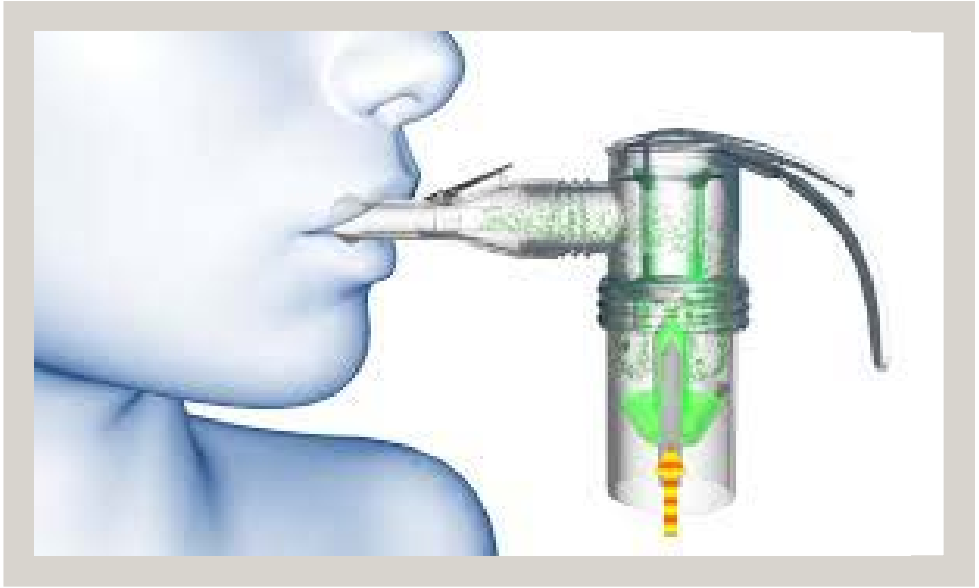


- Non-clinical safety toxicity data supports commencement of FIH studies
- Phase I study (healthy volunteers) commenced Q1 2018

Immunoglobulin Therapy – Expanding Benefit

Nebulised Ig – respiratory tract infections

- Concept: Prevention of viral and bacterial infections of the respiratory tract by inhaling polyclonal immunoglobulins
- Technical feasibility demonstrated



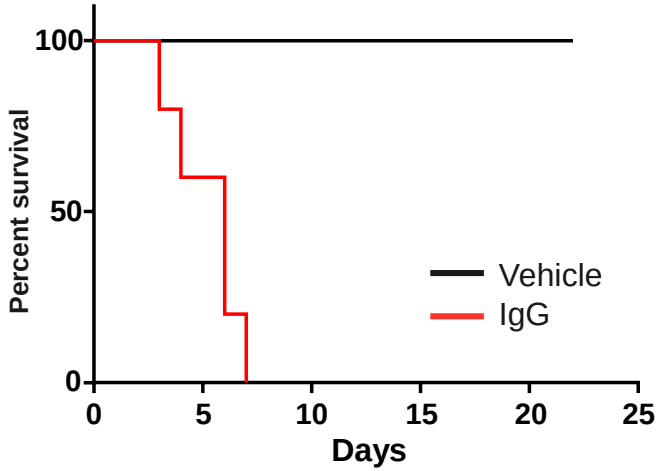
Potential indications for NebIg:

- Prevention of infections in PID patients
- Prevention of infection-related exacerbations in COPD and Bronchiectasis patients

Immunoglobulin Therapy – Expanding Benefit

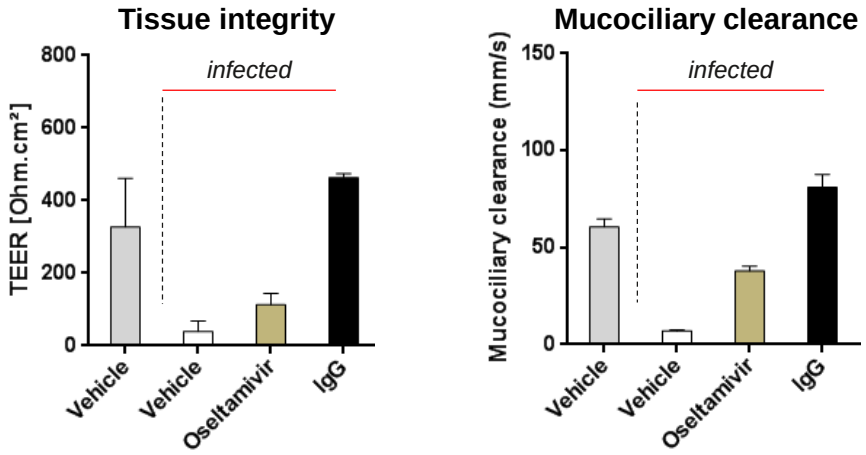
Inhaled IgG prevents bacterial and viral infection

Mouse model of *S. pneumoniae* infection



Intranasal IgG prevents *S. pneumonia* bacterial infection in mouse model

***In vitro* model of *influenza virus* infection**

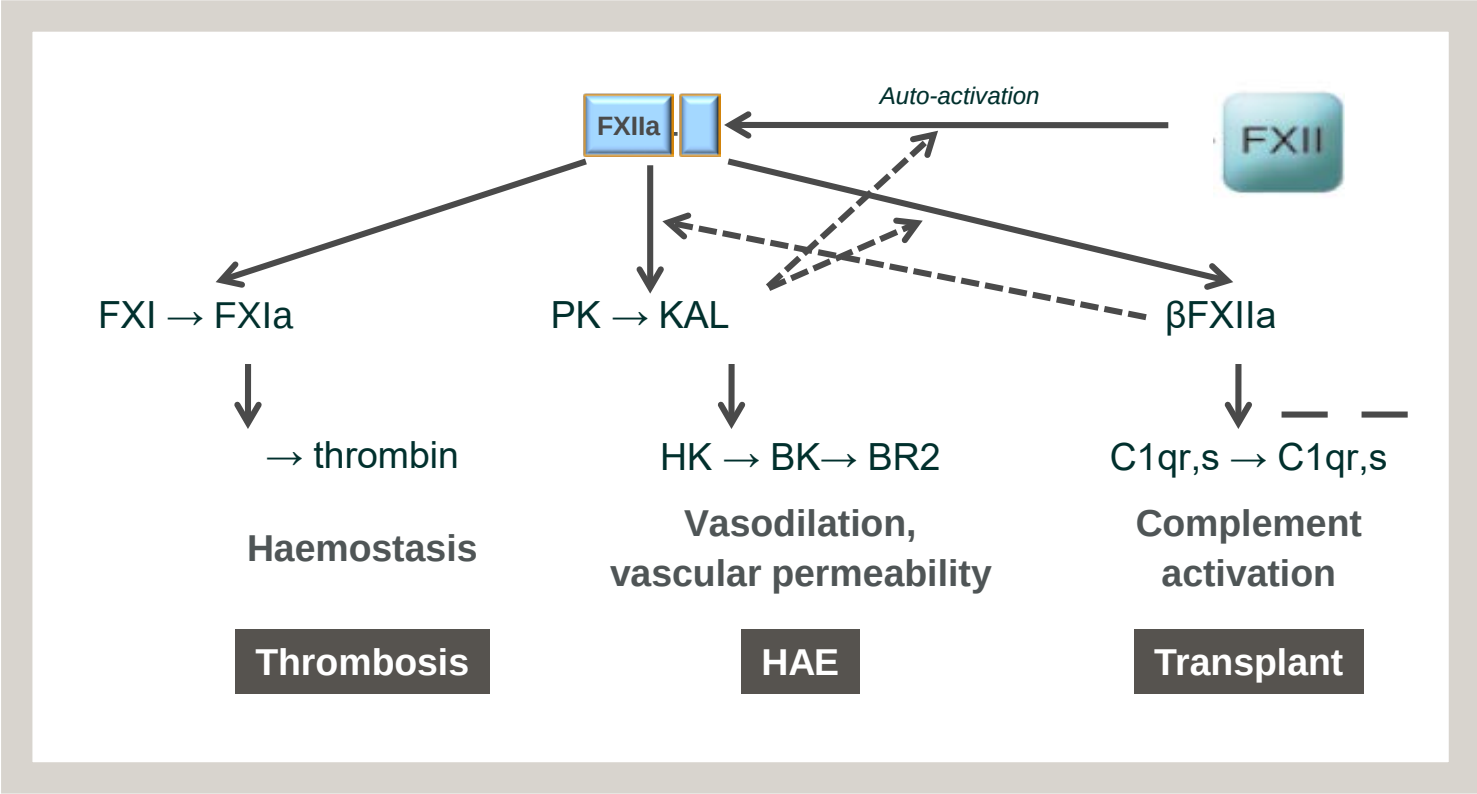


IgG preserves tissue integrity and mucociliary clearance of primary human bronchial cells after influenza virus infection

- GLP Toxicology studies in progress
- First-in-human trial planned for 2019

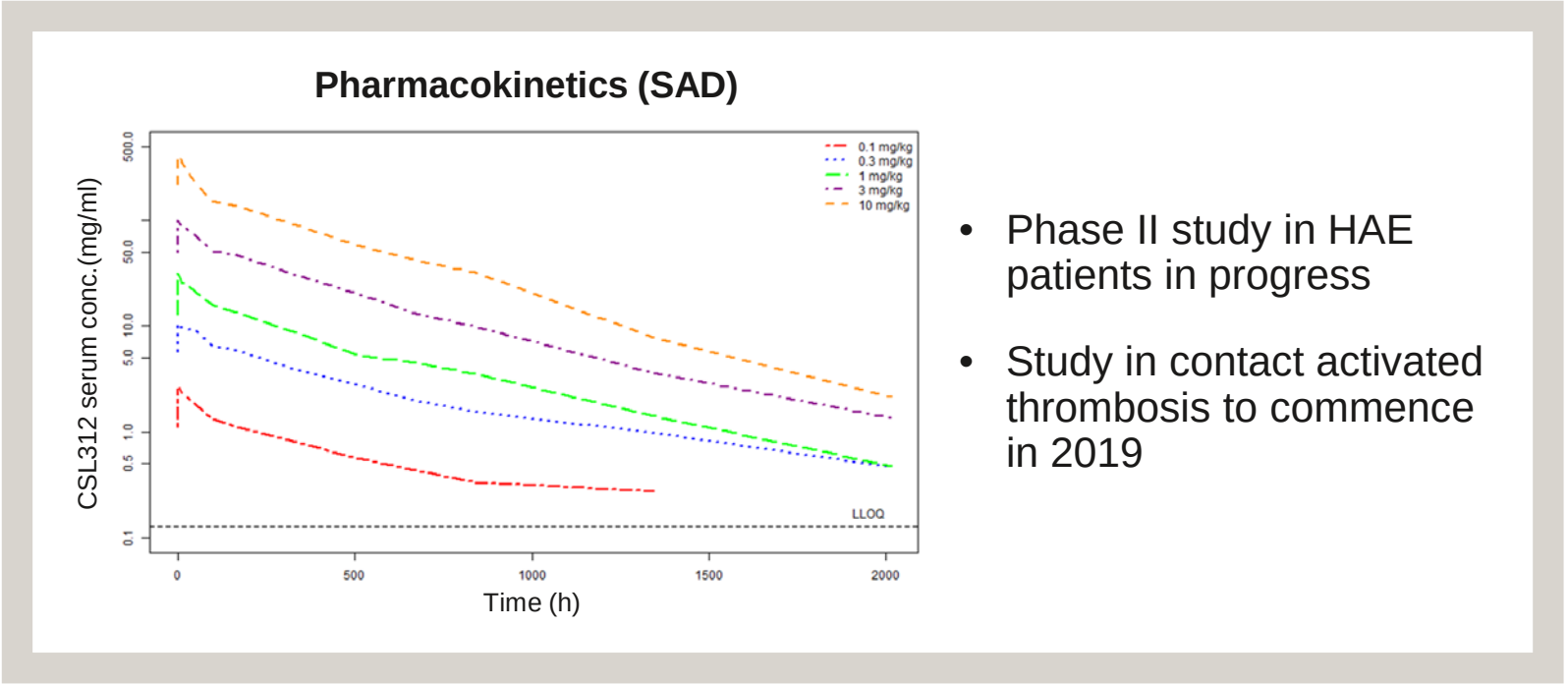
CSL312 – HAE and Thrombosis

- Targeting FXIIa represents a novel approach to the treatment of HAE & contact activated thrombosis
- Efficacy in multiple animal models and translational studies



CSL312 – HAE and Thrombosis

First in Human (healthy volunteers) Phase I study



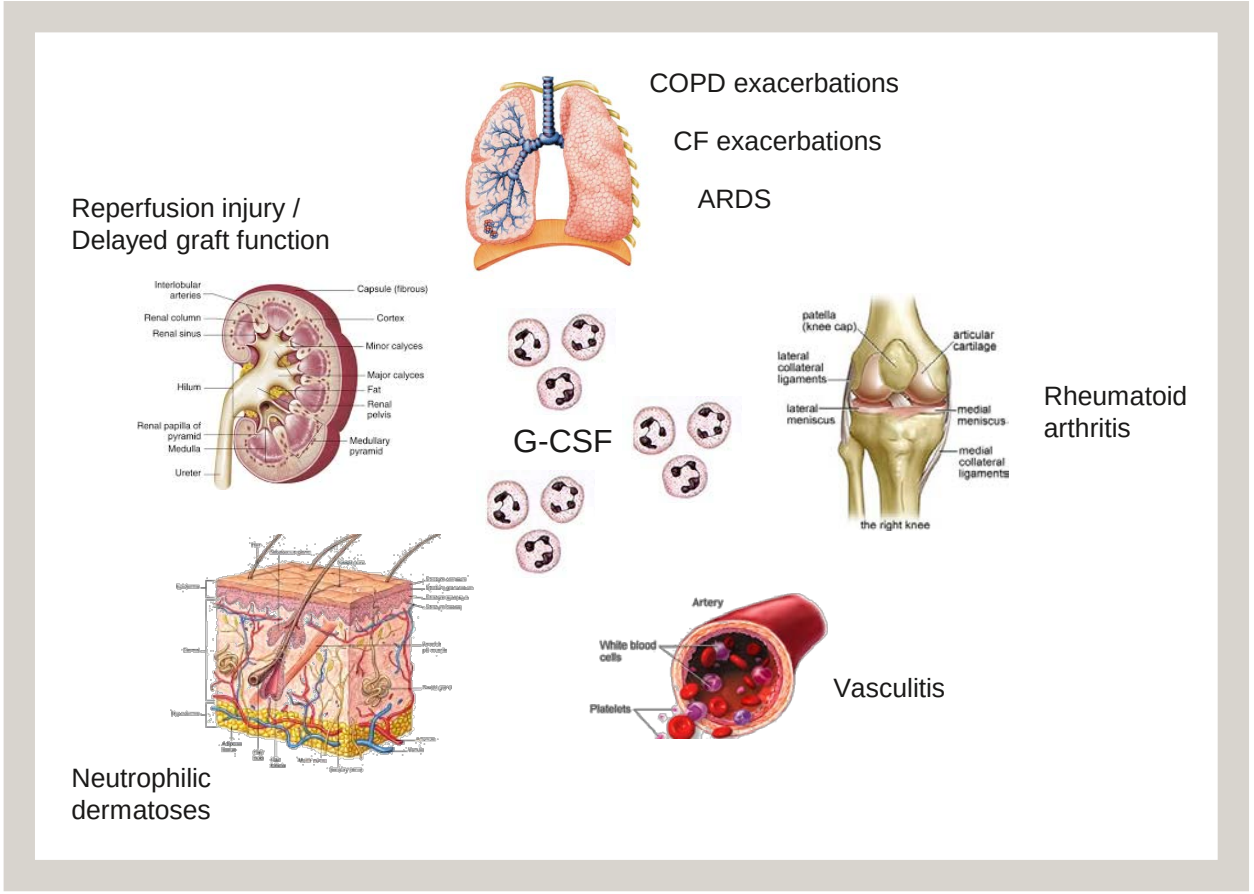
- Phase II study in HAE patients in progress
- Study in contact activated thrombosis to commence in 2019

- Safe and well tolerated
- Linear pharmacokinetics with expected pharmacodynamic effects
  - Inhibits FXIIa mediated activity in a dose dependent manner

CSL324 – Neutrophil Mediated Inflammation

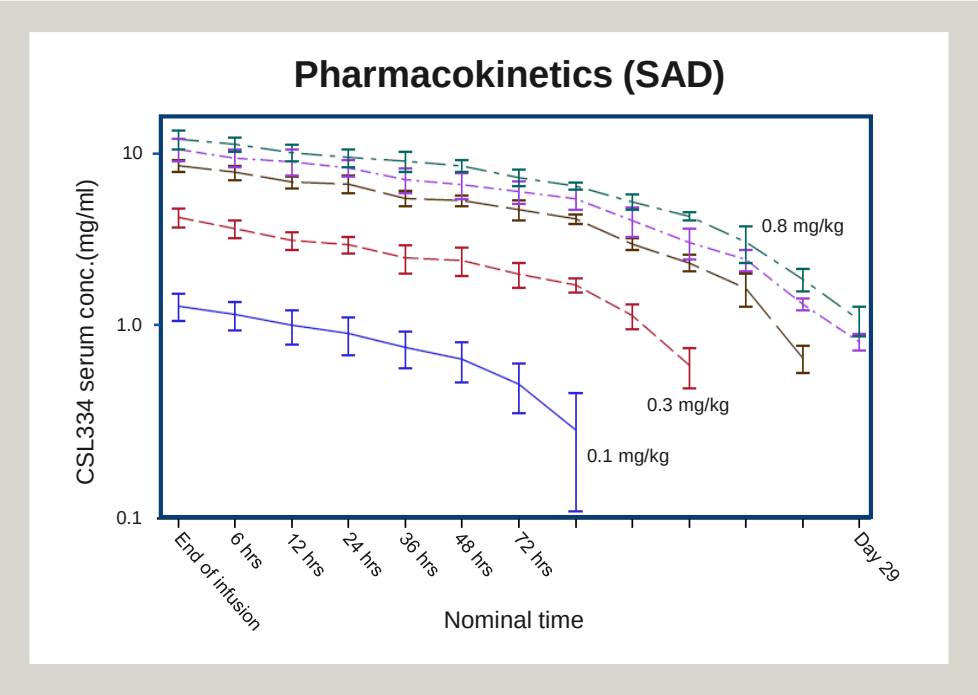
G-CSF / Neutrophils / Inflammation

- Neutrophils – contribute to protective mechanism against infections
- Neutrophil numbers and activity under control of Granulocyte Colony Stimulating Factor (G-CSF)
- Excessive activated neutrophils can cause chronic severe inflammatory diseases
- Targeting G-CSF represents a novel approach to the treatment of inflammatory diseases
- Efficacy in multiple animal models and translational studies



CSL324 – Neutrophil Mediated Inflammation

First in Human (healthy volunteers) Phase I study



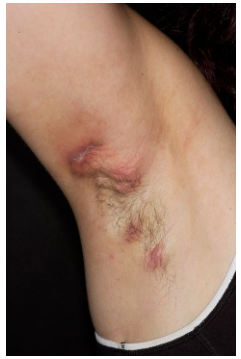
- Safe and well tolerated
- Linear PK with target saturation and expected pharmacodynamic effects
  - *ex vivo* STAT 3 and *in vivo* G-CSF challenge

CSL324 – Neutrophil Mediated Inflammation

Phase Ib study in neutrophilic dermatoses commencing Q2 2019

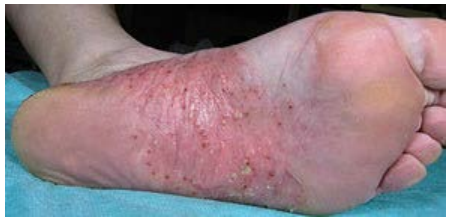
Hidradenitis Suppurativa (Acne Inversa)

- Chronic, inflammatory, recurrent, debilitating skin disease of the hair follicle
- Lesions are painful, unsightly, odorous, with devastating effect on the patients QOL
- Prevalence 1-4% of the general population
- Unmet need – Adalimumab is not effective in all patients, and does not always have a durable response



Palmoplantar pustulosis

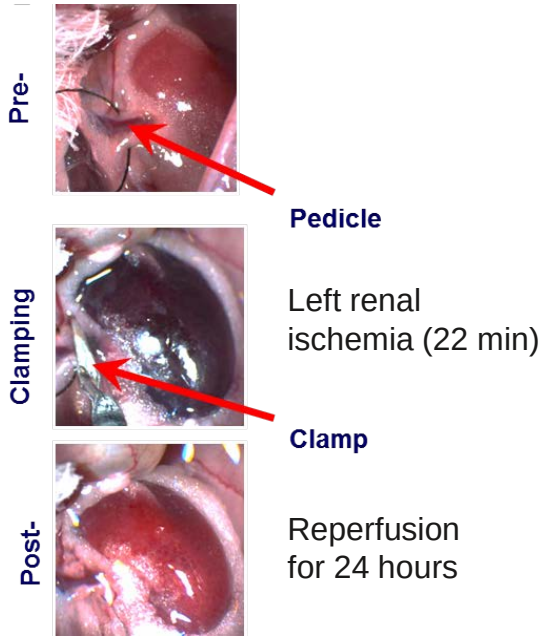
- Characterised by a chronic eruption of sterile pustules on palms and soles – filled with neutrophils
- The lesions are usually painful and decrease patients QOL
- Prevalence data limited – very rare
- Unmet need – SoC topical steroids, phototherapy and systemic Methotrexate, cyclosporine

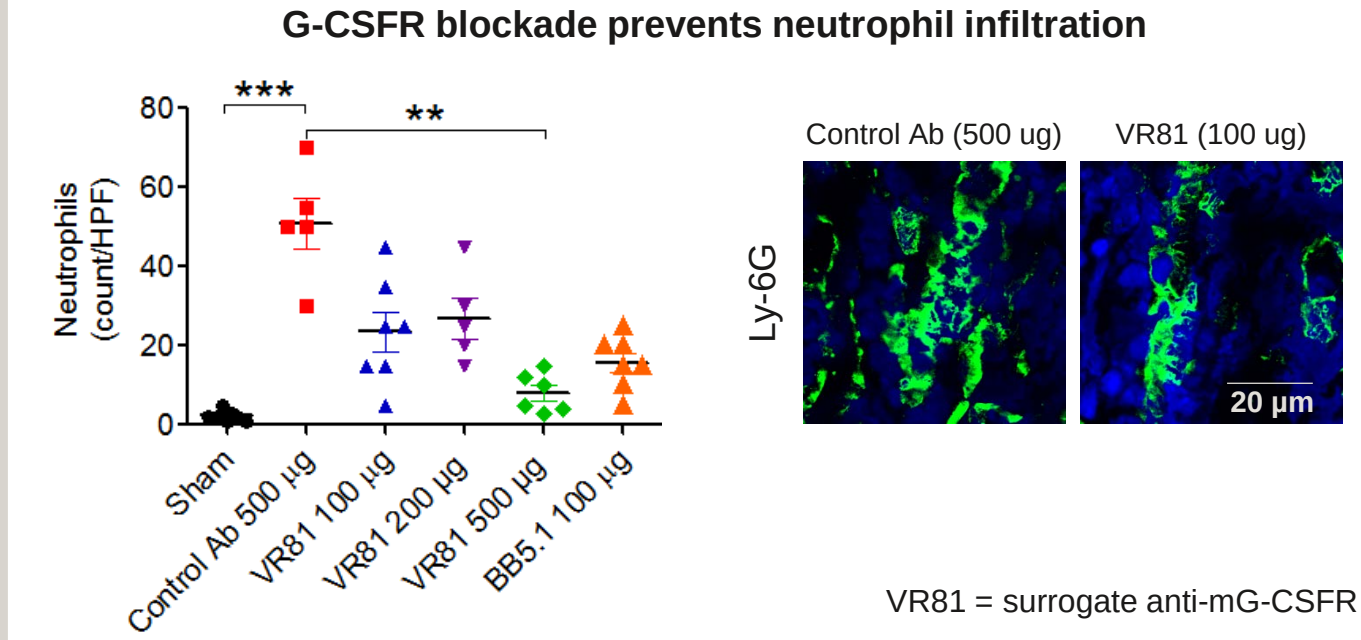


CSL324 – Neutrophil Mediated Inflammation

Kidney graft reperfusion injury

- G-CSFR blockade protects against renal Ischemia Reperfusion Injury (IRI) in a mouse model





CSL324 – Neutrophil Mediated Inflammation

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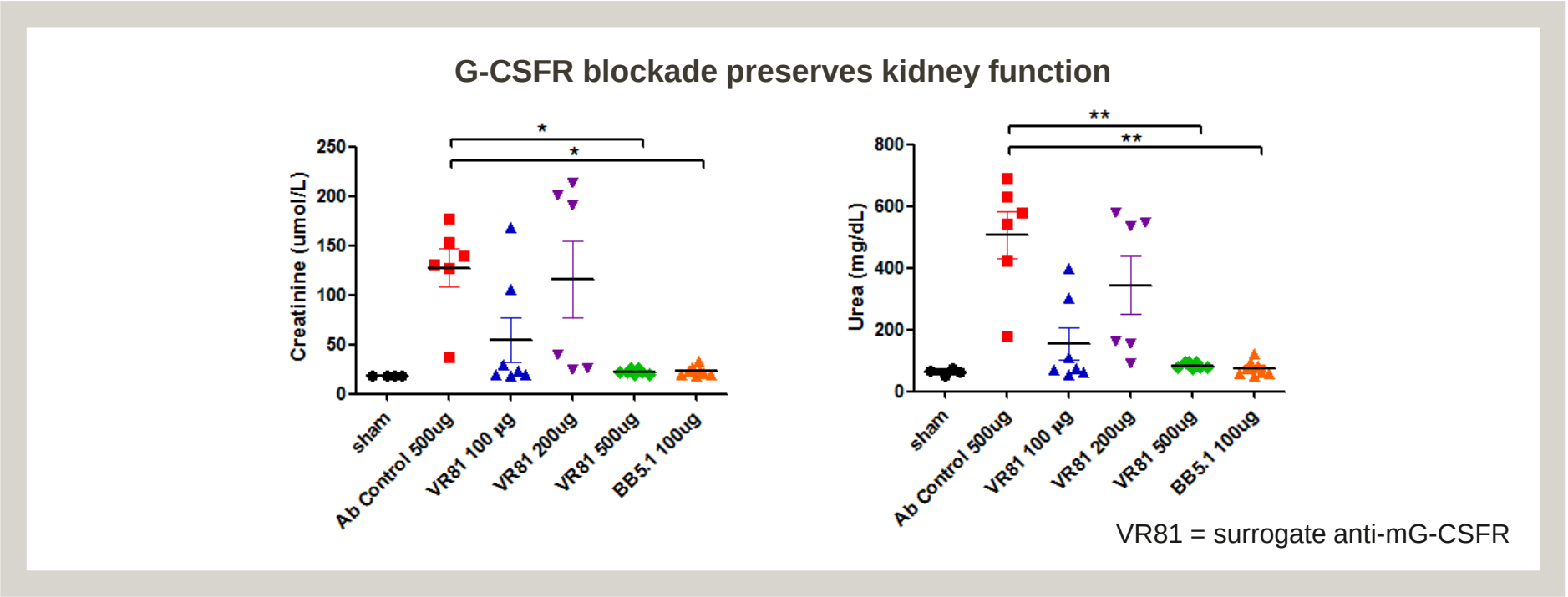


Opportunity for CSL324 in solid organ transplantation

Research and Early Development

- Expanding capacity and capability across global Research sites
  - New projects leveraging Calimmune gene and cell therapy technologies
- Continuing to innovate in areas of business strength

Immunoglobulins | **Haemophilia** | **Specialty Products**

- Developing new opportunities in areas of unmet need

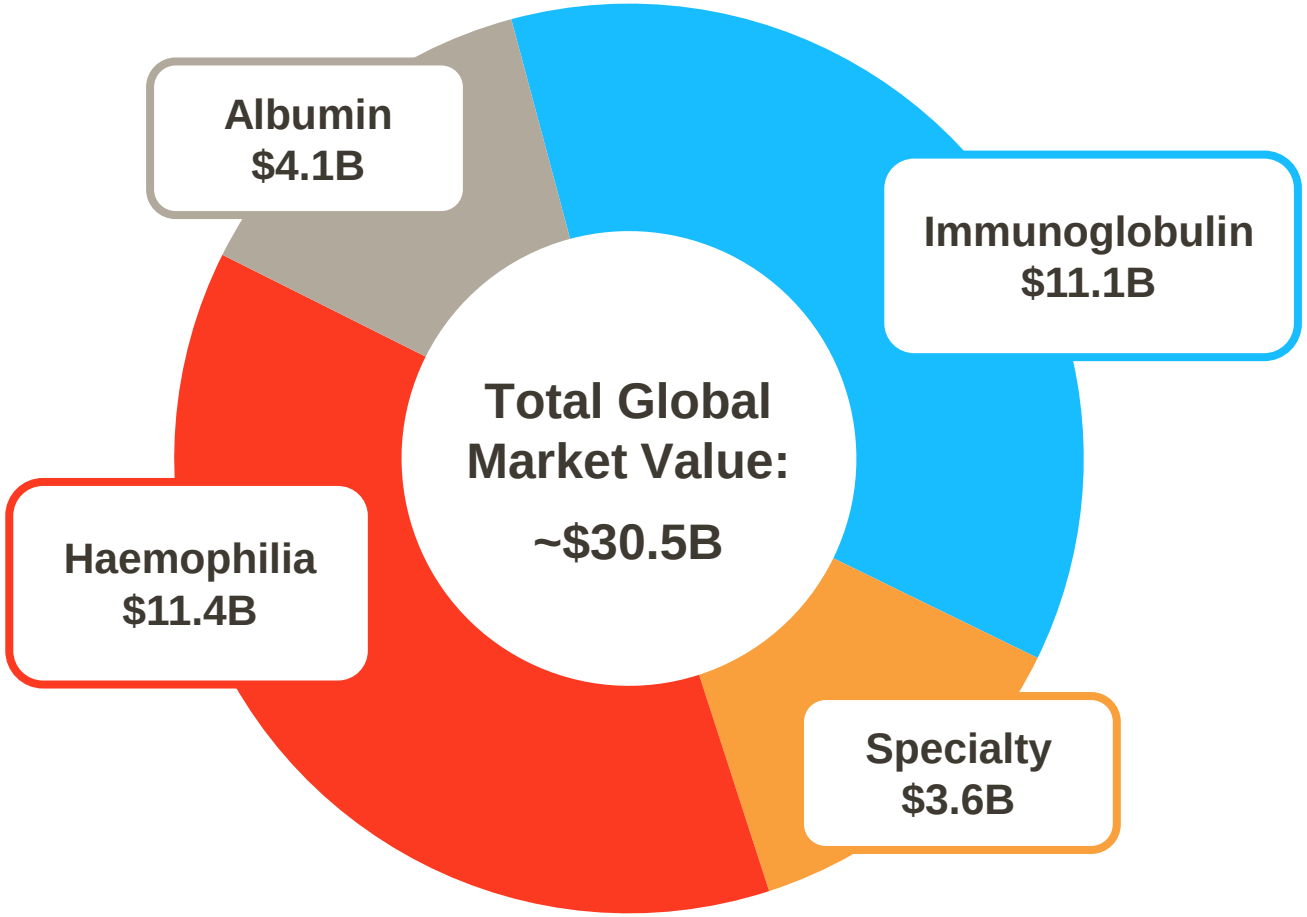
Breakthrough Medicines | **Transplant**

- Creating and progressing a sustainable portfolio of early stage opportunities

Commercial Market Overview

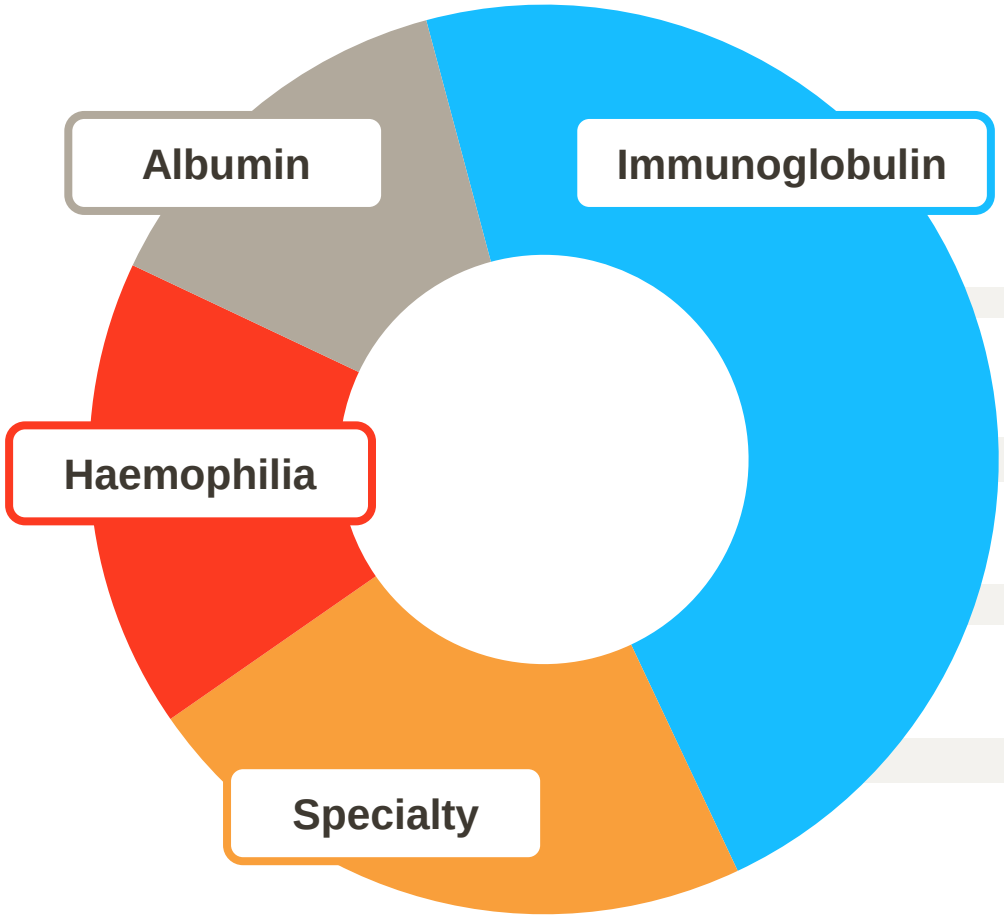
Mr Bill Campbell
Executive Vice President & Chief Commercial Officer

Targeted Protein Therapeutic Market



Source: Adivo, Global Market Research, Analyst Reports, Company Annual Reports, Haemophilia mkt includes Inhibitor mkt

CSL Portfolio

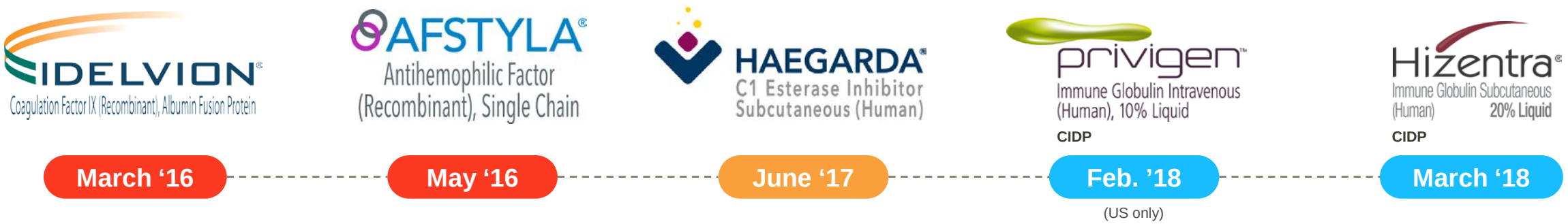


CSL Total FY18 $6,678M

Immunoglobulin	$3,145M	+11%
Specialty	$1,490M	+24%
Haemophilia	$1,113M	+5%
Albumin	$921M	+7%

Growth at constant currency

New Product Launches



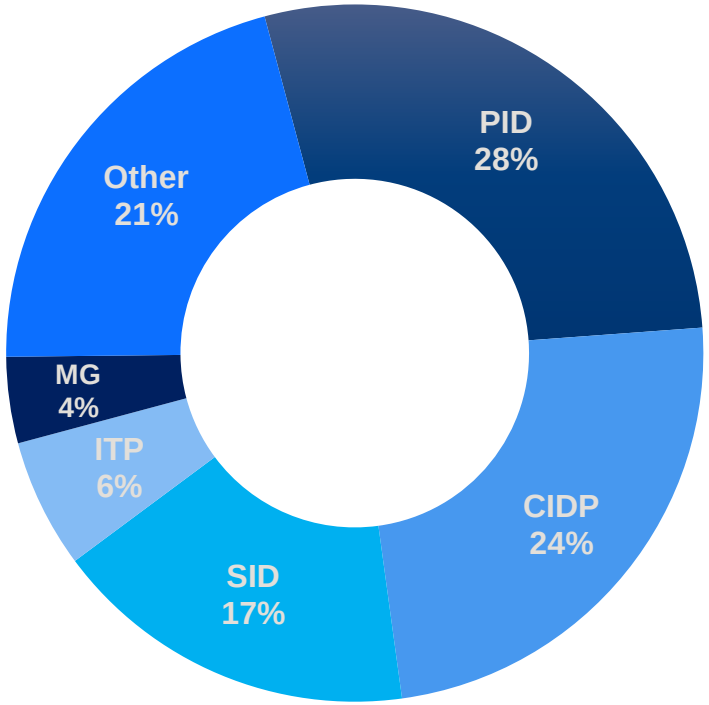
Launch date denotes first country to launch globally

5 major launches in 24 months
Some of the **most successful** launches in the industry
Significant contribution to the business now…in future

R&D Productivity | **Commercial Excellence**

Immunoglobulin Market

Global IG volume by indication
9% Growth

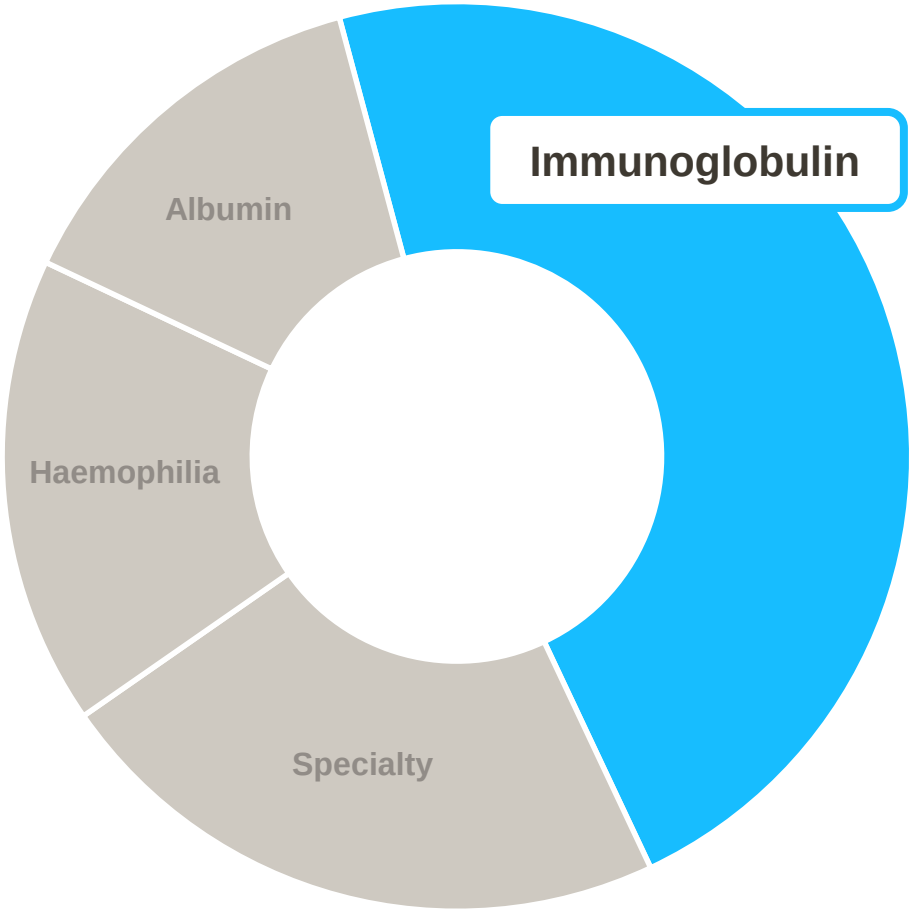


Source: Data on file

Growth Drivers

- Enhanced diagnosis in PID, CIDP
- Immunotherapy driving SID growth
- Increasing per capita use in emerging markets
- Continued market supply tightness

CSL Portfolio: Immunoglobulin



FY18 $3,145M +11%

- Above market volume growth
- Expansion in PID, SID, CIDP
- Balanced growth across all regions
- Continued life-cycle investments

Disciplined execution

Immunoglobulins: Category Leadership

GROW
the current business

- Maximise PID / SID opportunity
- Leverage broad portfolio
- Enhance product offerings

EXPAND
our presence in neurology

- Replicate our approach to build market leading segments
- Build on PRIVIGEN® experience in CIDP
- Launch HIZENTRA® in CIDP

INNOVATE
and protect the franchise

- Novel delivery devices
- New indications e.g. IIM, SSc
- rFc multimer

Immunoglobulin Portfolio

privigen®

Hizentra®

Privigen is a ready-to-use 10% IVIG approved in
80+ countries
worldwide[1]

Proven effective and well tolerated with
10+ years
of patient experience

100,000
patient-years of experience[3]

&

More than
6 million
exposures worldwide[3]

Approved for use in
6
indications*

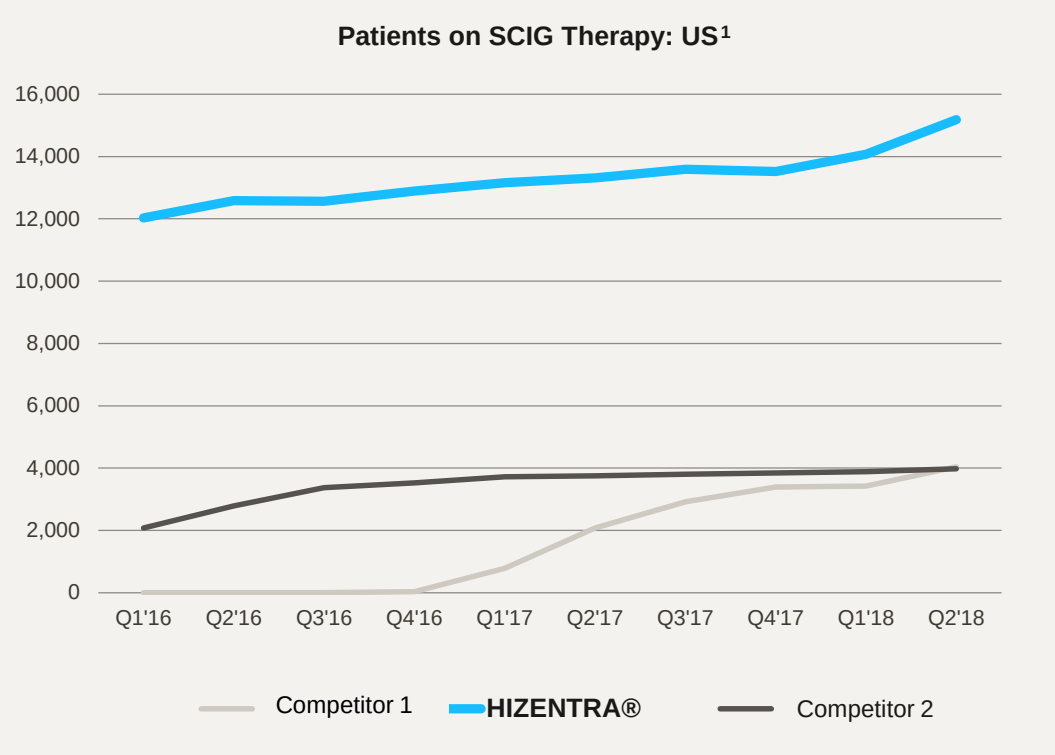
Used in
>100,000 patients
with chronic disease in the last year[2]

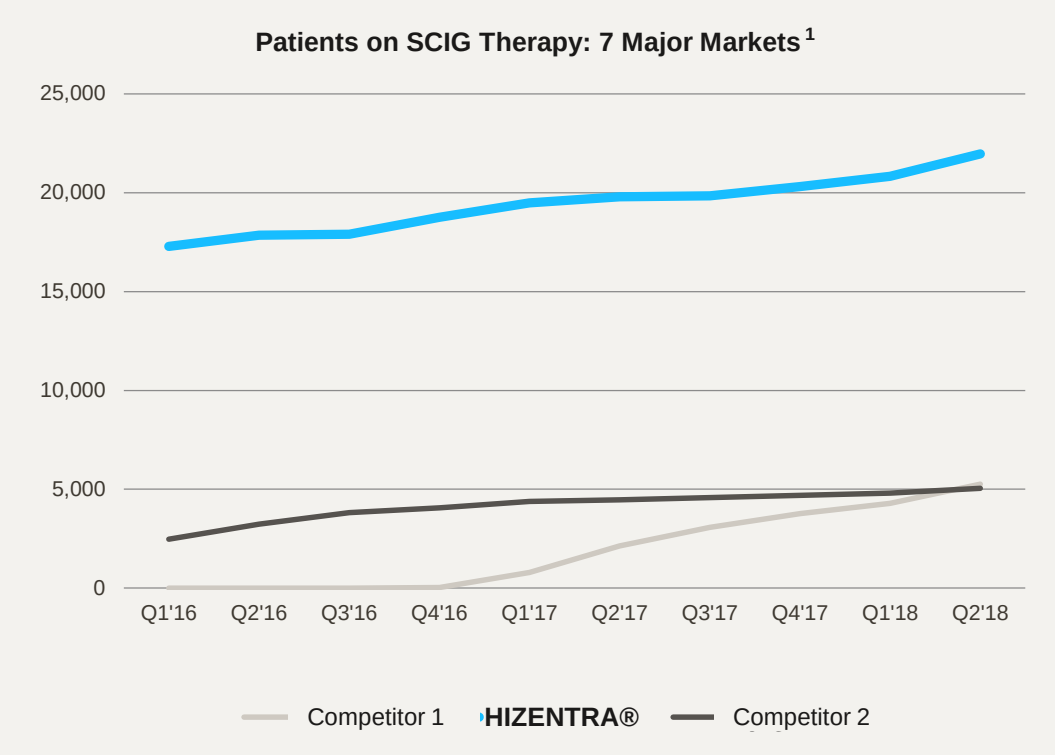
Proven efficacy and tolerability profile since
2010

57 countries
HIZENTRA® is a 20% SCIG that is approved in 57 countries worldwide[4]

References: 1. Data on file. Available from CSL Behring as PRI-10015; 2. Data on file. Available from CSL Behring as DOF-PRI-10016; 3. Data on file. Available from CSL Behring as DOF-HIZ-005; 4. Data on file. Available from CSL Behring as DOF-HIZ-004
*PID,SID, adults with CIDP, chronic ITP, Guillain-Barre syndrome and Kawasaki disease
All Indications are not approved in all markets

Hizentra®: Innovator, Market Leader





Source: Adivo Q2 2018 Tracking Data
Major Markets include: US, Germany, France, Spain, Italy, UK, Japan
1 Not all products shown

Hizentra® addresses unmet needs in CIDP therapy

CIDP Update

- Early in launch cycle
- Leading indicators are positive
- Market share growth with both PRIVIGEN® and HIZENTRA®

Significant opportunity for leadership with HIZENTRA®

Experience IV-related systemic adverse reactions

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

Have venous access issues

HIZENTRA® does not require venous access

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

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

Require more frequent infusions to manage their disease

HIZENTRA® provides steady state Ig levels for continuous control

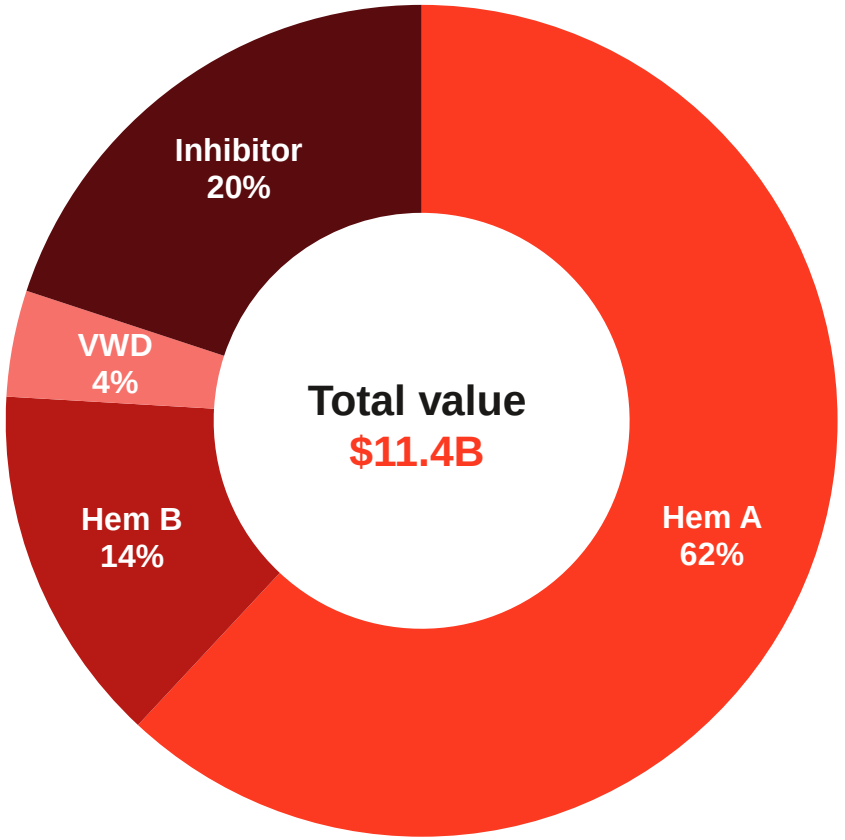
Source: Data represents patients reporting a preference between IVIG in the prerandomized phase and Hizentra in the randomized phase of the phase III study of subcutaneous immunoglobulin for the treatment of chronic inflammatory demyelinating polyneuropathy (CIDP) – the PATH study

Immunoglobulin Portfolio

- Positioned for continued growth
- Expanding market presence
- Diverse disease opportunities
- Balanced geographic footprint
- Continued life cycle investment
- Plasma collections running ahead of the market
- Early days…but very positive in CIDP

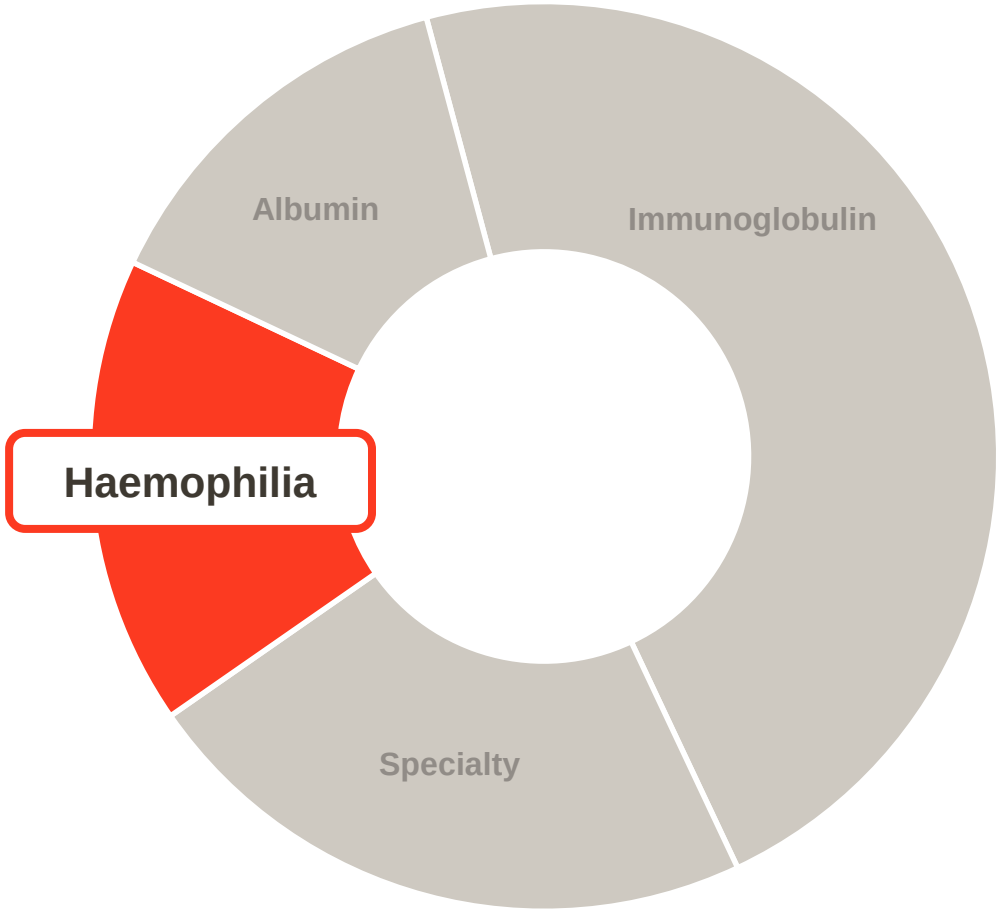
Market Leading Therapies

Haemophilia Market



- Highly competitive Haem A segment
- Rapid transition of Haem B to long acting products
- 75% of patients with bleeding disorders are under or untreated
- New technologies / advancements hold great promise…

CSL Portfolio: Haemophilia



AFSTYLA®

IDELVION®

HUMATE-P®

Beriate® P

VONCENTO®

FY18 $1,113M +5%

Haem A

- AFSYTLA®
  - Launched in 12 countries
  - Plasma-derived portfolio

Haem B

- IDELVION®
  - Transformational Product
  - Strong growth
  - Market leadership

von Willebrand Disease

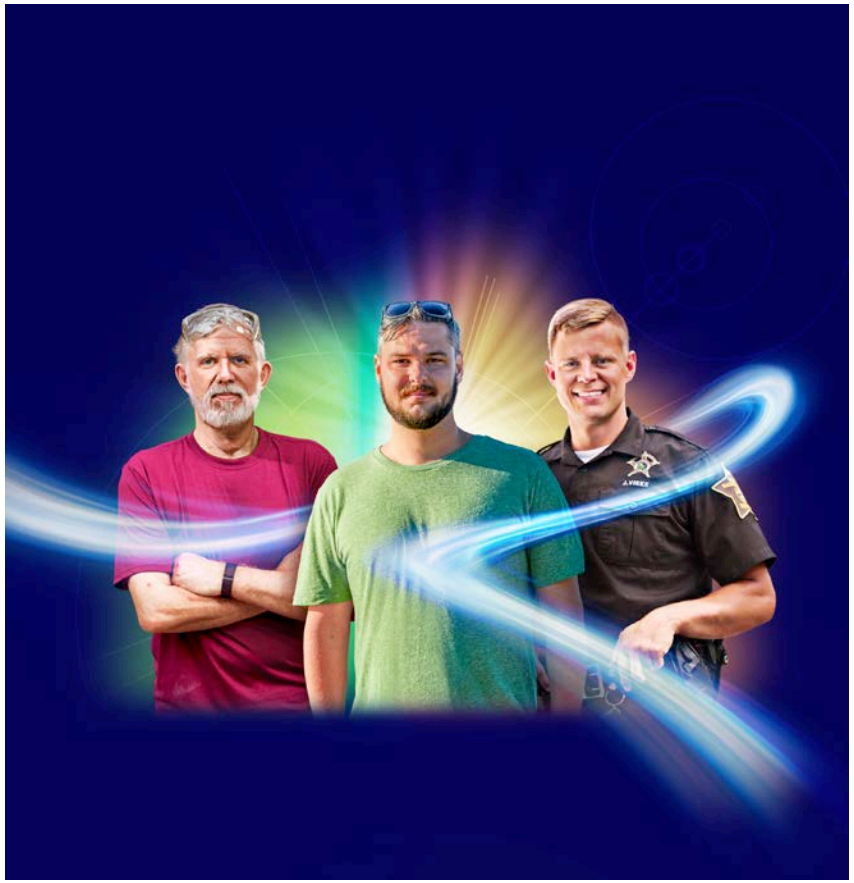
- HUMATE-P®, VONCENTO®
  - Strong contributors to portfolio

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: Annualized spontaneous bleeding rate.
† EHL: Extended half life

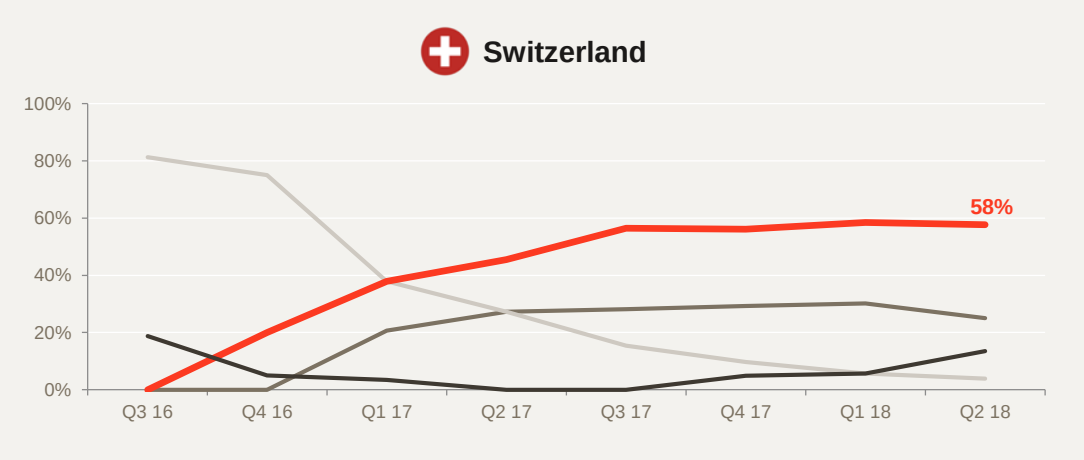
IDELVION® Clinical Profile is Uniquely Differentiated

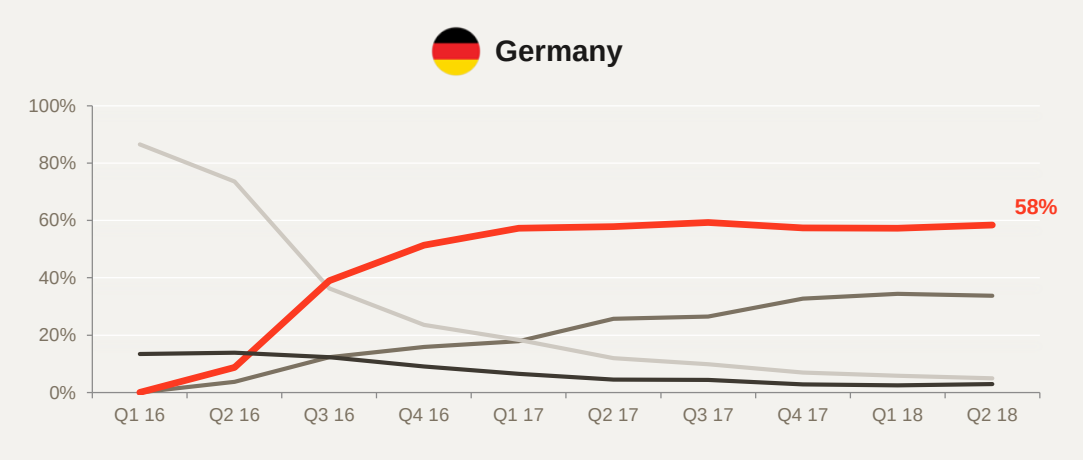


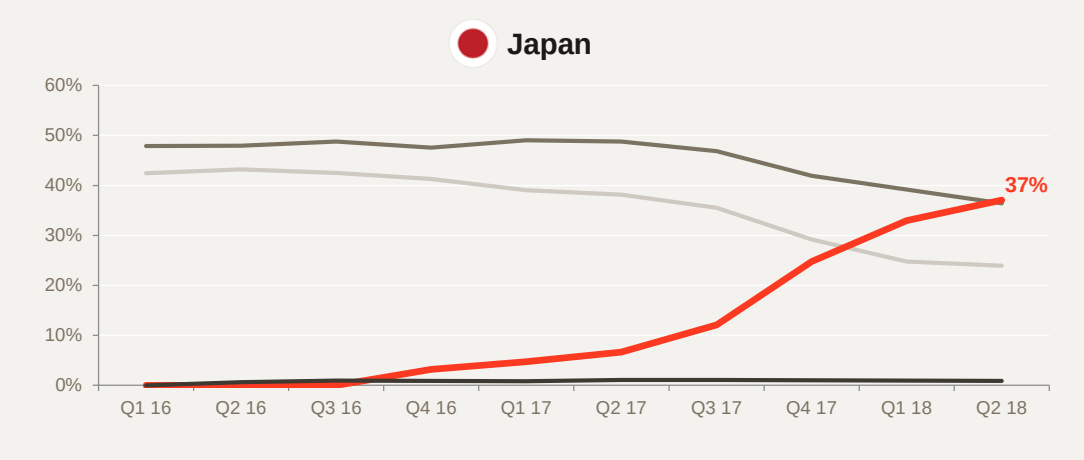
0 **Median AsBR**	• Zero median annualized spontaneous bleeding rate (AsBR) in prophylaxis
Up to 14 day dosing*	• Greater freedom from infusions
21% Factor IX steady state trough levels†	• High and sustained factor levels at steady-state with prophylactic use
#1 Factor Choice[1]	• IDELVION is the most switched to Factor IX when changing therapy

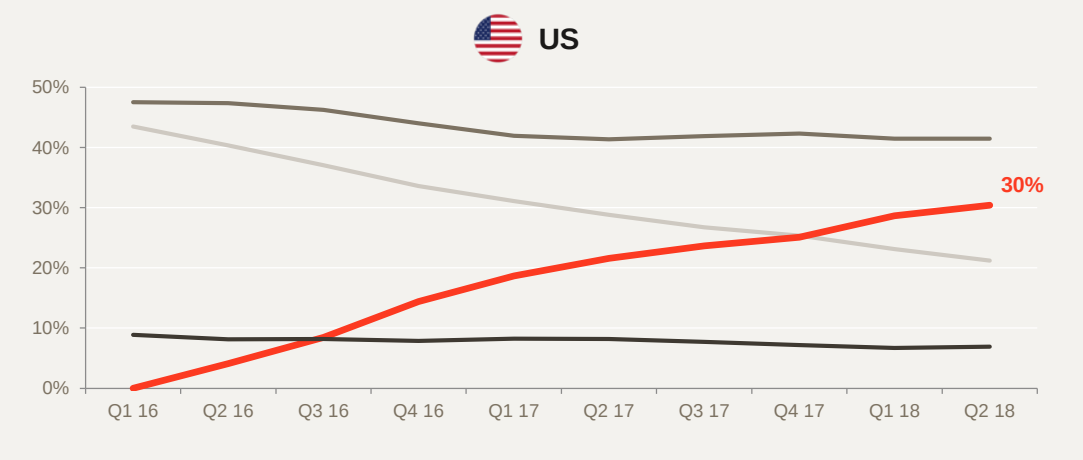
* In appropriate patients 12 years and older.
† Average FIX levels with 7-day dosing over 92 weeks in clinical trials
Reference: 1. Data on file. Available from CSL Behring as DOF IDL-002.

IDELVION® Performance in Key Markets









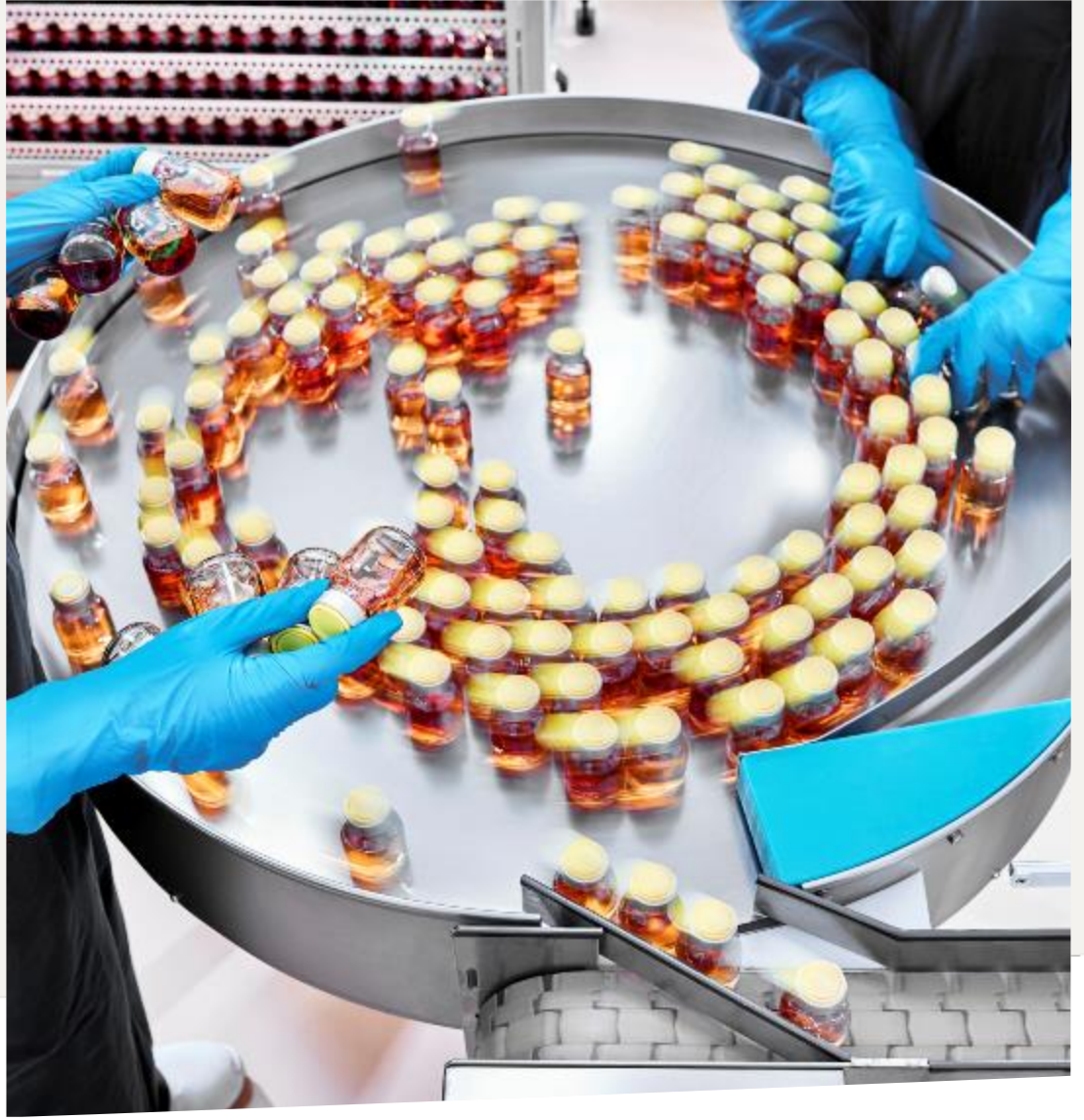
IDELVION® Competitor 1 Competitor 2 All Other

Source: Adivo Q2 2018 Tracking Data
Patient share of recombinant prophylaxis in launch markets

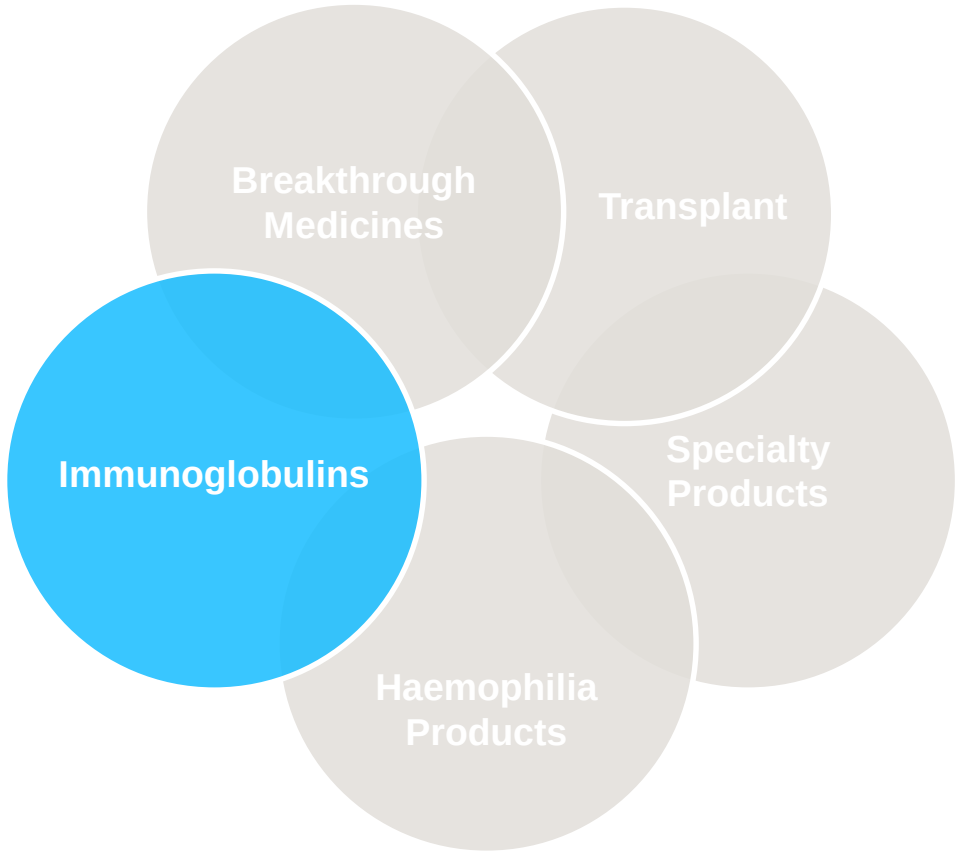
Q&A

Clinical Development

Dr Bill Mezzanotte
EVP & Head R&D

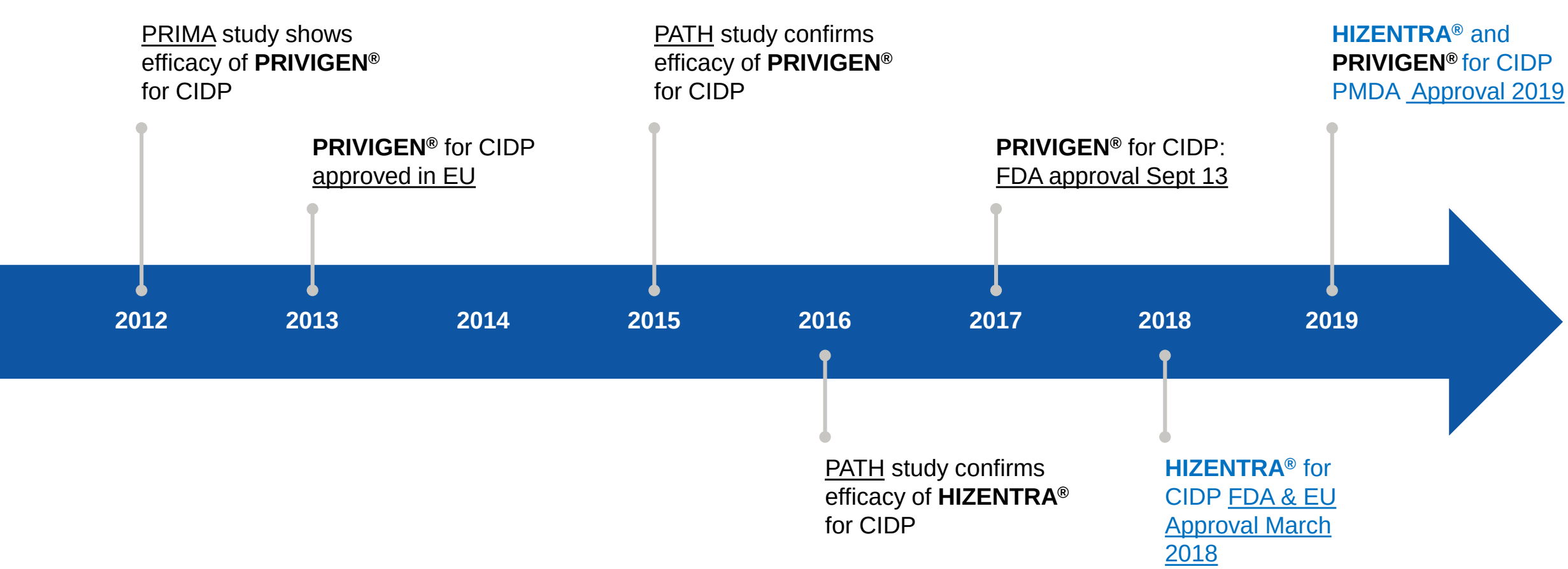


Immunoglobulins

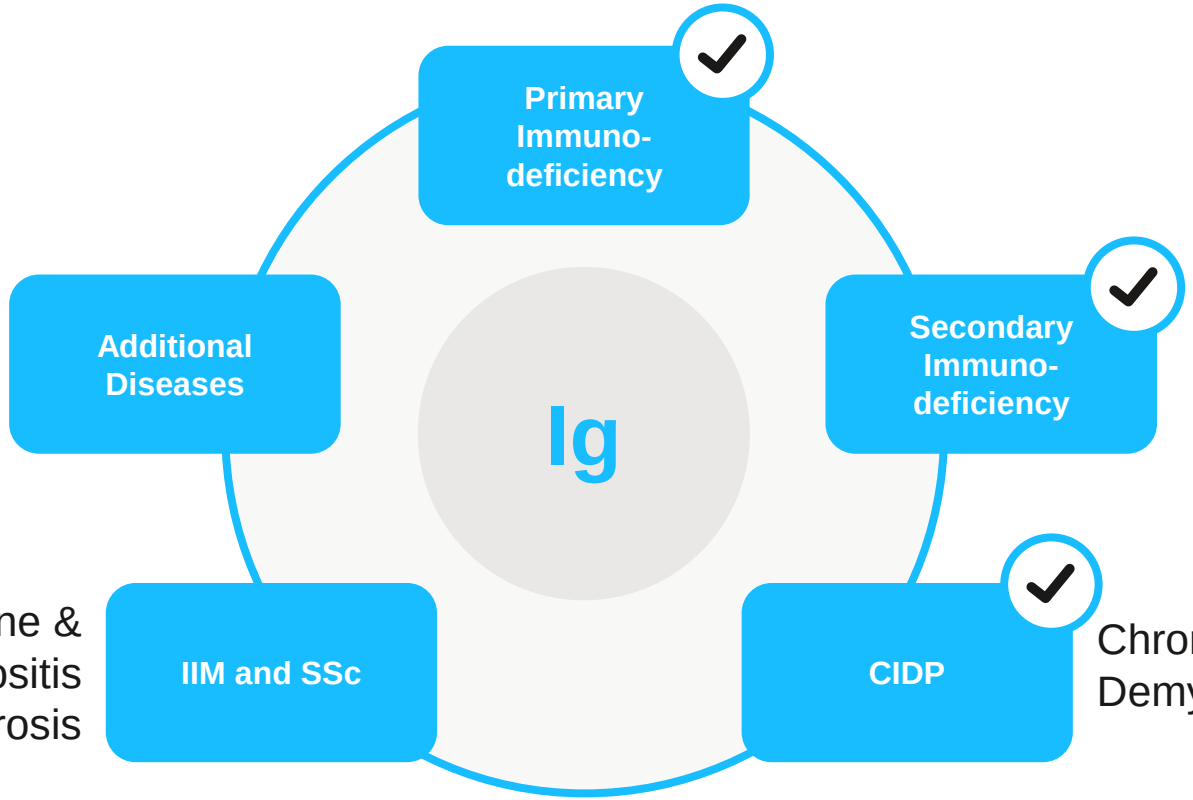


- **Maintaining leadership position through focus on:**
  - New Indications
  - Geographic expansion
  - Delivery options
- **Key Focus:**
  - HIZENTRA®
  - PRIVIGEN®

Milestones in Ig Development for CIDP



Impact of Ig (IV & SC) in Rare Diseases

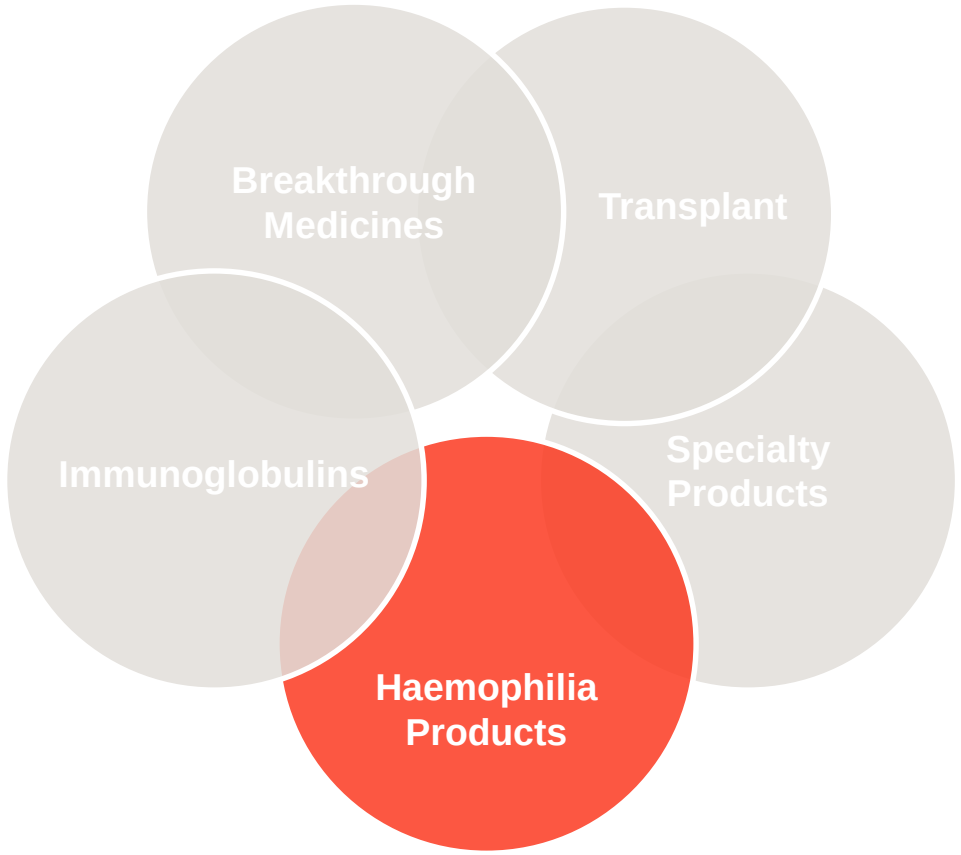


Immune & Inflammatory Myositis and Systemic Sclerosis

Chronic Inflammatory Demyelinating Polyneuropathy

- Health Authority (FDA, EMEA, PMDA) interactions – 2018
- Trials start 2019

Haemophilia Products



- **Supporting and enhancing plasma products and developing novel recombinant portfolio with focus on:**
  - Scientific and product innovation
  - Patient benefit
- **Key Focus:**
  - IDELVION® (rIX-FP)
  - AFSTYLA® (rVIII-Single Chain)

IDELVION® Delivering in the Real World

Annualised Bleed Rates in switched patients

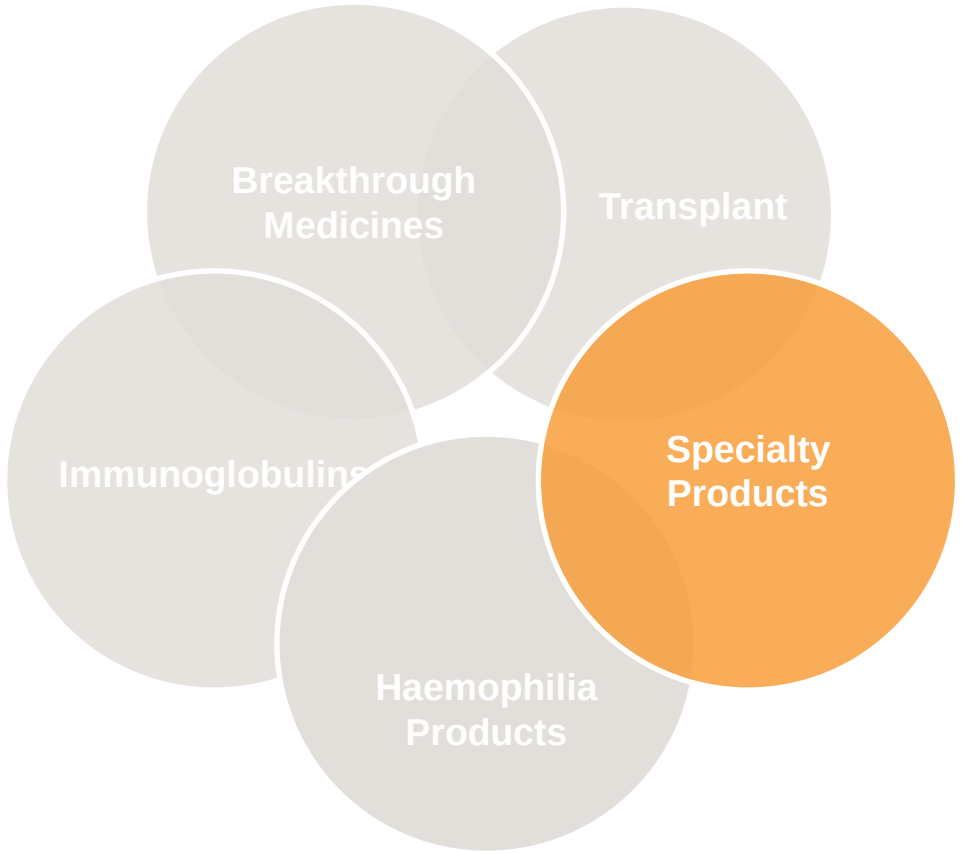
FIX product	All FIX	rFIX-Fc	IDELVION
Prophylaxis-to-prophylaxis patients mean ± SD	**7.4 ± 9.1 (n=34)**	**8.9 ± 9.6 (n=12)**	**1.5 ± 4.5 (n=34)**
# with zero bleed (%)	6 (17.6)	2 (16.7)	23 (67.6)

Escobar et al, ISTH July 2018

- >85% of All-FIX therapies were administered every 7 days or more frequently
- 45% of IDELVION administration was every 14 days

- Further increased dosing flexibility anticipated
  - 21-day dosing submission planned 3Q 19

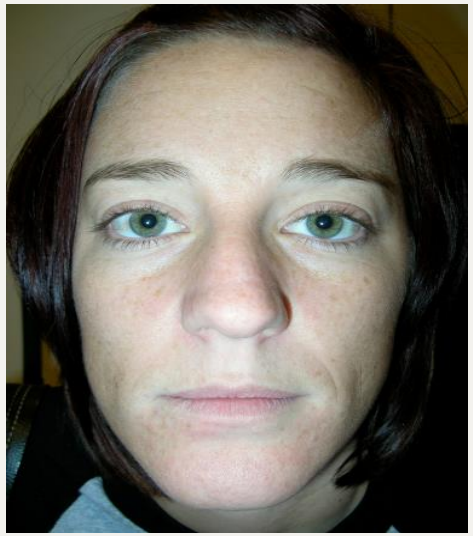
Specialty Products

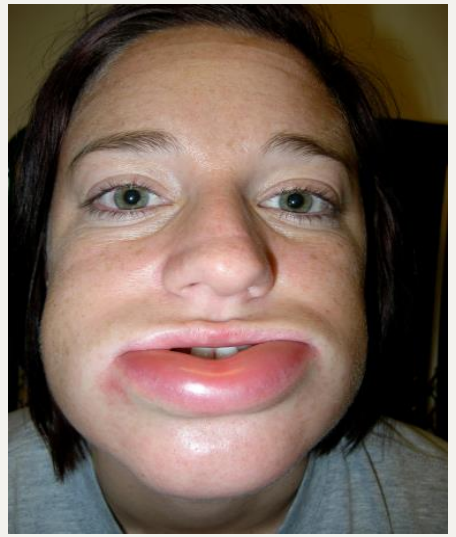


- **Leveraging high quality broad product portfolio through:**
  - New markets
  - Novel indications
  - Novel modes of administration
- **Key Focus:**
  - HAEGARDA®/BERINERT®
  - KCENTRA®/BERIPLEX®
  - ZEMAIRA®/RESPREEZA®

Hereditary Angioedema (HAE)

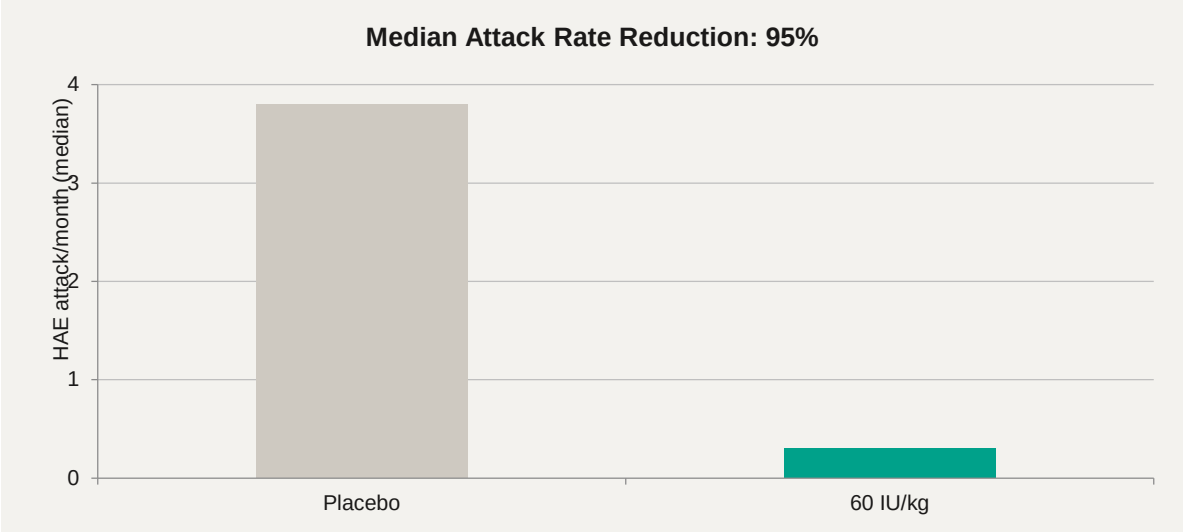
- Hereditary angioedema (HAE) is a disorder that results in recurrent attacks of severe swelling
- All body sites are associated with impairment and patients are impacted during and between attacks
- Most severe are laryngeal attacks which can require emergency interventions to protect the airway





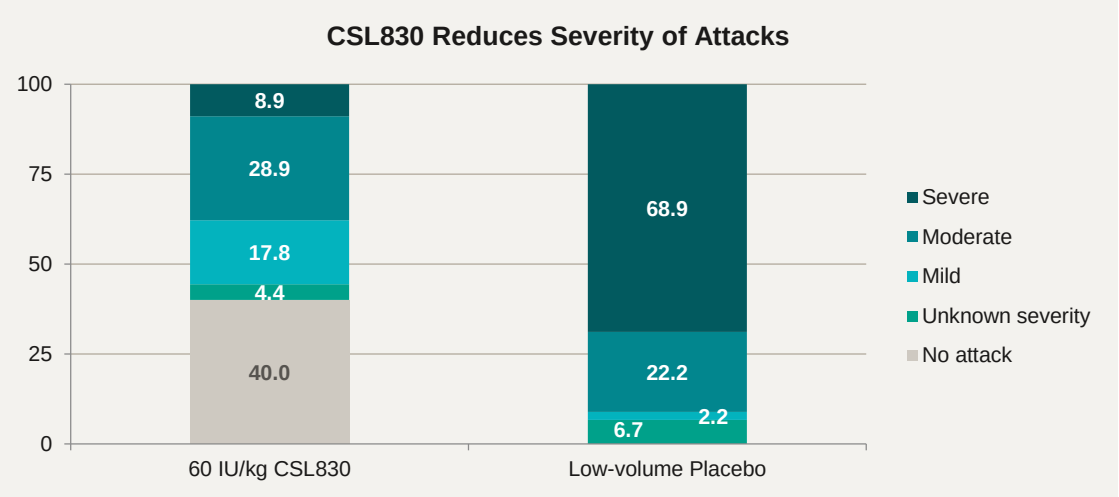
Demonstrating Unique Benefit of HAEGARDA® COMPACT

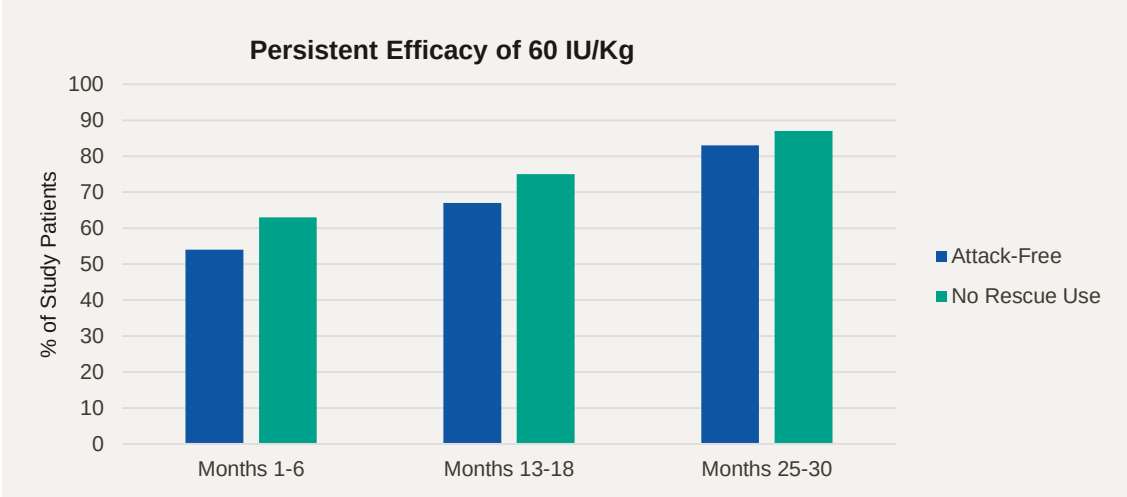
BASELINE	
Mean Age	39.6 ± 14.9
Female %	67
Mean # HAE attacks 3 prior months	9.8 ± 6.6
% use of HAE Prophylaxis 3 prior months	42%



Longhurst et al NEJM March 2017

Demonstrating Unique Benefit of HAEGARDA® COMPACT



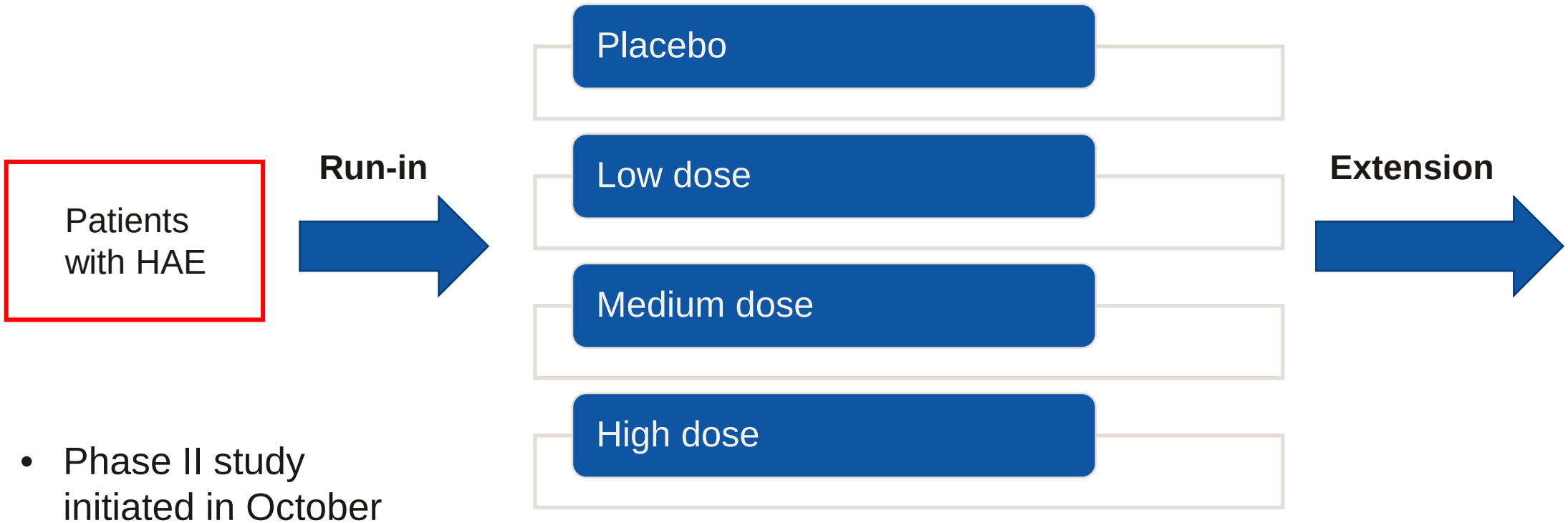


Longhurst et al NEJM March 2017

CSL312 Anti-FXIIa in HAE

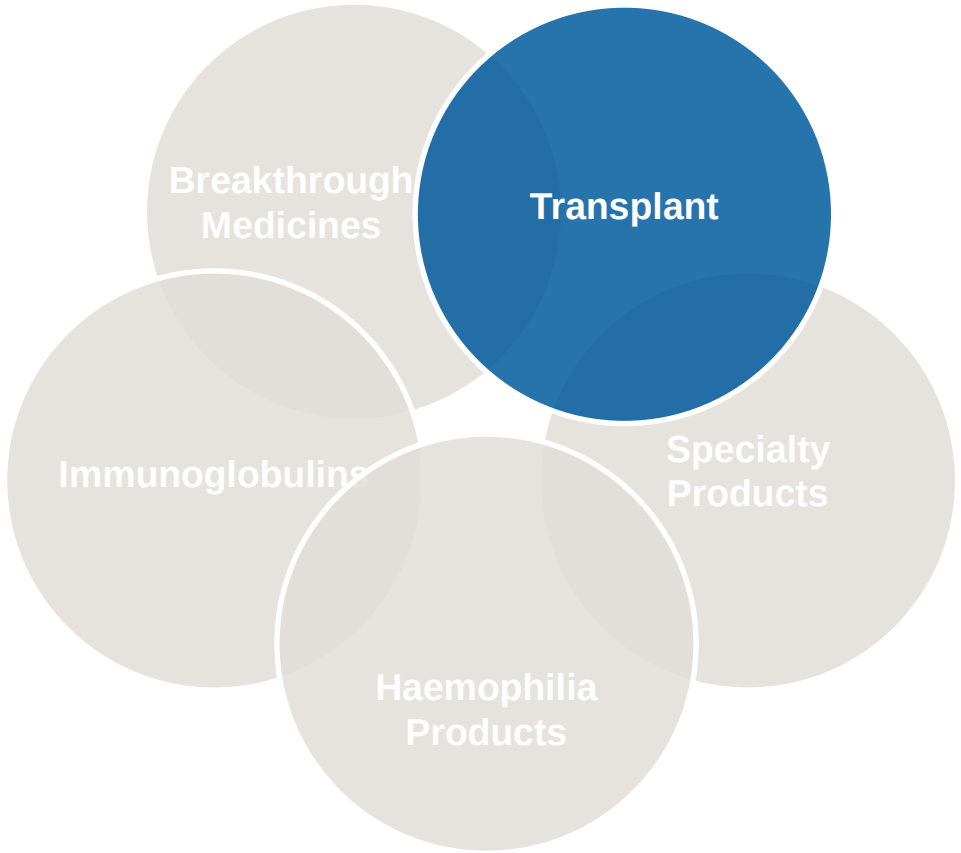
VANGUARD

Prove CSL312 Efficacy and Safety to Guard Against HAE Attacks



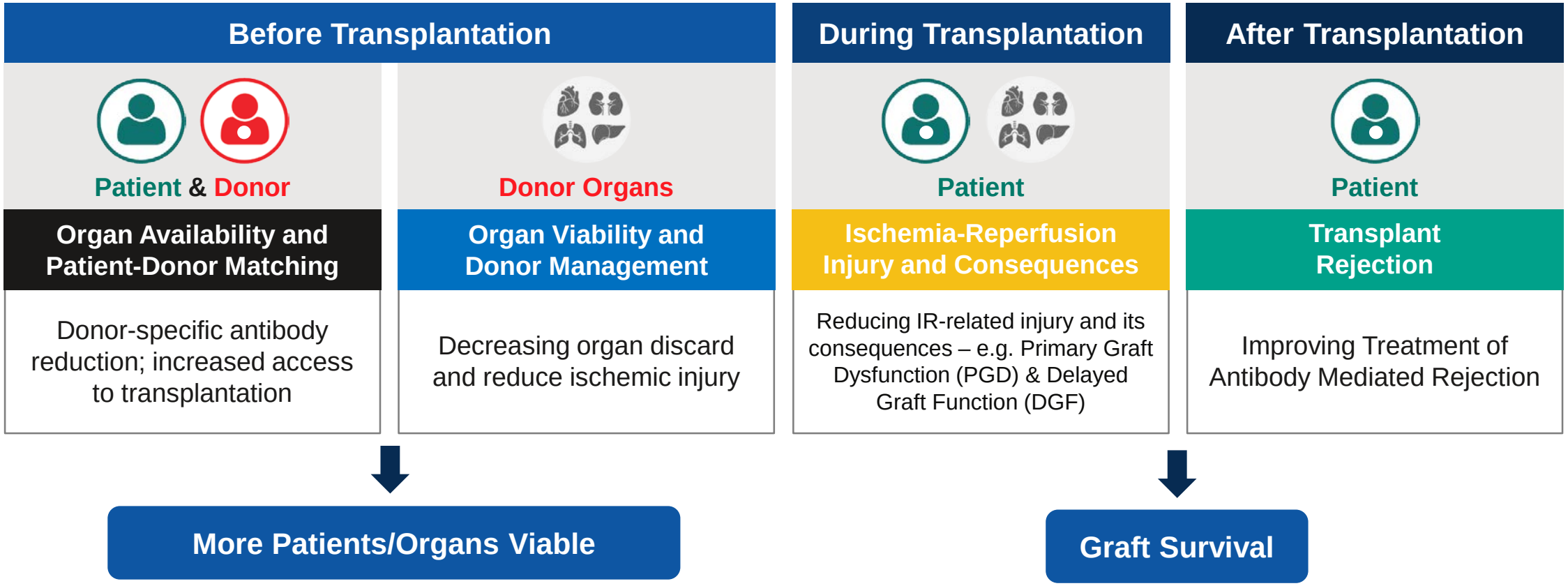
- Phase II study initiated in October

Transplant



- **Developing CSL and other novel therapies with potential to improve transplant outcomes:**
  - Significant unmet need
- **Key Focus:**
  - C1 inhibitor (C1-INH)
  - Alpha1 anti-trypsin (AAT)
  - Anti-IL-6 / clazakizumab*

Solid Organ Transplant (SOT): Unmet Medical Need



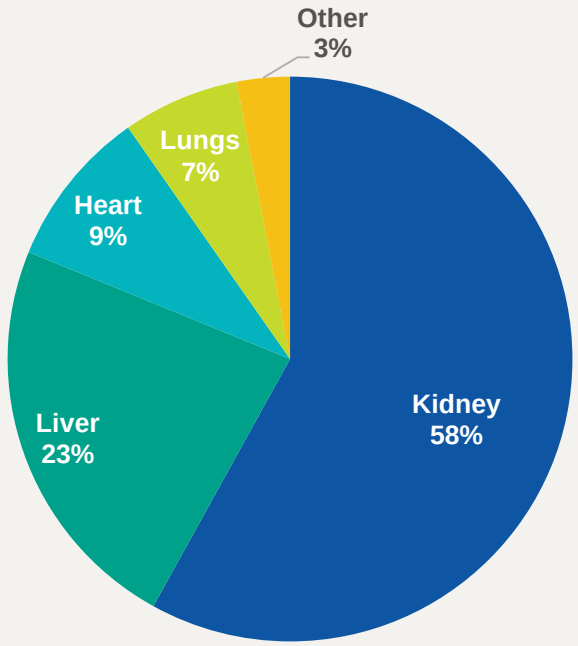
Improving Graft Survival in Kidney Transplantation

Ischemia-Reperfusion Injury and Consequences

Delayed Graft Function (DGF)

- Delayed graft function (DGF - any use of HD within 7 days of KTx or slow graft function (SGF) occurs in 20-30% of cases
  - More common with deceased donors
- Patients who develop DGF have:
  - ~40% increased risk of graft loss and acute rejection
  - Higher health care costs

Transplants by Organ Type (US - 2015)

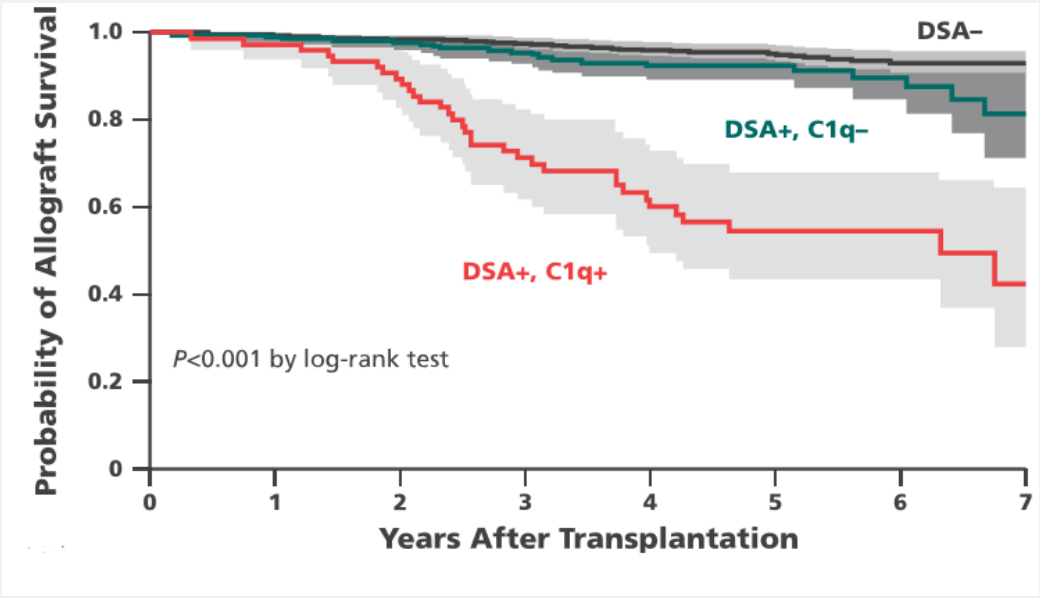


Transplant Rejection

Antibody Mediated Rejection

- AMR occurs in up to 5-10% of transplants acutely and up to 30% chronically
- AMR is marked by declining renal function and is associated with lower graft survival
- Patients with donor-specific antibodies are denied transplant due to the risk for AMR

Donor-specific Antibodies (DSAs) underpin Antibody Mediated Rejection in Kidney Transplantation



Complement-binding DSAs

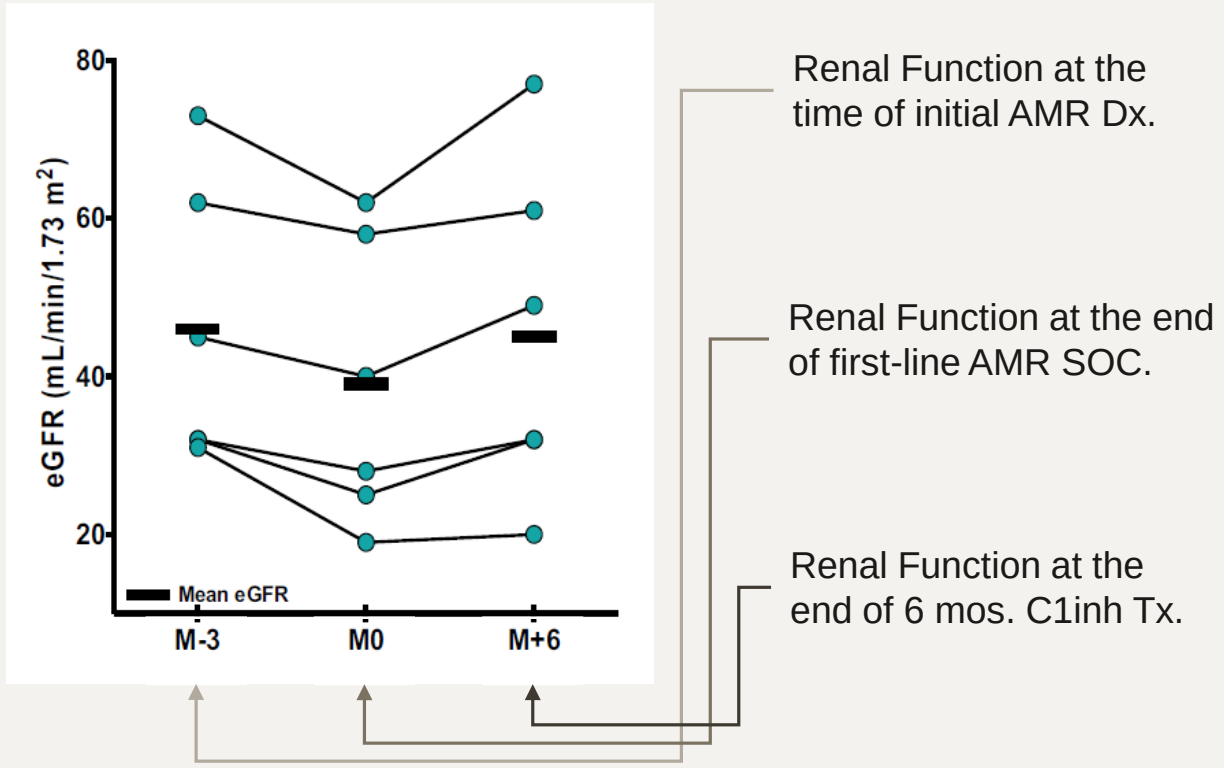
- Associated with more severe inflammation and graft injury
- C1-INH offers therapeutic option

Non-complement-binding DSAs

- Antibody-mediated cellular toxicity
- Direct endothelial activation & proliferation
- Anti IL-6 offers therapeutic option

Loupy A, Lefaucheur C, et al. *N Engl J Med*. 2013;369(13):1215-1226

Long Term C1 INH Administration Stabilises Graft Function in AMR Patients Unresponsive to Standard of Care

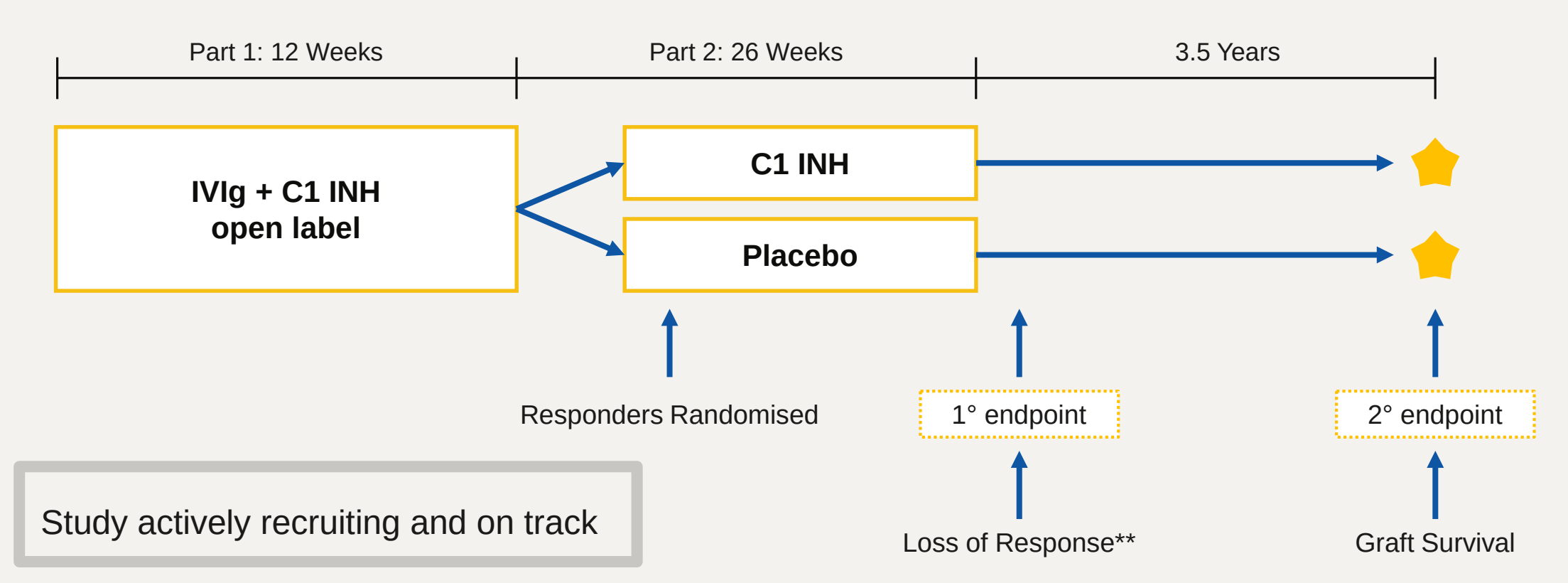


In a pilot study 6 patients with AMR, unresponsive to standard of care, were treated with C1 INH and had improved renal function (estimated Glomerular Filtration Rate, eGFR) at 6 months

Viglietti et al., Am J of Transplantation 2016

CSL842 Phase III
Randomised, Placebo-controlled Withdrawal

ARMOR
C1-esterase Inhibitor As Adjunctive Treatment For Refractory Antibody-Mediated Rejection



**occurrence of any of the following
Decline in renal function (eGFR)
Allograft failure
Subject death

Vitaeris and CSL Strategic Collaboration in AMR

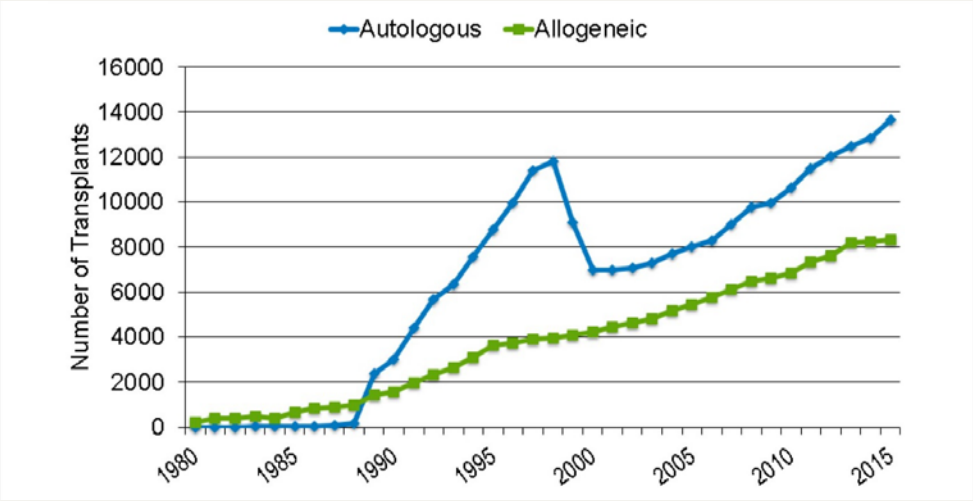
- Clazakizumab (anti-IL6) in clinical development
- Successful FDA Type C meeting
- Anticipated dosing in chronic AMR patients in 2019
- IL-6 may play a role in
  - DSA production and DSA mediated allograft injury
  - Cell-mediated rejection
  - Chronic allograft vasculopathy
- Pilot study demonstrated blocking IL-6 stabilises renal function and prolongs graft survival*

Vitaeris

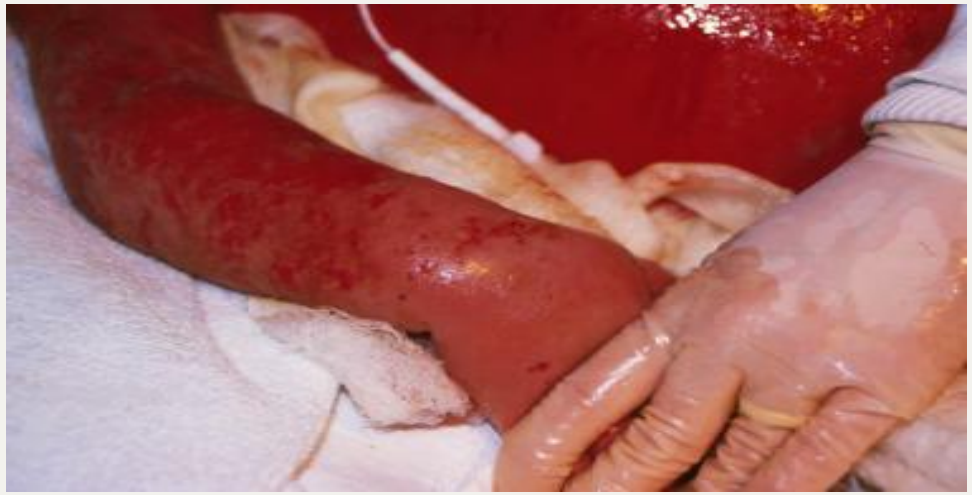
*Choi et al Am J Transplantation 2017

Beyond Solid Organ Transplant: Hematopoietic Stem Cell Transplant (HSCT) and Graft versus Host Disease

Annual HSCTs in the US



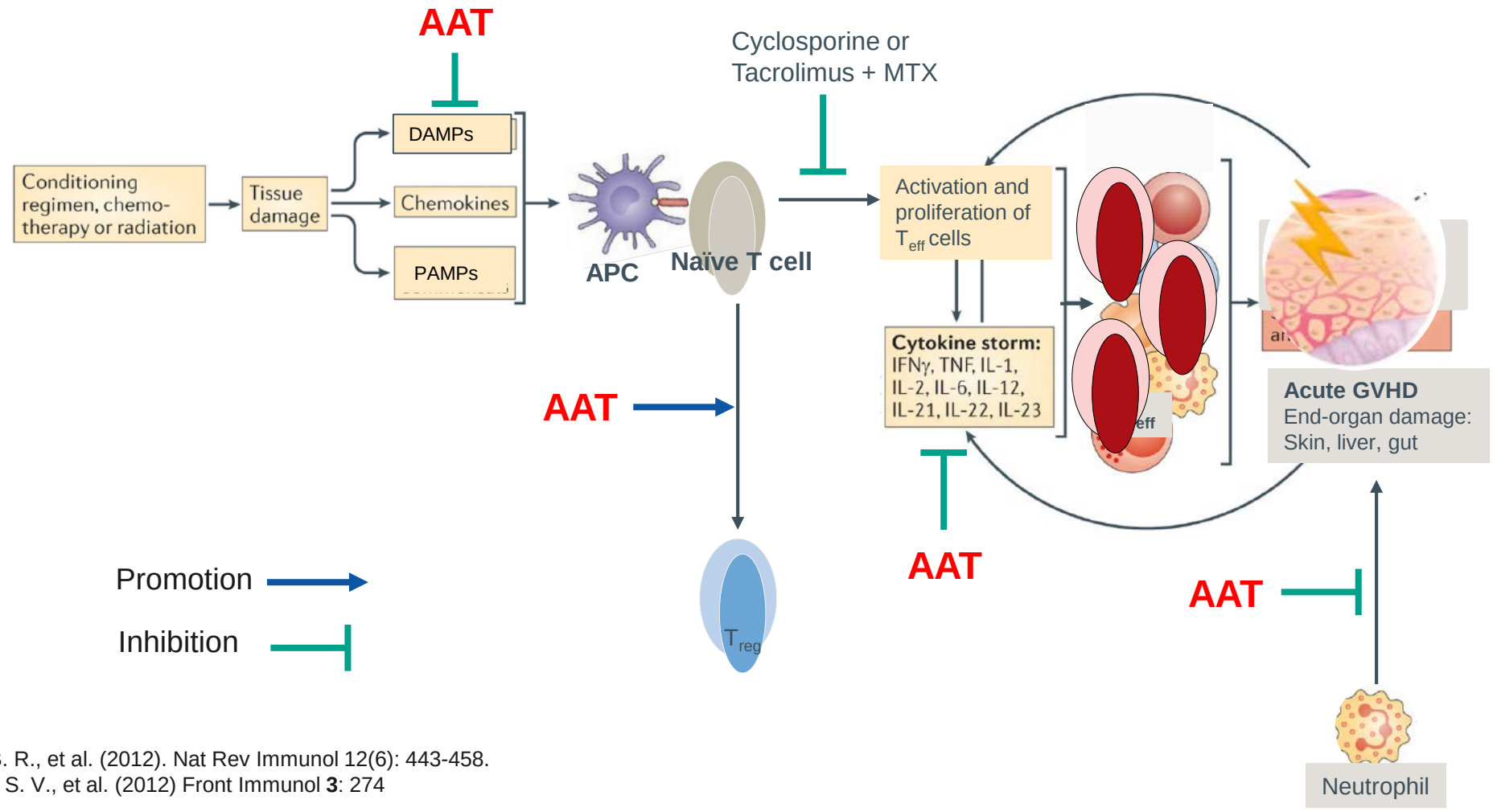
~50-60% of Allogeneic HSCT develop acute Graft versus Host Disease (GvHD)



GvHD is a common cause of morbidity and mortality in HSCT

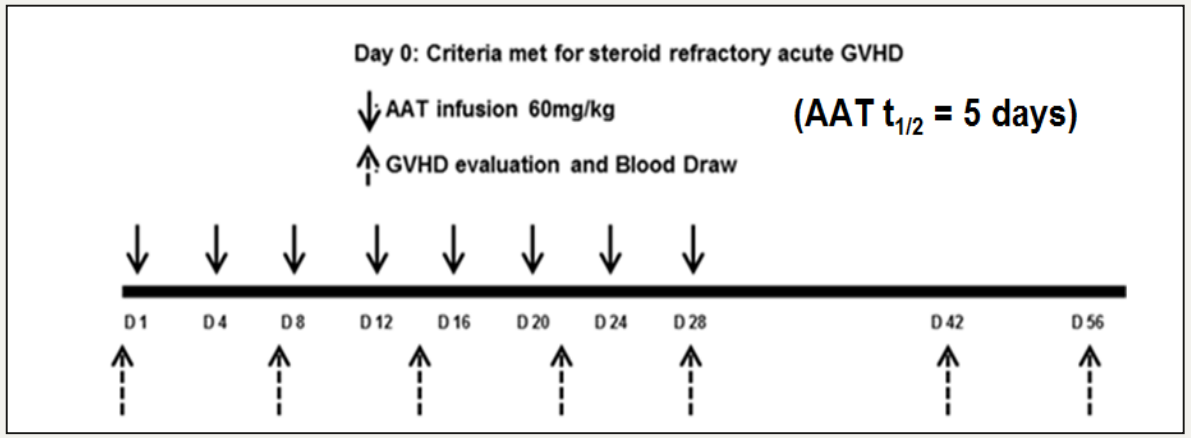
- Survival is 30% for Grade III and 10% for Grade IV
- Therapies are often ineffective or cause severe immunosuppression

Potential Immunomodulation of Alpha-1 Antitrypsin (AAT) in Acute GVHD



Blazar, B. R., et al. (2012). Nat Rev Immunol 12(6): 443-458.
Schmidt, S. V., et al. (2012) Front Immunol **3**: 274

Treatment of Steroid-Refractory GvHD with AAT



Mangenau et al Blood 2018

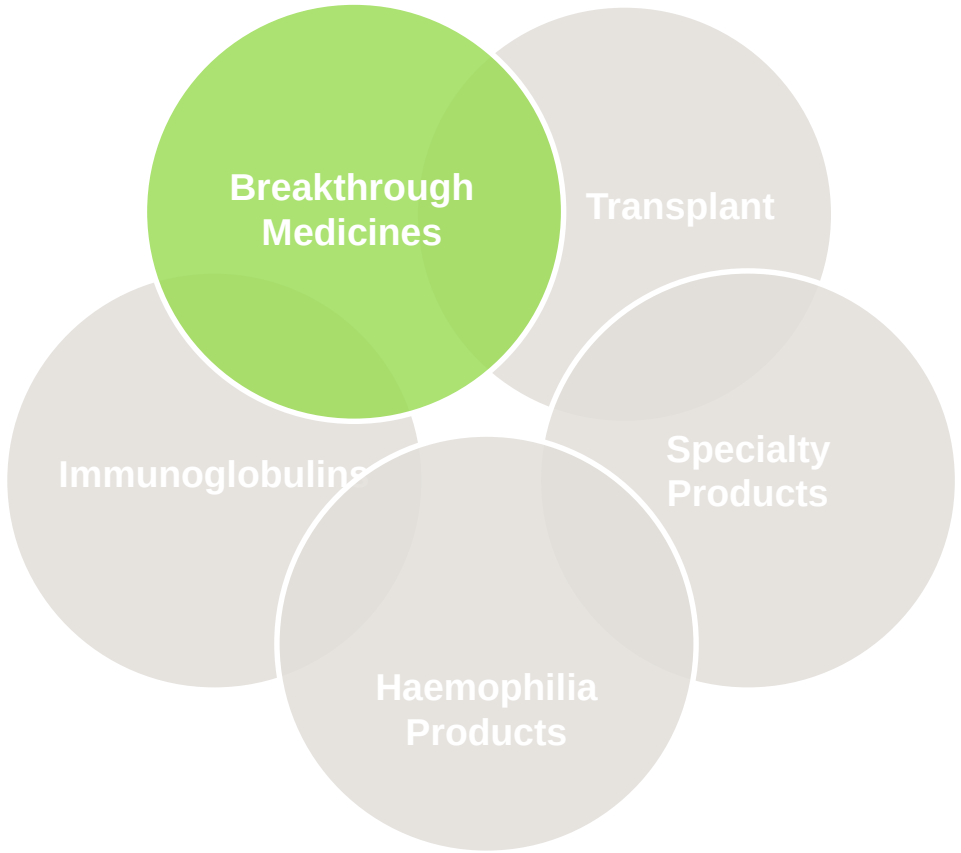
Alpha-1 Antitrypsin (AAT)

- 40 Patients with Steroid refractory aGVHD
- Open label AAT - 60mg/kg twice weekly x 4 weeks
- Day 28 overall response rate (ORR) - 65%
  - 35% Complete Response
- Sustained responses - 73% at Day 60
- Well tolerated with low rates of infection

CSL964 AAT GvHD Prevention

- Planned evaluations in prophylaxis of GvHD with AAT
- Study start up activities commenced

Breakthrough Medicines

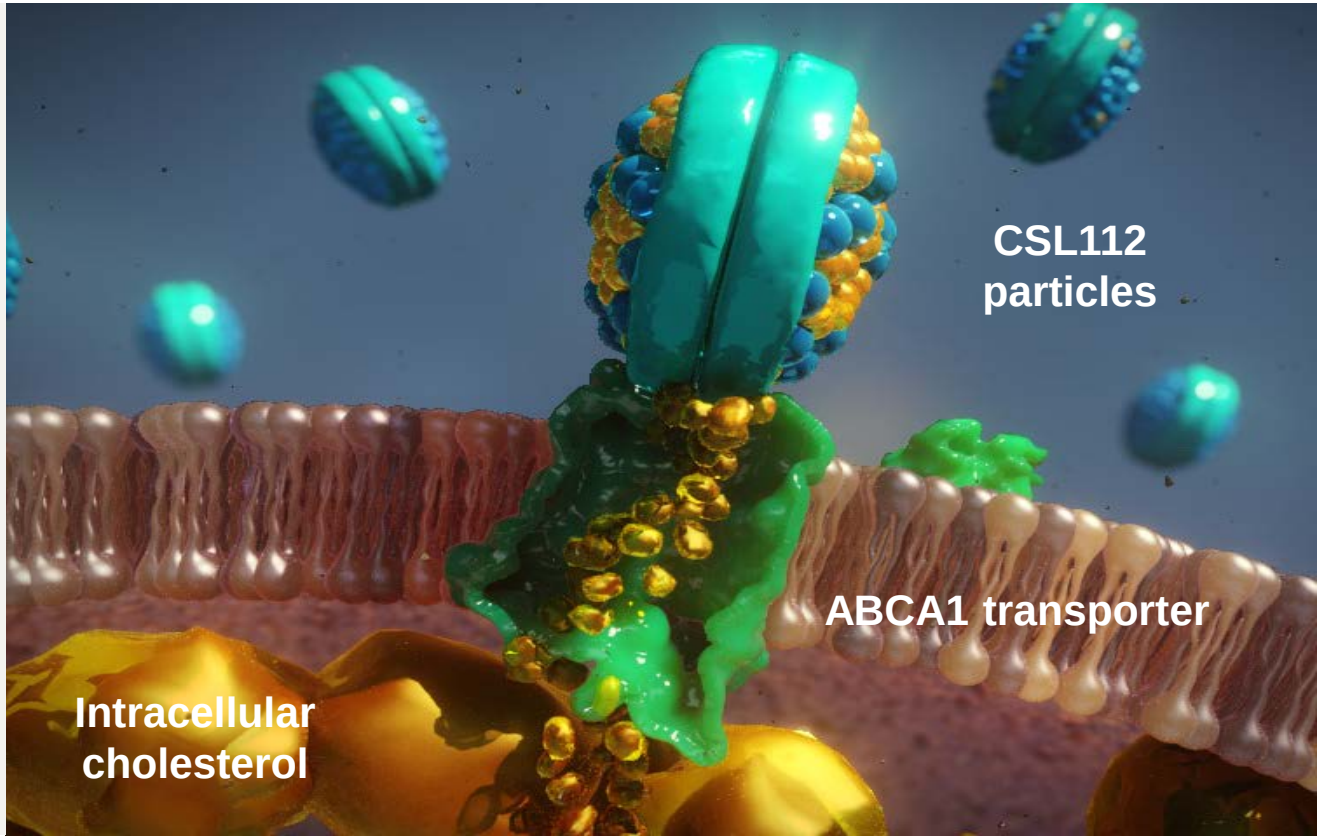


- **Leveraging clinical and technical insight in developing novel protein-based therapies:**
  - Significant unmet need
  - Multiple indications
- **Key Focus:**
  - CSL112 (ApoA-I)
  - CSL312 (anti-FXIIa mAb)
  - CSL324 (anti-G-CSFR mAb)
  - CSL346 (anti-VEGF-B mAb)
  - CSL311 (anti-BC mAb)

CSL112 Hypothesis

CSL112 will

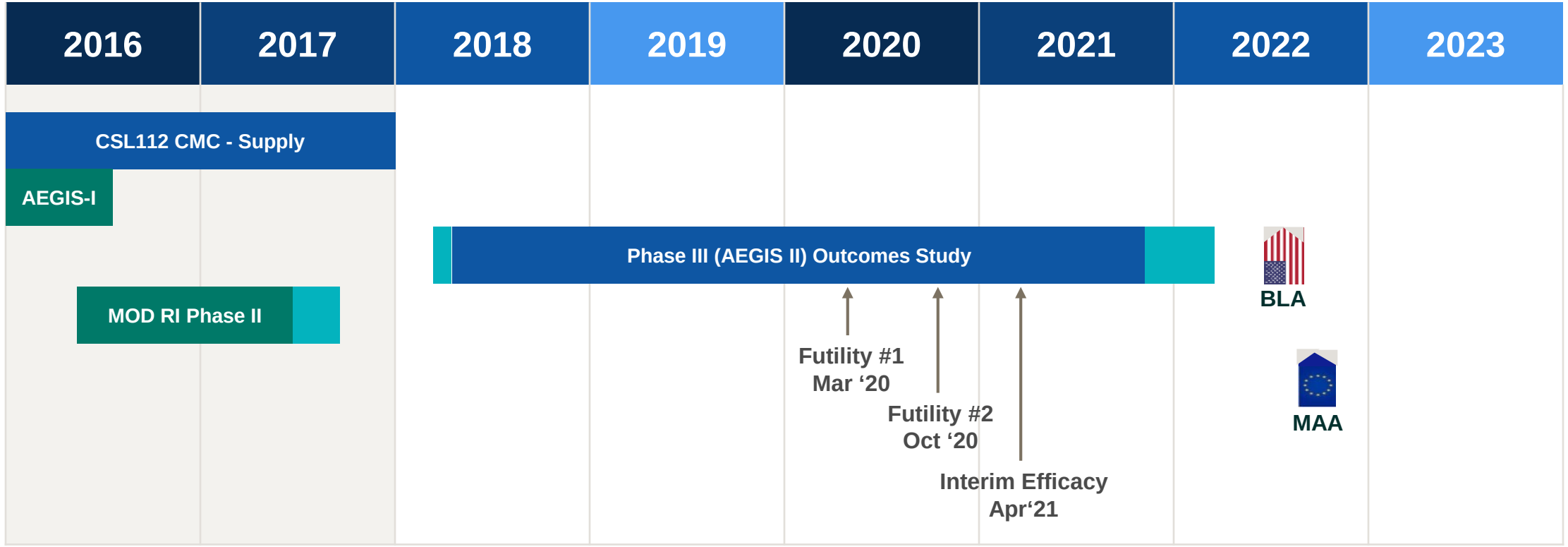
- be safe and well tolerated
- enhance cholesterol efflux capacity (CEC)
- acutely stabilise atherosclerotic plaques and prevent subsequent major adverse cardiovascular events (MACE) in the early, highest risk period (unique treatment period)



CSL112 Phase III Study Design

- Enriched Study Population: Multi-vessel coronary artery disease and at least one of the following:
  - Age >65
  - History of MI
  - Diabetes mellitus
  - Peripheral artery disease (PAD)
- Registry data confirms enriched AEGIS-II population is associated with high early recurrent event rate and supports our trial assumptions

CSL112 Program Timeline

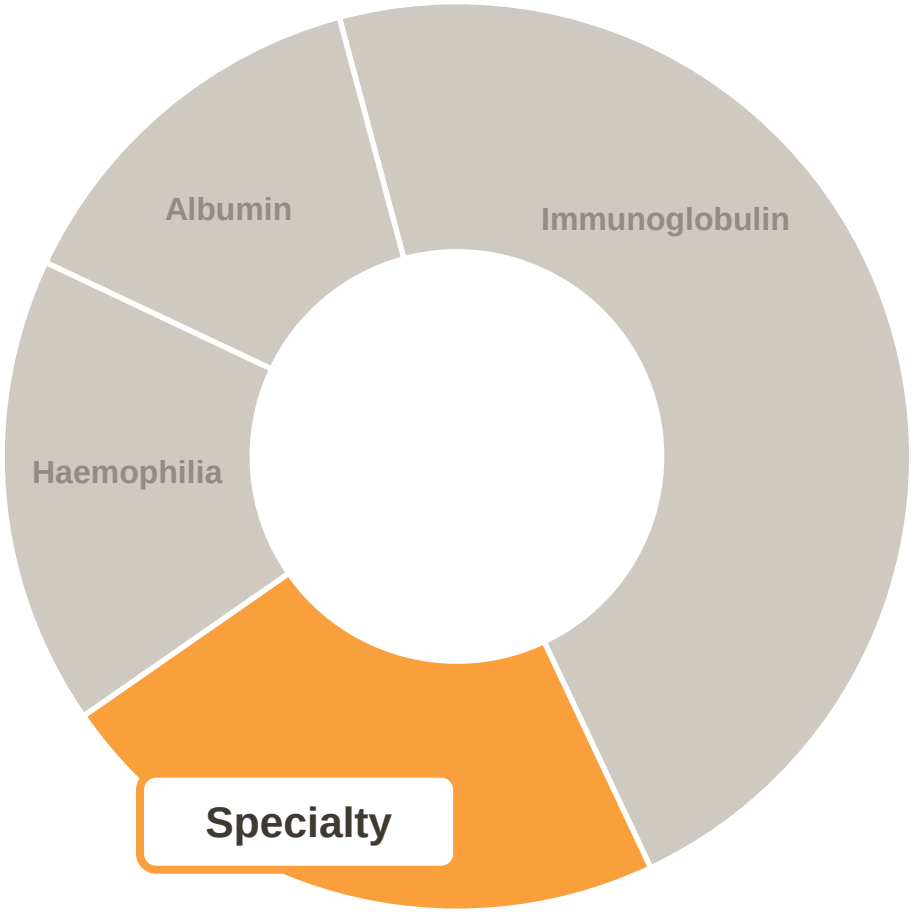


- Actively recruiting and on track
- To date, patient activity at sites supports the Registry data

Commercial Overview
Specialty, Transplant, CSL112

Mr Bill Campbell
Executive Vice President & Chief Commercial Officer

CSL Portfolio: Specialty



FY18 1,490M +24%

Kcentra®
Prothrombin Complex Concentrate (Human)

HAEGARDA®
C1 Esterase Inhibitor Subcutaneous (Human)

BERINERT®
C1 Esterase Inhibitor, Human
On-Demand Treatment

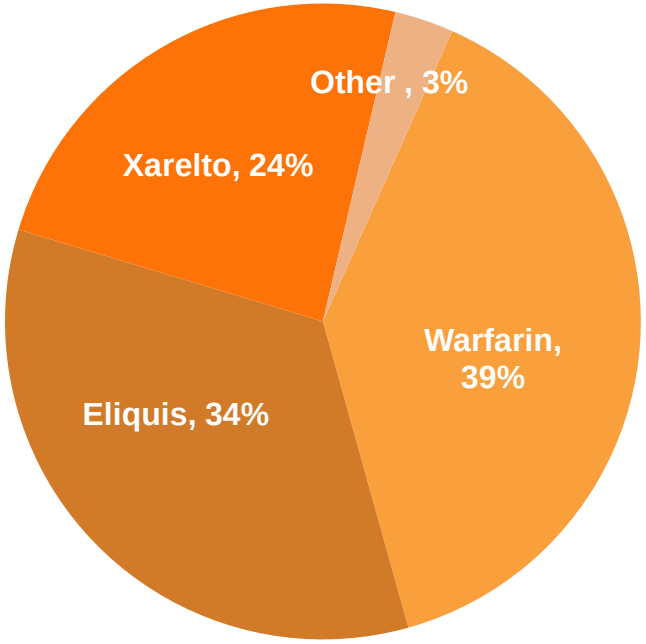
RiaSTAP®
Fibrinogen Concentrate (Human)
Strengthens clots. Supports hemostasis.

Zemaira®
alpha$_1$-proteinase inhibitor (Human)

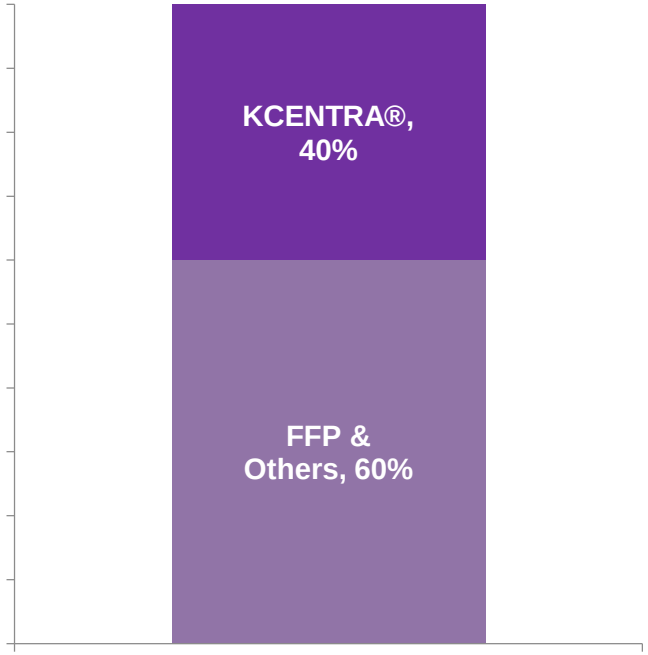
Respreeza®
alpha$_1$-proteinase inhibitor (Human)

Continued Growth Opportunity for Kcentra®

Anticoagulation Market US[1]



Warfarin Market US[1]



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

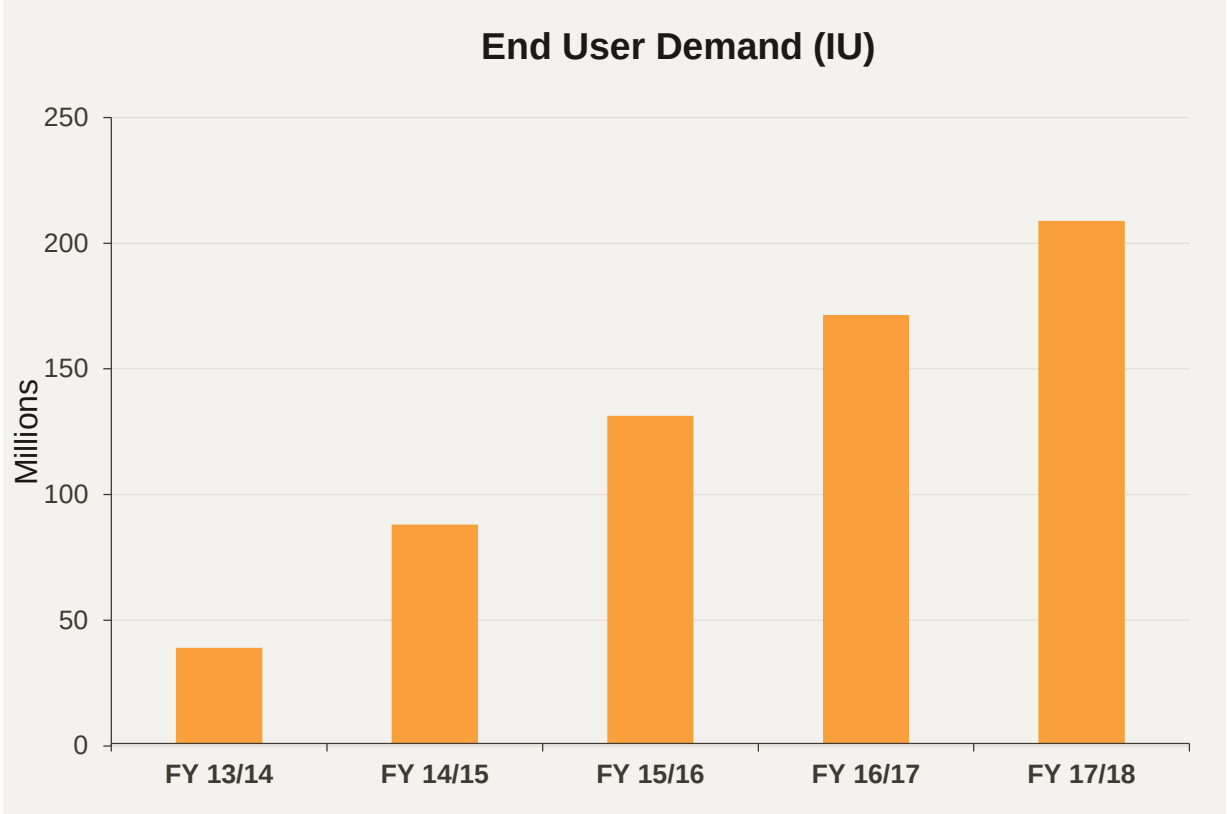
Source: 1. IQVIA NPA Market Dynamics Anti-Coagulant Patients Q3 2018

*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

Kcentra® Growth Since Launch

Kcentra®
Prothrombin Complex Concentrate (Human)

Urgent Warfarin Reversal



Specialty Products – HAEGARDA®

- Transformational HAE therapy
- New patients weekly
- Strong patient, physician and prescriber engagement
- Natural C1 replacement

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

HAEGARDA®

Established efficacy

- 95% reduction in HAE attacks
- Rescue medication reduced by >99%
- HAEGARDA® studied in patients with 3.8 attacks per month

C-INH for C1-INH deficiency

- HAEGARDA® replaces missing or dysfunctional C1-INH, regulating the normal production of bradykinin
- C1-INH has been used in HAE for over 35 years

WAO Guidelines

- 2017 WAO Treatment Guidelines recommend the use of C1-INH for first line, long-term prophylaxis therapy

Why HAEGARDA®

Key KOL Quote

"With efficacy it is as good as it gets with HAEGARDA®. However if Lanadelumab can prove the same level of efficacy, HAEGARDA® can still clearly differentiate by its MOA, replacing the missing protein of CI-INH"

— Leading KOL

Additional Patient Testimonials

"I never realized how much HAE limited me until it stopped being a big part of my life."

— Shari, HAEGARDA® patient

"When I started HAEGARDA®, I went longer without an attack than I had in over 18 years."

— Stephanie, HAEGARDA® patient

"For 40 years I lived with so many limitations, until HAEGARDA®. I'm still getting used to a new way of life."

— Melissa, HAEGARDA® patient

Additional HCP Quotes

"From our collective experience, we gave efficacy 5. I have some Cinryze patients that still have breakthrough attacks but haven't had any with HAEGARDA®."

— HAE HCP

"She started HAEGARDA®…and literally her life changed. She said she owed it all to HAEGARDA®. I cried with this woman. And she didn't have any attacks. She started HAEGARDA® and was attack free."

— HAE HCP, MD

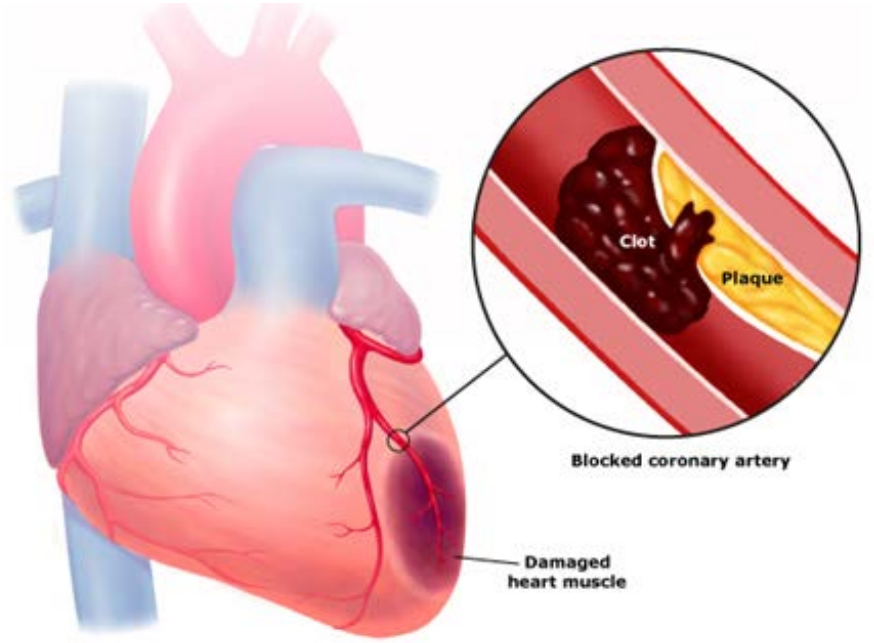
"Maybe the most important part of the guidelines is the emphasize of C1 inhibitors as first line. No matter how you feel about guidelines, its still number one."

— HAE HCP, MD

"C1-INH has been around for 35 years. It is a trusted product."

— HAE HCP, MD

Cardiovascular Disease (CVD)
High Unmet Medical Need



- CVD remains leading cause of death globally
- In the US & Europe, 2 million MI's occur each year
- Survivors remain at high risk for early recurrent CV events
- Among high-risk populations:
  - 14% recurrence in year one
  - of these ~70% within first 90 days
- Reducing the risk of early recurrent events represents a significant unmet need

CSL112 – Our Vision and Strategy

Vision

Establish CSL112 as a leading hospital initiated solution to prevent early recurrent CV events in post-AMI pathway of care

Strategy

- Define the unmet need within the 90d period
- Establish the role of Apo A-I and Cholesterol Efflux
- Position CSL112 in the post AMI pathway of care
- Define the clinical and economic value of CSL112

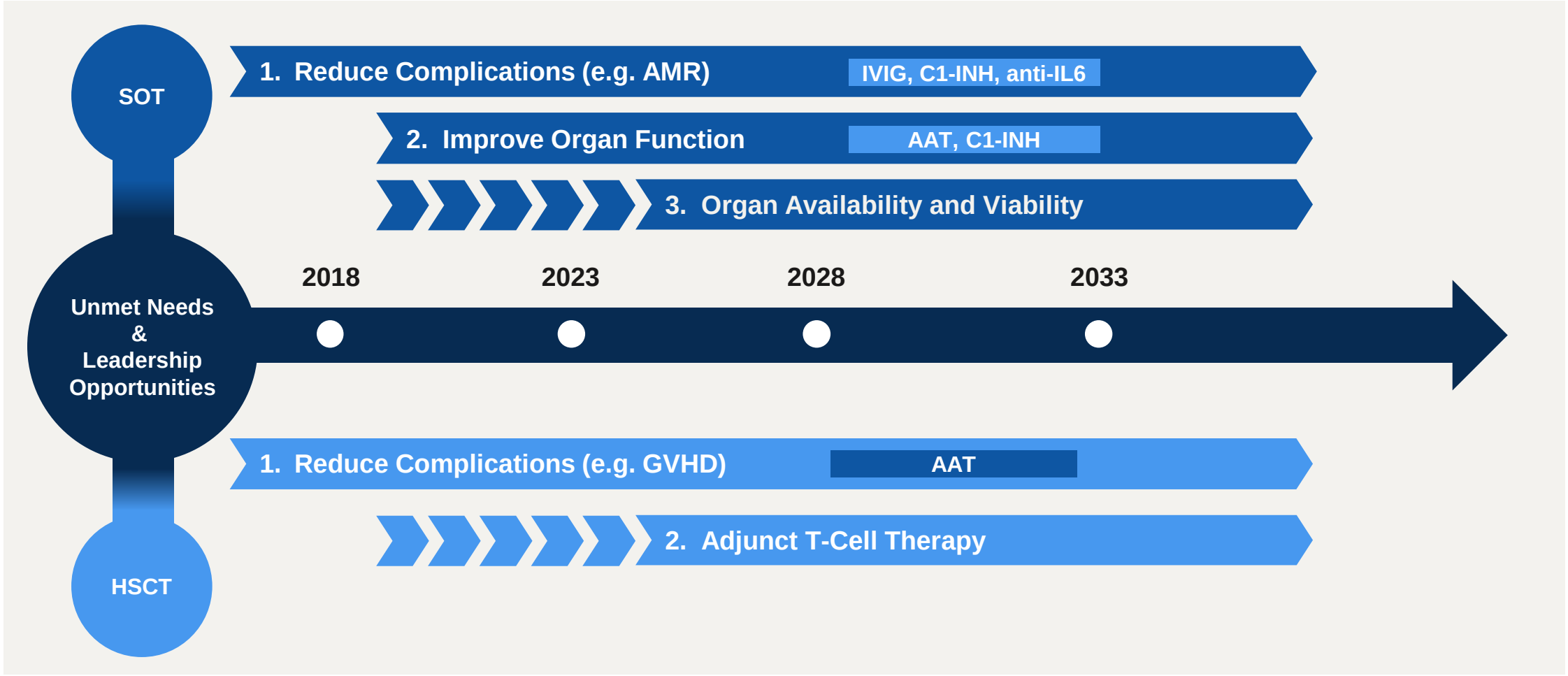
CSL112 – Our Journey

- Expanding patient focus to heart disease, the leading cause of death W/W
- Refining high-risk AMI target population and validating with real world data
- Developing insights relative to the post-MI pathway of care
- Engaging with hospitals and payors to define value proposition and pricing
- Building insight and partnerships through Advisory Boards and Scientific exchange
- Developing a global Disease Awareness educational program
- Partnering with hospitals, payers and patients to prepare the market

Transplant Opportunity

- Two fundamental types of transplant:
  - Solid organ transplant (SOT)
  - Hematopoietic stem cell transplant (HSCT)
- Transplant is amongst the most transformative and curative therapies in all of medicine
- Utility is currently restricted due to
  - Treatment-related toxicities
  - Demand outstrips availability of healthy compatible donors
- Reducing complications could significantly increase utilisation

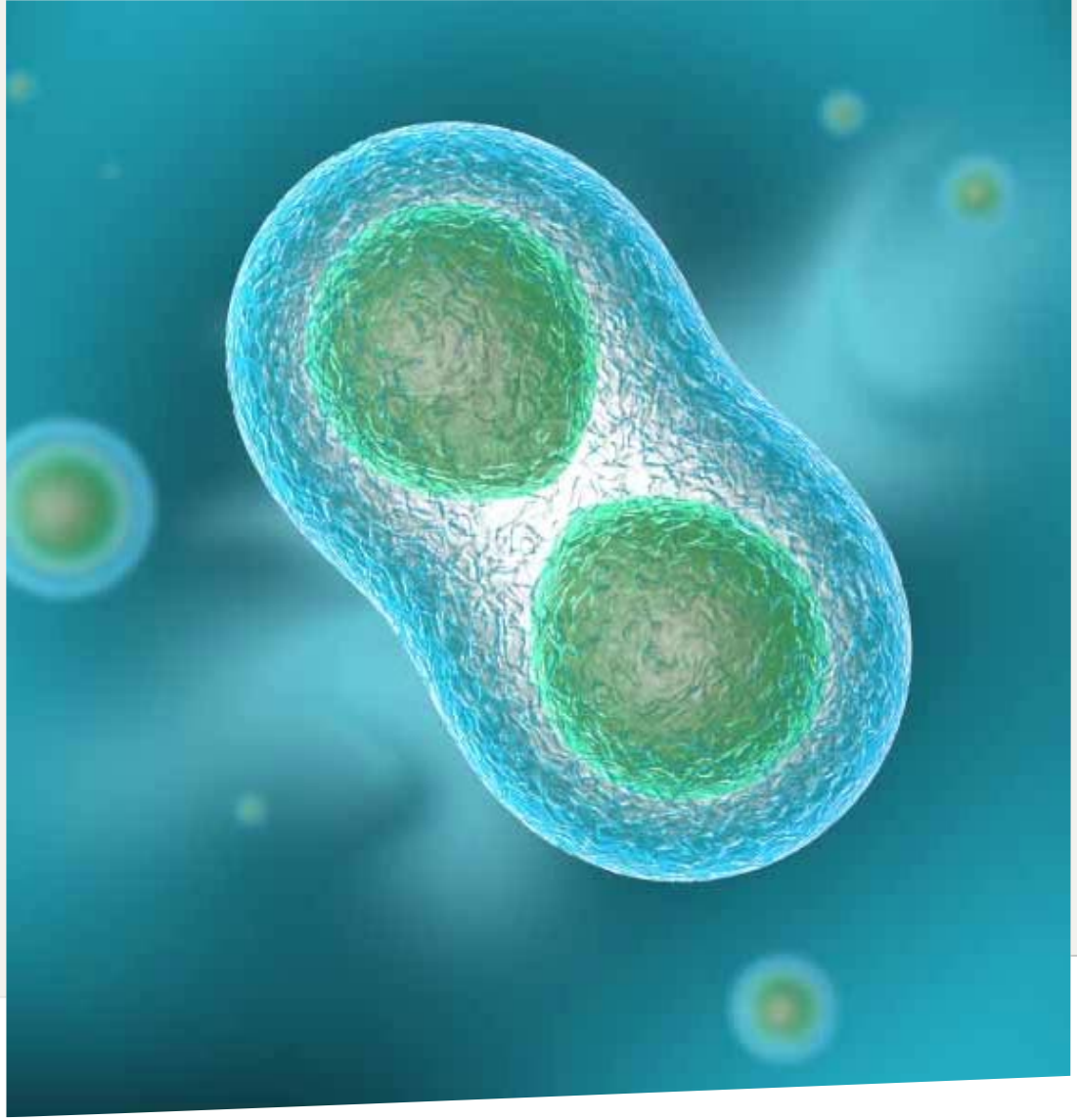
Transplant Strategy



Transplant Fit for CSL

- Significant unmet patient needs
- Multiple opportunities with current assets with proof-of-concept evidence
- Limited competition and concentrated call points
- Building on our strong foundation of plasma assets
- Potential to expand use of Hematopoietic Stem Cell Transplant

Summary



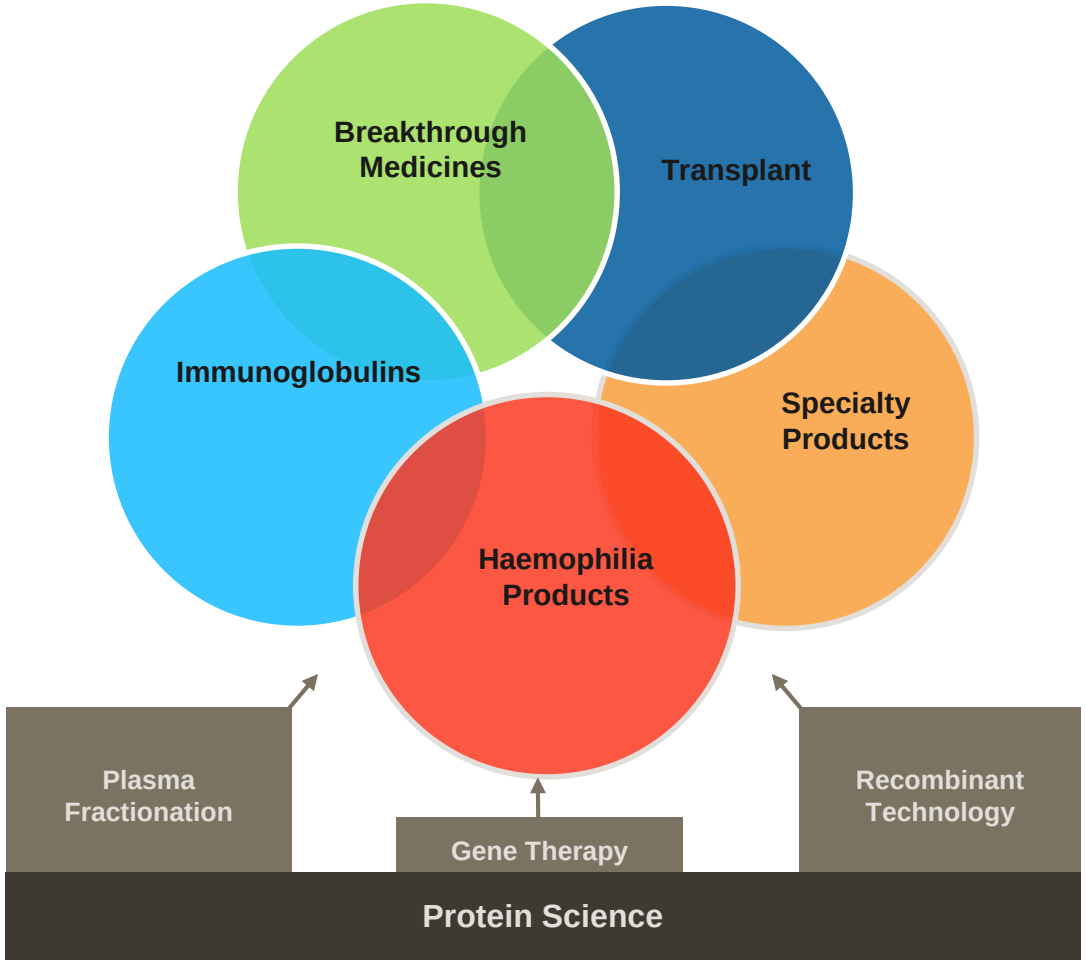
R&D Portfolio - December 2018

	RESEARCH	PRE-CLINICAL	PHASE I	PHASE II	PHASE III	REGISTRATION	COMMERCIAL / PHASE IV
New Product Development	Emerging Technologies	CSL787 Nebulised Ig	CSL730 rFc Multimer	CSL312 Anti-FXIIa in HAE	Clazakizumab* Transplant		IDELVION®
	Novel Strategies	CSL311 Anti-BC	CSL324 Anti-G-CSF	Mavri GM-CSFR-AZ*	pdFVIII Ruide		AFSTYLA®
	Discovery Projects	CSL200 (CAL-H) SCD	CSL346 Anti-VEGF-B		CSL112 Apo-AI		FLUAD® aTIV 65+ yr US, UK, AUS
	Haptoglobin	CSL889 Hemopexin in SCD	CSL334 IL-13R* ASLAN		FLUAD QIV 65+ yr		FLUCELAX® QIV 4+ yr US
	Clinical Applications	P. gingivalis/POD* OH-CRC			Pre-Pandemic Vaccine (aH5N1c)		CSL830 C1-INH Subcut EU
Life Cycle Management / Market Development	Clinical Applications	C1-INH New Indications			PRIVIGEN® ID Japan		PRIVIGEN® CIDP US
		Fibrinogen New Formulations			HIZENTRA® IIM	AFLURIA® QIV 6m-4 yr AUS	HIZENTRA® CIDP
					CSL842 C1-INH AMR	PRIVIGEN® CIDP Japan	KCENTRA® Japan
					CSL964 AAT GvHD Prevention	HIZENTRA® CIDP Japan	HAEGARDA® US
							AFLURIA® QIV 6m+ US

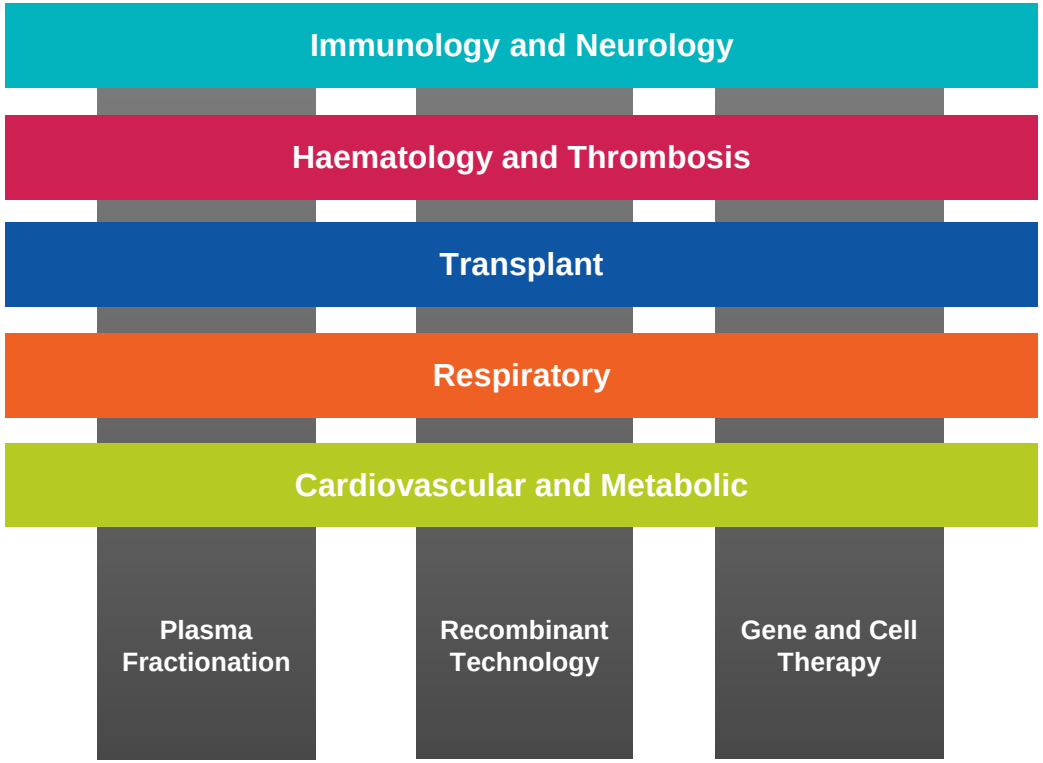
Core Capabilities: Immunoglobulins | Haemophilia | Specialty Products | Breakthrough Medicines | Transplant | Vaccines & IP

*Partnered Projects

Current CSL Behring Therapeutics Platform



Future CSL Behring Therapeutic Area Framework



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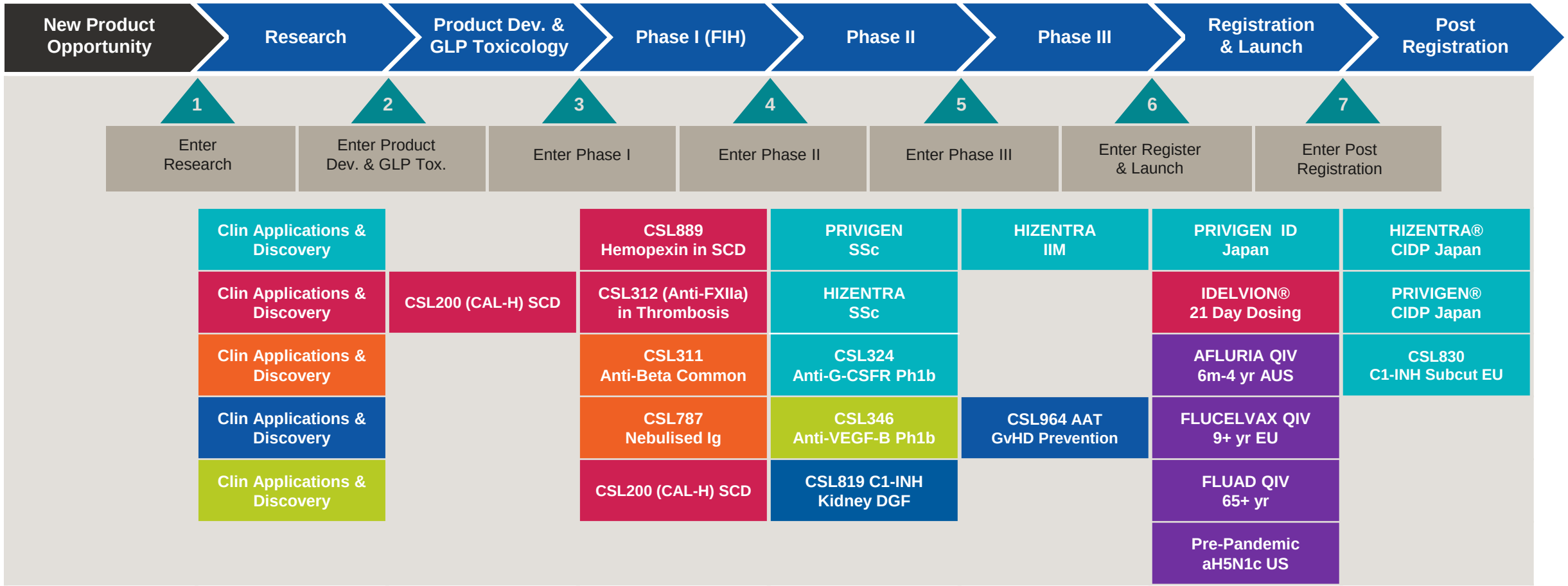
New Product Development	Discovery Projects	CSL787 Nebulised Ig	CSL730 rFc Multimer	CSL312 Anti-FXIIa in HAE	Clazakizumab* Transplant		IDELVION®
	Discovery Projects	CSL311 Anti-BC	CSL324 Anti-G-CSFR	Mavri GM-CSFR*	pdFVIII Ruide		AFSTYLA®
	Discovery Projects	CSL200 (CAL-H) SCD	CSL346 Anti-VEGF-B		CSL112 Apo-AI		FLUAD® aTIV 65+ yr
	Discovery Projects	CSL889 Hemopexin in SCD	CSL334 IL-13R* ASLAN		FLUAD QIV 65+ yr		FLUCELVAX® QIV 4+ yr US
	Discovery Projects	P. gingivalis/POD* OH-CRC			Pre-Pandemic Vaccine (aH5N1c)		CSL830 C1-INH Subcut EU
Life Cycle Management / Market Development	Clinical Applications				PRIVIGEN® PID Japan	FLUCELVAX® QIV 9+ yr EU	PRIVIGEN® CIDP US
	Clinical Applications				HIZENTRA® IIM	AFLURIA® QIV 6m-4 yr AUS	HIZENTRA® CIDP
	Clinical Applications				CSL842 C1-INH AMR	PRIVIGEN® CIDP Japan	KCENTRA® Japan
	Clinical Applications				CSL964 AAT GvHD Prevention	HIZENTRA® CIDP Japan	HAEGARDA® US
	Clinical Applications						AFLURIA® QIV 6m+ US

Therapeutic Areas: Immunology & Neurology | Haematology & Thrombosis | Respiratory | CV & Metabolic | Transplant | Vaccines & IP

*Partnered Projects

Expected Progress in Next 12 Months



Therapeutic Areas: Immunology & Neurology | Haematology & Thrombosis | Respiratory | CV & Metabolic | Transplant | Vaccines & IP

Significant Target Launch Dates

2018	2019	2020	2021-2024
HIZENTRA® CIDP US/EU	HIZENTRA® CIDP Japan	PRIVIGEN® PID Japan	CSL312 (Anti-FXIIa) HAE
PRIVIGEN® CIDP US	PRIVIGEN® CIDP Japan	IDELVION® 21 Day Dosing	Hizentra® IIM
CSL830 C1-INH Subcut EU			Improved Fibrinogen
Kcentra Japan			CSL112 ApoA-I
			Clazakizumab* Transplant
			IVIg Kidney AMR
AFLURIA® QIV 6m+ US			CSL842 C1-INH AMR
AFLURIA® QIV 5-17yr AUS	AFLURIA® QIV 6m to 5yr AUS		FLUCELVAX® QIV 4+ yr AUS
FLUAD® aTIV 65+ yr UK, AUS	FLUCELVAX® QIV 9+ yr EU	FLUAD® aQIV 65+ yr US	FLUAD® aQIV 65+ yr EU

Therapeutic Areas: Immunology & Neurology | Haematology & Thrombosis | Respiratory | CV & Metabolic | Transplant | Vaccines & IP

2018 Highlights

Immunology & Neurology	• Completion of CSL324 (anti-G-CSF) Phase I study • Initiation of CSL312 (anti-FXIIa) HAE Phase II study • Initiation of CSL730 (rec FC multimer) Phase I study • PRIVIGEN® CIDP and HIZENTRA® CIDP approved in the US
Haematology & Thrombosis	• Ongoing IDELVION® dosage extension study supports 21 day regimen • Initiation of CSL200 (CAL-H) in SCD GTP Toxicology studies
Transplant	• CSL842 C1-INH AMR Phase III actively recruiting and on track • Successful FDA Type C meeting regarding Clazakizumab (anti-IL6) study
Cardiovascular & Metabolic	• Initiation of CSL112 (Apo A-1) Phase III study (AEGIS-II) • Completion of CSL346 (Anti-VEGF-B) Phase 1 study
Respiratory	• Initiation of CSL787 Nebulised Ig GLP Toxicology studies
Licensing & Vaccines	• AFLURIA® QIV registered in US for 6M-4years • FLUAD® aTIV registered in UK and Australia • FLUCELVAX® QIV positive effectiveness data compared with egg-based vaccines in US 2017-18 season • Initiation of CSL334 IL-13R* Phase I study by ASLAN

Q&A

Next Generation Cell-based Influenza Vaccine Shows Significantly Greater Effectiveness Compared to Standard Egg-based Options in the 2017-18 US Influenza Season

CSL spotlights developments in cell-based vaccine technology at Australian Research and Development briefing

CSL Limited (ASX:CSL; USOTC:CSLLY) subsidiary Seqirus, today presented new real-world data showing that its cell-based quadrivalent influenza vaccine (QIVc) was 36.2 percent more effective than standard* egg-based quadrivalent vaccines (QIVe) in preventing influenza-like illnesses during the 2017/18 influenza season in the United States. This is likely due to the predominance of the H3N2 virus and its propensity for mutation when it is adapted for influenza vaccine production in chicken eggs. These observational data were presented today at the Canadian Immunisation Conference and also shared at CSL's annual Research and Development briefing in Sydney.

The finding is based on an analysis of over one million (1,353,862) medical records for patients aged four years and above who received either a four-strain egg-based influenza vaccine or a four-strain cell-based influenza vaccine in a primary care setting during the 2017/18 influenza season in the United States. Analysing real-world data from electronic medical records is a new and important approach to understanding the effectiveness of influenza vaccines and their impact on health outcomes. These types of analyses are different from traditional randomised clinical trials which study clinical efficacy.

According to the US Centers for Disease Control[1] the 2017/18 influenza season in the US was the worst in recent years with the H3N2 virus being associated with the majority of influenza infections. Research has shown that H3N2 viruses often undergo changes when they are grown in eggs[2]. When produced completely outside of the egg-based process, cell-based influenza vaccines avoid egg-adapted changes, which means they may offer a closer match and potentially improved protection compared to standard egg-based options in some seasons.[3, 4, 5, 6, 7]

QIVc was first licensed in the US in 2016 based on a study showing non-inferiority immune response to a three-strain cell-based influenza vaccine. Both cell-based products used in this study were produced using egg-based starting viruses.[8] The 2017/18 season was the first in which QIVc was manufactured using a cell-derived H3N2 starting virus, making this component of the vaccine exclusively cell-based. Seqirus is incorporating other cell-derived starting viruses into the production process for QIVc and has plans to conduct real-world studies over future seasons to help determine the full potential of the cell-based technology in preventing influenza.

**standard QIVe is non-adjuvanted with standard dose of antigen.*

CSL Limited ABN 99 051 588 348

"The real-world data, along with other emerging evidence, indicates that cell-based influenza vaccines may result in better influenza-related outcomes compared to standard egg-based vaccine options in some seasons, particularly those seasons characterised by egg-adapted changes," said Gregg Sylvester, VP Medical Affairs, Seqirus. "We are greatly encouraged by the data and with increasing availability of our vaccine look forward to working with partners to generate additional data in future seasons."

Developing new and better influenza vaccine technologies is a strategic priority for Seqirus, including further advancing current cell-based technology as well as adjuvants – or 'immune boosters' – to enhance the immune response of those particularly vulnerable to influenza such as children and the elderly.

While QIVc is currently only licensed in the US, the European regulatory agency (EMA) recently issued a positive recommendation for the vaccine, indicating formal approval in Europe by the end of 2018. Expansion into other markets is planned after that, including the submission of an application to the TGA in Australia in 2019.

Seqirus' QIVc is manufactured in the company's Holly Springs facility in North Carolina. The capacity of the plant to meet anticipated future demand for the vaccine has been greatly enhanced with approval by the FDA earlier in 2018 for important process improvements to the manufacturing process, and by the recently announced US$140 million plant expansion.

"The burden of influenza is a global healthcare concern, and Seqirus is committed to developing new and potentially better vaccines that help reduce the hundreds of thousands of deaths and severe illness caused every year by influenza. Since we acquired the cell-based technology just three years ago, we have increased vaccine production five-fold and introduced cell-derived starting viruses (rather than viruses that have been optimised to grow in eggs). These innovations together with other major investments into the Holly Springs facility will assist us to meet further global demand for the vaccine," said CSL's Chief Scientific Officer Professor Andrew Cuthbertson.

Influenza is a common, highly contagious infectious disease that can cause severe illness and life-threatening complications in many people. In Australia, the impacts of the 2017 season included high levels of absenteeism and a substantial burden on primary care and hospitals.[9]

"Vaccination is the best line of defence in reducing deaths and severe illness caused by influenza. Every flu season is different and it's important that we stay one step ahead of influenza viruses through the development of more effective vaccines, better matched to the strains in circulation. This real-world data on cell-based vaccines is encouraging and will bring another welcome influenza vaccine option to Australia," said Professor Terry Nolan AO, Head, Melbourne School of Population and Global Health. - *ends* -

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About the Study: Data from a large U.S. electronic medical record (EMR) provider for primary care practices were obtained between August 1, 2017 and March 31, 2018. This was a retrospective cohort study with the objective of determining the *relative vaccine effectiveness* (*rVE*) of cell-based quadrivalent, inactive influenza vaccine (QIVc) compared to that of egg-based, quadrivalent, inactive influenza vaccine (QIVe). The endpoint assessed was influenza-like illness (ILI), as defined by CDC, which is a widely used set of symptoms that serves as an indicator for people who have influenza infection and reflects exposure and outcome experiences during routine clinical practice.

The analysis included data from people 4 years and older in primary care setting, 92,192 who received QIVc and 1,255,983 who received a QIVe. Exposures were derived from recorded immunizations in individual patients EMRs.

The rVE estimated from the study's primary analysis indicated that QIVc was more effective than standard egg-based QIVs in preventing ILI (rVE of 36.2%, 95% CI (26.1,44.9; P<0.001)). Potential study limitations were minimised using stringent quality control of the data set, cross-referencing the exposure classification step, evaluating two different outcomes code sets for ILI, adjusting for key variables and conducting multiple sensitivity analyses.[10] There are currently no head to head clinical trials comparing the efficacy QIVc to QIVe.

Quadrivalent cell-culture influenza vaccine is not approved in Australia.

About Seasonal Influenza: Influenza is a common, highly contagious infectious disease that can cause severe illness and life-threatening complications in many people. To reduce the risk of more serious outcomes, such as hospitalization and death, resulting from influenza, the CDC encourages annual vaccination for all individuals aged 6 months and older.[11]Because transmission to others may occur one day before symptoms develop and up to 5 to 7 days after becoming sick, the disease can be easily transmitted to others.[12] Influenza can lead to clinical symptoms varying from mild to moderate respiratory illness to severe complications, hospitalization and in some cases death. The CDC estimates that 959,000 people in the United States were hospitalized due to influenza-related complications during the 2017/18 influenza season. Since it takes about 2 weeks after vaccination for antibodies to develop in the body that protect against influenza virus infection, it is best that people get vaccinated to help protect them before influenza begins spreading in their community.[9]

About CSL: CSL (ASX:CSL) is a leading global biotechnology company with a dynamic portfolio of life-saving medicines, including those that treat haemophilia and immune deficiencies, as well as vaccines to prevent influenza. Since our start in 1916, we have been driven by our promise to save lives using the latest technologies. Today, CSL — including our two businesses, CSL Behring and Seqirus - provides life-saving products to more than 60 countries and employs 22,000 people. Our unique combination of commercial strength, R&D focus and operational excellence enables us to identify, develop and deliver innovations so our patients can live life to the fullest. For more information about CSL Limited, visit www.csl.com.

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