R&D Briefing

December 3, 2014



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Agenda December 2014 R&D Briefing

- Welcome
- Introduction & Highlights
- Protein Science Research
- Immunoglobulins & Specialty Products
 - Clinical Development
 - Commercial Opportunities
- Q&A

Break

- Coagulation/Haemophilia
 - Clinical Development
 - Commercial Opportunities
- Breakthrough Medicines & Licensing
- Summary
- Q&A

3

Mark Dehring Andrew Cuthbertson Andrew Nash

Charmaine Gittleson Bob Repella

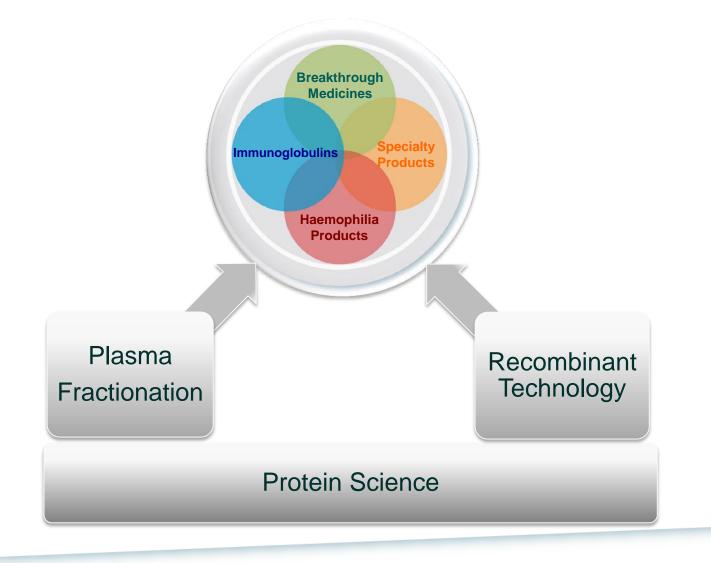
Charmaine Gittleson Bob Repella Andrew Cuthbertson Andrew Cuthbertson



Introduction and Highlights

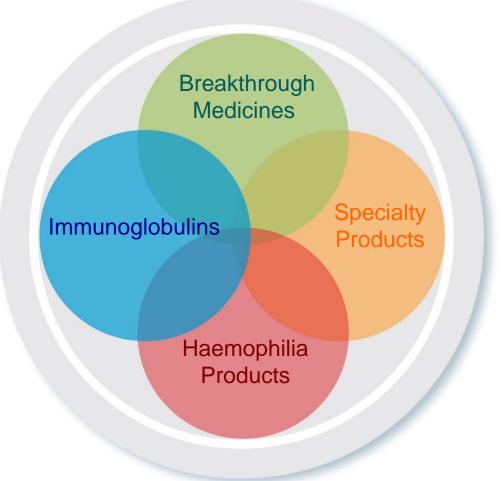


CSL Protein Therapeutics Technical Platform





CSL R&D Strategy



- Maintain commitment to extracting maximum value from existing assets and supporting and improving current products
- Develop new protein-based therapies for treating serious illnesses focusing on products that align with our technical and commercial capabilities

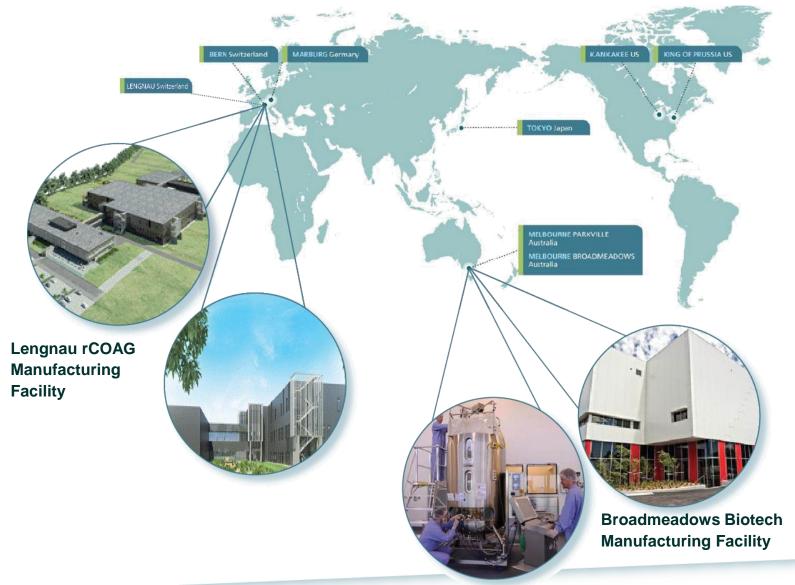


Leveraging Global Capabilities





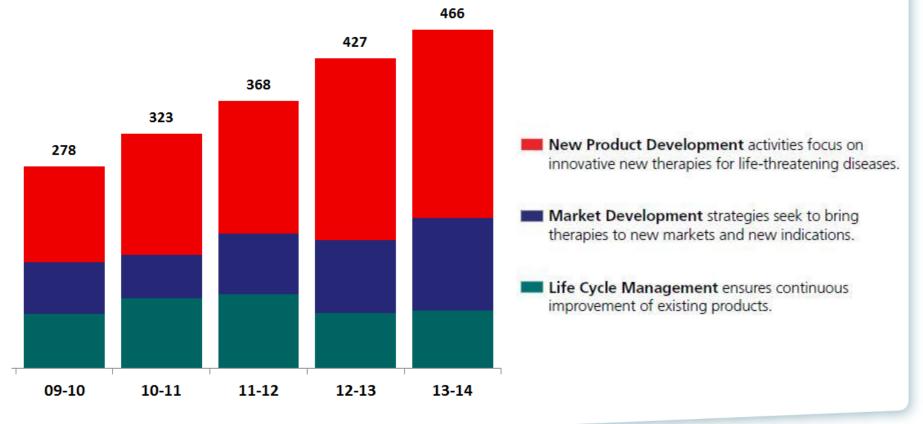
Building Global Recombinant Capabilities





R&D Investment

CSL RESEARCH AND DEVELOPMENT INVESTMENT (US\$ MILLIONS)



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Global R&D Portfolio

December 2013

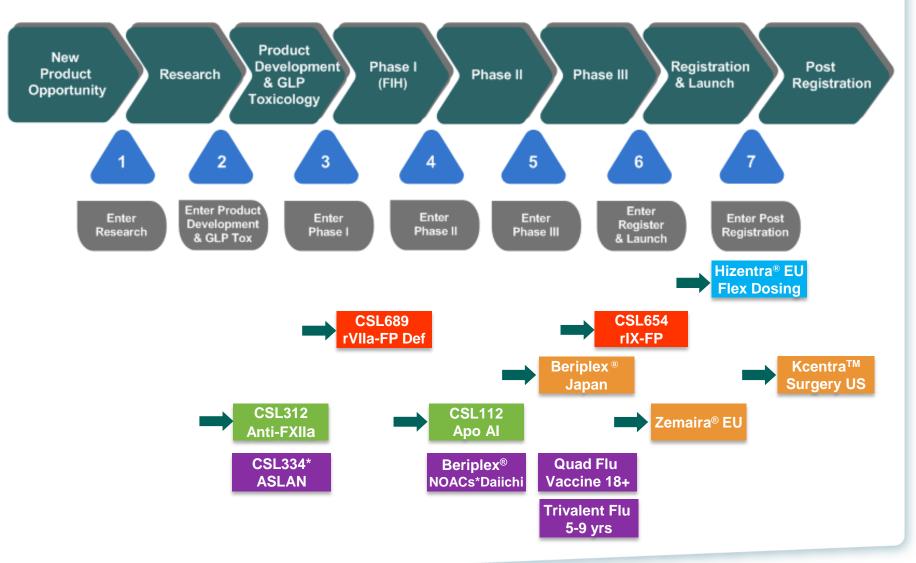
	Research	Pre-clinical	Phase I	Phase II	Phase III	Registration	Commercial Phase IV
							Immunoglobuli
							Haemophilia
							Specialty Products
Life Cycle Management [#]							Influenza Vaccine
					Hizentra [®] CIDP		Hizentra [®] Jap
							Privigen [®] CID
		Fibrinogen New			CSL830	Kcentra™ US	Hizentra [®] biwee
Market		Indications			C1-INH subcut	Surgery	Voncento [®] El Kcentra™ US
Development		PCC New Indications			Fibrinogen Aortic EU	Zemaira [®] EU	Bleeding
	Novel Plasma						
	Proteins Rec Coagulation	CSL650					
	Factors Partnered Vaccine	rvWF-FP Partnered Vaccine	Partnered Vaccine	CSL689 rVIIa-FP	CSL627 rVIII-SC		
	Programs*	Programs*	Programs*		CSL654 rIX-FP		
	P. gingivalis/POD OH-CRC/Sanofi*		CSL362 IL-3R* Janssen				
	Discovery	CSL324 G-CSFR	Uditissen	CSL112			
	Projects	CSL346 VEGFB		reconstituted HDL			
New Product Development	FXIIa Antagonist	CSL334 IL-13R		CAM3001 GM-CSFR –AZ*			
	Immunoglol		philia Specia	Ity Products	Breakthrough Me		ines & IP



*Partnered Projects

#LCM includes direct post marketing commitments as well as pathogen safety, capacity expansions, yield improvements, new packages and sizes for all registered products

Progress through Stage Gates in 2014



Global R&D Portfolio

December 2014

	Research	Pre-clinical	Phase I	Phase II	Phase III	Registration	Commercial Phase IV
							Immunoglobuli
							Haemophilia
Life Cycle Management [#]							Specialty Products
							Influenza Vaccine
					Hizentra [®] CIDP		Hizentra [®] Japa
					Beriplex®		Privigen [®] CID
Market Development		Fibrinogen New			Japan CSL830		Hizentra [®] biweek
		Indications PCC New		Beriplex [®] NOACs	C1-INH subcut Fibrinogen		Kcentra™ US
		Indications		Daiichi*	Aortic EU	Zemaira [®] EU	Bleeding /Surge
	Novel Plasma Proteins						
	Rec Coagulation Factors	CSL650 rvWF-FP	CSL689 rVIIa-FP Congen Def	CSL689 rVIIa-FP Inhibitors	CSL627 rVIII-SC	CSL654 rIX-FP	
New Product Development	Partnered Vaccine	Partnered Vaccine	Partnered Vaccine				
	Programs* P. gingivalis/POD	Programs*	Programs* CSL362 IL-3R*				
	OH-CRC/Sanofi*	FXIIa Antagonist	Janssen	001.440			
	Discovery Projects	CSL324 G-CSFR		CSL112 reconstituted HDL			
		CSL346 VEGFB CSL334 IL-13R		CAM3001 GM-CSFR –AZ*	Quadrivalent Flu Vaccine		
Core Capabilities:	Immunoglo	oulins Haemo	nhilia Spaai	alty Products	Breakthrough N	lodicinos	Vaccines & IF



*Partnered Projects

#LCM includes direct post marketing commitments as well as pathogen safety, capacity expansions, yield improvements, new packages and sizes for all registered products

Protein Science Research



CSL's Global Research Capability

- Hub & spoke model
- Single coordinated project portfolio
- Research excellence in therapeutic proteins
- Plasma and recombinant manufacturing platforms











Bio21 - Research Hub

- Located within world class university, medical research and hospital precinct in Parkville, Melbourne
- Technical expertise
 - protein engineering, molecular biology, cell biology, models of disease, genomics / bioinformatics
- Improved access to
 - high quality staff
 - cutting edge technologies
 - ideas / innovations / collaborations
 - patients and patient samples
- Model for Biotech / Pharma Research



• decentralisation into high quality academic research hubs



CSL Research Project Portfolio

Some examples from the CSL Research Project Portfolio

Priority	Immunoglobulins	Haemophilia	Specialty Products	Breakthrough Medicines
High	Ig Formulations	FVIII half-life ext.	Beriplex NOACs Reversal	CSL312 HAE/Throm CSL362 SLE*
Medium				P.ging vaccine / mAb* CSL334 Asthma*
Lower	lg Biomarkers		Haptoglobin / Hemopexin	

* Partnered project

Current products

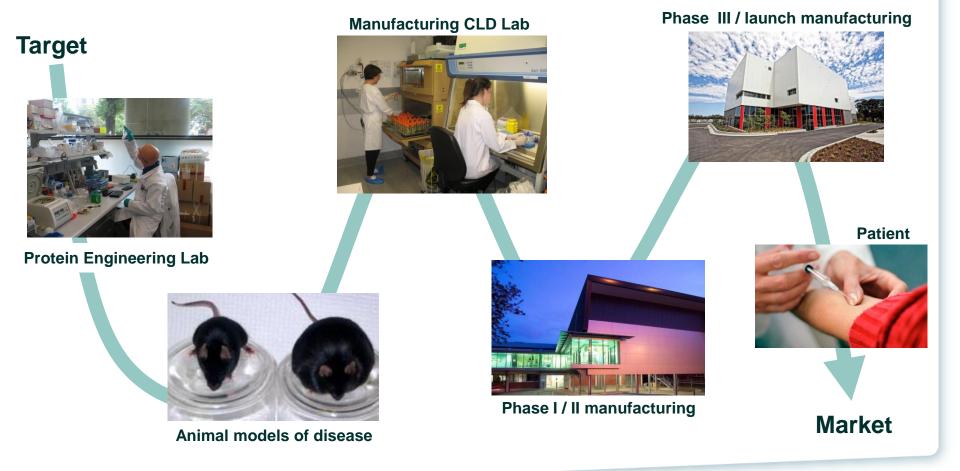
• new indications, new formulations, MOA, Biomarkers

New product candidates

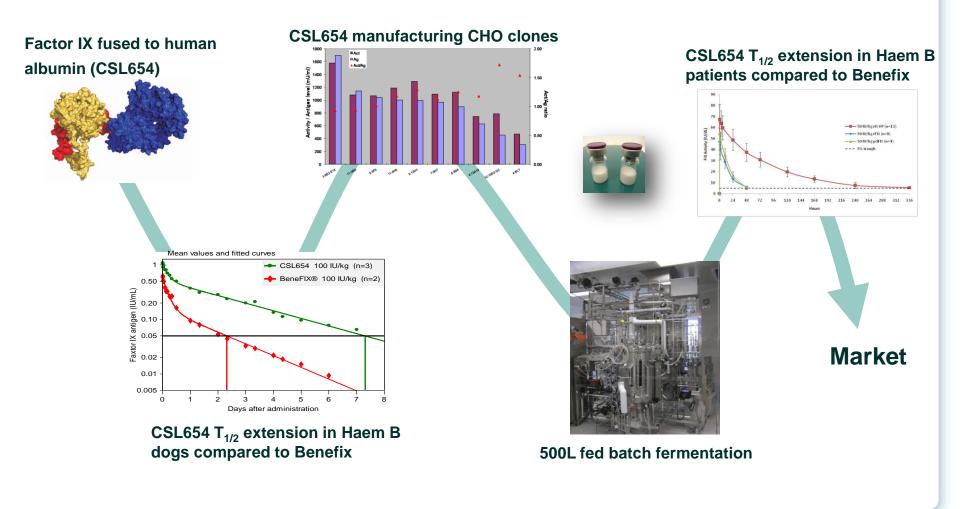
• novel protein-based therapeutics and vaccines, plasma and recombinant

Plasma and Recombinant Proteins

Capabilities from discovery to market

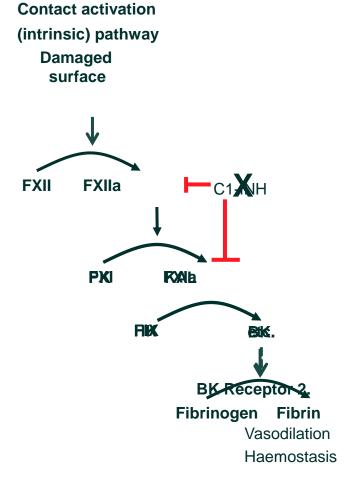


CSL654 (rIX-FP) – Discovery to Development





CSL312 (FXIIa antagonist mAb)



Hereditary Angioedema (HAE I, II, III)



HAE attack

Current therapeutic strategy

- On demand treatment with:
 - plasma derived C1-Inhibitor (Berinert)
- small molecule kalikrein inhibitor
- small molecule BR2 inhibitor
- Prophylaxis limited by convenience issues
- subQ Berinert

Opportunity

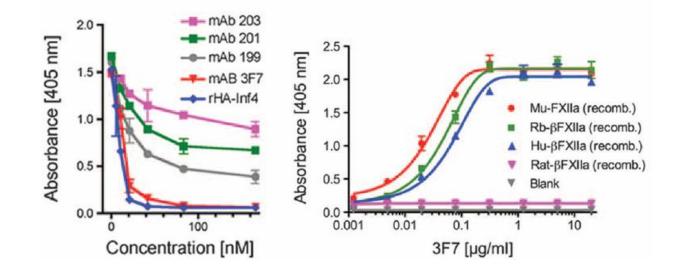
 Improve clinical outcomes and patient QoL by enabling prophylaxis



CSL312 (FXIIa antagonist mAb)

Generation & characterisation of a human FXIIa antagonist mAb

screening of human Ab (Fab) phage display library



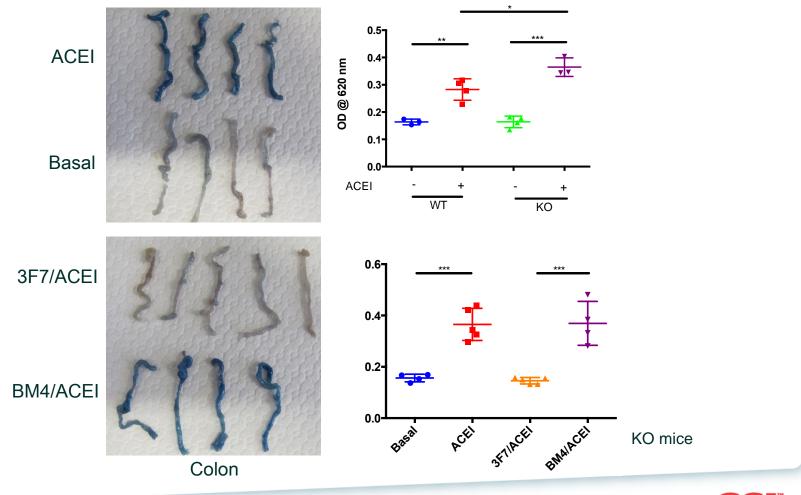
mAb 3F7 shows complete inhibition of FXIIa

• affinity matured 3F7 (= CSL312) shows further specificity improvements



CSL312 – Hereditary Angioedema

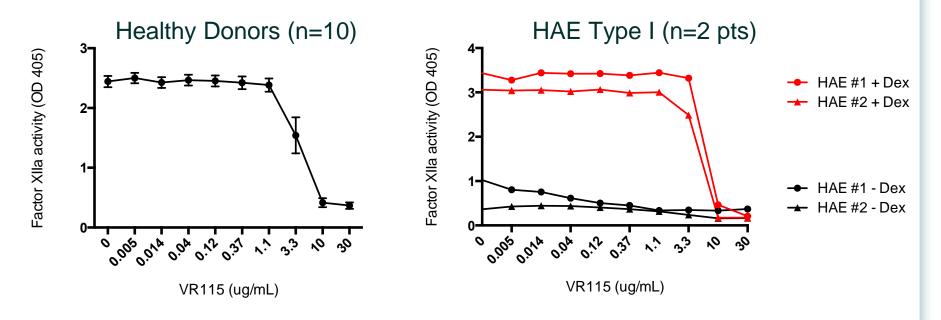
CSL312 inhibits vascular leakage in ACEI treated C1-INH null mice





CSL312 – Hereditary Angioedema

CSL312 inhibits Factor XIIa activity in human plasma



Current status

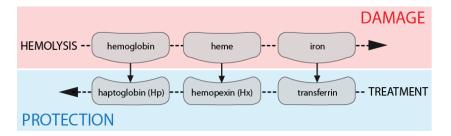
CSL312 has progressed into product development and toxicology



Haptoglobin (Hp) / Hemopexin (Hx)

Red blood cell lysis and inflammation / tissue damage

- In pathological settings RBC lyse to release haemoglobin (Hb)
- Haemoglobin is further oxidised leading to the release of heme
- Free Hb and heme are toxic and contribute to disease pathology
 - NO scavenging
 - reactive oxygen species, oxidative stress
 - activation of inflammatory pathways (heme / TLR4)
- Acute phase proteins Hp and Hx sequester and dispose of free Hb and heme



• Hp and Hx are significantly depleted in acute and chronic disease





Haptoglobin (Hp) / Hemopexin (Hx)

Sickle Cell Disease

- Mutation in β -Hb gene, aggregation of β -Hb, sickle-shaped RBC
- Obstruct microvasculature, prone to lysis and release of Hb / heme

Diverse manifestations

 Acute chest syndrome, severe pain, pulmonary hypertension, stroke, splenic infarction, sepsis and renal failure

Aetiology

- Chronic low level and acute higher level exposure to Hb and heme
 - -> Vasoconstriction, vascular damage / local inflammation
 - → Vaso-occlusive crisis
 - mechanical and heme induced obstruction of capillaries

• Hp is absent and Hx significantly depleted in SCD patients

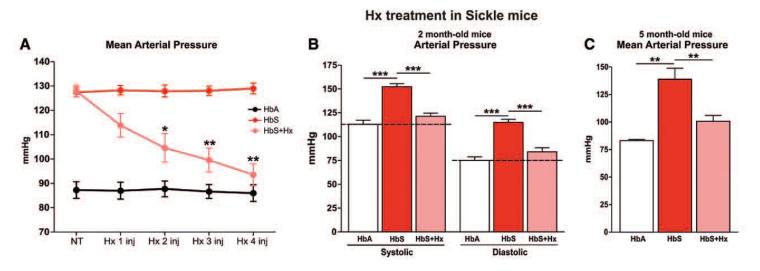




Haptoglobin (Hp) / Hemopexin (Hx)

Hx therapy normalises blood pressure in SCD mice

- Transgenic mice that express human α -globlin and β -globin incorporating the sickle mutation (HbS), no expression of mouse Hb genes
- 0.7mg Hx, 2x per week for 4 weeks from 1 month of age



Vinchi et al., Circulation 2013

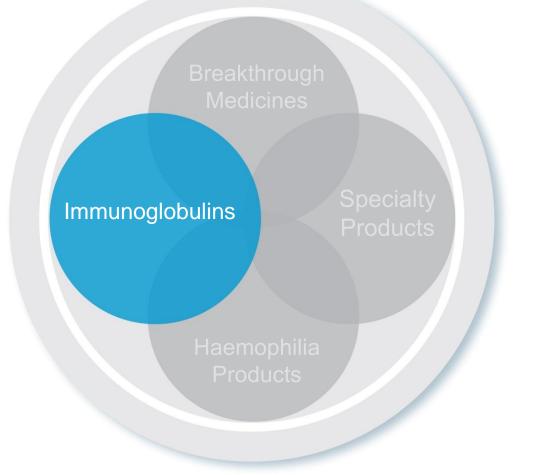
CSL Research on Hp / Hx

- Swiss government funding since 2011
- Collaborators: University of Zurich, University of Torino, FDA CBER
- Processes for purification of Hp and Hpx from plasma developed
- Initial pre-clinical proof-of-concept data generated in vitro and in vivo
- Planning to progress into product development during 2015

Immunoglobulins



Immunoglobulins



Maintaining leadership position through focus on:

- Patient convenience
- Yield
- Label
- Formulation science
- Specialty Igs
- Key Focus
- Hizentra[®]
- Privigen[®]





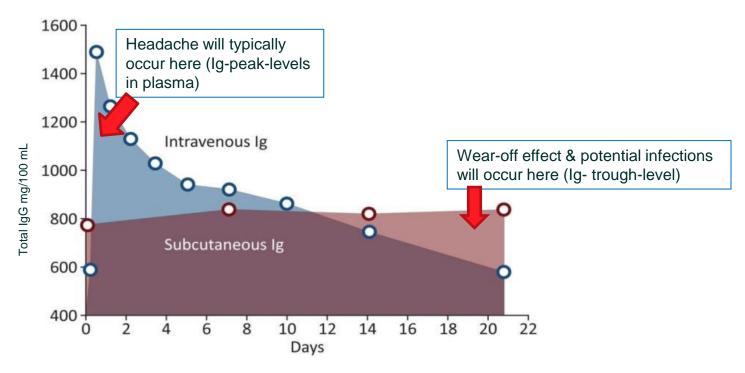
The first and only 10% liquid intravenous immunoglobulin (IVIg) therapy that is proline stabilised with room temperature storage up to 36 months



The first 20% high concentration low volume SCIG for convenient self administration providing steady-state Ig levels and an established long-term safety record with chronic administration



Benefits of Hizentra®: Steady-State Kinetics



Pharmacokinetic Profile of IVIG vs. SCIG

30

- SCIG weekly dosing results in steady IgG levels (no peaks, no troughs) 1
- Patients report less wear off effect switching from IVIG to Hizentra^{® 2}

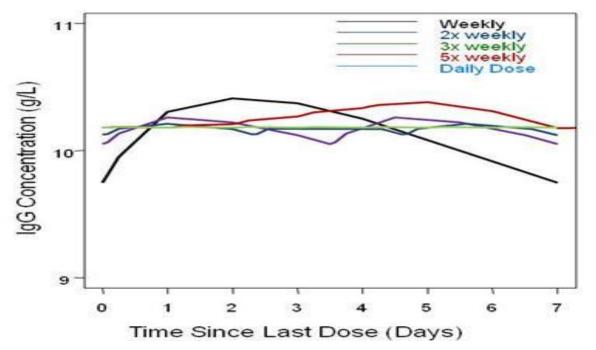


Hizentra[®] Schedules Beyond Biweekly



Individualised dosing strategies for patient protection

Medians of various scenarios *



- More optionality, better management of dosing holiday
- Approved by EMA
- Under FDA review

31



Strengthening Presence in Neurology



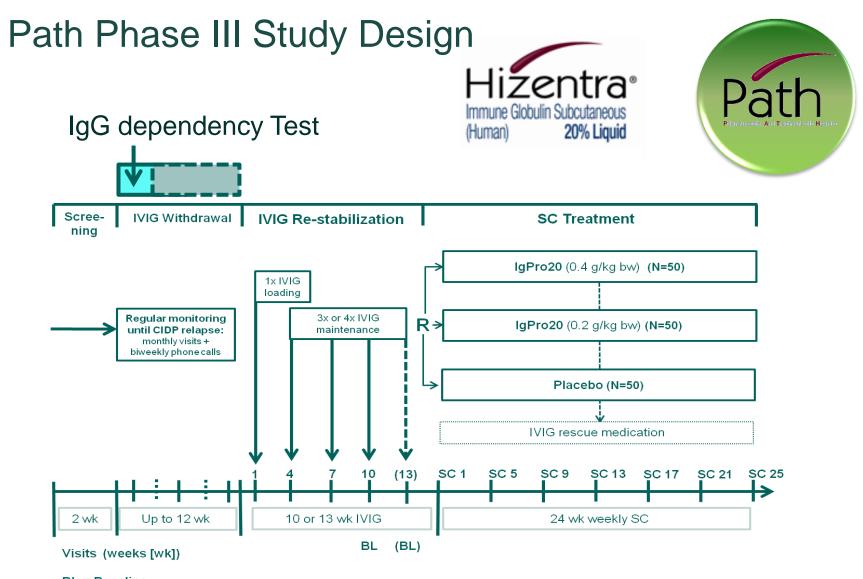
IVIG therapy made simple

Chronic Inflammatory Demyelinating Polyneuropathy

- Increased use of Privigen[®] across Europe and Canada in patients with CIDP
- Hizentra[®] CIDP orphan designation in the US
- Ongoing progress in Hizentra[®] Path study







BL = Baseline R = Randomization

Path Study Progress





- 60 patients completed
- 114 / 174 randomised
- Expect to close recruitment in late 2015
- Last patient completing late 2016
- FDA and EMA submissions Q3/4 2017



Commercial Opportunities and Activities



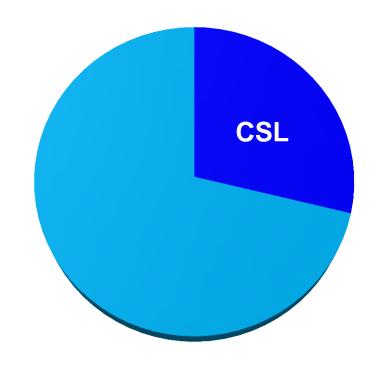
Global Immunoglobulin Market

2013/14 Sales (USD)

- Ig volume continues to grow globally
- Increased competition particularly in SCIg
- CSL is well positioned









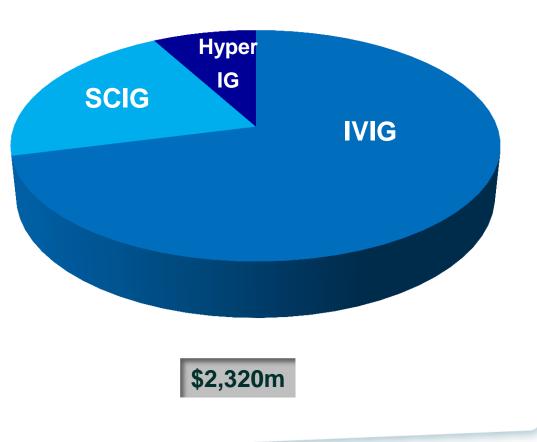


Sources: Company annual reports / earnings releases, CSL Estimates of Target Markets

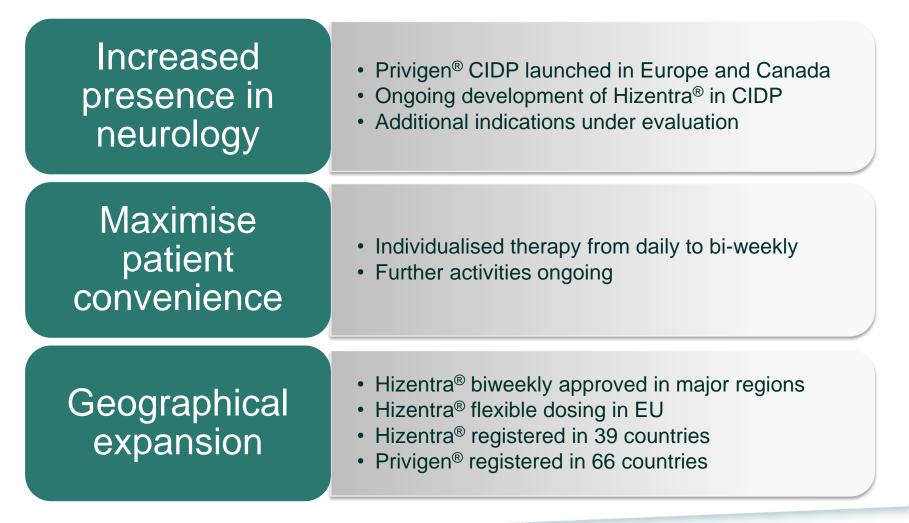
CSL's Immunoglobulin Portfolio

2013/14 Sales (USD)

- Increased presence in neurology in Europe
- Maximise patient convenience
- Geographical expansion



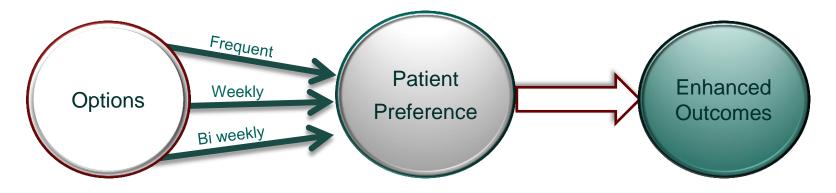
Immunoglobulins: Progress Achieved





Individualised Therapy





Advantages of individualised therapy with Hizentra®

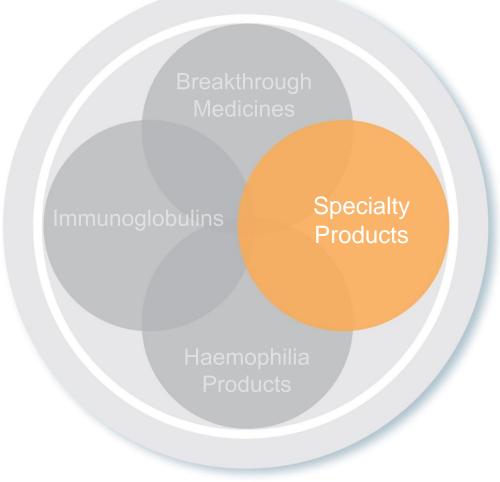
- Dosing flexibility provides more freedom to patients, allowing them to manage their condition based upon their specific needs and lifestyle
- All dosing options with Hizentra[®] result in steady-state IgG levels, avoiding the monthly IVIG wear-off effects



Specialty Products



Specialty Products



Leveraging high quality, broad product portfolio through:

- New markets
- Novel indications
- Novel modes of administration

Key Focus

- Beriplex^{® /} Kcentra[™]
- Berinert[®]
- Zemaira[®]
- Fibrinogen



Kcentra[™] (Beriplex[®])



- Prothrombin Complex Concentrate = PCC
 - vitamin K-dependent coagulation factors (FII, FVII, FIX, FX)

Kcentra[™] launched in April in the US as a first in class therapy to reverse the effects of vitamin K antagonists (e.g. Warfarin) for:

- Bleeding related to over-anticoagulation
- Patients needing urgent surgery
- Included in treatment guidelines

Clinical Program commenced in Japan to register Beriplex[®] for vitamin K antagonist reversal

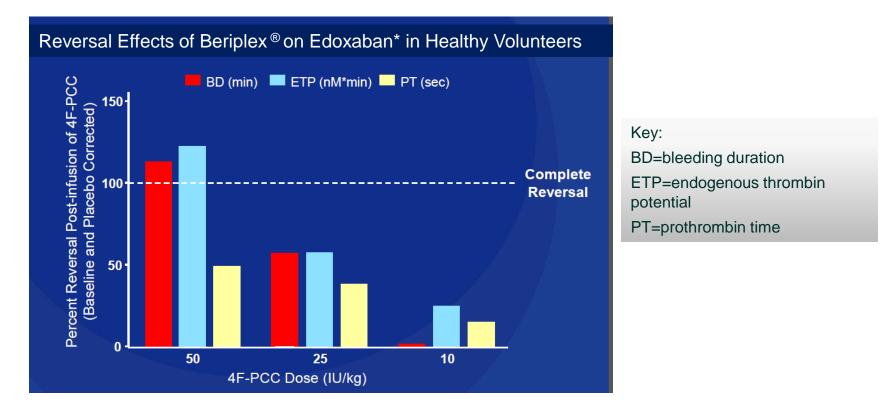
PMDA submission Q1 2016



Kcentra[™] (Beriplex[®])



• Potential clinical application for new oral anticoagulant reversal?



50IU/kg Beriplex[®] dose reversed the anticoagulant effect of edoxaban

Clinical Trial Registration—URL: http://www.clinicaltrials.gov. Unique identifier: NCT02047565. (Zahir H. Circulation. 2015;131:00-00. Published online November 17, 2014) * Edoxaban - Daiichi Sankyo Pharma Development, Edison, NJ





Plasma derived, pasteurised & nanofiltered concentrate of C1 Esterase Inhibitor indicated for the treatment of acute abdominal, laryngeal or facial attacks of hereditary angioedema (HAE) in adults and adolescents

- Post marketing safety studies completed
 - No antibody generation
 - No increased thrombo-embolic risk



CSL830 (Subcutaneous C1-INH)

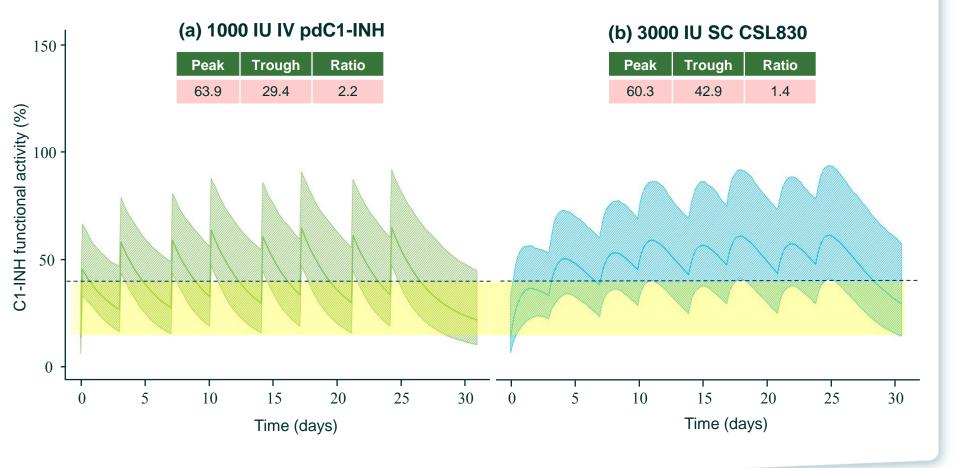
Plasma derived, pasteurised & nanofiltered highly concentrated C1 Esterase Inhibitor indicated for subcutaneous administration in the prophylaxis of hereditary angioedema (HAE) in adults and adolescents

- Patients with frequent attacks (50 to <100/year):
 - Treat acute attack, loss of life quality
- High frequency attacks (>100/year)
- Prophylaxis with intravenous C1 Esterase Inhibitor
 - Limited by venous access, break though attacks in some patients¹



Vulnerable Period (time <40% C1-INH activity)

SC CSL830 maintains trough levels above "protective" C1 levels



Data on file CSL Behring Submitted for publication

46

CSL830 Clinical Program



Clinical Studies for Optimal Management in Preventing Angioedema with low-volume

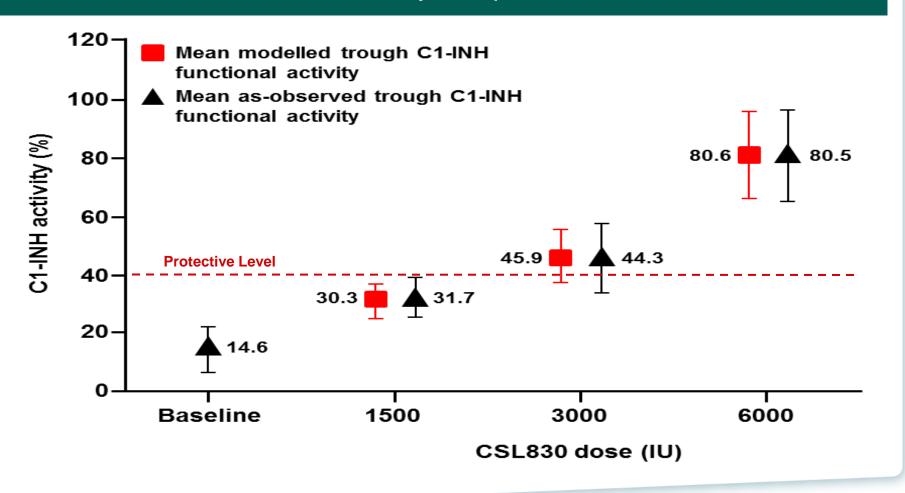
Preventing Angioedema with low-volume subcutaneous C1-inhibitor Replacement Therapy



47

CSL830 Phase II COMPACT Study Results

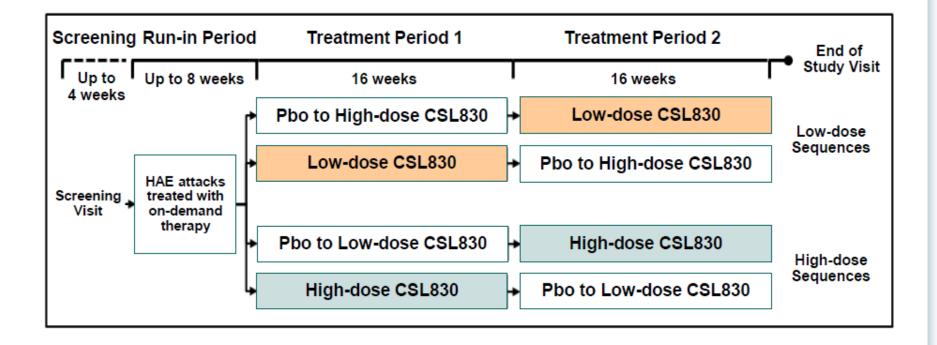
Primary Endpoint





CSL830 Phase III Study Design

Clinical Studies for Optimal Management in Preventing Angioedema with low-volume subcutaneous C1-inhibitor Replacement Therapy



*Pbo = Placebo

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Modified from Zuraw et al; EEACI 2014

49

CSL830 COMPACT Program Progress

- 84/100 patients randomised
- Last Patient visit Q4 2015
- Long term Safety study to commence Dec 2014
- Submission to FDA Q2/3 2016



Clinical Studies for Optimal Management in Preventing Angioedema with low-volume subcutaneous C1-inhibitor Replacement Therapy







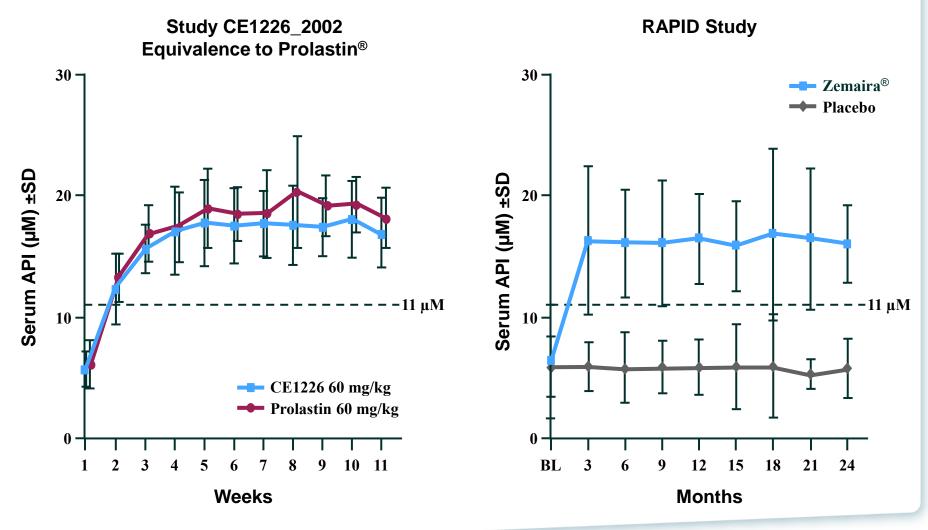
Zemaira is the first highly purified alpha-1 augmentation therapy approved by the FDA for chronic augmentation and maintenance therapy of adults with alpha-1 and emphysema

Seeking to broaden use through approval in EMA in 2015

- Completed RAPID trial in 2013
- Under review with EMA



Zemaira[®] Biochemical Efficacy

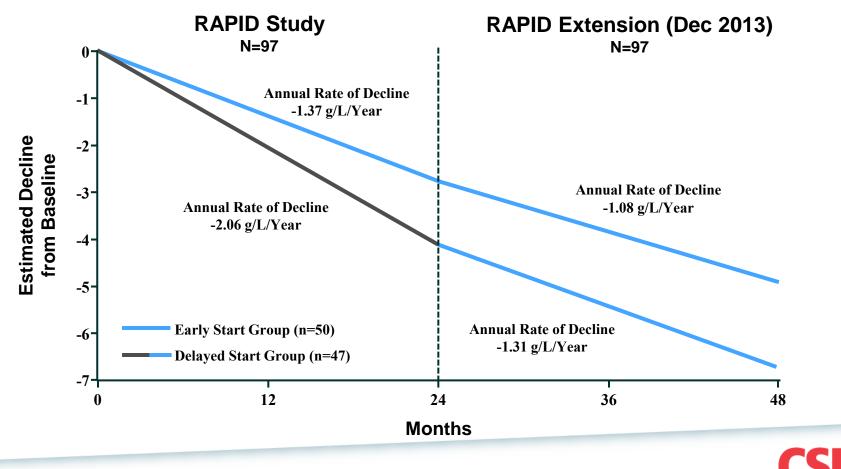




52

Zemaira[®] Continues to Slow the Rate of Lung Density Decline Over 4 Years

Estimated Rate of Decline in Physiologically Adjusted P15 at TLC



53

Commercial Opportunities and Activities



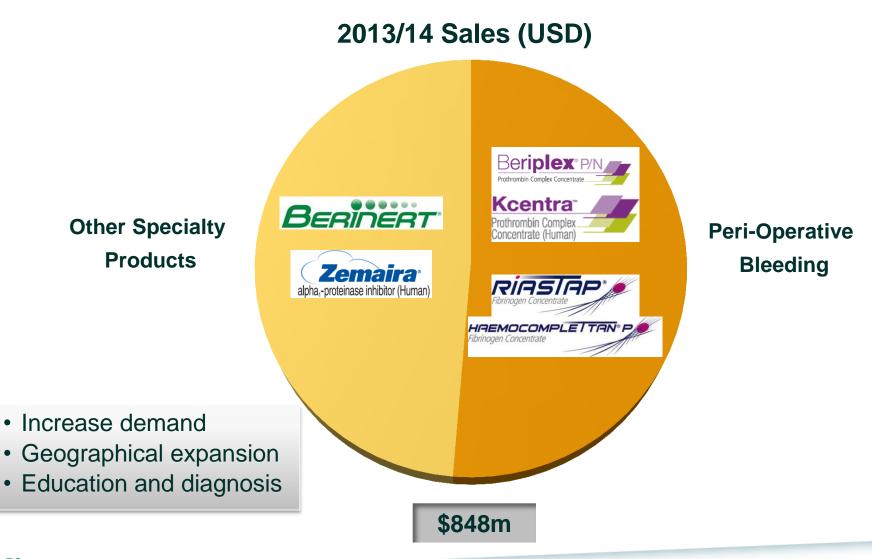
Select Specialty Products – Global Markets

- Rare diseases
- Unmet medical need
- High value
- Increasing awareness





CSL's Specialty Products Portfolio





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Kcentra[™]



Kcentra[™], Prothrombin Complex Concentrate (Human), is the first nonactivated 4-factor PCC approved in the U.S. for the urgent reversal of vitamin K antagonist (VKA, e.g., warfarin) therapy in adult patients with acute major bleeding or needing an urgent surgery or other invasive procedure

Sustain momentum in US

- Surgical indication and launch
- Hospital account expansion

Key tactics

- Pivotal publication in Lancet
- Broad customer education

Geographical expansion¹

- Eastern Europe
- Japan

Life cycle management

- Improved virus filtration
- New 1000IU vial







Berinert treats the fundamental cause of HAE symptoms by providing C1-Inhibitor deficient patients with the missing human protein¹

Berinert has demonstrated that it provides fast relief of pain and swelling within 30 minutes²

Geographical expansion

- Asia
- Latin America
- Russia

Patient care and convenience

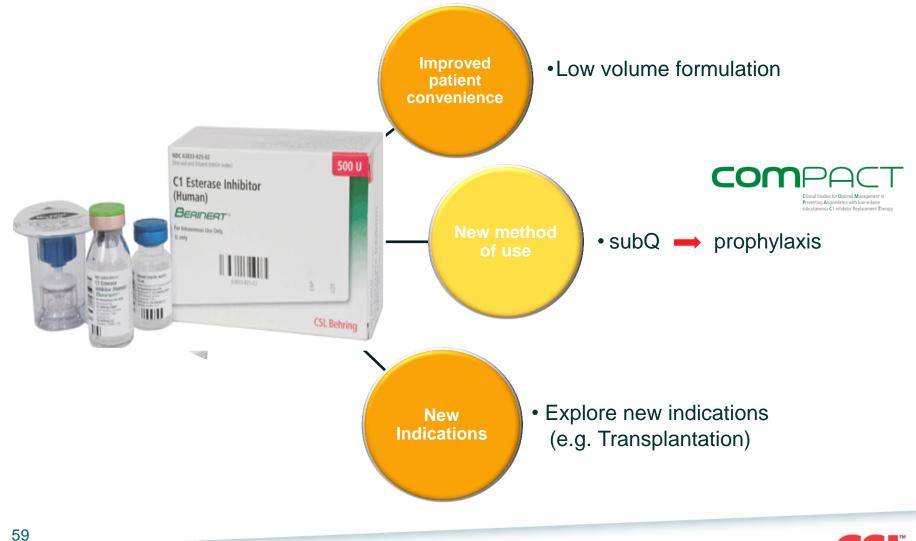
- Short term prophylaxis in Europe
- Self-administration education and expansion



Agostini et al. J Allergy Clin Immunol. 2004¹ Craig et al. J Allergy Clin Immunol 2009²

Berinert[®] Key Features







Zemaira®



Indicated in the US for chronic augmentation and maintenance therapy in adults with alpha-1 deficiency and clinical evidence of emphysema

Has been shown to slow the progression of emphysema as measured by CT lung density

DNA₁ is the first and only test to confirm known and unknown variants of alpha-1 proteinase inhibitor

Increased diagnosis

- Approximately 100K patients in US
- 10% of patients diagnosed
- Established DNA₁ test

Continued investment

- Expand US sales force
- Explore new formulations

Geographical expansion

- EU registration process ongoing
- Launched in Brazil
- Dossier submitted in Mexico

RAPID data

- Publish in high impact journal
- Medical Affairs education







Break



R&D Briefing

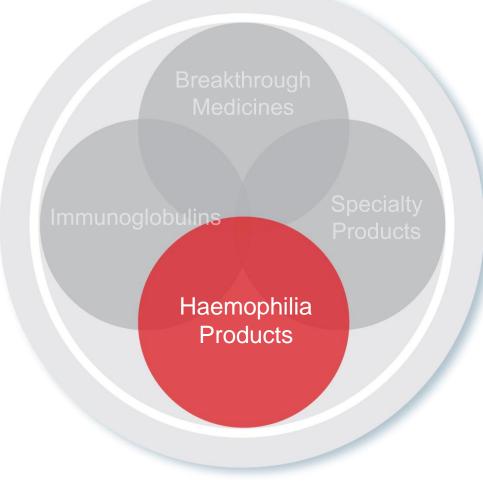
December 3, 2014



Haemophilia Products



Haemophilia



Supporting and enhancing plasma products and developing novel recombinant portfolio with focus on:

- Scientific and product innovation
- Patient benefit

Key Focus

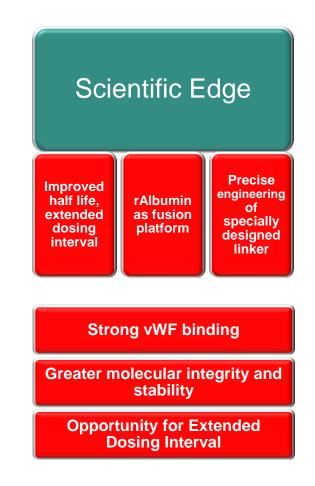
- Long acting rIX-FP
- Long acting rVIIa-FP
- rVIII-Single Chain
- Research into long acting rvWF-FP



Innovation to Drive Growth

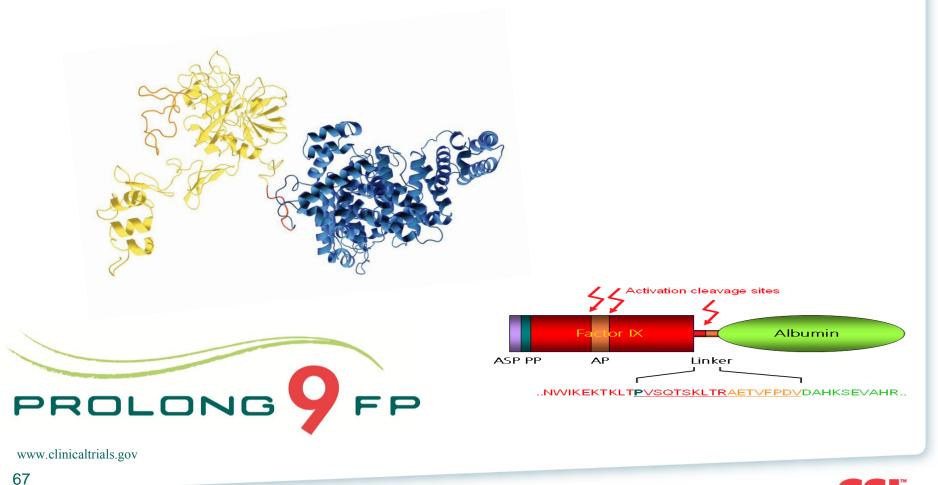
Patient benefit primary driver of innovation

- Albumin fusion technology
 - rIX-FP, rVIIa-FP, rvWF-FP
- Factor VIII
 - Innovative SingleChain design





PROLONG-9FP Clinical Development Program: rIX-FP



CSL



2012 120: 2405-2411 Prepublished online August 2, 2012; doi:10.1182/blood-2012-05-429688

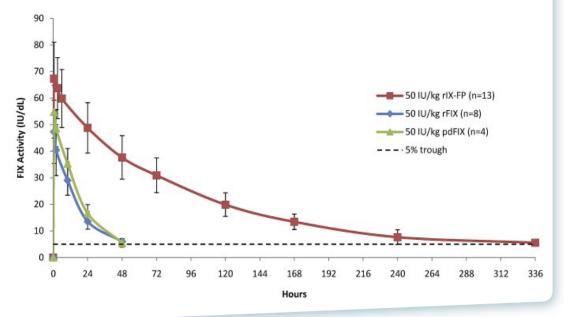
Safety and pharmacokinetics of a novel recombinant fusion protein linking coagulation factor IX with albumin (rIX-FP) in hemophilia B patients

Elena Santagostino, Claude Negrier, Robert Klamroth, Andreas Tiede, Ingrid Pabinger-Fasching, Christine Voigt, Iris Jacobs and Massimo Morfini

Compared with in market rFIX

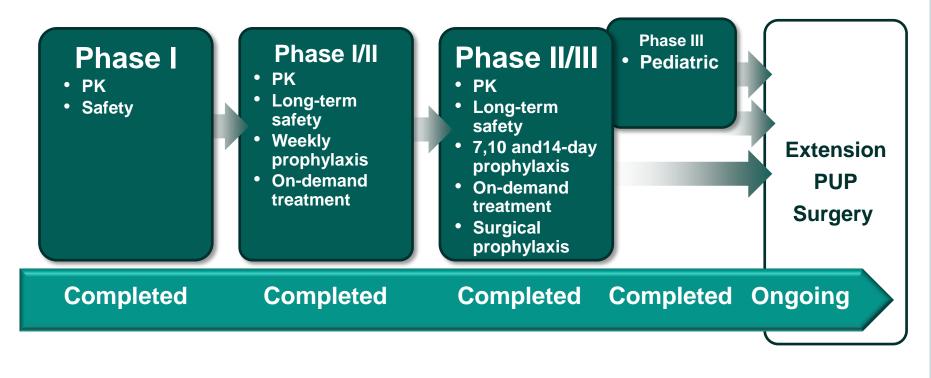
- 5.3-fold longer half-life (92hrs)
- ~ 45% higher incremental recovery
- ~7-fold larger AUC
- ~7-fold slower clearance







PROLONG-9FP Clinical Development Program: rIX-FP







PROLONG-9FP Clinical Results Summary

- Excellent safety profile
 - Well tolerated
 - No inhibitors

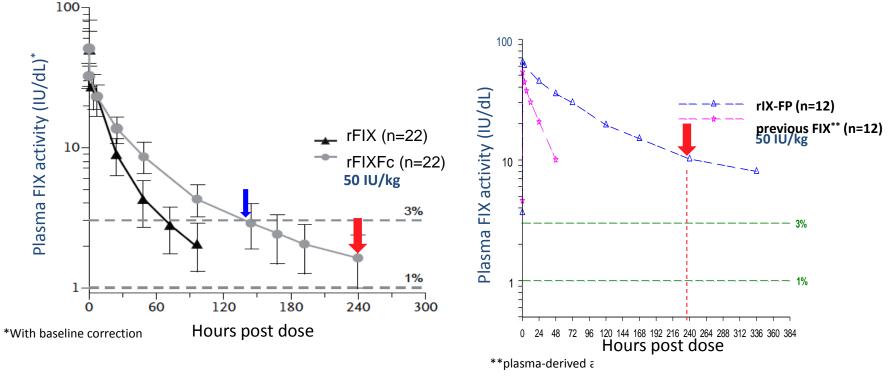


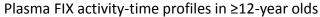
- No adverse events related to CSL654
- Meets all criteria for registration
 - Effectively treats bleeding episodes
 - Offers benefit for prophylaxis
 - Effective in 7-day, 10-day and 14-day regimens



FIX Activity: rIX-FP vs. rFIXFc

rIX-FP shows higher activity at the 240 hour time point









Powell et al. N Engl J Med 2013; CSL Behring. Data on file.

71

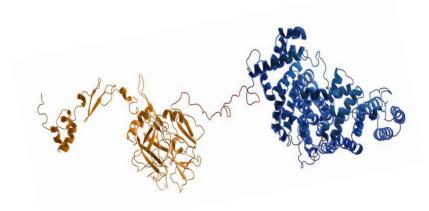
rIX-FP (CSL654) Clinical Development

- All patients now in extension study
- Dossier submission for adult and paediatric indications
 - FDA Dec 2014
 - EMA Q2 2015

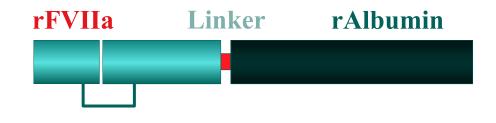




rVIIa-FP (CSL689)







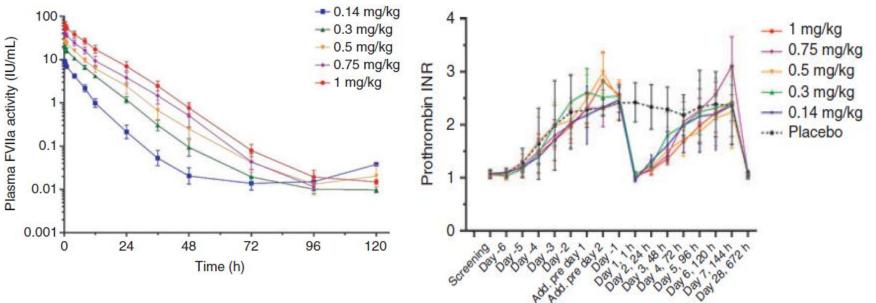


Journal of Thrombosis and Haemostasis, 11: 1977-1985

ORIGINAL ARTICLE

Safety and pharmacokinetics of a recombinant fusion protein linking coagulation factor VIIa with albumin in healthy volunteers

G. GOLOR, * D. BENSEN-KENNEDY, † S. HAFFNER, * R. EASTON, † K. JUNG, ‡ T. MOISES, ‡ J.-P. LAWO, ‡ C. JOCH‡ and A. VELDMAN‡



• Half-life = 8.5 hrs (vs rFVIIa ~2-3hrs)



rVIIa-FP Clinical Development Program

Congenital Factor VII Deficiency



- Phase I PK/PD study in congenital FVII deficiency patients
 - PK and safety in patients
 - To commence December 2014





rVIIa-FP Clinical Development Program

Congenital Haemophilia with Inhibitors

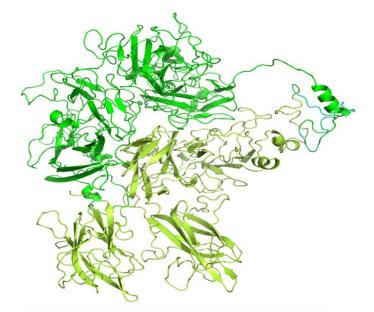


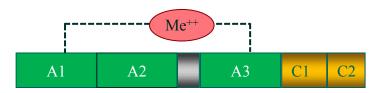
- Pivotal Phase II/III trial in haemophilia A & B patients with inhibitors
 - Dose finding, safety & efficacy on-demand therapy
 - To commence first half 2015





rVIII-SingleChain (CSL627)



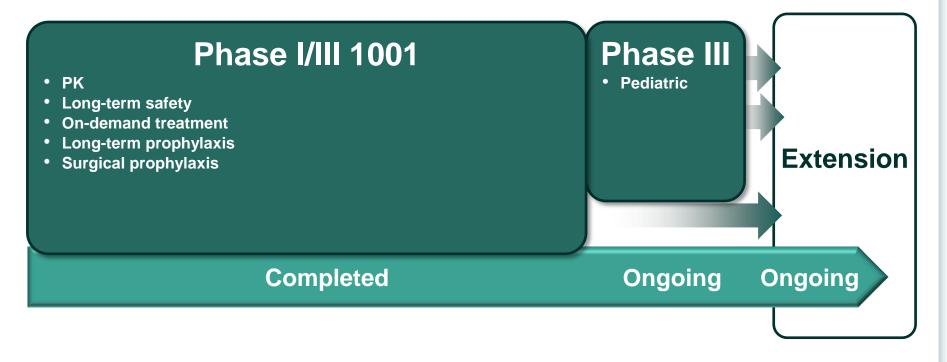


rVIII-SingleChain





AFFINITY Clinical Development Program: rVIII-SingleChain

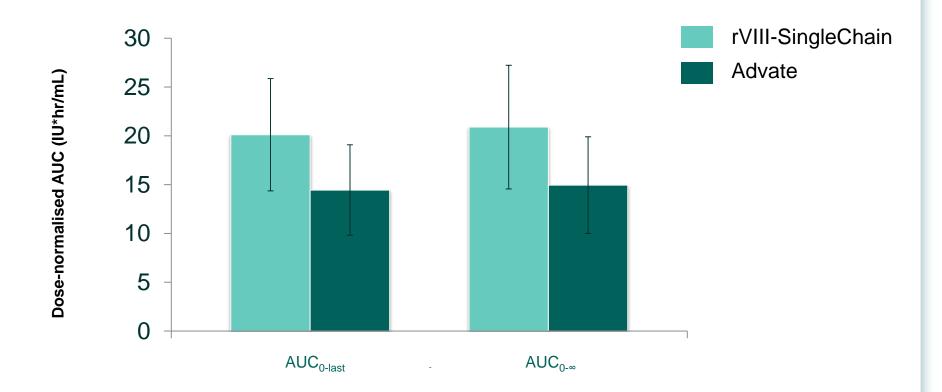




www.clinicaltrials.gov



CSL627 PK Evaluation: Area Under the Curve

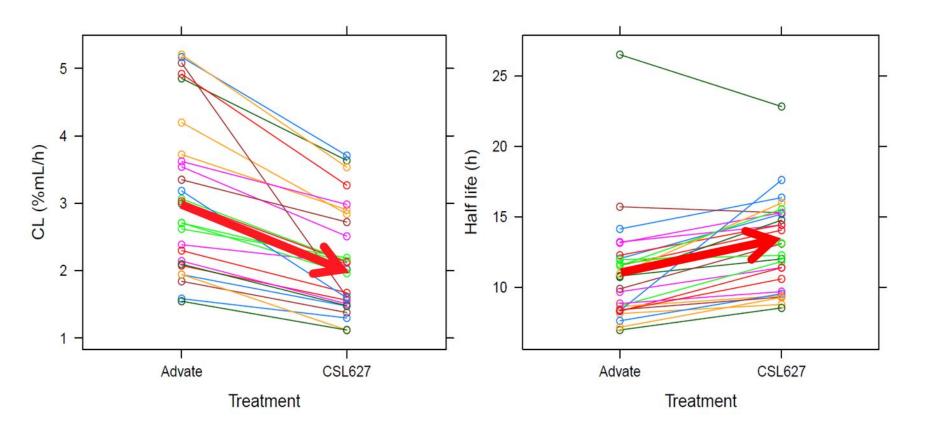


*Dose-normalised baseline-corrected FVIII activity AUC_{0-last} and $AUC_{0-\infty}$ in plasma following a single intravenous administration of rVIII-SingleChain or Octocog alpha. FVIII activity determined by chromogenic assay and normalised by individual dose to 50 IU/kg. Data presented are mean ±SD n=27



www.clinicaltrials.gov CSL Behring. Data on file.

CSL627 PK Evaluation: Clearance and t_{1/2}



CSĽ

*Dose-normalised baseline-corrected FVIII activity Clearance and half-life in plasma following a single intravenous administration of rVIII-SingleChain or Octocog alpha. FVIII activity determined by chromogenic assay and normalised by individual dose to 50 IU/kg. n=27

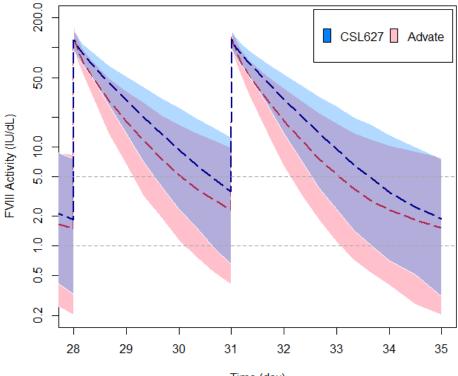
80

CSL Behring. Data on file.

CSL627 PK Supports Dosing Twice-Weekly

Product	Time to 2% (hr)	Time to 1% (hr)
rVIII- SingleChain	78.0	91.9
Octocog alpha	65.2	77.2

50 IU/kg, twice per week



Data presented are mean values. n=22





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CSL Behring. Data on file.

rVIII-SingleChain Phase I/III Study

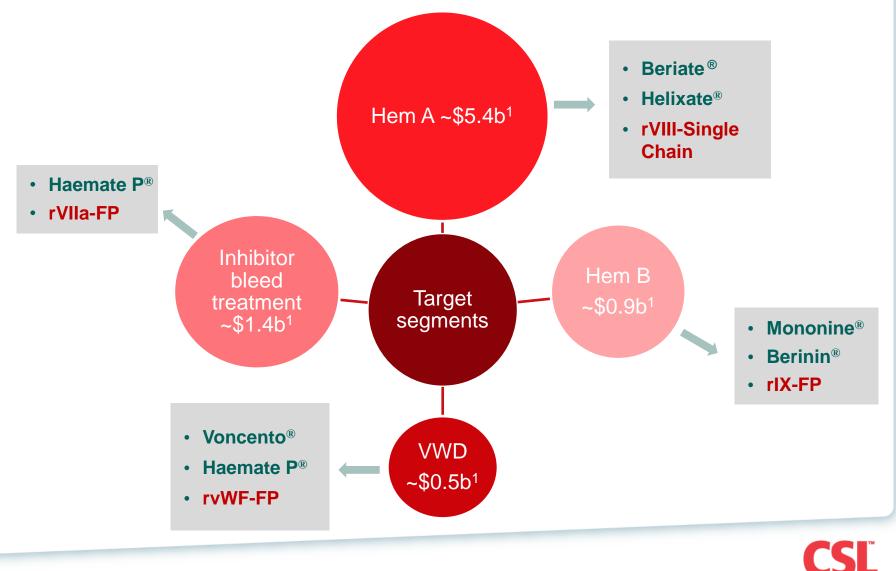
- Very well tolerated
- No inhibitors
- All bleeding events effectively treated
- All surgeries successfully treated
- Pivotal study primary endpoint reached
 - US dossier submission first half 2015
 - EMA dossier submission Q4 2015



Commercial Opportunities and Activities



Coagulation: Key Market Segments (USD)

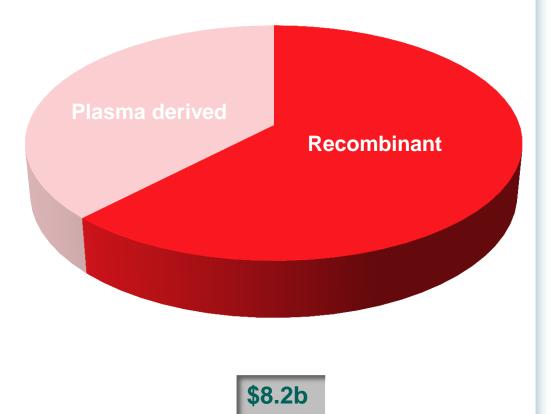


Sources: Company annual reports / earnings releases, CSL Estimates of Target Markets

84

Global Haemophilia Market (USD)

- Trend toward recombinants in major markets
- New longer-acting competition
- Pd highly competitive tender markets

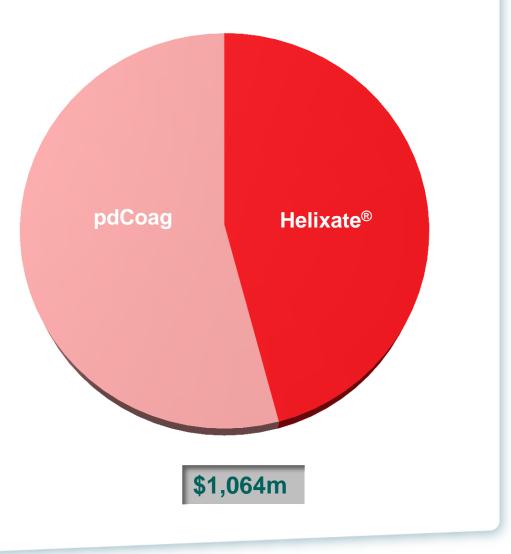




Sources: Company annual reports / earnings releases, CSL Estimates of Target Markets

CSL Coagulation Sales 2013/14 (USD)

- Broad portfolio presence
- Growth in developed and emerging markets
- Helixate[®] strong foundation for recombinant pipeline



86

rVIII-SingleChain (CSL627)

Single chain design with most of B-domain deleted Covalent link between heavy and light chains

Single Chain Design

- Binds strongly to vWF
- Greater molecular integrity and stability
- Improved PK profile

Potential Differentiated Profile

- Effective bleeding control
- Favorable tolerability profile
- Low potential for inhibitors
- Longer lasting therapeutic effect
- Twice-weekly dosing



rIX-FP (CSL654)

Unique recombinant albumin fusion protein molecule

Enhanced pharmacokinetic profile including five-fold half-life extension, seven fold increase in AUC* and higher trough levels

Attributes of Albumin

- Natural protein
- Transports natural components
- Not associated with immune response
- Long half-life

Potential Differentiated Profile

- Effective bleeding control
- Favorable tolerability profile
- Minimising the potential for immunologic response
- Dosing interval 7 to 14 days



Coagulation: Growth Drivers

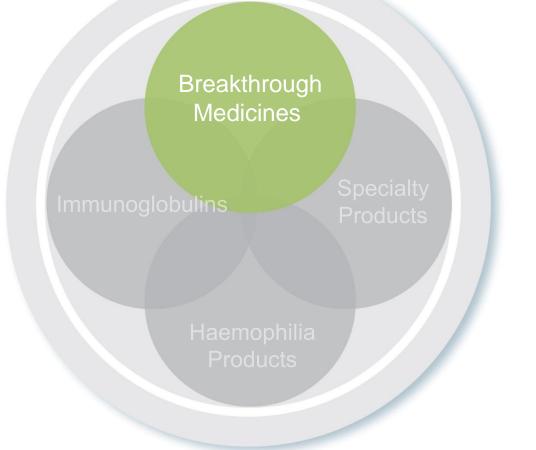
Increased diagnosis	 Estimated 1 in 1,000 people have inherited blood disorders 75% inadequate or no care; disorder not diagnosed 		
Awareness of benefits of prophylaxis	 Publications and presentations Benefits of long/longer acting products 		
Growth in recombinant market	 Hemophilia B – long acting Hemophilia A – longer acting Inhibitors – long acting Inhibitors – long acting 		
CSL leadership	 Strong heritage in therapeutic category Understanding of physician and patient community Robust pipeline of recombinant products 		



Breakthrough Medicines



Breakthrough Medicines



Leveraging clinical and technical insight in developing novel protein-based therapies

- Significant unmet need
- Multiple indications

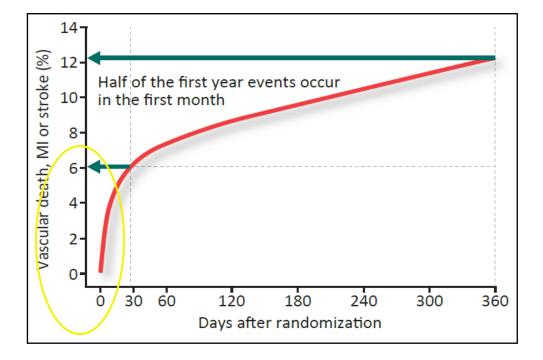
Key Focus

- CSL112 (Apo AI)
- CSL346 (anti-VEGF-B mAb)
- FXII Antagonist



CSL112 (Apolipoprotein A-I)

 Reduction of early recurrent cardiovascular events represents a substantial unmet medical need



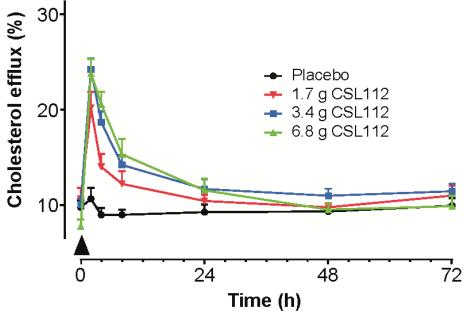
Recurrent CV events occur early, are associated with high mortality and are inadequately addressed by available therapies

Figure adapted from PLATO Trial, Kohli P et al. Circulation 2013;127:673-680



CSL112

- Novel Mechanism of Action for Early Reduction of Recurrent CV Events
- Produces an immediate and robust increase in the efflux of cholesterol from cells, including lipid-rich macrophages in coronary arteries



• Expected to rapidly stabilise plaque and reduce the incidence of <u>early</u> recurrent cardiovascular events



CSL112 AHA Presentations Nov 18, 2014



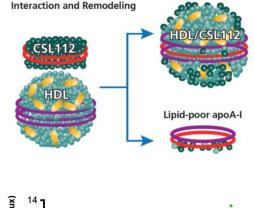
Further elucidation of mechanisms by which CSL112 may rapidly stabilise plaque at risk of rupture

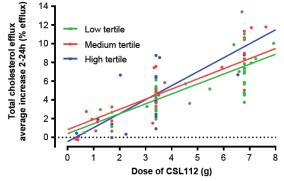
Mechanism of HDL Remodeling Induced by CSL112

- Prebeta-1 HDL levels correlate strongly with ABCA1 mediated cholesterol efflux
- Infusion of CSL112 rapidly produces large increases in prebeta-1 HDL

CSL112 Enhances Cholesterol Efflux In Patients with Low HDL Function

- CAD* patients have impaired ability to efflux cholesterol from cells
- CSL112 caused strong and quantitatively similar elevation in cholesterol efflux in patients with coronary artery disease and healthy subjects



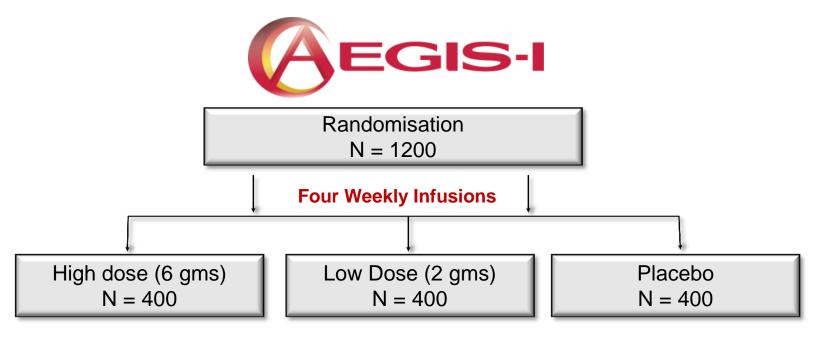




94

CSL112 AHA announcement of Phase 2b start





Administrated in acute MI setting

Primary endpoint: liver and renal safety

To be followed by Phase 3 morbidity/mortality trial

Target indication

Reduction of early atherothrombotic events in acute MI patients

at high risk of recurrent events



Licensing and Collaborations



Licensing

Breakthrough Medicines

Immunoglobulins

Specialty Products

Haemophilia Products Optimising value of IP Portfolio and assets

- Partner high opportunity products
 - GARDASIL[®]
 - Mavrilimumab (GM-CSFRα - Medi/AZ)
 - Periodontal disease (Sanofi)
 - CSL362 (Janssen)
 - CSL334 (ASLAN)
- ISCOMATRIX® adjuvant



GARDASIL®

Impact of Australia's HPV Vaccination Program

Genital warts

- 93% reduction in genital warts in females less than 21 years
- 82% reduction in genital warts in heterosexual males less than 21 years
- Rates of treatment for genital warts in private hospitals have also declined
 Cervical disease
- Current Australian cervical screening program data show that rates of high grade cervical disease are declining in both the <20 year old age group and in women aged 20–24 years

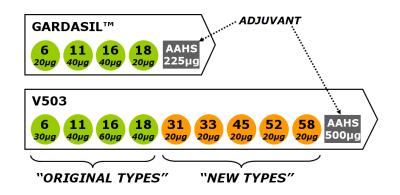
HPV Prevalence

- Substantial fall in vaccine-targeted HPV types in vaccinated women
- Also lower prevalence of vaccine-targeted types in unvaccinated women, suggesting herd immunity



GARDASIL®

- Long term protection
 - Follow up studies up to 8 years demonstrate no break through disease
- V503: 9-Valent HPV Vaccine
 - Merck's 2nd generation HPV vaccine
 - Phase III data: prevented 97% cervical, vaginal and vulvar precancers caused by additional 5 types
 - US BLA Dec 2013 for 2015 launch
 - Australia Submitted registration
 package to TGA June 2014



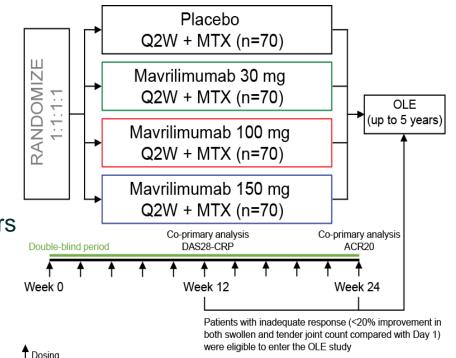


Gardasil is a registered trademark of Merck and Co., Inc.

Mavrilimumab (GM-CSFR α mAb)

Phase IIb (EARTH EXPLORER 1) study:

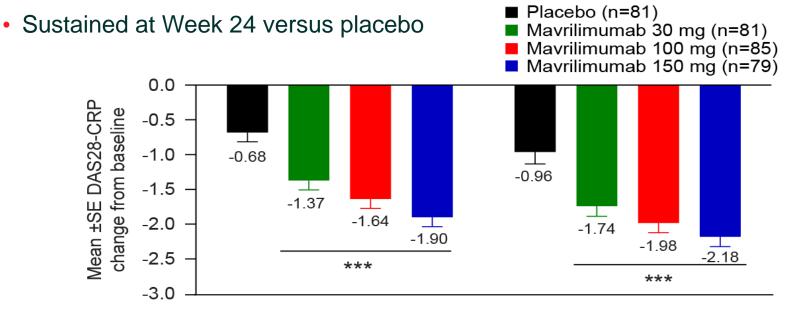
- 326 patients with moderate-to-severe RA and an inadequate response to at least one disease-modifying anti-rheumatic drug
- Dosing (30, 100, 150mg) every 2 weeks for 24 weeks
- Co-primary endpoints
 - Mean change from baseline in DAS28-CRP at Week 12
 - ACR20 response rate at Week 24
- Other endpoints
 - Multiple disease activity parameters
 - Safety and tolerability profile
- Patients eligible to enter openlabel extension (OLE) study



Mavrilimumab

Phase IIb study met DAS28-CRP co-primary endpoint:

 At Week 12, a statistically significant difference in DAS28-CRP was seen for all doses of mavrilimumab versus placebo



Week 12

Week 24

 A significantly greater percentage of mavrilimumab-treated patients met the ACR20 co-primary endpoint versus placebo for all doses

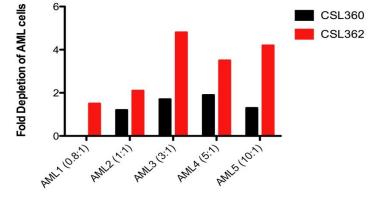
Mavrilimumab

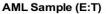
Phase IIb study conclusions:

- Study met both co-primary endpoints at all mavrilimumab doses
- All secondary endpoints (including ACR50, ACR70 response) achieved statistical significance for the 150 mg dose
- Rapid (after one week of initiation of treatment) and sustained improvement in multiple symptoms of RA observed in patients receiving mavrilimumab
- Improvements demonstrated in patient-reported outcomes (pain, health-related quality of life, physical function, fatigue)
- An acceptable safety and tolerability profile, with no apparent safety signals, demonstrated over the 24-week study period

CSL362 (anti-IL-3R α mAb)

- Initial indication: Acute myeloid leukaemia
- Enhanced recruitment of tumour killing NK cells
- Phase I study in progress
- Other high quality opportunities in autoimmunity eg. SLE





• Partnership with Janssen Biotech, Inc



Summary



Global R&D Portfolio

December 2014

	Research	Pre-clinical	Phase I	Phase II	Phase III	Registration	Commercial/ Phase IV
Life Cycle Management [#]							Immunoglobulins Haemophilia Specialty Products Influenza Vaccine
Market Development		Fibrinogen New Indications PCC New Indications		Beriplex [®] NOACs Daiichi*	Hizentra [®] CIDP Beriplex [®] Japan CSL830 C1-INH subcut Fibrinogen Aortic EU	Zemaira [®] EU	Hizentra® Japan Privigen ® CIDP Hizentra® biweekly Voncento® EU Kcentra™ US Bleeding /Surgery
New Product Development	Novel Plasma Proteins Rec Coagulation Factors Partnered Vaccine Programs* P. gingivalis/POD OH-CRC/Sanofi* Discovery Projects	CSL650 rvWF-FP Partnered Vaccine Programs* FXIIa Antagonist CSL324 G-CSFR CSL346 VEGFB	CSL689 rVIIa-FP Congen Def Partnered Vaccine Programs* CSL362 IL-3R* Janssen	CSL689 rVIIa-FP Inhibitors CSL112 reconstituted HDL CAM3001	CSL627 rVIII-SC Quadrivalent Flu Vaccine	CSL654 rIX-FP	
Core Capabilities:	Immunoglo	CSL334 IL-13R	philia Specia	GM-CSFR –AZ*	Breakthrough M	ledicines	Vaccines & IP

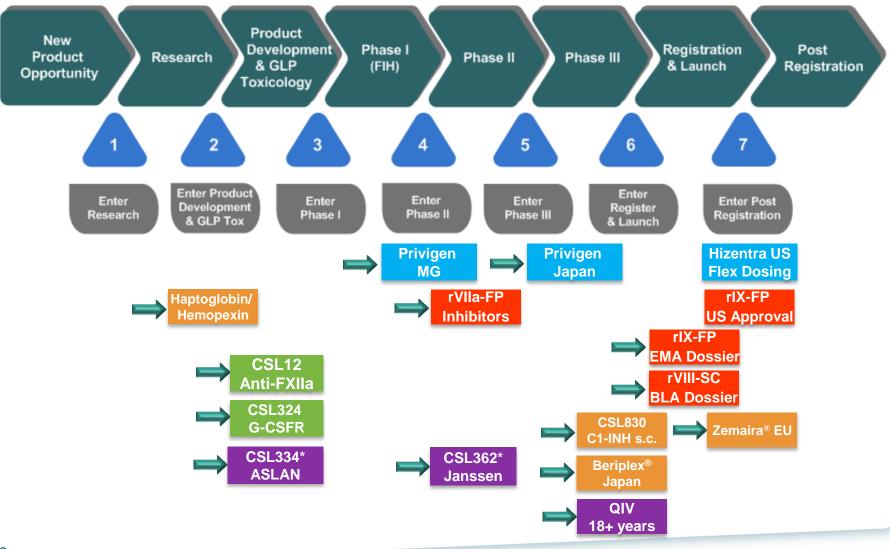


*Partnered Projects

#LCM includes direct post marketing commitments as well as pathogen safety, capacity expansions, yield improvements, new packages and sizes for all registered products

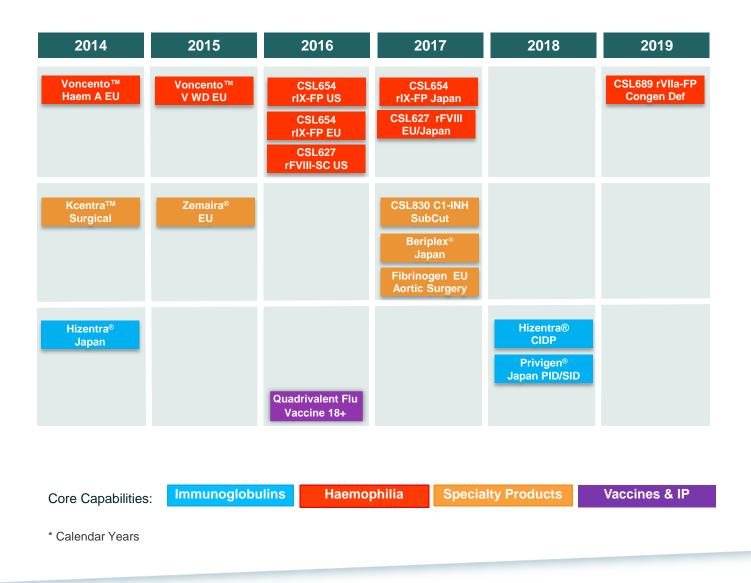


Expected Progress in next 12 Months





Significant Target Launch Dates





107

2014 Highlights

Immunoglobulins	 Hizentra[®] flexible dosing registration in EU Hizentra[®] CIDP orphan drug designation Ongoing global Privigen CIDP registrations 	
Specialty Products	 Kcentra[™] registration for surgical indication in US Berinert[®] s.c. Pivotal Phase III rapid recruitment Commencement of Beriplex[™] Japan Phase III study 	
Haemophilia	 rIX-FP Phase III efficacy data supports 7-14 day dosing rVIII-SingleChain Phase I/III supports twice-weekly dosing rVIIa-FP congenital deficiency Phase I/II commenced 	
Breakthrough Medicines	 Commencement of CSL112 (Apo A-1) Phase IIb study Anti-FXIIa mAb progressed into product development 	
Licensing & Vaccines	 Quadrivalent Flu (QIV-01) study 18+ yrs fully recruited Mavrilimumab positive additional Phase II data 	







Further Information

Presentation Playback

A playback of the Research and Development presentations will be available for a period of two weeks following the R&D Briefing. Investors wishing to listen to these presentations should contact CSL Investor Relations to arrange access. Contact: <u>maria.pikos@csl.com.au</u>

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