

ASX Announcement

For immediate release

20 October 2020

CSL's Annual R&D Investor Briefing 2020

CSL Limited (ASX:CSL; USOTC:CSLLY) – CSL will hold its annual Research and Development briefing today; the presentation is attached for the information of investors.

Amongst other achievements, CSL is pleased to highlight the following:

- Its work across a number of programs across our R&D platforms to prevent and treat COVID-19.
- CSL's AEGIS-II Phase 3 study of CSL112 (ApoA-1) for treatment of acute coronary syndrome has now resumed following a COVID related pause. More than 10,000 people have been enrolled to date.
- Results from Phase 2 clinical trials for Garadacimab, a treatment in hereditary angioedema (HAE), met its primary end points with a statistically significant reduction in HAE attacks.
- US Food & Drug Administration approval for an expanded label indication for Haegarda, to now include patients of 6 years and older.
- The aquisition of Clazakizumab (CSL300), an anti-interleukin-6 monoclonal antibody in the IMAGINE Phase 3 trial for the treatment of chronic active antibody-mediated rejection, the leading cause of long-term rejection in kidney transplant recipients.

Shareholders can access the briefing through CSL's website at CSL.com

Approved for Release

Fiona Mead Company Secretary

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Agenda

Topic	Presenter
Welcome	Mark Dehring
Introduction and Highlights	Bill Mezzanotte
Research - Protein Therapies, Gene Therapies & Vaccines	Andrew Nash
Immunology Highlights & COVID-19 Response	Mittie Doyle
Commercial	Bill Campbell
Transplant Highlights	Laurie Lee
Summary	Bill Mezzanotte
Q&A	Panel
Close	

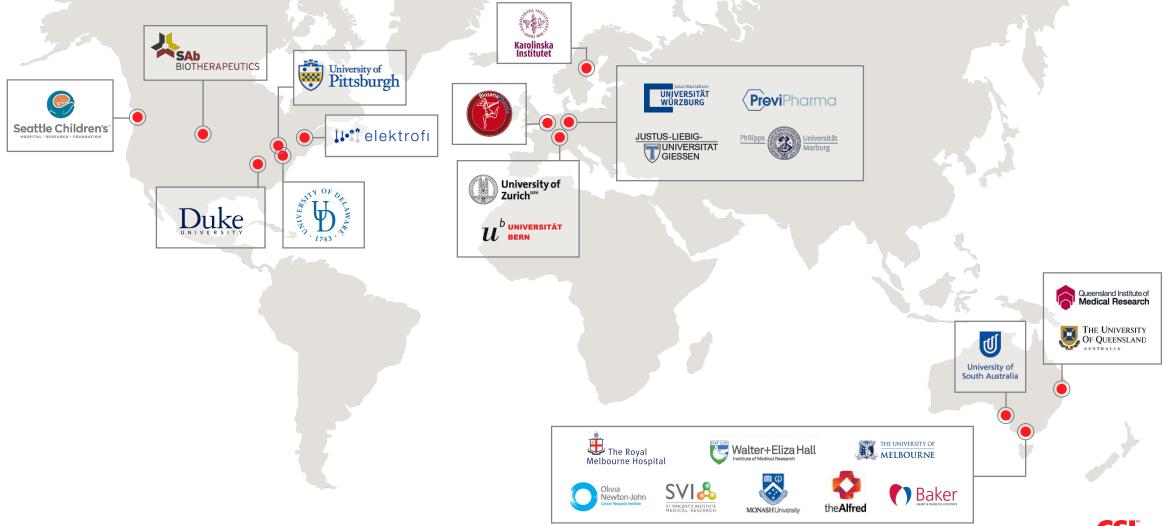


Global Research and Development Footprint

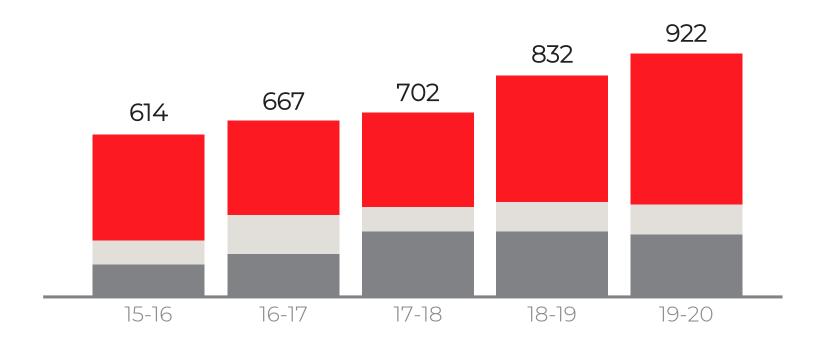




Key Global Research Partnerships for Early Innovation Access



Commitment to Research and Development



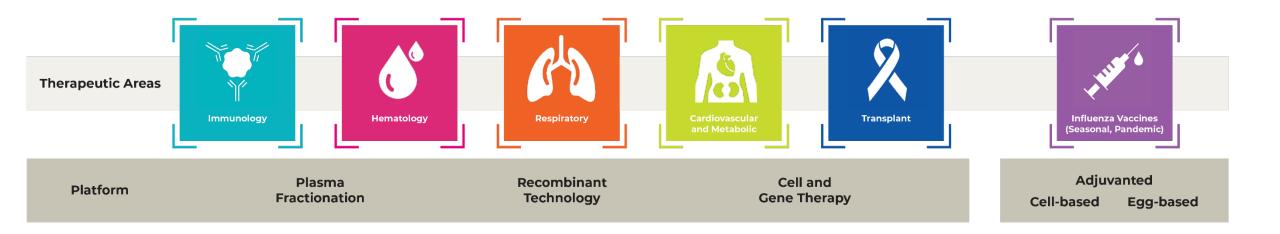
R&D investment ~10-11% global revenue

- New Product Development
 activities focus on innovative new
 therapies for life-threatening
 diseases
- Market Development
 strategies seek to bring therapies to
 new markets and new indications
- Life Cycle Management
 ensures continuous improvement
 of existing products

Includes R&D for CSL Behring and Seqirus. Investment reported in US\$ millions



Focus Through Our Therapeutic Areas and Platforms





R&D Portfolio – December 2019

SL510 d Fibrinogen SL787 ulised Ig QIVC ed Cell Culture iza Vaccine	CSL730 rFc Multimer CSL324 Anti-G-CSFR mAb CSL200	Garadacimab Anti-FXIIa (HAE) mAb HIZENTRA® (SSc)	HIZENTRA® (DM) CSL112	PRIVIGEN® (PID) JP
ulised Ig QIVc ad Cell Culture	Anti-G-CSFR mAb			00: 070
ed Cell Culture	CCI 200		ApoA-1 (ACS)	CSL830 C1-INH Subcut EU
iza vaccine	CAL-H (SCD)	PRIVIGEN® (SSc)	Clazakizumab Anti-IL-6 (AMR) mAb	PRIVIGEN® (CIDP) US, JP
ngivalis	CSL889 Hemopexin (SCD)	HAEGARDA® Japan	CSL842 C1-INH (rAMR)	HIZENTRA® (CIDP) US, JP
ntal Disease	Garadacimab Inti-FXIIa (Thrombosis)	CSL630 pdFVIII Ruide	CSL964 AAT (GvHD Treatment)	HAEGARDA® US
	CSL311 Anti-Beta Common mAb	Mavrilimumab Anti-GM-CSFR mAb	CSL964 AAT (GvHD Prevention)	IDELVION®
	CSL346 Anti-VEGF-B mAb		FLUCELVAX® QIV	AFSTYLA®
Г	CSL334/ASLAN004 (Anti-IL-13R)			KCENTRA® Japan
				ZEMAIRA®/RESPREEZA® AAT
				AFLURIA® QIV 6M+ US, AU
				FLUAD® QIV 65yrs+ US,EU,CA
Dechiratory	_			AUDENZ™ Adjuvanted Monovalent Influenza A (H5N1) Vaccine
	Respiratory Outlicensed F	Respiratory	Respiratory Cardiovascular & Metabolic	Respiratory Cardiovascular & Metabolic



R&D Portfolio Highlights - FY20



- HIZENTRA® Phase III DM study initiated
- HAEGARDA® Phase III HAE study in Japan initiated
- HAEGARDA® paediatric approval in US
- PRIVIGEN® approved for PID, SID & CIDP in Japan
- Garadacimab (Anti-FXIIa) Phase II HAE study results presented at EAACI Congress; FDA granted orphan drug designation (ODD)
- FDA granted HIZENTRA® ODD for CIDP



Haematology

- CSL200 (Gene Therapy) in SCD Phase I study initiated
- FDA granted CSL200 fast track designation
- CSL889 (Hemopexin) Phase I SCD study initiated
- CSL889 (Hemopexin) ODD approved in EU & US for SCD



Respiratory

 CSL311 (Anti-Beta Common) Phase I study in mild asthmatic patients initiated



Cardiovascular and Metabolic

- CSL112 (ApoA-1) Phase III study (AEGIS-II) >9500 patients recruited
- CSL112 (ApoA-1) AEGIS-II first futility analysis conducted; trial to continue as planned



Transplant

- AAT for prevention of GvHD Phase III study enrolment into Cohort 2 completed
- FDA granted AAT ODD for GvHD treatment & prevention
- Clazakizumab AMR study initiated
- FDA granted Clazakizumab ODD and fast track designation for CABMR



Acquisitions & Alliances

- Alliance with Seattle Children's Research Institute to develop WAS & XLA stem cell gene therapies for PID
- Agreed to acquire exclusive global license rights to AMT-061 (EtranaDez) for haemophilia B*
- Acquisition of Vitaeris Inc. and Clazakizumab
- * Transaction with uniQure is subject to customary regulatory clearances before closing

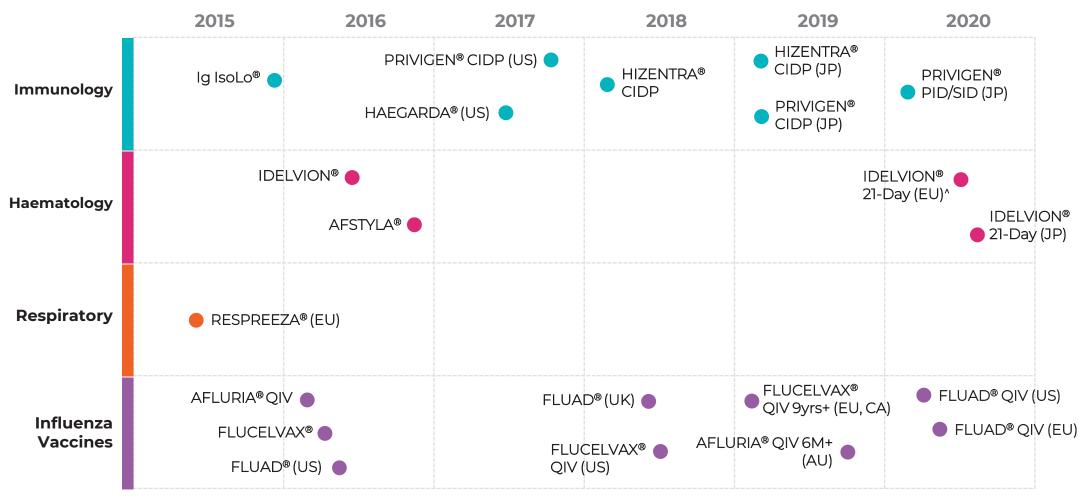


Influenza Vaccines

- Adjuvanted quadrivalent influenza vaccine, FLUAD® TETRA, approval in EU and FLUAD® QUADRIVALENT in US
- US FDA approval of AUDENZ™ adjuvanted, cell-based influenza A (H5N1) pandemic vaccine
- aQIVc (cell antigen + MF59®) new product development commenced



Key Past Launches from R&D Portfolio



Timelines shown by calendar year



[^] Expanded label for dosing every 21 days for patients ≥12 years in age, depending on individual patient and efficacy (and jurisdiction)

Notable Regional Regulatory Action

1 July 2019 - 1 October 2020



- * Bk-AE: bradykinin-mediated angioedema
- ** SCD: Sickle Cell Disease
- *** GvHD: Graft-versus-Host Disease
- **** CABMR: Chronic Antibody-Mediated Rejection
- ^ Every 21 days in patients ≥12 years of age, depending on individual patient and efficacy (and jurisdiction)



Expanded label for enhanced administration parameters



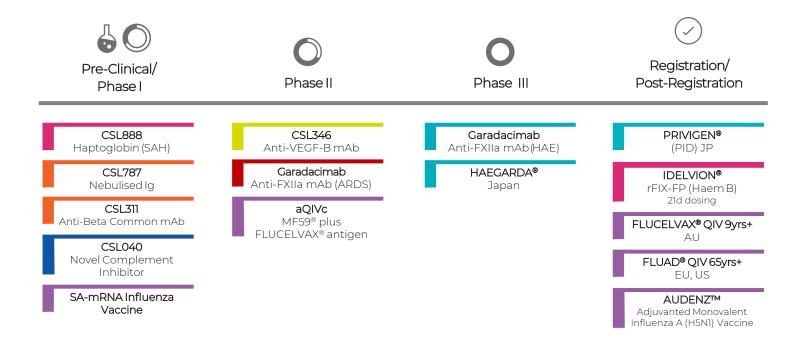
Expanded label for dosing every 21 days in patients ≥12 years of age

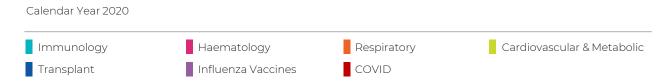


HAEGARDA Labeling update for expanded populations



R&D Portfolio Progression in 2020







CSL112 ApoA-1

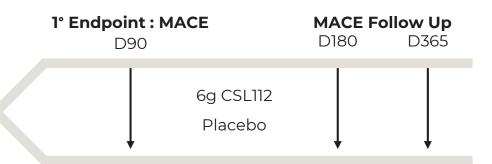
- All countries and sites reactivated
- Japan now active and enrolling well
- 1st futility analysis in 2020 passed

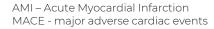


>17,000 AMI subjects ≥18yrs of age with Acute Coronary Syndrome

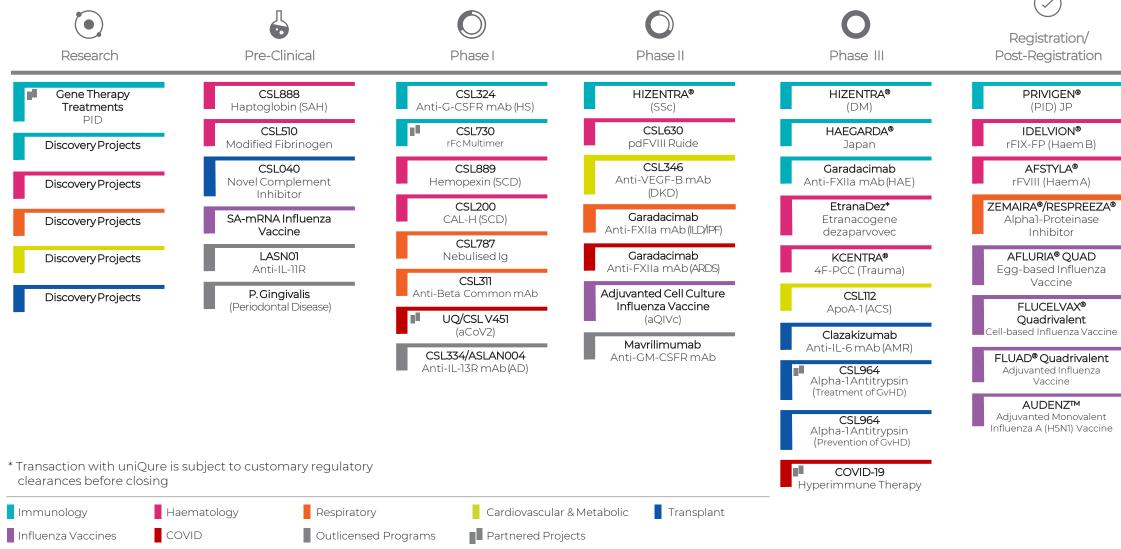
Screening

Randomisation





R&D Portfolio – October 2020







CSL Research

- Global team exploiting internal and external expertise and 4 drug discovery platforms to deliver innovative development opportunities across CSL therapeutic areas
- Expertise and track record in plasma and recombinant protein drug discovery, influenza vaccines and building capability in cell and gene therapy
- Expertise and depth of talent across 6 TAs





CSL Behring
Research
Melbourne
Bio21 Institute, University
of Melbourne



CSL Behring Research Marburg



Seqirus Research Boston



CSL Behring
Research Bern
Swiss Inst. for Translational &
Entrepreneurial Medicine,
University of Bern



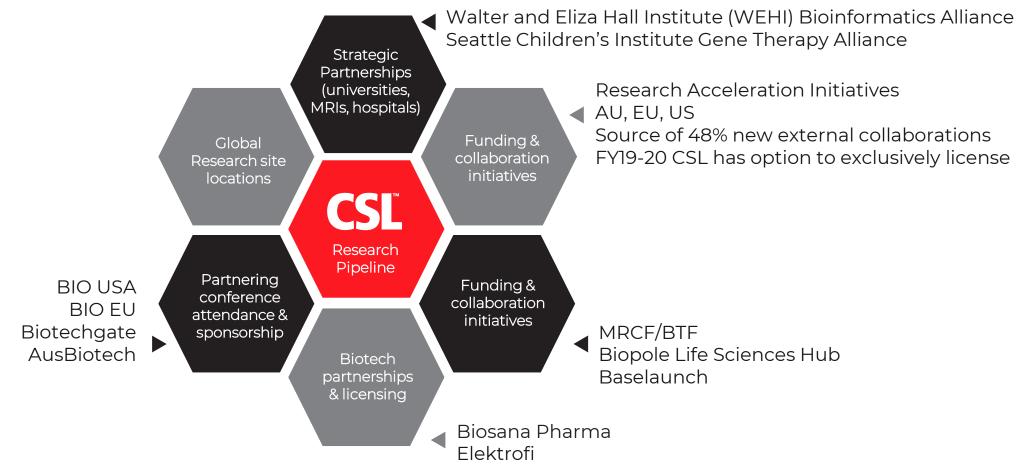
CSL Behring Research US Pasadena, KOP



CSL Behring Research – Sourcing Innovation

Research External Innovation Strategy

- the competition for innovation





Growing the Development Portfolio

Platforms Candidates Indications Plasma PID & SID proteins CSL888 Neutrophilic dermatoses CSL889 ANCA vasculitis **CSL787** SLE COPD Asthma ARDS CSL312 Pulmonary fibrosis CSL324 Recombinant Thrombotic conditions CSL346 proteins SCD crisis CSL311 Acute bleeding CSI 040 Ab graft rejection CSL362 Delayed graft function **GVHD** SCD GT Diabetic co-morbidities WAS GT Gene ... and others XLA GT therapy ASLAN PHARMACEUTICALS ASLAN004 Atopic dermatitis LASN01 Fibrosis & oncology



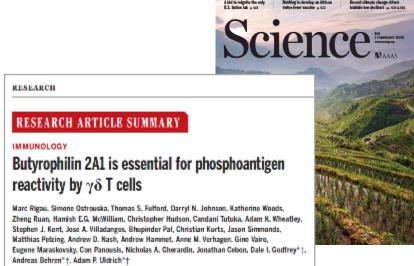
Collaboration Delivers Innovation

Collaboration leads to the discovery that BTN2A1 is required for the activation of $\gamma\delta$ T cells

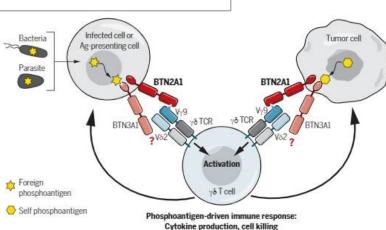


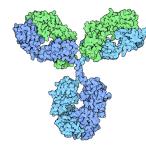






Antagonist and agonist monoclonal antibodies for use in autoimmune disease and immuno-oncology

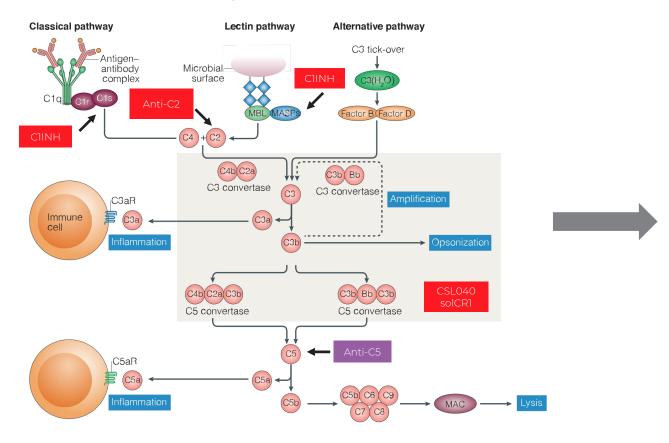






Targeting Complement Regulation

Complement Pathways



Potential indications

Chronic Indications, Classical/Lectin Pathway (Anti-C2 mAb)







Acute Indications, Classical/Lectin Pathway (CSL040)







Cyclic Acute *ex vivo* Pathway (CSL040)





Alternative Pathway needing chronic inhibitor (CSL040)



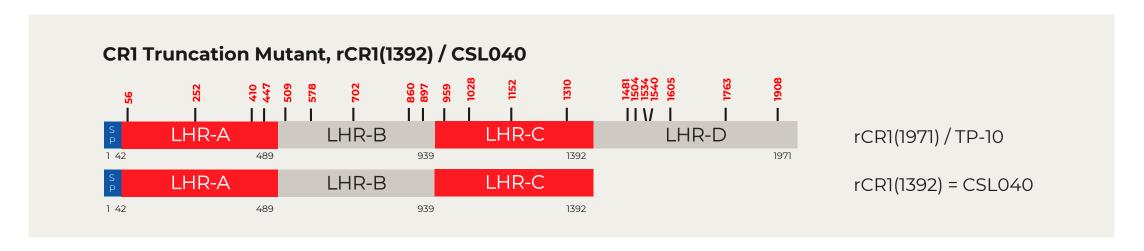




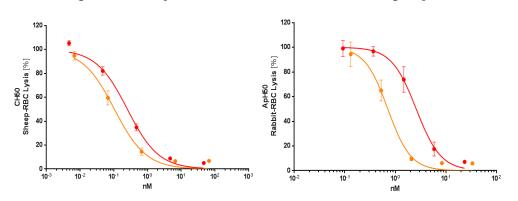
Source: Trouw, L.A. et al., (2017) Nat. Rev. Rheumatol. 13(9);538-547



CSL040 Complement Receptor 1 Inhibitor



Haemolytic complement inhibition assays (human serum)



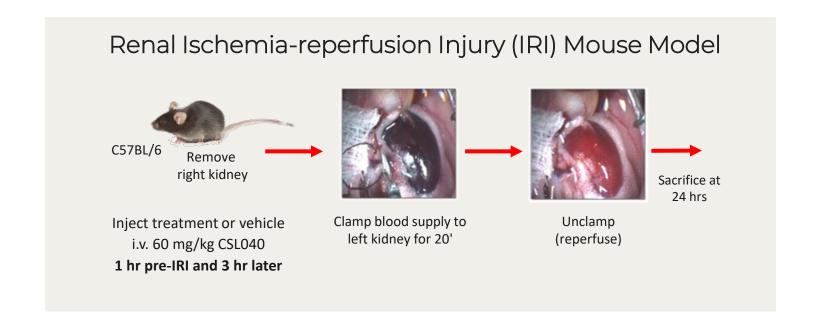
Inhibitor	IC ₅₀ Classical	IC ₅₀ Alternative
rCR1(1971)	253 pM	2587 pM
rCR1(1392)	104 pM	709 pM



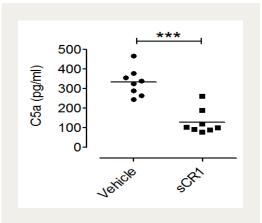
rCR1(1392) has 2-3 fold increased potency in vitro as compared to rCR1(1971) / TP-10

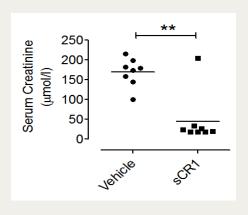


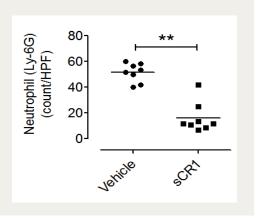
CSL040 Complement Receptor 1 Inhibitor



- CSL040 inhibits complement activity, leukocyte infiltration and renal damage in IRI model
- Pharm/Tox and product development to commence mid-2021



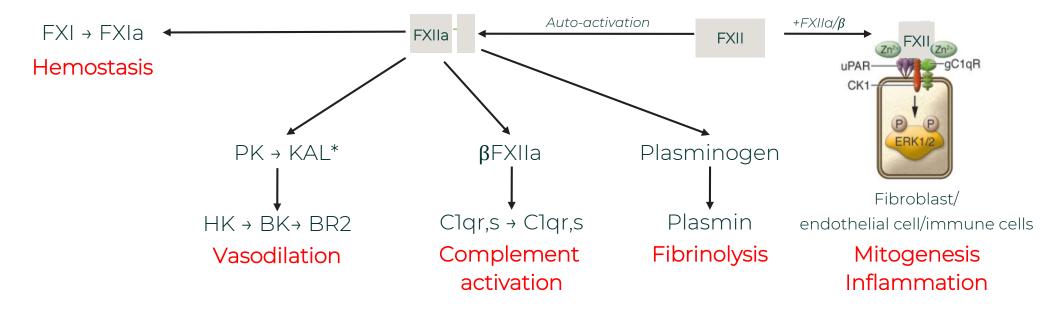






Garadacimab

Global leaders in FXII biology – new opportunities for Garadacimab



Beyond Hereditary Angioedema

New opportunities in fibrotic disease, cardiovascular disease, inflammatory disease



^{*} Feedback loops removed for simplicity

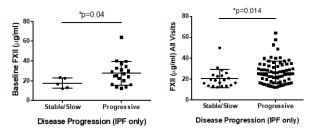
Garadacimab

Pulmonary Fibrosis

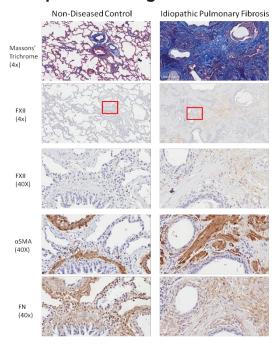
Garadacimab reduces fibrosis in the mouse bleomycin model of IPF Garadacimab from D0 Garadacimab from D5 150-150-Hydroxyproline (ug/left lung) Hydroxyproline (ug/left lung) 100-50-50-9 9



Plasma FXII levels are higher in IPF patients with progressive disease



FXII expression is higher in the IPF lung





Phase II to commence H2 2021

BLM

IPF – Idiopathic Pulmonary Fibrosis

Gene Therapy

uniQure

AMT-061 (EtranaDez) gene therapy (GT) for the treatment of Haemophilia B

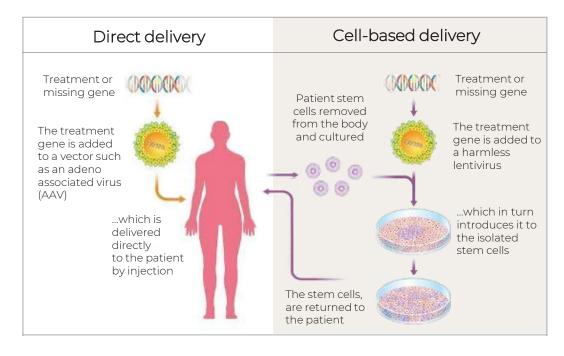
AAV5 vector encoding FIX Padua variant

May be clinically effective in patients with pre-existing Abs

Phase IIb mean FIX activity at 52 weeks 41%

Phase III study in progress

Upon deal completion, which is subject to customary regulatory clearances, CSL will have exclusive global rights to supply





Research Institute

Seattle Children's Research Institute (SCRI) – world leading preclinical & clinical experience with Lentivirus based GT

Alliance consolidates and extends CSL GT capability

Wiskott Aldrich Syndrome (WAS)

- CSLLVV and Select+ tech
- Ph I/II expected to commence H2-2022

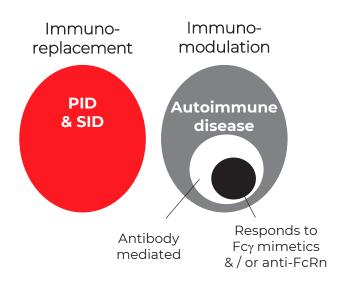
XLA

- SCRI LVV
- Ph I/II expected to commence H2-2022



Fc Mimetics and Anti-FcRn mAbs

IVIg & SCIg Usage



Ig vs. anti-FcRn

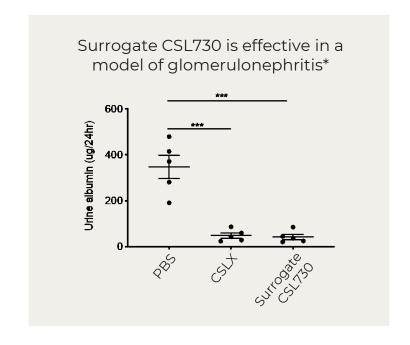
Ig supplementation vs. immune suppression

long term safety

persistence of response

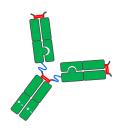
IVIg – Intravenous Immunoglobulin SCIg – Subcutaneous Immunoglobulin

Novel Applications for IgFc Mimetics



^{*} Disease induced by administration and cross-linking of antibodies directed against the kidney glomerular basement membrane

CSL730 Clinical Development





CSL / Momenta partnership



Phase I (moved to subcutaneous administration)

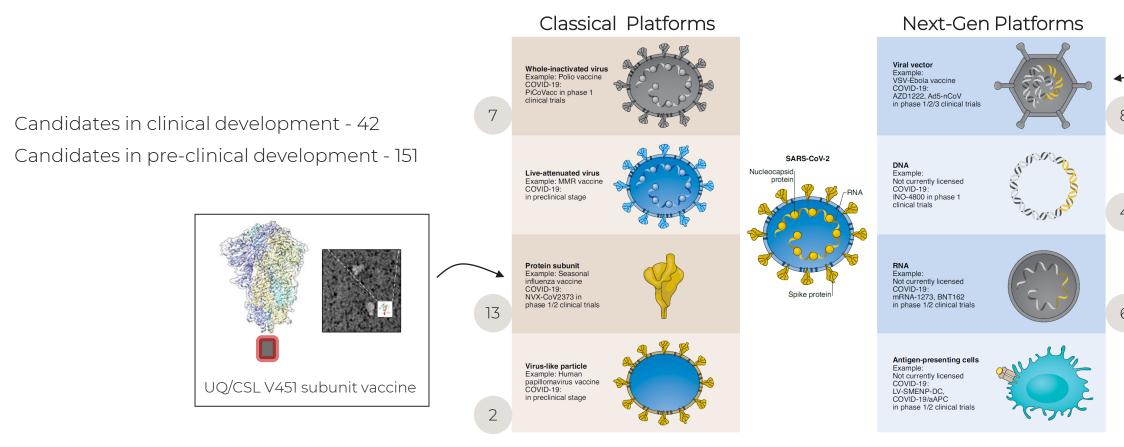


CSL – COVID-19 Vaccines

	UQ/CSL V451	AZD1222
Partners	University of Queensland, Coalition for Epidemic Preparedness Innovations (CEPI)	AstraZeneca
Vaccine Format	Recombinant virus spike protein (molecular clamp technology) formulated with MF59® adjuvant	Adenovirus vector designed to express spike protein of COVID-19 virus <i>in situ</i>
CSL Responsibility	Vaccine manufacture, clinical trials, supply	Vaccine manufacture
Current Status	Ph I ongoing, FSI Ph II/III Dec 2020	Phase III ongoing



CSL – COVID-19 Vaccines





In Clinical Development

Source: van Riel, D & de Wit, E., (2020) *Nature Materials* 19; 810-812



AZD1222

CSL – Production of UQ/CSL V451

CSL Biotech. Manufacturing Facility, Broadmeadows



2000L Cell Culture



Harvest by Depth Filtration



Drug Substance



Drug Product Filling, to be Formulated with MF59®



Vaccination

- Process scaled up and industrialised from Ph I as required
- Production, Fill/Finish for Ph II/III underway
- Same manufacturing platform technology to be used for AZD1222







Working Together to Fight COVID-19 with Immunoglobulin (Ig) Therapy

1. FOUNDERS





2. MEMBERS







3. CONTRIBUTORS















4. SUPPORTERS















Uber Health

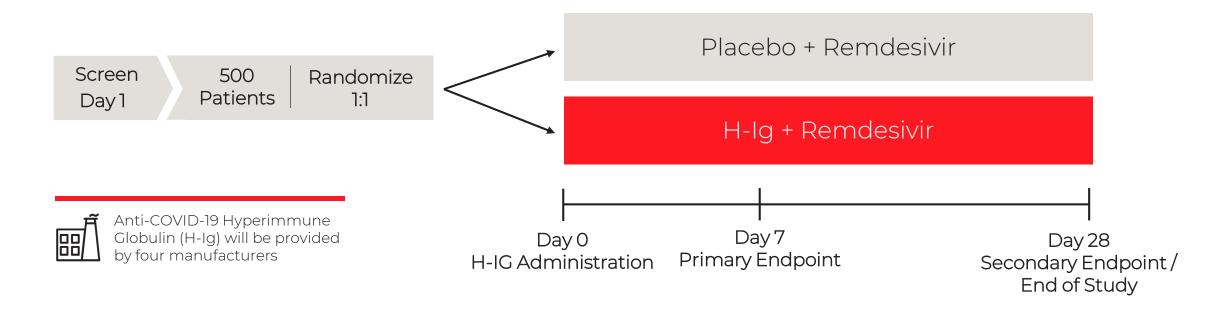








Collaborative Hyperimmune Ig Trial in COVID-19















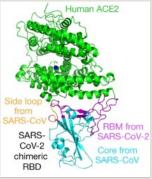
Hyperimmune Program for Australia

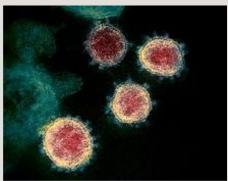
- Convalescent plasma collected by the Australian Red Cross Lifeblood
- CSLB has manufactured a clinical batch ready for clinical testing
- A single centre, Phase I, study of the Australian H-Ig product in 24 healthy volunteers
- Leverage global H-Ig data

Phase I to commence H2 2020











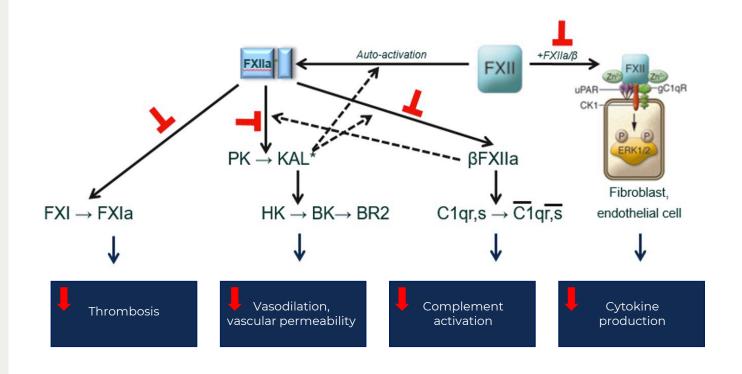
Potential Benefits of Blocking Factor XIIa in COVID-19





Primary Drivers of ARDS in COVID-19

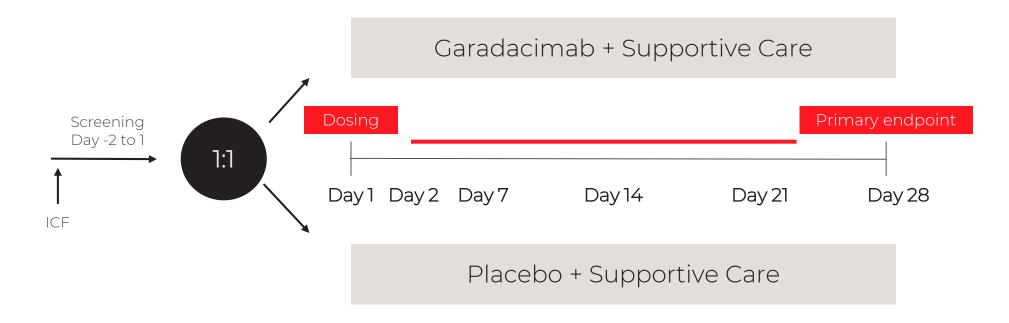
- Inflammation
- Thrombosis
- Vascular Permeability







Garadacimab in COVID-19



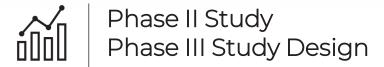
- Population 124 patients with severe COVID-19 complications
- Primary objective prevent progression to intra-tracheal intubation or death





Garadacimab in HAE: The Vanguard Program











Autosomal dominant genetic condition 1 in 10,000 – 50,000 people

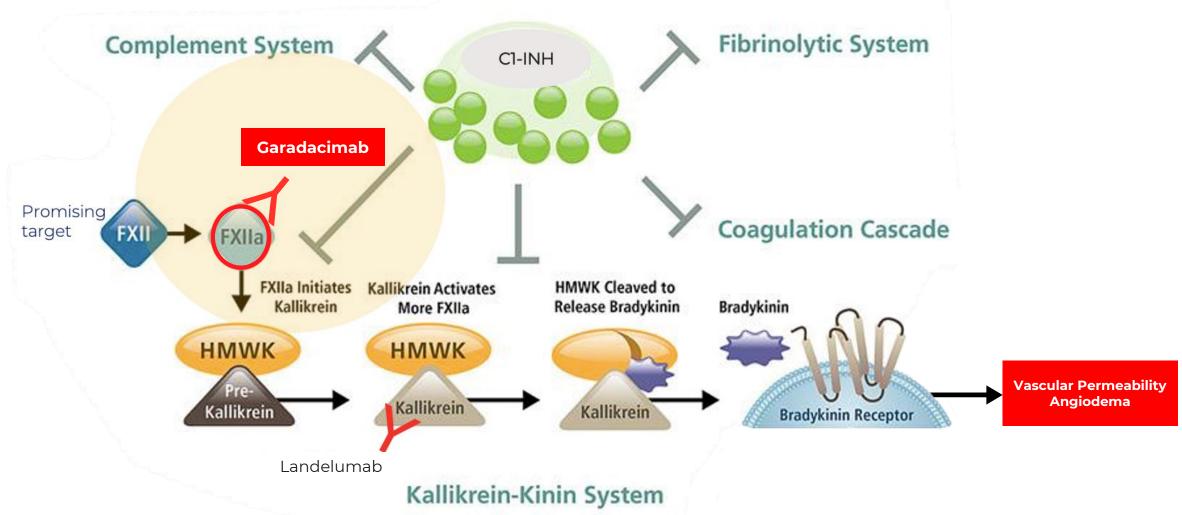
Unregulated protein cascade

- → elevated levels of bradykinin
- → fluid release into tissues
- → swelling in specific parts of body

Unpredictable onset, severity and attack location, lasts for 2-5 days

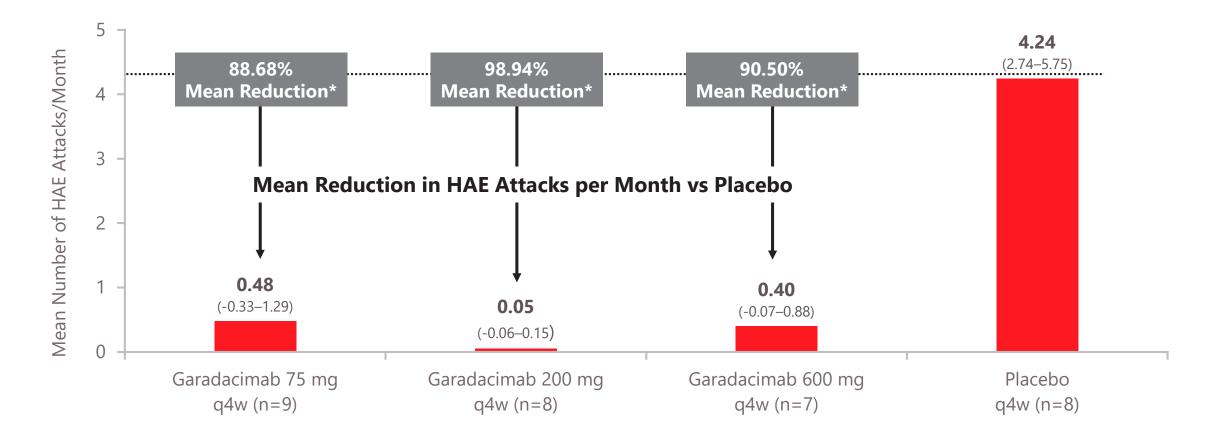


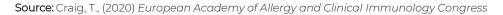
Garadacimab and Factor XIIa in HAE





Monthly SC Garadacimab Markedly Reduces Mean HAE Attack Rate (Phase II Study Results) Primary Endpoint





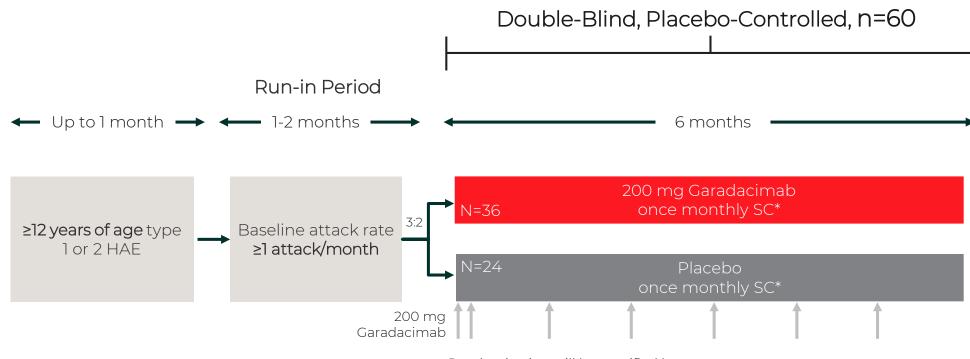


^{*} Mean percentage reduction in HAE attacks vs Placebo 95% CI values are given in brackets HAE - hereditary angioedema; q4w - every 4 weeks; TP1 - Treatment Period 1

VANGUARD

Garadacimab Pivotal Phase III Study





Randomization will be stratified by:

- Age (≤17 years and >17 years)
- Disease severity



Phase III to commence H1 2021



^{*} Subjects will receive 400 mg loading dose as first dose (2 × 200 mg)

HAE in Japan

Epidemiology

No ethnic differences worldwide*

Prevalence ~1/50,000, 2,400 estimated patients in Japan; HAE type 1 (85%), type 2 (15%)

Medical Practice

No drugs approved for long-term prophylaxis

Investigating both Garadacimab and HAEGARDA® for long term prophylaxis

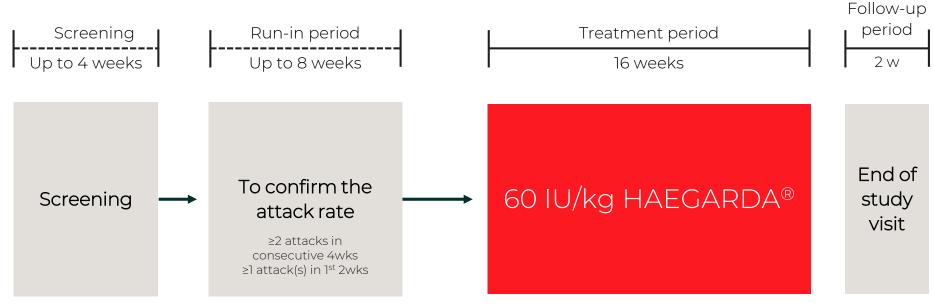


^{*} Source: Zuraw, B. (2010) World Allergy Organ J 3(9 Suppl); S25-8

Investigating HAEGARDA® for HAE in Japan

Open-label, single-arm Phase III study in ≥ 8 patients with HAE₁₊₂

- Twice-weekly subcutaneous administration of 60 IU/kg HAEGARDA®
- Primary Endpoint: HAE attack rate during treatment vs during Run-in period







Dermatomyositis – a Severe Autoimmune Disease

- Incidence 11 per 1,000,000
- Prevalence rate 14 per 100,000
- Increases with age (peak ages 70-79)*

Presents with proximal weakness, characteristic rash and systemic manifestations

Mortality rate 10-30% (5y), high comorbidity

Current treatment: corticosteroids and azathioprine, other immunosuppressives: no approved disease-modifying anti-rheumatic drugs (DMARDs)

High unmet need for long-term treatments without systemic side effects











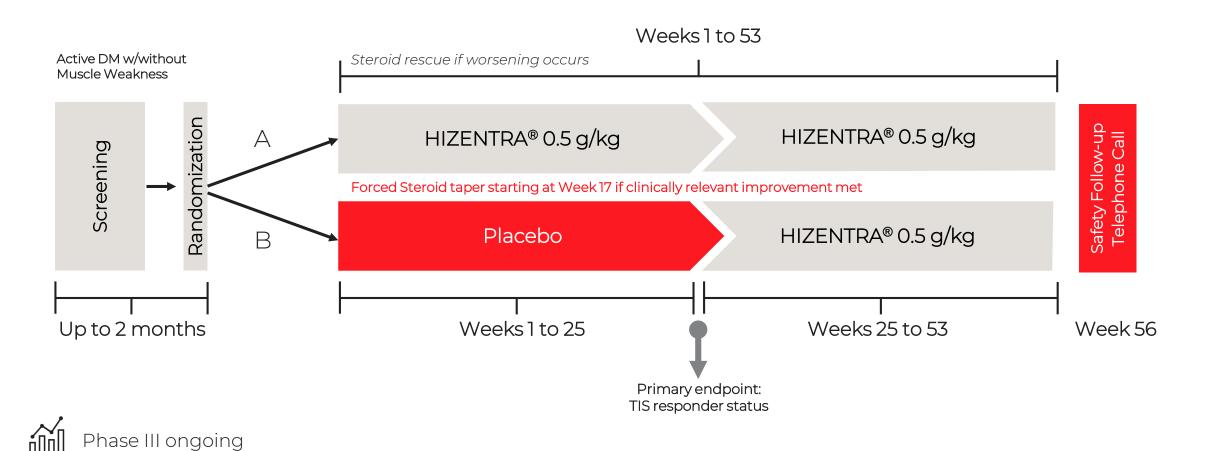


^{*} Source: Svensson J, et al., (2017) Clin Exp Rheumatol. 35(3):512-515

RECLAIIM



Phase III Study of HIZENTRA® in Adults with Dermatomyositis







FY20 Highlights



Sales of \$7.7Bn; increased by 8%¹



Strong underlying demand across the portfolio



Balanced regional & key market growth



New products contributing significantly to growth



Ig growth well above market



Continuing to invest in foundational tools for future growth



Successful transition of business model in China



^{1.} Growth percentages shown at constant currency to remove the impact of exchange rate movements, facilitating comparability of operational performance.

FY20: Strong Performance Across the Portfolio



20% growth¹in revenue YoY;
Continued
growth² in PID, CIDP



New launches in EU, APAC and Canada;
12% growth¹ in revenue YoY



12% growth¹ in revenue YoY; Further penetration² in US



34% growth¹ in revenue YoY and clear SCIg market leader² globally



25% growth¹ in revenue YoY; Market leadership² in several key markets, including US, Germany, Japan, Switzerland and Italy 21% growth¹ in revenue YoY;
Growth³ in nearly all launched markets



Transitioned to GSP in China; 11% growth¹ in revenue YoY ex-China



20% growth¹ in

revenue YoY; approval of

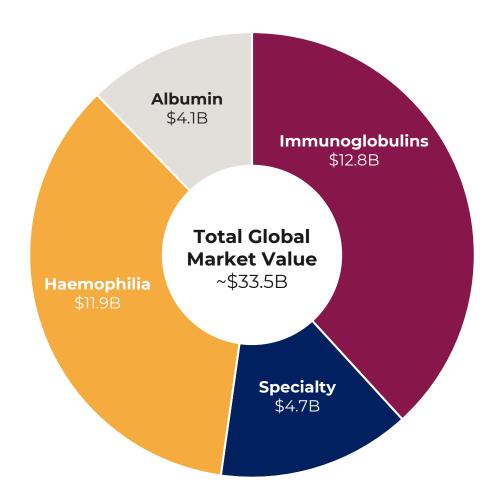
4&5 gr vials



- 1. Growth percentages shown at constant currency to remove the impact of exchange rate movements, facilitating comparability of operational performance.
- 2. Data on file
- 3. CSL Internal Reports



Targeted Protein Therapeutic Market

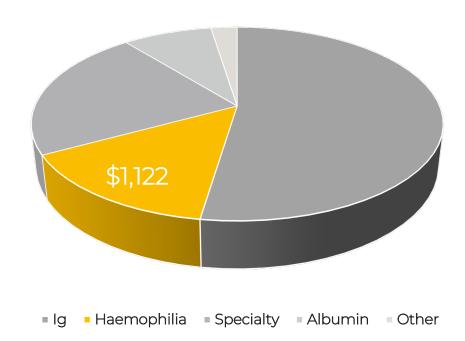


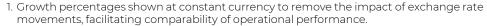


Haemophilia

Sales increased by 8%¹







^{2.} Data on file



- Transformational product
- Leadership position in several key markets²
- Approval of 21-day dosing in EU[^], CH, JP & CA



- Patient retention strategies and ongoing switches in competitive environment
- New market launches.

Plasma Coagulation Factors

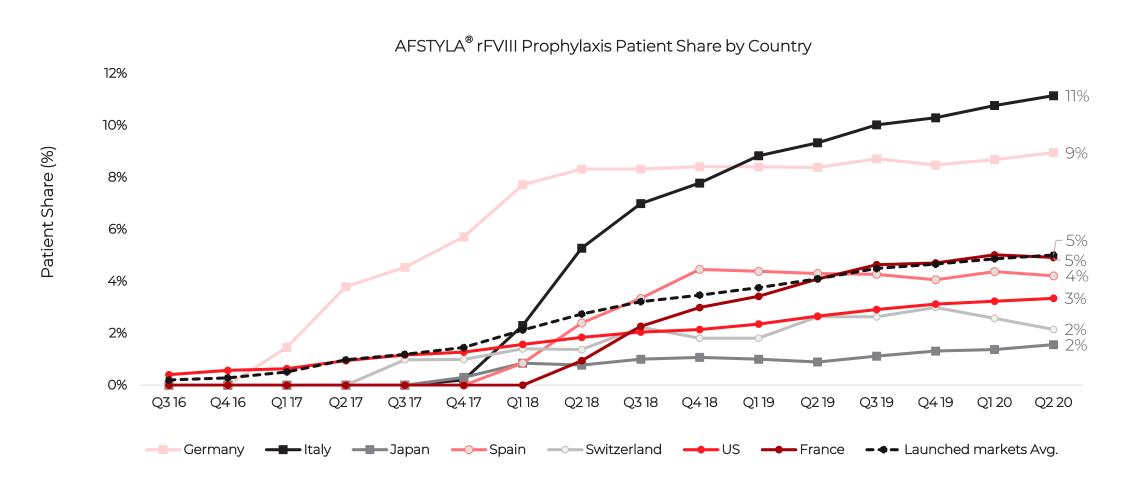
- Modest growth in HUMATE® /HAEMATE® (vWF)
- pdVIII competitive pressures
- MONONINE® to IDELVION® switches



[^] Expanded label for dosing every 21 days for patients ≥12 years in age, depending on individual patient and efficacy (and jurisdiction)



AFSTYLA® Share of rFVIII Prophylaxis – Growing Steadily

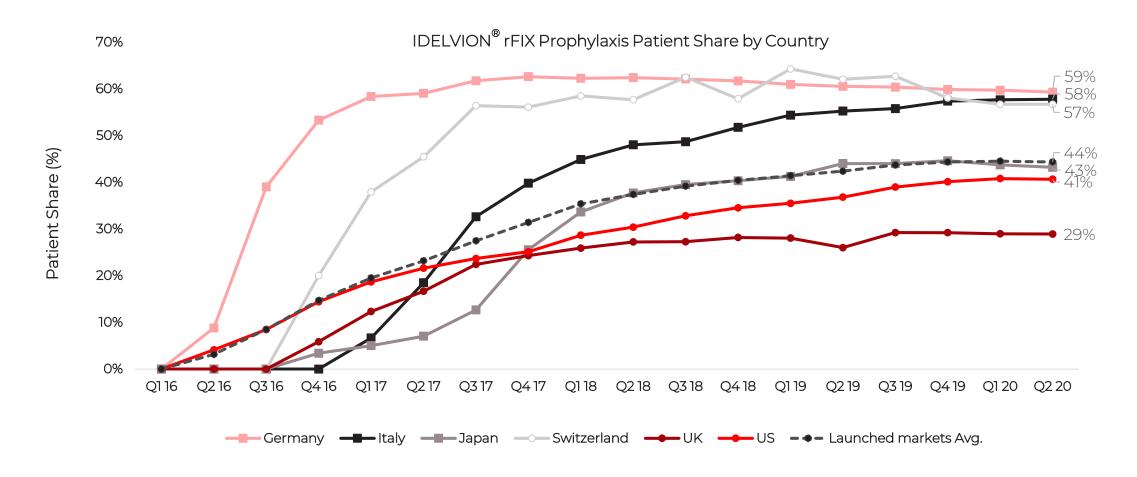


Source: Data on file. Data only available for 7MM, BR, CH and AR through Q2'20; Launched markets include DE, IT, JP, ES, CH, US, and FR 7MM refers to US, DE, FR, IT, UK, ES & JP





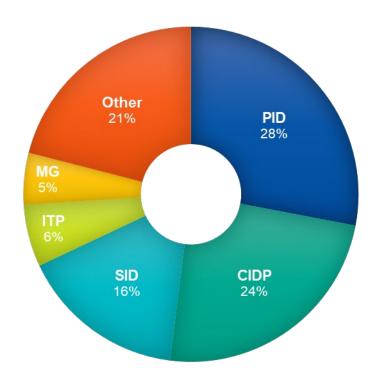
IDELVION® Share of rFIX Prophylaxis – Significant Shares





Immunoglobulin Market

Global Ig Volume by Indication



Market Dynamics

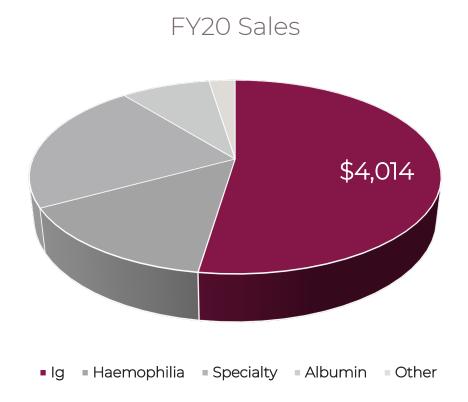
- Market growth above historical rates
- Growth in PID & CIDP
- Expanding usage for SID
- Market supply tightness pre-COVID-19
- COVID-19: Impact on plasma collection
- Shifting preference to SCIg and home administration





Immunoglobulins¹

Sales increased by 22%²





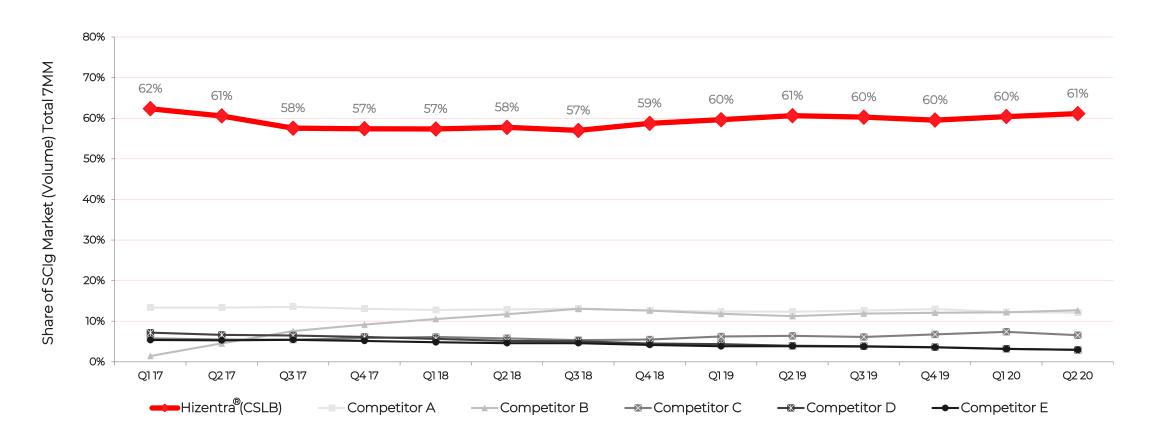
- Increased disease awareness & improved diagnosis in chronic therapies (PID & CIDP)
- Expansion of SID usage
- Launched PID/SID in Japan
- Market leader
- Increased preference for home administration
- Orphan exclusivity for CIDP in the US
- Continued CIDP launches

- 1. Excludes Ig hyperimmunes
- 2. Growth percentages shown at constant currency to remove the impact of exchange rate movements, facilitating comparability of operational performance.
- * Includes Privigen®, Sandoglobulin®/Carimune® and Intragam®



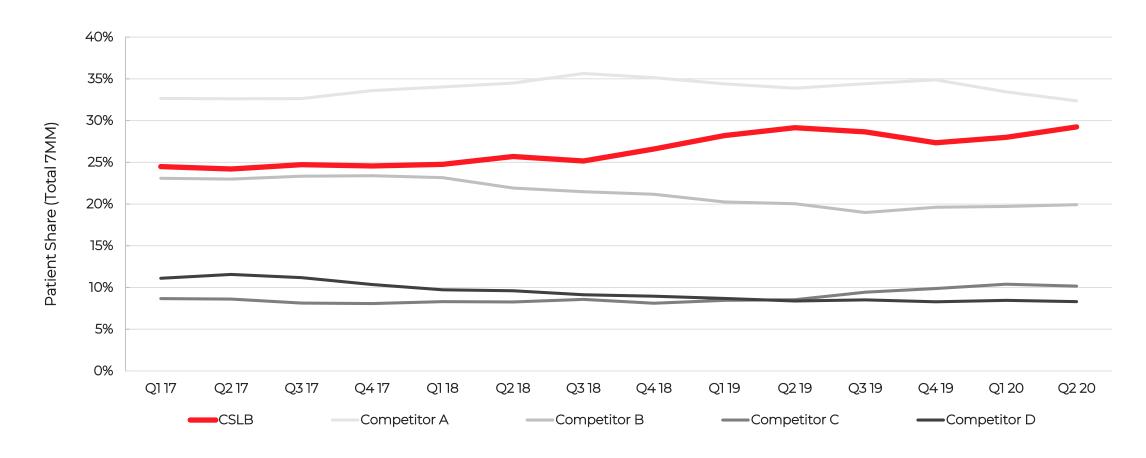


HIZENTRA®: Continued Strong Performance in SCIg Segment





CSL Behring Well-Positioned in CIDP

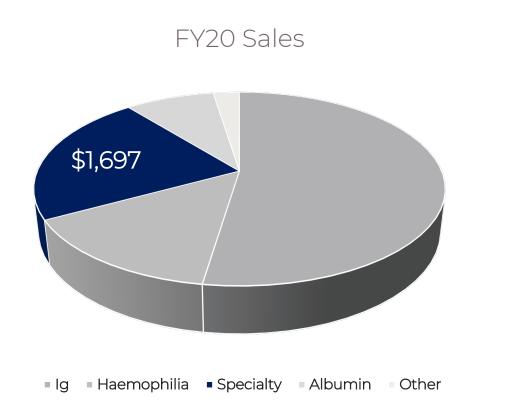






Specialty Products

Sales increased by 10%¹

















Peri-Operative Bleeding +10%¹

Other Specialty +9%¹

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





HAEGARDA® Continues to Deliver in the US



HAEGARDA® reduced HAE attacks by 95%*



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



Almost 25% of all new patients came from newest product launch¹

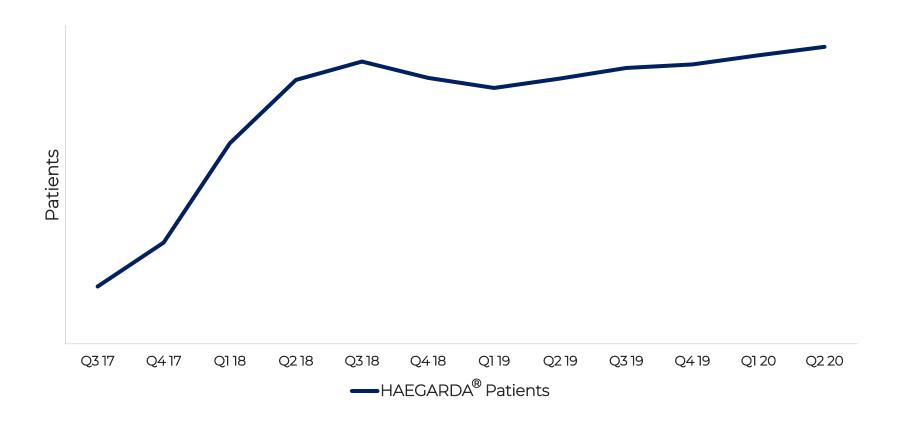
Finished with most patients on HAEGARDA® since launch¹

- * Median reduction in number of attacks in patients receiving 60 IU/kg of HAEGARDA $^{\rm B}$ vs placebo.
- † Median reduction in rescue medication use in patients receiving 60 IU/kg of HAEGARDA® vs placebo.
- ‡ The World Allergy Organization (WAO) guidelines for the management of HAE state that patients should have HAE rescue medication available at all times.
- ** Prophylactic non- steroids patient market
- 1. Data on file represents US market only





Finished with Most Patients on HAEGARDA® Since Launch

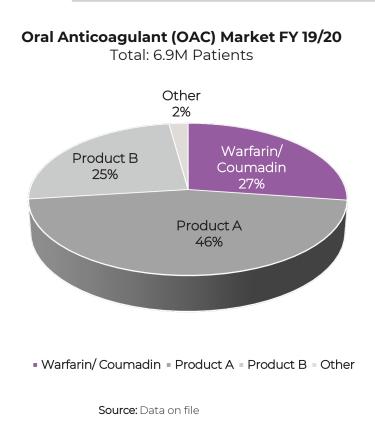


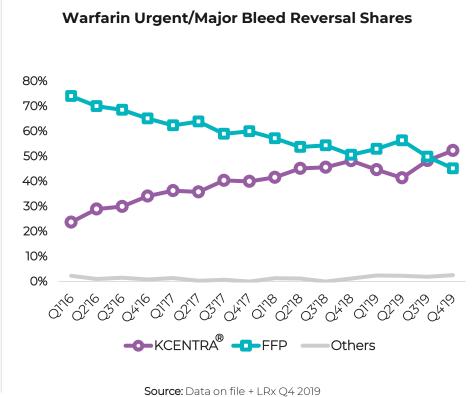


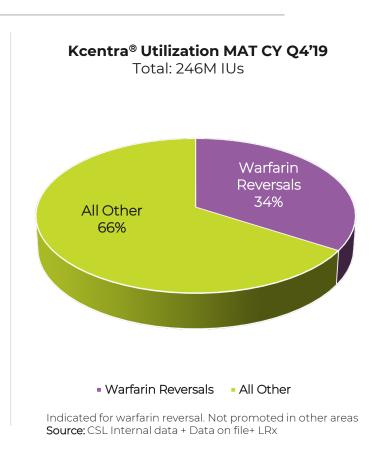


KCENTRA®: OAC Market & KCENTRA® Utilization

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





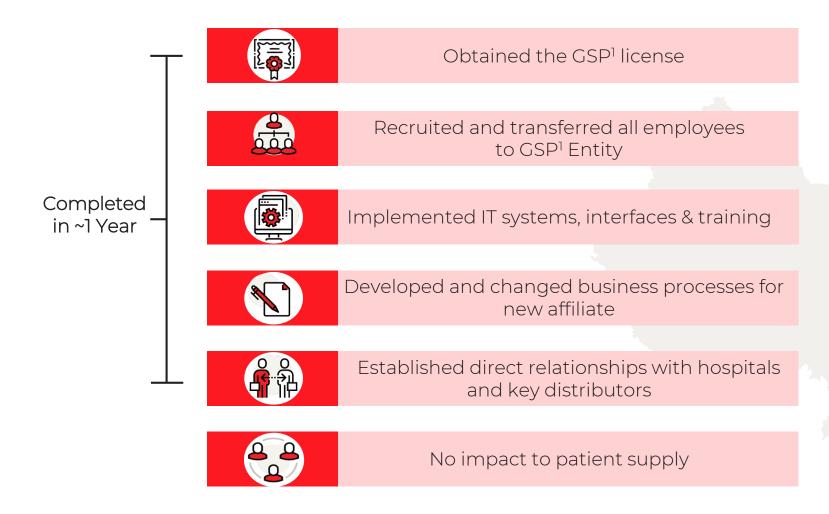


All data represents US market only



^{*} 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 FFP – Fresh frozen plasma

Successful Transition of Business Model in China



^{1.} Good Supply Practices (GSP)



Commercial Summary



Executing on strategies



Strong underlying demand across the portfolio



Balanced regional & key market growth



New products contributing significantly to growth



Aligned therapeutic area teams and strategy



Remain flexible and agile managing through COVID-19





Improve Outcomes for Transplant Recipients

Unmet needs in hematopoietic stem cell (HSCT) & solid organ transplantation

Before & During Transplantation

Lack of organs & optimally matched cells

- Shortage of available organs & organ discard
- Donor-recipient mismatch
- Consequences of ischemiareperfusion injury

After Transplantation

Inadequate long-term patient and graft survival

- Graft-versus-Host Disease (GvHD) is major risk to patient survival post-HSCT
- Antibody-Mediated Rejection (AMR) is leading cause of long-term graft loss in kidney transplant recipients

Need for less toxic post transplantation regimens

Patients are at risk for infection, malignancy and other comorbidities

Scientific focus:

Anti-inflammatory & immune modulation



Three Ongoing Late-Phase Transplant Programs

Inadequate long-term patient and graft survival

Graft-versus-Host Disease (GvHD)

Antibody-Mediated Rejection (AMR)



Phase III

AAT (CSL964) treatment study in collaboration with BMT CTN (NHLBI/NCI)





Phase II/III

AAT (CSL964) MODULAATE prevention study





Phase III

Clazakizumab (CSL300) IMAGINE trial

> Interleukin 6 Blockade Modifying Antibody-Mediated Graft Injury and Estimated Glomerular Filtration Rate (eGFR) Decline





GvHD: Frequent Post-Transplantation Complication with High Morbidity and Mortality

Up to 50% of patients develop GvHD after allogeneic HSCT despite current prophylactic regimens

Of those who develop acute GvHD, only 50% respond to treatment* (termed "steroid-refractory")

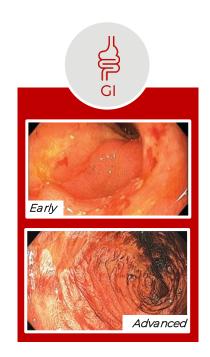
Severity of acute GvHD varies: grades III and IV are the most severe

Mortality associated with grade III and grade IV one year after transplant is 75% and 95%, respectively**

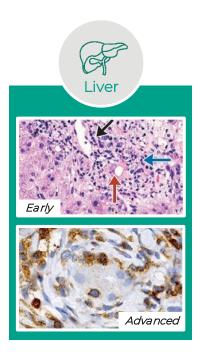
Clinical Manifestations



Maculopapular rash



- Upper GI: nausea, vomitina
- Lower GI: profuse watery diarrhoea; bloody diarrhoea or ileus



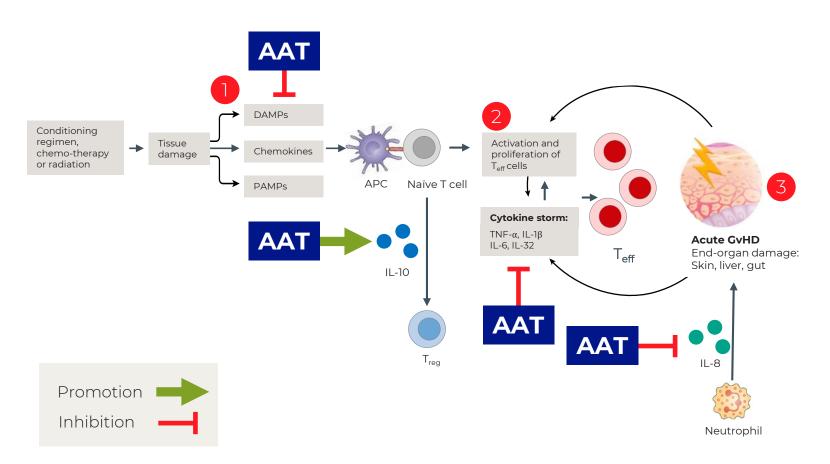
- Cholestatic jaundice
- Hyperbilirubinemia



^{*} Ferrara, J. & Chaudry, M. (2018) *Blood Adv.* 2(22):3411-3417

^{**} Hill, L. et al., (2018) Ther Adv Hematol. 9(1):21-46

Potential Mechanisms of AAT in GvHD



Pre-Clinical Data

- Protease inhibition protects tissue
- Reduces pro-inflammatory cytokine secretion
- Decreases CD8+ effector memory cells
- Inhibits neutrophil migration to sites of inflammation
- Promotes release of anti-inflammatory cytokine 11 -10

Source: Adapted from Blazar, B. R., et al., (2012). Nat Rev Immunol 12(6): 443-458



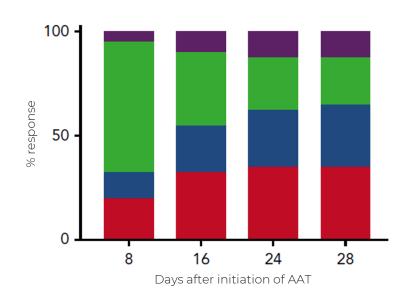
Clinical Response to AAT in Patients with Steroid-Refractory acute GvHD (SR-aGvHD)

Prospective, open label, Phase II study of i.v. AAT in SR-aGvHD*

- 40 subjects, steroid-refractory acute GvHD
- AAT twice weekly x 4 weeks at 60mg/kg
- Overall response rate (ORR) (CR + PR): at d28 = 65%; CR at d28=35%
- Sustained response at d60 of 73%

Second smaller study (n=12) had consistent findings**

Overall Response Rate (ORR)



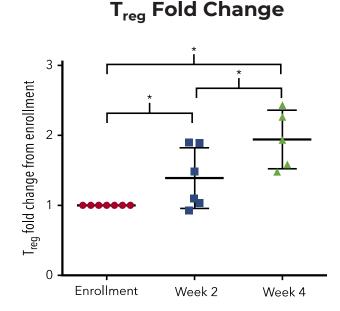




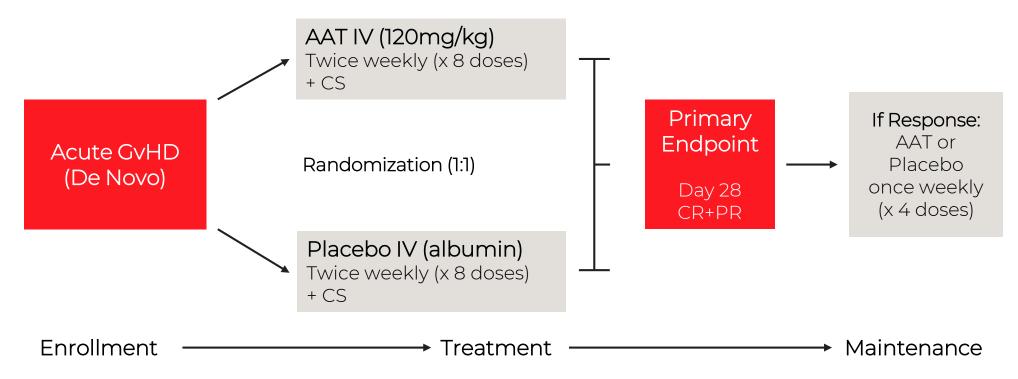
Figure 1. ORR. The percentage of patients who experienced an overall response (primary end point) as defined by the sum of patients with SR-aGvHD achieving complete response (CR) and partial response (PR) after initiation of AAT. NR, nonresponder; Prog, progression.

^{*} Magenau, J.M. et al., (2018) Blood. 131(12):1372-1379 ** Marcondes, A.M. et al., (2016) BBMT 22(9): 1596-1601



AAT for GvHD Treatment Study: BMT CTN 1705

Collaboration opportunity with Blood and Marrow Transplant Clinical Trials Network BMT CTN (NHLBI/NCI)





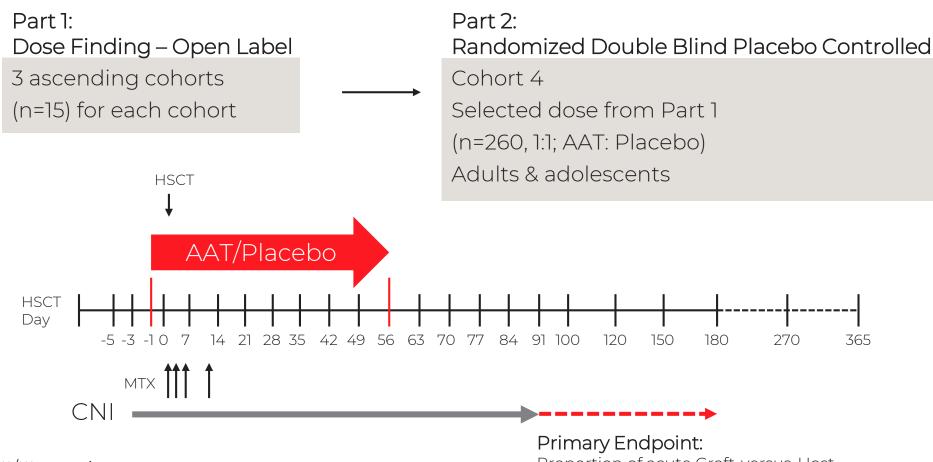
BMT CTN (NHLBI/NCI)



MODULAATE



AAT GvHD Prevention Phase II/III Study





Proportion of acute Graft-versus-Host Disease-free survival at 180 days post-HSCT

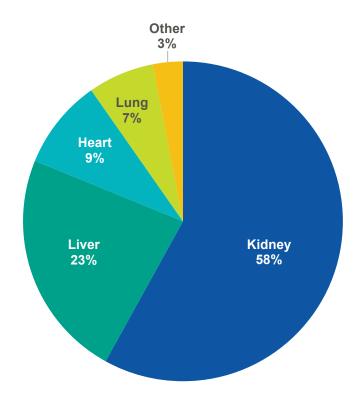


Solid Organ Transplantation



>500,000 patients are living with a transplanted kidney*

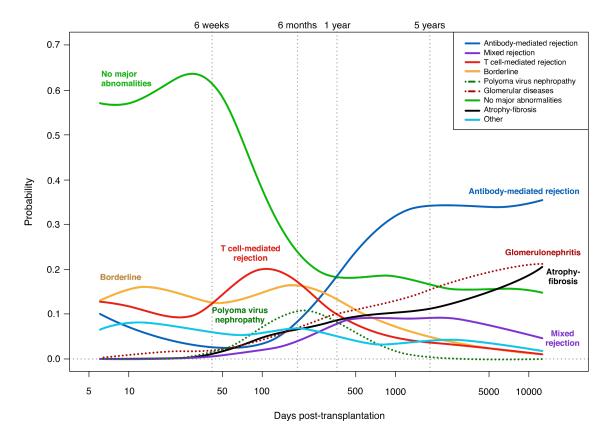
Transplants by Organ Type (US - 2015)

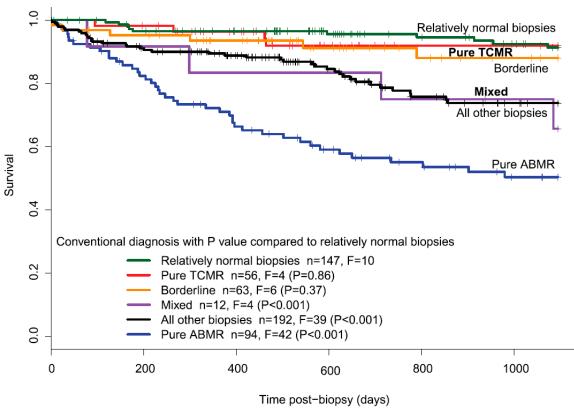




^{*} Scientific Registry of Transplant Recipients (SRTR) and European Renal Association – European Dialysis and Transplant Association (ERA-EDTA)

Antibody-Mediated Rejection (AMR) is a Leading Cause of Long-Term Graft Loss



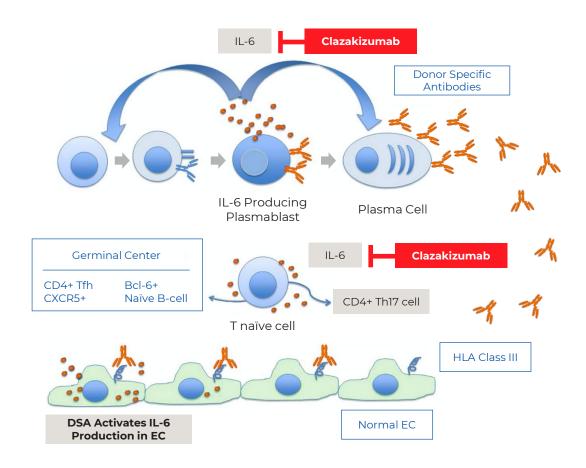


Source: Sellarés et al., (2012) Am J Transplant. 12:388-99

Source: Halloran et al., (2015) *J Am Soc Hephrol.* 26:1711-1720



IL-6 Plays a Key Role in the Development of AMR



IL-6 induces donor-specific antibodies (DSAs) leading to renal tissue damage

Anti-inflammatory and immune modulatory effects of IL-6 blockade:

- Reduces plasmablasts and proinflammatory T cells
- Increases Treg cells
- Decreases DSA production
- Reduces IL-6 production in activated ECs and subsequent reduction in vasculopathy

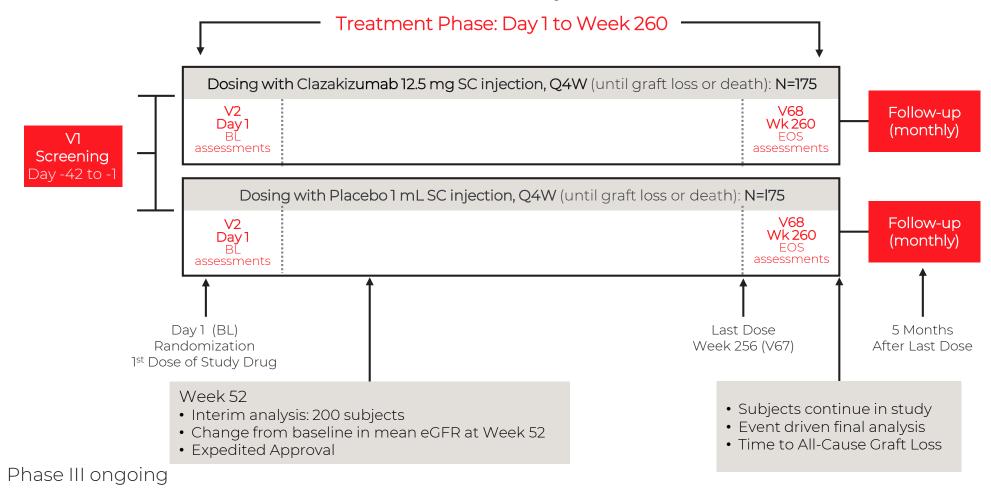
Source: Adapted from Jordan, S. et al., (2017) Transplantation. 101 (1): 32-44



IMAGINE



Clazakizumab for chronic AMR treatment study





Improve Outcomes for Transplant Recipients

Unmet needs in hematopoietic stem cell (HSCT) & solid organ transplantation

Before & During Transplantation

Lack of organs & optimally matched cells

- Shortage of available organs & organ discard
- Donor-recipient mismatch
- Consequences of ischemiareperfusion injury

After Transplantation

Inadequate long-term patient and graft survival

- ✓ Graft-versus-Host Disease (GvHD) is major risk to patient survival post-HSCT
- ✓ Antibody-Mediated Rejection (AMR) is leading cause of long-term graft loss in kidney transplant recipients

Need for less toxic post transplantation regimens

✓ Patients are at risk for infection, malignancy and other comorbidities

Scientific focus:

Anti-inflammatory & immune modulation



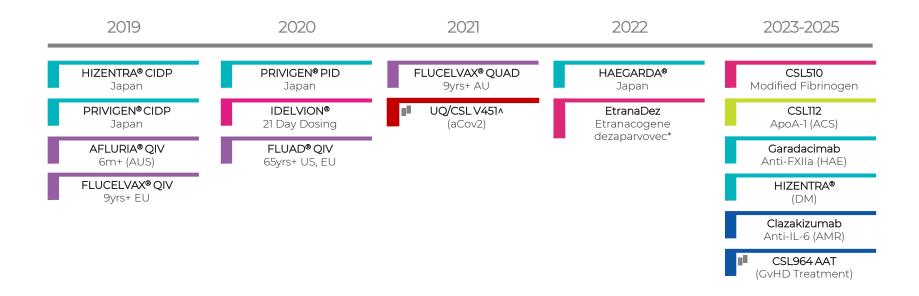


R&D Portfolio – October 2020

Research	Pre-Clinical	Phase I	Phase II	Phase III	Registration/ Post-Registration
Gene Therapy Treatments PID	CSL888 Haptoglobin (SAH)	CSL324 Anti-G-CSFR mAb (HS)	HIZENTRA® (SSc)	HIZENTRA® (DM)	PRIVIGEN® (PID) JP
Discovery Projects	CSL510 Modified Fibrinogen	CSL730 rFc Multimer	CSL630 pdFVIII Ruide	HAEGARDA® Japan	IDELVION® rFIX-FP (Haem B)
Discovery Projects	CSL040 Novel Complement Inhibitor	CSL889 Hemopexin (SCD)	CSL346 Anti-VEGF-B mAb (DKD)	Garadacimab Anti-FXIIa mAb (HAE)	AFSTYLA® rFVIII (HaemA)
Discovery Projects	SA-mRNA Influenza Vaccine	CSL200 CAL-H (SCD)	Garadacimab Anti-FXIIa mAb (ILD/IPF)	EtranaDez* Etranacogene dezaparvovec	ZEMAIRA®/RESPREEZA® Alpha1-Proteinase Inhibitor
Discovery Projects	LASN01 Anti-IL-11R	CSL787 Nebulised Ig CSL311	Garadacimab Anti-FXIIa mAb (ARDS)	KCENTRA® 4F-PCC (Trauma)	AFLURIA® QUAD Egg-based Influenza
Discovery Projects	P. Gingivalis (Periodontal Disease)	Anti-Beta Common mAb UQ/CSLV451 (aCoV2) CSL334/ASLAN004 Anti-IL-13R mAb (AD)	Adjuvanted Cell Culture Influenza Vaccine (aQIVc) Mavrilimumab Anti-GM-CSFR mAb	CSL112 ApoA-1 (ACS) Clazakizumab Anti-IL-6 mAb (AMR) CSL964 Alpha-1Antitrypsin (Treatment of GvHD) CSL964 Alpha-1Antitrypsin (Prevention of GvHD)	FLUCELVAX® Quadrivalent Cell-based Influenza Vaccine FLUAD® Quadrivalent Adjuvanted Influenza Vaccine AUDENZ™ Adjuvanted Monovalent Influenza A (H5N1) Vaccine
* Transaction with uniQure is clearances before closing	subject to customary regulatory	/		COVID-19 Hyperimmune Therapy	
Immunology Haematology Respiratory Cardiovascular & Metabolic Transplant Influenza Vaccines COVID Outlicensed Programs Partnered Projects					



Significant Target Launch Dates



Timelines shown by calendar year

^ Provisional Approval





^{*} Transaction with uniQure is subject to customary regulatory clearances before closing

R&D Portfolio Highlights – FY21



- Garadacimab (Anti-FXIIa) initiate Phase III study
- HAEGARDA® complete Phase III HAE study in Japan
- CSL324 (Anti-G-CSFR) initiate PK/Ethnicity study for SC formulation and inclusion of Japan



Respiratory

- CSL311 (Anti-Beta Common) advance Phase I study in mild asthmatic patients
- Garadacimab (Anti-FXIIa) initiate Phase II ILD/IPF study
- CSL787 (Neblg) initiate Phase I study



Cardiovascular and Metabolic

- CSL112 (ApoA-1) Phase III study (AEGIS-II) complete 2nd futility analysis (if applicable)
- CSL346 (Anti-VEGF-B) initiate Phase II study for DKD



Haematology

- KCENTRA® initiate Phase III study for treatment of massive haemorrhage associated with severe traumatic injury
- EtranaDez* US Approval



 CSL964 (AAT) for prevention of GvHD - complete Part 1, adaptive phase of study, and advance to confirmatory Part 2



- FLUCELVAX® Quadrivalent EU & CA approvals in 2+yrs indication
- FLUCELVAX® Quadrivalent US & CA submissions 6mons+ indication
- aQIVc (cell antigen + MF59®) initiate Phase II safety & immunogenicity study in adults 50+yrs



- COVID-19 Hyperimmune Therapy Phase III First Patient In
- Garadacimab (Anti-FXIIa) complete Phase II study
- UO/CSL V451 Phase II/III First Patient In



^{*} Transaction with uniQure is subject to customary regulatory clearances before closing

