

Global Leader in Allogeneic Cellular Medicines for Inflammatory Diseases

First Quarter Ended September 30, 2019

Nasdaq: MESO ASX: MSB

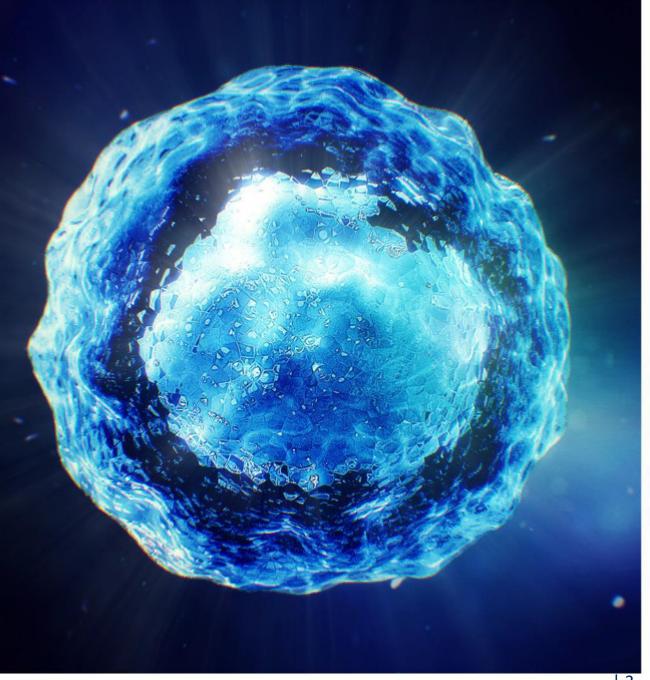


CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This presentation includes forward-looking statements that relate to future events or our future financial performance and involve known and unknown risks, uncertainties and other factors that may cause our actual results, levels of activity, performance or achievements to differ manetrally from any future results, levels of activity, performance or implied by these forward-looking statements. We make such forward-looking statements pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995 and other federal securities laws. All statements other than statements of historical facts contained in this presentation are forward-looking statements. Words such as, but not limited to, "believe," "expect," "anticipate," "estimate," "intend," "plan," "targets," "likely," "will," "would," "could," and similar expressions or phrases identify forward-looking statements. We have based these forward-looking statements largely on our current expectations and future events, recent changes in regulatory laws, and financial trends that we believe may affect our financial condition, results of operation, business strategy and financial needs. These statements may relate to, but are not limited to: expectations regarding the safety or efficacy of, or potential applications for, Mesoblast's adult stem cell technologies; expectations regarding the strength of Mesoblast's intellectual property, the timeline for Mesoblast's regulatory approval process, and the scalability and efficiency of manufacturing processes; expectations about Mesoblast's ability to grow its business and statements regarding its relationships with current and potential future business partners and future benefits of those relationships; statements concerning Mesoblast's share price or potential market capitalization; and statements concerning Mesoblast's capital requirements and ability to raise future capital, among others. Forward-looking statements should not be read as a guarantee of future performance or results, and ctual

Our Mission

Mesoblast is committed to bringing to market innovative cellular medicines to treat serious and life-threatening illnesses



Corporate History

Over a decade of scientific, manufacturing, clinical development and corporate development experience targeted at bringing to market allogeneic, off-the-shelf cellular medicines for inflammatory diseases

2004:

Mesoblast founded in Melbourne, Australia and listed on the ASX



2013:

Acquired MSC business from Osiris Therapeutics with future earn-outs



2015:

Dual listed on the Nasdaq



2017:

Entered licensing agreement with Takeda for the treatment of certain fistulae; in 2018 Alofisel® received approval in EU



2019:

Smith & Nephew acquired Osiris Therapeutics, and will receive future earnouts on MSC business



2019:

Entered into strategic partnership with Grünenthal for chronic low back pain asset in Europe & Latin America



2010:

Entered into strategic alliance with Cephalon to develop and commercialize MPC therapeutics



2011:

Entered into manufacturing partnership with Lonza Group in Singapore for MPC medicines



2014:

Granted manufacturing pioneer status by Economic Development Board of Singapore



2016:

TEMCELL® HS Inj (MSC medicine) launched in Japan by Mesoblast licensee JCR



2018:

Entered into strategic partnership agreement with Tasly for cardiovascular assets in China



2019:

Initiated first BLA submission to US FDA: remestemcel-L (MSC) for steroid refractory acute graft versus host disease (aGVHD)

Premier Global Cellular Medicines Company

Innovative Technology Platform¹

- Innovative technology targets some of the most severe disease states refractory to conventional therapies
- Well characterized multimodal mechanisms of action
- Underpinned by extensive, global IPestate

Late Stage Pipeline

- Initiated rolling filing with US FDA for approval for steroidrefractory aGVHD
- Two Phase 3 product candidates – heart failure and back pain – with near term US trial readouts
- Back pain Phase 3 product candidate partnered in Europe & Latin America with Grünenthal
- Heart failure Phase 3 product candidate partnered in China

Commercialization

- Building US sales force for potential aGVHD product launch
- Industrial-scale manufacturing to meet commercial demand
- First approved products commercialized by licensees in Japan² and Europe³
- Continued growth in royalty revenues from strategic partnerships

^{1.} Mesenchymal precursor cells (MPCs) and their culture-expanded progeny mesenchymal stem cells (MSCs).

^{2.} Licensee JCR Pharmaceuticals Co., Ltd. received the first full PMDA approval for an allogeneic cellular medicine in Japan and markets this product under its trademark, TEMCELL® Hs Inj.

Licensee Takeda received first central marketing authorization approval from the European Commission for an allogeneic stem cell therapy and markets this product under its trademark Alofisel®.

Commercial Scale Manufacturing Capability

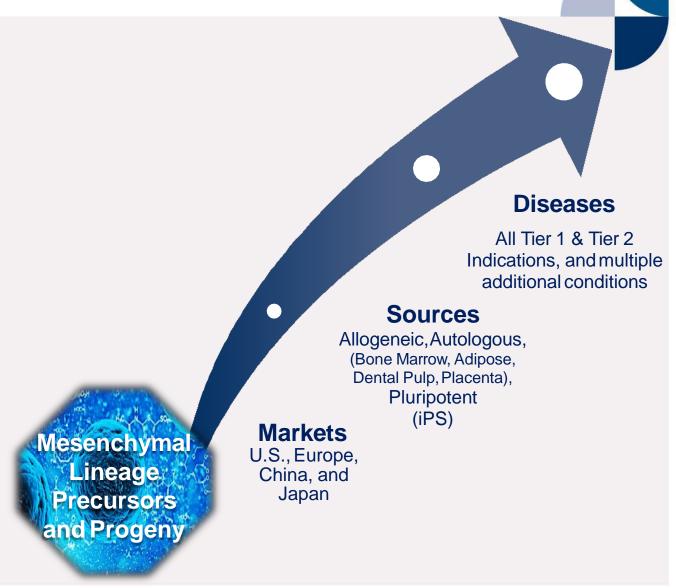
- Scalable allogeneic "off-the-shelf" cellular medicine platform
- Manufacturing meets stringent criteria set by international regulatory agencies including FDA and EMA
- Robust quality assurance processes ensure final product with batch-to-batch consistency and reproducibility
- Culture expansion scalable for near term commercial needs
- Proprietary xeno-free technologies being developed to enable sufficient yields for long term global commercial supply
- Next generation processes using 3D bioreactors to reduce labor and drive down cost of goods



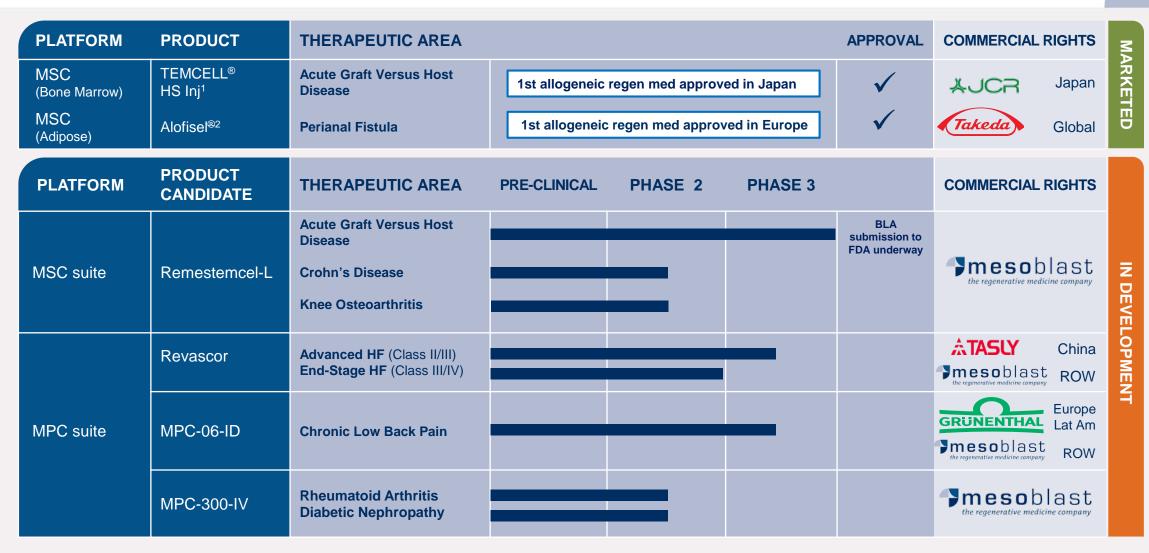
Lonza contract manufacturing facility in Singapore

Global IP Estate Provides Substantial Competitive Advantage

- ~1,000 patents and patent applications
 (68 patent families) across all major jurisdictions
- Covers composition of matter, manufacturing, and therapeutic applications of mesenchymal lineage cells
- Enables licensing to third parties for different indications, when in alignment with our corporate strategy e.g.TiGenix (subsequently acquired by Takeda)
- Provides strong global protection against competitors seeking to develop products in areas of core commercial focus



Commercial and Late-Stage Product Pipeline



This chart is figurative and does not purport to show individual trial progress within a clinical program

^{1.} TEMCELL® Hs. Inj. is a registered trademark of JCR Pharmaceuticals Co Ltd

^{2.} Alofisel® is a registered trademark of Takeda Pharmaceuticals

Partnerships and License Agreements



- Strategic partnership to develop and commercialize MPC-06-ID for chronic low back pain due to degenerative disc disease in patients who have exhausted conservative treatment options
- Grünenthal will have exclusive commercialization rights for Europe and Latin America
- Mesoblast will receive up to US\$150 million in upfront and milestone payments prior to product launch, as well as further commercialization milestone payments
- Cumulative milestone payments could exceed US\$1 billion depending on the final outcome of Phase III studies and patient adoption. Mesoblast will also receive tiered double digit royalties on product sales



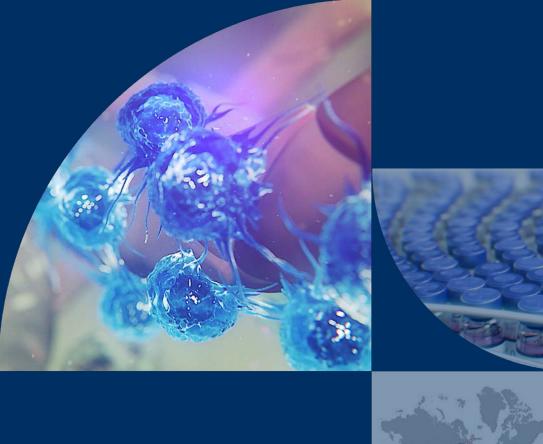
- JCR has rights to use our MSC technology to treat acute GVHD in Japan
- Its product TEMCELL® HS Inj. was the first fully approved allogeneic cellular medicine in Japan
- Royalties and milestones received in last 12 months exceed US\$6.0 million
- License expanded to cover use in epidermolysis bullosa (EB), a highly debilitating and sometimes lethal skin disease and hypoxic ischemic encephalopathy (HIE) in newborns



- Patent license agreement entered in Dec 2017 with Takeda (formerly TiGenix NV) providing exclusive access to certain IP for local treatment of perianal fistulae
- Mesoblast received €10 million in payments and is eligible to receive up to an additional €10 million in milestone payments (€20 million in total payments) plus royalties upon commercial sales of Alofisel® worldwide



- Exclusive cardiovascular rights in China
- Mesoblast received US\$40 million on closing, and is eligible to receive additional milestones and royalties



Financials
First Quarter FY2020

Substantial Increase in Revenues

For the quarter ending (US\$m)	September 30, 2019	September 30, 2018	September 30, 2017
Upfront/milestone revenue	15.0	10.5	0.5
Commercialization revenue	1.9	1.0	0.6
Interest revenue	0.1	0.1	0.1
Total revenue	17.0	11.6	1.2

- Strategic partnerships drive upfront and milestone revenues
 - US\$15.0 million for an upfront milestone payment for the strategic partnership with Grünenthal GmbH in the first quarter FY2020
 - US\$10.0 million from licensee Tasly Pharmaceutical Group in the first quarter FY2019
 - US\$0.5 million from licensee JCR in the first quarter FY2019
- 85% growth in commercialization revenue from royalty income on sales of TEMCELL® HS. Inj.¹

^{1.} TEMCELL® HS Inj. is a registered trademark of JCR Pharmaceuticals Co. Ltd.

Loss After Tax Reduced by 72% (US\$14.0 million)

Profit and Loss for the quarter ending (US\$m)	September 30, 2019	September 30, 2018
Total Revenue	17.0	11.6
Research and development	(12.4)	(18.5)
Manufacturing	(2.7)	(4.3)
Management & administration	(5.4)	(5.6)
Contingent consideration	(0.3)	(0.6)
Other operating income & expenses	(0.2)	(0.2)
Finance costs	(3.4)	(2.6)
Loss before tax	(7.4)	(20.2)
Income tax benefit	1.9	0.7
Loss after tax	(5.5)	(19.5)

Loss after tax reduced by US\$14.0 million (72%) predominantly due to:

- US\$6.1 million reduction in R&D expenditure; and
- US\$5.4 million increase in milestone revenues from strategic partnerships and increased commercialization revenues from product sales in Japan.

Strong Balance Sheet and 20% Reduction in Operating Net Cash Outflows

As of (US\$m)	September 30, 2019	June 30, 2019
Cash on Hand	34.5	50.4
Pro forma cash on hand	100.0	50.4

- Pro forma cash on hand at September 30, 2019 includes a US\$15.0 million upfront payment for the strategic partnership with Grünenthal received on October 1, 2019 and US\$50.5 million of gross cash proceeds from an institutional capital raise received on October 3, 2019.
- Over the next 12 months, we may receive up to an additional US\$30.0 million in milestone payments under the strategic partnership with Grünenthal and a further US\$35.0 million under the arrangements with Hercules Capital and NovaQuest, subject to achievement of certain milestones.

For the quarter ending (US\$m)	September 30,	September 30,	September 30,
	2019	2018	2017
Operating net cash outflows	(15.6)	(19.5)	(20.4)

20% (US\$3.9 million) reduction in net operating cash outflows for the three months ended September 30, 2019.



Operational Highlights First Quarter FY2020



Acute Graft Versus Host Disease (aGVHD)

Significant market opportunity for Remestemcel-L



Burden of Illness

- aGVHD is a life-threatening complication that occurs in ~50% of patients receiving allogeneic bone marrow transplants (BMTs)¹
- Steroid-refractory aGVHD is associated with mortality rates as high as 90%1,7 and significant extended hospital stay costs²

Minimal Treatment Options

- There is only one approved treatment for SR-GVHD and no approved treatment for children under 12 years old, outside Japan
- In Japan, Mesoblast's licensee has received the only product approval for SR aGVHD in both children and adults





- >30,000 allogeneic BMTs performed globally (>20K US/EU) annually, ~20% pediatric^{3,4}
- Our licensee, JCR Pharmaceuticals Co., Ltd launched TEMCELL®HS Inj.5 in Japan for SRaGVHD in 2016; reimbursed up to ~\$USD195k6
- SR-aGVHD represents \$USD > 700m US/EU market opportunity^{4,8}



^{1.} Westin, J., Saliba, RM., Lima, M. (2011) Steroid-refractory acute GVHD: predictors and outcomes. Advances in Hematology. 2. Anthem-HealthCore/Mesoblast claims analysis (2016). Data on file 3. Niederwieser D, Baldomero H, Szer J. (2016) Hematopoietic stem cell transplantation activity worldwide in 2012 and a SWOT analysis of the Worldwide Network for Blood and Marrow Transplantation Group including the global survey. 4. Source: CIBMTR Current Uses and Outcomes of Hematopoietic Cell Transplantation 2017 Summary. Passweg JR, Baldomero, H (2016) Hematopoietic stem cell transplantation in Europe 2014: more than 40,000 transplants annually. 5. TEMCELL is the registered trademark of JCR Pharmaceuticals Co. Ltd. 6. Based on a ¥JPY = \$USD 0.009375 spot exchange rate on market close on November 11, 2016.

Amounts are rounded. Source: Bloomberg. 7. Axt L, Naumann A, Toennies J (2019) Retrospective single center analysis of outcome, risk factors and therapy in steroid refractory graft-versus-host disease after allogeneic hematopoietic cell transplantation.

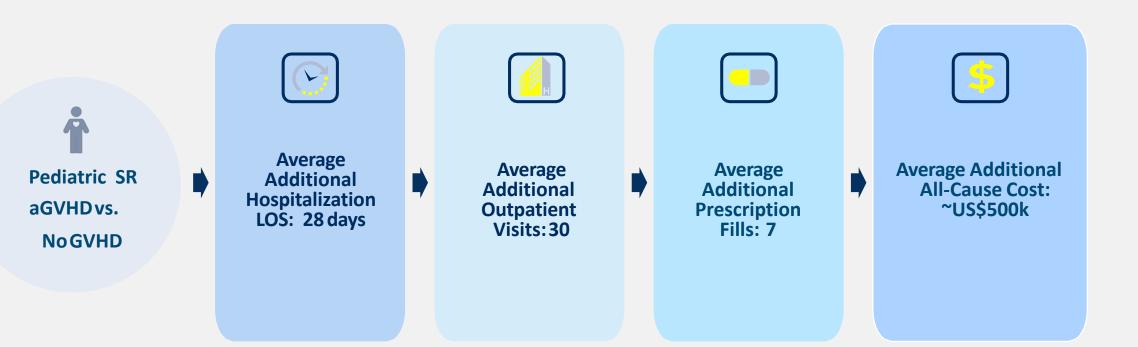
8. Data on file

Remestemcel-L: U.S. Regulatory and Commercial Strategy



- US strategy for remestemcel-L informed by TEMCELL sales experience in Japan
- Rolling BLA submission to FDA
- Fast Track designation provides eligibility for FDA priority review
- Commercialization strategy in place for product launch
- Ramp-up for inventory build
- Building out efficient, targeted sales force 15 centers account for ~50% of patients

Remestemcel-L: SR-aGVHD is Associated with Significant Burden of Illness in Children in the U.S.¹



^{1.} European Hematology Association 2019 Congress Meeting: Abstract PF718, The economic and humanistic burden of graft-versus-host disease (GVHD) in pediatric patients: A systematic literature review (SLR)

Remestemcel-L: Results from Providers/Payers Indicate Near Maximal Rating on Product Attributes¹



- Day 28 overall response rate (especially grade C/D)
- Day 100 & Day 180 Survival rates
- No increase in infections
- Large clinical data set (n~300)
- Ability to administer the drug outpatient
- Significant reduction in ICU stay

^{2.} ZS Associates June 2018 Qualitative Market Research: MCO Medical Directors n=5, Transplant Center Directors n= 5, Hospital Pharmacy Directors n=5, AMC-based Hem/Oncs / KOLs n=3

Remestemcel-L: Life Cycle Strategy

Mesoblast has over 10 years of experience in hematology-oncology space Remestemcel-L: - Positive Phase 3 Results Q12018 Chronic GVHD Large US Pediatric GVHD Expanded Access Program (>240 patients) SR-aGVHD pediatric Ex-US launch Label extension 2018 other indications Pediatric Phase 3 (US) top line data SR-aGVHD adult US/Ex-US parallel launch 2020 Product development/ **Targeted SR-aGVHD** manufacturing pediatric US launch optimization February 2016 JCR Pharmaceuticals launches **TEMCELL** in Japan (out-licensee) October 2013 Mesoblast acquires MSC-100-IV from Osiris Therapeutics

Remestemcel-L for Acute GVHD

Recent Highlights

- Continued growth in revenues from royalties on sales of TEMCELL in Japan for steroid refractory aGVHD
 - Product adoption and reimbursement seen in the Japan GVHD market for TEMCELL informs Mesoblast US commercial strategy for remestemcel-L in aGVHD
 - ➤ US addressable market for SR aGVHD in children and adults is expected to be approximately 8-fold larger than Japan, a major commercial opportunity due to greater patient numbers, incidence and pharmacoeconomics
- Mesoblast entered into an agreement with Lonza for commercial product manufacture in line with the corporate strategy to facilitate appropriate inventory build ahead of the planned launch of remestemcel-L

Key milestones

- Upcoming filing of completed Biologic License Application (BLA) submission to the US Food and Drug Administration (FDA)
- Within a maximum of 60 days after receipt of the complete application, Mesoblast will be informed by FDA of acceptance of the filing, and whether the BLA has received Priority Review under its existing Fast Track designation
- If approved, the US launch of remestemcel-L is expected to occur next year

Advanced and End-Stage Heart Failure

Common Treatment Pathway in Progressive Heart Failure¹

ClassI Progressive Vascular (Endothelial) Dysfunction and Heart Failure **ClassIV Mesoblast Target Market:** Early **Advanced ACEI or ARB** and End-Stage HF patients³ Statins Beta blockers Re-vascularization or valvular surgery **New Oral Therapies for** Class II-IV² Pharmacological Add-on **Advanced End-Stage** Diuretics for fluid retention If ACEI / ARBtolerated, Aldosterone antagonists sacubitril/valsartan Hydralazine / isosorbidedinitrate **Limited Therapeutic Options**

Cardiac Resynchronization Therapy (CRT)

Implantable Cardioverter-Defibrillator (ICD)

1. Source: Simon-Kucher & Partners 2017. Primary research 2017; Payers n=35, KOLs n=15, Cath lab managers n=4.

Digitalis

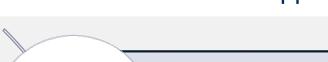
- 2. Corlanor® (ivabradine) approved by FDA (April 2015). ENTRESTO® (sacubitril/valsartan) approved by FDA (July 2015).
- S. GlobalData-PharmaPoint Heart Failure (2016); McMurray et al., 2012; Yancy et al., 2013, 2016 ACC/AHAHFSA Focused Update on New Pharmacological Therapy for Heart Failure: An Update of the 2013 ACCF/AHA Guideline for the Management of Heart Failure.

LVAD

Heart transplants

Advanced Heart Failure

Revascor – Commercial opportunity





- ~ 8 million patients with chronic heart failure by 2030 in US alone¹
- 17-45% globally die within 1 year of hospital admission¹
- Majority of advanced heart failure patients die within 5 years¹



- Despite recent advances in newly approved drugs, limited treatment options are available for patients with advanced heart failure²
- New therapies to reduce hospitalizations and mortality in patients with advanced heart failure who have failed othertherapies
- Area of great need: NYHA class III-IV where event rate is highest



- US healthcare costs for NYHA class II-IV patients\$US115bn/year4
- Hospitalizations account for ~69% of expenditure³⁻⁵
- Multi-billion dollar annual market opportunity in US^{4,5}





Advanced Heart Failure

Revascor - Phase 3 trial fully enrolled

- Trial design is 1:1 randomized, controlled, double blinded; conducted over 55 sites across North America using 150 million cell dose vs control
- Events-driven Phase 3 trial completed enrollment of 566 patients in February 2019
- Primary endpoint: reduction in recurrent heart failure-related major adverse cardiac events such as heart failure-related hospitalizations and cardiac death
- Secondary endpoint: reduction in terminal cardiacevents
- Target patient population enriched for those likely to be both highest risk for events and greatest responders to Revascor therapy



Revascor for Advanced Heart Failure

Key milestones

- Full accrual of primary endpoints events in the Phase 3 trial of Revascor for advanced heart failure around the end of CY19
- Data read-out for this Phase 3 trial planned in H1 CY20
- Results will be considered pivotal to support regulatory approval in the US, as well as China through the Tasly partnership

End-Stage Heart Failure

Revascor – Commercial opportunity in reducing GI bleeding in patients with LVADs



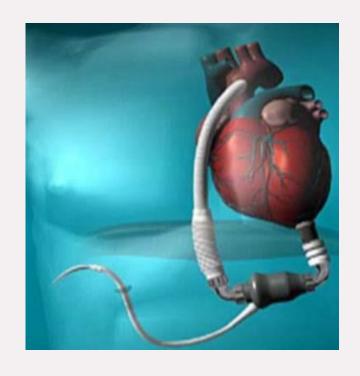
- In the US there are ~ 250,000–300,000 patients annually who suffer from advanced systolic heart failure (NYHA Class III–IV)¹
- Despite optimal medical therapy, mortality exceeds 50% in class IV patients¹

Ongoing Unmet Need

- LVADs have improved survival, but morbidity remains high with patients on average experiencing greater than two hospitalization annually²
- Gastrointestinal (GI) bleeding is the leading cause of non-surgical hospitalizations in LVAD patients²
- Device attributable major adverse events (DAEs) can cost on average \$USD46.5k per hospitalization²



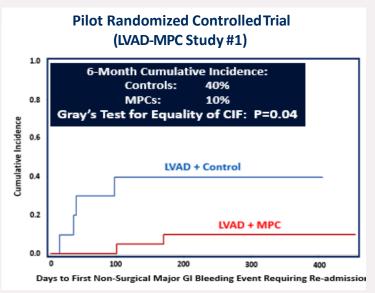
- ~ 4,500 5,500 assist devices are implanted annually in the US^{3, 4}
- US LVAD market is growing double-digit CAGR and represents significant market growth opportunity^{3,4}
- US targeted commercial footprint provides low cost market entry



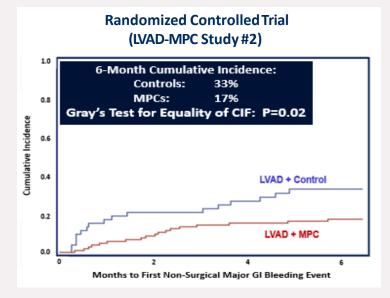
End-Stage Heart Failure in LVAD Patients

Revascor reduced GI bleeding events causing hospitalizations in two randomized trials





MPC (n = 20)	Control (n = 10)	P-value
Event Rate (100-Pt-Months)	Event Rate (100-Pt-Months)	
4.2	14.2	0.06



MPC (n = 106)	Control (n = 53)	P-value
Event Rate (100-Pt-Months)	Event Rate (100-Pt-Months)	
3.8	15.9	<0.001

Rate of major GI bleeding events over six months in LVAD patients reduced by 70% and 76% with MPCs in two randomized controlled trials

Revascor for End-Stage Heart Failure in LVAD Patients

Recent Highlights

- Mesoblast and the International Center for Health Outcomes Innovation Research (InCHOIR) at the Icahn School of Medicine at Mount Sinai in New York have agreed on the protocol for a confirmatory Phase 3 trial of Revascor
- In line with FDA guidance, the primary endpoint will be reduction in major mucosal bleeding events, and key secondary endpoints will be improvement in various parameters of cardiovascular function
- Revascor is being developed for these patients under existing FDA Regenerative Medicine Advanced Therapy (RMAT) and Orphan Drug Designations

Key milestones

- Initiation of confirmatory Phase 3 trial of Revascor for the reduction of mucosal bleeding in end-stage heart failure patients implanted with an LVAD
 - > Results will be considered pivotal to support regulatory approval in the US

MPC-06-ID: A New Paradigm for Treatment of Chronic Low Back Pain Due to Degenerative Disc Disease

Burden of Illness

- Back pain causes more disability than any other condition¹
- Inflicts substantial direct and indirect costs on the healthcare system^{1,2}, including excessive use of opioids in this patient population

Minimal Treatment Options

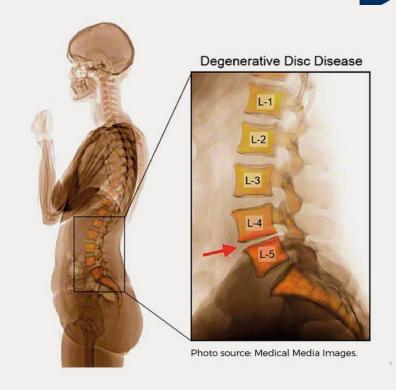
- Minimal treatment options for patients with chronic low back pain (CLBP) who fail conservative therapy include opioids and surgery
- 50% of opioid prescriptions are for CLBP

Unmet Need

 Disease modifying therapy for durable improvement in pain and function has potential to prevent progression to opioid use or surgical intervention

Market Opportunity

- Over 7m patients are estimated to suffer from CLBP due to degenerative disc disease (DDD) in each of the U.S. and E.U.5 ³⁻⁶
- MPC-06-ID development program targets over 3.2m patients in U.S. and 4m in E.U.5 with moderate to severe disease



MPC-06-ID – Development Strategy for US & Europe



- Phase 3 trial in chronic low back pain completed enrolment in March 2018 with 404 patients randomized to receive MPC-06-ID or placebo
- Initiate confirmatory Phase 3 trial in Europe in partnership with Grünenthal
- Complete commercial manufacturing in partnership with Grünenthal
- Results of confirmatory Phase 3 clinical trials in US and Europe, together with commercial manufacturing, expected to support regulatory approval and commercial launches in both Europe and US for MPC-06-ID in chronic low back pain due to degenerative disc disease

Key Terms of the Strategic Partnership with Grünenthal



Grünenthal has obtained

 An exclusive license for Europe and Latin America to develop and commercialize MPC-06-ID in the treatment of chronic low back pain due to degenerative disc disease

In consideration, Mesoblast will receive

- Up to US\$150 million in upfront and milestone payments prior to product launch, as well as further commercialization milestone payments
- Payments include commitments up to US\$45 million within the first year comprising US\$15 million on signing, US\$20 million on receiving regulatory approval to begin a confirmatory Phase 3 trial in Europe, and US\$10 million on certain clinical and manufacturing outcomes
- Cumulative milestone payments could exceed US\$1 billion depending on the final outcome of Phase 3 studies and patient adoption
- Mesoblast will also receive tiered double digit royalties on product sales
- Mesoblast retains the rights for the rest of world, including the US and Japan markets

Transaction Benefits to Mesoblast

✓ Strong commercial partner

- Delivers commercialization, distribution, sales & marketing
- Field force comprises around 1,600 people across Europe, Latin America & US overall focus is on pain visited nearly 300,000 stakeholders in 2018 (physicians, pharmacists & health administrators)
- Provides knowledge and knowhow in manufacturing, regulatory affairs (Europe in particular)

√ Advances approval pathway

- Provides funding for Phase 3 trial in Europe reducing Mesoblast cash outflow
- Mesoblast and Grünenthal will collaborate on the study design for a confirmatory Phase 3 trial in Europe
- Confirmatory European and US (currently ongoing) Phase 3 trials are expected to support regulatory approval in both Europe and US

✓ Transaction focuses on Europe

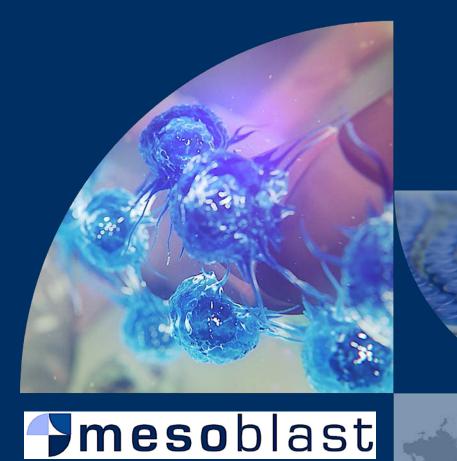
- Mesoblast maintains rights to all other geographic markets, including US, Japan and China for additional
 partnering opportunities to maximize shareholder return
- ✓ Third party endorsement provides validation of technology platform

MPC-06-ID for Chronic Low Back Pain



Key Milestones

- Last patient last visit at 24-months of follow up in the Phase 3 trial of MPC-06-ID for chronic low back pain H1 CY20, with the primary endpoint being a composite outcome of pain and function at 12 and 24 months
- Obtain clearance in CY20 from European regulatory authorities to begin European Phase 3 trial
- Results from the Phase 3 trials will be considered pivotal to support regulatory approval in the US, as well as Europe through the Grünenthal partnership



MASX

Questions