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Global Leader in Allogeneic Cellular Medicines for Inflammatory Diseases

Operational Highlights & Financial Results for the Period Ended March 31, 2022

June 2022

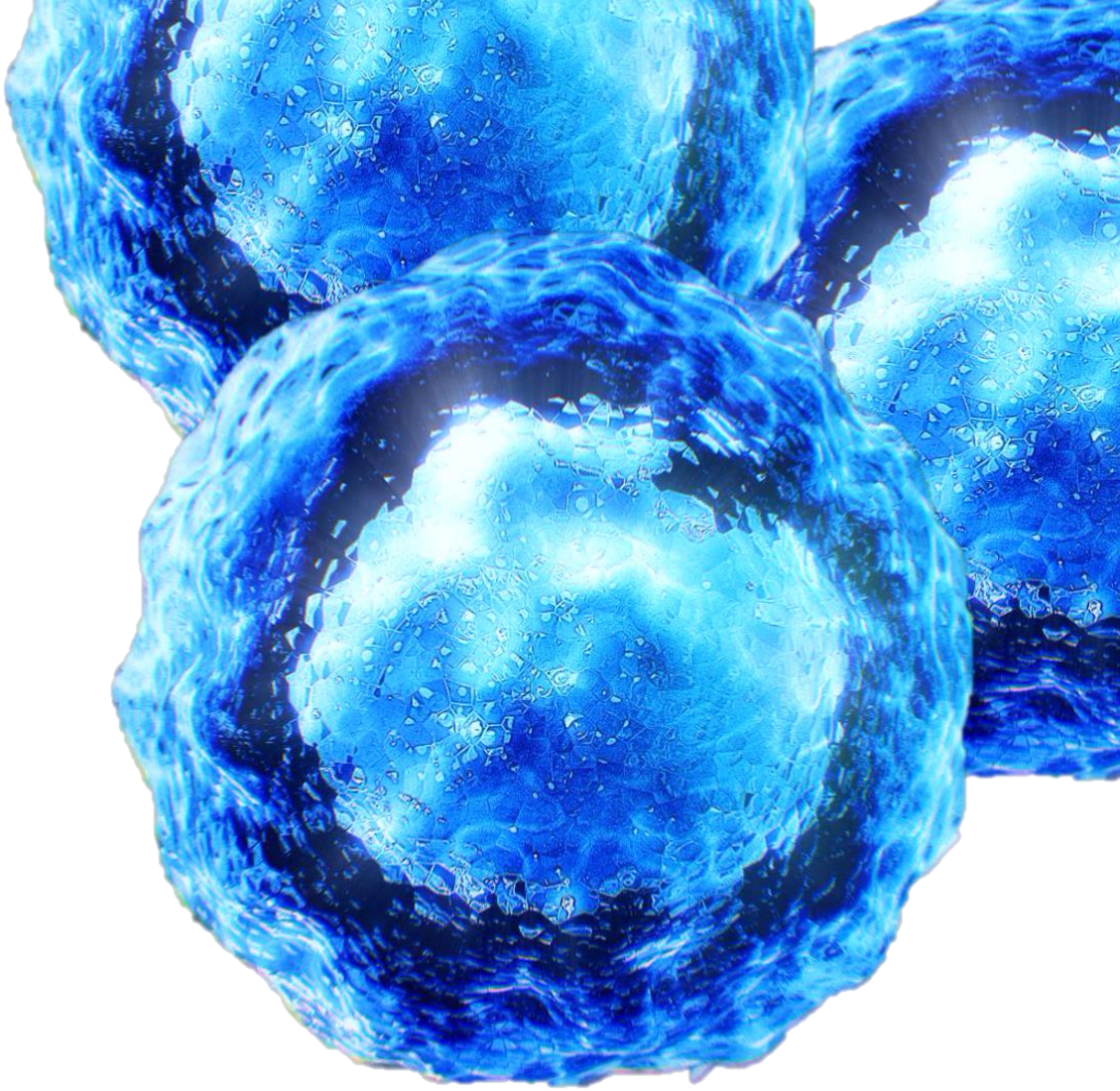
ASX: MSB; Nasdaq: MESO

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 materially from any future results, levels of activity, performance or achievements expressed 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 actual results may differ from the results anticipated in these forward-looking statements, and the differences may be material and adverse. You should read this presentation together with our financial statements and the notes related thereto, as well as the risk factors, in our most recently filed reports with the SEC or on our website. Uncertainties and risks that may cause Mesoblast's actual results, performance or achievements to be materially different from those which may be expressed or implied by such statements, include, without limitation: risks inherent in the development and commercialization of potential products; uncertainty of clinical trial results or regulatory approvals or clearances; government regulation; the need for future capital; dependence upon collaborators; and protection of our intellectual property rights, among others. Accordingly, you should not place undue reliance on these forward-looking statements. We do not undertake any obligations to publicly update or revise any forward-looking statements, whether as a result of new information, future developments or otherwise.

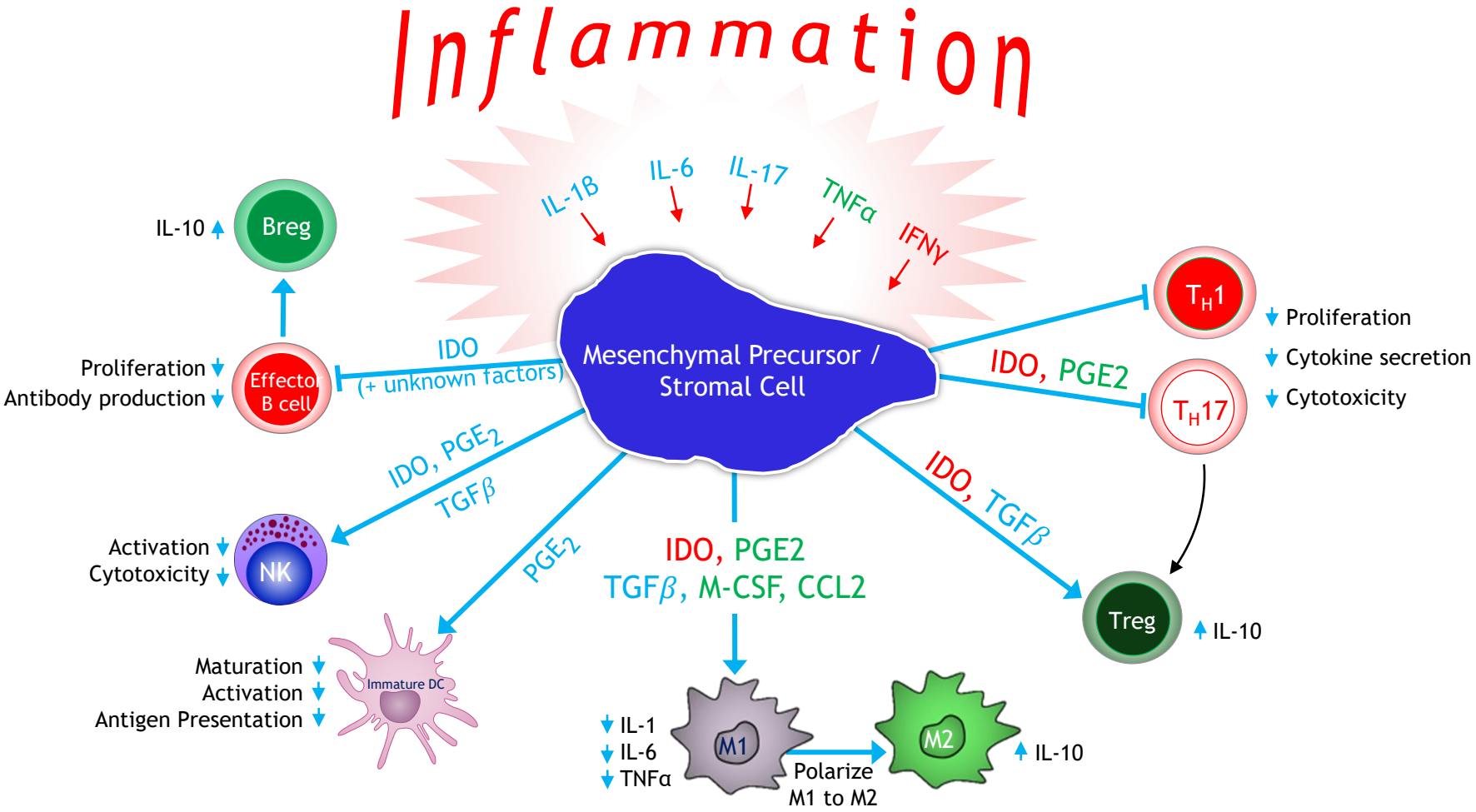
Our Mission

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



Platform Technology – Mechanism of Action

Our mesenchymal precursor/stromal cells respond to and are activated by multiple inflammatory cytokines through surface receptors, resulting in orchestration of an anti-inflammatory cascade



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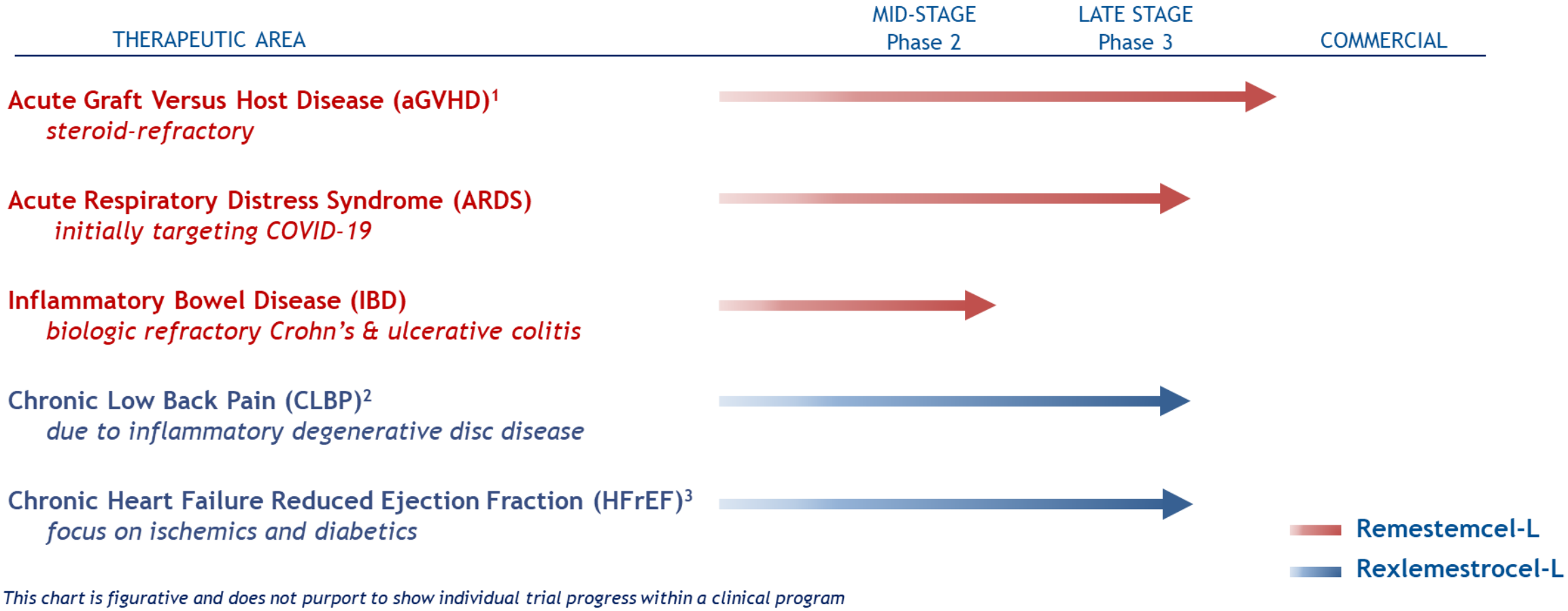
Late-Stage Clinical Pipeline



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

1. JCR Pharmaceuticals Co., Ltd. (JCR), has the right to develop mesenchymal stromal cells (MSCs) in certain fields for the Japanese market, including for the treatment of hematological malignancies, such as Graft vs Host Disease, and for hypoxic ischemic encephalopathy (HIE). Mesoblast has the right to use safety and efficacy data generated by JCR to support its development and commercialization plans for remestemcel-L in the US and other major healthcare markets, including for GVHD and HIE
2. Grünenthal has an exclusive license to develop and commercialize rexlemestrocel-L for chronic low back pain in Europe and Latin America/Caribbean
3. Tasly Pharmaceuticals has exclusive rights for rexlemestrocel-L for the treatment or prevention of chronic heart failure in China

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Manufacturing Remestemcel-L

Financial Results

for the Period Ended March 31, 2022

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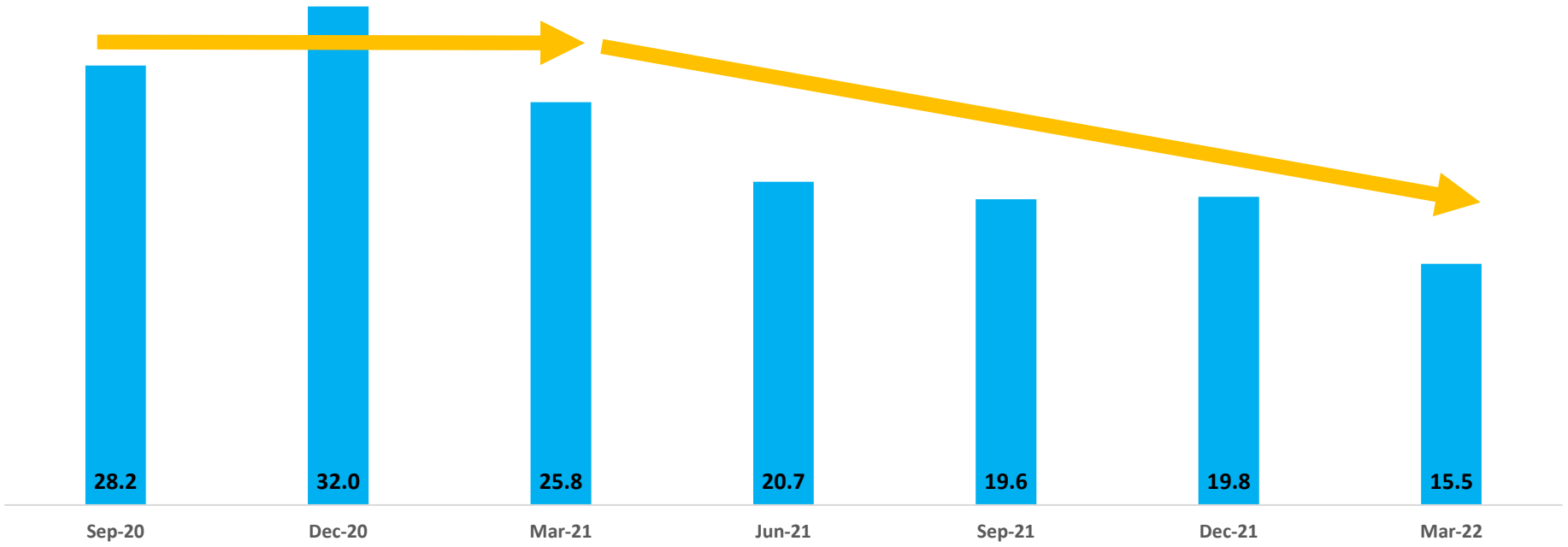
Financial Highlights

- Revenues in the quarter increased by 5% on the comparative quarter to US$2.0 million and by 46% for the nine-month period ended March 31, 2022, to US$8.0 million
- Net cash usage reported for operating activities in the quarter was reduced by 40%, or US$10.3 million, to US$15.5 million compared with US$25.8 million in the comparative quarter last year[1]
- For the quarter, net cash usage reported for operating activities excluding inventory for the planned remestemcel-L product launch, was reduced by 50% to US$11.2 million from US$22.2 million in the comparative quarter
- For the nine-month period ended March 31, 2022, net cash usage reported for operating activities was reduced by 36%, or US$31.2 million, to US$54.8 million compared with US$86.0 million in the comparative period last year, and by 40% excluding inventory for the planned remestemcel-L product launch
- Cash on hand at the end of the quarter was US$76.8 million, with up to an additional US$40 million available to be drawn down from existing financing facilities subject to certain milestones

1. Accounting policy change resulted in a $1.4 million benefit in the Mar 22 quarter.

Reported Quarterly Net Operating Cash Burn has been significantly reduced

US$m



- Reported quarterly net operating cash burn has been reduced over the last 5 quarters.

Accounting policy change resulted in a $1.4 million benefit in the Mar 22 quarter.

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Reduction in R&D Spend; Steady Investment in Manufacturing

P&L for the 3 months ended (US$m)	Mar 31, 2022 (3rd Qtr FY2022)	Mar 31, 2021 (3rd Qtr FY2021)
Total Revenue	**2.0**	**1.9**
Research and development	(8.2)	(12.4)
Manufacturing	(5.6)	(7.3)
Management & administration	(7.6)	(8.1)
Revaluation of contingent consideration	0.7	1.5
Revaluation of warrant liability	0.9	-
Other operating income & expenses	0.4	1.0
Finance costs	(3.9)	(3.2)
Loss before tax	**(21.3)**	**(26.6)**
Income tax benefit	~	0.1
Loss after tax	**(21.3)**	**(26.5)**

- **Decreased R&D Spend:**
  34% reduction ($4.2m) predominantly due to reduced spend on clinical trial activities.

- **Steady Investment in Manufacturing:**
  Continued build of pre-launch inventory of remestemcel-L to support the launch of SR-aGVHD.

  On FDA approval, remestemcel-L inventory will be recognized on the balance sheet, currently at US$29.7 million.

Figures have been rounded.

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Remestemcel-L

Acute Graft Versus Host Disease (aGVHD)

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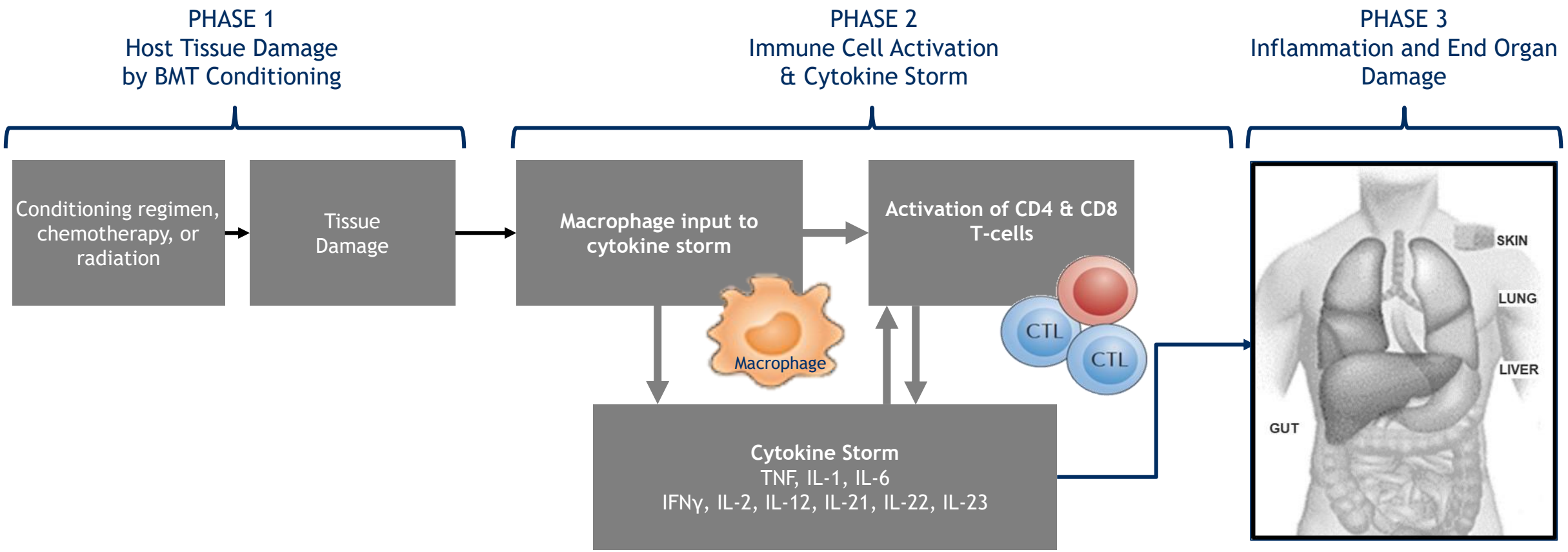
Acute Graft Versus Host Disease (aGVHD)

Serious and Fatal Complication of Allogeneic Bone Marrow Transplantation (BMT)



Modified from Blazar et al., Nature Reviews Immunology 12: 443 – 458

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Remestemcel-L: Steroid-Refractory Acute Graft Versus Host Disease

Significant Unmet Need with High Mortality

Treatment Options

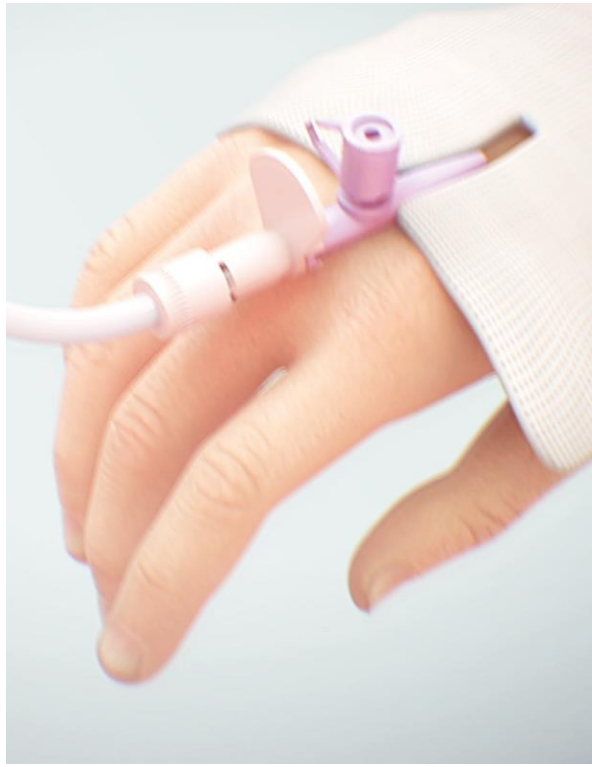
- Corticosteroids are first-line therapy for aGVHD
- There is only one approved treatment for disease refractory to steroids and no approved treatment in the US for children under 12 years old
- In Japan, Mesoblast's licensee has received the only product approval for SR-aGVHD in both children and adults

Burden of Illness

- Acute GVHD is a life-threatening complication that occurs in ~50% of patients receiving allogeneic bone marrow transplants (BMTs)[1]
- Acute GVHD primarily affects skin, GI tract, and liver
- Steroid-refractory aGVHD is associated with mortality rates as high as 90%[1,5] and significant extended hospital stay costs[2]

Market Opportunity

- More than 30,000 allogeneic BMTs performed globally (>20K US/EU) annually, ~20% pediatric[3,4]
- Approx. 1,500 allogeneic BMTs in children and adolescents in US[4]



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. HRSA Transplant Activity Report, CIBMTR, 2019 5. 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 transplantion. Bone Marrow Transplantation.

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Remestemcel-L: Prior Clinical Data in Children with SR-aGVHD

Consistent Efficacy and Safety Outcomes in a Total of 309 Children from Three Studies

- Remestemcel-L was used as first-line therapy in a randomized controlled Phase 3 trial of 260 patients, with SR-aGVHD, including 27 children
- Remestemcel-L was used as salvage therapy in an expanded access program in 241 children with SR-aGVHD, 80% of whom had Grade C/D disease, and failed institutional standard of care
- Remestemcel-L was used as first-line therapy in Mesoblast's open-label Phase 3 trial in 54 children with SR-aGVHD, 89% of whom had Grade C/D disease

		Protocol 280 (pediatric)		EAP 275	Study 001
	MAGIC[1] N=30[2]	Placebo N=13	Remestemcel-L N=14	Remestemcel-L N=241	Remestemcel-L N=54[3]
Day 28 Overall Response	43%	38%	64%	65%	69%
Day 100 Survival	57%	54%	79%	66%	74%

1. Mount Sinai Acute GVHD International Consortium (MAGIC) - a group of ten BMT centers throughout the US and Europe whose purpose is to conduct ground-breaking clinical trials in GVHD, including developing informative biorepositories that assist in developing treatments that can guide GVHD therapy; 2. Two subjects in the MAGIC cohort had follow-up <100 days; these subjects are excluded from the respective survival analyses; 3.GVHD001 had 55 randomized patients, however one patient dropped out before receiving any dose of remestemcel-L

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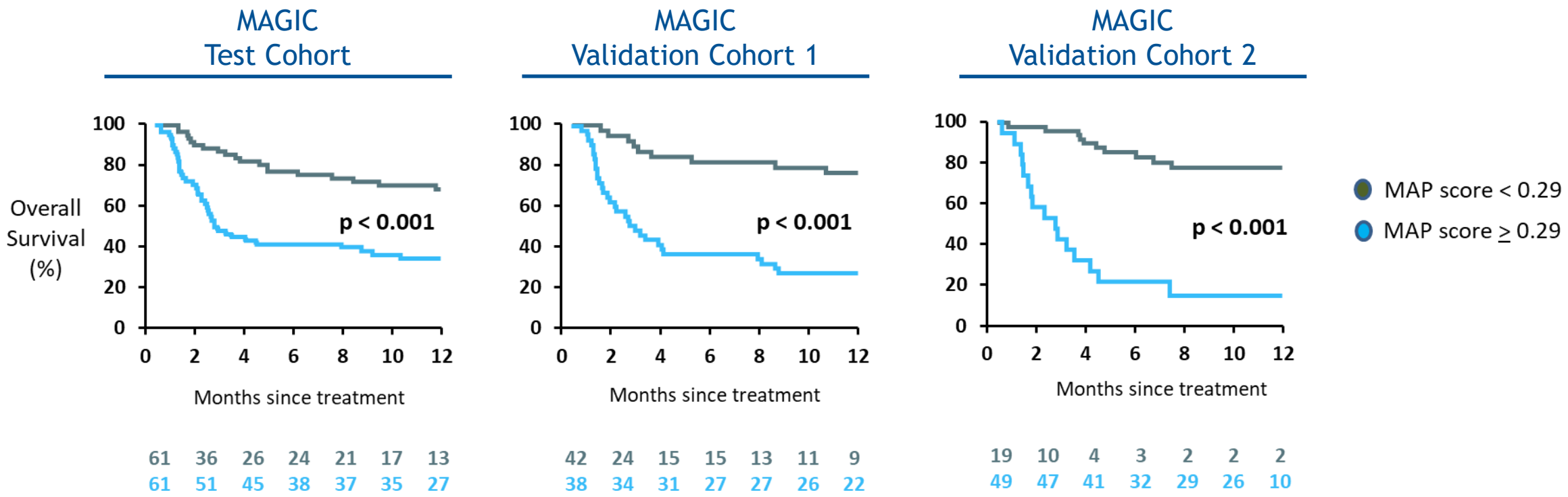
Identifying Acute GVHD Patients at High Risk of Non-Response to Treatment and Death

MAGIC Algorithm Probability Biomarker Score (MBS, MAP) > 0.29 is a Validated Threshold



Major-Monfried H, et al. MAGIC biomarkers predict long-term outcomes for steroid-resistant acute GVHD. Blood 2018; 131 (25): 2846-2855

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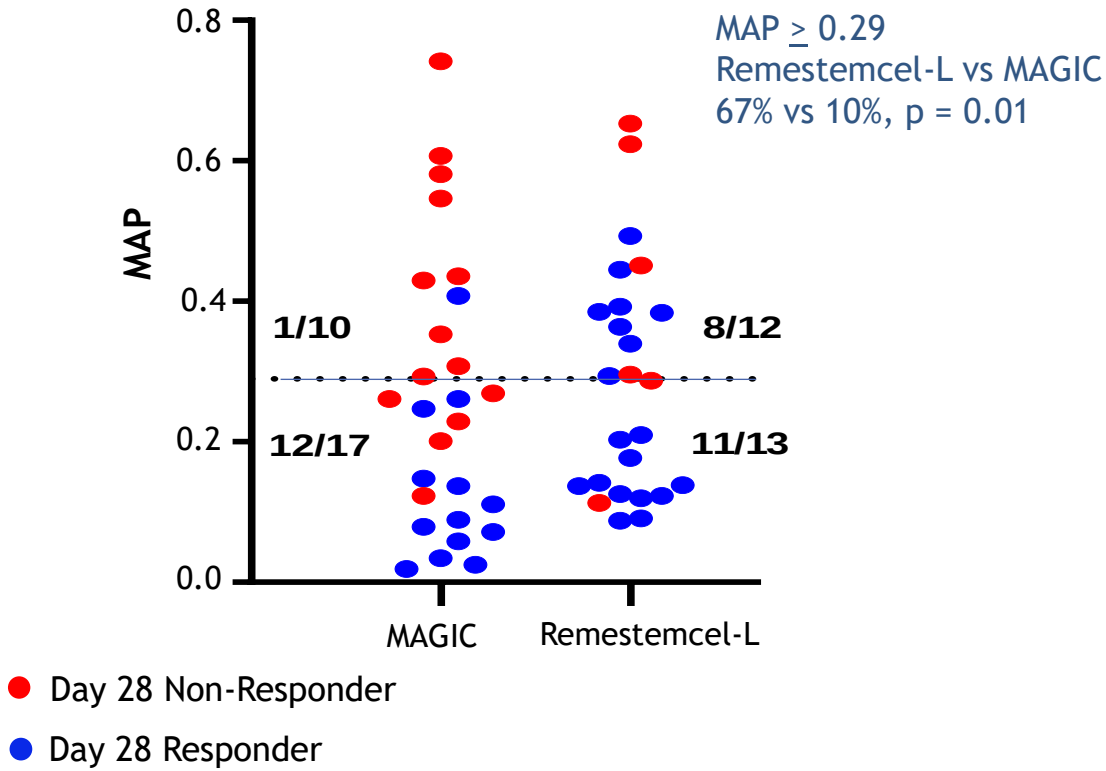
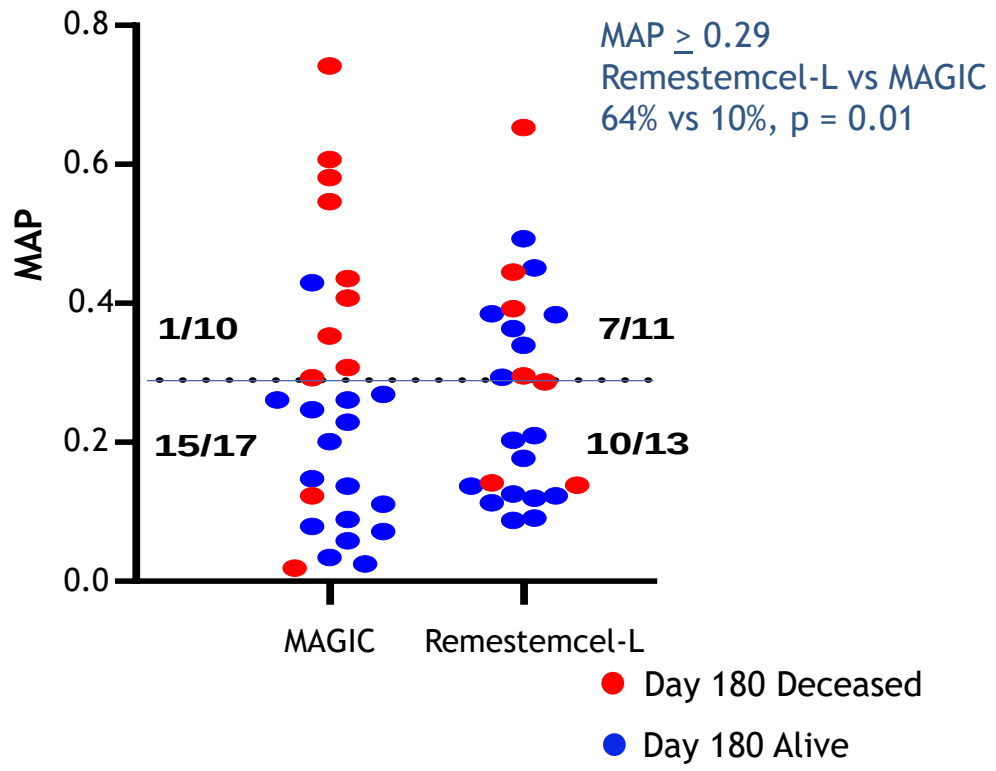
Remestemcel-L Treatment Outcomes

Significantly Greater Day 28 Overall Responses and Day 180 Survival in Steroid-Refractory Patients with Baseline MAP ≥ 0.29

Response by Baseline MAP



Survival by Baseline MAP



Kasikis S et al. Bone Marrow Transplantation 2021; 56:2869-2870.

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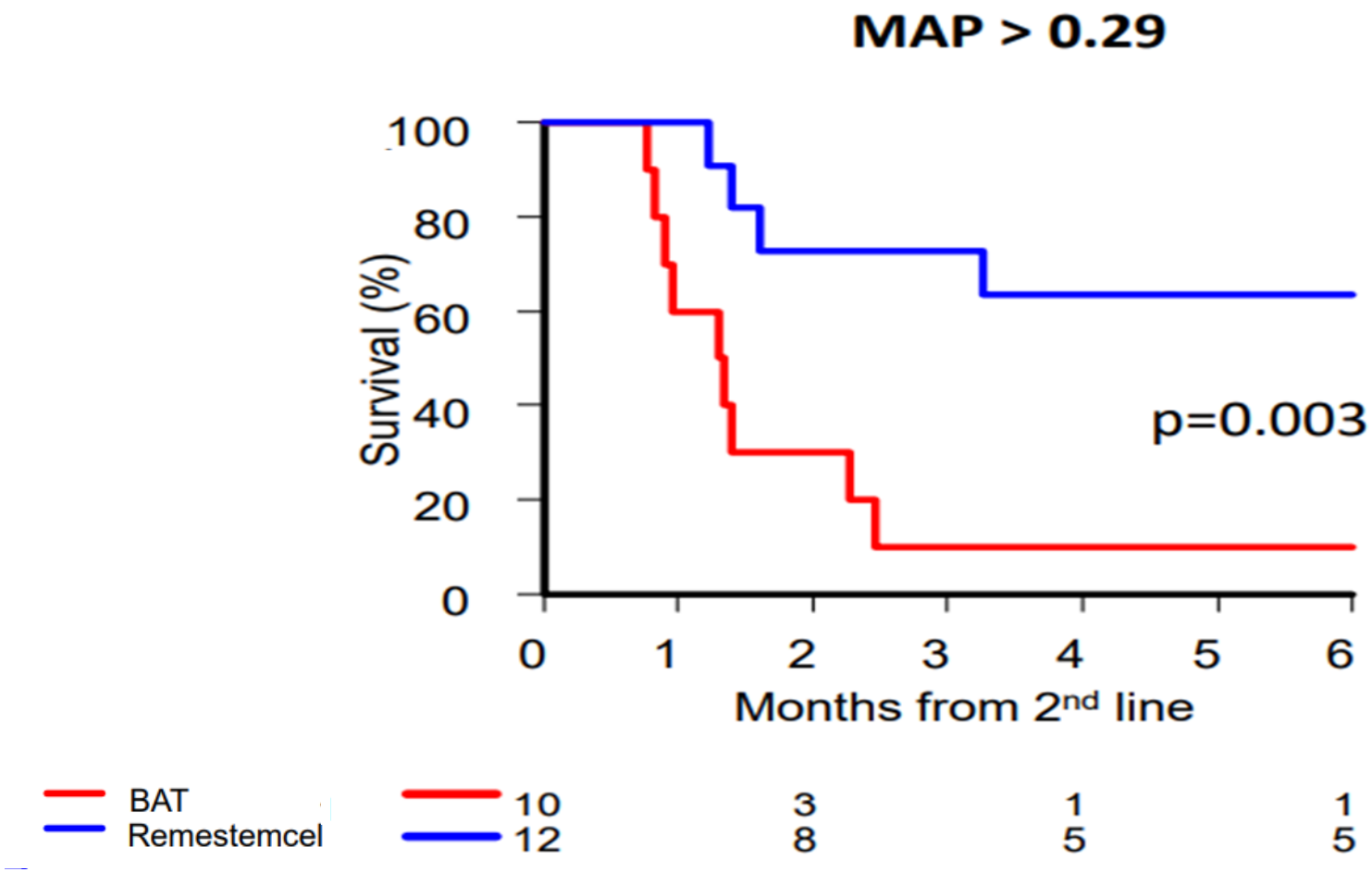
Remestemcel-L Treatment Outcomes

Significantly Greater Survival in Steroid-Refractory Patients with Baseline MAP ≥ 0.29

Kaplan-Meier Estimates of 6-month Overall Survival for the Two Patient Cohorts by Baseline MAP



Abbreviations:
MAP: MAGIC algorithm probability;
BAT: best available therapy.

Kasikis S et al. Bone Marrow Transplantation 2021; 56:2869-2870.

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Remestemcel-L: Plan for BLA Resubmission

- Mesoblast believes that the proposed potency assay measuring remestemcel-L's in vitro anti-inflammatory and immunomodulatory activity helps establish a clear understanding of remestemcel-L's mechanism of action in SR-aGVHD, and demonstrates relevance to the *in vivo* clinical effect of the product in the 54-patient Phase 3 trial in children with SR-aGVHD

- Strongest correlation between potency assay and survival seen in those patients at highest mortality risk as measured by clinical severity or high biomarker levels of inflammation

- Additionally, Mesoblast has now generated data from the expanded access program (EAP 275) of 241 children which confirm the ability of the in-vitro potency assay to measure product activity relevant to survival outcomes

- Our GMP contractor is now well resourced allowing final testing of product inventory for the BLA resubmission

- In preparation for the expected FDA review, Mesoblast last week completed a successful mock pre-approval inspection of its GMP manufacturing facility and process comprising both on-site and virtual inspections by external auditors

- Mesoblast will provide these new data to FDA and address all chemistry, manufacturing and controls (CMC) outstanding items as required for the planned BLA resubmission in the coming quarter. If the resubmission is accepted, CBER will consider the adequacy of the clinical data in the context of the related CMC issues

Remestemcel-L

Acute Respiratory Distress Syndrome (ARDS) due to COVID-19

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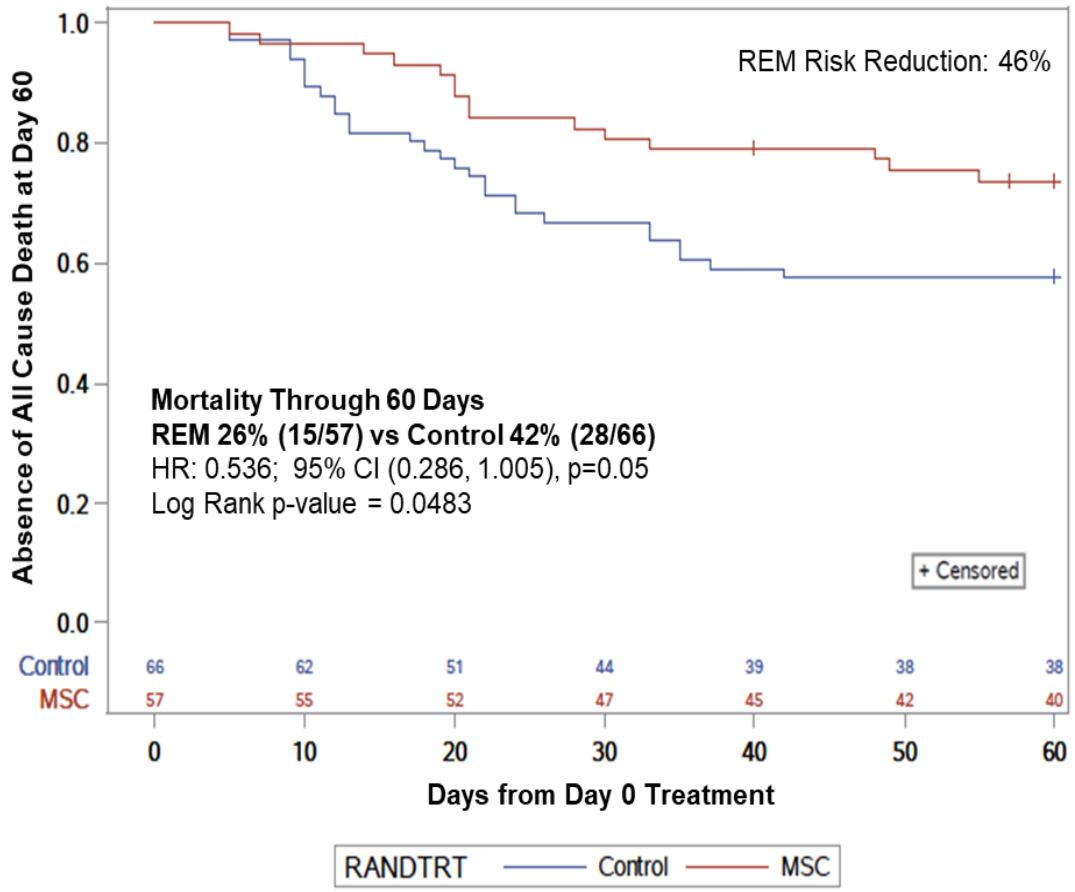
Remestemcel-L: Acute Respiratory Distress Syndrome (ARDS)

Clinical Need for Effective Treatment Remains High

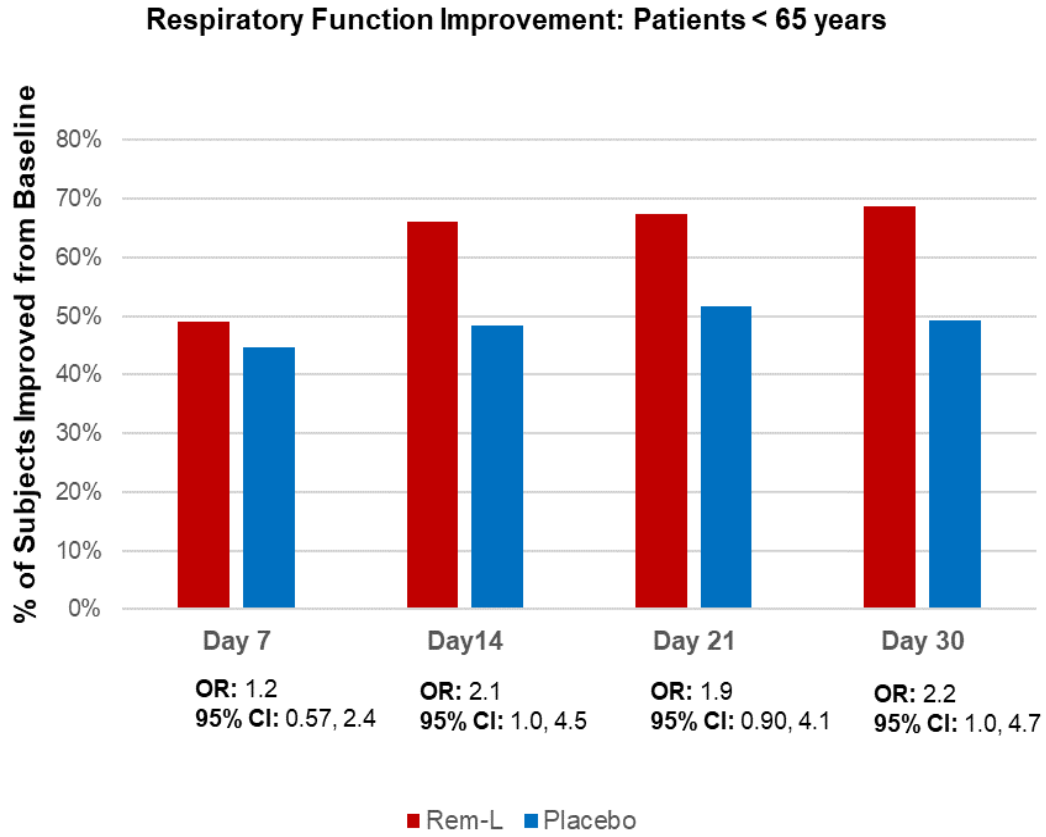
- ARDS is caused by cytokine storm in lungs of patients infected with COVID-19 or other respiratory pathogens
- New COVID-19 variants are emerging globally with high infection rates
- ARDS remains a major cause of mortality for COVID-19 patients who are immunocompromised, unvaccinated, or with comorbidities, as well as those with seasonal influenza and other pathogens
- Remestemcel-L has the potential to tame the cytokine storm in ARDS and may offer a life-saving treatment for high-risk patients
- Mesoblast intends to move forward with the pivotal trial for EUA, with reference to the aGVHD BLA for product potency assay in place prior to trial commencement

Greatest Mortality Reduction & Improved ARDS Severity* seen in Remestemcel-L Treated Patients < 65 years

Modified Intent to Treat (mITT) Patients < 65 years old (n=123) Remestemcel-L vs Control



Treated Patients (mITT) < 65 years old (n=123) Remestemcel-L vs Control



* Measured as resolution and/or improvement of ARDS as defined by the Berlin criteria at Days 7, 14, 21, and 30 post-randomizations

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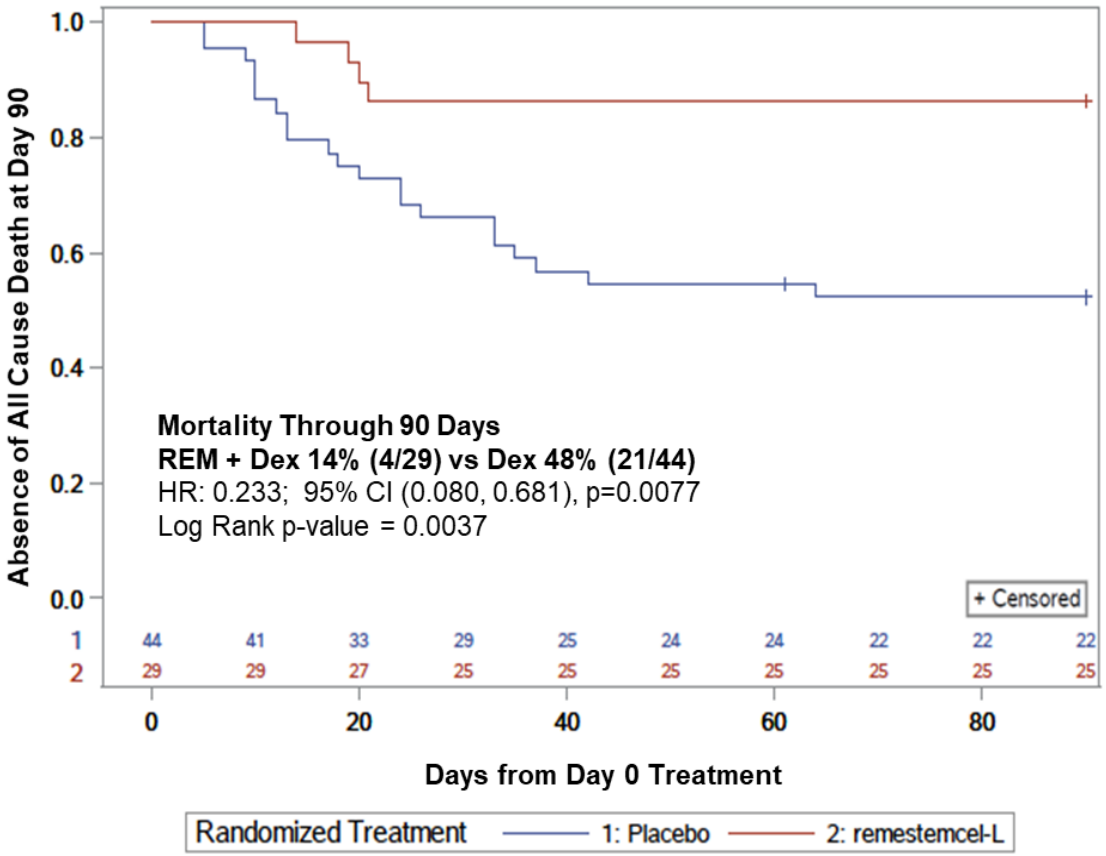
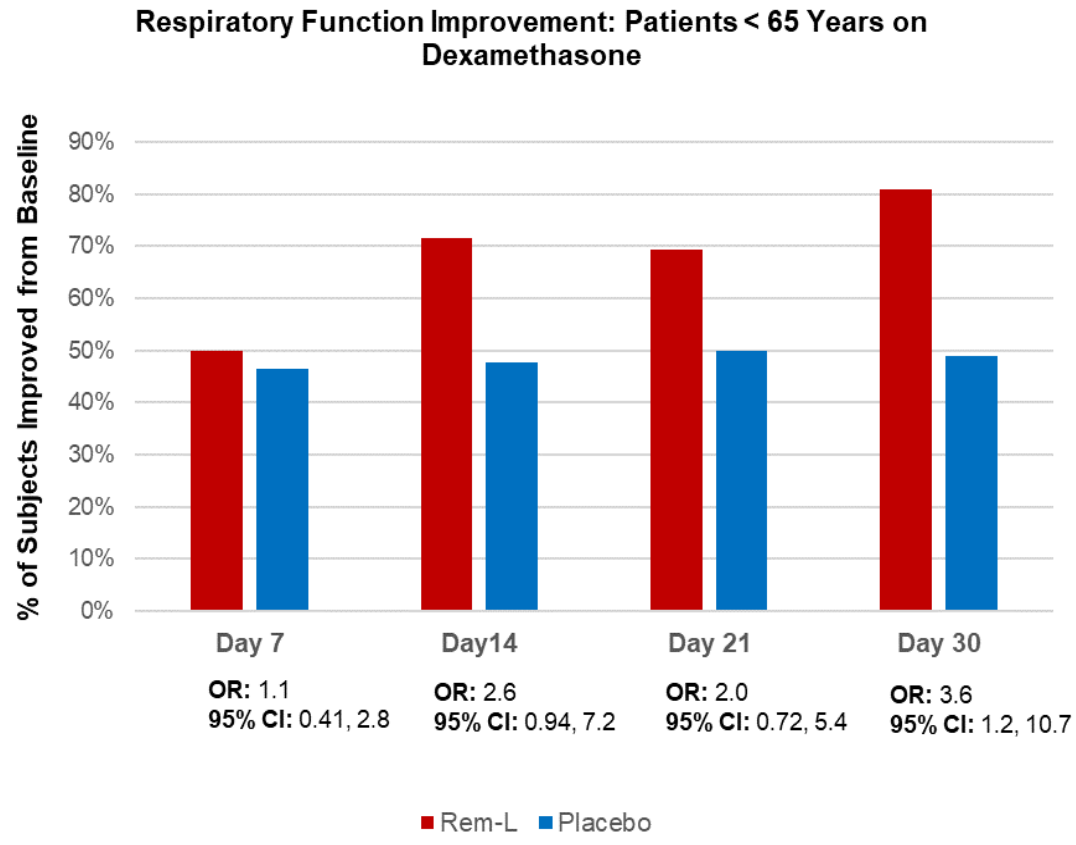
Remestemcel-L Plus Dexamethasone Shows Synergy in Mortality Reduction and Improvement in ARDS Severity* in Exploratory Population < 65 years old

Treated Patients (mITT) < 65 years old on Dexamethasone (n=73) through 90-Days



Treated Patients (mITT) < 65 years old on Dexamethasone (n=73)



* Measured as resolution and/or improvement of ARDS as defined by the Berlin criteria at Days 7, 14, 21, and 30 post-randomizations

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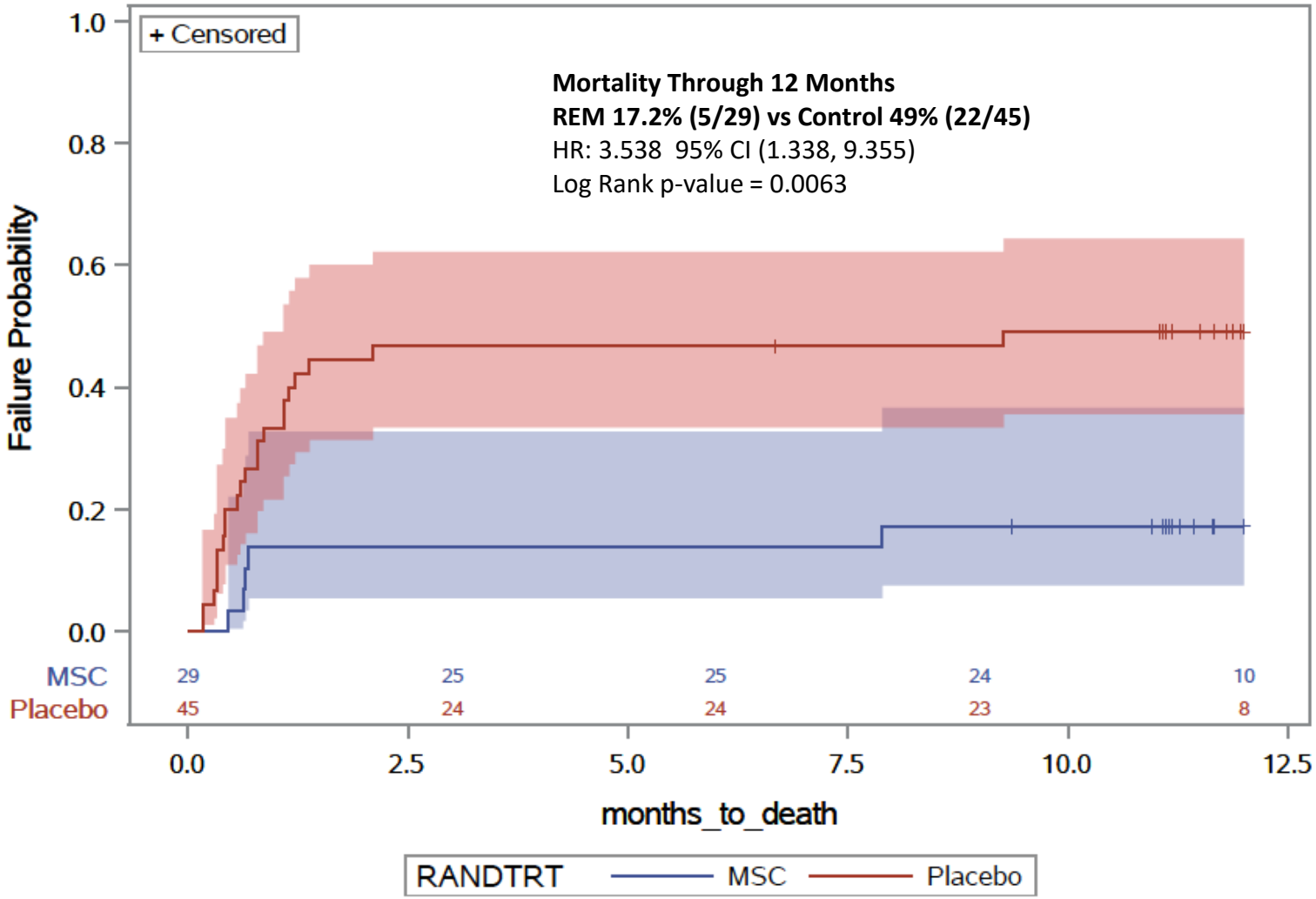
Remestemcel-L Plus Dexamethasone Shows Synergy in COVID ARDS Mortality Reduction Over 12 Months in Exploratory Population < 65 years old

Treated Patients (ITT) < 65 years old on Dexamethasone (n=74) Through 12 Months



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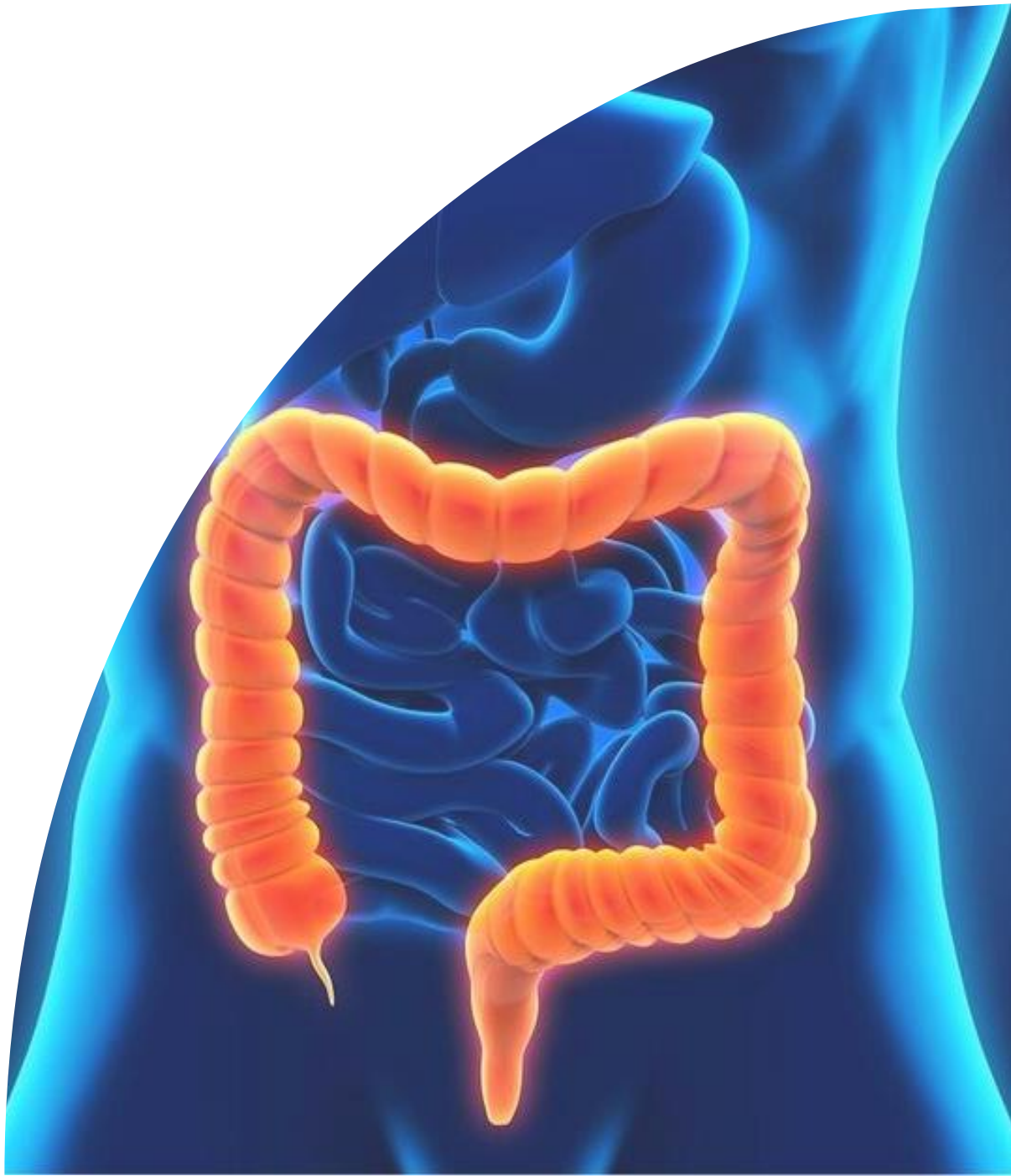
Remestemcel-L: Regulatory Pathway to Potential EUA for COVID-19 ARDS

- The FDA has advised Mesoblast that an additional clinical study in COVID ARDS, if statistically positive, could provide a dataset in conjunction with the recently completed 222 patient clinical study that might be sufficient to support an emergency use authorization (EUA)
- FDA provided guidance that the existing COVID ARDS Investigational New Drug (IND) file and future submissions for remestemcel-L in this indication may continue to cross-reference manufacturing and potency assay information in BLA for pediatric SR-aGVHD
- Mesoblast is working together with investigators from a clinical trial network focused on acute lung injury at over 40 sites across the United States affiliated with Vanderbilt University Medical Center to design and implement a pivotal trial of remestemcel-L to reduce mortality in high-risk patients with ARDS

Remestemcel-L

Inflammatory Bowel Disease

Ulcerative Colitis & Crohn’s Disease



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Remestemcel-L: Inflammatory Bowel Disease

Potential Localized Treatment for Ulcerative Colitis & Crohn's Colitis Refractory to Biologics - High Unmet Need

Treatment Options

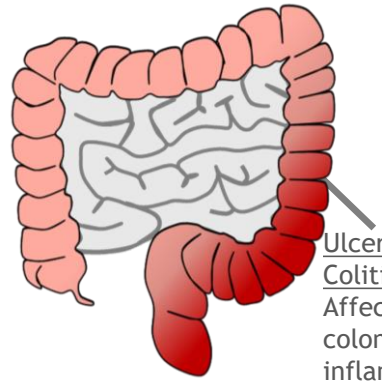
- Despite recent advances, approximately 30% of patients are primarily unresponsive to anti-TNFα agents
- Among responders, up to 10% will lose their response to the drug every year[1,2]

Burden of Illness

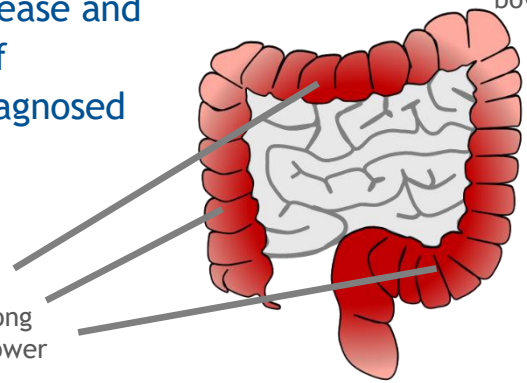
- Up to 80% of patients with medically-refractory Crohn's disease and 20% of patients with medically-refractory ulcerative colitis eventually require surgical treatment of their disease[1,2]
- Which can have a devastating impact on quality of life

Market Opportunity

- More than three million people (1.3%) in the US alone have inflammatory bowel disease[1]
- Approximately 33,000 new cases of Crohn's disease and 38,000 new cases of ulcerative colitis diagnosed every year[3-5]



Ulcerative Colitis
Affects the colon causing inflammation of the inner lining of the bowel



Crohn's Disease
Can present anywhere along the GI tract – usually in lower part of small bowel and upper colon. Can penetrate through intestinal layers from inner to outer

1. Crohn's and Colitis Foundation; 2. Lightner AL. Surgery for Inflammatory Bowel Disease in the ERA of Biologics. J Gastroinest Surg. 2020 Vol 24: 1430-1435; 3. CDC Facts and Figures 2015; 4. Globaldata Pharmapoint 2018; 5. Dahlhamer JM, MMWR Morb Mortal Wkly Rep. 2016;65(42):1166–1169

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Remestemcel-L: Ulcerative Colitis & Crohn’s Colitis

Results of First Patient Cohort from Randomized Controlled Study Published in the Journal of Crohn's and Colitis

- The immunomodulatory effects of remestemcel-L on GI inflammation is being further evaluated in a randomized, controlled study of remestemcel-L by direct endoscopic delivery to areas of inflammation in patients with medically refractory ulcerative colitis or Crohn’s colitis
- A single local delivery of remestemcel-L by colonoscopy resulted in rapid mucosal healing and disease remission in these refractory patients at high risk of progression to surgery
- The study at Cleveland Clinic will randomize up to 48 patients with medically refractory ulcerative colitis or Crohn’s colitis in a 2:1 fashion to receive a single intervention with remestemcel-L or placebo.
- Medically refractory ulcerative colitis and Crohn’s colitis patients are defined as having active disease for at least 6 months and having lost response to at least one monoclonal antibody (anti-TNF or anti-integrin)

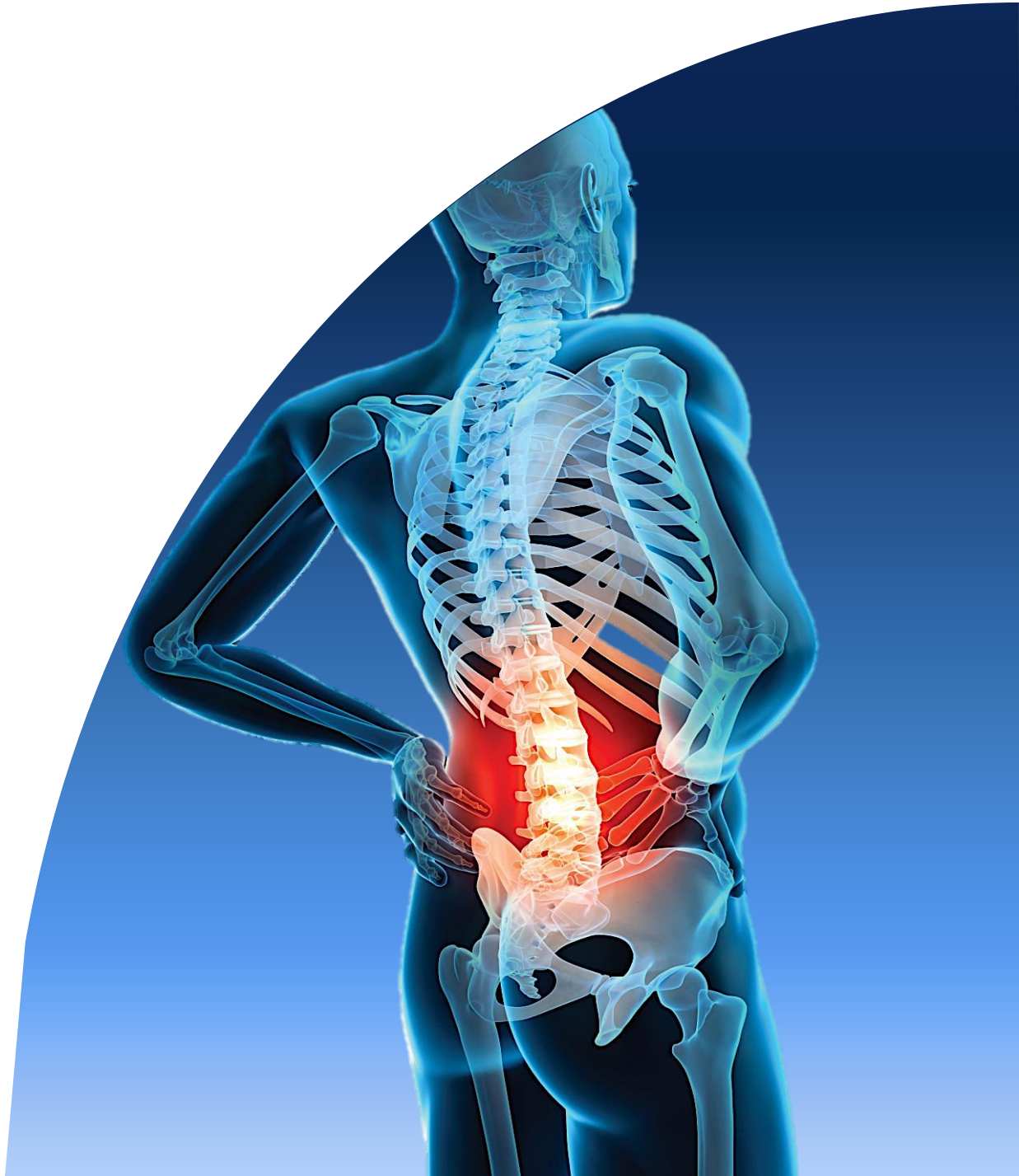
Remestemcel-L: Ulcerative Colitis & Crohn's Colitis

Results of First Patient Cohort from Randomized Controlled Study Published in the Journal of Crohn's and Colitis

- Key results of the interim analysis performed in the first 12 enrolled patients were as follows:
  - All UC patients treated with remestemcel-L had improved clinical and endoscopy scores within 2 weeks, as defined by the Mayo clinical score and Mayo endoscopic severity (MES) score, and all achieved clinical and endoscopic remission by 2 weeks
  - All UC patients were extremely satisfied or satisfied with remestemcel-L treatment at 3 months, based on the inflammatory bowel disease patient reported treatment impact (IBD-PRTI), and response was described as excellent or good in all patients
  - All Crohn's colitis patients treated with remestemcel-L showed treatment remissions or responses by three months, as measured by the Simple Endoscopy Score for Crohn's Disease (SES-CD) (mean score 17 at baseline decreased to 5 at 3 months)
  - Remestemcel-L treatment resulted in reduction of fecal calprotectin, a validated biomarker of disease activity,10 from mean of 231 at baseline to 67 at 3 months, indicative of remission
  - In controls with UC and Crohn's colitis over 3 months, endoscopy scores increased, fecal calprotectin levels increased from a mean of 330 to 505, and clinical responses were described as poor or unchanged

Rexlemestrocel-L

Chronic Low Back Pain (CLBP) due to Degenerative Disc Disease (DDD)



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Rexlemestrocel-L

A New Paradigm for Treatment of Chronic Low Back Pain due to Degenerative Disc Disease

Burden of Illness

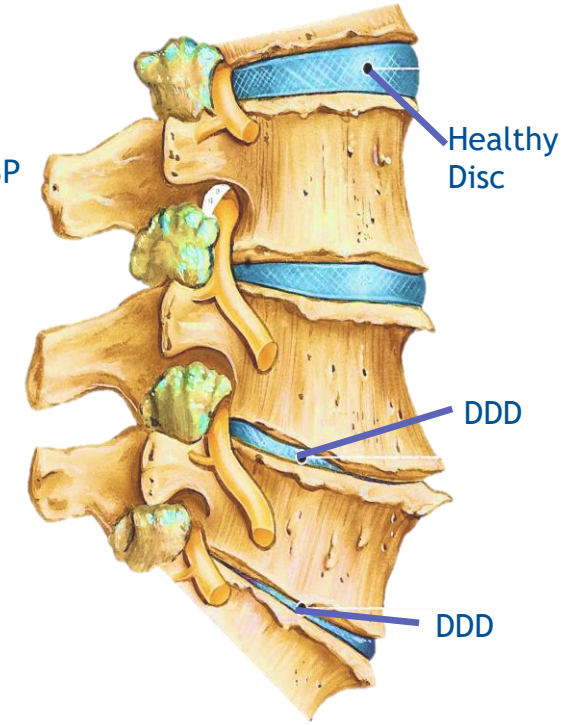
- Back pain causes more disability than any other condition[1]
- Inflicts substantial direct and indirect costs on the healthcare system,[1] including excessive use of opioids in this patient population

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[3]
- Durable improvement in pain has potential to reduce opioid use and prevent 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 [3,4,5]



1. Williams, J., NG, Nawi, Pelzter, K. (2015) Risk factors and disability associated with low back pain in older adults in low-and middle-income countries. Results from the WHO Study on global ageing and adult health (SAGE). PloS One. 2015; 10(6): e0127880., 2. Simon, J., McAuliffe, M., Shamim, F. (2015) Discogenic Low Back Pain. Phys Med Rehabil Clin N Am 25 (2014) 305–317., 3.Decision Resources: Chronic Pain December 2015., 4. LEK & NCI opinion leader interviews, and secondary analysis., 5. Navigant: Commercial Assessment for a Proprietary Cell-Based Therapy for DDD in the U.S. and the EU3 – August 2014., 6. HealthCare Utilization and Cost of Discogenic Lower Back Pain in the US – Anthem/HealthCore.

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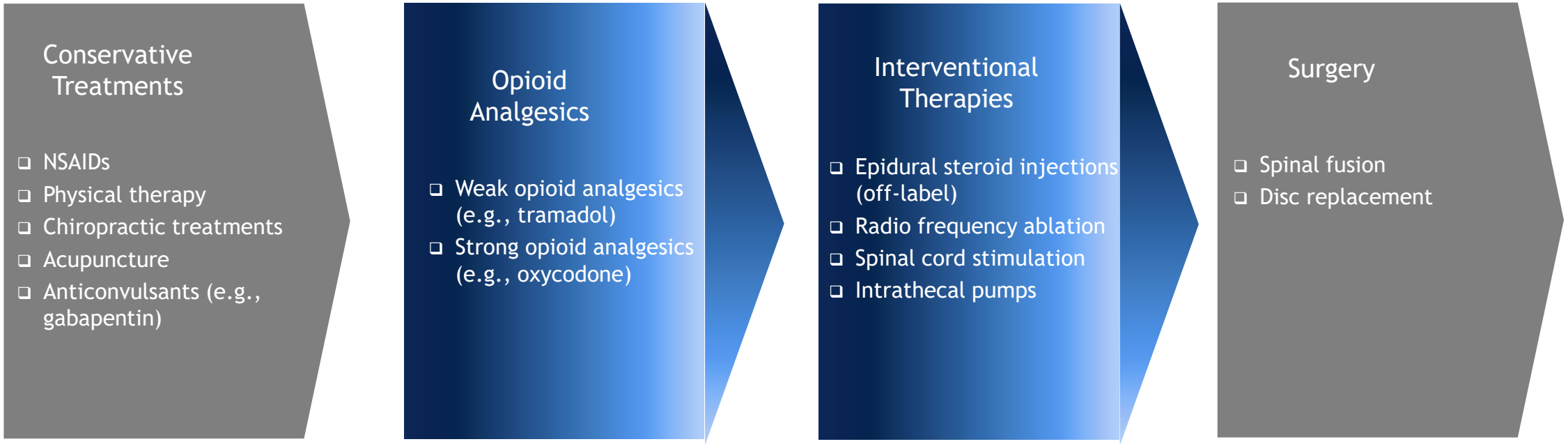
The Patient Treatment Journey

Rexlemestrocel-L Potential for First-Line CLBP associated with DDD, Refractory to Conservative Treatment

Rexlemestrocel-L targeting moderate-to-severe DCLBP



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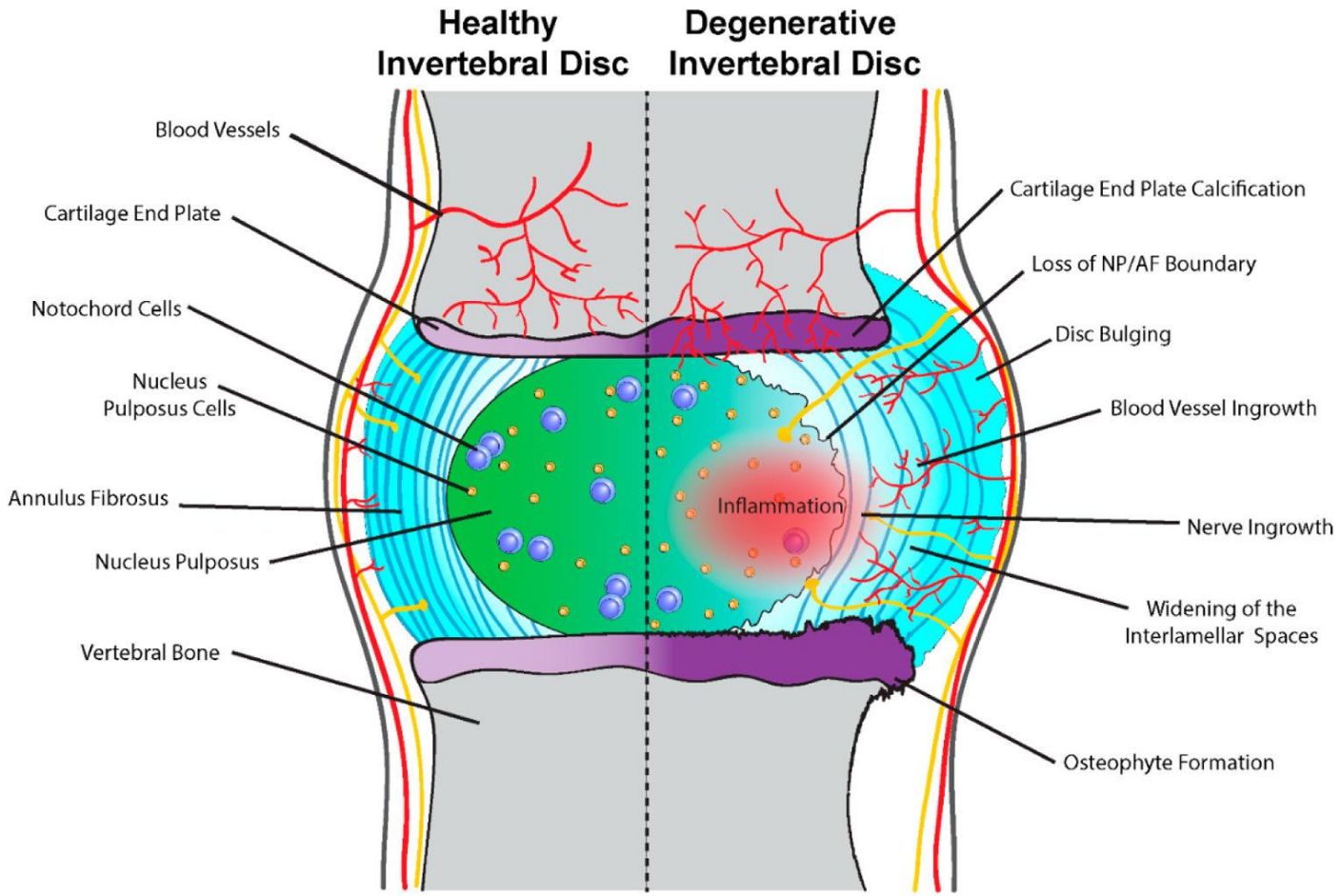
Chronic Low Back Pain

Inflammation is at the Core of Degenerative Disc Disease



McCann MR and Seguin CA. Notochord Cells in Intervertebral Disc Development and Degeneration. J. Dev. Biol. 2016, 4(1), 3

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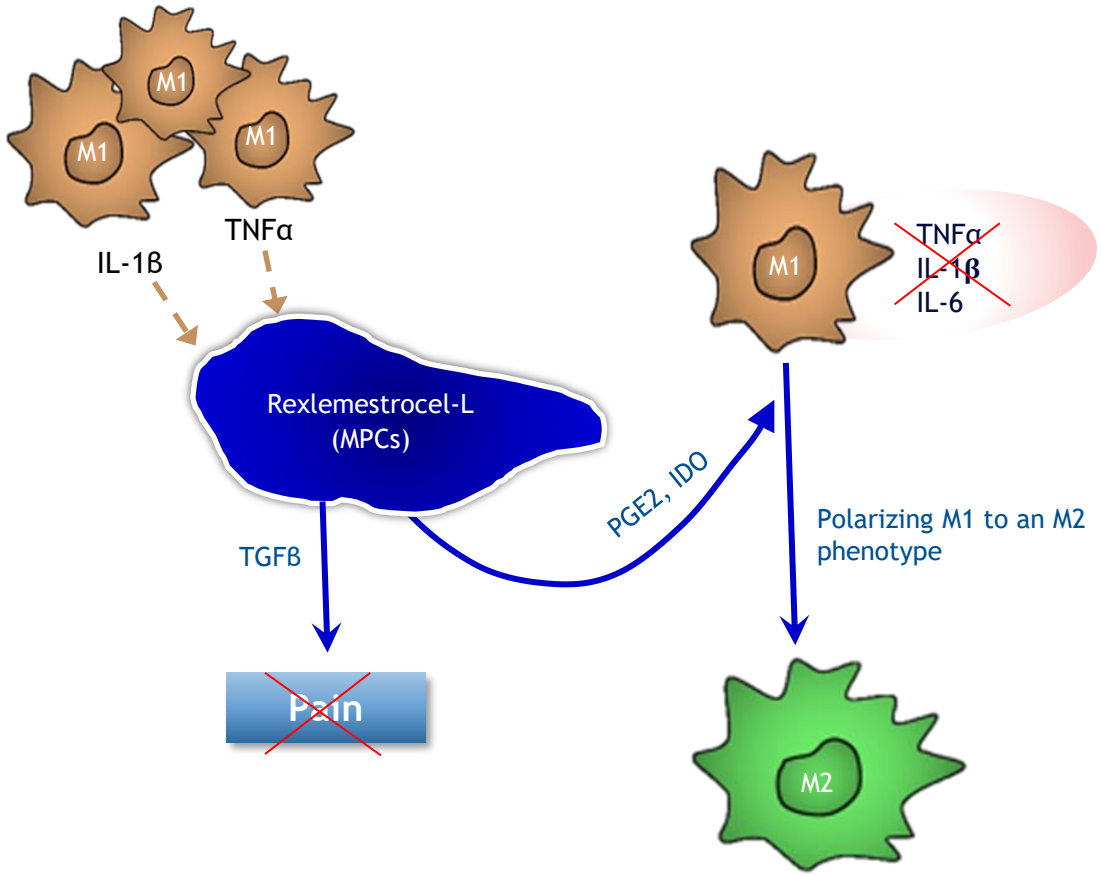
Technology Platform – Mesenchymal Precursor Cells (MPC)

Potential Mechanisms of Action in Treating Inflammatory Disc Disease

Rexlemestrocel-L

Mesenchymal precursor cells (MPC) beneficially act in the inflamed disc:

1. Reduce neurite ingrowth
2. Reduce neuropathic pain
3. Increase structural integrity of annulus
4. Increase proteoglycans in nucleus



M1=pro-inflammatory macrophage; IL-1β=interleukin-1 beta (pro-inflammatory cytokine); TNFα=Tumour Necrosis Factor alpha (pro-inflammatory cytokine); M2=anti-inflammatory macrophage

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Phase 3 Trial Outcomes – Rexlemestrocel-L for Chronic Low Back Pain

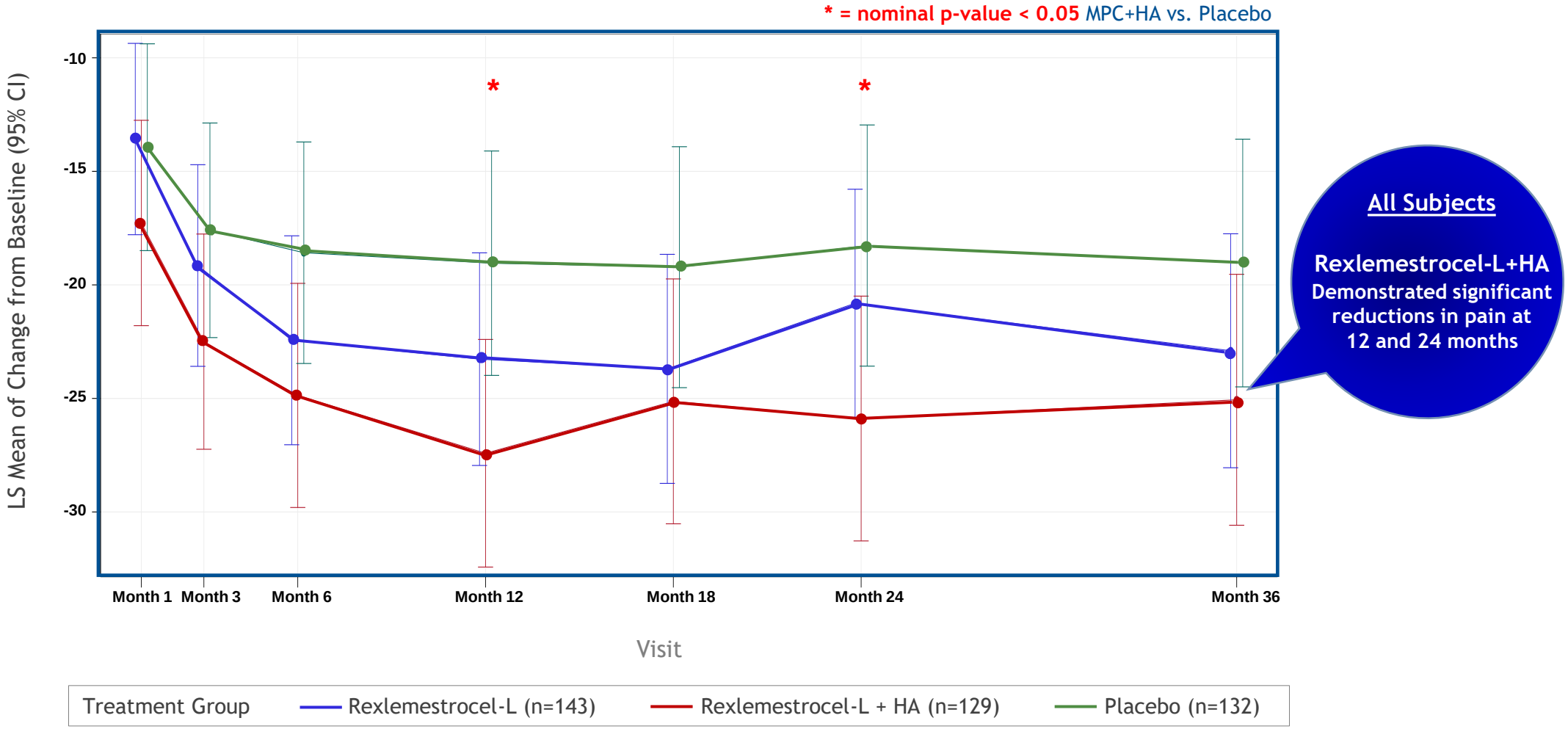
Single Injection of Rexlemestrocel-L + HA Results in >Three Years of Pain Reduction

Positive results from a single injection of MPC + Hyaluronic Acid (HA) carrier include:

- No appreciable differences in the safety profile of subjects treated with Rexlemestrocel-L, Rexlemestrocel-L+HA or saline control
- Achievement of significant and durable reductions in CLBP (mean change from baseline in back pain intensity) through 36 months across the entire evaluable study population (n=404) compared with saline controls
- Greatest pain reduction was observed in the pre-specified population of subjects with CLBP duration shorter than the baseline study median of 68 months (n=202) with significantly greater reduction (nominal p-value < 0.05) at all time points analyzed over 36 months compared with saline controls
- Significantly greater pain reduction in the pre-specified patient subset of opioid users (n=168) at all time-points compared with saline controls and by 36 months there was a significant increase in the proportion of patients that came off opioids altogether

Phase 3 Trial: Outcome

LS Mean Change in Low Back Pain from Baseline - Entire Study (n=404)



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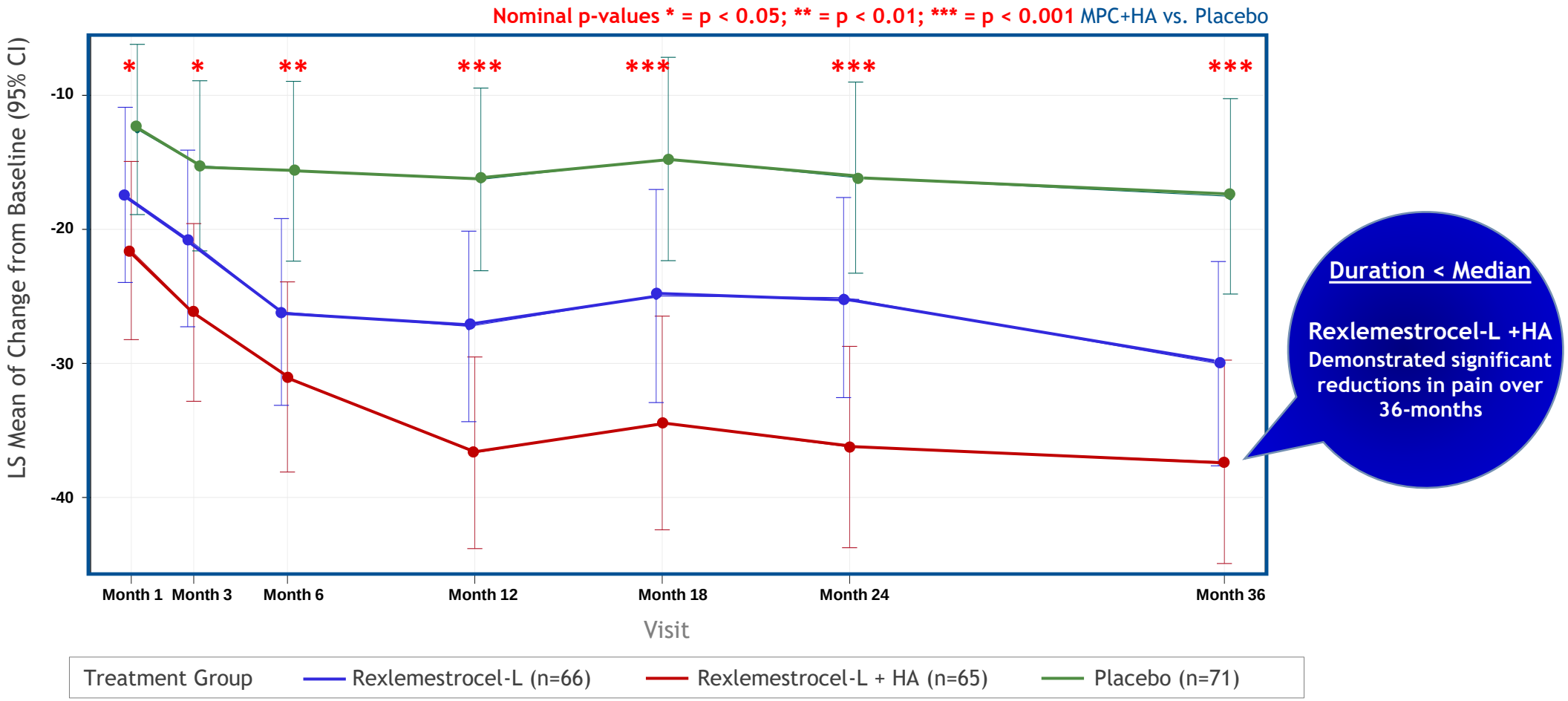
Phase 3 Trial: Outcome

LS Mean VAS Change in Low Back Pain from Baseline - Duration CLBP < 68 Month Median Baseline Duration (n=202)



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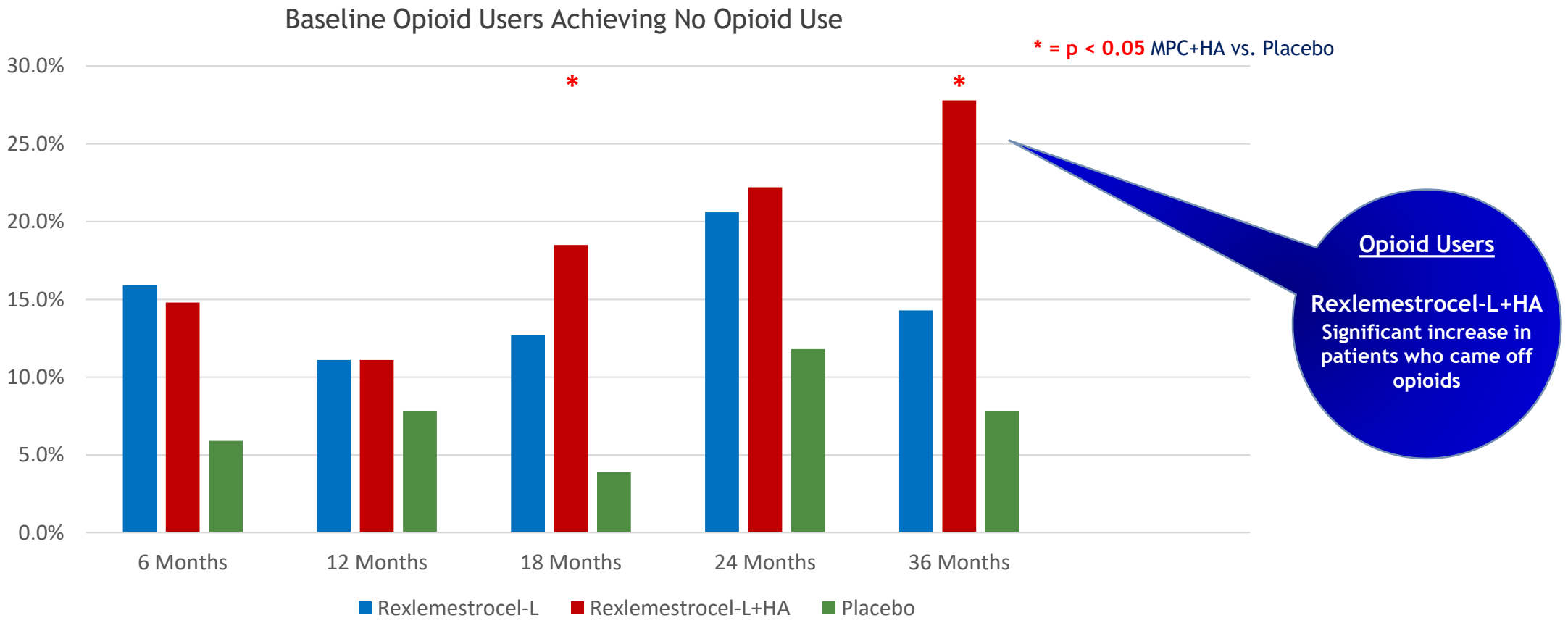
Phase 3 Trial: Outcome

Rexlemestrocel-L + HA Increased the Proportion of Patients with Baseline Opioid Use Who Were Not Taking an Opioid at 36 Months



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Next Steps for Rexlemestrocel-L in Chronic Low Back Pain

- FDA Office of Tissues and Advanced Therapies (OTAT) agreed with Mesoblast's proposal for mean pain reduction at 12 months to serve as the primary endpoint of the next trial, with mean functional improvement and reduction in opioid use as secondary endpoints
- A key objective is to demonstrate durable reduction in pain and position rexlemestrocel-L as a potential opioid-sparing agent
- The planned upcoming US trial will include at least 20% of subjects from the EU to support submissions to both FDA and EMA
- Active discussions ongoing with key investigators and advisors on final protocol design

Rexlemestrocel-L

Chronic Heart Failure with Reduced Ejection Fraction (HFrEF)

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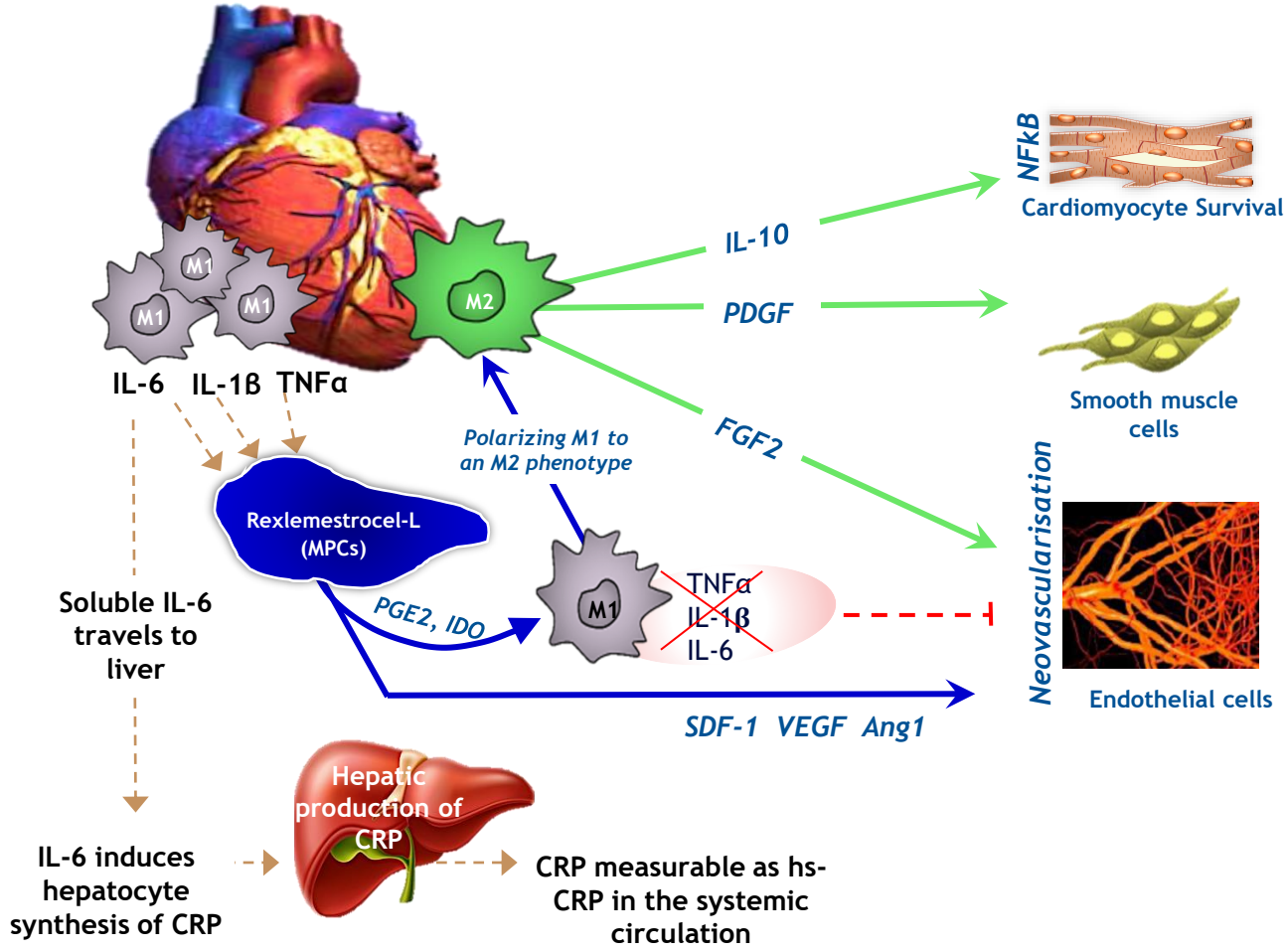
Rexlemestrocel-L: Proposed Mechanism of Action

Intra-Cardiac Administration in Treatment of both Heart Failure & Large Vessel Atherosclerosis

Mesenchymal precursor cells (MPC) beneficially act the heart and the systemic vasculature:

1. Reduce cardiac / systemic inflammation
2. Reversal of endothelial dysfunction
3. Induce microvascular networks within viable heart muscle
4. Reduce heart muscle death



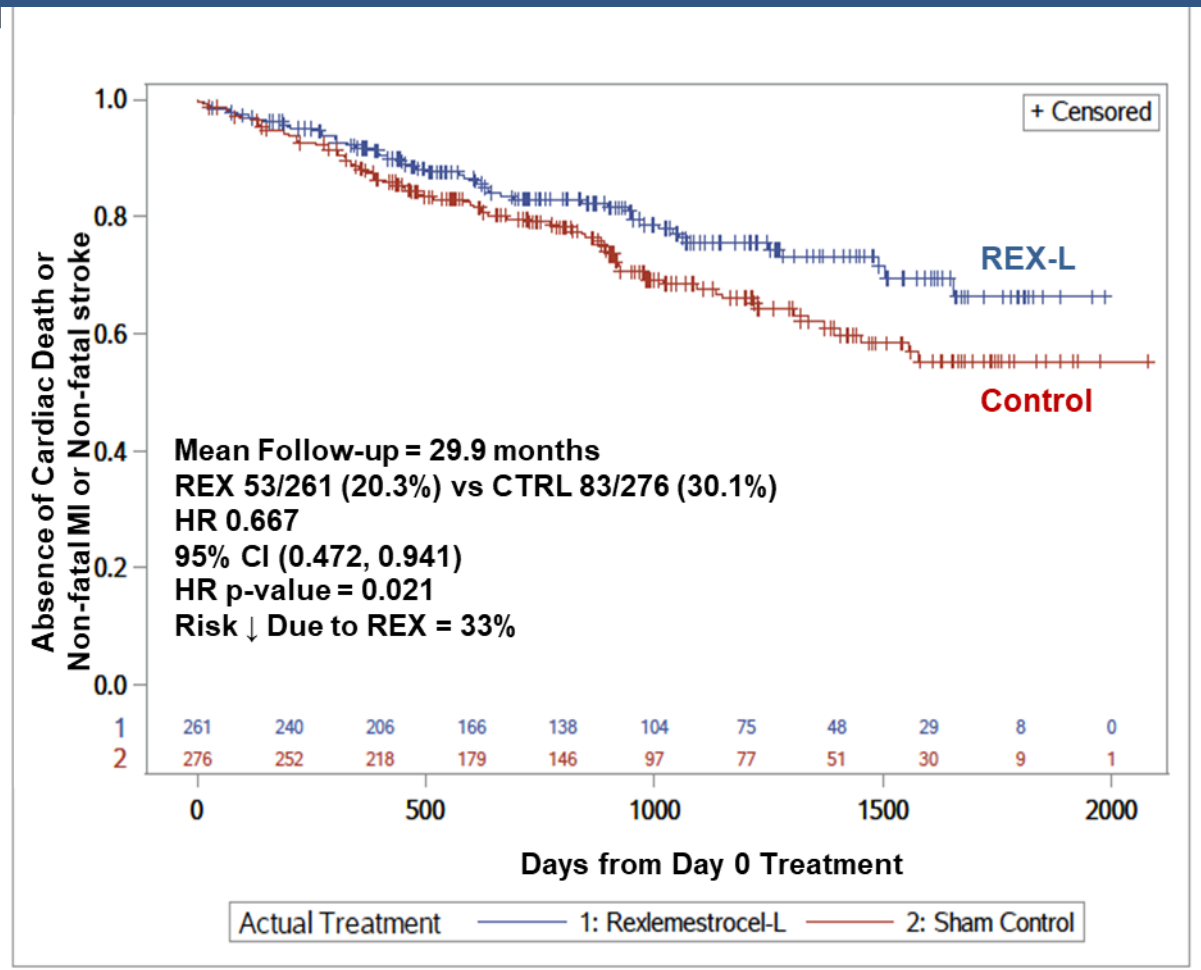
M1=pro-inflammatory macrophage; IL-6=interleukin 6 (pro-inflammatory cytokine); IL-1β=interleukin-1 beta (pro-inflammatory cytokine); TNFα=Tumour Necrosis Factor alpha (pro-inflammatory cytokine); IL-1-=interleukin 10 (anti-inflammatory cytokine); M2=anti-inflammatory macrophage

Modified from Borow KM, Yaroshinsky A, Greenberg B, Perin E. Phase 3 DREAM-HF Trial of Mesenchymal Precursor Cells in Chronic Heart Failure: A Review of Biological Plausibility and Implementation of Flexible Clinical Trial Design. Circ Res. 2019;125:265-281

DREAM-HF Phase 3 Trial in HFrEF

Rexlemestrocel-L Reduced Incidence of 3-Point Composite MACE - CV Death, MI or Stroke - Compared to Controls Across All 537 Treated Patients

Time-to-First-Event (TTFE) for Cardiovascular Death or Non-fatal MI or Non-fatal Stroke



MACE=Major Adverse Cardiovascular Event; TTFE=Time To First Event; MI=Myocardial Infarction (Heart Attack)

Kaplan-Meier log rank statistics

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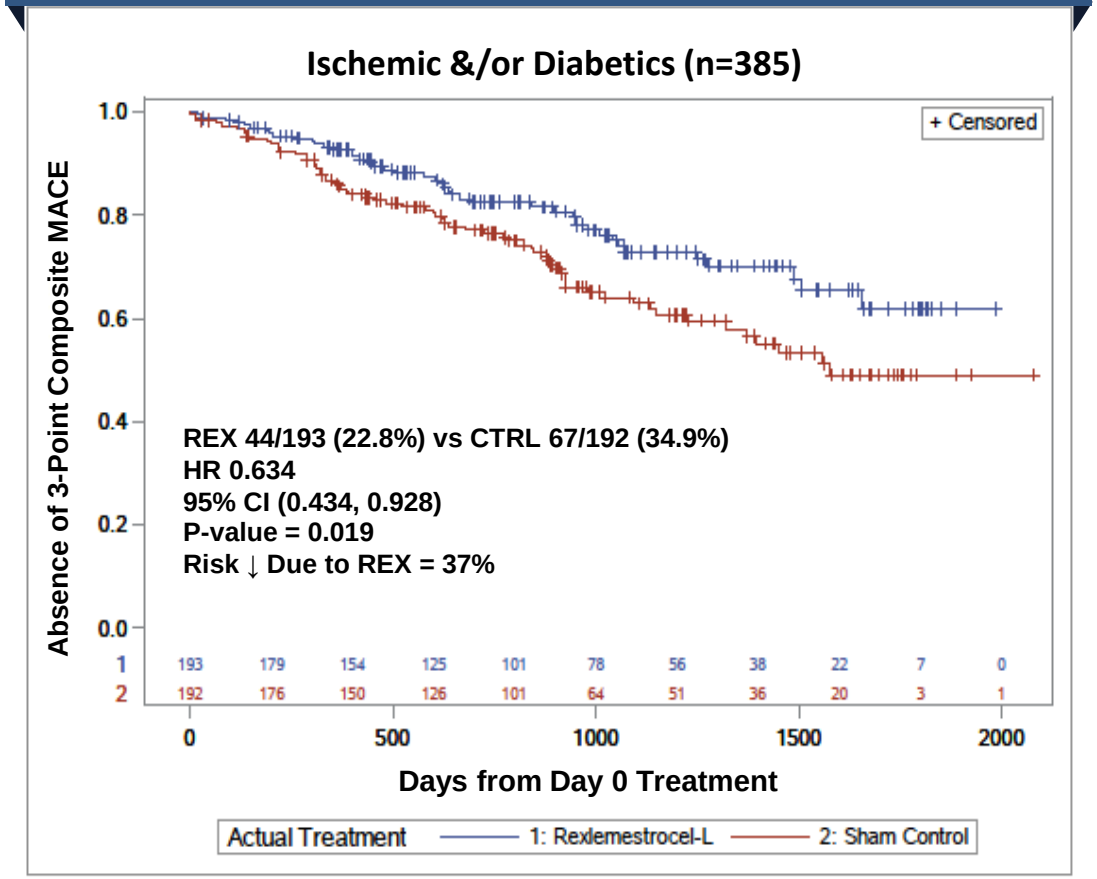
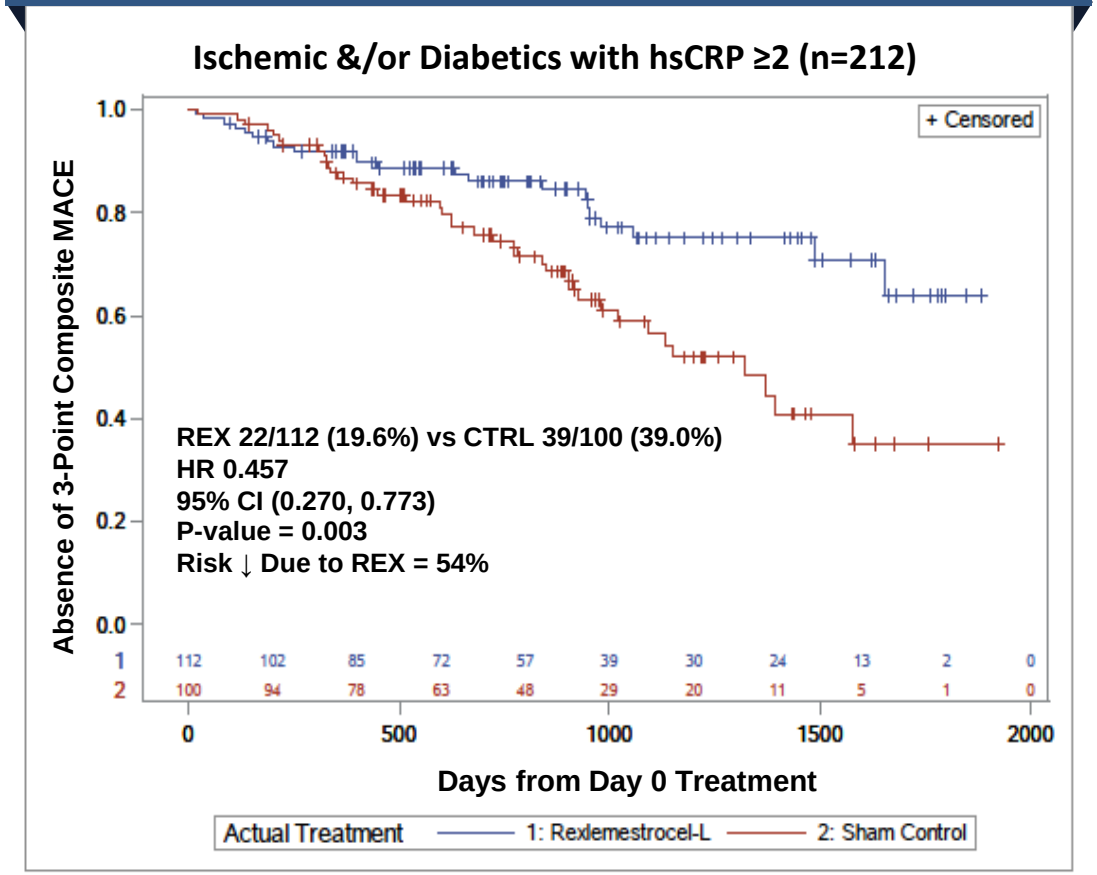
DREAM-HF Phase 3 Trial in HFrEF

3-Point Composite MACE, High-Risk Patients (Myocardial Ischemia &/or Diabetes), and Inflammation

Rexlemestrocel-L Reduced Risk of 3-Point TTFE Composite IMM MACE in High-Risk Patients with Myocardial Ischemia &/or Diabetes by 37%



In Patients with Myocardial Ischemia and/or Diabetes with hsCRP≥2 mg/L Rexlemestrocel-L Reduced Risk of TTFE for 3-Point MACE by 54%



Kaplan-Meier log rank statistics

MACE=Major Adverse Cardiovascular Event; TTFE=Time To First Event; IMM=Irreversible Morbidity or Mortality; hs-CRP=High-Sensitivity C-Reactive Protein (a measure of systemic inflammation)

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Investigational Agents Evaluated for Cardiovascular Risk Reduction Using 3-Point IMM MACE*

Comparison With Rexlemestrocel-L in Patients With Myocardial Ischemia &/or Diabetes

Medication	Drug Class	Clinical Trial	Hazard Ratio	Risk Reduction	95% CI	P-value	# Randomized Patients
Liraglutide	GLP-1 Receptor Agonist (RA)	LEADER	0.87	13%	0.78, 0.97	0.01	9,340
		Heart Failure Sub-group	0.94	6%	0.72, 1.21	-------	1,305
Dulaglutide	GLP-1 Receptor Agonist (RA)	REWIND	0.88	12%	0.79, 0.99	0.03	9,901
Empagliflozin	SGLT-2 Inhibitor	EMPA-REG	0.86	14%	0.74, 0.99	0.04	7,020
Canagliflozin	SGLT-2 Inhibitor	CANVAS + CANVAS-R	0.86	14%	0.75, 0.97	0.02	10,142
		Heart Failure Sub-group	0.80	20%	0.61, 1.05	-------	1,461
Dapagliflozin	SGLT-2 Inhibitor	DECLARE Timi 58	0.93	7%	0.84, 1.03	-------	17,160
		Heart Failure Sub-group	1.01	0%	0.81, 1.27	-------	1,724
Ertugliflozin	SGLT-2 Inhibitor	VERTIS CV	0.99	1%	0.88, 1.12	-------	8,246
Rexlemestrocel-L	**Mesenchymal Precursor Cells**	**DREAM HF Ischemics &/or Diabetics**	**0.63**	**37%**	**0.43, 0.93**	**0.019**	**385**
		Ischemics &/or Diabetics With Baseline hsCRP≥2mg/L	**0.46**	**54%**	**0.27, 0.77**	**0.003**	**212**

* TTFE Composite for non-fatal MI, or non-fatal stroke, or cardiovascular death

Wang CCL, et al. Circulation; 2019; 139: 1741-1743; McGuire DK, et al. JAMA Cardiology 2021; 6: 148-158

Rexlemestrocel-L: Conclusions & Key Next Steps in HFrEF

1. Transendocardial delivery of 150 million allogeneic MPCs (rexlemestrocel-L) was safe and did not elicit any clinically meaningful immune-related responses

2. Over a mean follow-up of 30 months, a single rexlemestrocel-L dose on top of maximal standard of care significantly reduced:

   - Composite of cardiovascular death or non-fatal MI or non-fatal stroke in all 537 patients
   - A hierarchical analysis of pre-specified risk stratification showed greatest benefit in patients with myocardial ischemia and/or diabetes (72% of total treated population)
   - In controls (treated with maximal current therapies for heart failure), the presence of myocardial ischemia and/or diabetes resulted in 1.9-fold greater risk of 3-Point MACE versus other control patients with heart failure
   - Rexlemestrocel-L reduced 3-Point MACE in myocardial ischemics and/or diabetics by 37%
   - Greatest benefit in patients with elevated CRP at baseline with reduction in 3-Point MACE of 54% (n = 212)

3. Mesoblast expects to receive guidance from FDA on a potential approval pathway following detailed review of the outcomes identified in high-risk HFrEF patients with diabetes and/or myocardial ischemia

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Thank You