

The logo for mesoblast, featuring the word "mesoblast" in a dark blue sans-serif font, followed by a square icon divided into four quadrants of different shades of blue.

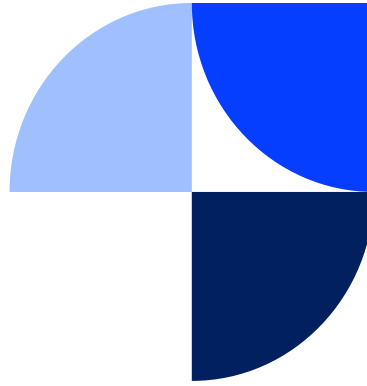
mesoblast

Global Leader in Allogeneic Cellular Medicines for Inflammatory Diseases

Corporate Presentation
BIOTECH SHOWCASE 2022

JANUARY 2022

ASX: MSB; Nasdaq: MESO

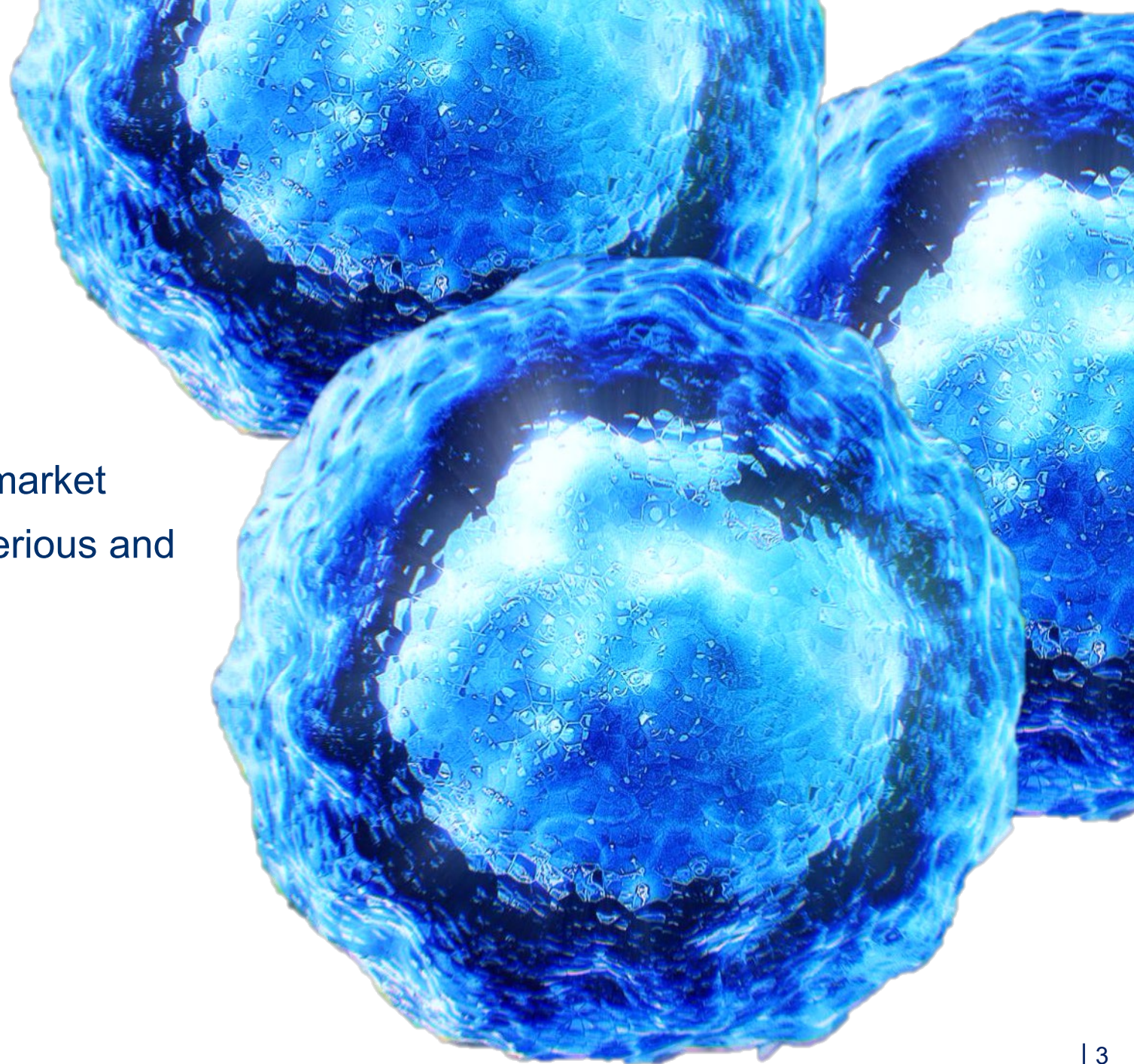


CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

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.

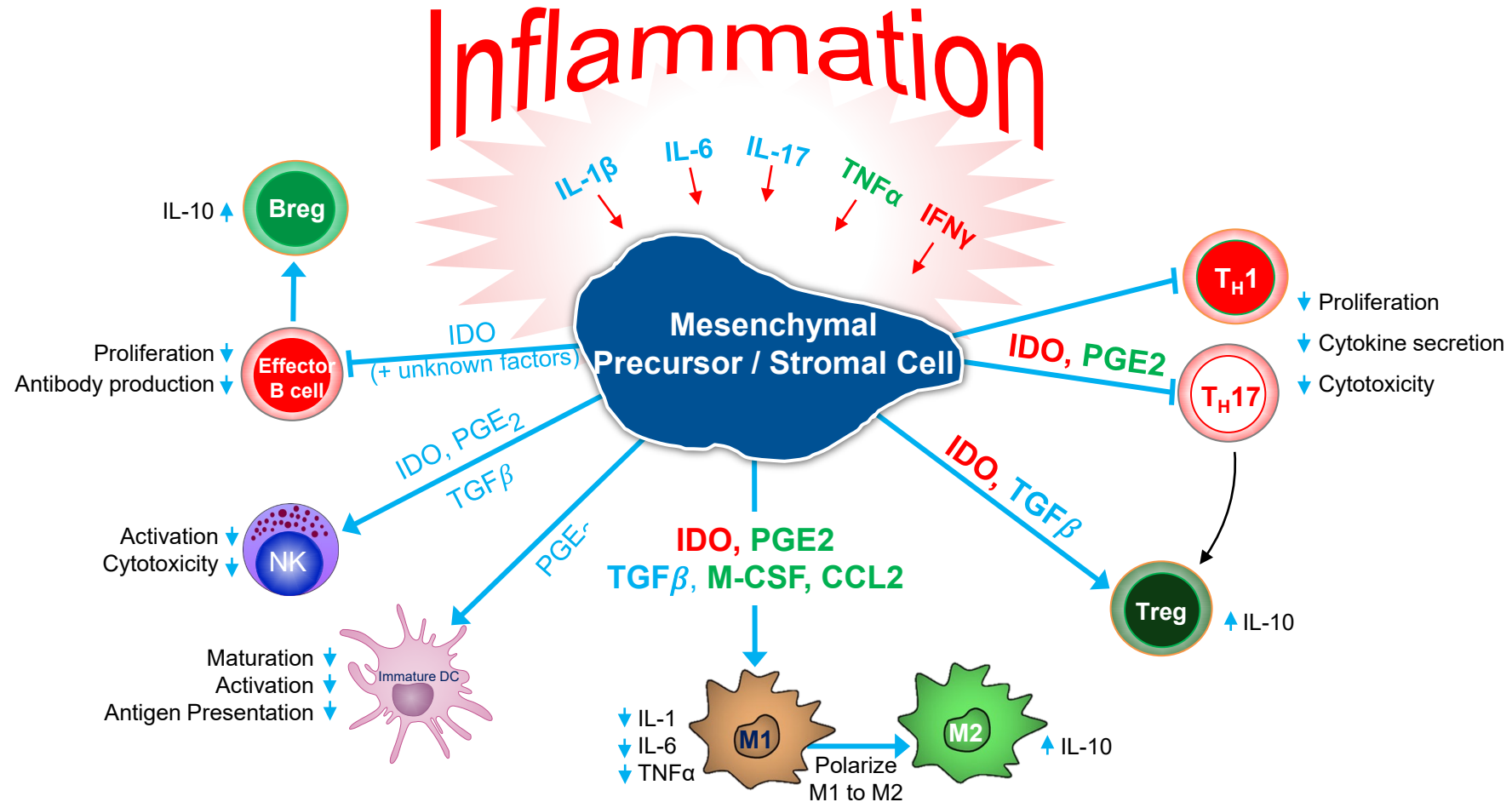
Our Mission

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

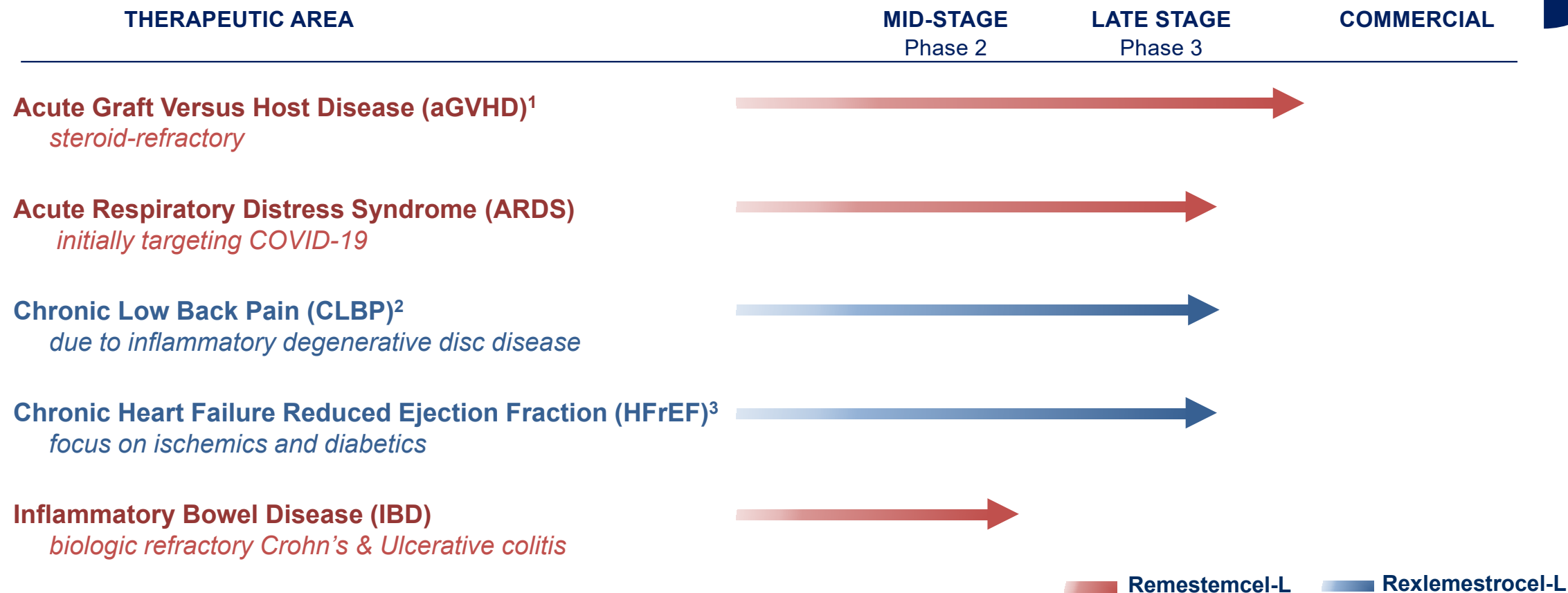


Platform Technology – Mechanism of Action

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



Late-Stage Clinical Pipeline

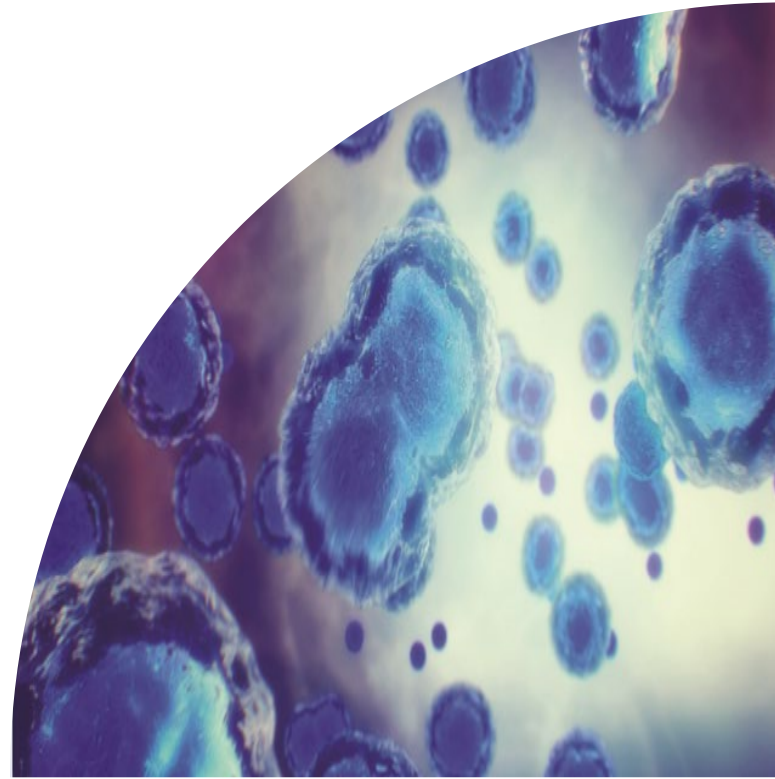


This chart is figurative and does not purport to show individual trial progress within a clinical program

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

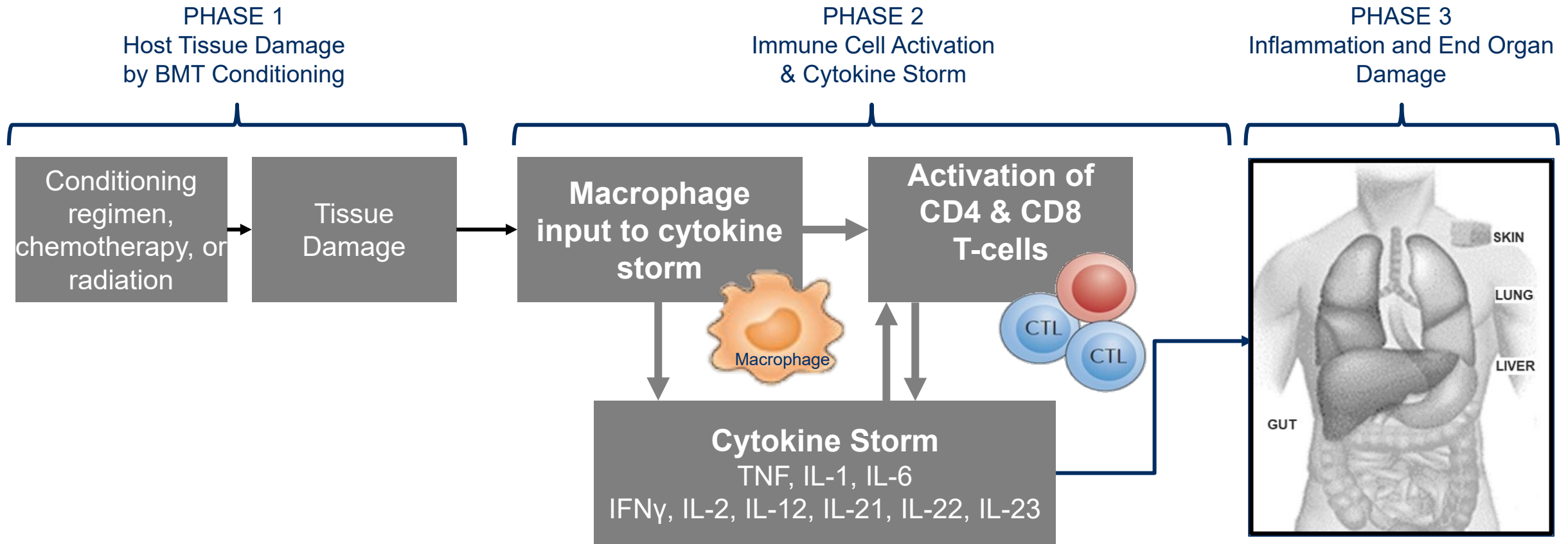
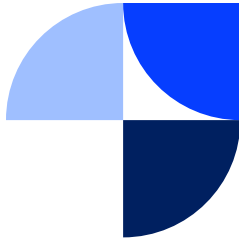
Remestemcel-L

Acute Graft versus Host Disease

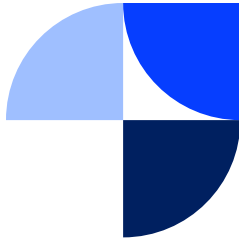


Acute Graft versus Host Disease (aGVHD)

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



Children with Steroid-Refractory Acute GVHD at High Risk of Treatment Failure and Death



Extremely high unmet medical need

- More than 2,000 allogeneic BMTs in children and adolescents in US¹
- Despite prophylaxis, ~50% will develop aGVHD²
- First-line treatment is corticosteroids
- Response rate is ~50%
- Children < 12 years of age have no approved treatment for steroid-refractory acute GVHD

Acute GVHD Primarily Affects Skin, GI Tract, and Liver

- Classic skin rash; Abdominal cramps; Large volumes of diarrhea
- Rising serum bilirubin (indicative of liver damage or disease)
- Mortality as high as 70 – 90%²⁻⁵ when involving gut and liver



© J Kurtzberg MD, reproduced with permission

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

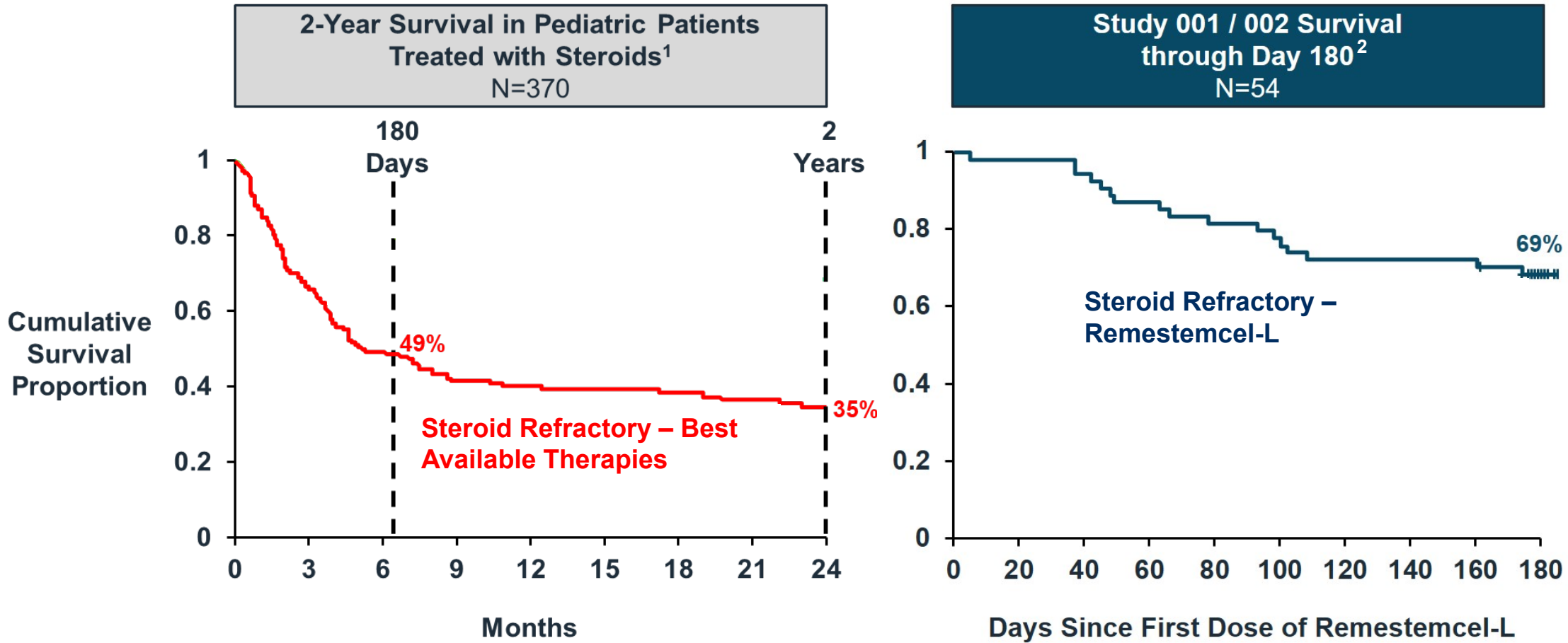
	MAGIC ¹ N=30 ²	Protocol 280 (pediatric)		EAP 275	Study 001
		Placebo N=13	Remestemcel-L N=14	Remestemcel-L N=241	Remestemcel-L N=54 ³
Day 28 Overall Response	43%	38%	64%	65%	69%
Day 100 Survival	57%	54%	79%	66%	74%

Source: ODAC Advisory Committee Briefing Document and Presentation August 2020.

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

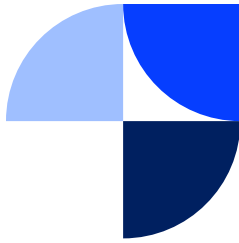


Remestemcel-L Improved Dismal Survival in Children with SR-aGVHD

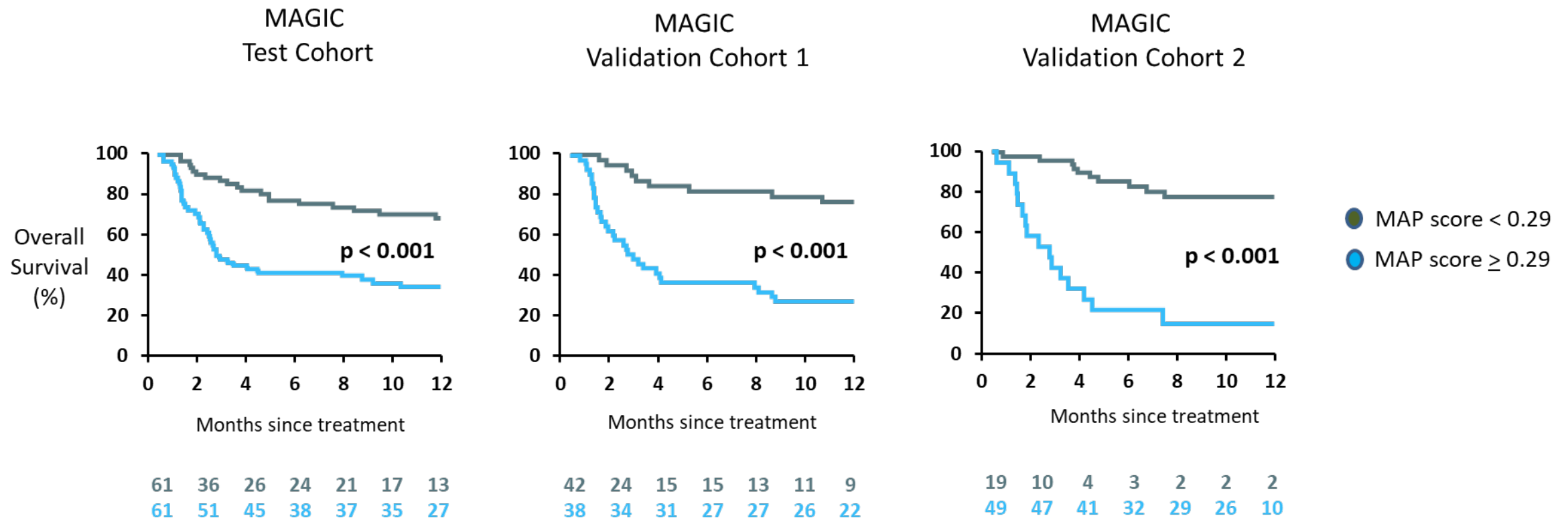


1. Adapted and redrawn from Figure 2 of MacMillan, M.L. et al. Pediatric acute GVHD: clinical phenotype and response to upfront steroids. Bone Marrow Transplant 55, 165–171 (2020); 2. Kurtzberg, J. et al. A Phase 3, Single-Arm, Prospective Study of Remestemcel-L, Ex Vivo Culture-Expanded Adult Human Mesenchymal Stromal Cells for the Treatment of Pediatric Patients Who Failed to Respond to Steroid Treatment for Acute Graft-versus-Host Disease. Biol Blood Marrow Transplant 26 (2020) 845-854

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

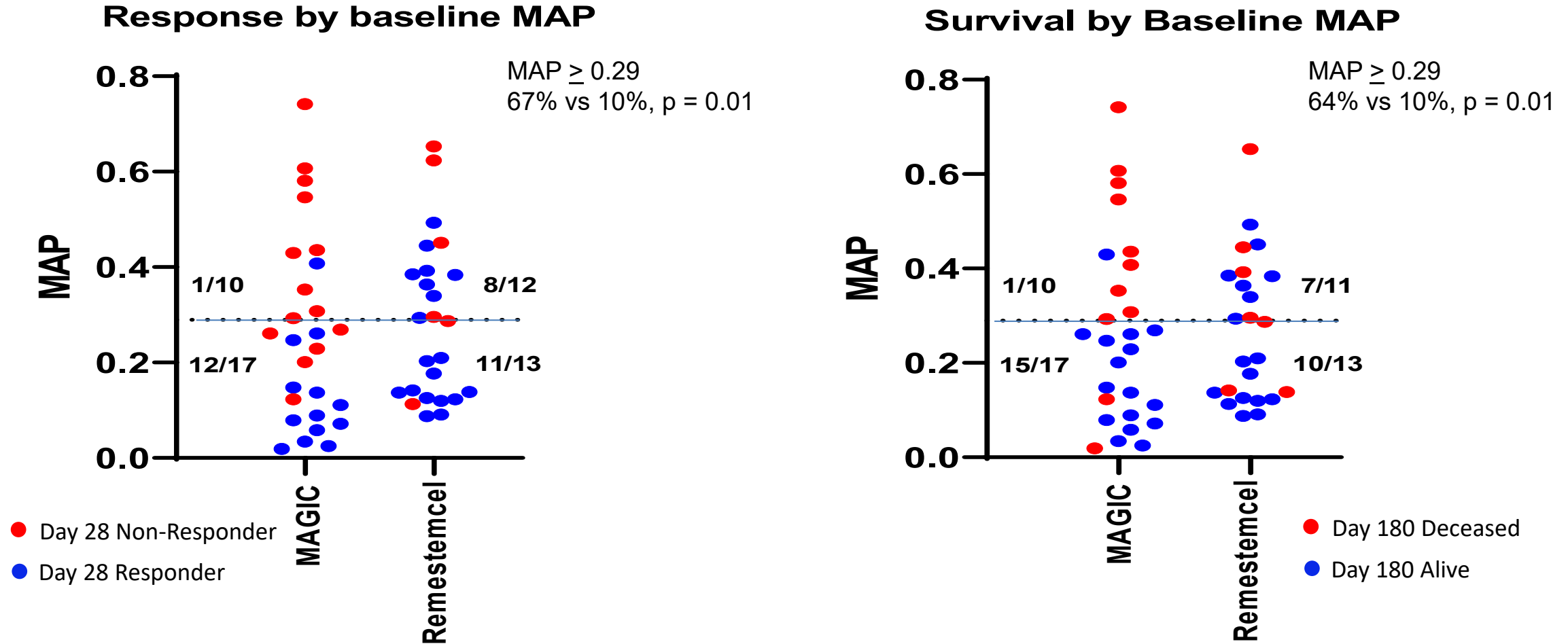
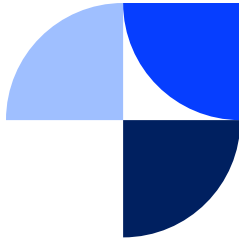


MAGIC Algorithm Probability Biomarker Score (MBS, MAP) > 0.29 is a Validated Threshold



Remestemcel-L Treatment Outcomes

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

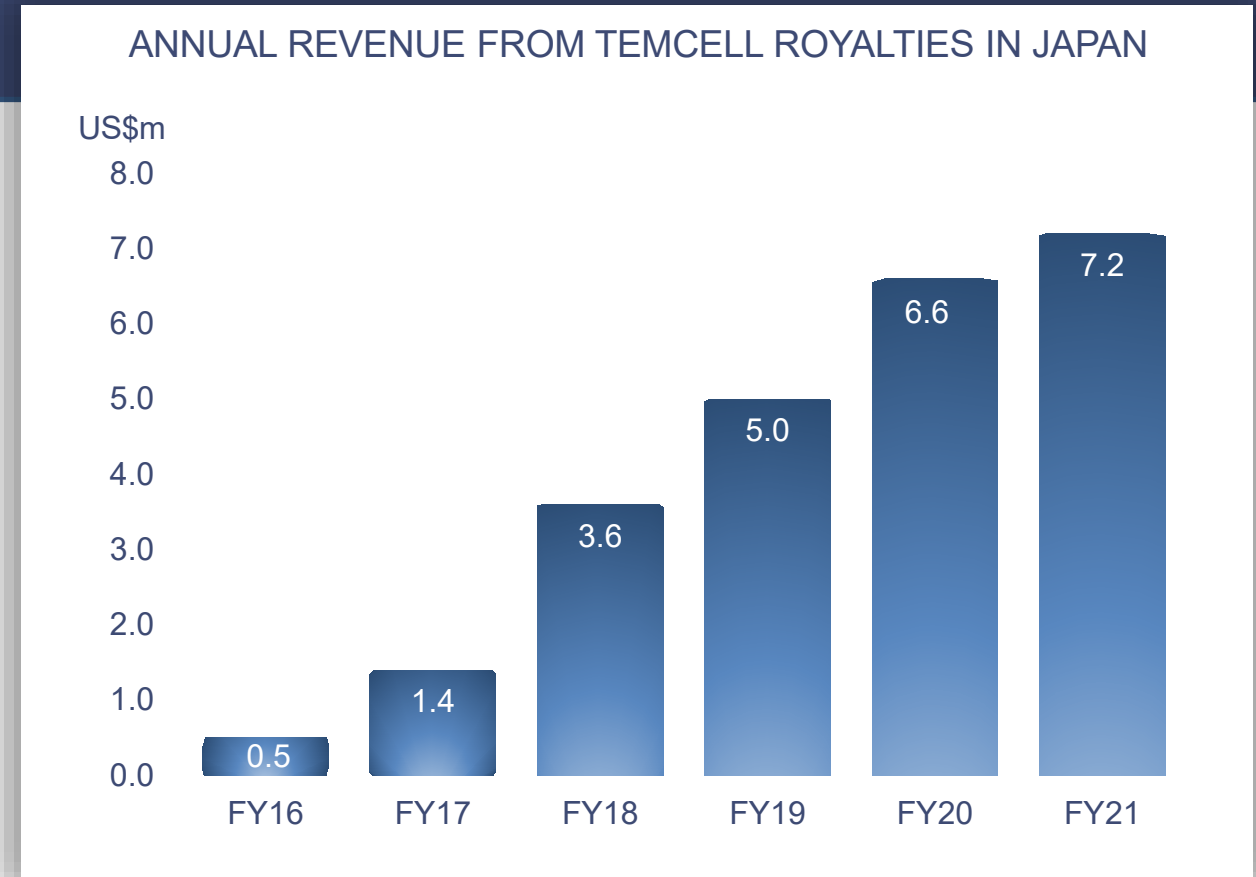


Remestemcel-L: Regulatory & Commercial Update for SR-aGVHD

- Met with the FDA's OTAT November 2021
 - OTAT indicated that Mesoblast's approach to address the outstanding CMC items is reasonable
 - OTAT indicated that the in vitro immunomodulatory activity Mesoblast intends to measure for potency is a reasonable critical quality attribute (CQA) for the product, and the relevance of this activity to clinical outcomes should be established
 - Mesoblast has now generated substantial new data that it believes establish the relevance of the proposed in vitro immunomodulatory activity of remestemcel-L to the in vivo clinical effect of the product in the Phase 3 trial in children with SR-aGVHD, including survival and biomarkers of in vivo activity
 - Mesoblast will provide these new data to OTAT, and address other outstanding items as required for the Biologics License Application (BLA) resubmission
 - Mesoblast continues to be in a well-established process with FDA's Center for Biologics Evaluation and Research (CBER), and if the resubmission is accepted, CBER will consider the adequacy of the clinical data in the context of the related CMC issues noted above
- 

Continued Growth in Revenues from Sales of TEMCELL in Japan for SR-aGVHD

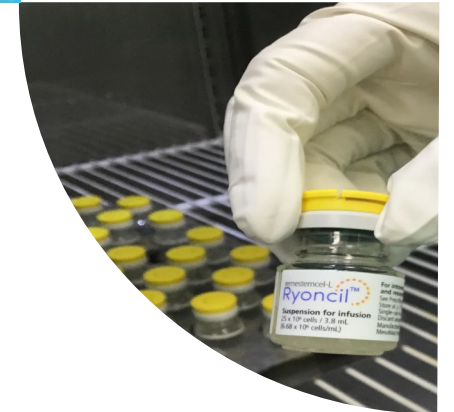
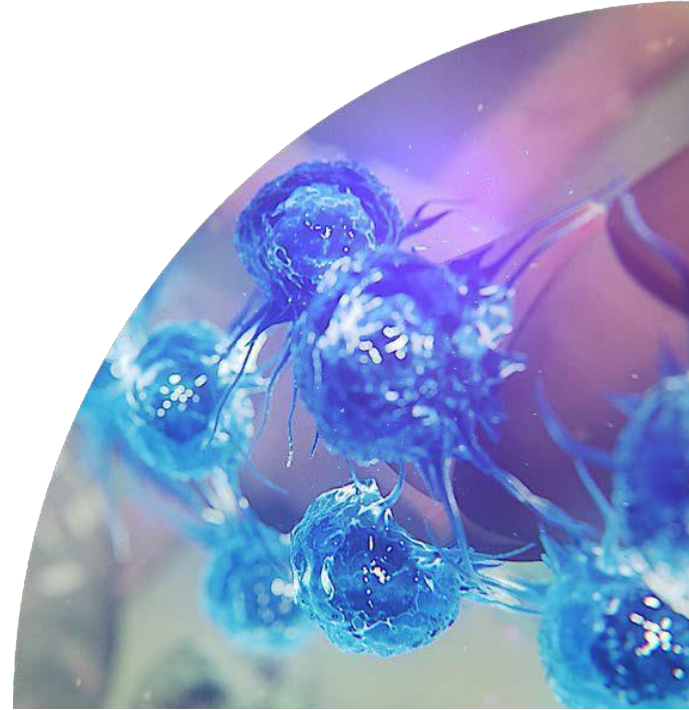
- JCR Pharmaceuticals has exclusive rights to Mesoblast's MSC technology for acute GVHD in Japan
- FY2021 revenue from TEMCELL® HS Inj¹ royalties increased by 10% from the prior year period to US\$7.2 million
- Product adoption and reimbursement informs Mesoblast US commercial strategy for remestemcel-L in acute GVHD
- US addressable market for acute GVHD in children and adults is ~ eight-fold larger than Japan due to greater patient numbers, incidence and pharmacoeconomics



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

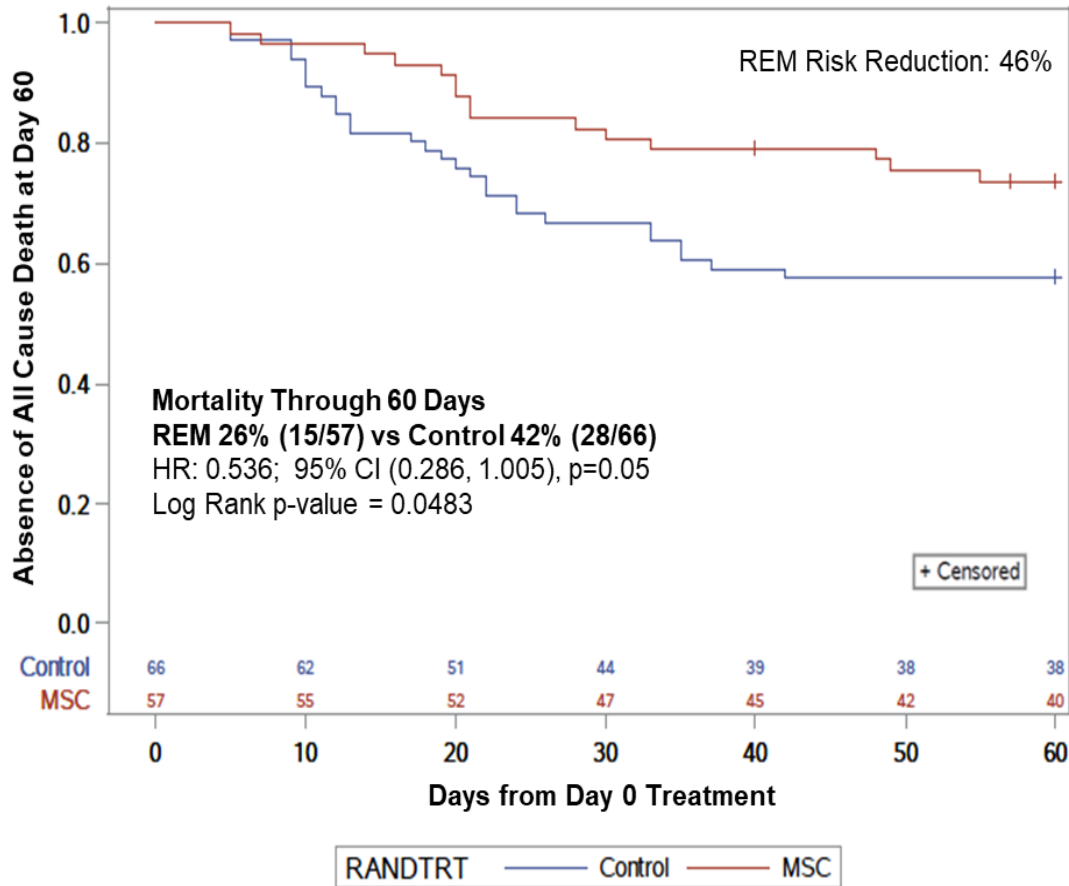
Remestemcel-L

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

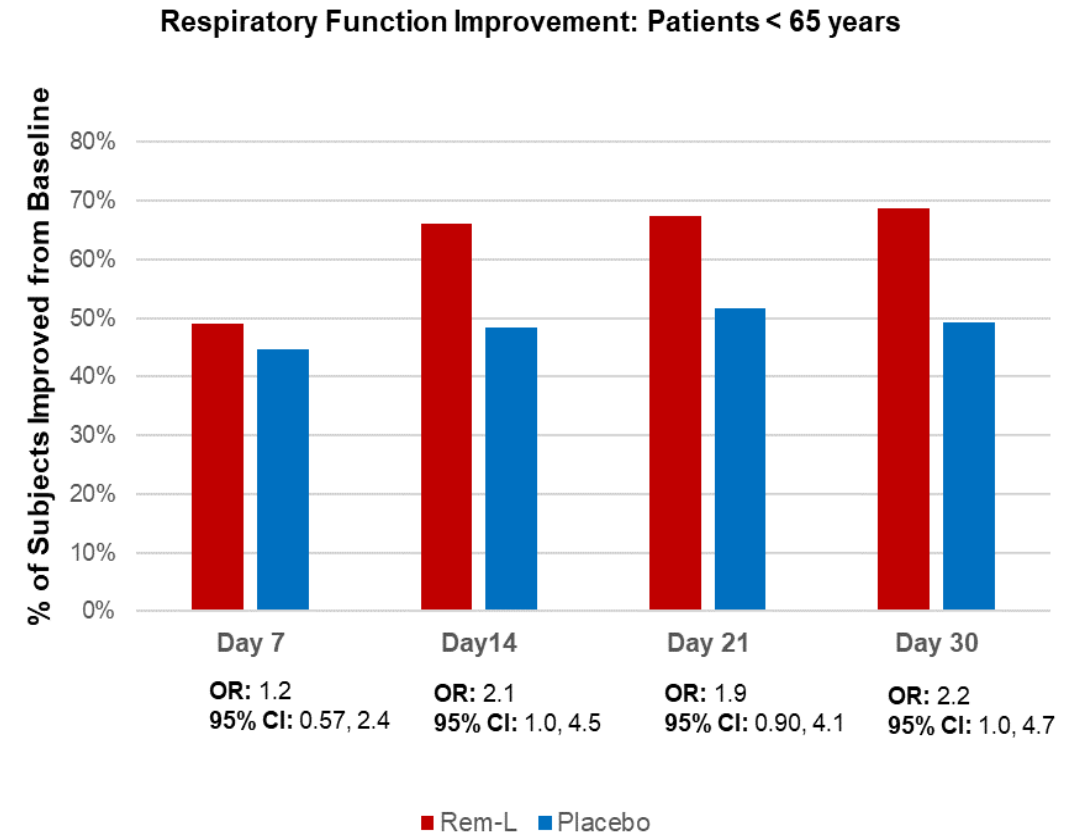


Greatest Mortality Reduction Improved ARDS Severity* Seen in Remestemcel-L Treated Patients < 65 years

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



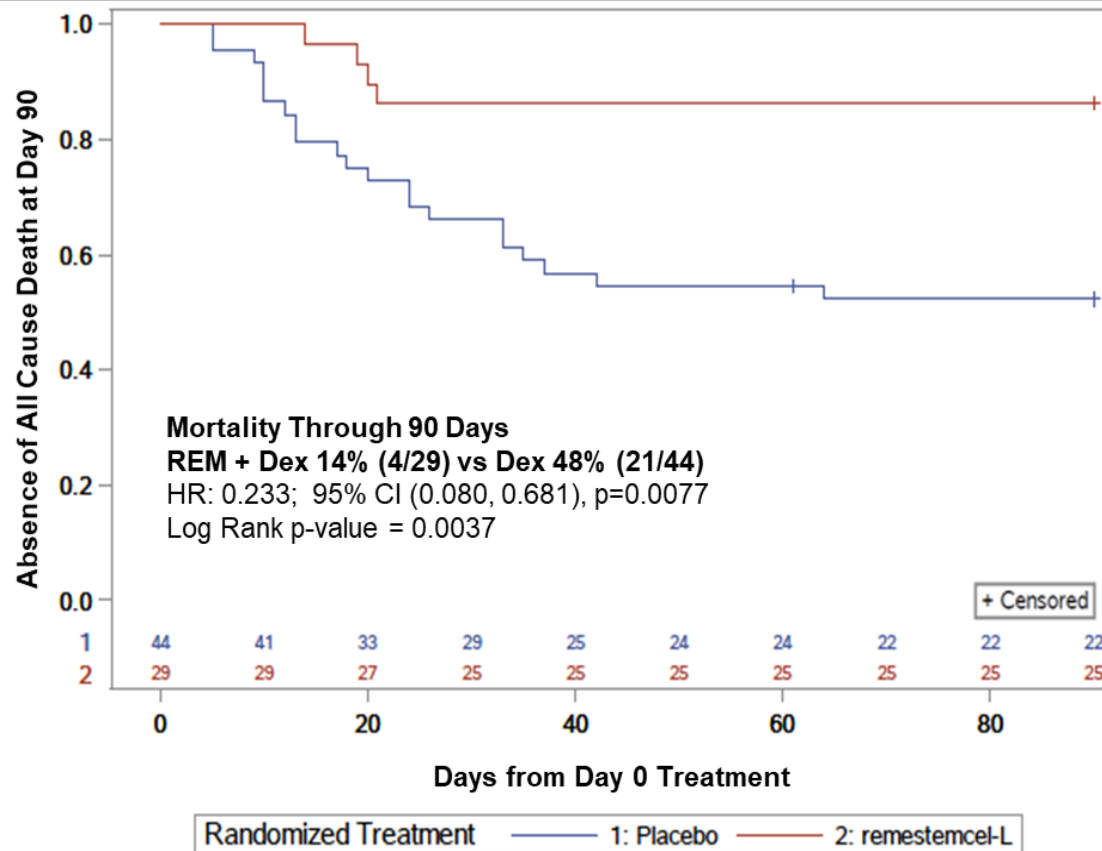
Treated Patients (mITT) < 65 years old (n=123)
Remestemcel-L vs Control



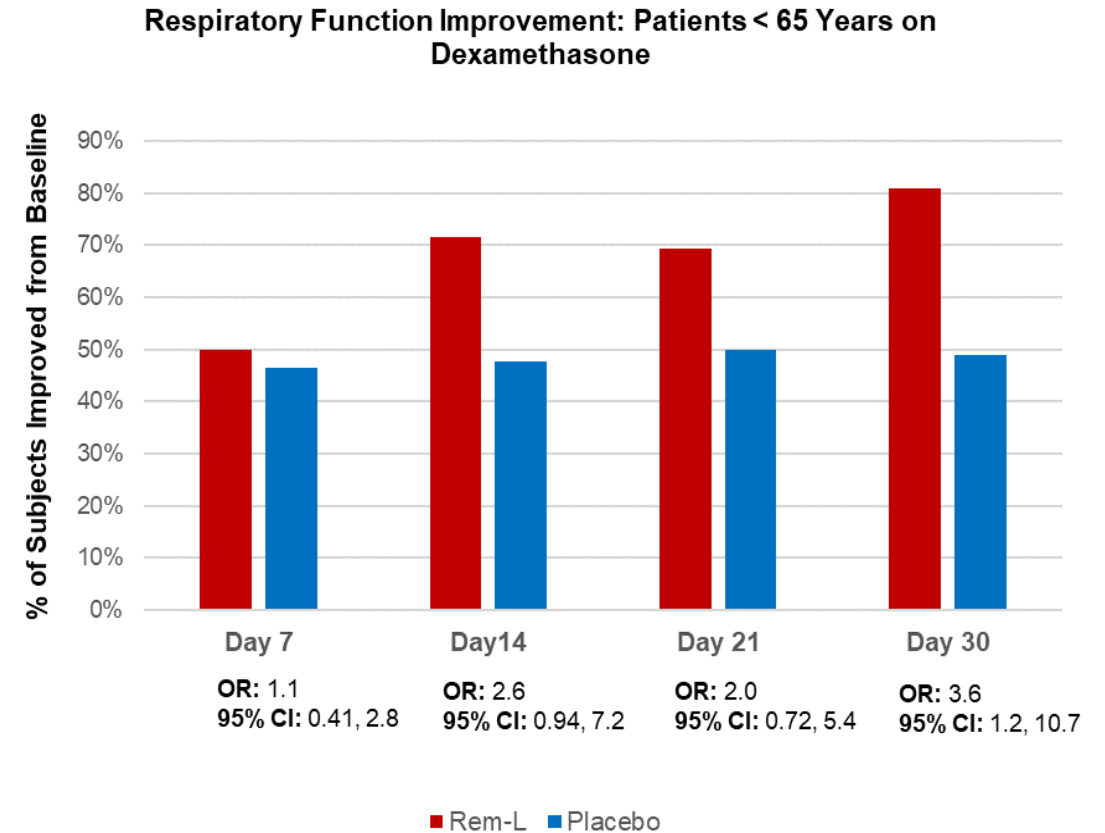
* Measured as resolution and/or improvement of ARDS as defined by the Berlin criteria at Days 7, 14, 21, and 30 post-randomizations

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)



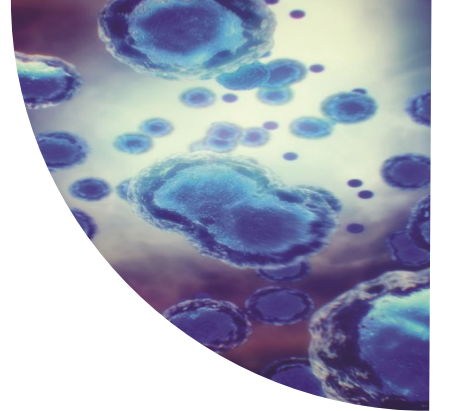
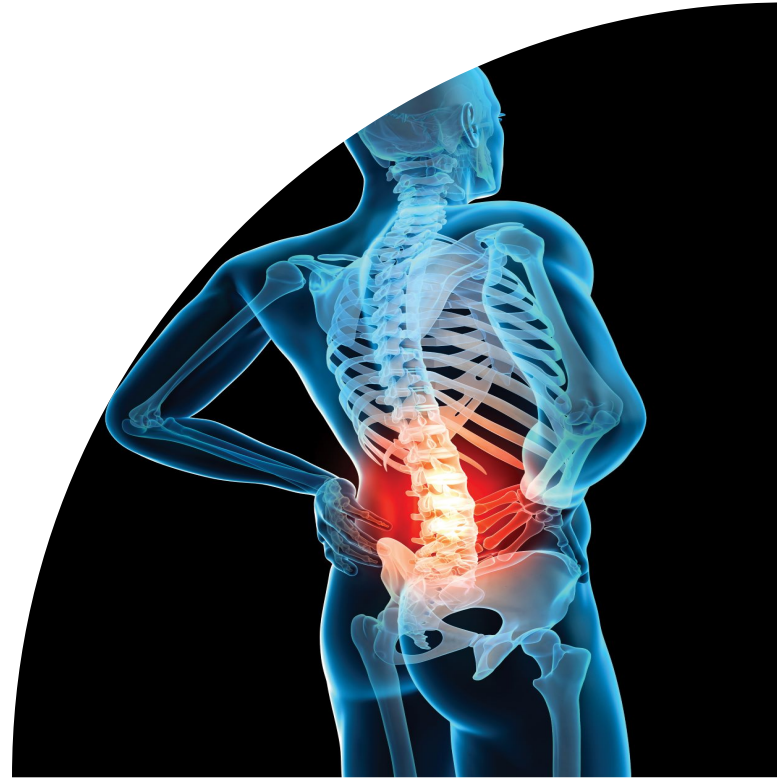
* Respiratory Function Improvement measured as resolution and/or improvement of ARDS as defined by the Berlin criteria at Days 7, 14, 21, and 30 post-randomizations; Clinical Improvement was assessed based on a 7-point ordinal scale at baseline and on Days 7, 14, 21, and 30 and discharge from hospital

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)
- The 222 patient study was conducted by the US National Institutes of Health–funded Cardiothoracic Surgical Trials Network of investigators
- FDA indicated that potency assays must be established and agreed prior to commencement of the proposed Phase 3 clinical trial
- 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 plans to move forward with an additional Phase 3 trial in COVID-19 ARDS with the next step being to agree on the final protocol with FDA and the trial clinical investigators

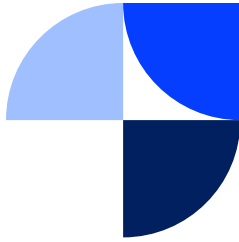
Rexlemestrocel-L

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



Rexlemestrocel-L

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



Burden of Illness

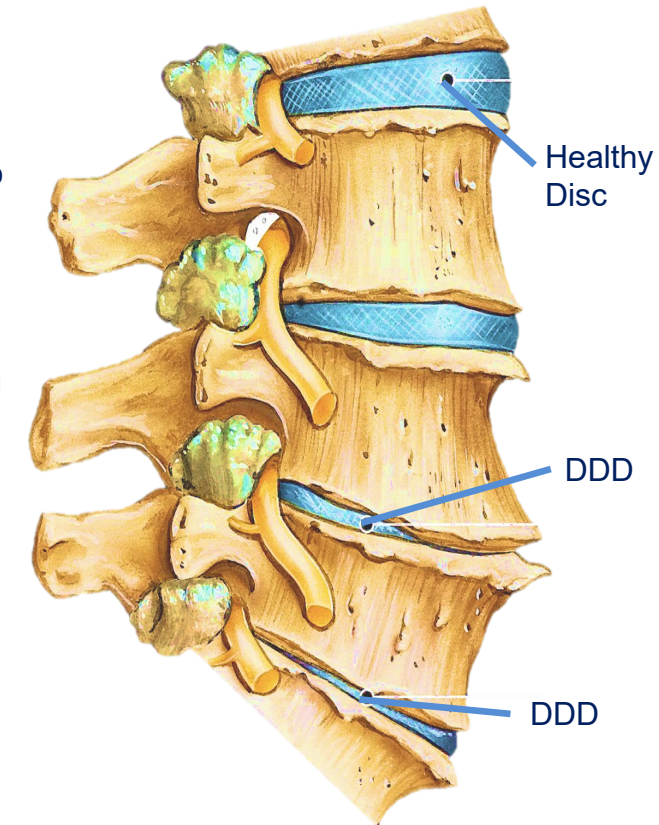
- Back pain causes more disability than any other condition¹
- Inflicts substantial direct and indirect costs on the healthcare system¹, including excessive use of opioids in this patient population

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 CLBP³
- 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}
- MPC-06-ID development program targets over 3.2m patients in U.S. and 4m in E.U.5 with moderate to severe disease



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 – August2014., 6. HealthCare Utilization and Cost of Discogenic Lower Back Pain in the US – Anthem/HealthCore.



Current Patient Treatment Journey (US/EU) for Discogenic CLBP

Rexlemestrocel-L (MPC-06-ID) Potential for First-Line DCLBP Refractory to Conservative Treatment

Rexlemestrocel-L (MPC-06-ID) targeting moderate-to-severe DCLBP

Conservative treatments

- NSAIDs
- Physical therapy
- Chiropractic treatments
- Acupuncture
- Anticonvulsants (e.g., gabapentin)

Opioid analgesics

- Weak opioid analgesics (e.g., tramadol)
- Strong opioid analgesics (e.g., oxycodone)

Interventional therapies

- Epidural steroid injections (off-label)
- Radio frequency ablation
- Spinal cord stimulation
- Intrathecal pumps

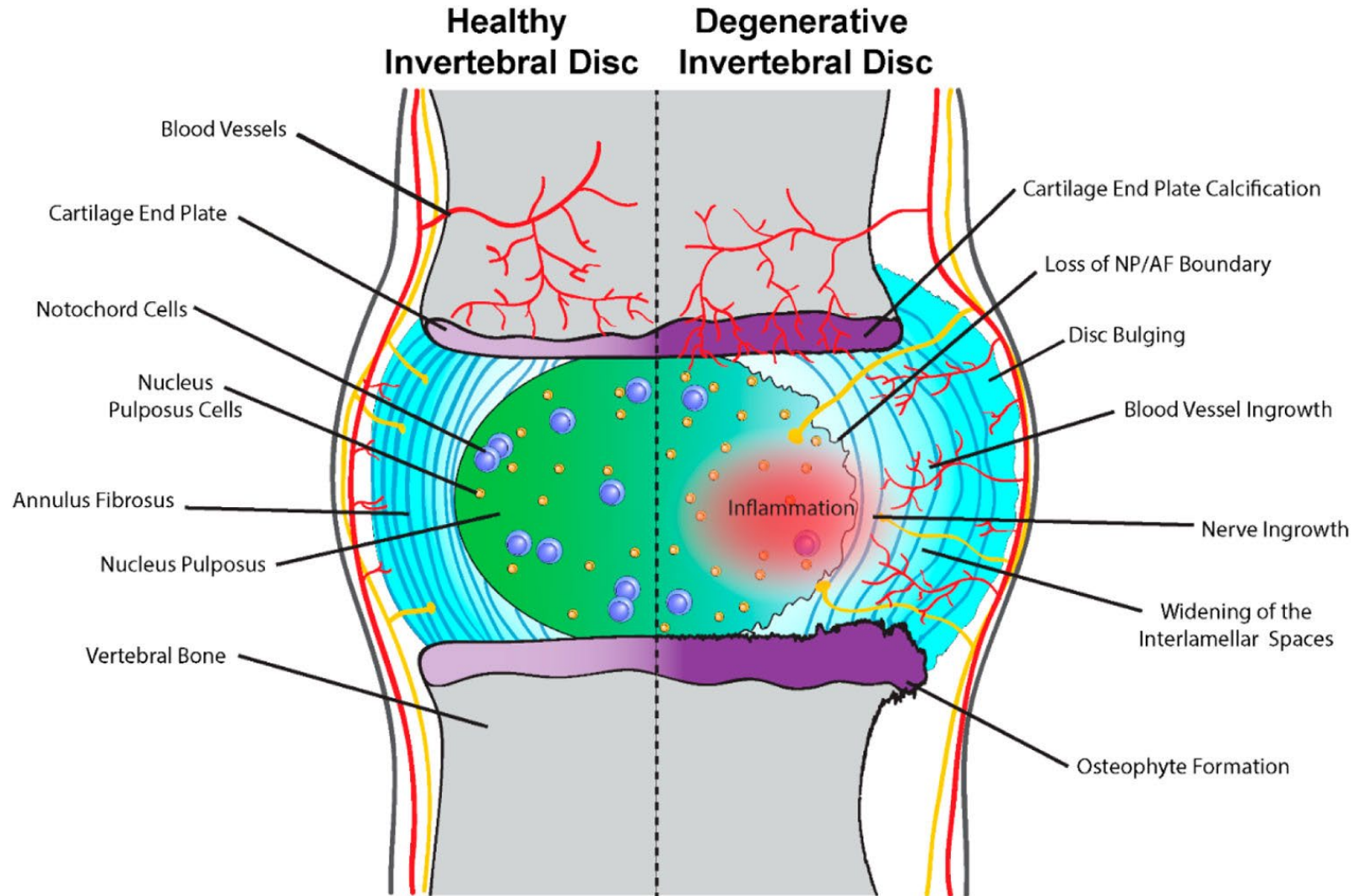
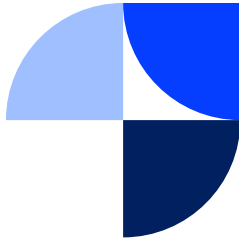
Surgeries

- Spinal fusion
- Disc replacement



Chronic Low Back Pain

Inflammation is at the Core of Degenerative Disc Disease

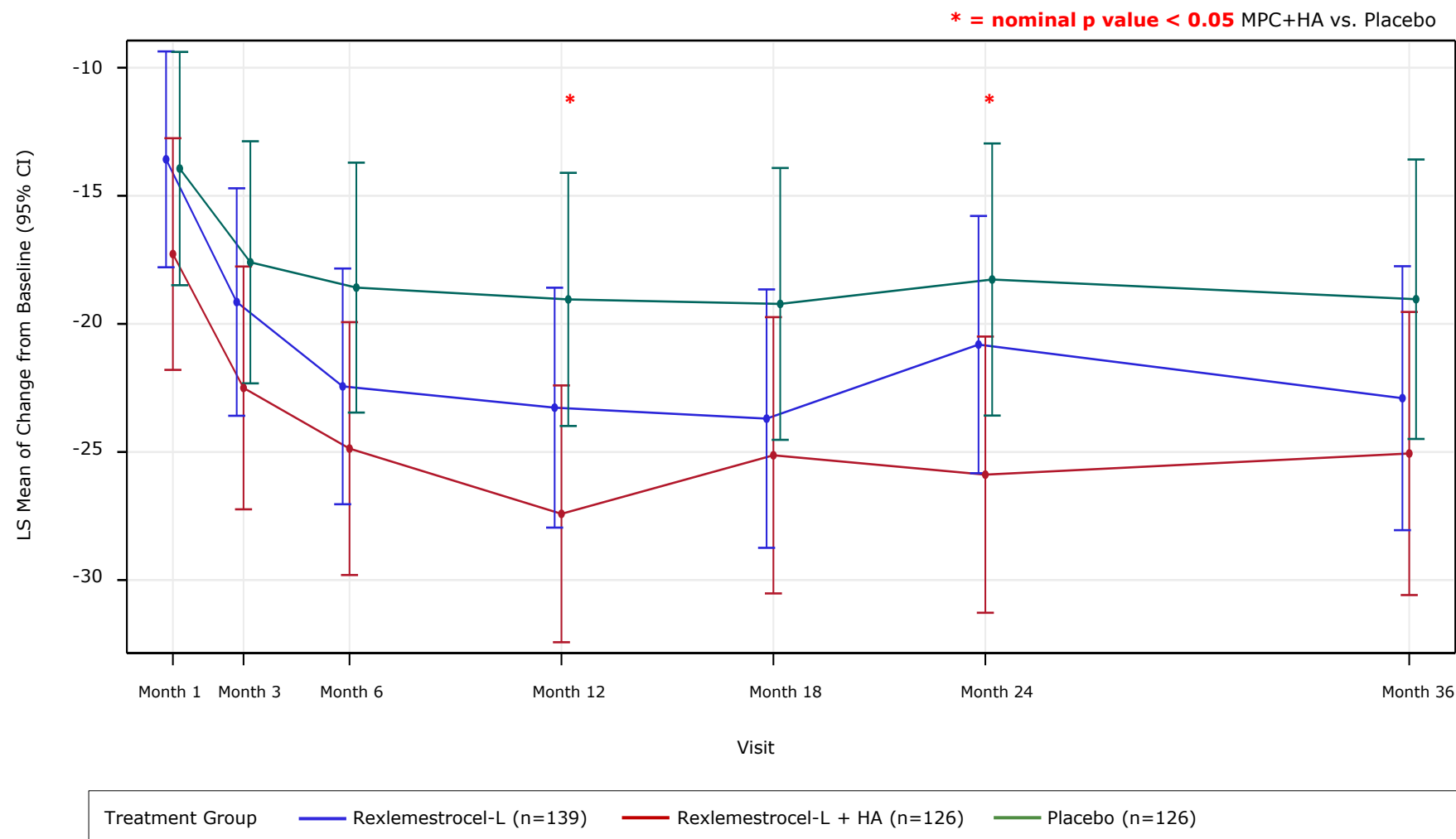


Results of 404-Patient Randomized Controlled Phase 3 Trial in CLBP: Single Injection of Rexlemestrocel-L + HA Results in >2 Years of Pain Reduction

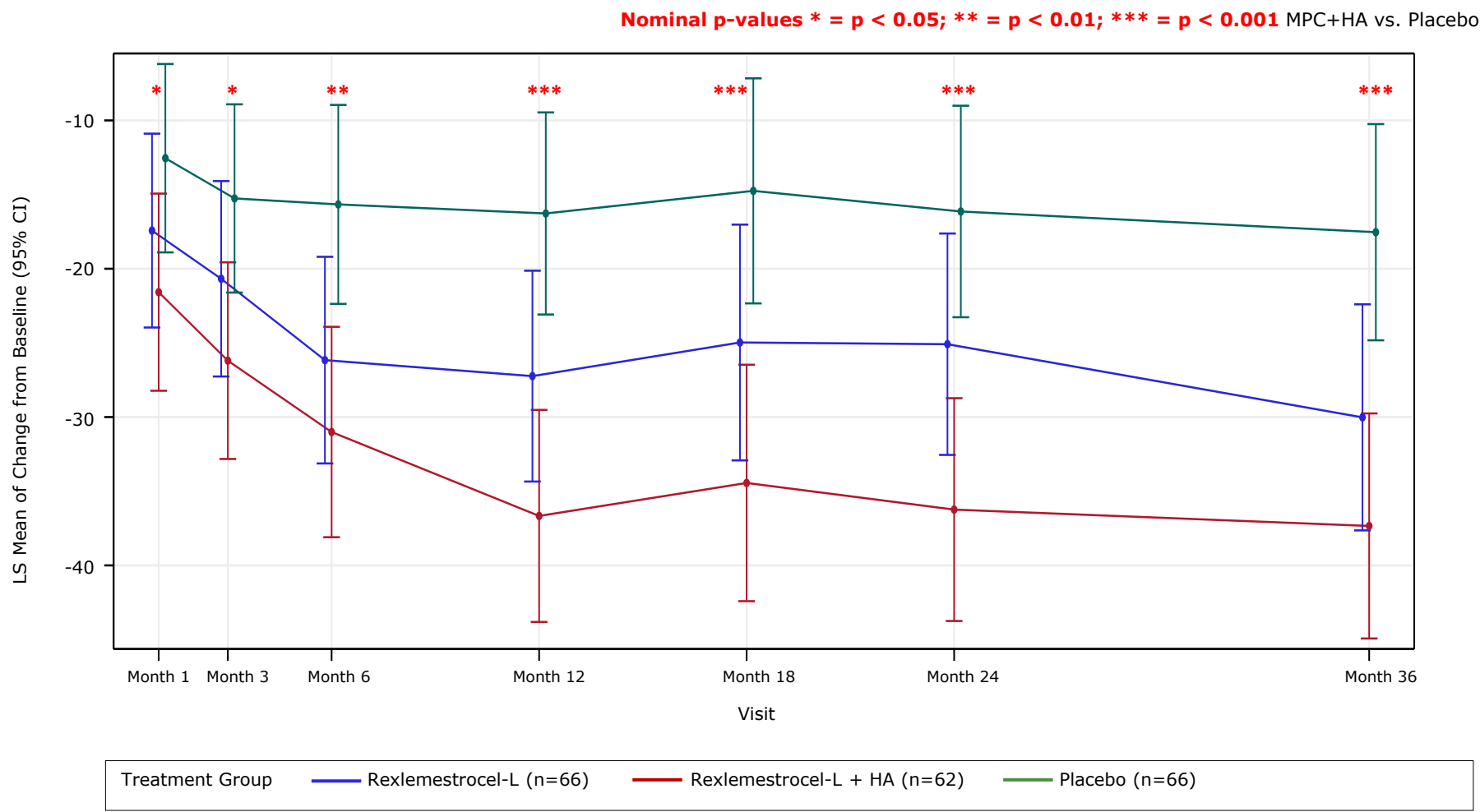


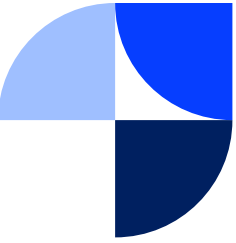
- Positive results from a single injection of MPC + Hyaluronic Acid (HA) carrier include:
 - Achievement of significant and durable reductions in CLBP (mean change from baseline in back pain intensity) through 36 months across the entire evaluable study population (n=391) compared with saline controls
 - 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=194), 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

LS Mean Change in Low Back Pain from Baseline - Entire Study (n=391)



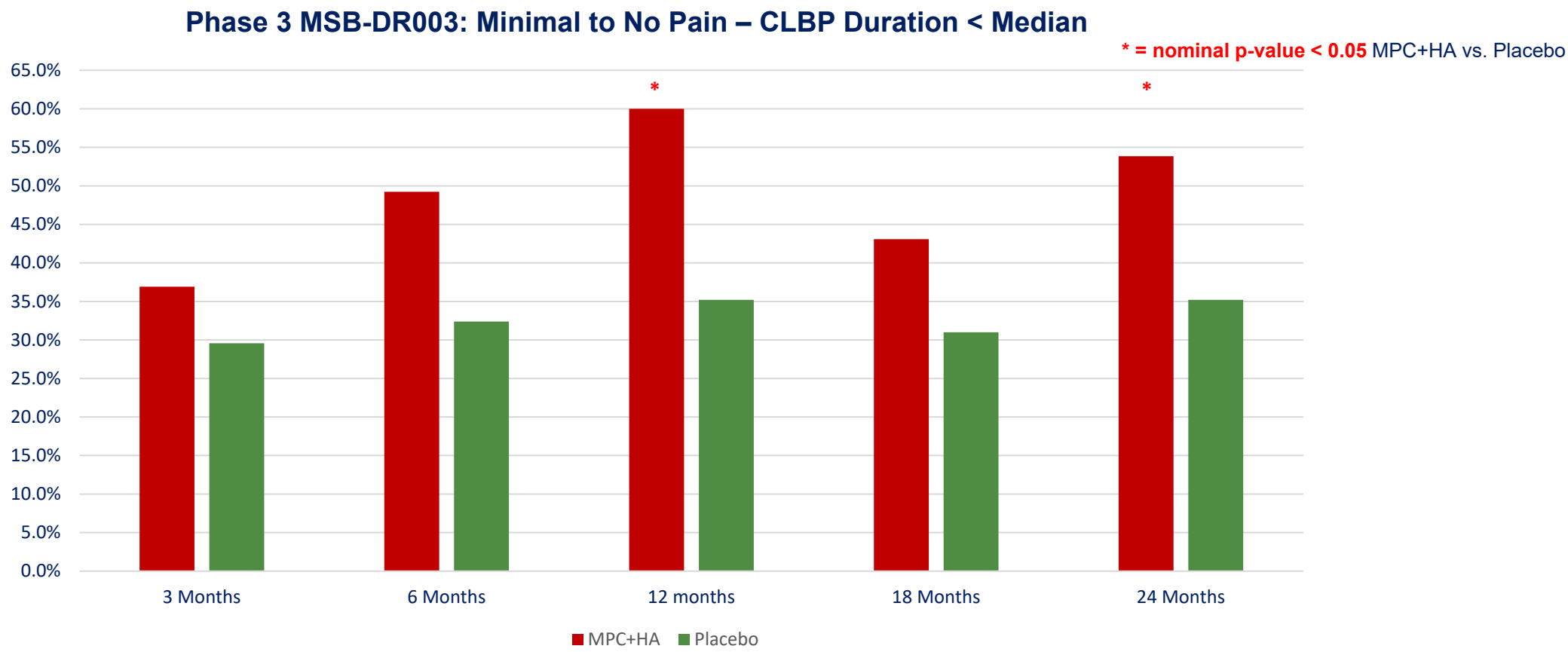
LS Mean VAS Change in Low Back Pain from Baseline - Duration CLBP < 68 Month Median (n=194)





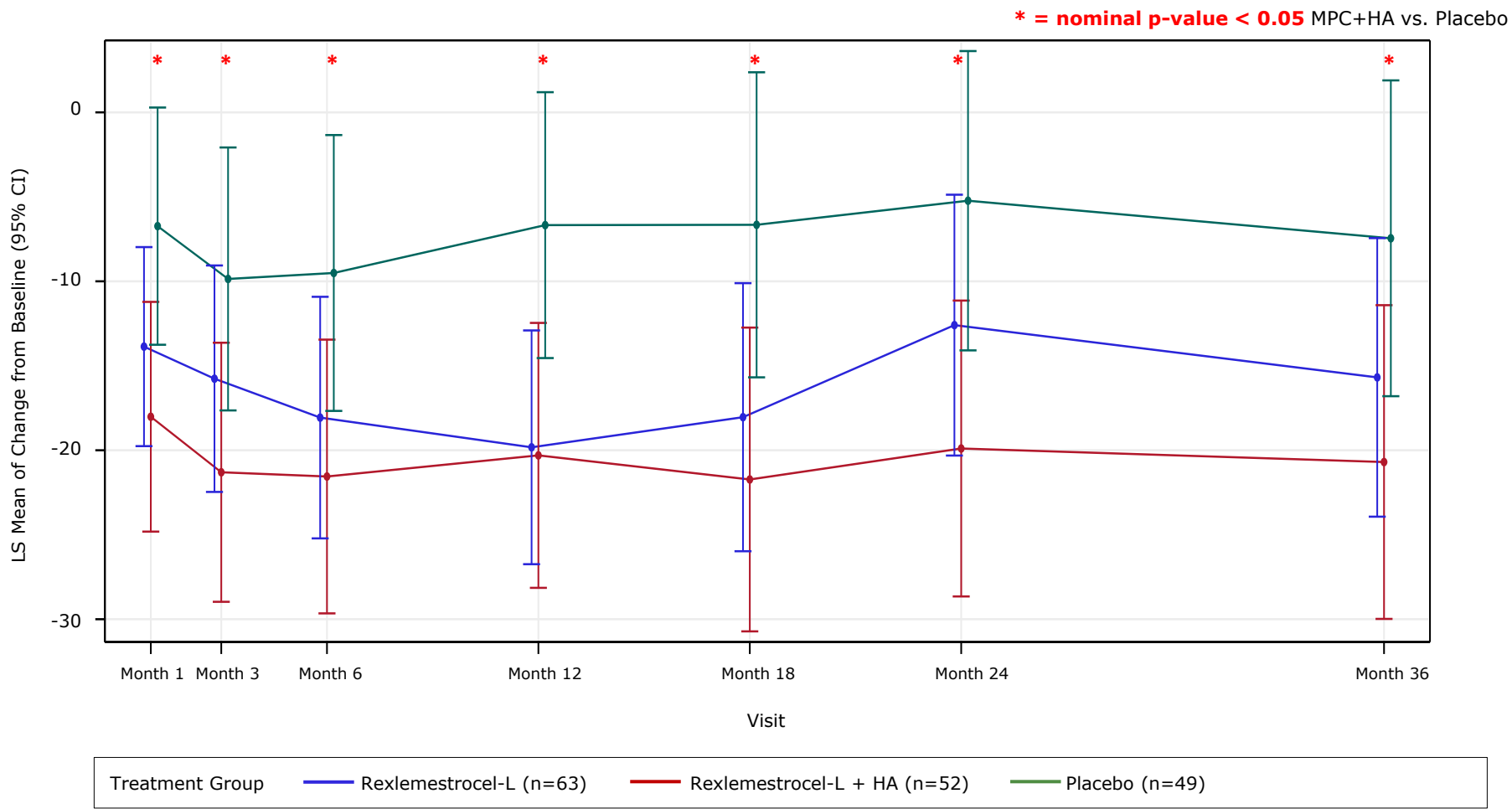
Subjects with Minimal to No Pain (VAS ≤ 20)

MPC + HA Increased Proportion of Patients with Minimal/No Pain (VAS <20) at 12 and 24 Months in those with Pain Duration < Median



Minimal to No Pain – Subjects with a Low Back Pain VAS score ≤ 20 mm AND no post-treatment intervention through timepoint being evaluated. Subjects with missing data imputed as non-responders.

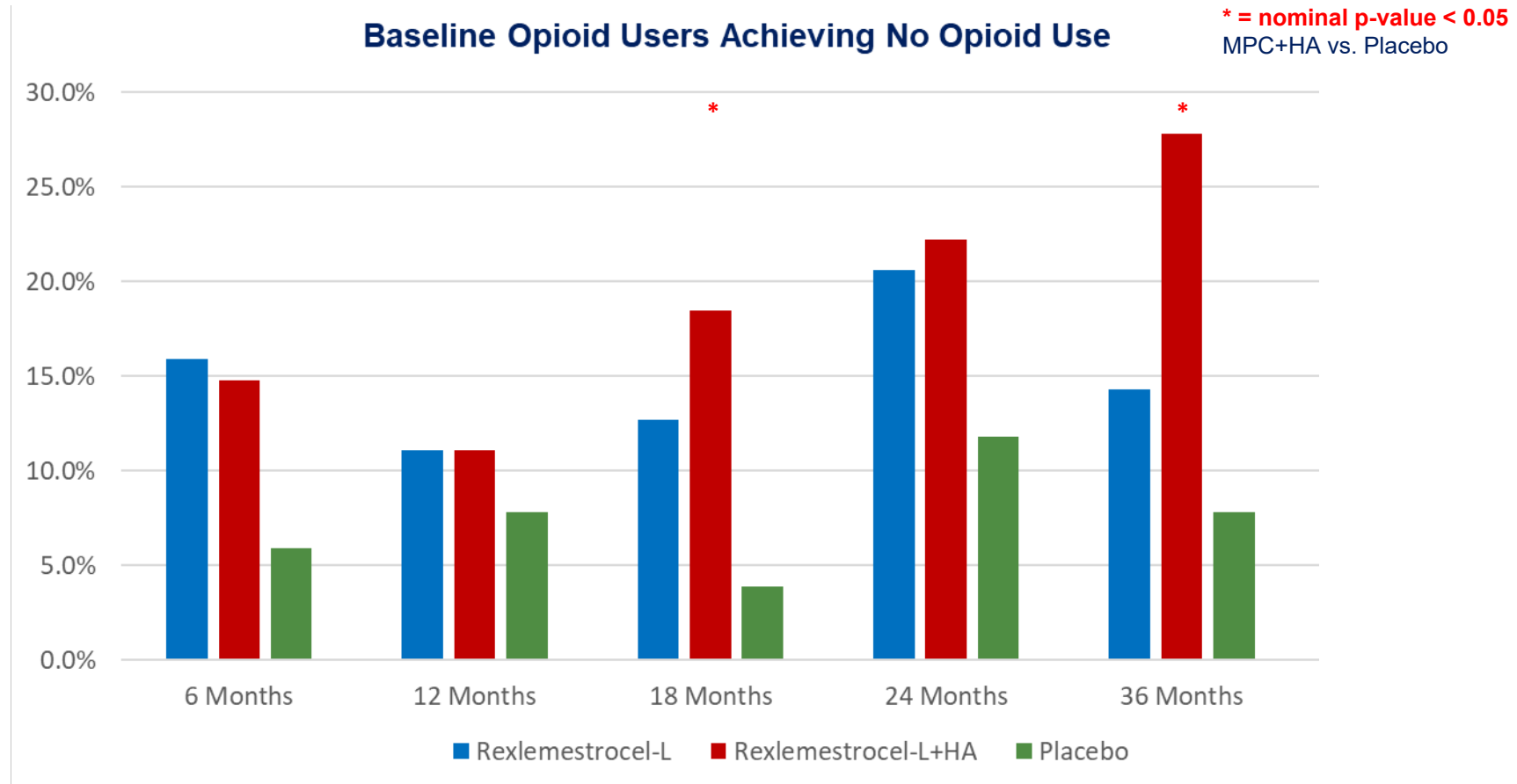
LS Mean VAS Change in Low Back Pain from Baseline - Opioid Users (n=168)

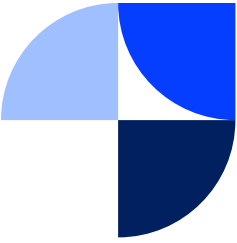




Pain Medication in Opioid Users

MPC + HA Increased the Proportion of Patients with Baseline Opioid Use Who Came Off Opioids Through 36 Months



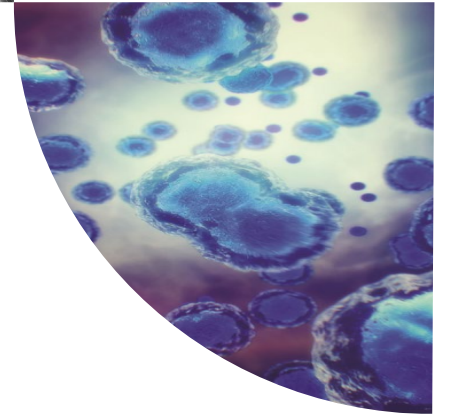
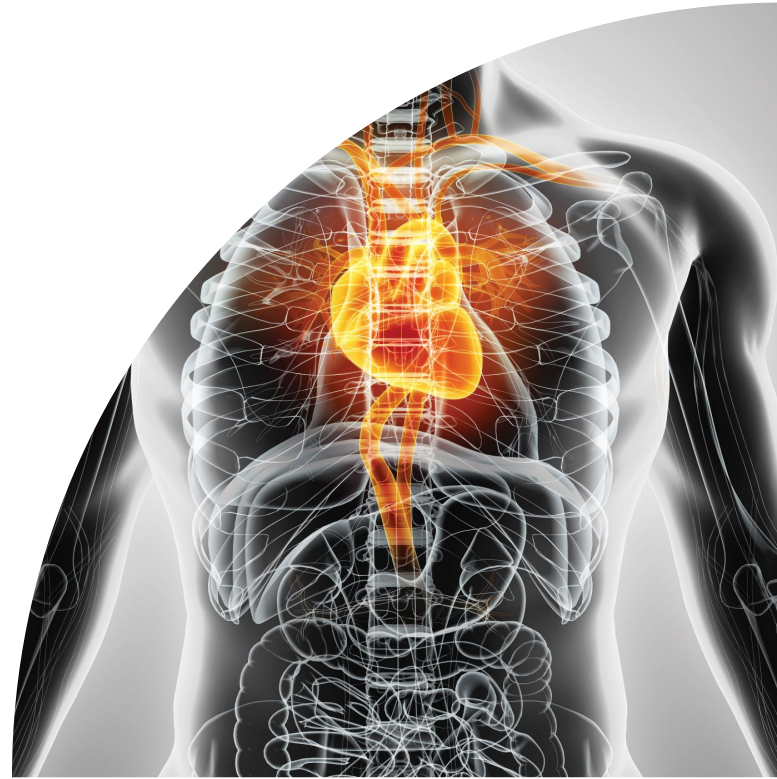


Next Steps for Rexlemestrocel-L in Chronic Low Back Pain

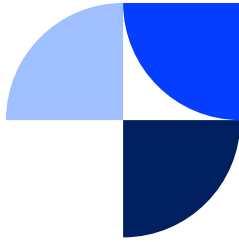
- Recently received feedback from the FDA Office of Tissues and Advanced Therapies (OTAT) on the Phase 3 program
- OTAT agreed with Mesoblast's proposal for mean pain reduction at 12 months to serve as the primary endpoint of the next trial, with mean functional improvement and reduction in opioid use 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

Rexlemestrocel-L

Chronic Heart Failure with Reduced Ejection Fraction (HFrEF)



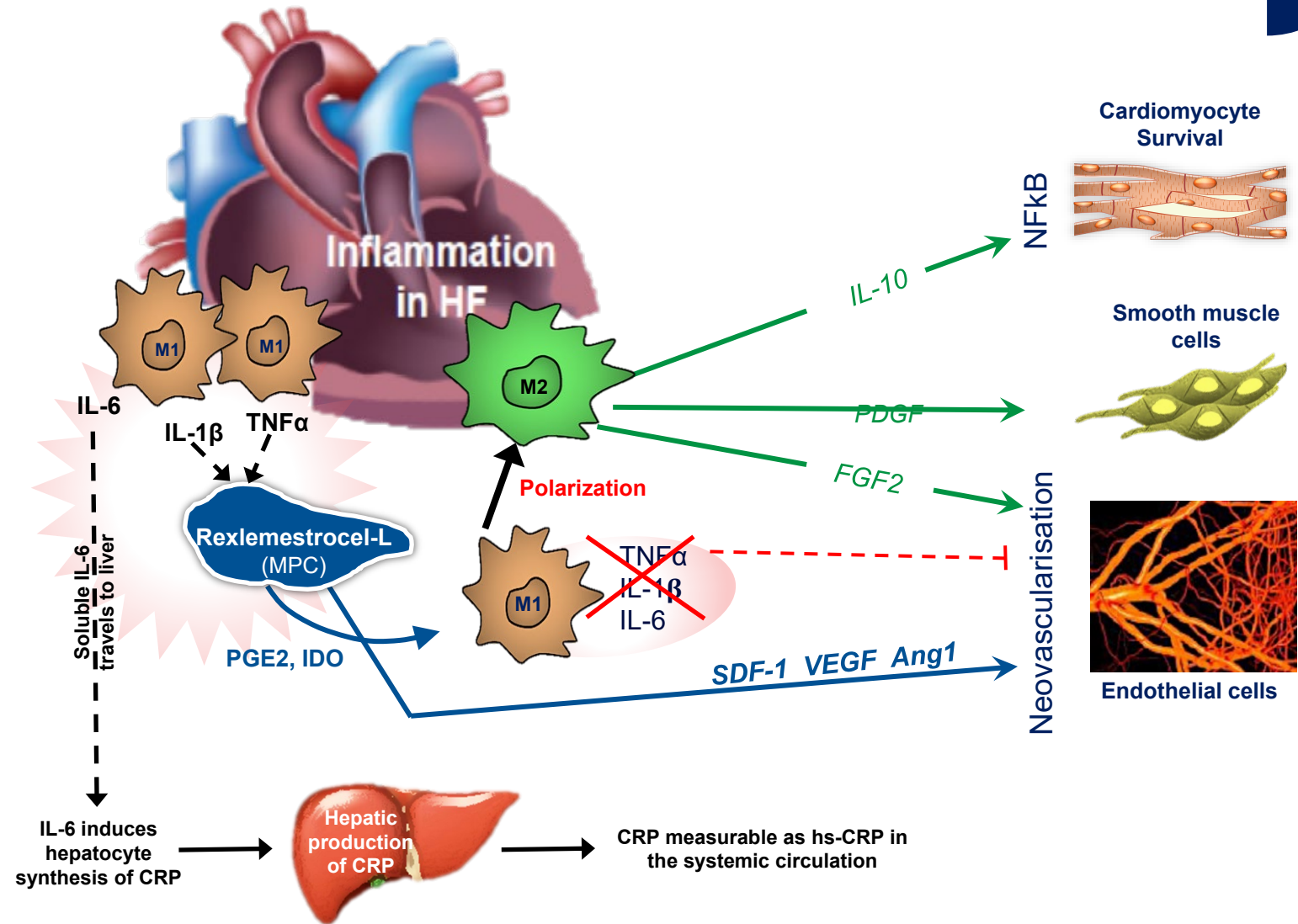
Proposed Mechanism of Action of Intra-Cardiac MPC Administration in Treatment of both Heart Failure & Large Vessel Atherosclerosis



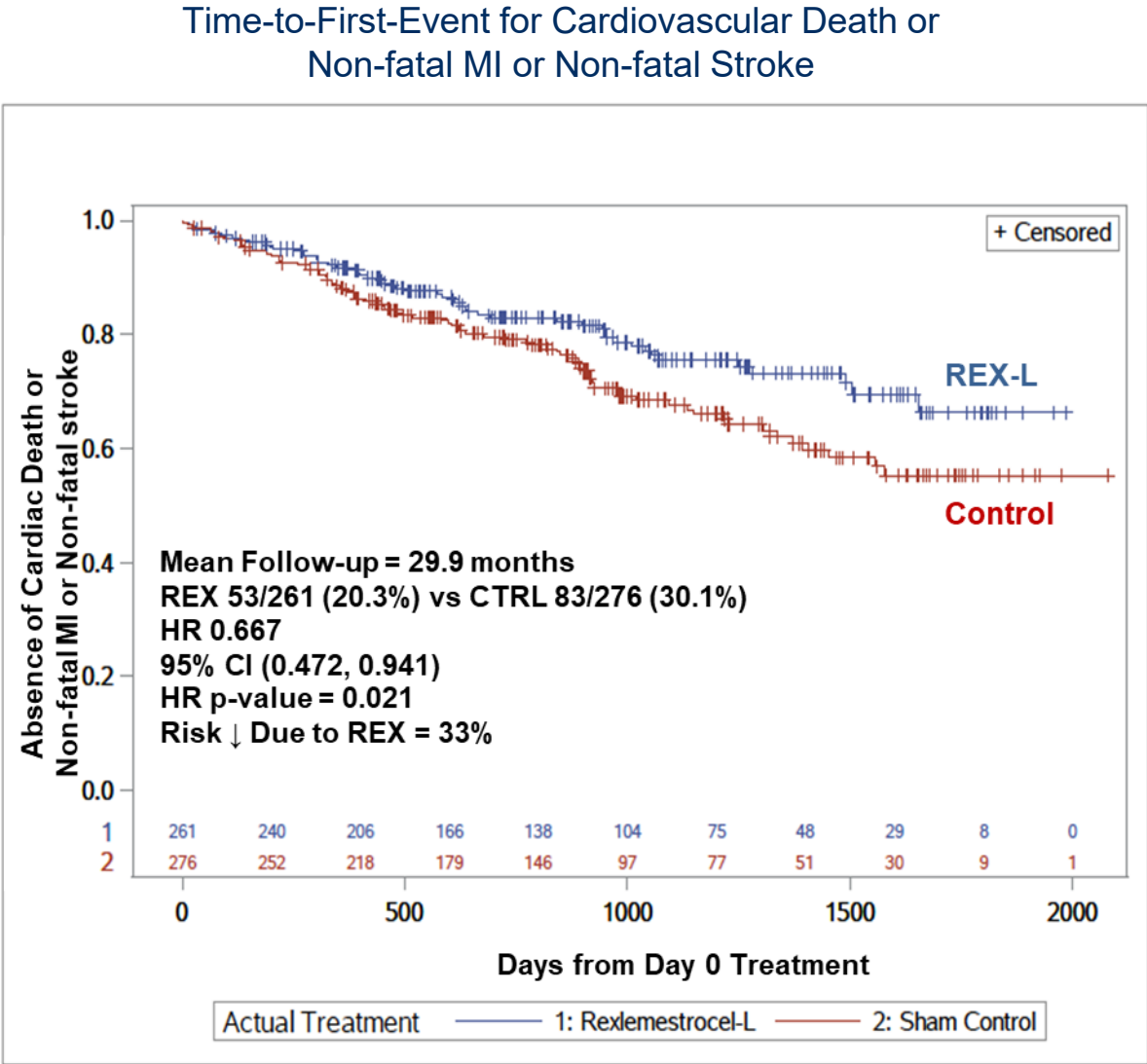
Mesenchymal precursor cells (MPC) key mechanisms of action thought to beneficially impact the heart and the systemic vasculature:

- Reduction in cardiac and systemic inflammation
- Reversal of endothelial dysfunction
- Induction of microvascular network within viable heart muscle
- Reduction in heart muscle death

hs-CRP synthesized in the liver is the systemic consequence of intra-cardiac IL-6 production

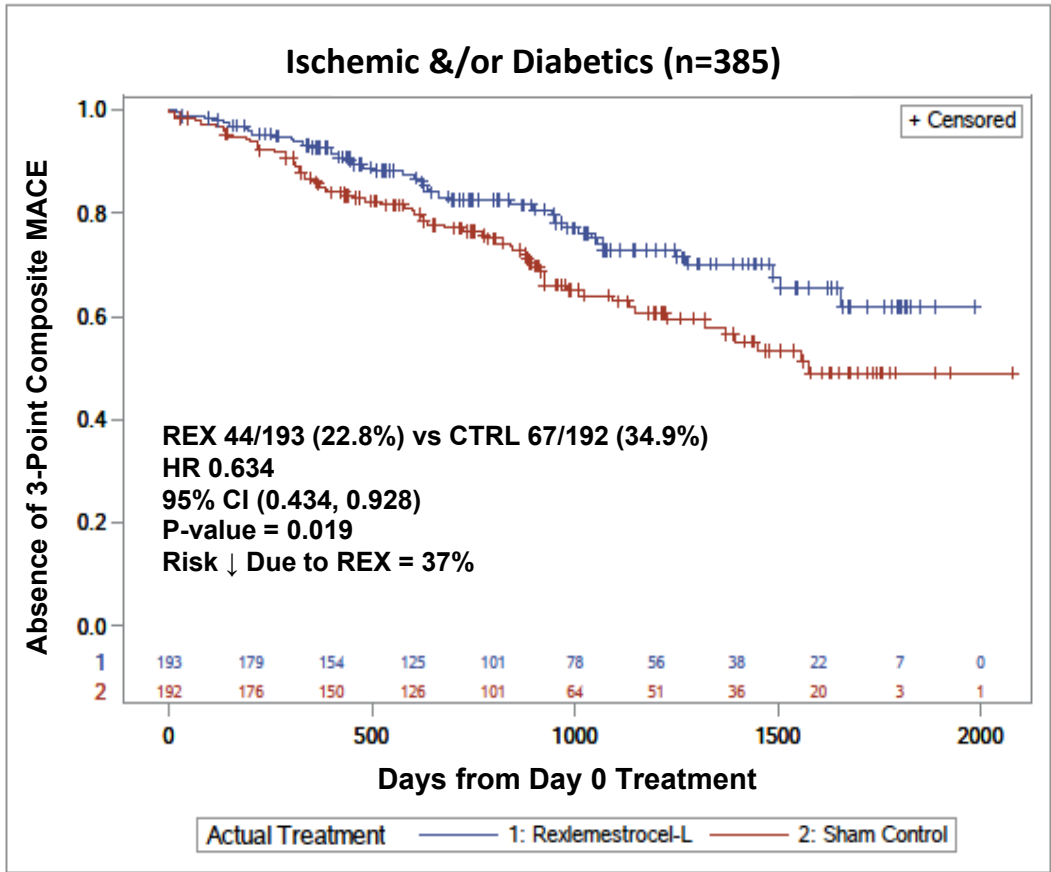


Rexlemestrocel-L Reduced Incidence of 3-Point Composite MACE (CV Death, MI or Stroke) Compared to Controls Across All 537 Treated Patients

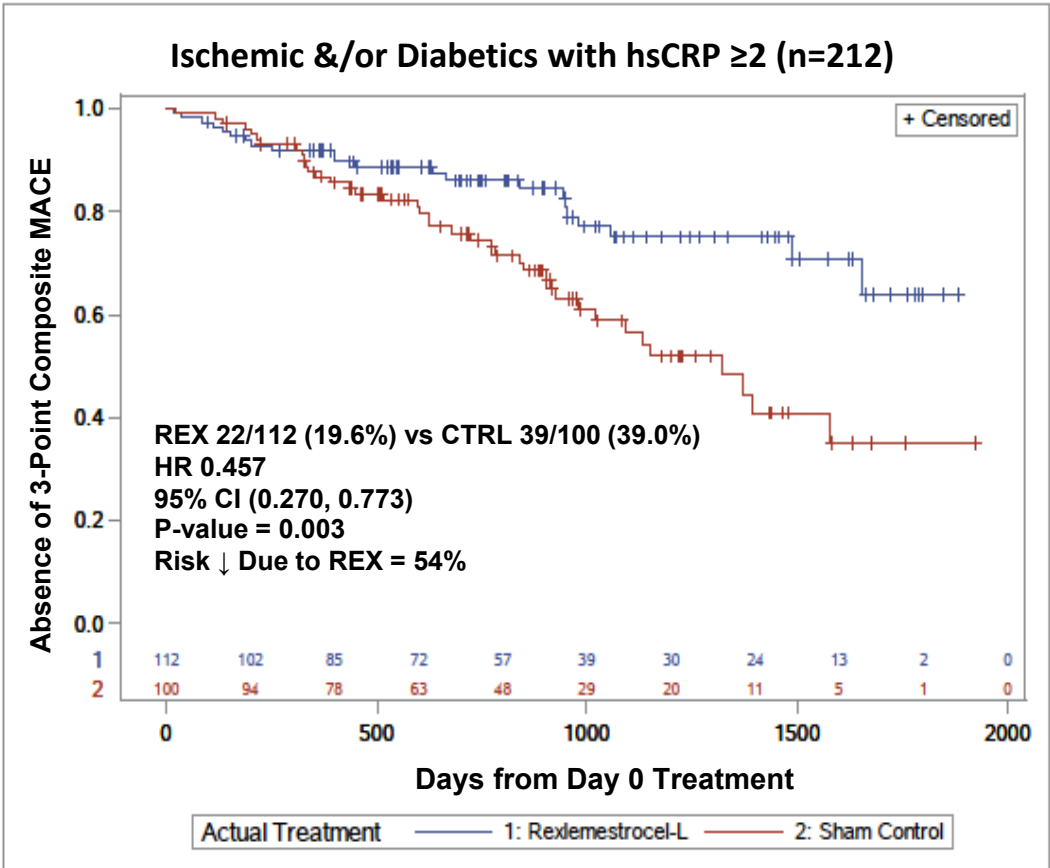


Composite 3-Point MACE and Inflammation

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%



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 $\geq$ 2mg/L	0.46	54%	0.27, 0.77	0.003	212

* TTFE Composite for Cardiovascular Death or Non-fatal MI or Non-fatal Stroke

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

Rexlemestrocel-L: Conclusion & Key Next Steps for 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 to formally submit to FDA its new analyses of outcomes in high-risk HFrEF patients with diabetes and/or myocardial ischemia to agree on a potential pathway to approval

The Mesoblast logo is a square divided into four quadrants by a white cross. The top-left quadrant is light blue, the top-right is medium blue, the bottom-left is dark blue, and the bottom-right is a very dark blue.

mesoblast

Thank You

Four horizontal white lines of decreasing length, centered below the 'Thank You' text, creating a stylized graphic element.