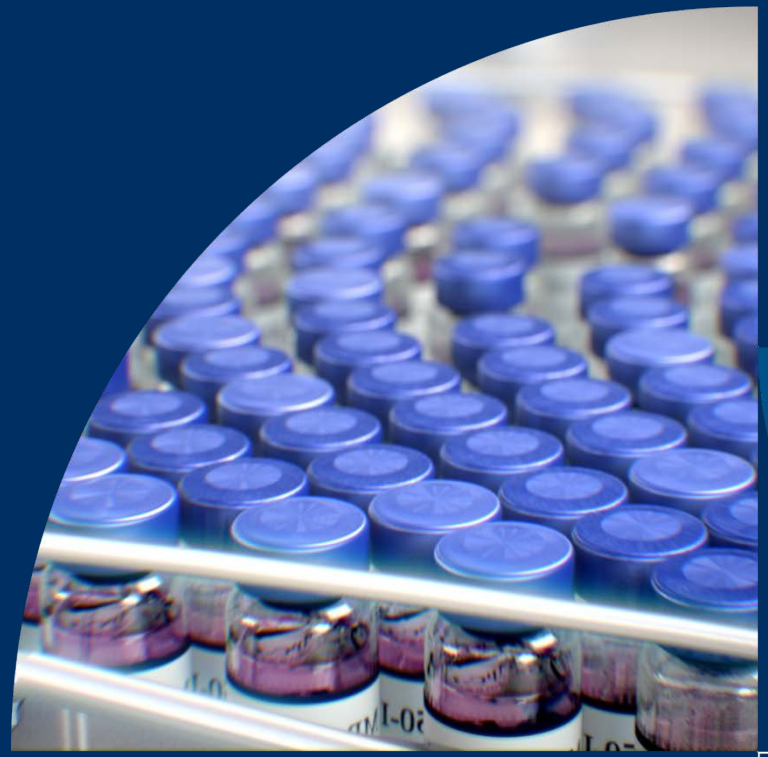
mesoblast

the regenerative medicine company

Operational Highlights and Financial Results for the Year Ended June 30, 2017 (FY17)

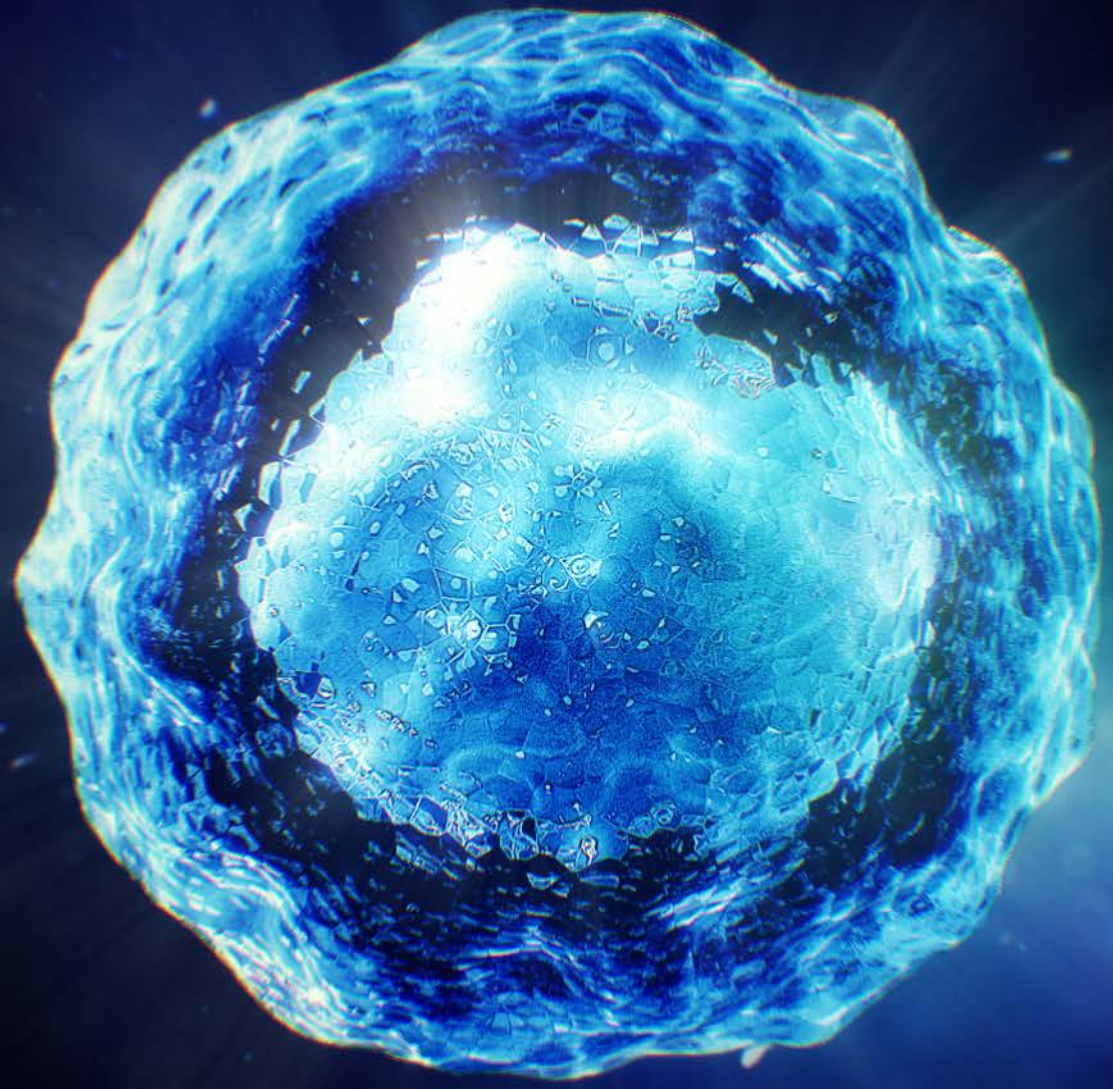
30 August 2017



Operational Highlights

Our Mission:

Mesoblast is committed to bring to market disruptive cellular medicines to treat serious and life-threatening illnesses



Investment Proposition:

Building a Leading Franchise of Cellular Medicines

A Leader in Disruptive Cellular Technology Platform

- Extensive patent portfolio
- Potent immuno-selected mesenchymal lineage precursors and progeny
- Mechanism of action through release of biomolecules to modify multiple disease-specific pathways
- Deep expertise in cellular pathways and mechanisms

Capability for Commercial Translation

- Scalable industrialized manufacturing
- “Off the shelf” product capabilities to target large markets
- Understanding of regulatory and reimbursement landscape
- TEMCELL® HS. Inj. (aGVHD), approved in Japan[1]

Advanced Pipeline of Cellular Medicines

- Three Tier 1 product candidates in Phase 3, one in Phase 2
- Focused on serious and life-threatening diseases with commensurate pricing
- Clinical data support further development across multiple indications
- Multiple upcoming clinical milestones & corporate development

* Mesenchymal lineage adult stem cells (MLCs) including mesenchymal precursor cells (MPCs) and culture-expanded mesenchymal stem cells (MSCs).

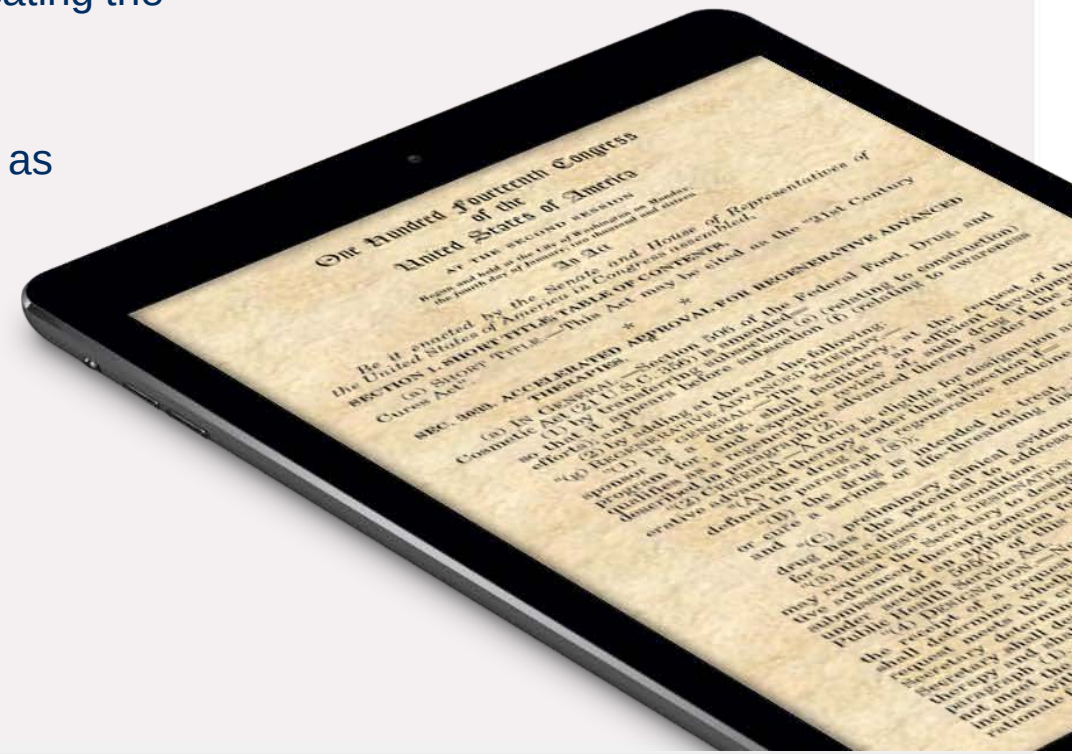
1. Commercialization rights to Japan were out-licensed to JCR Pharmaceuticals Co., Ltd. TEMCELL® is a registered trademark of JCR Pharmaceuticals Co., Ltd.

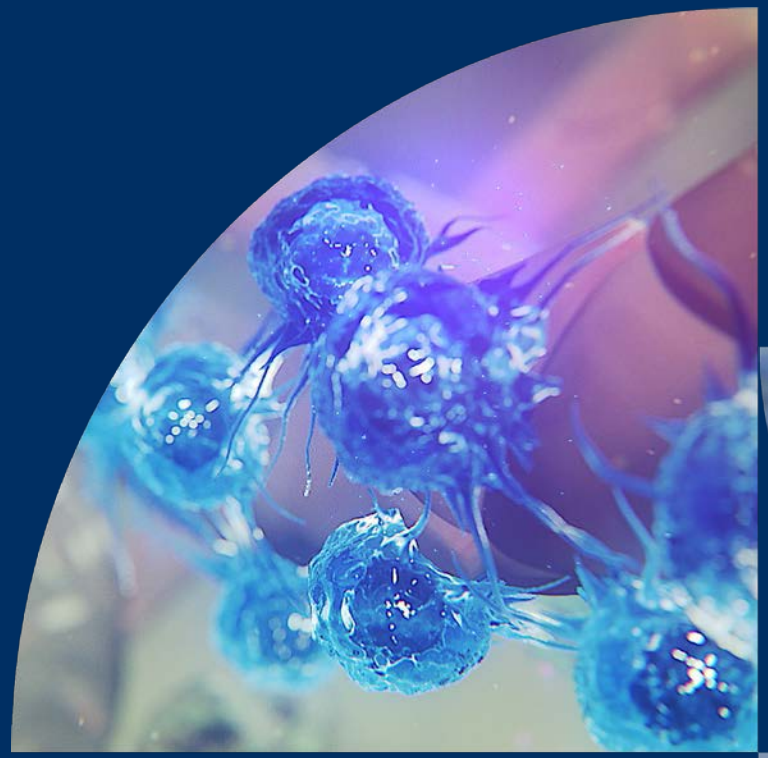
The 21st Century Cures Act ("Cures Act"):

Legislation for An Expedited Approval Path for Cellular Medicines Designated as Regenerative Medicine Advanced Therapies (RMAT)

- Cellular medicines may be designated as regenerative advanced therapies, if they are intended to treat, modify, reverse, or cure a serious or life-threatening disease or condition, and there is preliminary clinical evidence indicating the potential to address the unmet medical need

- Key benefits of the legislation for cell-based medicines, designated as regenerative advanced therapies, include:
  - *Potential eligibility for priority review and accelerated approval*
  - *Potential to utilize surrogate endpoints for accelerated approval*
  - *Potential to utilize a patient registry data and other sources of "real world evidence" for post approval studies, subject to approval by the FDA*

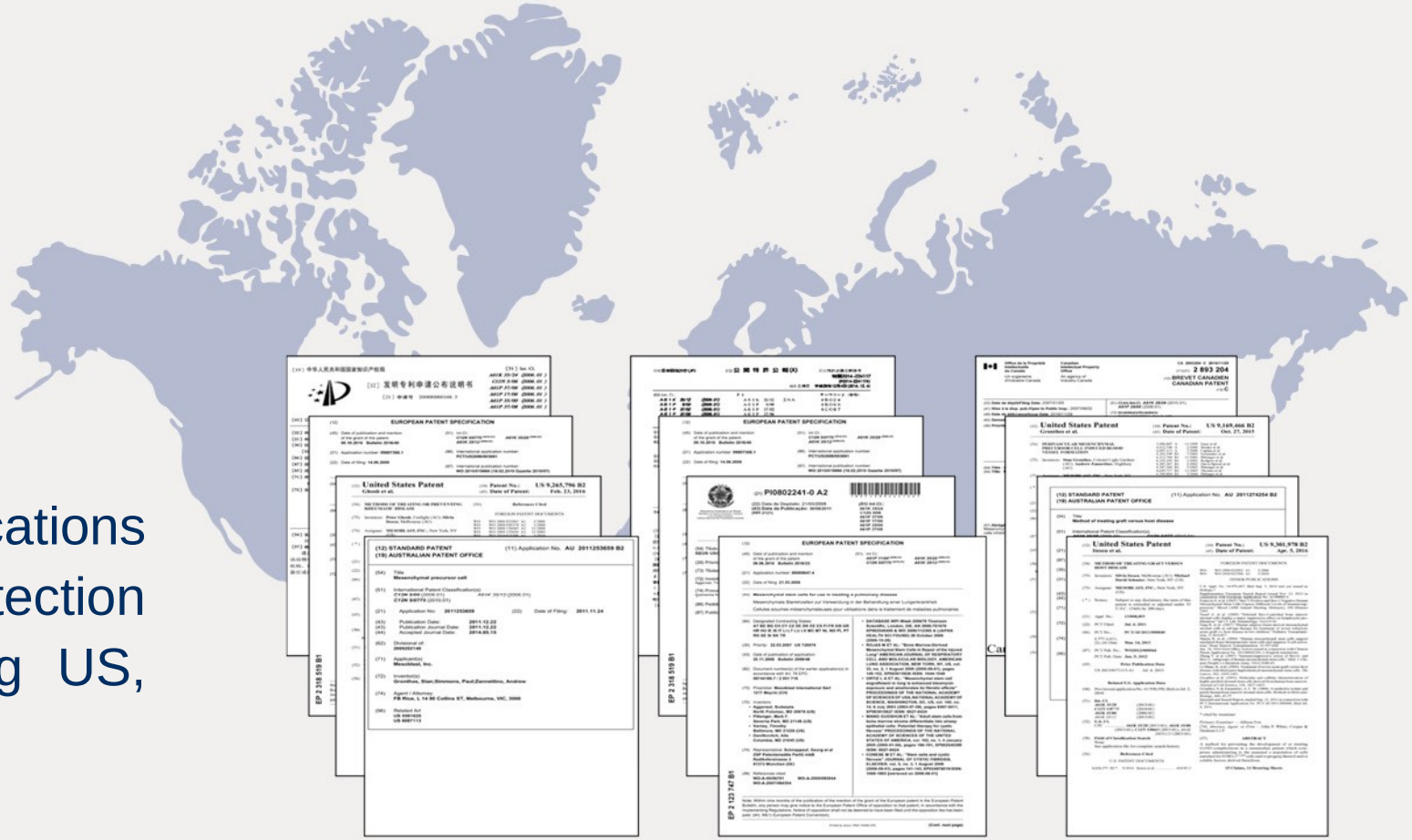




Proprietary Mesenchymal Lineage Technology Platform

Intellectual Property:

An Extensive Portfolio Covering Composition of Matter, Manufacturing, and Therapeutic Applications of Potent Immuno-selected Mesenchymal Lineage Precursors and Progeny



~ 800 Patents and patent applications across 69 Patent Families. Protection across major markets including US, Europe, Japan and China

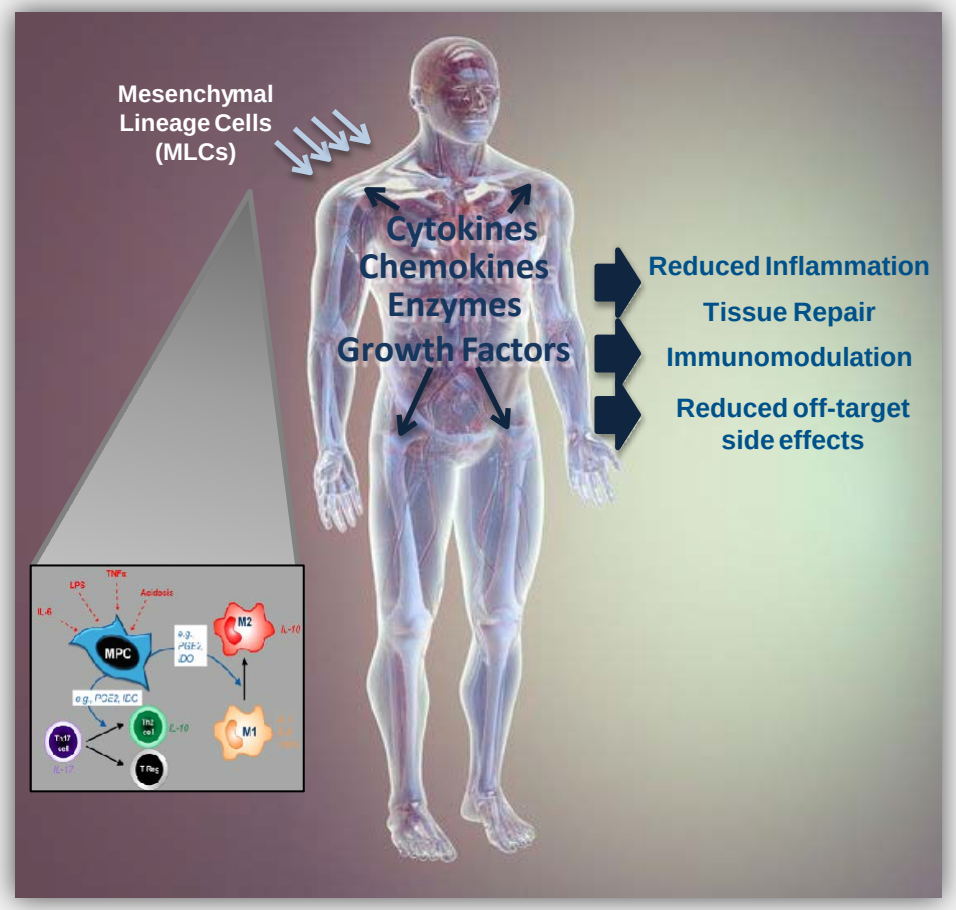
The Mesoblast Difference:

Technology Positioned for Scalable Manufacturing Capability

- Manufacture completed for clinical supply of all current Phase 3 trials
- Regulatory activities ongoing to meet requirements for commercial manufacturing across product pipeline
- Specific formulations defined for product delineation
- In-house proprietary media formulations developed to deliver step-change yield improvements and eliminate source capacity constraints
- Continuing development using large commercial-grade bioreactors and automation, reduction in labor and COGS improvements

Translating Our Science to the Clinic

- Mesenchymal lineage immuno-selected precursors and progeny cells (MLCs)
- STRO-1/STRO-3 immuno-selection provides a homogeneous and potent population of MLCs with receptors that respond to inflammatory and damaged tissue signals
- In response to specific activating signals present in damaged tissues, MLCs secrete a diverse variety of biomolecules responsible for immunomodulation and tissue repair[1]
- Specificity of triggering signals potentially reduces likelihood of off-target side effects
- Preliminary clinical data suggests optimal response likely to occur when signals are greatest in most advanced disease states

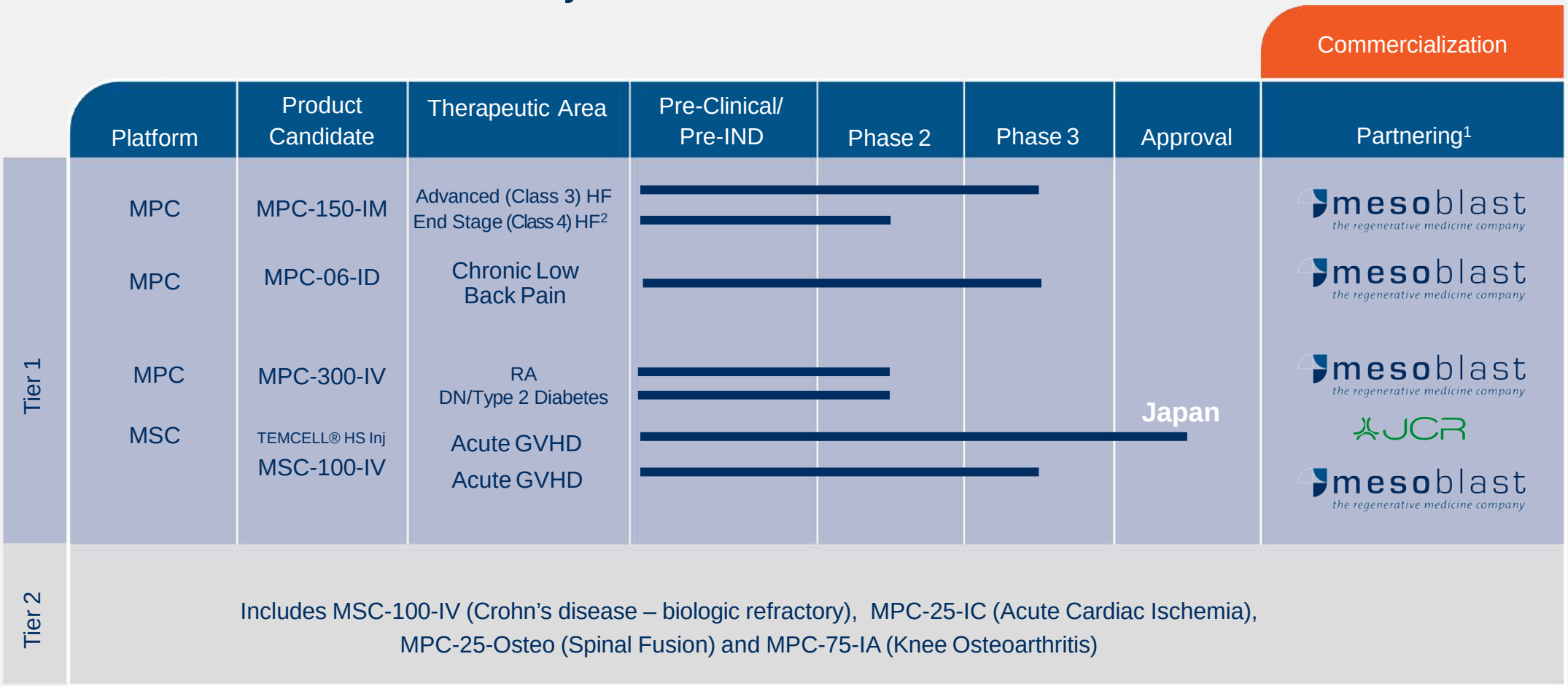


1.Singer and Caplan Annu. Rev. Pathol. Mech. Dis. 2011. 6:457–78.

Diverse Pipeline of Cellular Medicines

Portfolio of Advanced Product Candidates:

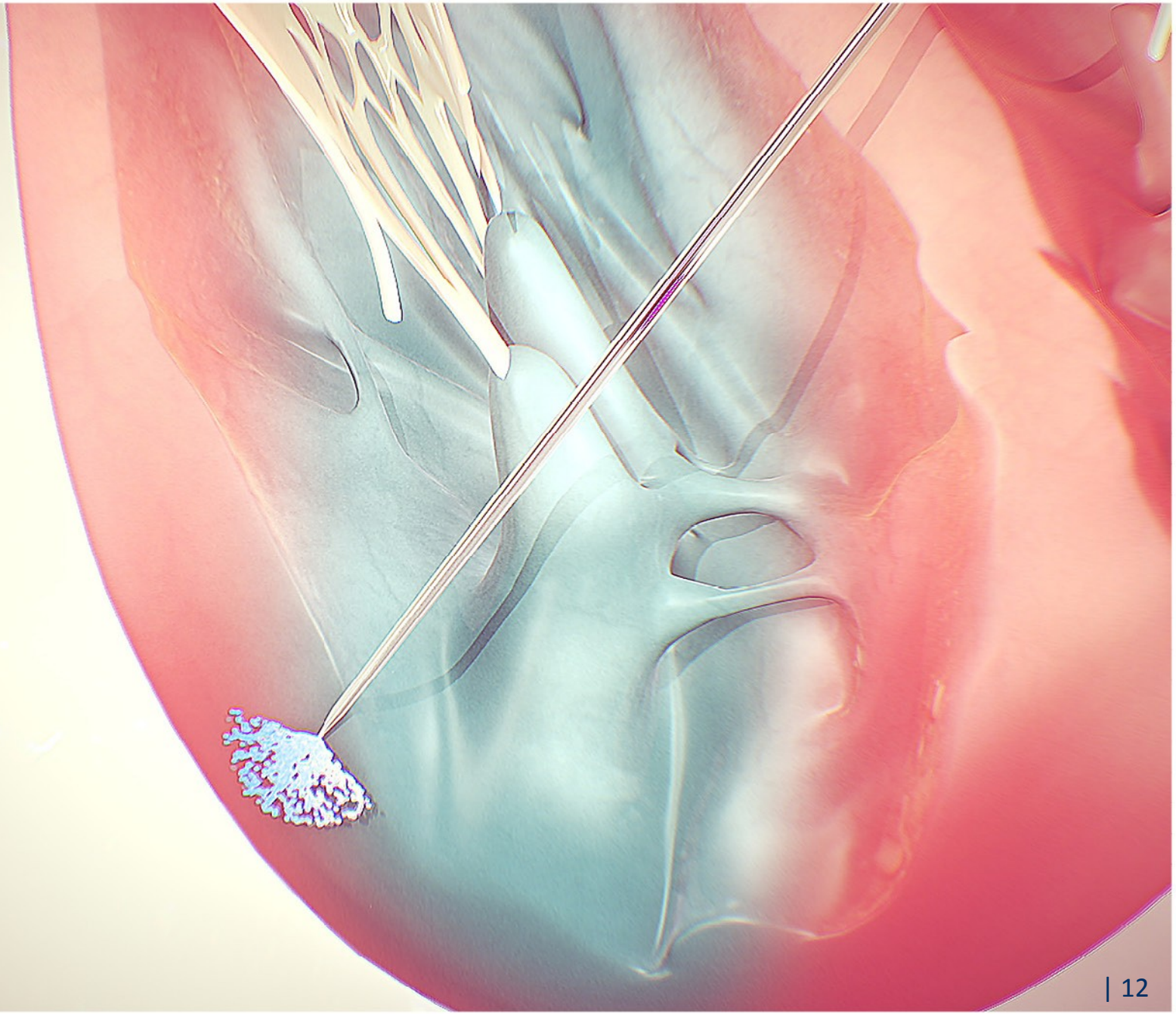
Well Positioned for the 21st Century Cures Act Environment



This chart is figurative and does not purport to show individual trial progress within a clinical program. For product registration purposes, Phase 3 programs may require more than one trial.
Tier 1 programs represent our lead programs where we focus the majority of our time and resources. Tier 2 programs are also in development and may advance to Tier 1 depending on the merit of newly generated data, market opportunity or partnering options.

1. On December 22, 2016, Mesoblast Ltd. entered into an equity purchase agreement with Mallinckrodt Pharmaceuticals for ~US$ 21.7m to exclusively negotiate a development and commercialization partnership for rights to GVHD and Chronic Low Back Pain outside of the Chinese and Japanese markets.
2. Clinical trial is fully funded by the National Institutes of Health (NIH).

MPC-150-IM
Chronic Heart Failure (CHF) Program



MPC-150-IM:

Targeting Patients with Worsening HF Despite Optimal Standard of Care

MPC-150-IM Targeted Position in Treatment Pathway at Launch[1]

Standard of Care

Current Treatments
- ACEI or ARB
- Statins
- Beta blockers
- Diuretics for fluid retention
- Aldosterone antagonists
- Hydralazine/Isosorbide dinitrate
- Digitalis

Under Investigation in Phase 2b/3

New Combination Oral Therapies

MPC-150-IM targets HFrEF NYHA class IIB/III patients with worsening HF despite optimal care

Cardiac Resynchronization Therapy

MPC-150-IM targets HFrEF NYHA class III/IV patients with worsening HF despite optimal care

End Stage HF LVAD[7] Heart transplant

1. 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.

MPC-150-IM:

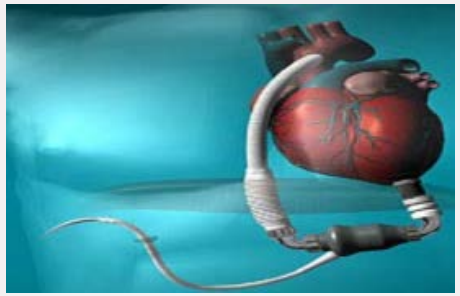
Adjunct to LVAD in NYHA Class IV/End Stage Heart Failure Commercial Landscape

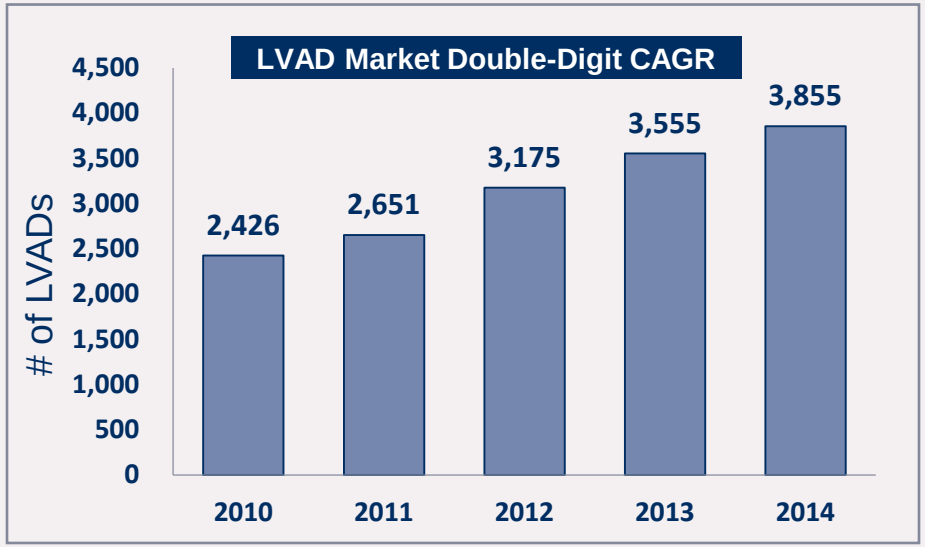
Burden of Illness and Unmet Need

- 250K – 300K patients suffer from advanced systolic HF (NYHA Class IV)[1]
- Despite optimal medical therapy, 1-year mortality exceeds 50% in class IV patients[1]
- For end stage heart failure, only ~2K heart transplants are performed in US annually due to limited donors[2]
- LVADs have significantly improved survival and are increasingly used as destination therapy[1]
- However 12 month mortality rates remain high at ~20%-30%[1] and morbidity, principally from GI bleeding, limits increased use of devices

Market Opportunity

- LVAD market represents double-digit annual growth opportunity[3]
- Targeted product launch strategy requires minimum investment (top 40 centers represent ~75% of volume)[4]
  - Anticipate orphan-like pricing
  - Requires minimal Account Managers and Medical Science Liaisons





1. Gustafsson G, Rogers J. (2017) Left ventricular assist device therapy in advanced heart failure: patient selection and outcomes. European Journal of Heart Failure 19, 595-602.
2. Agency for Healthcare Research and Quality: HCUPnet: ICD-9 principal procedure code 27.51 2014.
3. Agency for Healthcare Research and Quality: HCUPnet: ICD-9 all listed procedure code 37.66 Data 2010 – 2014.
4. Medicare provider charge inpatient-DRGALL-FY2014.

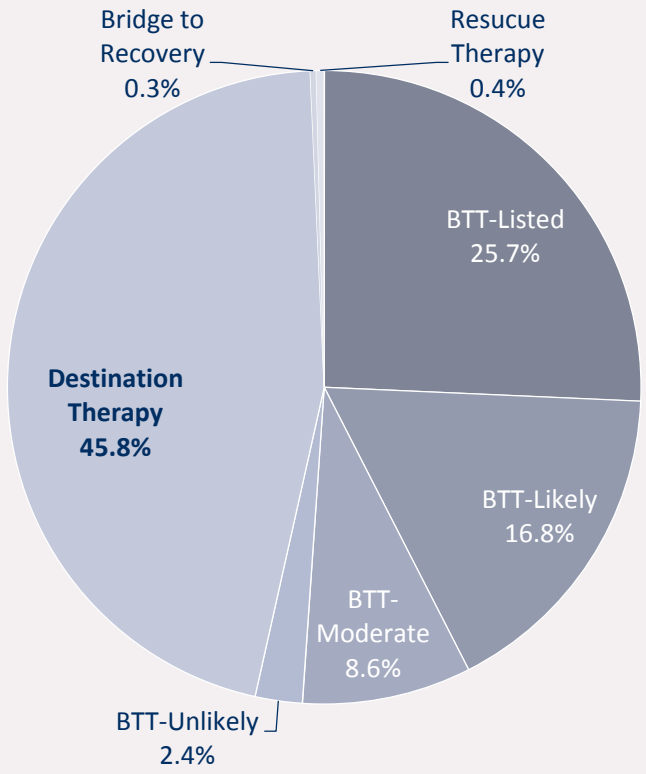
MPC-150-IM:

Targets Destination Therapy and Potential Use for Bridge to Recovery

Three Distinct Market Segments

- Bridge to transplant (BTT) appears saturated with ~2k transplants per annum as hearts available are limited[1,2]
- **Destination Therapy (DT) is the fastest growing segment , growing from ~8% prior to 2010 to ~45% in 2016[3]**
- Bridge to Recovery (BTR) may be a future market opportunity

Destination Therapy Represents ~45% of Market[3]



1. Agency for Healthcare Research and Quality: HCUPnet: ICD-9 principal procedure code 27.51 2014.
2. http://healthresearchfunding.org/24-heart-transplant-waiting-list-statistics/.
3. INTERMACS_Quality_Assurance_Quarterly_Report_2016_Q4_Cummaltive_Hospx-9999.

MPC-150-IM:

Rationale for Use as Adjunct Therapy in LVAD Patients

We believe MPC-150-IM has the potential to:

- enhance beneficial remodelling of native heart muscle by inducing myocardial blood vessel maturation in the heart and reducing myocardial inflammation
- strengthen native heart sufficiently to facilitate LVAD explantation
- reduce GI bleeding and associated hospitalizations due to arterio-venous malformations in the gut by secreting pro-arteriogenic factors necessary for blood vessel maturation
- increase survival by reducing complications associated with LVAD use

MPC-150-IM:

Bleeding is the Major Complication of Continuous Flow (CF) LVADs

Adverse Event	Events	Rate
Bleeding	4,420	7.79
Cardiac/vascular		
Right-sided heart failure	276	0.49
Myocardial infarction	34	0.06
Cardiac arrhythmia	2,303	4.06
Pericardial drainage	305	0.54
Hypertension	115	0.20
Arterial non-CNS thrombosis	94	0.17
Venous thrombotic event	286	0.50
Hemolysis	314	0.55
Infection	4,132	7.28
Stroke	916	1.61
Renal dysfunction	876	1.54
Hepatic dysfunction	326	0.57
Respiratory failure	1,551	2.73
Wound dehiscence	96	0.17
Psychiatric episode	525	0.93
Total burden	16,569	29.20

The most common cause of LVAD-related re-hospitalization, not associated with surgical procedures, is gastrointestinal (GI) bleeding

Adverse Event Rates
(Events per 100 Patient-Months)
in the First 12 Months Post-Implant
From INTERMACS*
N = 7,286 patients
CF-LVADs; 2012-2014

INTERMACS: Interagency Registry for Mechanically Assisted Circulation

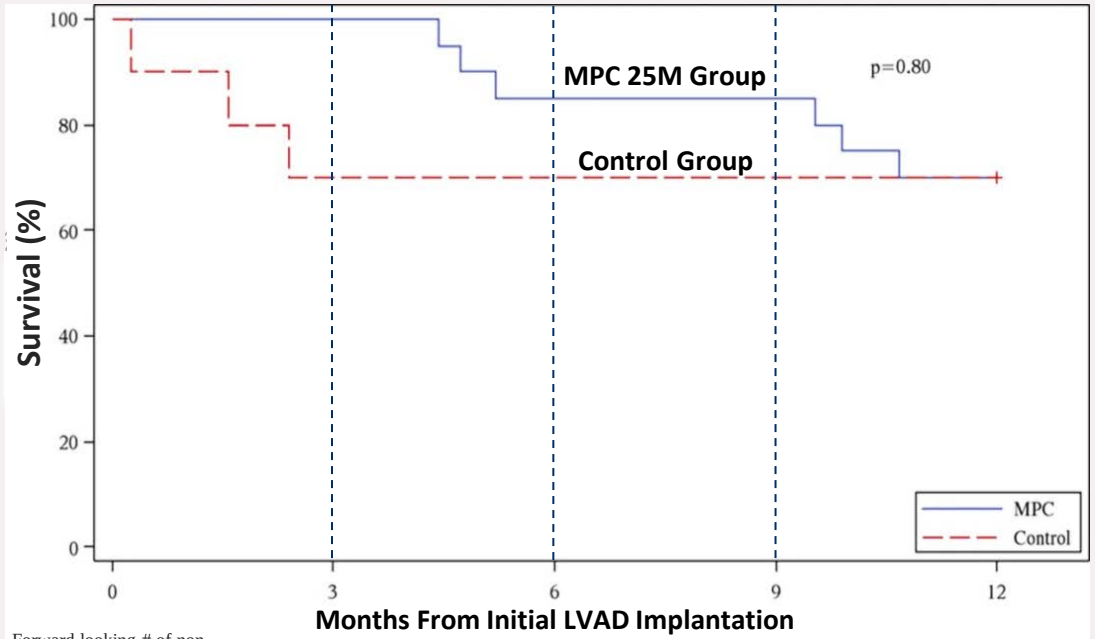
1. Source: Pinney SP, et al. JACC 2017;69:2845-61.

LVAD MPC Pilot Trial:

25M MPCs Increased Ability to be Weaned off LVADs and Increased Short-Term Survival[1]

- No cell-related safety events observed
- Median time to first readmission was 91 days in the MPC group vs 51 days in the control group
- 50% of MPC vs. 20% of control patients tolerated temporary wean at 90 days despite low dose of cells deployed
- Total number of temporary weans tolerated by MPC group was more than double that of the control group
- Using Bayesian approach, posterior probability that MPCs increased likelihood of successful wean at 90 days was 93%
- At 90 days, 30% (3/10) of controls expired compared to 0% (0/20) treated patients

LVAD MPC Pilot Trial: 12 Month Survival



Forward looking # of non-censured pts at risk of death:

MPC	20	20	17	17	14
Control	10	7	7	7	7

1. Source: Ascheim DD et al. Circulation. 2014;129:2287-2296.

MPC-150-IM:

Operational Update for Phase 2b Trial Evaluating 150M MPCs in End-Stage Heart Failure Patients as Adjunct to LVAD

- Study is sponsored and funded by the United States National Institutes of Health (NIH), and conducted by the NIH-funded Cardiothoracic Surgical Trials Network (CTSN)
- The 159-patient, double-blind, placebo-controlled 2:1 randomized trial, is evaluating the safety and efficacy of injecting MPC-150-IM into the native myocardium of LVAD recipients
- The primary efficacy endpoint of the study is the number of temporary weans from LVAD tolerated over 6 months
- Additionally, the study is evaluating time to re-hospitalization from major non surgical bleeding, patient survival, and various quality of life measurements over 12 months
- Enrollment to be expected to complete in Q3 CY 2017; Top-line results expected during Q1 CY2018

MPC-150-IM:

Targets the Serious and Life-Threatening Complications of Heart Failure

Burden of Illness and Unmet Need

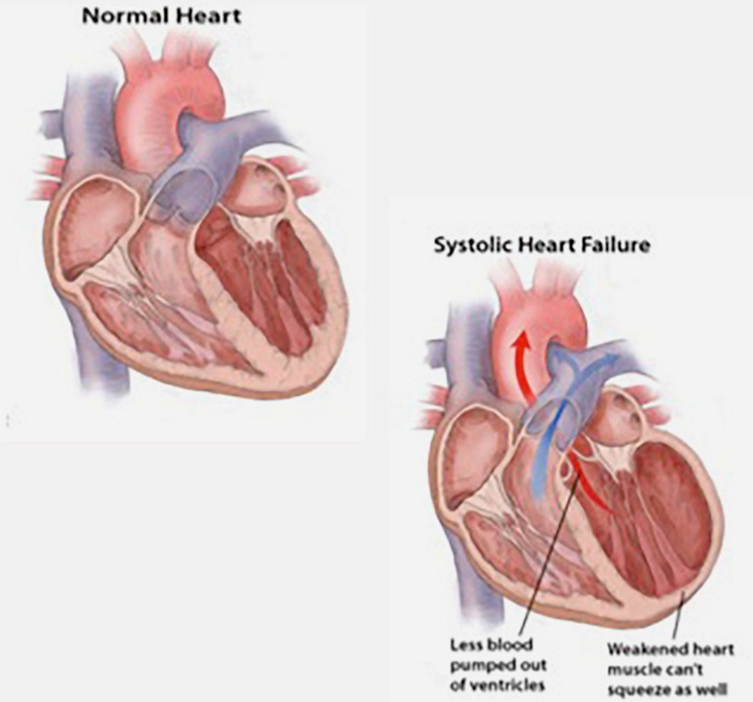
- Globally, 17-45% of heart failure patients die within 1 year of hospital admission
- Majority die within 5 years of admission[1]
- MPC-150-IM to target advanced HFrEF NYHA Class II-III with the objective of reducing major cardiovascular events (e.g. mortality and hospitalizations)

Minimal Treatment Options

- Despite recent advancements in pharmacotherapy, limited treatment options are available for patients with advanced NYHA Class II-IV Heart Failure with Reduced Ejection Fraction (HFrEF)[2]

Market Opportunity

- ~1.9m NYHA Class II-IV patients with LVEF<40% in the US alone[3]
- Over $60.2bn/yr in U.S. direct costs when this illness is identified as a primary diagnosis[4]
  - $115bn as part of a disease milieu[4]; hospitalizations result in ~69% of expenditures[5]

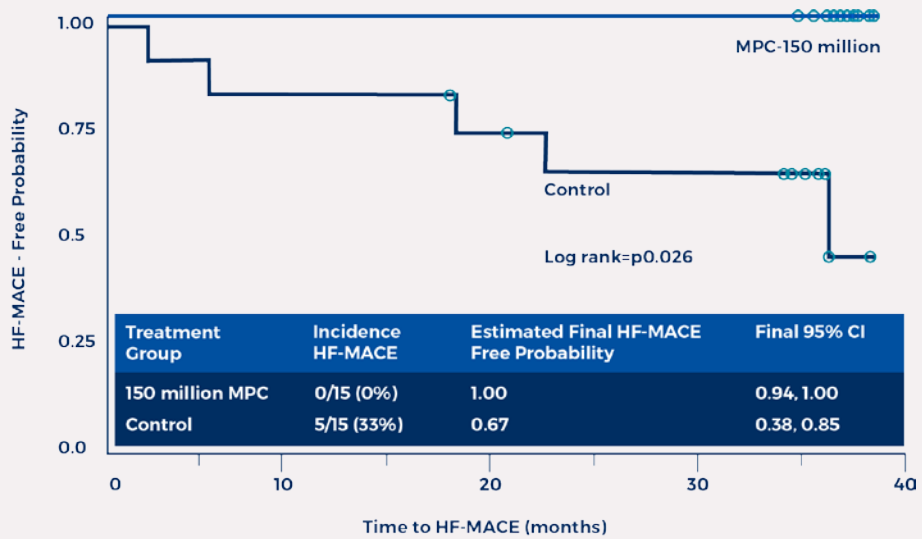


1. Heart Failure: Preventing disease and death worldwide – European Society of Cardiology 2014.
2. ACC/AHAHFSA Focused Update on New Pharmacological Therapy for Heart Failure: An Update of the 2013 ACCF/AHA Guideline for the Management of Heart Failure.
3. Gurwitz JH, Magid DJ, Smith DH, et al. Contemporary Prevalence and Correlates of Incident Heart Failure with Preserved Ejection Fraction. The American Journal of Medicine. 2013;126(5):393-400. Derived by applying a HF-REF prevalence rate of 32.6% to the U.S. rate of 5.7m U.S. patients.
4. A Reevaluation of the Costs of Heart Failure and its Implications for Allocation of Health Resources in the United States. Voigt J. Clinl.Cardiol. 37, 5, 312-321 (2014).
5. The Medical and Socioeconomic Burden of Heart Failure: A Comparative Delineation with Cancer. Dimitrios, F. International Journal of Cardiology (2015), doi: 10.1016/j.ijard.2015.10.172.

MPC-150-IM:

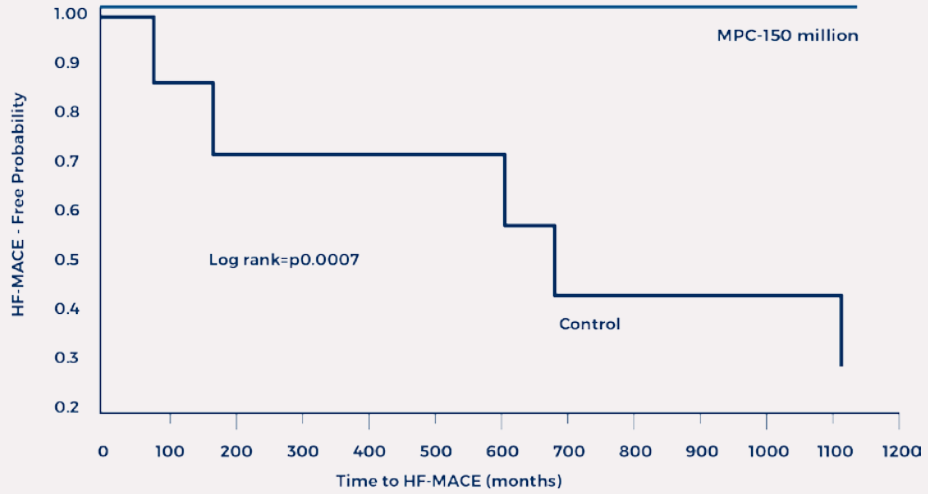
Durable (36 Months) Protection Against HF-MACE[1] in Phase 2 Trial Following Single Dose

% HF-MACE Kaplan-Meier Curve over 36 months following treatment in all patients[1]



Treatment Group	Incidence HF-MACE	Estimated Final HF-MACE Free Probability	Final 95% CI
150 million MPC	0/15 (0%)	1.00	0.94, 1.00
Control	5/15 (33%)	0.67	0.38, 0.85

HF-MACE Kaplan-Meier Curve over 36 months following treatment in patients with LVESV>100ml[2]



- Over 36 months, patients receiving 150M MPC had significantly greater probability of remaining free of a first HF-MACE vs. controls (0% vs. 33%, p = 0.026 by log-rank)
- All HF-MACE events occurred in controls with baseline Left Ventricular End Systolic Volume (LVESV)>100ml, where the treatment effect size was even greater (0% vs. 71%, p = 0.0007 by log rank)
- Controls with baseline LVESV>100ml had 11 total/recurrent HF-MACE events over 36 months vs. 0 in matched patients receiving 150M MPCs (p=0.0007)

1. HF-MACE is defined as a composite of cardiac related death or non-fatal heart failure hospitalisations. 2. Circ Res. 2015; 117:576-584. Perin E et al. A Phase II Dose-Escalation Study of Allogeneic Mesenchymal Precursor Cells in Patients With Ischemic or Non-Ischemic Heart Failure 3. Journal of Cardiac Failure 2015; Vol 21(8): S107; 19th Annual Scientific Meeting of the Heart Failure Society of America, Emerson et al.

MPC-150-IM:

Operational Update for Phase 3 Trial in NYHA Class II-III Advanced CHF Patients

- Trial has enrolled 400 of approximately 600 patients
- In April 2017, a pre-specified interim futility analysis of the efficacy endpoint in the Phase 3 trial's first 270 patients was successfully achieved
- After notifying the Company of the interim analysis results, the trial’s Independent Data Monitoring Committee (IDMC) formally recommended the trial be continued as planned
- In line with best practice for blinded Phase 3 clinical trials, the interim futility analysis data were only reviewed by the IDMC
- Mesoblast, the FDA, and trial investigators remain blinded to grouped safety and efficacy data for the ongoing trial as well as the numerical results of the interim analysis
- Expected enrollment completion is 2H CY18

Acute Graft vs Host Disease (aGVHD)

MSC-100-IV for steroid-refractory aGVHD

MSC-100-IV: Acute Graft vs Host Disease (aGVHD)

Serious and Life-Threatening Complication of Bone Marrow Transplants

Burden of Illness and Unmet Need

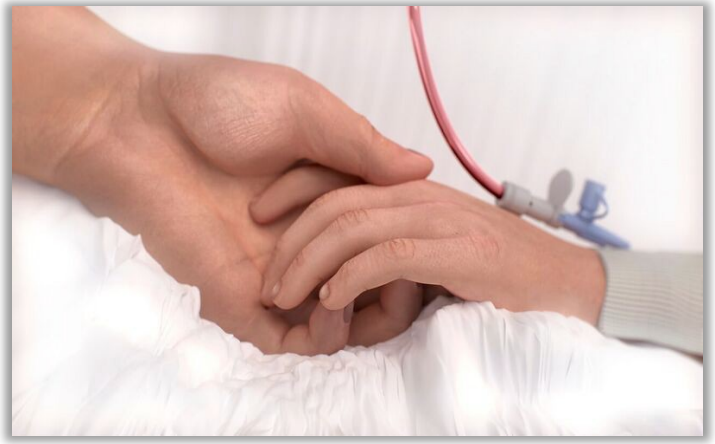
- aGVHD - a severe immunological reaction occurring in BMT patients
- Steroid-refractory aGVHD (SR-aGVHD) patients have mortality rates as high as 95%[1]
- Is a major limitation in successful allogeneic hematopoietic stem cell transplants[1]
- Refractory aGVHD is associated with significant extended hospital stay costs[2]

Minimal Treatment Options

- No regulatory approved treatment for SR-aGVHD outside of Japan
- No broad consensus on off-label second-line agents

Market Opportunity

- ~30,000 allogeneic BMTs performed globally (~20K US/EU5) annually, ~20% pediatric[4,5]
- Received approval in Japan (TEMCELL® HS Inj.) for aGVHD in 2015; reimbursed up to ~$USD195k per full treatment course[3]



1. West, J., Saliba, RM., Lima, M. (2011) Steroid-refractory acute GVHD: predictors and outcomes. Advances in Hematology.
2. Anthem-HealthCore/Mesoblast claims analysis (2016).
3. Based on a ¥JPY = $USD 0.009375 spot exchange rate on as of the market close on November 11, 2016. Amounts are rounded. Source: Bloomberg.
4. Gratwohl A et al Quantitative and qualitative differences in use and trends of hematopoietic stem cell transplantation: a Global Observational Study. Haematologica. 2013 Aug;98(8):1282-90.
5. CIBMTR, Decision resources GVHD Epi Nov 2012.

MSC-100-IV for aGVHD: Product Development Strategy

Pediatric aGVHD

- Multi-center, single-arm, open-label, ongoing Phase 3 study in up to 60 pediatric patients with steroid-refractory aGVHD
- The pre-specified interim futility analysis of the trial's primary endpoint was successfully achieved in Nov 2016
- The FDA has granted a Fast Track designation for the use of MSC-100-IV to improve overall response rate in children with steroid refractory aGVHD. Fast Track designation has the potential to shorten the time to FDA approval through priority review and a streamlined rolling review process
- The product candidate's existing Orphan Indication designation may additionally lead to extended marketing exclusivity following FDA approval

Adult aGVHD

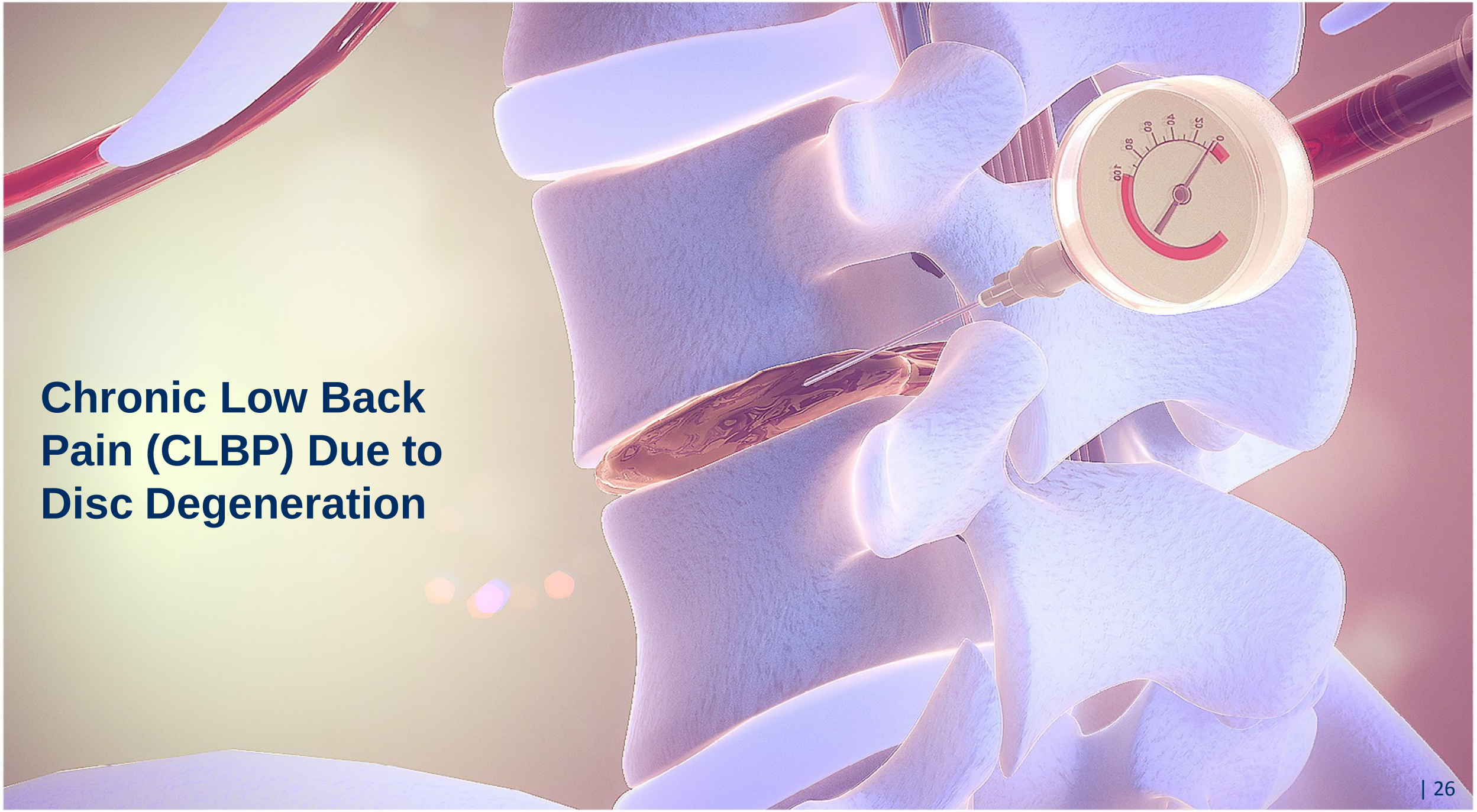
- Complete targeted Phase 3 study in high-risk subset of adult patients with aGVHD (liver and gut disease)

Trial Endpoints[1]:

- Primary endpoint: Overall Response
- Key secondary endpoint: Survival

1. Clinicaltrials.gov identifier: NCT02652130.

Chronic Low Back Pain (CLBP) Due to Disc Degeneration



MPC-06-ID:

Potential Alternative to Invasive Surgery and Opioid Use for Chronic Low Back Pain Patients

Burden of Illness and Unmet Need

- 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

Minimal Treatment Options

- Patients failing opioids and epidural steroids are limited to highly invasive surgical procedures[2]

Market Opportunity

- In 2016, over ~7m U.S. patients are estimated to suffer from CLBP due to degenerative disc disease (DDD)[3,4,5]
- MPC-06-ID development program targets over ~3.2m patients

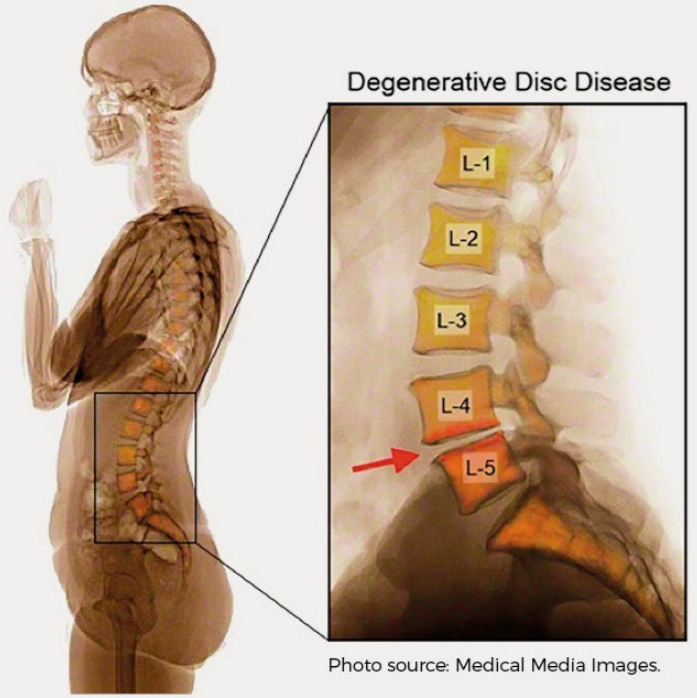


Photo source: Medical Media Images.

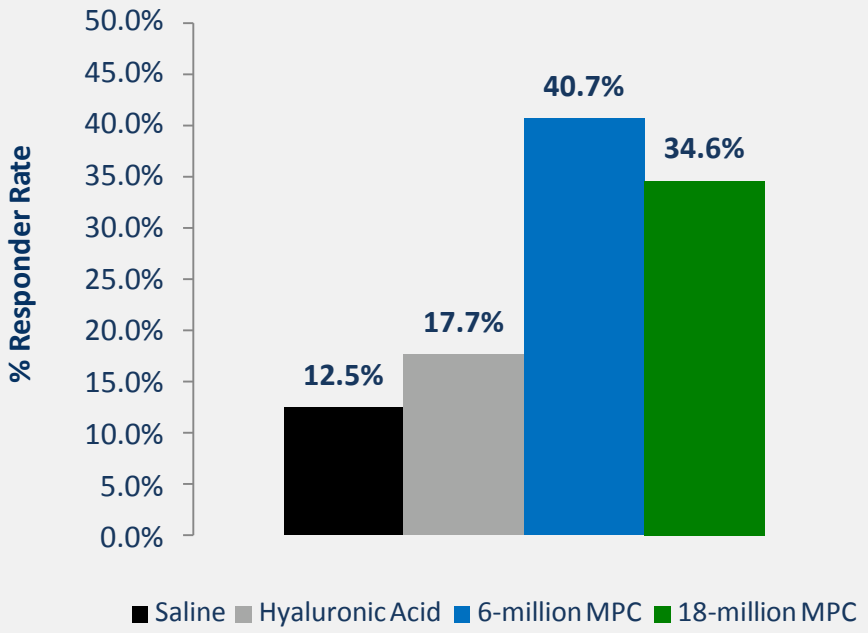
1. Williams, J., NG, Nawi, Pelzter, K. (2015) Risk factors and disability associated with low back pain in older adults in low-and middle-income countries. Results from the WHO Study on global ageing and adult health (SAGE). PloS One. 2015; 10(6): e0127880.
2. Simon, J., McAuliffe, M., Shamim, F. (2015) 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.

MPC-06-ID: Phase 2 Trial Results Support Phase 3 Program

- 100 patients with >6 months of CLBP due to DDD and unresponsive to conservative therapies (incl. opioids and epidural steroids) were evaluated in a blinded, randomized, placebo controlled Phase 2 trial
- Primary endpoint composite over 24 months was achieved by 41% of patients who received 6 million MPCs, 35% of the 18 million MPC group, 18% of the hyaluronic acid group, and 13% of the saline group, using the pre-specified PP population

- Pain responder criteria (50% pain reduction with no additional intervention at both 12 and 24 months) was achieved by 52% of the 6 million MPC group compared with 13% of the saline group ($p<0.05$)
- Functional responder criteria (15-point reduction in ODI and no additional intervention at both 12 and 24 months) was achieved by 48% of the 6 million MPC group compared with 13% of the saline group ($p<0.05$)

Composite Responders at both 12 & 24 Months - PP[1]



1. Source Mesoblast Ltd; PP = Per Protocol population. A Composite Responder must have an optimal pain (50% reduction in VAS) AND function (15 point reduction in ODI) response AND no additional intervention.

MPC-06-ID: Phase 3 Trial Update

- A 360-patient Phase 3 trial across US and Australian sites
- Targeted to complete recruitment by Q4 2017
- FDA has provided written guidance:
  - Use of a composite primary endpoint is acceptable for potential approval
  - Agreed thresholds for pain (50% decrease in VAS) and function (15 point improvement in ODI)
  - Two timepoints (12 and 24 months) for meeting pain and functional improvement criteria
  - No additional intervention at the treated level through 24 months

Financial Results

Q4 FY 2017:
Financial Highlights for the Twelve Months Ending June 30, 2017 (US$m)

- At June 30, 2017, the Company had cash reserves of US$45.8 million and US$84.0 million after adjusting for proceeds from the A$50.7 million (US$40.0 million) fully underwritten entitlement offer
- In line with our forecast in August 2016, operational streamlining delivered cost savings in R&D product support costs, manufacturing, and management & administration of US$20.7 million vs FY16 (28% reduction)
- Operational streamlining enabled significant absorption of the incremental costs of the MPC-150-IM program in advanced chronic heart failure (CHF)
- Due to the incremental costs of the MPC-150-IM CHF Phase 3 trial, total company net cash outflows in FY17 for operational activities increased by 8% vs FY16
- SOX compliance – Disclosure controls & procedures, & internal controls over financial reporting were effective
- The Company intends to partner one or more of its four Tier 1 product candidates in order to increase cash reserves and further reduce cash burn.
- Mesoblast retains an equity facility for up to A$120 million / US$90 million, to be used at its discretion over the next two years to provide additional funds as required

Operational Streamlining:
Successfully achieved targeted savings for FY17 (US$m)

In August 2016, the Company announced a range of cost reduction initiatives in order to save US$20-25 million of operational costs. **US$20.7 million** of cost savings have been achieved through these initiatives in FY17 as follows: Cost containment measures remain in force for FY18

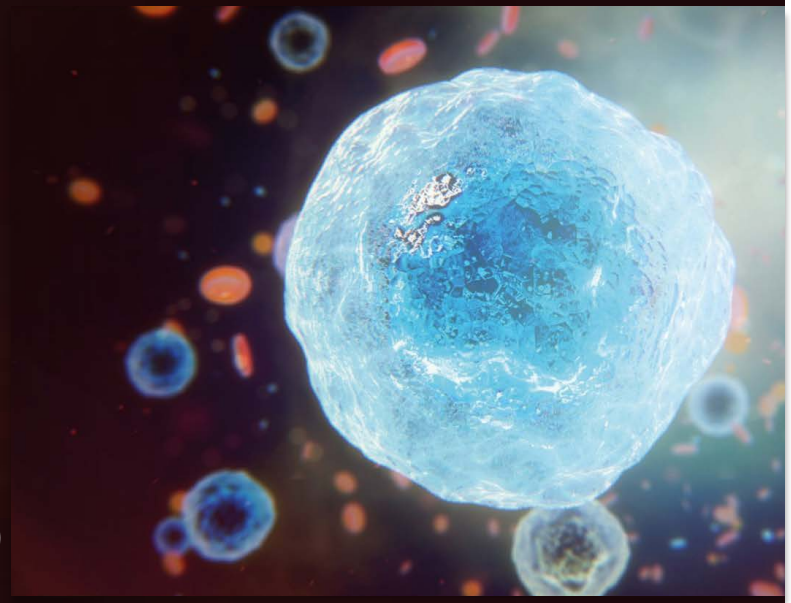
- **US$3.5 million** (17% reduction) in cost savings within R&D product support costs: a 35% reduction in FTEs was achieved primarily through a labor restructure. This, combined with the cost containment of travel have reduced product support costs within R&D in comparison with FY16

- **US$17.7 million** cost savings within Manufacturing: Costs were reduced by 59% as the Company had sufficient quantities of clinical grade product previously manufactured for all ongoing clinical trials; there were also savings arising from the labor restructure, combined with cost containment of consultants and travel

- **(US$0.5) million** of increased costs within Management and Administration: Overall costs increased due to a $1.4 million increase in non-cash items consisting of share based payment expenses and depreciation. However within this category, there were cost savings of $0.9 million following reductions in FTEs, consultancy expenses, and corporate overhead expenses such as rent and other office expenses

Targeted Upcoming Milestones and Catalysts

- **MPC-150-IM**
  - *Phase 3 trial for Class II/III continues to enroll with target expected completion (2H CY18)*
  - *Phase 2B trial expected to complete enrollment (3Q CY17) for Class IV*[1,2]
  - *Phase 2B data read-out Class IV (expected 1Q CY18)*
- **MPC-06-ID**
  - *Phase 3 trial expected to complete enrollment (4Q CY17)*
- **MPC-300-IV**
  - *12-Month data readout for RA (expected 3Q CY17)*
- **MSC-100-IV**
  - *Phase 3 expected to complete enrollment and top-line data read-out (2H CY17)*
- **Potential corporate partnerships (***Mallinckrodt Pharmaceuticals, CV partners***)**



1. Study is sponsored and funded by the United States National Institutes of Health (NIH), and conducted by the NIH-funded Cardiothoracic Surgical Trials Network (CTSN).
2. Clinical trial is fully funded by the National Institutes of Health (NIH).