Global Leader in Allogeneic Cellular Medicines for Inflammatory Diseases

Annual General Meeting 2025

November 2025

ASX: MSB; Nasdaq: MESO

CAUTIONARY NOTE REGARDING FORWARD LOOKING STATEMENTS

This presentation includes forward-looking statements and forecasts 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 with respect to sales and revenue, 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

To be the world's leading and most innovative cell therapy company, commercializing off-the-shelf allogeneic cellular medicines to treat serious and life-threatening inflammatory illnesses

mesoblast

Execution Strategy

- Continue strong growth in RYONCIL® sales driven by market adoption
- Work towards profitability through strong cash flow, judicious use of funds for operations, optimal capital structure
- Culture transition to efficient commercial organization (e.g. new Chief Financial Officer, Chief Commercial Officer, new commercial US director)
- Expand RYONCIL (remestemcel-L-rknd) label indications and obtain approval for rexlemestrocel-L products
- US manufacturing focus to provide increased capacity and cost efficiencies
- Appropriate commercial partnering backed by demonstrable value drivers (FDA approval, payer reimbursement, strong revenues)

mesoblast

2025: Approval & Successful Launch

- Received **U.S. FDA approval** RYONCIL December 2024
- RYONCIL is the first and only FDA-approved allogeneic mesenchymal stromal cell (MSC) product
- Launched April 2025, with revenues growing quarter on quarter
- Gross revenue from RYONCIL US$22 million in Q1 FY26
- **Expect >US$30 million** gross revenue from RYONCIL Q2 FY26
- Initial demand indicates **significant unmet need**

mesoblast

Strong Financial Position

Cash balance
US$145M
at Sep 30, 2025

Net operating cash usage for Q1 FY26 was $14.9 million

Working towards profitability through strong cash flow and judicious use of funds for operations

Operating plan includes spend on Phase 3 programs, manufacturing for BLA filing and commercial inventory

Retire/refinance existing debt

mesoblast

Leadership to Deliver Commercial Excellence

- Team continues to deliver in a highly resilient and agile manner
- Capitalize on embedded culture of efficiency, accountability and growth
- Expand executive leadership with commercial operational management skills (e.g. new CFO, CCO)
- Complement existing Board with global commercial expertise

CFO: Chief Financial Officer | CCO: Chief Commercial Officer

mesoblast

Growth Pipeline Targeting Multiple Inflammation-Based Indications

RYONCIL
Remestemcel-L

Adult aGvHD
Pivotal trial as part of second-line regimen
TAM children & adults ~**US$1B**

Inflammatory Colitis
Biologic refractory inflammatory colitis with high risk of colectomy

Inflammatory Lung Disease
Clinical data in ARDS, COPD

Chronic Low Back Pain with degenerative disc disease; confirmatory Phase 3 trial enrolling
TAM
>US$10B

Cardiac HFrEF
Ischemic chronic heart failure with inflammation
TAM
>US$10B

Rexlemestrocel-L

Other **Musculoskeletal** diseases including knee, hip, shoulder OA

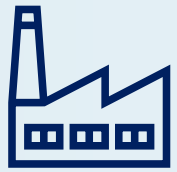
aGVHD: acute graft versus host disease | TAM: total addressable market | ARDS: acute respiratory distress syndrome | COPD: chronic obstructive pulmonary disease | HFrRF: heart failure reduced ejection fraction | OA: osteoarthritis

mesoblast

Optimizing & diversifying manufacturing

Objectives are to meet projected growth in demand through:

- Establishing diversified manufacturing
- Focusing on process innovation to increase yield & reduce COGS
- Scaling manufacturing operations in U.S.



Commercial product for CHF & CLBP to be manufactured in the U.S.

mesoblast

COGS: cost of goods | CHF: chronic heart failure | CLBP: chronic low back pain

Strategic Partnerships

- Objectives to unlock pipeline value and accelerate market access
- FDA approval and know-how provides confidence for partner investment in development and label expansion
- Strong revenues and payer engagement demonstrates pipeline value and enhances shareholder return
- Co-development and co-promotional activities will ensure appropriate value retention and returns

RYONCIL® Update

Steroid-Refractory Acute Graft Versus Host Disease (SR-aGvHD)

mesoblast

Ryoncil®
(remestemcel-L-rknd) Suspension for IV infusion

Redefine what is possible in the treatment of pediatric SR-aGvHD

Discover the first and only FDA-approved mesenchymal stromal cell therapy indicated for the treatment of steroid-refractory acute graft-versus-host disease in pediatric patients 2 months of age and older.[1]

Visit RYONCIL.com

RYONCIL® is the first FDA-approved, off-the-shelf cell therapy for children aged 2 months and older, including adolescents and teenagers, with steroid-refractory acute graft versus host disease (SR-aGvHD), a life-threatening condition with high mortality rates.[1]

Press Release available at www.mesoblast.com

1. Please see the full Prescribing Information at www.ryoncil.com

Success of Commercial Launch

Ryoncil®

Expect
>US$30M
this quarter
gross revenue

>40 centers
onboarded
45 centers ≈ 80% of pediatric BMTs

>260 million
US lives covered under insurance

Specific HCPCS **J-Code** was **assigned** by CMS

Patient hub established

BMT: bone marrow transplant | HCPCS: Healthcare Common Procedure Coding System | CMS: Centers for Medicare & Medicaid Services

mymesoblast

Label Expansion into Adults

Pivotal study of RYONCIL on top of approved second-line therapy in adults with severe SR-aGvHD

Working with NIH-funded BMT-CTN, to initiate next quarter

Primary endpoint is Day 28 response

44-58% adults with severe SR-aGvHD fail second-line agents, and these have survival of only 25% through 100 days[1-3]

Significant cross-over of sites already onboarded for use of RYONCIL in children

RYONCIL in Adult aGvHD

Use of RYONCIL under EAP in patients aged 12 and older with SR-aGvHD who failed ruxolitinib or other second-line agents was associated with **76% survival at Day 100**[4]

SR-aGvHD: steroid-refractory acute graft versus host disease | NIH: National Institute of Health | BMT CTN: Bone & Marrow Transplant Clinical Trials Network

1. Jagasia M, et al. Ruxolitinib for the treatment of steroid-refractory acute GVHD (REACH1): a multicenter, open-label phase 2 trial. Blood. 2020 May 14; 135(20): 1739-1749; 2. Abedin S, et al. Ruxolitinib resistance or intolerance in steroid-refractory acute graft versus-host disease — a real-world outcomes analysis. British Journal of Haematology, 2021;195:429-43; 3. Zeiser R, et al. Ruxolitinib for Glucocorticoid-Refractory Acute Graft-versus-Host Disease. N Engl J Med 2020;382:1800-1810; 4. Kurtzberg J, et al. Ryoncil (Remestemcel-L) for Third-Line Treatment of SR-aGvHD in Adolescents and Adults [Poster presentation]. 2025 Transplantation & Cellular Therapy Tandem Meetings

Inflammatory Colitis

Label expansion targeting biologic-refractory moderate/severe inflammatory colitis

Major unmet need across the adult and pediatric population with high risk of colectomy

>3 million people in US alone have IBD with ~15%-20% on a biologic therapy

KOLs engaged on protocol. Plan to file an IND in Q1 CY26 and initiate a study for label expansion

RYONCIL in Colitis

Local administration improves outcomes in patients with biologic-refractory extensive colitis[1]

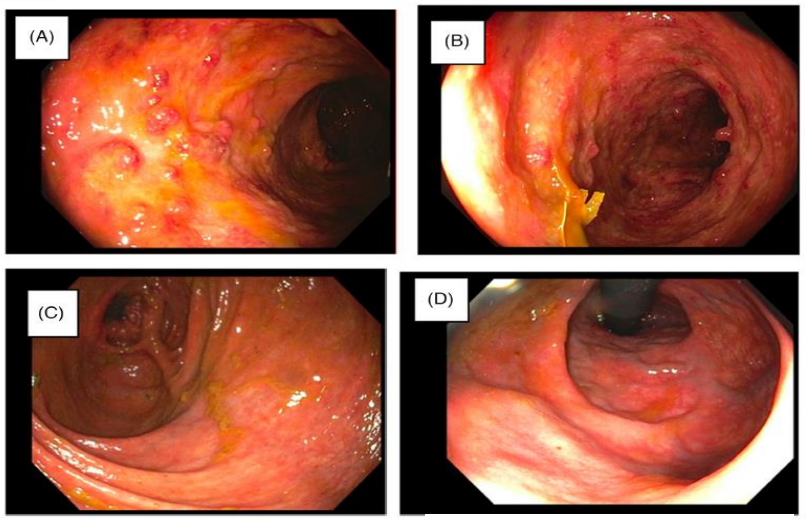


FIGURE 3 Colonoscopy: pretreatment colonoscopy with MSCs showing a Mayo score of 2 and pancolitis (A, B) as compared with the colonoscopy 3 months after MSC treatment showing a Mayo score of 0 to 1 throughout (C, D).

1. Lightner A, et al. Abstracts of the 17th Congress of ECCO - European Crohn's and Colitis Organisation. Poster P428.

KOL: key opinion leader | IND: Investigational New Drug application (with FDA)

Milestones for RYONCIL

Increase revenue growth to fund multiple label expansion opportunities in pediatric and adult inflammatory diseases

Commence registrational study in Q1 CY26 in adults with severe aGvHD to gain access to a market 3-4 times larger

File an IND for inflammatory colitis in children & adults in Q1 CY26 and prepare for study commencement in this large opportunity with high unmet

aGvHD: acute graft versus host disease | IND: Investigational New Drug application (with FDA)

Rexlemestrocel-L Update

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

mesoblast

Phase 3 CLBP Program On Track

First 404-patient randomized controlled Phase 3 trial completed

Actively recruiting a 300-patient confirmatory Phase 3 trial across 40 sites in the U.S., primary endpoint 12-month reduction in pain

Enrollment expected to be completed in the coming quarter

Data readout & BLA filing expected CY27

Commercial manufacturing in U.S. to leverage **existing capacity and cost efficiencies**

>7m patients (est.) suffer from CLBP due to DDD in each of the U.S. and E.U.5[1-3]

1. Decision Resources: Chronic Pain December 2015; 2. LEK & NCI opinion leader interviews, and secondary analysis; 3. Navigant: Commercial Assessment for a Proprietary Cell-Based Therapy for DDD in the U.S. and the EU3 – August 2014

CLBP: chronic low back pain | BLA: Biologics License Application (FDA) | DDD: degenerative disc disease

Rexlemestrocel + HA Reduces And Eliminates Opioid Use In Phase 3 Trial

- Of the 168 patients on opioids in prior Phase 3 trial, a single intra-discal injection of rexlemestrocel-l + HA significantly reduced pain at 12, 24 and 36 months
- Pain reduction at 12 months predicted reduction in opioid usage at both 12 and 24 months (p=0.018 and p=0.029, respectively)
- By 36 months, 28% of opioid users who received rexlemestrocel-L + HA were able to eliminate all opioids compared with 8% of saline controls (p=0.0083)
- **RMAT received** for rexlemestrocel-L as potential opioid-sparing therapy in CLBP
- September 2025 FDA Draft Guidance on Non-Opioid Analgesics for Chronic Pain: FDA considers **opioid elimination an endpoint** in itself
- Mesoblast to meet with FDA Dec-25 to discuss opioid elimination data from first RCT

REVASCOR® Update (rexlemestrocel-L)

Chronic Heart Failure with Reduced Ejection Fraction (HFrEF) and Persistent Inflammation

mesoblast

CHF Program Update

Aligned with FDA on items required for filing BLA for end-stage CHF with LVADs regarding CMC potency assays for commercial product release

Commercial manufacturing scale-up in U.S. for capacity, cost efficiencies, and diversification

Expect to file BLA for Accelerated Approval Q1 CY26

Aligned with FDA on proposed design and primary endpoint for the confirmatory trial post-approval

Strategic partnership discussions for cardiovascular program ongoing

CHF: Chronic Heart Failure | LVAD: left ventricular assist device |CMC: chemistry, manufacturing, and controls | BLA: Biologics License Application (FDA)

Summary & Upcoming Milestones

RYONCIL, first & **only FDA approved** MSC product

- ✓ On track for **gross revenue >US$30 million** this quarter
- ✓ Onboarded >40 centers; 45 centers account for ~80% of U.S. pediatric BMTs
- ✓ Initiating label expansion to adult aGvHD; 3-4x larger market v. pediatric
- ✓ Inflammatory colitis trial IND filing Q1 CY26

Rexlemestrocel-L second generation platform

- ✓ Enrollment for CLBP for expected to complete in Q1 CY26
- ✓ BLA filing for accelerated approval in end-stage CHF with LVADs

Optimizing manufacturing & logistics in U.S. to support for future growth

US$145m cash on hand at Sep 30, 2025

Management to host investor R&D day in Q1 CY26

mesoblast

mesoblast

Thank You