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UNITED STATES FOOD & DRUG ADMINISTRATION (FDA) GRANTS MESOBLAST ORPHAN-DRUG DESIGNATION FOR REVASCOR® (REXLEMESTROCEL-L) IN CHILDREN WITH CONGENITAL HEART DISEASE

Melbourne, Australia; February 15 and New York, USA; February 14, 2024: Mesoblast Limited (ASX:MSB; Nasdaq:MESO), global leader in allogeneic cellular medicines for inflammatory diseases, today announced that the United States Food and Drug Administration (FDA) has granted its allogeneic cell therapy Revascor® (rexlemestrocel-L) an Orphan-Drug Designation (ODD) following submission of results from the randomized controlled trial in children with hypoplastic left heart syndrome (HLHS), a potentially life threatening congenital heart condition. This follows the Rare Pediatric Disease Designation (RPDD) granted by FDA last month.

Mesoblast Chief Executive Silviu Itescu said: "We are very pleased to have now been granted both Orphan-Drug Designation and Rare Pediatric Disease Designation by FDA for REVASCOR in the treatment of children with this often-fatal congenital heart condition. The designations were granted on the back of the results from children in a randomized controlled trial indicating that REVASCOR may increase the ability to successfully accomplish life-saving surgery. We plan to meet with FDA to discuss the pathway for approval in this indication."

Results from a blinded, randomized, placebo-controlled prospective trial of REVASCOR conducted in the United States in children with HLHS were published in the December 2023 issue of the peer reviewed *The Journal of Thoracic and Cardiovascular Surgery Open (JTCVS Open).*[1]

In the HLHS trial conducted in 19 children, a single intramyocardial administration of REVASCOR at the time of staged surgery resulted in the desired outcome of significantly larger increases in left ventricular (LV) end-systolic and end-diastolic volumes over 12 months compared with controls as measured by 3D echocardiography, (p=0.009 & p=0.020 respectively).

These changes are indicative of clinically important growth of the small left ventricle, facilitating the ability to have a successful surgical correction, known as full biventricular (BiV) conversion, which allows for a normal two ventricle circulation with the surgically repaired left ventricle taking over circulatory support to the body. Without full BiV conversion the right heart chamber is under excessive strain with increased risk of heart failure and death.

As noted in our recent publication, "The fact that 100% of REVASCOR-treated children compared with 57% of controls had large enough LVs to accommodate the full BiV conversion suggests that REVASCOR treatment may help increase the ability to 'better grow' the HLHS LV after LV recruitment surgery."

About Orphan Drug Designation
The FDA's Orphan Drug Designation Program provides orphan status to drugs and biologics which are defined as those intended for the safe and effective treatment, diagnosis or prevention of rare diseases and disorders that affect fewer than 200,000 people in the United States. Orphan designation qualifies the sponsor of the drug for various development incentives, including eligibility for seven years of market exclusivity upon regulatory approval, exemption from FDA application fees, tax credits for qualified clinical trials, and other potential assistance in the drug development process.

About Rare Pediatric Disease Designation
FDA awards priority review vouchers to sponsors of rare pediatric disease product applications that meet certain criteria. Under this program, a sponsor who receives an approval for a drug or biologic for a "rare pediatric disease" may qualify for a Priority Review Voucher (PRV) that can be redeemed to receive a priority review of a subsequent marketing application for a different product or may be sold or transferred to a third party.

About Hypoplastic Left Heart Syndrome (HLHS)
HLHS is a severe congenital heart disease in which the left side of the heart does not fully develop and effective pumping of oxygenated blood by the left ventricle to the rest of the body is reduced. Without

immediate surgery after birth, the prognosis is dismal with HLHS overall being responsible for 25% to 40% of all neonatal cardiac mortality.[2] In the longer term, surgery that creates a two-ventricle series circulation with the left ventricle (LV) pumping blood to the body and the right ventricle pumping blood to the lungs is the ideal anatomic repair. Unfortunately, achievement of this objective is limited by the inability in most patients for the left ventricle to grow sufficiently to support the circulation to the body.

About Revascor® (rexlemestrocel-L) in Heart Disease
REVASCOR is an allogeneic preparation of immunoselected and culture-expanded mesenchymal precursor cells which have been shown previously to have multiple mechanisms-of-action that may be beneficial to children with HLHS including neovascularization, anti-fibrosis, anti-apoptosis, immunomodulation, reduction in inflammation, and reversal of endothelial dysfunction. In the DREAM-HF randomized sham-placebo controlled prospective trial of REVASCOR in 565 randomized adult patients with heart failure with low ejection fraction (HFrEF), a single intramyocardial administration of REVASCOR into the left ventricle resulted in significant improvement in LV ejection fraction at 12 months,[3] indicative of strengthened overall LV systolic function.

About Mesoblast
Mesoblast (the Company) is a world leader in developing allogeneic (off-the-shelf) cellular medicines for the treatment of severe and life-threatening inflammatory conditions. The Company has leveraged its proprietary mesenchymal lineage cell therapy technology platform to establish a broad portfolio of late-stage product candidates which respond to severe inflammation by releasing anti-inflammatory factors that counter and modulate multiple effector arms of the immune system, resulting in significant reduction of the damaging inflammatory process.

Mesoblast has a strong and extensive global intellectual property portfolio with protection extending through to at least 2041 in all major markets. The Company's proprietary manufacturing processes yield industrial-scale, cryopreserved, off-the-shelf, cellular medicines. These cell therapies, with defined pharmaceutical release criteria, are planned to be readily available to patients worldwide.

Mesoblast is developing product candidates for distinct indications based on its remestemcel-L and rexlemestrocel-L allogeneic stromal cell technology platforms. Remestemcel-L is being developed for inflammatory diseases in children and adults including steroid refractory acute graft versus host disease, biologic-resistant inflammatory bowel disease, and acute respiratory distress syndrome. Rexlemestrocel-L is in development for advanced chronic heart failure and chronic low back pain. Two products have been commercialized in Japan and Europe by Mesoblast's licensees, and the Company has established commercial partnerships in Europe and China for certain Phase 3 assets.

Mesoblast has locations in Australia, the United States and Singapore and is listed on the Australian Securities Exchange (MSB) and on the Nasdaq (MESO). For more information, please see www.mesoblast.com, LinkedIn: Mesoblast Limited and Twitter: @Mesoblast

References / Footnotes

1. Wittenberg RE, Gauvreau K, Leighton J, Moleon-Shea M, Borow KM, Marx GR, Emani SM, Prospective randomized controlled trial of the safety and feasibility of a novel mesenchymal precursor cell therapy in hypoplastic left heart syndrome, JTCVS Open Volume 16, Dec 2023, doi: https://doi.org/10.1016/j.xjon.2023.09.031
2. Kritzmire, S. M, et al. (2022). Hypoplastic left heart syndrome. https://www.ncbi.nlm.nih.gov/books/NBK554576/#
3. Perin EC, Borow KM, Henry TD, et al. Randomized Trial of Targeted Transendocardial Mesenchymal Precursor Cell Therapy in Patients With Heart Failure. Journal of the American College of Cardiology. 2023;81(9):849-863. doi:10.1016/j.jacc.2022.11.061

Forward-Looking Statements
This press release 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. 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. Forward-looking statements include, but are not limited to, statements about: the initiation, timing, progress and results of Mesoblast's preclinical and clinical studies, and Mesoblast's research and development programs; Mesoblast's ability to advance product candidates into, enroll and successfully complete, clinical studies, including multi-national clinical trials; Mesoblast's ability to advance its manufacturing capabilities; the timing or likelihood of regulatory filings and approvals (including any future decision that the FDA may make on the BLA for remestemcel-L for pediatric patients with SR-aGVHD), manufacturing activities and product marketing activities, if any; the commercialization of Mesoblast's product candidates, if approved; regulatory or public perceptions and market acceptance surrounding the use of stem-cell based therapies; the potential for Mesoblast's product candidates, if any are approved, to be withdrawn from the market due to patient adverse events or deaths; the potential benefits of strategic collaboration agreements and Mesoblast's ability to enter into and maintain established strategic collaborations; Mesoblast's ability to establish and maintain intellectual property on its product candidates and Mesoblast's ability to successfully defend these in cases of alleged infringement; the scope of protection Mesoblast is able to establish and maintain for intellectual property rights covering its product candidates and technology; estimates of Mesoblast's expenses, future revenues, capital requirements and its needs for additional financing; Mesoblast's financial performance; developments relating to Mesoblast's competitors and industry; and the pricing and reimbursement of Mesoblast's product candidates, if approved. You should read this press release together with our 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, and 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.

Release authorized by the Chief Executive.

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