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CLINICALLY MEANINGFUL OUTCOME IN NIH TRIAL OF MPC-150-IM FOR HEART FAILURE LVAD RECIPIENTS PROVIDES PATHWAY FOR POTENTIAL REGULATORY APPROVAL

New York, USA; November 11, 2018 and Melbourne, Australia; November 12, 2018: Mesoblast Limited (ASX:MSB; Nasdaq:MESO) today announced that results from a 159-patient randomized, sham-controlled Phase 2 trial in end-stage heart failure patients implanted with a left ventricular assist device (LVAD) showed that Mesoblast's allogeneic cell therapy candidate MPC-150-IM achieved significant reduction in major gastrointestinal (GI) bleeding episodes and related hospitalizations, a complication affecting up to 40% of LVAD recipients.[1]

This clinically meaningful outcome confirms results seen in an earlier 30-patient pilot trial[2] which provided the basis for the Regenerative Medicine Advanced Therapy (RMAT) designation granted to Mesoblast by the United States Food and Drug Administration (FDA) for MPC-150-IM as adjunctive therapy to LVAD implantation.

Under the RMAT designation, Mesoblast received specific guidance from the FDA that reduction in major GI bleeding episodes and related hospitalizations in the current trial is a clinically meaningful outcome with a high unmet need that could meet requirements for an approvable regulatory endpoint. In contrast, the FDA advised that the primary endpoint in the current trial of temporary weaning from full LVAD support is considered a biomarker and is not a clinically meaningful outcome in and of itself.

Results from the United States National Heart, Lung and Blood Institute (NHLBI)-sponsored trial were presented today by the study's independent lead investigator Dr Francis Pagani, Surgical Director of the Adult Heart Transplant Program and Program Director for the Center for Circulatory Support, University of Michigan Medical Center, as a late-breaking trial at the 2018 American Heart Association Scientific Sessions in Chicago.

Dr Pagani said: "This trial, like the previous pilot investigation, demonstrated that intramyocardial allogeneic MPC injections were associated with a significant reduction in GI bleeding, a major cause of morbidity and increased cost in LVAD patient management."

Over the six-month observation period, treatment with MPC-150-IM was associated with the following results:

- the primary endpoint of temporary weaning from full LVAD support was not achieved overall; limitation was that the high rate of pump thrombosis reduced the number of evaluable wean attempts
- significant beneficial effect was observed on the primary endpoint of temporary weaning from full LVAD support in a pre-determined subgroup analysis of ischemic heart failure patients, representing 44% of the total trial population (rate ratio 1.55, p value for interaction =0.02)
- significant reduction in cumulative incidence of major GI bleeding events by 48%, from 33% in controls to 17% (p=0.02)
- significant reduction in rate of major GI bleeding events by 76%, from 15.9/100 patient months to 3.8/100 patient months (p<0.001)
- significant reduction in rate of hospitalization for GI bleeding, a major cause of hospital readmissions, by 65%, from 0.21/100 patient months to 0.07/100 patient months (p=0.03); no significant reduction in all cause readmissions
- no patients experienced a safety-stopping event for the trial
- overall mortality was similar between the two groups, 14% vs 15% at 12 months

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- overall time to transplant was similar between the two groups, despite a non-significant increase in anti-HLA class I antibodies in the MPC group (26% vs 9% in controls)

Full trial results are expected to be published in a peer-reviewed journal.

Major GI bleeding in LVAD recipients is thought to be caused by a general state of inflammation in the heart and abnormal blood vessels in the GI tract.[3,4,5] The proposed mechanism of action (MOA) by which Mesoblast's mesenchymal precursor cells (MPCs) are thought to exert their effects in these patients across multiple organ systems is through secretion of biomolecules which reduce damaging inflammation and reverse endothelial dysfunction associated with inflammation.

Mesoblast Chief Executive Dr Silviu Itescu said: "We are very pleased by the results of this independently conducted trial. The clinically meaningful outcome achieved in these very high-risk patients provides a potential pathway to bring our heart failure product candidate MPC-150-IM to market sooner for these patients in great need. In addition, the ability to address inflammation and endothelial dysfunction, mechanisms central to the development and progression of heart failure, may have broader implications for the use of our cells in patients with advanced heart failure."

The Phase 2 trial was conducted by the Cardiothoracic Surgical Trials Network (CTSN) with the International Center of Outcomes and Innovation Research, Mt. Sinai School of Medicine, serving as the coordinating center. The trial was funded and sponsored by the NHLBI of the United States National Institutes of Health and the Canadian Institutes for Health Research.

MPC-150-IM for Chronic Heart Failure
Mesoblast's product candidate MPC-150-IM is being developed for patients suffering from chronic heart failure (CHF) and progressive loss of heart function following damage to the heart muscle. CHF is characterized by an enlarged heart and insufficient blood flow to the organs and extremities of the body due to both progressive dysfunction of heart muscle and dysfunction of blood vessels in the heart and in the peripheral organs. CHF is classified by the severity of the symptoms experienced by the patient. The most commonly used classification system was established by the New York Heart Association (NYHA) and ranges from Class I (mild) to Class IV or end-stage (severe).

MPC-150-IM is also being evaluated by catheter-based delivery in patients with NYHA Class IIb-III CHF. This ongoing events-driven Phase 3 trial has enrolled approximately 85% of approximately 600 total patients.

End-Stage Heart Failure and Left Ventricular Assist Devices
In the United States, there are approximately 250,000–300,000 patients annually who suffer from advanced systolic heart failure (NYHA Class IIIb–IV) who despite optimal medical therapy (excluding mechanical assist devices) have a one-year mortality >25% and exceeding 50% in class IV patients.[6] The only options to increase survival in these patients are the use of cardiac assist devices or heart transplants. Due to the decline in organ donations and limited availability of healthy donor hearts, the treatment of CHF with mechanical circulatory support devices such as LVADs is gaining momentum, with 4,500–5,500 assist devices implanted annually in the United States.[7,8,9] However, rehospitalization is frequent in patients with an LVAD ranging from 2.1–2.7 times per year. The majority of patients rehospitalized for non-device related causes are as a result of GI bleeding (34%-44%) and infections (36%-44%).[10,11]

References

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Conference Call
Mesoblast will host a conference call to discuss the results beginning at 8.00am EST; 1.00pm BST Monday, November 12; and 12:00am AEDT Tuesday, November 13, 2018.

The live webcast can be accessed via
http://webcasting.boardroom.media/broadcast/5bdfe30db7b1cf2eab18cf12

To access the call only, dial 1 855 881 1339 (toll-free United States), 0800 051 8245 (toll-free United Kingdom), 1 800 558 698 (toll-free Australia) or +61 2 9007 3187 (outside of the United States and Australia).

The conference identification code is 867444.

The archived webcast will be available on the Investor page of the Company's website – www.mesoblast.com

About Mesoblast
Mesoblast Limited (ASX:MSB; Nasdaq:MESO) is a world leader in developing allogeneic (off-the-shelf) cellular medicines. The Company has leveraged its proprietary technology platform to establish a broad portfolio of late-stage product candidates with three product candidates in Phase 3 trials – acute graft versus host disease, chronic heart failure and chronic low back pain due to degenerative disc disease. Through a proprietary process, Mesoblast selects rare mesenchymal lineage precursor and stem cells from the bone marrow of healthy adults and creates master cell banks, which can be industrially expanded to produce thousands of doses from each donor that meet stringent release criteria, have lot to lot consistency, and can be used off-the-shelf without the need for tissue matching. Mesoblast has facilities in Melbourne, New York, Singapore and Texas and is listed on the Australian Securities Exchange (MSB) and on the Nasdaq (MESO). www.mesoblast.com

Forward-Looking Statements
This announcement includes forward-looking statements that relate to future events or our future clinical development and 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 timing, progress and results of Mesoblast and its collaborators' preclinical and clinical studies; Mesoblast and its collaborators' ability to advance product candidates into, enroll and successfully complete, clinical studies; the timing or likelihood of regulatory filings and approvals; 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.

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