

## Cynata Collaborates with World Leading Team on Acute Respiratory Distress Syndrome Project

- New product development collaboration with Critical Care Research Group to investigate Cymerus™ MSCs as a treatment for acute respiratory distress syndrome
- Study to be conducted in association with the Prince Charles Hospital in Brisbane by world leading academic groups
- Funded by a group of bodies including the Queensland State Government
- Cynata's unique MSC technology has potential for the treatment of acute respiratory distress syndrome which has a high unmet medical need with high mortality rates and which affects about 275,000 patients annually in the US alone<sup>1</sup>

**Melbourne, Australia; 11 April, 2017:** Australian stem cell and regenerative medicine company, Cynata Therapeutics Limited (ASX: CYP), has commenced a collaboration with a world leading research team, Critical Care Research Group (CCRG), to investigate Cynata's proprietary Cymerus™ MSCs as a treatment for acute respiratory distress syndrome (ARDS) with extracorporeal membrane oxygenation (ECMO).

ECMO is a treatment used in patients whose lungs are unable to provide an adequate amount of oxygen to the blood. ECMO circulates blood through an artificial lung, oxygenating the blood before putting it back into the bloodstream of a patient.

ARDS is an inflammatory process leading to build-up of fluid in the lungs and respiratory failure. It can occur due to a range of insults, including infection, trauma and inhalation of noxious substances. Importantly, ARDS commonly occurs in previously healthy individuals, and it accounts for approximately 10% of all ICU admissions and almost 25% of patients requiring mechanical ventilation. A recent large-scale study performed in 50 countries, found that patients with ARDS had a hospital mortality of 35%-46%.<sup>2</sup> In addition, survivors of ARDS are often left with severe long term illness and disability.<sup>3</sup>

ECMO has emerged as a valuable treatment adjunct to support the vital organs in patients with severe ARDS, which can provide short-to-medium term mechanical pulmonary support. However, ECMO is not in itself a treatment for ARDS and the mortality among patients supported by it remains high. MSC therapy has attracted attention as a possible treatment for ARDS due to the ability of MSCs to reduce inflammation, enhance clearance of pathogens and stimulate tissue repair. There remains a need to investigate the use of MSCs during ECMO, which is most commonly used in patients with severe ARDS, who are in dire need of rapid and effective treatment.

As part of this new collaboration, Cynata's Cymerus™ MSCs will be evaluated by The Prince Charles Hospital, Brisbane's Critical Care Research Group (CCRG) in the CELTIC Ovine study (Combining Extracorporeal Life Support and Cell Therapy in Critical Illness). The study team will be led by Professor John Fraser and also includes co-investigators from Queen's University Belfast, Queensland University of Technology, The Australian Red Cross and Imperial College London. The study is being funded by the Queensland State Government, the National Health and Medical Research Council (NHMRC), the Intensive Care Society UK, and the Prince Charles Hospital Foundation.

The study will seek to determine if Cymerus™ MSC treatment improves oxygenation in sheep with ARDS supported by ECMO, and to evaluate the effects on lung mechanics, blood flow, inflammation and lung injury, as well as safety. An additional objective is to determine the optimum method of delivering the MSCs. If the study is successful, it is anticipated that the data would support progression to a clinical trial of Cymerus™ MSCs in humans with ARDS undergoing ECMO support.

“We are very optimistic about the potential benefit that MSC therapy can bring to these critically ill patients, and this study in combination with ECMO is a crucial step towards clinical trials. We are delighted that Cynata has joined this collaborative project. Their manufacturing process has the potential to overcome some of the challenges that we have previously identified with donor-derived MSCs,<sup>4</sup> including batch to batch inconsistency and problems with scalability, so we look forward to evaluating their cells in our model”, said Professor Fraser.

“Professor Fraser and his team are world renowned researchers in this field and we are honoured to have the opportunity to collaborate with them, especially on a project that has the potential to radically change outcomes for patients with such a damaging condition. The collaboration adds to our existing preclinical program for the treatment of asthma with the Monash Lung Biology Network and expands our position in the lung disease area”, said Dr Kilian Kelly, Cynata’s Vice President, Product Development.

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## About Cynata Therapeutics (ASX: CYP)

Cynata Therapeutics Limited (ASX: CYP) is an Australian clinical stage stem cell and regenerative medicine company that is developing a therapeutic stem cell platform technology, Cymerus™, originating from the University of Wisconsin-Madison, a world leader in stem cell research. The proprietary Cymerus™ technology addresses a critical shortcoming in existing methods of production of mesenchymal stem cells (MSCs) for therapeutic use, which is the ability to achieve economic manufacture at commercial scale. Cymerus™ utilises induced pluripotent stem cells (iPSCs) to produce a particular type of MSC precursor, called a mesenchymoangioblast (MCA). The Cymerus™ platform provides a source of MSCs that is independent of donor limitations and provides an “off-the-shelf” stem cell platform for therapeutic product use, with a pharmaceutical product business model and economies of scale. This has the potential to create a new standard in the emergent arena of stem cell therapeutics and provides both a unique differentiator and an important competitive position.

## About the Critical Care Research Group and the Celtic Collaborators

The Critical Care Research Group (CCRG) is based at The Prince Charles Hospital, Brisbane, Australia’s largest cardiothoracic specialist hospital. The group has a worldwide reputation for innovative research in the field of cardiorespiratory organ support, including ECMO and mechanical assist devices. The CCRG also hosts the NHMRC Centre for Research Excellence for Advanced Cardiorespiratory Therapies Improving Organ Support (CRE-ACTIONS). The co-location of a state of the art animal laboratory on The Prince Charles Hospital campus allows the group to undertake research in large animal models of cardiorespiratory failure and facilitates translation of research to clinical practice. Through its membership of the global ECMONet organisation, the CCRG, under Prof John Fraser, has built a collaboration with Prof Danny McAuley of Queen’s University Belfast to undertake the CELTIC project. Prof McAuley is a well-established researcher in the field of ARDS and critical care and currently leads a phase I/II clinical trial of MSCs in ARDS. This team has been strengthened by the addition of Dr Nathan Palpant, a noted stem cell biologist based at the Institute for Molecular Bioscience, University of Queensland. Together the CELTIC collaborators are uniquely placed to advance the translation of cell therapy for severe ARDS.

## References

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- <sup>2</sup> Bellani G, Laffey JG, Pham T, Fan E, Brochard L, Esteban A, et al. Epidemiology, Patterns of Care, and Mortality for Patients With Acute Respiratory Distress Syndrome in Intensive Care Units in 50 Countries. *Jama*. 2016;315(8):788.
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