

FOR IMMEDIATE RELEASE:

Umbilical Cord Cells Outperform Bone Marrow Cells in Repairing Damaged Hearts

TORONTO, Ontario (13 November, 2012) - A study published this month by researchers at the University of Toronto and Toronto's Princess Margaret Hospital has shown that cells derived from the umbilical cord, "Human Umbilical Cord PeriVascular Cells" (HUCPVCs), are more effective in restoring heart function after an acute myocardial infarction (in common parlance, a heart attack) in a pre-clinical model than a similar cell population derived from bone marrow

At present, mesenchymal cells, known to release a series of factors that stimulate tissue repair, and control inflammation, are most commonly harvested from bone marrow. But the new study, headed by Dr. Armand Keating, now suggests that umbilical cord cells outperform bone marrow cells in improving heart muscle function.

The study, released in *Cell Transplantation* this month, demonstrates that the cells originating from the tissues surrounding the blood vessels of the human umbilical cord, also known as "Wharton's Jelly," outperformed the current gold standard for stem cell therapies for repairing damage to heart muscles, after an induced heart attack when injected directly into the affected area. Dr. Keating calls the HUCPVC results "statistically and significantly better" than bone marrow cells.



Standard heart function tests measured the effect of the therapy after the cells were injected. The HUCPVC cell therapy was twice as effective at repairing damage to heart tissue than no treatment.

"We are hoping that this translates into fewer people developing complications of heart failure because their muscle function after a heart attack is better," states Keating. Keating and his team will now complete additional pre-clinical studies, and hope to begin clinical trials of the HUCPVC cells on patients within 12-18 months.

Keating is also interested in conducting further research with the umbilical cord cells to overcome the damaging effects of chemotherapy on heart tissue, an agonizing problem for some patients who may be cured of their cancer only to confront heart failure as a result of treatment.

Apart from heart disease, clinical trials with mesenchymal cells are conducted around the world to investigate the treatment of a variety of diseases, including a serious complication of bone marrow transplantation called graft-versus-host disease, autoimmune disorders, neurological diseases and tissue injury arising from lung and liver disease. Today, more than 250 clinical trials are currently being conducted worldwide using mesenchymal cells.

About HUCPVCS

The umbilical cord, normally discarded at the birth of a child, is a rich source of stem cells. As this tissue source is commonly discarded after birth, umbilical cords present none of the ethical, or medical, challenges presented by the use of embryonic cells. Evidence shows that these young cells are more biologically potent than similar types of cells harvested from adult donors.

HUCPVC Stem Cells 'Home Grown'

HUCPVCs also represent an economic advantage to Canada, as the platform technology was developed in Ontario, and is provided to leading researchers free of charge by the company that manufactures the cells, Tissue Regeneration Therapeutics (TRT).

"We have a comprehensive family of international patents to protect this important cell source," says Professor J.E. Davies of the University of Toronto's Institute of Biomaterials and Biomedical Engineering (IBBME) and President of TRT. A pioneer in this relatively new field, Davies created this platform technology by filing his first patent in 2003. The first human clinical mesenchymal cell therapies were performed in 2004.

About Dr. Armand Keating



Dr. Armand Keating is Professor of Medicine, Director, Division of Hematology and Epstein Chair in Cell Therapy and Transplantation at the University of Toronto and also a professor at its Institute of Biomaterials and Biomedical Engineering (IBBME). He is Director of the Cell Therapy Program at Princess Margaret and University Health Network and is the current President of the American Society of Hematology.

About IBBME

The Institute of Biomaterials and Biomedical Engineering (IBBME) is an interdisciplinary unit situated between three Faculties at the University of Toronto: Applied Science and Engineering, Dentistry and Medicine. The Institute pursues research in four areas: neural, sensory systems and rehabilitation engineering; biomaterials, tissue engineering and regenerative medicine; molecular imaging and biomedical nanotechnology; medical devices and clinical technologies.

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