

Stem cell innovation jump-starts circulation

March 8 2012, By Kevin Hattori



Prof. Joseph Itskovitz-Eldor

A stem cell breakthrough at the Technion-Israel Institute of Technology could ultimately benefit human patients struggling to recover from cardiovascular disease, or serious circulatory damage from conditions such as diabetes.

Programming both embryonic and adult stem cells, researchers at the Technion's Rappaport Faculty of Medicine and Rambam Medical Center Campus are the first to produce and multiply cells called pericytes, crucial to the formation of healthy blood vessels.

Led by Prof. Joseph Itskovitz-Eldor – head of the Technion's Berlin Family Laboratory for Stem Cell Research – along with Dr. Ayelet Dar-

Oaknin, the team then injected these pericytes into the injured leg muscles of mice, where blood flow had been almost completely shut off.

Within just three weeks, the pericytes rebuilt a functional system of blood vessels and even regenerated muscle damaged by the lack of oxygen supply – results that hold great hope for treating tissue damage in humans who suffer from heart or vascular disease and a range of other conditions.

“The path to implementation in patients is still protracted” but could be “not too many years away,” said Rambam director and former Faculty of Medicine dean Dr. Rafael Beyar in praising the “huge potential” of the findings.

The pericytes in the spotlight were produced with embryonic [stem cells](#) (from donated fertilized eggs), as well as adult stem cells genetically reprogrammed so they too are “pluripotent,” able to become any type of human cell or tissue. Created from the patient’s own cells, these pericytes can be transplanted to heal tissues without the risk of rejection.

Prof. Itskovitz-Eldor is the ob/gyn department head at Rambam, and director of the Technion’s stem cell lab and Forman Families Center for Excellence in stem cell and tissue regeneration research. His latest findings were published in the American Heart Association journal *Circulation*.

Provided by American Technion Society

Citation: Stem cell innovation jump-starts circulation (2012, March 8) retrieved 21 July 2024 from <https://medicalxpress.com/news/2012-03-stem-cell-jump-starts-circulation.html>

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