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1. World's First Amniotic Stem Cell Bank Opens In Medford

22nd October, 2009

A European biotech company on Thursday opened the world's first amniotic stem cell bank in Medford.

The company, *Biocell Center*, does work in fertility and infant care. CEO Kate Torchilin said the new facility will be the first in the world to collect and store amniotic stem cells for their unique therapeutic properties:

"That is the mission of our company: to offer the opportunity to store the sample to medical centers and physicians who think their patients will benefit from this service," Torchilin said.

Biocell Center has offices in Italy and Switzerland, but says it's opening the amniotic stem cell bank in Medford because of the strong life sciences sector in Massachusetts.

Biocell website : http://www.biocellcenter.com/en/

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Source: Boston Globe

2. New technique may help turn adult cells into stem cells faster

19th October, 2009

Scientists from The Scripps Research Institute have developed a new method that would hasten the process of creating cells from human adult tissue, without the use of embryonic cells.

According to lead researcher Professor Sheng Ding, the new technique is 200 times more efficient, twice as fast as conventional methods and a lot more safer in transforming adult human cells into stem cells or "induced pluripotent stem cells (iPS).

"Both in terms of speed and efficiency, we achieved major improvements over conventional conditions," Nature quoted Dr Ding as saying.

"This is the first example in human cells of how reprogramming speed can be accelerated. I believe that the field will quickly adopt this method, accelerating iPS cell research significantly," Ding added.

During the study, Ding focused on manipulating a naturally occurring process in cells, in particular in a type of adult cell called fibroblasts, which give rise to connective tissue.

This naturally occurring process called MET (mesenchymal to ephithelial cell transition) pushes fibroblasts closer to a stem-cell-like state. The team tested various drug-like molecules that can inhibit the TGFb (transforming growth factor beta) and the MEK (mitogen-activated protein kinase) pathways, known to be involved in the MET process.They have discovered two chemicalsALK5 inhibitor SB43142

and MEK inhibitor PD0325901, which when used in combination were highly effective in promoting the transformation of fibroblasts into stem cells.

"This method is the first in human cells that is mechanism-specific for the reprogramming process," said Ding.And the two-chemical technique bested the efficiency of the classic genetic method by 100 times, he added.The findings appear in online issue of the journal Nature Methods.

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Source: DNA India

3. U. Mich. awarded $6.8M in grants for stem cells

22nd October, 2009

The University of Michigan has received 13 federal stimulus grants worth $6.8 million for stem cell research — a sign of the state's growing clout since voters last year eased restrictions in the emerging field that seeks treatments and cures for numerous diseases.

The Ann Arbor university released the findings Thursday after analyzing about $5 billion in grants awarded this year by the National Institutes of Health as part of the $787 billion economic stimulus program. That is part of $10.4 billion the NIH received from the program for grants that must be awarded by Sept. 30, 2010.

Sean Morrison, director of the university's Center for Stem Cell Biology, said the state and its leading institution for stem cell research raised their profiles since the passage last November of Proposal 2, which changed state law to allow people to donate embryos left over from fertility treatments for scientific research.

He said the school's efforts also have been boosted by President Barack Obama's executive order earlier this year to end limits on using federal dollars for stem cell research. It reversed former President George W. Bush's Aug. 9, 2001 directive that banned federal funding for research into stem lines created after that date.

"The passage of Proposal 2 made it possible for millions of dollars in new resources to flow into the University of Michigan to be invested into ... stem cell research," Morrison said.

The university is among the leading academic recipients for the stem-cell research grants, alongside Johns Hopkins University, University of Wisconsin, Harvard University and the California university system.

The grants are among more than 260 stimulus awards the University of Michigan has received to date from the National Institutes of Health in all areas. Overall, the state of Michigan has received 395 stimulus grants through the NIH, placing it ninth among states.

University of Michigan's research uses adult and embryonic stem cells, as well as adult cells that have been reprogrammed to behave like embryonic stem cells.

Morrison was awarded $744,000 to examine the potential of using human embryonic stem cells to develop a treatment for Hirschprung's disease, a birth defect related to the nervous system regulating intestinal functionOther grant recipients include dentistry professor Russell Taichman, who received $971,456 for a two-year study that will use reprogrammed adult stem cells to heal and restore facial and skull tissues following disease or trauma; and cardiovascular medicine professor Mario Delmar, who received $500,000 to examine a type of cardiac stem cell involved in forming scars within the heart.

Many researchers and advocates say stem cells, which can turn into any organ in the body, hold promise for treatments and cures for cancer, diabetes, spinal cord injury and Lou Gehrig's disease. Critics oppose the destruction of human embryos and fear such work will not be properly regulated.

Morrison said the university has spent most of the past year since the passage of the proposal clearing the hurdles imposed by "rational" regulations stemming from the state and federal actions. The school has constructed new research laboratories and is hiring new faculty and researchers.

He said the latest round of federal funding "really does stimulate biomedical research in important ways in this country."

"Our ability to do research has really declined over the past 10 years, during the Bush administration," he said. "This new money coming into the system is really coming at an important time to reverse that decline."

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Source: The Associated Press

4. Harvest Technologies Announces FDA Approval

22nd October, 2009

This is a two phase 42-patient 'feasibility'clinical trial using the company's BMAC System to concentrate autologous bone marrow cells to treat patients with congestive heart failure undergoing treatment with

coronary artery bypass grafting (CABG) Surgery. The BMAC System is a point-of-care device used in the operating room to concentrate patient's own (autologous) bone marrow stem cells in approximately 15 minutes. The study's design provides for randomization of subjects into two study cohorts: Treatment Group who will have the Harvest cellular composition injected into the myocardium after CABG surgery and Control Group who will receive only the CABG surgery.

Congestive heart failure (CHF) has emerged as a major chronic disease among patients in the United States. About 400,000 new patients develop CHF each year. Morbidity and mortality rates are high; annually, approximately 900,000 patients require hospitalization for CHF, and up to 200,000 patients die from this condition. The average annual mortality rate is 40-50% in patients with severe (New York Heart Association [NYHA] class IV) heart failure. CHF accounts for over 10 million office visits, 6 million hospital days and $30 billion in direct costs each year. The initial stages of heart failure are managed with medical therapy and the end-stage heart failure is managed with surgical procedures in addition to medical therapy. The "gold standard" surgical treatment for myocardial revascularization is coronary artery bypass grafting (CABG).

Although surgical and catheter based revascularization of ischemic myocardium can treat angina, reduce the risk of myocardial infarction, and improve function of viable myocardium, these treatments can not restore the viability of severely ischemic and/or necrotic myocardium. Autologous cell therapy has been studied as an innovative treatment option for this patient population. Recent discoveries showing that primitive, pluripotent stem/progenitor cells may differentiate into functional myocardial or vascular tissue have ignited great interest and sparked studies utilizing

these cells as a treatment strategy for acute myocardial infarction and chronic ischemic heart disease. Several papers have shown that autologous bone marrow may be the most practical and safest source for these reparative cells, as pre-clinical data suggest that subsets of bone marrow derived cells may be able to generate both functional cardiomyocytes and blood vessels.

However, two major obstacles associated with autologous adult stem cell therapy have been the lack of a simple, practical method for integrating cell therapy within the clinical setting and credible scientific-based, randomized controlled studies. "Our BMAC technology is making the benefit of cellular therapy available right now for European physicians," said Gary Tureski, President of Harvest Technologies. "They are able to harvest and concentrate autologous adult stem cells easily and quickly, at the point of care -- thereby enabling them to develop cellular therapy treatments for orthopaedic and vascular diseases, today. We believe that this experience will prove to be a major benefit to cellular therapy approaches for cardiac disease."

Principal Investigator Dr. Amit Patel, MD, associate professor of surgery at the University of Utah School of Medicine, will lead this U.S. clinical study. "Having a methodology for concentrating a composition of bone marrow cells in the operating room represents the next phase in the evolution of cell based therapies for cardiac disease. The Harvest rapid bedside method can do in minutes what other methodologies used in our first series of clinical trials needed hours to complete."

Harvest Technologies is a privately held company based in Plymouth, Mass.

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Source: ***Los Angeles News***

5. Stem cell miracle by city docs of Kolkata

17th October, 2009

Stem cell transplants from a single donor are not new. But, in what could be a pathbreaking initiative in the field of bone marrow transplant, doctors at a private hospital in the city have conducted a stem cell transplant (SCT) using the umbilical cord blood of three different donors. The first ever multiple-unit SCT in the country was conducted on an 18-year-old boy in an advanced stage of aplastic anaemia.

Aman Khandelwal has been suffering from the disorder for around a year-and-a-half. The boy, from Maunath Bhangar near Varanasi, had collapsed during a PT class in February last year. He was initially treated for fever and weakness.

When there was no improvement, his blood was examined. It was then that doctors found that he had a very low count of haemoglobin. Doctors gave him iron capsules, but the haemoglobin continued to dip, until he had to be given a blood transfusion.

Aman was then taken to Sanjay Gandhi Post Graduate Institute of Medical Sciences, Lucknow, where an examination of his bone marrow confirmed that he had aplastic anaemia, a blood disorder in which the bone marrow stops producing blood cells and platelets. Aman's father Nirmal then took the boy to Bombay Hospital.

When several rounds of "immuno-suppressant" medication and subsequent blood transfusions did not

work, doctors at Bombay Hospital gave up. Six months had passed by then, and Rs 40 lakh was already spent. The ailment had also proceeded to an advanced stage. Aman's parents took him home with no hope that their only son would survive.

That is when Aman's family chanced upon a newspaper report about SCT on aplastic anaemia at Netaji Subhash Chandra Bose Cancer Research Institute (NSCBCRI), Kolkata. "I wanted to live on, and my parents saw a ray of hope," says Aman.

Aman was brought to NSCBCRI in September. By then, his condition had become so severe that he was bleeding from his eyes and gums. "We immediately decided to go for multiple-unit SCT. At such an advanced stage, this was the only resort. Though there were risks involved, they were worth taking," said NSCBCRI medical director Dr Ashis Mukhopadhayay. The doctors got reference of a same type of transplant in a cancer research institute in Seattle on advanced leukemia patients, which emboldened them.

A crack team of doctors was formed, which included Ritwik Pandey, Pinaki Ranjan Gupta, Ujjal Roy, S K Biswas and M Guin. Doctors Deepa Choudhury, Prasenjit Choudhury and Kushabrati Ghosh provided the three units of cord blood. Aman was admitted on September 27 and the transplant was done over three days. The total cost of treatment? Rs 5 lakh.

"In patients with severe aplastic anaemia, there is about 50% chance of rejection in case of single-unit SCT. The risk of multiple-unit SCT is that the patient has a chance of developing graft-versus-host diseases. But this can be taken care of with proper medication," said Mukhopadhyay.

Aman will stay in hospital for three weeks. He is expected to be able to get back to school in another six months.

"I miss school immensely. My heart is always at the basketball court and the cricket field. Wish me luck, so that I could go back to school again," said the Class XI student.

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Source: The Times of India

6. Growing Cartilage From Stem Cells

22nd October, 2009

Using adult stem cells from bone marrow and skin as well as human embryonic stem cells, Athanasiou chair of the UC Davis Department of Biomedical Engineering and his colleagues, have already grown

cartilage tissue in the lab. Now they are experimenting with various chemical and mechanical stimuli to improve its properties.

Cartilage is one of the very rare tissues that lacks the ability to heal itself. When damaged by injury or osteoarthritis, the effects can be long-lasting and devastating.

"If I cut a tiny line on articular cartilage (the cartilage that covers the surfaces of bones at joints), it will never be erased," Athanasiou said. "It's like writing on the moon. If I go back to look at it a year later, it will look exactly the same."

Work that Athanasiou's group began in the early 1990s at Rice University has resulted in the only FDA-approved products for treatment of small lesions on articular cartilage. (In total, Athanaisou's patents have resulted in 15 FDA-approved products.)

"This will be live, biological cartilage that will not only fill defects, but will potentially be able to resurface the entire surface of joints that have been destroyed by osteoarthritis," Athanasiou said. Currently, joint replacements using metal and plastic prosthetics are the only recourse for the one in five adults who will suffer major joint damage from osteoarthritis.

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Source: Science Daily