

LifeCell – Daily News Update

October 23, 2009

Key Industry News:

Publication	sciencedaily.com
Headline	<u>Identifying Safe Stem Cells To Repair Spinal Cords</u>
Gist of the article	<p>Adult stem cells tested for defects before being implanted in the injured spinal cords of mice helped the animals recover with no cancerous side effects, according to new research. In recent years, scientists found that some experimental stem cell therapies can cause cancerous tumors. Pre-screened cells could result in potentially life-saving treatments without such side effects.</p> <p>These new findings were presented at Neuroscience 2009, the annual meeting of the Society for Neuroscience and the world's largest source of emerging news about brain science and health. "We tried to identify induced pluripotent stem cells from adult tissue that would be safe when applied to cell therapy for central nervous system disorders," said Masaya Nakamura, MD, PhD, at Keio University School of Medicine, a co-author of the study. "These results suggest that properly pre-evaluated cells may be a promising source for future transplantation therapy."</p> <p>Here, the authors investigated the possibility of making transplantation therapies safer and more efficient by examining different types of stem cells. They generated 36 induced pluripotent stem cell clones, which differed in their origins and other characteristics. They found that the cell's origin was a crucial indicator of whether the cells would result in tumors.</p> <p>Results showed that immature (undifferentiated) stem cells are more likely to form tumors than mature ones. The transplantation of "safe" cells into mice with spinal cord injuries resulted in the formation of new neurons, while "unsafe" cells sped recovery for a short period but ultimately formed tumors.</p> <p>"This study confirms that before human clinical trials go forward involving treatment of central nervous system disorders with induced pluripotent stem cells, pre-evaluating each cell clone carefully is essential," Nakamura said.</p> <p>Research was supported by the project for realization of regenerative medicine by the Ministry of Education, Culture, Sports, Science and</p>

	Technology of Japan.
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Publication	journalstar.com
Headline	<u>UNMC announces stem cell breakthrough</u>
Gist of the article	<p>The University of Nebraska Medical Center on Thursday announced what it called a major stem cell research breakthrough by one of its scientists.</p> <p>Iqbal Ahmad, professor of ophthalmology and visual sciences, has reprogrammed regular body cells to resemble embryonic stem cells without the use of potentially harmful foreign genetic material, UNMC said.</p> <p>Ahmad's research suggests cells taken from a patient's eye can be reprogrammed to replace cells lost to degenerative diseases.</p> <p>In a news release, Ahmad said his findings would not have been possible without embryonic stem cell research.</p> <p>"We need to know how embryonic stem cells induced adult stem cells to function like themselves, and we can't know this if we don't continue with embryonic stem cell research," he said.</p>

Publication	irishtimes.com
Headline	<u>Group seeks to furnish facts on stem cells</u>
Gist of the article	<p>DEBUNKING FALSE medical claims, educating the public and lobbying government will be key aims of a new body launching today, the Irish Stem Cell Foundation.</p> <p>A group of Irish doctors and scientists has established the foundation and opened a website, www.irishstemcellfoundation.org, that goes live today.</p> <p>"We are an independent, not-for-profit organisation. We want to give the facts as scientific facts," stated co-founder Dr Stephen Sullivan, originally from Cork and formerly a researcher in the Harvard Stem Cell Institute in Boston.</p> <p>He joined with Prof Orla Hardiman, consultant neurologist and epidemiologist at Beaumont Hospital and Health Research Board clinical scientist, and with Prof Louise Kenny, professor of obstetrics at University College Cork and a consultant obstetrician and gynaecologist at Cork University Maternity Hospital, to establish the foundation.</p> <p>The motivation to form the body came from public confusion about stem cells, Prof Hardiman said yesterday. The foundation was needed "so that people will understand the benefits and limitations of stem cells", she stated.</p>

	<p>“It will put a degree of reality into the claims made for stem cells in neurological disease. People often have an over-optimistic view of what can be achieved.”The body would most likely become involved in advocacy, but could also help foster debate on the issues involved, Prof Hardiman said.</p> <p>“Part of the remit is to offer up a debate on stem cells and also look at the exploitation of patients going abroad.”</p> <p>Dr Sullivan was scathing about the misleading claims being made for untested stem cell treatments offered abroad. Many patients were tempted to spend money to receive therapies that had not been shown to be safe.</p> <p>“These are not even being done in the lab, let alone with patients,” he said. “It is becoming a huge industry and they are offering treatments that not only are unsubstantiated but are dangerous. People are paying huge amounts of money for a false hope.”</p> <p>Last April, the parents of a child with a rare medical condition spent €60,000 for controversial stem cell treatments in China.</p> <p>The child’s mother, Maria Kieran, defended the family’s choice, acknowledging that there was a possibility the treatment would make no difference at all.</p> <p>Dr Sullivan said the website would provide scientifically accurate, up-to-date information about such treatments and whether they could be trusted. It would also serve as a source of information for the media, with experts based both here and abroad available to comment on issues raised.</p> <p>The website will also provide links to other scientifically accurate internet websites such as that for the International Society for Stem Cell Research, he said. “The idea came from other stem cell networks such as the New York Stem Cell Foundation. They are nodes of experts and there was no node in Ireland,” Dr Sullivan stated.</p> <p>The long-term aim was to lobby government for the introduction of legislative controls that would open up stem cell research here. University College Cork’s governors voted last October to agree a code of practice to allow embryonic stem cell research.</p>
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Publication	sciencedaily.com
Headline	<u>Reprogramming Patient's Eye Cells May Herald New Treatments Against Degenerative Disease</u>
Gist of the article	Scientists have overcome a key barrier to the clinical use of stem cells

with a technique which transforms regular body cells into artificial stem cells without the need for introducing foreign genetic materials, which could be potentially harmful. The research, published in Stem Cells, suggests that cells taken from a patient's eye can be "reprogrammed" to replace or restore cells lost to degenerative diseases.

The research, led by Professor Iqbal Ahmad and co-authors from the University of Nebraska Medical Center, is the first proof in principle that somatic, or body cells, can be reprogrammed into induced pluripotent stem cells (iPSCs) simply through the influence of the microenvironment in which the sampled cells are cultured. Until now genetic materials were introduced into somatic cells to re-programme them to become pluripotent, enabling them to generate cells of all three embryonic lineages.

"Our findings provide evidence for an emerging view that somatic cells may be reprogrammed safely and simply by defined chemicals and other factors, which may facilitate their clinical use," said Ahmad. "The next step is to know how robust the reprogramming is and what existed within the microenvironment to cause it."

The team sampled progenitor eye cells, which regenerate the eye's cornea, from laboratory rats. By reprogramming them to resemble stem cells they acquired the properties necessary to replace or restore neurons, cardiomyocytes, and hepatocytes, cell types which are degenerated in Parkinson's disease, heart disease, and liver disease.

This reprogramming technique may allow 'autologous cell transplantation', where the donor of the cells is also the recipient. This is preferable to using cells from another person which may cause the patient's immune system to reject the transplanted cells.

Also, because this technique involves the use of iPSCs derived from adult eye cells and not embryonic stem cells (ES) it side steps many of the ethical dilemmas which have embroiled stem cell research.

"This research shows that it is possible to take cells from a patient's eye without affecting vision and reprogram them for use in autologous cell therapy to replace or rescue degenerating cells," concluded Ahmad, "this would allow us to circumvent ethical issues and the problems caused by the immune system rejecting foreign cells."