

**LifeCell – Daily News Update**

**October 22, 2009**

**Key Industry News:**

Publication	<b>sciencedaily.com</b>
Headline	<a href="#"><u>Growing Cartilage From Stem Cells</u></a>
Gist of the article	<p>Damaged knee joints might one day be repaired with cartilage grown from stem cells in a laboratory, based on research by Professor Kyriacos Athanasiou, chair of the UC Davis Department of Biomedical Engineering and his colleagues.</p> <p>Using adult stem cells from bone marrow and skin as well as human embryonic stem cells, Athanasiou and his group have already grown cartilage tissue in the lab. Now they are experimenting with various chemical and mechanical stimuli to improve its properties.</p> <p>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.</p> <p>"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."</p> <p>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, Athanasiou's patents have resulted in 15 FDA-approved products.)</p> <p>"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.</p>

Publication	<b>jsonline.com</b>
Headline	<a href="#"><u>Stem cell pioneer predicts reprogramming will change drug development</u></a>
Gist of the article	Stem cell pioneer James Thomson of the University of Wisconsin-Madison told members of the Milwaukee Academy of Medicine that

	<p>techniques that allow scientists to change human skin cells into something almost identical to embryonic stem cells will change the way new drugs are developed in the next 10 or 20 years.</p> <p>During a half-hour talk Tuesday night, Thomson guided members of the academy through the revolutionary developments in cell biology - - from his isolation of embryonic stem cells in monkeys and then humans to the cloning of Dolly the sheep by the Scottish scientist Ian Wilmut and finally the reprogramming revolution ushered in by Thomson, his UW collaborator Junying Yu and Japanese scientist Shinya Yamanaka.</p> <p>Thomson, who was awarded the academy's 2009 Distinguished Achievement Award, cautioned that the stem cell field is in danger of falling prey to the same kind of hype that greeted the gene therapy field. Nonetheless, he predicted stem cells and reprogramming "will change human medicine in ways we cannot fully predict."</p> <p>Thomson did stress that stem cell advances are most likely to revolutionize medicine in ways that don't make the front page of a newspaper: for example, by allowing scientists to watch diseases unfold at the cellular level; and by allowing pharmaceutical companies to test thousands of drugs against sick or damaged cells in a laboratory dish.</p> <p>Although far more attention is paid to the idea of one day treating diseases through cell transplantation, Thomson said that is less likely to take place anytime soon and will probably be too costly for many patients.</p>
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Publication	<b>Prweb.com</b>
Headline	<a href="#"><u><b>Spinal Cord Injury Patients Demonstrate Progress after Stem Cell Therapy at the XCell-Center</b></u></a>
Gist of the article	<p>The XCell-Center has released results from a follow-up study of 115 spinal cord injury patients treated with autologous bone marrow stem cells. Overall, nearly 60% improved following treatment.</p> <p>These results support the premise that spinal cord injury patients can be treated safely and effectively with autologous stem cell therapy.</p> <p>The most common improvement, reported by more than 6 out of every 10 patients, was the return of feeling to the hands, feet, arms, legs or trunk.</p> <p>Muscle strength and endurance improved in over 50% of those treated and more than 4 in 10 patients reported a decrease in muscle spasticity. "We returned home and one week after the transplant I</p>

	<p>noticed my spasticity had decreased by about 85% and I could now put my feet flat on the floor... In March of 2009, I had my Baclofen pump removed," reported Mrs. Patricia Miller, who underwent her first treatment in December, 2008.</p> <p>Around 30% regained bowel and/or bladder function following treatment. A similar percentage experienced improvements in fine motor skills.</p> <p>"These impressive results demonstrate the significant impact that stem cell therapy has for a majority of spinal injury patients who undergo treatment," remarked Dr. Hans de Munter, the XCell-Center's Chief Scientific Officer.</p> <p>The treatment begins by collecting a small amount bone marrow from the patient's hip bone using a thin needle under local anesthesia. The stem cells are then separated from the bone marrow at the XCell-Center's EU certified cGMP laboratory (current good manufacturing process). Before the cells leave the lab, they are counted and their vitality is confirmed. The last step of the treatment is the minimally invasive implantation procedure, which consists of injecting the stem cells into the patient's spinal fluid using a spinal needle under local anesthesia.</p> <p>The cost for spinal cord injury treatment starts at 7,545 Euros.</p>
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Publication	<b>sciencedaily.com</b>
Headline	<b><u><a href="#">New Method To Coax Retinal Cells From Stem Cells</a></u></b>
Gist of the article	<p>Researchers have developed a new method for identifying retinal precursor cells derived from human embryonic stem cells (those from embryonic tissue) and induced pluripotent stem cells (those from adult skin cells). These precursor cells represent the earliest stages of retinal development. The new method results in a greater yield of retinal cells from stem cells and could be used to better understand disease processes and realize effective treatments for eye disorders.</p> <p>The 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.</p> <p>Problems associated with retinal degenerative diseases are due to the injury and death of neurons, or support cells that can't regenerate. The cell types primarily affected are the light-sensing rod and cone photoreceptors and the adjacent retinal pigment epithelium, which maintains proper photoreceptor health and function. If these cells could be replaced or bypassed, sight could be restored.</p> <p>"So far, a number of human cell sources have been examined to see if they produce multiple retinal cell types, but most candidates have</p>

	<p>proven inadequate," said Jason S. Meyer, PhD, at University of Wisconsin, the study's lead author. "In comparison, human stem cells have produced cells that are clearly of a retinal nature."</p> <p>When the stem cells were isolated and matured, specific retinal cell types could be identified, including photoreceptors and retinal pigment epithelium. Using this new system, the authors could regulate the production of certain cell types by adding or removing particular compounds to the cells. "This ability could aid in the discovery of new therapeutic approaches to a variety of disorders affecting the retina," Meyer said. "These findings could lead to treatments for other neurological disorders, in addition to eye diseases."</p>
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