

**LifeCell – Daily News Update**

**October 29, 2009**

**Key Industry News:**

Publication	sciencedaily.com
Headline	<a href="#">Stem Cell Therapy May Offer Hope For Acute Lung Injury</a>
Gist of the article	<p>Researchers at the University of Illinois at Chicago College of Medicine have shown that adult stem cells from bone marrow can prevent acute lung injury in a mouse model of the disease.</p> <p>Acute lung injury (ALI) is responsible for an estimated 74,500 deaths in the U.S. each year. ALI can be caused by any major inflammation or injury to the lungs and is a major cause of death in patients in hospital ICUs. There is no effective drug treatment.</p> <p>In ALI, the layer of cells that forms the lining of the blood vessels surrounding the lung's air sacs is damaged, allowing fluid to leak in and fill the sacs. Repair of these breaks in the endothelium, or lining, is complicated by the fact that endothelial cells are long-lived, says Kishore Wary, UIC assistant professor of pharmacology and lead author of the study. Turnover of new cells takes as long as two to five years, and few of the precursor cells needed for replacement circulate in the body at any given time.</p> <p>"The stem cells that might be able repair the damage caused by ALI are simply not on hand," he said.</p> <p>Wary and his colleagues were able to identify progenitor stem cells in the bone marrow of mice that could prevent and treat experimentally-induced ALI. These progenitor stem cells, named Flk-1 and CD34 for the proteins on their surfaces, constitute a very small percentage of the stem cell population in the bone marrow, but the researchers were able to develop a way of culturing the cells that increased their numbers and their "stickiness."</p> <p>The stem cells stud their surface with molecules called integrins that allow the cells to stick to their targets and affect the repair. "Increasing this capacity for stickiness in our culture system was likely to make the stem cells more effective in repair," Wary said.</p> <p>When mice that had been injected with a compound that causes ALI were injected with the purified and cultured Flk and CD34 stem cells, the progenitor cells were able to repair the lung injury, prevent fluid build-up, and led to improved survival.</p> <p>The mouse disease model not only demonstrated that stem cell treatment is a promising therapy for ALI, Wary said, "but also provided us with the means to understand how these progenitor cells</p>

	<p>did their repair work. These therapeutic cells employed integrins to stick to the site of injury and turn on cellular and molecular repair machinery," he said.</p> <p>The researchers hope to explore the possibility of using stem cell therapy in human acute lung injury.</p> <p>The research was supported by grants from the National Institutes of Health. Stephen M. Vogel, Sean Garrean, Yidan D. Zhao and Asrar B. Malik, all of the department of pharmacology in the UIC College of Medicine, also contributed to the study.</p>
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Publication	honoluluadvertiser.com
Headline	<a href="#">Kahala salon using cow stem cells to reverse aging</a>
Gist of the article	<p>A salon in Kalaha is using bovine stem cells to make its clients look younger.</p> <p>Helen's Haven of 4819 Kilauea Ave., owned by medi-esthetic specialist Helen Rapoza, is the first salon in Honolulu to offer what she calls "cryo-stem cell therapy" to reverse aging.</p> <p>The cells are extracted from the amniotic fluid of cows in an organically fed herd in France. This is done in the very early stages of pregnancy.</p> <p>"The cells do not have the bovine DNA yet," said Rapoza. She said that while the cells are not specific to the cow's genetic composition they do have the DNA information that allows them to convert to human genetic composition.</p> <p>After extraction from the amniotic fluid of the cows, the cells are cryogenically preserved, put in vials and shipped.</p> <p>Rapoza applies the cells topically to the damaged skin of clients.</p> <p>She said that when a new cell comes into contact with an old cell it leads to the reprogramming of the old cell. "Your more mature cells actually increase their activity," she said.</p> <p>Rapoza said the stem cells are very fragile so she does not rub them into the face but taps them in.</p> <p>After she finishes each treatment Rapoza advises her client to be very careful. "You don't want to do a lot of rubbing or scrubbing the day of the application because you can disturb the cells and break the little membranes and they won't reproduce," she said. She recommends one session a week for three weeks and then bimonthly for nine months. She recommends one session a week for three weeks and then bimonthly for nine months.</p>

	<p>Rapoza's clients have found immediate results in degrees and much better results over a 144-hour period.</p> <p>Unlike Botox injections, there is no discomfort associated with stem cell treatments. "There's no pain to this," said Rapoza. "Our clients just relax and some even nap." The treatments last about 30 minutes.</p>
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Publication	mercurynews.com
Headline	<a href="#">Stanford research: Artificial germ cells showing promise</a>
Gist of the article	<p>Stanford University researchers have fabricated the cells that make sperm and eggs, the components of human reproduction, shedding light on a little-understood stage of early human development and offering hope for preventing infertility, genetic disease and birth defects.</p> <p>Through a complex and delicate process, the research team nudged embryonic stem cells to grow up a little, maturing into the so-called "germ cells" that are more fundamental to conception than candlelight and soft music.</p> <p>The team members don't want to build a baby. Rather, they plan to study the early steps of human development, when events sometimes go terribly awry and create disease.</p> <p>They also hope that lab-produced sperm and eggs could someday help people who can't make their own and are thus unable to conceive. If these sperm and eggs are functional, they could be used in in vitro fertilization.</p> <p>"Human development is a very complex process, and we've never had a system before to study it in the lab, to see the things we can see now," said lead investigator Renee Reijo Pera, who directs Stanford's Center for Human Embryonic Stem Cell Research and Education Center. The research was published in Wednesday's issue of the journal Nature.</p> <p>Embryonic stem cells are versatile building blocks that, given the right conditions, can be induced to morph into a variety of more mature cells. In leading labs around the country, they've turned into tissue types such as neurons, muscle and the lining of the gut.</p> <p>The new work, which builds on previous research involving genes linked to infertility, is funded in part by the California Institute for Regenerative Medicine, created by passage of Proposition 71 in 2004. Embryos were donated by families undergoing in vitro fertilization.</p> <p><b>Infertility help</b></p> <p>Previous research yielded only immature versions of these reproductive germ cells. The Stanford team went further, inducing these cells to go all the way through the reductional process of meiosis so the cells contain just one copy of a chromosome, a critical step in sexual reproduction.</p> <p>The germ cells even made immature sperm, called spermatids —</p>

those sleek and specialized agents that hold the secrets to NASCAR, beef jerky and the programming of DVD players.

The next step is to try to produce oocytes, the eggs made by women.

"It is a very nice paper. I think it is particularly important to show the production of haploid cells," like spermatid, "that have one copy of each chromosome, not two," said Dr. Arnold Kriegstein, director of the Eli and Edythe Broad Center of Regeneration Medicine and Stem Cell Research at the University of California-San Francisco.

"I think it provides a road map for how to explore a complicated process like meiosis," said Kriegstein. "Problems with fertility may be due to problems with these processes."

Until now, the study of infertility has been hampered by the fact that the human reproduction cycle cannot be studied very well using animals.

"Humans have a unique reproductive system," said Reijo Pera, professor of obstetrics and gynecology at Stanford University School of Medicine. "We've relied on studies in mice "... but the reproductive genes are not the same." It is not yet known whether lab-made sperm could actually fertilize an egg and create a new person.

But if so, someday it may be possible to turn germ cells into little factories that crank out sperm or eggs for people who can't make their own. About 10 to 15 percent of couples are infertile, and about half of those problems due to an inability to make reproductive cells.

"We are excited about helping those who have difficulty having children due to few or no eggs or sperm," Reijo Pera said. She predicted that in two to five years it will help scientists to better understand and diagnose infertility.

#### Boon to research

At this point, it is not ethical or feasible to make a child using synthesized sperm or eggs.

That's because the germ cells created by the Stanford team carry foreign DNA, called transgenes, that were needed to move the experiment forward.

"We don't make children that carry foreign DNA. It's not ethical; we don't know where the DNA could land" during development, said Reijo Pera. In future research, they hope that DNA won't be necessary.

In addition, she said, scientists are waiting for guidelines and regulations regarding how to go about using artificial germ cells.

Will the cells usher in a new era of single parenting? No, according to the team — because one germ cell cannot create both eggs and sperm. Germ cells are either male or female, depending on the gender of the embryo from which they are derived.

But in the lab, they are certain to accelerate research.

Abundant and readily available germ cells will make it much easier to study birth defects. Down syndrome, for instance, is thought to be

	<p>linked to developmental errors in eggs, sperm or early embryos. Scientists can also use germ cells to directly study the impact of environmental toxins like pollution.</p> <p>The cells could even offer insights into late-in-life diseases, which may have their genesis in faulty embryonic programming. There is increasing evidence that genetic flaws set the stage for illnesses like diabetes, cardiovascular disease or neurodegenerative ailments such as Parkinson's disease.</p> <p>By learning what nature does — and repeating it in a Petri dish — researchers can find out what goes wrong, and eventually how to correct it.</p>
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Publication	trak.in
Headline	<a href="#">Turmeric can help fight cancer</a>
Gist of the article	<p>An extract found in the yellowish orange Indian spice turmeric can kill oesophageal cancer cells, say scientists.</p> <p>In the research, boffins found that when they treated oesophageal cancer cells in the laboratory with curcumin – a chemical in tumeric – it started to kill cancer cells within 24 hours. The cells also began to digest themselves.</p> <p>Cancer experts at the Cork Cancer Research Centre said the findings in the British Journal of Cancer could help doctors find new treatments, reports The BBC.</p> <p>Dr Sharon McKenna said: “Scientists have known for a long time that natural compounds have the potential to treat faulty cells that have become cancerous and we suspected that curcumin might have therapeutic value.”</p> <p>Dr Lesley Walker, director of cancer information at Cancer Research UK, said: “This is interesting research which opens up the possibility that natural chemicals found in turmeric could be developed into new treatments for oesophageal cancer.</p> <p>“Rates of oesophageal cancer rates have gone up by more than a half since the 70s and this is thought to be linked to rising rates of obesity, alcohol intake and reflux disease so finding ways to prevent this disease is important too.”</p>