findings
The Newsletter of the Nebraska Coalition for Lifesaving Cures Volume 8, Issue 5
Nebraska Coalition for Lifesaving Cures

# Regents Expected to Vote on Stem Cell Research Policy

**At their next board meeting, set for November 20, 2009, the University of Nebraska Board of Regents is expected to vote to change its long-standing research policy and in effect, ban the use of embryonic stem cells.**

**It is important that all those who support stem cell research make their voices heard by contacting the Board of Regents. Log on to our website at www.nebraskacures.com to send an email to the Regents.**

# A Conversation About Stem Cell Research

*Recently Sandy Goodman, President of the Nebraska Coalition for Lifesaving Cures sat down with Lawrence Goldstein, PhD, Professor of Cellular and Molecular Medicine at the University of California, San Diego, School of Medicine for a discussion about embryonic stem cell research. The following are excerpts from that interview.*

**Lawrence Goldstein, PhD, and Sandy Goodman, President NCLC**

**Q.** Tell us about your work with stem cell research.

**A.** I am a biological scientist who works on cells in the brain and cells in the blood and how they malfunction in different types of diseases. Several years ago we reached a point in our research where we felt that we had done as much as we could do with animal versions of these diseases…because after all our goal was not to cure leukemia or Alzheimer's disease in a mouse…our goal was to cure leukemia or Alzheimer's or Lou Gehrig's disease in people.

**Q.** Do you only use stem cells in your research?

**A.** No, we use the range of kinds of cells…in fact we try to use the best kinds of cells for each aspect of the problem we are trying to solve. So in our experiments on leukemia we use a mixture of cord blood in some experiments, we use bone marrow adult stem cells in some experiments, but we also use embryonic stem cells in some experiments, because there are processes that we think are defective in leukemia that we believe we can best reproduce using embryonic stem cells and the technologies we have available so that we can then test our ideas about leukemia and hopefully someday develop better, more effective drugs for leukemia.

**Q.** There has been a lot of discussion about reprogrammed stem cells. When they first came out many people suggested this was the answer, eliminating the need for the use of any other type of stem cells. What is the reality of this issue?

**A.** Reprogrammed stem cells, like all stem cells are really marvelous cells. However, like all new technologies, there is a great deal we don't know about these reprogrammed cells and our experience already is that they are not identical to human embryonic stem cells in their behavior, in their stability and we have some concerns about whether they are completely genetically normal and that it something they are investigating at the moment. So, I think most professional scientists working in this area would tell you we really need to work with both to solve the problems that we face – one teaches us a lot about the other and to declare now that one will ever replace the other is completely jumping the gun. The way we find things out – we do experiments. We ask careful questions about the property. It takes months – sometimes years – to answer these kinds of questions.

**Q.** While we may never know the answer to this, is it a fair statement to say that the only way to know we no longer need embryonic stem cells in research is to continue to use them in research?

**A.** I think that's right. That is the only way you can find out what unique properties they have…how they will contribute…how they won't contribute…what are their limits…what are their advantages and liabilities. But the experience thus far is that the problems in human disease that we are trying to solve are very difficult. Don't underestimate how tough these are. We work for years on some of these problems working right at the limits of our methods. We need every sensible useful tool and method we can bring to bear on these problems.

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## Conversation *Continued from Page 1*

**Q.** There has been research on adult stem cells for decades now and human embryonic stem cells were only derived about 11 years ago. What has been the impact of the study of human embryonic stem cells on the advancement of understanding of stem cell biology in general including its impact on the potential for expanding the use of adult stem cell treatments?

**A.** Something that people who don't work in the lab with these cells don't realize is, for example, bone marrow stem cells, the blood forming stem cells, are very useful…they're very good for treating some diseases and very useful for learning about diseases of the blood and immune system. But they're very difficult to grow…they won't grow very well in the lab. So if we need large quantities of them to do the kinds of experiments we need to do to understand their basic circuitry to understand how they work and what makes them be a stem cell as opposed to a blood cell or a hair cell or a nerve cell, those experiments are very difficult to do if you don't have enough material. And so the embryonic stem cells give us ways of making large quantities of adult stem cells of all types.

**Q.** Because of the discussion and focus around embryonic stem cells, the impression is always that those individuals who support embryonic stem cell research want the research to concentrate only on embryonic stem cell research. What is the reality of the funding related to embryonic stem cell research and how do embryonic stem cells fit into that picture?

**A.** Those of us who work with embryonic stem cells would never say you should work exclusively with embryonic stem cells and give up on everything else. Research with all of these types of cells is essential to solve the very difficult problems with human disease that we're trying to solve. Another thing that is not well recognized outside the scientific community, is that getting funding to do any research work is incredibly competitive. At present, 15% of grant applications to the National Institute of Health are being funded…that's not a good situation…but what it tells you is that any grant that applies to do scientific work has to compete with all the other grants that are being applied for doing scientific work and they are reviewed by scientists for quality, rigor, creativity, the likelihood they will have an impact on an important problem. So there is no preference by and large and the work has to stand on its own merits in the world of scientific opinion when it is judged by professional scientists working on adult stem cells in many cases who will ask is this work up to the quality or can it be brought up to the quality that we think is required to do this and how does it compare to adult stem cell approaches.

**Q.** Currently how does the funding split between adult stem cell research and embryonic stem cell research?

**A.** It's a little hard to get those numbers…but I would say based on what I know, a very large fraction of the funding in the stem cell area is going to research with adult stem cells. Probably the large majority.

There are some reasons for that. They've simply been around a lot longer to work with…the blood forming stem cells were first demonstrated in the early 1960s and research has gone on with them for a long time. They're very useful for diseases of the blood and studying the blood. That said, some of the work with these blood forming stem cells is at the level of testing different clinical applications; what's the best way to introduce them; what's the best way to treat patients with different kinds of leukemia or lymphoma. Those clinical trials are very costly and so that soaks up quite a bit of funding in the stem cell arena in general. The embryonic stem cell has to compete with that work. When a grant is awarded for work with embryonic stems cells it is either because it is a unique application or it is something that can't be approached with any type of adult stem cell or there is an approach that someone thought of that is typically approached with adult stem cells where there is a scientific judgment that an embryonic stem cell approach has greater promise.

**Q.** There has been debate around the use of embryonic stem cells at the University of Nebraska Medical Center. From a broad scientific perspective, how would you view a program that would not be allowed to incorporate embryonic stem cell research in their totality of stem cell research and regenerative medicine program?

**A.** I think there would be a number of consequences. First there would be (the University's) reputation. It would be like hanging out a sign that says, "innovation not welcome here" and that's not something to be taken lightly. I hope you take pride in your university…it's a great institution…and secondly, you want to attract the best possible faculty, the best possible physicians, the best possible students who want to come and work at your university because that leads to a second issue. The medical centers that are involved in the development with new medical therapies are frequently those that are the first to deliver them to the local population. If you were to restrict yourself to only blood related work…that's fine. But as work makes progress on for example, Lou Gehrig's disease with embryonic stem cells – not guaranteed but we're hopeful as work goes on…there will be human clinical trials using embryonic stem cells to treat LG and I would guess in Omaha and Nebraska in general there would be humans who would like to participate in those trials –there are experiments to see if those therapies would work…but sometimes there are patients with no therapies available who will gladly participate in trials because they have a chance they might get better. And so I think that would close out an option that ought to be available to a modern, first-rate medical center. And of course the final issue is that you have such a great tradition in the blood forming arena…you are poised to incorporate these new sets of technologies and contribute to the more rapid development of the kinds of new approaches we need to treat diseases where we're stumped if we only use adult stem cells.

It would be terrible to close off a community of highly trained, skilled scientists from participating in what looks like the next important revolution in biology.

*To hear the complete conversation between Sandy and Dr. Goldstein, log on to www.nebraskacures.com.*

# UNMC Research Team Makes Major Breakthrough In Stem Cell Research

*October 26, 2009 | Source: UNMC Press Release*

A University of Nebraska Medical Center research team led by Iqbal Ahmad, PhD, 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.

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 is the first proof in principle that somatic, or body cells, can be transformed into induced pluripotent stem cells (iPSCs) simply through the influence of the microenvironment in which the sampled cells are cultured. Previously, genetic materials were introduced into somatic cells to reprogram them to become stem cells.

"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," Dr. Ahmad said. "The next step is to know how robust the reprogramming is and what existed within the microenvironment to cause it."

Dr. Ahmad said his findings wouldn't have been possible without embryonic stem cell research.

"It must be emphasized that this development is directly related to embryonic stem cell research and the knowledge we have acquired from it," he said. "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."

The team sampled progenitor eye cells, which regenerate the eye's cornea, from laboratory rats. The cells were reprogrammed to resemble stem cells, and they acquired the properties necessary to replace or restore cell types that degenerate in Parkinson's disease, heart disease and liver disease.

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

Dr. Ahmad's research was supported by the Nebraska Department of Health and Human Services.

***Support our effort to protect stem cell research in Nebraska by joining our Coalition.***
**www.nebraskacures.com**

# Vital Embryonic Research Upholds University Mission

*November 8, 2009 | By Sandy Goodman*
*Source: Omaha World-Herald Editorial*

An objective review of the evidence for the scientific importance and ethical and moral grounding of human embryonic stem-cell research (hESCR) shows that it is in the best interest of the University of Nebraska to maintain its current policy, which allows hESCR at the university in accordance with state and federal regulations.

There is no legitimate scientific debate regarding the continued importance of human embryonic stem cells to the fields of stem-cell biology, regenerative medicine, drug screening and lab study of human models of disease. All scientific bodies expressing a view hold that hESCs are integral to advancing our search for cures and treatments.

In fact, the only way we will ever know if we no longer need to use hESCs in medical research is to continue to study them in comparison with other cells.

For decades, government, scientific, religious and other institutions around the world have rigorously examined the ethics and approved the research use of excess in vitro fertilization (IVF) embryos that otherwise would be discarded. Research with hESCs has been ongoing in many countries, including Germany and Israel, for more than 10 years under strict regulation.

The most relevant evidence for Nebraska came last year when the Nebraska Legislature adopted Legislative Bill 606 48-0 after a decade of public debate. LB 606 established the state's public policy on hESCR.

As the bill's chief negotiator described it in a recent letter, LB 606 allows continued research on federally approved embryonic stem-cell lines but prohibits the use of state funds or state facilities to destroy human embryos for the purposes of research or to create one via somatic cell nuclear transfer.

All parties involved understood that a new administration would expand federal funding to lines created after Aug. 9, 2001, and agreed that would not be cause to revisit the state's hESCR policy.

Nebraska law states the object of the University of Nebraska is "to afford to the inhabitants of this state the means of acquiring a thorough knowledge of the various branches of literature, science and arts."

Board of Regents action to effectively ban hESC use at the university would frustrate this object, damage the university's standing as a research university, restrict opportunity for students and faculty, and delay access to innovative treatments for the people of Nebraska.

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**Nebraska Coalition for Lifesaving Cures**
8401 West Dodge Road, Suite 100
Omaha, NE 68114

402-390-2461
www.nebraskacures.com

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