findings
The Newsletter of the Nebraska Coalition for Lifesaving Cures Volume 9, Issue 2
Nebraska Coalition for Lifesaving Cures

# Mike Yanney and Dr. Gail Walling Yanney Honored for Their Support of Medical Research

Mike Yanney and Gail Walling Yanney, M.D. were honored on April 26th by the Nebraska Coalition for Lifesaving Cures for their passionate support of medical research. The lunch, held at Happy Hollow Club, was attended by more than 230 people.

This marks the eighth consecutive year the organization has recognized an individual or couple for their support of research.

**Above: Mike Yanney and Gail Walling Yanney, M.D.**

Richard Holland, an Omaha philanthropist and chairman of the board of the Nebraska Coalition for Lifesaving Cures, called the Yanneys "our town's greatest citizens."

Harold M. Maurer, M.D., chancellor of the University of Nebraska Medical Center, also praised the Yanneys. "The Yanneys are unique, visionary people who will sacrifice everything to assist the community and to help people in need," he said.

In accepting the recognition, Dr. Yanney said, "We are honored to support UNMC and the world-class research being done there."

John Nelson, chairman and CEO of the Silverstone Group, served as emcee at the event. Chris Pilcher-Huerter, a member of the Board of NCLC who was treated for lymphoma at UNMC, spoke about her battle with cancer, stressing the importance of research in developing new treatments for diseases.

**Left to Right: Harold Maurer, M.D., Mike Yanney, Beverly Maurer, Richard Holland, Gail Walling Yanney, M.D., and Sanford Goodman**

## Past Tribute Luncheon Honorees:

| | |
|---|---|
| Dorothy and Stanley M. Truhlsen, M.D. | 2009 |
| Richard D. Holland | 2008 |
| James O. Armitage, M.D. | 2007 |
| Harold and Marian Andersen | 2006 |
| Rik and Dr. Shannon Bonness | 2005 |
| Michael F. Sorrell, M.D. | 2004 |
| Charles Durham | 2003 |

## Researchers Create Retina From Human Embryonic Stem Cells

*May 26, 2010 | University of California, Irvine*

University of California, Irvine scientists have created an eight-layer, early stage retina from human embryonic stem cells, the first three-dimensional tissue structure to be made from stem cells.

It also marks the first step toward the development of transplant-ready retinas to treat eye disorders such as retinitis pigmentosa and macular degeneration that affect millions.

"We made a complex structure consisting of many cell types," said study leader Hans Keirstead of the Reeve-Irvine Research Center and the Sue and Bill Gross Stem Cell Research Center at UCI. "This is a major advance in our quest to treat retinal disease."

In previous studies on spinal cord injury, the Keirstead group originated a method by which human embryonic stem cells could be directed to become specific cell types, a process called differentiation. Results of those studies are leading to the world's first clinical trial using a stem cell-based therapy for acute spinal cord injury.

## A Human Embryonic Stem Cell Therapy Moves Forward

*March 2, 2010*

Advanced Cell Technology of Worcester, Massachusetts announced on Tuesday that a human embryonic stem cell therapy it is developing for a rare form of juvenile blindness has been granted orphan drug status by the US Food and Drug Administration (FDA).

The special status gives companies tax breaks, access to grant funding for clinical trials, and up to seven years of market exclusivity under the 1983 Orphan Drug Act. The Act is aimed at speeding therapies for diseases afflicting fewer than 200,000 Americans.

ACT applied last November for permission to begin human trials of its stem cell-based therapy for Stargardt's disease. Formally known as Stargardt's Macular Dystrophy, it is a degenerative disease of the retina that affects roughly 1 in 10,000 US youngsters. A closely related cause of blindness, Age-related Macular Degeneration (AMD), affects millions of Americans.

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

## Study Shows Induced Pluripotent Stem Cells Do Not Fully Replace Embryonic Stem Cells As Disease Models

*May 18, 2010 | Medical News Today*

A study from the Hebrew University of Jerusalem and the Children's Hospital in Boston has shed new light on the properties of induced pluripotent stem cells (iPS cells), reporting evidence that they may not be able to replace embryonic stem cells in some research and medical applications.

Human iPS cells were discovered in 2007. Like embryonic stem cells, iPS cells can self-renew and turn into any cell or tissue type, but are obtained by genetically reprogramming the somatic cells of an individual, raising hopes for their use in research and regenerative medicine without the practical and ethical limitations of embryonic stem cells. iPS cells also provide models for diseases that would be difficult or impossible to study in humans.

Human embryonic and induced pluripotent stem cells show remarkable similarities, however, there is controversy on whether iPS cells are fully able to replace embryonic stem cells in basic research and in clinical applications.

In the new study, published in the May 7 issue of *Cell,* stem cell researchers obtained iPS cells from the skin cells of individuals affected by fragile X syndrome, the most common form of inherited mental retardation in boys, and compared their properties with that of embryonic stem cells isolated from embryos with the same genetic defect (embryos resulted from IVF treatment of a mother carrying the mutation causing fragile X).

Researchers reported that the fragile X gene, called FMR1, was active in embryonic stem cells but not in iPS cells. "We saw a difference between iPS and embryonic stem cells, although they have the same mutation" said Nissim Benvenisty, director of the Stem Cell Unit at the Hebrew University of Jerusalem and a leading author of the study.

Three years ago, the Jerusalem group showed that FMR1 was active in human stem cells but not in adult tissues: when stem cells differentiate and turn into mature tissues, epigenetic modifications of the DNA lock down the FMR1 gene, silencing its activity.

Researchers expected that reprogramming adult skin cells back into iPS cells would reset their epigenetic blocks, reactivating FMR1; instead, they found out that the FMR1 gene resisted reprogramming, and remained inactive in iPS cells, which then failed to faithfully model the natural process.

It is possible that other genes may likewise escape the reprogramming process leading to iPS cells. "Our findings might underline a more general phenomenon of epigenetic differences between human embryonic and induced pluripotent stem cells," Benvenisty said. "Until we understand better the differences between these two types of cells, the optimal approach might be to model human genetic disorders using both systems, whenever possible".

# Discovery of Stem Cell Illuminates Human Brain Evolution, Points to Therapies

*May 24, 2010 | Nature: Vol. 464, Issue 7288*

University of California San Francisco scientists have discovered a new stem cell in the developing human brain. The cell produces nerve cells that help form the neocortex – the site of higher cognitive function—and likely accounts for the dramatic expansion of the region in the lineages that lead to man, the researchers say.

Future studies of these cells are expected to shed light on developmental diseases such as autism and schizophrenia, as well as age-related illnesses, such as Alzheimer's disease.

Studies also will allow scientists to track the molecular steps that the cell goes through as it evolves into the nerve cell, or neuron, it produces. This information could then be used to prompt embryonic stem cells to differentiate in the culture dish into neurons for potential use in cell-replacement therapy.

"This discovery has the potential to transform our understanding of the development and evolution of the human neocortex, the most uniquely human part of the central nervous system," says the senior author of the study, neurologist Arnold Kriegstein, MD, PhD, director of the Eli and Edythe Broad Center of Regeneration Medicine and Stem Cell Research at UCSF.

"It also should inform our understanding of developmental diseases and advance the creation of cell-based therapies. If we're going to understand how these disorders develop, we have to better understand how the human and primate cerebral cortex develops."

The study was funded by grants from the California Institute for Regenerative Medicine and the Bernard Osher Foundation.

*I am a two-time survivor of Lymphoma cancer. Less than a year ago I was a recipient of a stem cell transplant at the Nebraska Medical Center. Little did I know when I became a member of the Nebraska Coalition for Life Saving Cures, and an advocate for stem cell research, I would be a stem cell transplant recipient! In large part, because of stem cell research, I stand before you here today. I stand before you with REAL HOPE.*

**-Chris Pilcher Huerter**
Comments at the Yanney luncheon, April 26, 2010

# Moral Issues Sharply Divide Americans

## Partisan disagreement drives national controversy on gay relations, abortion

*May 26, 2010*

Americans generally agree about the morality of 12 out of 16 behaviors or social policies that sometimes spark public controversy, with sizable majorities saying each is either "morally acceptable" or "morally wrong." By contrast, views on doctor-assisted suicide, gay and lesbian relations, abortion, and having a baby outside of marriage are closely divided -- the percentage supporting and the percentage opposing are within 15 points of each other.

The findings are from Gallup's annual Values and Beliefs survey, conducted May 3-6, 2010. Perhaps of some relevance to the 2010 midterm congressional elections, Gallup finds Republicans and Democrats the furthest apart in their reactions to several cultural matters related to sex and reproduction: gay/lesbian relations, abortion, embryonic stem cell research, having a baby outside of marriage, and premarital sex. Majorities of Democrats, compared with fewer than half of Republicans, consider each of these morally acceptable.

While there is also a wide gulf in attitudes toward the death penalty, majorities of Democrats as well as Republicans consider that policy acceptable.

**Percentage Viewing Matters as "Morally Acceptable," by Party ID** *Ranked by party difference (Democrat vs. Republican)*

| | Dem. | Ind. | Rep. | Diff. |
|---|---|---|---|---|
| Gay or Lesbian | 61% | 61% | 35% | 26% |
| Abortion | 51% | 39% | 26% | 25% |
| Death penalty | 52% | 66% | 76% | 24% |
| Embryonic stem cell research | 68% | 62% | 47% | 21% |
| Having a baby outside of marriage | 61% | 59% | 41% | 20% |
| Premarital sex | 67% | 64% | 47% | 20% |
| Buying/Wearing clothing made of animal fur | 54% | 61% | 67% | 13% |
| Divorce | 73% | 74% | 61% | 12% |
| Doctor-assisted suicide | 52% | 46% | 40% | 12% |
| Cloning animals | 34% | 32% | 27% | 7% |
| Suicide | 18% | 16% | 11% | 7% |
| Gambling | 64% | 60% | 59% | 5% |
| Extramarital affairs | 7% | 7% | 3% | 4% |
| Medical testing on animals | 58% | 57% | 62% | 4% |
| Cloning humans | 11% | 7% | 8% | 3% |
| Polygamy | 6% | 12% | 5% | 1% |

*Survey Methods: Results are based on telephone interviews conducted May 3-6, 2010, with a random sample of 1,029 adults, aged 18 and older, living in the continental U.S., selected using a random-digit-dial sampling technique.*

# Science Meets for Greater Nebraska Students



**681 students from 36 schools participated in nine regional science meets this spring. NCLC sponsored five of those meets assisting 469 students to participate.**

## Film Streams Partners with Coalition for Night at the Movies

**Director Jessica Gerstle In Person:**
**THE ACCIDENTAL ADVOCATE**
**September 23, 2010 ▪ 7:00 P.M.**

**Tickets may be purchased at the Film Streams box office or online at filmstreams.org**

When surgeon and athlete Claude Gerstle suffered a tragic bicycle accident that left him paralyzed from the neck down, he and his daughter, Emmy Award-winning journalist Jessica Gerstle, discovered hope in the politicized area of stem cell research. In this powerful, personal documentary, father and daughter track down the thinkers, the politicians, the crusaders, and the naysayers in an effort to understand the potential science and the political quagmire impeding it.

A Q&A with director Jessica Gerstle will follow the film. Presented in collaboration with Film Streams at the Ruth Sokolof Theatre, 1340 Mike Fahey Street, Omaha.

# Remembering Robert Allen

*Compiled from articles in UNMC Today and Omaha World-Herald*

Robert M. Allen, a Hastings, Neb., retailer, former University of Nebraska Regent, longtime member of the UNMC Board of Counselors and an ardent supporter of medical research, died following a brief illness. He was 84.

Allen won his first six-year term to the NU Board of Regents in 1988. He was re-elected in 1994. He served on the UNMC Board of Counselors from 2002 to 2010.

"Bob Allen was a great Regent. He truly loved the university and always kept the best interest of the university in mind in everything he did as a Regent," said UNMC Chancellor Harold M. Maurer, M.D. "After he finished his term as a Regent, I asked Bob to be a member of the UNMC Board of Counselors. He gladly accepted this invitation and was one of our most faithful and dedicated board members

Allen supported NU Medical Center research using tissue from elective abortions for research into Alzheimer's disease, AIDS-related dementia and other brain disorders. Opponents vowed to boycott his business. Amid all the controversy, Allen said his concern was for the university's academics.

Allen graduated from Omaha Central High School in 1944 and served in the Navy Air Corps during World War II. He was discharged in 1946 and returned to the University of Nebraska to play basketball, graduating with a bachelor's degree in business in 1950.

He often said his real desire as a young man was to attend dramatic arts school. Allen, however, joined the family in the retail business. His father operated a drugstore in Grand Island and a brother, Bruce Allen, had a store in North Platte, Neb.

In 1958, Robert Allen opened a store in Hastings that resembled the finest department stores of Omaha and Lincoln and — under the same roof — offered a full line of groceries. Today's 100,000-square-foot store dominates a city block.

Allen's attracted customers from neighboring towns. He was named co-retailer of the year 1994 by the Nebraska Retail Federation. He publicly vowed to go blow for blow with Walmart on prices. Walmart won, and Allen's quit selling hardware, sporting goods and toys.

Allen was mayor of Hastings from 1976 to 1980 and served on the Hastings school board from 1972 to 1976. Allen was devoted to solving the 1972 slayings near Grand Island of his sister and brother-in-law, Bernice and retired Col. Bill Peak, and their 14-year-old daughter, Barbara. The deaths remain a mystery.

Survivors include his wife, Georgene, sons Bryant and Erik and daughter Kristin. Funeral details were pending.

# The Link Between Regenerative Medicine and Human Embryonic Stem Cell Research

*By Angie Rizzino, Ph.D.*

*Dr. Rizzino is a stem cell biologist who was recruited to the University of Nebraska Medical Center in December of 1983. Prior to joining the University, he was an investigator at the National Cancer Institute. He has worked in the field of stem cell biology for over 30 years. He has been continuously funded by the National Institutes of Health since the mid 1980s.*

Just four years ago, scientists developed a method to convert adult cells of the body into cells that exhibit all the essential properties of early embryonic cells. This discovery created both excitement and hope that there will soon be new and effective therapies for treating a wide range of debilitating human conditions, including diabetes, Parkinson's disease and spinal cord injuries.

The process of converting adult cells into an embryonic stem cell-like state is referred to as reprogramming, and the cells that are generated by this process are referred to as induced pluripotent stem (iPS) cells. The ability to produce human iPS cells has been hailed as a true breakthrough, because it offers hope that the cells needed for future cell-based therapies will be genetically matched to the patient undergoing treatment. As a consequence, there should be no need for drugs to suppress the immune system, which would be needed to prevent rejection if the cells are not genetically matched to the patient. Achieving the goal of producing patient-matched cells for cell-based therapies would be a major advance in regenerative medicine. However, much more work needs to be conducted before this goal becomes a reality.

The discovery of human iPS cells has led some to argue forcefully that there is no longer a need to study human embryonic stem (ES) cells, which are produced from early stage human embryos well before they form any fetal or adult cells. (In fact, once the embryo begins to form cells found in the human fetus, they can no longer give rise to human ES cells.) On the surface, the argument that we no longer need to work with human ES cells may sound reasonable, but this is a fallacious argument. Researchers who produce and study iPS cells know that we need to learn far more about iPS cells before we will be able to consistently produce and properly maintain high quality human iPS cells. The following discussion helps illustrate some of the reasons why it is essential to continue to work with and study human ES cells.

First, it is abundantly clear to stem cell researchers that human iPS cells produced in different laboratories around the world are not identical. Fortunately, stem cell biologists have been able to use human ES cells as the "gold standard" to judge the quality of human iPS cells. This would not have been possible without the intensive study and characterization of human ES cells over the past 12 years. In fact, it is important to recognize that if the study of human ES cells had been banned, we would not know how to produce human iPS cells or what properties human iPS cells should possess. In this regard, recent studies have identified some important difference between ES cells and iPS cells.

Second, continued progress in the study of human iPS cells is also tied to continued progress in our understanding of human ES cells. Although we know that human ES cells possess the ability to give rise to virtually any cell type in the body through differentiation (a property known as pluripotency), we still need to know more about the molecular properties of human ES cells. Knowing more about the molecular properties of human ES cells will enable us to determine with greater precision the quality and the true clinical potential of human iPS cells.

Third, and equally important, we still need to determine the best laboratory practices required to maintain the pluripotency of human ES cells during prolonged periods of study. This information is needed not only for working with human ES cells, it provides essential information needed for working with their reprogrammed counterparts, human iPS cells. For practical reasons, the best laboratory practices are more readily developed in the course of studying human ES cells.

There has been substantial progress made during the past decade in the field of regenerative medicine when viewed in the larger context. However, progress in this important area of biomedical research would have been far slower if we had not undertaken the isolation and study of human ES cells, which provided the critical groundwork for knowing how to produce human iPS cells. The future for regenerative medicine indeed appears to be very bright. Progress in regenerative medicine is not only likely to help alleviate acute pain and suffering, it is also likely to eventually provide new treatment strategies for chronic diseases that are very costly and which worsen with time. Compassion for those in need compel me to argue for continued study of all types of stem cells, including human ES cells.

findings

**Nebraska Coalition for Lifesaving Cures**
900 S. 74th Plaza, Ste. 301
Omaha, NE 68114

402-390-2461
www.nebraskacures.com

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