Delayed Tolerance May Hold Key to Life without Immunosuppression

Three years after Joseph Leventhal, MD, PhD, director of kidney and pancreas transplantation, performed the first of more than a dozen groundbreaking simultaneous kidney-stem cell transplants in mismatched donor-recipient pairs, an upcoming clinical trial could someday change the way all transplants are done in the future.

In collaboration with Suzanne Ildstad, MD, director of the Institute of Cellular Therapeutics at the University of Louisville, the pending trial is an adaptation of their ongoing research published this year in Science Translational Medicine.

The paper outlined a modified transplant procedure that begins about a month before a kidney transplant, when bone marrow stem cells are collected from the blood of the kidney donor using a process known as apheresis. The donor cells are then sent to the University of Louisville, where researchers enrich cells believed to help transplants succeed. During the same time period, the recipient undergoes pre-transplant conditioning, which includes small doses of radiation and chemotherapy to suppress their own bone marrow, so the donor’s stem cells have more space to grow in the recipient’s body.

A day after the kidney transplant, the donor stem cells are transplanted as well, prompting them to engage in the marrow, from which other specialized blood cells develop. The goal of the double-transplant technique is to create chimerism, or an environment where two bone marrow systems exist and function in one person. Following transplantation, the recipient takes anti-rejection drugs, with the goal of decreasing them...
Immunosuppression continued from pg. 1

over time and eliminating them altogether one year after the procedure.

Normally, organ recipients must follow a lifelong regimen of immunosuppressant drugs for their transplanted organs to survive. Those drugs greatly increase the risk of infections, cancer, high blood pressure, and other serious medical problems.

By tricking the recipients’ immune system into thinking the donated organ is part of the patient’s natural self, the procedure has thus far eliminated the need for the medication years after transplantation.

“Our third patient was the first where we had the engineered stem cell dose that we wanted, given the full conditioning regimen, and saw this high level of chimerism that was persistent,” said Leventhal, associate professor of surgery at Northwestern University Feinberg School of Medicine.

“We were a year out, and when he came off of immunosuppression it was, ‘oh my god, we’ve done it.’ Because it was a living, unrelated transplant, a friend to a friend, it was almost surreal that we had been able to demonstrate proof of principle.”

What Next?
Leventhal and Ildstad expect to begin new research this year that could potentially change the way all transplants are conducted.

“We are ready to embark on a companion clinical trial of what we are calling ‘delayed-tolerance induction,’ where we postpone the infusion of the donor stem cells until months or even years after the transplant occurs,” Leventhal said. “This is an important trial conceptually because this is the manner in which researchers will very most likely achieve tolerance for deceased-donor organs.”

Because the process of recipient conditioning and transplantation takes four to five days, it is impossible to conceive a timeframe where it could be used for other solid organ procedures. But much the way Leventhal and Ildstad built the mismatched donor trial from Ildstad’s preclinical and early clinical observation, delayed-tolerance induction is building upon the most recent mismatched-donor successes.

“When you have a deceased donor organ like a kidney, a liver, or a heart, you don’t have four to five days to get that organ; you maybe have four to five hours. You need an approach that is going to separate the transplant from the actual induction of tolerance using stem cells,” Leventhal said. “If this trial is successful, it really opens the door to use a modification of our approach in practically any organ transplant scenario. It’s pretty exciting.”

The new delayed-tolerance trial will involve individuals who received a living-donor kidney, and whose donor is ready, willing, and able to provide stem cells down the road. The procedure will test the concept of separating the transplant event from the stem cell infusion and tolerance induction.

By waiting for an organ recipient to fully recover from the transplant surgery before introducing a tolerance regimen, Leventhal believes the approach will not only open itself to applications with cadaver donors, but that it may become the preferred order of operation even for healthier or living-donor transplants.

“If someone is very sick and is going to have a very stormy post-operative course, the last thing you want to do is induce tolerance in the middle of a hurricane. What you want to do is let that storm pass, let them recover from the organ transplant,” he said. “Because they will be in much better shape and no longer be in full-blown liver failure, the tolerance induction will have a greater chance of success.”

Achieving Tolerance
Two years after successfully removing the first mismatched transplant recipient from immunosuppression drugs, Leventhal hopes to validate the single-center approach in a multi-center fashion. Although the results look very promising thus far, the emphasis of the procedure is improving long-term outcomes, something only time will demonstrate.

“We clearly have established for the first time, here at Northwestern, the ability to achieve tolerance in mismatched and unrelated donors and recipients, but there are other cell populations that we know are important for regulating the immune response whose properties can be harnessed and used in the clinic,” Leventhal said. “There are some of us, myself included, who believe that it will be possible to isolate and expand these cells from a potential transplant recipient, and give them back to them after a transplant, which would then allow you to minimize, if not eliminate the drug-based therapy.”

Continued on pg. 3
Revisions to the 1995 Public Health Service (PHS) regulations regarding financial conflict of interest (COI) in publicly funded research, enacted by the Department of Health and Human Services (HHS) in 2011, will be effective on August 24.

Among the most impactful changes are revisions to the definition of “significant financial interest,” extent of investigators’ disclosure of information to institutions regarding their financial interests, institutions’ management of financial conflicts of interest, information reported to NIH and other funders, information made available to the public, and investigator training.

Ahead of these revisions, Northwestern University Provost Dan Linzer sent a statement informing the community that as of Monday, July 23, Northwestern had implemented its own new COI policy. He noted that the last time the Northwestern policy and procedures were rewritten was over a decade ago, and that much has changed in the intervening years.

“The new PHS requirements, which we hear may be adopted in part or wholly by other agencies, provided impetus to revisit our COI policies and procedures,” he said in the statement. “The policy changes are being implemented to comply with new federal regulations governing Financial Conflict of Interest (FCOI) policies at all institutions accepting PHS research funds.”

The new Northwestern policy and process will apply to all individuals involved in the design, conduct, or reporting of research for all proposals submitted and current awards received on or after August 24. While all research investigators will be affected by the new Northwestern COI policy, PHS funded researchers and staff working on PHS-funded studies will have additional disclosure requirements.

Further information about the new Northwestern University COI policy can be found on the Conflict of Interest Office (NUCIO) website.

What you need to know about the PHS regulations

- As Linzer noted, the PHS regulations may affect all agencies funded under HHS. Says Michelle Melin-Rogovin, manager of research administration at Northwestern University Feinberg School of Medicine, “The NIH guidance is probably good for sister agencies that are smaller and less structured to follow. Also, as goes PHS, so goes the federal government; the National Science Foundation has similar guidelines, so don’t think you’re off the hook.” Melin-Rogovin has been writing about the new guidelines in her blog, “Research Administration Nation.”

- The Feinberg Research Office recommends checking the NIH website FCOI page for new information at least weekly.

- Melin-Rogovin also recommends bookmarking the NIH frequently asked questions section about the regulations – new questions are added regularly.

- Research administrators should be prepared to ask PIs about planned travel and its purpose – creating a checklist of items to ask about, depending on the investigator’s type of research activity, will be important.

Melin-Rogovin adds, “Collaboration between industry and academia is needed in order to fund advancement in science. Not every relationship is a conflict of interest, and these relationships can be extremely complicated. If you have a question, it’s perfectly appropriate to ask about it in order to receive additional information and to understand that the project you’re working on is meeting your university guidelines and the new regulations.”

Presentation slides and a handout from the July town hall meeting regarding the new PHS regulations and Northwestern COI policy are available on the NUCIO website. General questions and inquiries about the new policy should be directed to nucio@northwestern.edu.

Immunosuppression continued from pg. 2

Because immunosuppression drug regiments require rigorous compliance, produce side-effects which limit life expectancy, and do not prevent the chronic loss of organs over time, Leventhal is hopeful that tolerance induction will make a major impact.

“We believe that the quality of life that patients will experience and how long their organs will last will be enhanced by coming off of drug-based immunosuppression,” he said. “I think it’s safe to say that over the next decade there is going to be a tremendous amount of work where we begin to identify new cell-based strategies that have the broadest application for improving outcomes in organ transplant recipients.”
Faculty Profile: Seth Corey, MD, MPH
Professor in Cell and Molecular Biology and Pediatrics

Working at the intersection of pediatrics and basic science, Seth Corey, MD, MPH, professor in pediatrics and cell and molecular biology at Feinberg, is one investigator whose translational research will benefit from the new location of Anne and Robert H. Lurie Children's Hospital of Chicago.

Prior to joining Northwestern University in 2008, Corey was section chief of pediatric leukemia and lymphoma at University of Texas MD Anderson Cancer Center. He also was associate professor of pediatrics and pharmacology at University of Pittsburgh School of Medicine.

He received his medical degree and master’s degree in public health in 1982 at Tulane University. He completed his residency at the St. Louis Children’s Hospital in pediatrics in 1985 and his fellowship in pediatrics hematology at Children’s Hospital in Boston in 1988.


When not pursuing his career-related passions, Corey is a film buff. During his time at the University of Pittsburgh he started a film festival to showcase the emerging Israeli film industry. Though Corey is no longer involved, the popular festival lives on, and is now in its 20th successful year.

What are your research interests?

I am interested in why white blood cells become leukemic, and why the bone marrow fails to produce normal blood cells. Each day a trillion blood cells are produced, yet leukemia is not as common as epithelial cancers, and bone marrow failure syndromes are rare. There must be tight, high-quality systems that control for the proliferation, differentiation, and survival of blood stem cells and their progeny.

My lab focuses on two fascinating sets of disorders, the adult myelodysplastic syndromes and the pediatric bone marrow failure syndromes. Both evolve frequently into leukemia.

A second major project in our lab focuses on how a protein we discovered remodels both the plasma membrane and the actin cytoskeleton.

The ultimate goal is to understand the mysteries of biological systems and contribute to the cure of children and adults afflicted with leukemia or myelodysplastic syndromes.

Who makes up your research team?

I have a small but diverse group of people, which makes the lab fun: a biochemist, a couple physician-scientists, two technicians, a zebrafish biologist and his technician, and this summer a great group of enthusiastic undergraduates and graduate students.

How does the Lurie Children’s move affect your work?

The move has made it easier for me to participate more fully in clinical activities and education, and will hopefully allow my colleagues to interact more with me in translational research. It now takes a village to care for a patient, study his or her disease, and advance knowledge. Lurie Children’s is no longer a suburb.

How does your research advance medical science and knowledge?

First, one has to identify the components. To understand the pathophysiology of blood disorders, I began my career as a fellow in the new field of oncogene signaling. I identified and characterized the roles of Src tyrosine kinases and PI 3’kinase and their associated signaling molecules in hematopoiesis and leukemia.

Then, in collaboration with pharmaceutical companies, my lab showed that inhibitors of Src or PI 3’ kinases block leukemia (and solid tumors like breast cancer). Successful targeted therapy, however, will not be easy, as biological systems are complex and resistance comes quickly.

Now, I am working with a bioengineer and a mathematician on a systems analysis of how a blood stem cell becomes specialized like a neutrophil and where the system can fail to produce too few or too many cells. Ultimately, I’d like to use that analysis as a blueprint for systems pharmacology against leukemia and myelodysplastic syndromes.

What collaborations are you involved with across campus and beyond?

Science is a team sport, and
Corey, continued from pg. 4

it requires multi-disciplinary skills. My current collaborations are with a chemical bioengineer at the University of Pennsylvania, a mathematician specializing in stochasticity at Rice University, a bioengineering group at Georgia Institute of Technology, a theoretical chemist at University of Chicago, and a leukemia geneticist in Cleveland. I just wish we could put together such a group here at Northwestern; I firmly believe in the inverse-square law.

How is your research funded?

I have been continuously funded since 1988, mostly through the National Institutes of Health. But grants from American Heart Association, American Cancer Society, Leukemia and Lymphoma Society, Department of Defense, Howard Hughes Medical Institute, and foundations like Hyundai Hope for Wheels have sustained my research.

How did you become interested in this area of research?

Like biology, it was a little bit of determinism and stochasticity. I became interested in immunology during my second year of medical school, when my father died from renal cell cancer, and at that time, the one idea was to use immunotherapy. I was able to spend three months at the NIH as a fourth year student doing immunology. But as a resident at St. Louis Children’s Hospital, I took care of a girl with severe aplastic anemia. That set off a burning interest in hematopoiesis and related disorders. I was fortunate to be a post-doc in Boston, in labs where blood growth factors and oncogenes were being discovered.

Now, what interests me is the application of computational biology, engineering, and network analysis to solve these same biomedical challenges.

Which honors are you most proud of?

I am honored to hold an endowed professorship named after Sharon Murphy, former division chief of pediatric hematology-oncology at Lurie Children’s and past chair of the multi-institutional Pediatric Oncology Group, and Steve Rosen, the Director of the Lurie Comprehensive Cancer Center. Sharon and Steve have been major leaders in clinical oncology and have made major contributions to the treatment of lymphomas.

Welcome New Faculty

Juehua Gao, MD, PhD, joins as assistant professor in pathology.

Gao received her Doctor of Medicine degree from Fudan University in Shanghai, China, where she also completed her internship in internal medicine. She received her doctorate degree in immunology from University of Florida, and completed fellowships in anatomic and clinical pathology and hematopathology from Feinberg.

Gao’s research interests are signaling and genetic abnormalities in myeloid neoplasms, particularly in developing clinical assays that provide diagnostic and prognostic value for patients with myelodysplastic syndrome and acute myeloid leukemia.

Hyewon Phee, PhD, joins as assistant professor in microbiology-immunology.

Phee received her bachelor’s degree in food and nutrition and her master’s degree in chemistry from Seoul National University, Korea. She then received her doctorate degree in biochemistry from Ohio State University, and completed a post-doctoral fellowship. From Ohio, she moved to California to finish her post-doctoral work at University of California San Francisco, where she later worked as an instructor and most recently as an assistant adjunt professor of medicine-rheumatology.

Phee’s research focuses on signal transduction pathways in T cell migration, activation, and autoimmunity. Her long-term research goal is to define signal transduction pathways that integrate cytoskeleton and signaling network during immune cell migration and activation in normal and pathological conditions.

Core Fact

Did you know the Keratinocyte Core, part of the Skin Disease Research Center, is offering free services for the summer?

Interested users can download this free coupon to take advantage of limited-time offers, such as free primary keratinocyte cultures.

For more information about the Core’s services, contact Paul Hoover at paul-hoover@northwestern.edu.
When Theresa Sukal Moulton, DPT, PhD, arrived at Northwestern University to pursue her master’s degree in the fall of 2003, the doctor in physical therapy-doctor of philosophy in engineering dual-degree program, of which she would become the first graduate, didn’t even exist. But while working in the lab of Jules Dewald, PT, PhD, chair of the Department of Physical Therapy and Human Movement Sciences (DPTHMS), as a biomedical engineering graduate student, Sukal Moulton realized a stark interest in understanding what happens in adults following a stroke. Her pursuit coincided with Dewald’s drive to begin offering a first-of-its kind program meshing the distinct intellect of an engineer with the applied science skills of a physical therapist. So in 2006, she began physical therapy (PT) school to help gain a bigger-picture vantage point.

“I think that having clinical experience really improved the research questions I was asking and my ability to carry out successful experiments with young people,” said Sukal Moulton, who decided to focus on pediatrics for her PhD research. “It was a very natural flow to start the DPT-PhD program because it was around the time when I was trying to figure out how I could gain practical, hands-on experience in the clinic.”

Her doctoral dissertation focused on the use of engineering tools to quantify the expression of upper-extremity weakness, loss of independent joint control, and loss of independent limb control in childhood hemiparesis, or weakness affecting one side of the body. The results of her research are noted for illustrating that the timing of brain injuries in infants and young children affect the movement disorders observed and measured in adolescence.

She started by identifying children as having brain injuries during three distinct time periods. The first was pre-natal injury, often occurring in babies born prematurely, between the second and early third trimester of gestation. The second was perinatal injury, occurring at full-term birth, possibly due to a difficult delivery. The last group consisted of those who suffered a post-natal injury, occurring sometime after six months of age.

Sukal Moulton used three different arm strength and coordination experiments to test her hypothesis that the timing of injury mattered with regard to normal development. The first looked at strength, comparing the hemiparetic, or weaker, arm with the stronger arm. The results conveyed that individuals with hemiparesis were weaker on their paretic side, but that the time of the injury affected how much weaker they were. The later the injury, the more weakness was found. And with regard to joint weakness, the further the joint is from the body, comparing the shoulder to the wrist for instance, the greater the weakness.

“We think that part of the reason for that weakness is the neural tissue that’s available at the different time periods of development,” Sukal Moulton said.

The second experiment was based around Dewald’s research in individuals with stroke in adulthood. It looked at movement interactions in an isometric setup.

“We used a light weight cast to connect someone to a six-degree-of-freedom load cell. This provided a way for us to very specifically measure the efforts they were making. As we asked them to do a movement exercise in one direction, we looked at what happened with the other joints in their arm.”

She found that while people can normally lift up at the shoulder without other joint involvement, people with hemiparesis demonstrate different patterns of activation, especially in the post-natal group. When asked to lift up at the shoulder, they also flexed and bent in at their elbow, and flexed and bent their wrist and fingers. The early injury groups did not have this same loss of independent joint control. If asked to lift their shoulder, they had a normal response, but if asked to lift their wrist as hard as they could, they would also flex their elbow.

“If you look at a lot of the childhood hemiparesis research, anyone with cerebral palsy or hemiplegic cerebral palsy is grouped into one category. Researchers asked individuals to do tasks and generalized by saying ‘kids with cerebral palsy do this, and typically developing kids do this,’ ” Sukal Moulton said. “What my work showed is that maybe you need to look at kids with cerebral palsy in more than one pool, and that the timing of...
Sponsored Research

**Peter Penzes, PhD Associate Professor in Physiology and Psychiatry and Behavioral Sciences**

**Project title:** Molecular Mechanisms of Abnormal Dendritic Spine Plasticity in Schizophrenia

**Sponsor:** National Institute of Mental Health

Schizophrenia is a serious mental disorder which affects approximately 0.5 percent of the population. Strong evidence supports a key role for abnormal synaptic connectivity in schizophrenia, but the molecular mechanisms underlying its pathogenesis are not known. Understanding these mechanisms will allow us to identify new targets for therapeutic intervention, especially early in the course of illness.

Several schizophrenia susceptibility genes regulate synapses and many regulators of synapses are implicated in schizophrenia. However, the mechanisms through which mutations in these genes underlie specific neurobiological phenotypes related to schizophrenia are not known. Based on our preliminary data, we hypothesized that rare coding variants in genes that control synapses, cumulatively enriched in subjects with schizophrenia, disrupt brain connectivity, and impact neuromorphological and cognitive measures in patients.

In the proposed work, we will use a multidisciplinary translational approach that combines human genetics, molecular and electrophysiological studies in cellular models, functional validation in mice, and cognitive assessment and structural brain imaging in patients. Data generated will provide new mechanistic insights into pathways that underlie abnormal brain connectivity in schizophrenia that will allow us to identify therapeutic targets.

**Brian Mustanski, PhD Associate Professor in Medical Social Sciences**

**Project title:** Gene-Environment Interactions Effects on HIV Risk (GENI)

**Sponsor:** National Institute on Drug Abuse

Risky behaviors, specifically substance use, conduct problems, and sexual risk-taking, are the primary direct and indirect causes of morbidity and mortality among adolescents. Although these behaviors are often studied individually, research indicates that they frequently occur together, although more information is needed regarding the relationships among and development of these behaviors over time in different populations.

GENI focused on the clustering of these three types of risky behaviors in a very low-income African-American population of adolescents in the southern U.S. This population is at an increased risk compared to other ethnic, geographic, and income groups for several types of negative mental and physical health outcomes, including victimization due to injury really makes a difference."

In front of an audience of friends, family, peers, and professionals, Sukal Moulton defended her dissertation in January, outlining the research that also showed that in terms of controlling a single arm, the later the injury, the harder it became, but when it came to controlling both arms in an independent, non-mirrored fashion, the earlier the injury, the harder that task became.

“We identified two specific areas of movement impairment and discovered that it truly depended on the timing of injury,” she said. “It was a really awesome opportunity to open up a new facet of investigation within Dewald’s lab. I think everybody does that in their own way, but when you work with a totally different population it is very obvious. It was a great experience because I had to convince all of these people working on research with adults that we cannot expect the same from kids and that we need to approach this differently, even if we are using similar techniques to measure them.”

Sukal Moulton, who had been working as a pediatric PT at the Rehabilitation Institute of Chicago, is now headed to Washington, D.C., to begin a post-doctoral fellowship in the lab of Diane Damiano, PT, PhD, at the National Institutes of Health. There she will investigate the coordination of lower extremities in children with cerebral palsy using non-invasive brain imaging.

Sukal Moulton, continued from pg. 6

In front of an audience of friends, family, peers, and professionals, Sukal Moulton defended her dissertation in January, outlining the research that also showed that in terms of controlling a single arm, the later the injury, the harder it became, but when it came to controlling both arms in an independent, non-mirrored fashion, the earlier the injury, the harder that task became.

“We identified two specific areas of movement impairment and discovered that it truly depended on the timing of injury,” she said. “It was a really awesome opportunity to open up a new facet of investigation within Dewald’s lab. I think everybody does that in their own way, but when you work with a totally different population it is very obvious. It was a great experience because I had to convince all of these people working on research with adults that we cannot expect the same from kids and that we need to approach this differently, even if we are using similar techniques to measure them.”

Sukal Moulton, who had been working as a pediatric PT at the Rehabilitation Institute of Chicago, is now headed to Washington, D.C., to begin a post-doctoral fellowship in the lab of Diane Damiano, PT, PhD, at the National Institutes of Health. There she will investigate the coordination of lower extremities in children with cerebral palsy using non-invasive brain imaging.
violence, HIV infection, incarceration, and death at an early age. This analysis draws on bioecological theory and problem behavior theory to explain the clustering of substance use, conduct problems, and risky sex behaviors from early to late adolescence.

GENI is led by Mustanski and involves collaborations with Danielle Dick, PhD, Virginia Commonwealth University, and John Bolland, PhD, University of Alabama. In addition to examining the development of a cluster of health issues facing urban African-American youth living in poverty, this study capitalizes on a natural experiment in which federal housing funds were used to relocate a sample of predominantly African-American families living in impoverished public housing to more advantaged neighborhoods. In addition to this “treatment condition,” two natural control groups exist: youth living in other public housing neighborhoods that are equivalent on census measures of poverty and youth self-reported HIV risk behaviors; and youth that relocated to similarly disadvantaged neighborhoods.

What makes this natural experiment particularly exceptional is that all of these adolescents (592 adolescents between the ages of 13 and 18) were participants in the Mobile Youth Survey (MYS), which provides multiple waves of pre-relocation youth self-report data on HIV risk behaviors and neighborhood quality. Along with census data, the MYS data allows for statistical control for baseline differences between groups. To extend the MYS data, detailed assessments of sexual risk taking, substance use, externalizing behaviors, neighborhood risks and resources, family factors, and personality were obtained from youth and their primary caregivers. DNA samples for genotyping were also collected.

To help assure that we were addressing concerns and needs of the community participating in the project, we conducted focus groups with neighborhood residents and held a forum with community leaders. Consultation with community advisors occurred throughout the project. As a benefit to participants, a brief HIV education session was provided to the participant family at the completion of their interviews.

Once data collection was complete, Mustanski and the Mobile project team met with community leaders and organization representatives to discuss preliminary analyses and data availability to the community to assist with current and future program planning and grant writing in such areas as teen pregnancy, HIV/AIDS prevention, and mental health.

Analyses are ongoing to identify gene-environment interplay related to this cluster of outcomes. Specifically Mustanski’s team is using caregiver report of neighborhoods, interview assessments, and administrative data to characterize neighborhood environments. Neurotransmitter genes and those related to stress response are serving as initial candidate genes.

---

Research in the News

**Chicago Tribune** July 24  
Length of Sleep Varies by Race, Study Shows  
Mercedes Carnethon’s research was featured.

**NBC News (National)** July 23  
Transplanted Lungs Didn’t Come from Colo. Victims, Despite Reports  
John Friedewald was quoted.

**The New York Times** July 19  
The New Old Age  
Lee Ann Lindquist was quoted.

► Lindquist was also quoted in *U.S. News & World Report*, ABC News (National), and UPI

**ABC News (National)** July 18  
Prostate Cancer: Surgery Rarely Best, Researcher Suggests  
William Catalona was quoted.

**WTTW-Chicago (PBS)** July 17  
A Condition of Doubt  
Catherine Belling was interviewed.

► Belling was also quoted in *U.S. News & World Report*, Huffington Post, and *Chicago Tribune*

**UPI** July 13  
Reducing Stress Reduced MS Development  
David Mohr’s research was featured.

► Mohr was also quoted in *U.S. News & World Report*, WebMD, FOX News National, and UPI

**National Public Radio** July 11  
Gene Mutation Offers Clue For Drugs To Stave Off Alzheimer’s  
Robert Vassar’s research was featured.

**Chicago Tribune** July 8  
Early Birth Linked to an Increase in Psychiatric Illness  
Ann Borders’ research was featured.

**ABC News (National)** July 3  
Gene-Altering Lotion May Treat Skin Diseases  
Amy Paller’s research was featured.

More headlines
High Impact Factor Research May and June 2012


High Impact Research, continued from pg. 9


Continued on pg. 11


Funding Opportunities

**Specialized Programs of Research Excellence (SPOREs) in Human Cancer for Years 2010, 2011 and 2012 (P50)**

**More information**

**Sponsors:** Department of Health and Human Services (HHS), National Institutes of Health (NIH)

**Submission Deadline:** September 20 (LOI August 20)

**Upper Amount:** $12.5 million

**Synopsis:** The National Cancer Institute (NCI), the National Institute of Dental and Craniofacial Research (NIDCR), and the National Institute of Neurological Disorders and Stroke (NINDS) invite new or renewal (competitive) applications for P50 Research Center Grants for Specialized Programs of Research Excellence (SPOREs). The program will fund five-year P50 SPORE grants to support state-of-the-art investigator-initiated research that will contribute to improved detection, diagnosis, treatment, and prevention of an organ-specific cancer (or a related group of cancers). SPOREs are expected not only to conduct a wide spectrum of research activities, but also to contribute significantly to the development of specialized research COREs, improved research model systems, and collaborative research projects with other institutions. The research supported through this program must be translational in nature and must be based upon knowledge of human biology stemming from research using cellular, molecular, structural, biochemical, or genetic experimental approaches.

**Translational Programs in Lung Diseases (P01)**

**More information**

**Sponsor:** United States Department of Health and Human Services (HHS), National Institutes of Health (NIH), National Heart, Lung, and Blood Institute (NHLBI)

**Submission Deadline:** September 26 (LOI August 26)

**Upper Amount:** $8.75 million

**Synopsis:** This opportunity solicits Program Project Grant (P01) applications from institutions and organizations that will perform collaborative, translational research that moves mechanistic research to clinical applications to improve prevention, diagnosis, or treatment of lung diseases and sleep disorders.

Featured Events

**8/13**

**Myron & Muriel S. Bender Distinguished Lecture Series in Organic Chemistry**

**Presented by Tom W. Muir, PhD, Princeton University**

**Date:** Monday, August 13, 4 to 5 p.m.

**Lecture:** “Protein ligation: Organic chemistry on big proteins”

**Location:** Technological Institute – Tech L211 2145 Sheridan Road (Evanston campus)

**Date:** Tuesday, August 14, 4 to 5 p.m.

**Lecture:** “Chromatin: An expansive canvas for chemical biology”

**Location:** Technological Institute – Tech L211 2145 Sheridan Road (Evanston campus)

**Date:** Wednesday, August 15, 11 a.m. to noon

**Lecture:** “When bugs talk: Virulence regulation in Staphylococci”

**Location:** Ryan Hall 4003 2190 Campus Drive (Evanston campus)

**Contact:** gretchen-burnett@northwestern.edu

**More information**

**8/17**

**Pediatric Grand Rounds**

“Guidelines for management of severe pediatric traumatic brain injury: progress, pitfalls and a dearth of data,” presented by Mark Wainright, MD, PhD, Feinberg

**Date:** Friday, August 17, 8 to 9 a.m.

**Location:** Lurie Children’s Hospital 11th Floor Conference Center 225 E. Chicago Ave. (Chicago campus)

**Contact:** BVonRueden@luriechildrens.org

**More information**

**9/8**

**3rd Annual Prostate Cancer Public Education Forum**

This is a free forum intended for patients, spouses, advocates, and healthcare professionals.

**Date:** Saturday, September 8, 8 a.m. to 3 p.m.

**Location:** Lurie Research Center — Hughes 303 E. Superior St. (Chicago campus)

**Contact:** cancer@northwestern.edu

**More information**

**More events**

Event organizers are encouraged to submit calendar items on Plan-It Purple for consideration. Please contact the Research Office with further questions.