

FSM Research Newsletter

December 2008

Feinberg School of Medicine Office for Research
Northwestern University

EMERGE NETWORK STUDY MAKES PROGRESS PART OF NATIONWIDE EFFORT TO BLEND EMR AND GENETICS

Researchers at the Feinberg School of Medicine (FSM) are participating in the Electronic Medical Record and Genomics Network (eMERGE), a nationwide effort that may transform the future of personalized medicine by integrating medical informatics technology and genetics. Northwestern is one of five institutions in the eMERGE network, which has collectively been awarded \$20 million by the National Human Genome Research Institute, a division of NIH.

The eMERGE Network studies will explore the relationship between genetic variations and a common human trait, using genome-wide association studies (GWAS). The fundamental objective of these studies is to determine whether electronic medical records (EMR) systems can serve as resources for such complex genomic analysis of disease susceptibility and therapeutic outcomes, across diverse patient populations. In addition to Northwestern University, the eMERGE Network includes research teams from the University of Washington, University of Wisconsin, Mayo Clinic, and Vanderbilt University.

The FSM eMERGE research team aims to determine which gene variants might be related to type 2 diabetes and asthma. The team will also determine best practices for community engagement and data sharing, taking into account the ethical concerns associated with privacy and confidentiality. Northwestern's participation represents an important milestone for NUgene, which was launched by the Center for Genetic Medicine (CGM) in 2002 as a biorepository of DNA samples and healthcare information from participating Northwestern patients.

Now in its second year, Northwestern's eMERGE study has made significant progress.

According to Rex Chisholm, PhD, the study's principal investigator and dean for research at FSM, the initial phase of the study focused on developing a computational algorithm. "With an algorithm designed, the team is now conducting chart review to confirm that it will work," he says. The next phase of eMERGE will focus on increasing the number of samples, especially those from patients with type 2 diabetes. To this end, eMERGE investigators are working with a number of internal medicine clinics at Northwestern Memorial Hospital and some community-based clinics. "Once that phase ends, we will begin sending our samples to one of two network-designated laboratories for genotyping," Dr. Chisholm says.

Wendy Wolf, PhD, co-investigator for the eMERGE study and director of NUgene, CGM, says Northwestern's participation in this network has broad-based benefits. "As the eMERGE studies are conducted, network institutions will also evaluate the viability of using biobank-coupled EMR data for research, which would be significantly more efficient than the time-consuming, expensive process of soliciting new participants for each project. At Northwestern, for example, the entire research community will have access to our biobank, which will include up to 18,000 phenotyped samples from the entire eMERGE network.

They won't have to pay for this, which will be a real bonus."

The eMERGE study has already enhanced understanding of issues related to privacy and consent. Maureen Smith, clinical director of NUgene, CGM, is coordinating the community engagement component of eMERGE at FSM and serves as co-chair of the eMERGE network's Consent Group. She says an important part of the study is to better understand people's attitudes about collecting, analyzing and sharing genetic



Members of the NU FSM eMERGE research team, from left to right: Rex Chisholm, Phil Greenland, Geoff Hayes, Maureen Smith, Warren Kibbe, Bill Lowe, Abel Kho, Wendy Wolf, Pedro Avila, and Andrew Winter.

research data. To that end, she recently conducted three focus groups with

participants in NUgene

and another three with members of the public from Chicago communities. Preliminary analysis indicated that 75 percent of these participants were neutral or somewhat trusting of medical research. "The focus groups also identified a number of other themes, including a lack of understanding of genetic research, distrust of the government as an oversight body for genetic research data, and a desire for more information and education about genetic research," she says. "It was very heartening, though, that most participants were enthusiastic about involvement in medical research, even though it would have no direct benefit to them personally."

"The eMERGE network and the studies being conducted offer an unprecedented opportunity to look at large samples of genetic material and explore whether patients with certain diseases or traits have a common genetic marker," says Dr. Chisholm. "Ultimately, we may even be able to use this tool to explore whether genetic similarities are predictive of success in treating patients with specific drugs or other approaches. Clearly, this blending of EMR and genetics has the potential to make a transformational impact on our ability to screen, diagnose and treat disease."

In this issue:

eMERGE Network Study Makes Progress	1
Faculty Profile: Linda Van Horn, PhD, RD	2
Welcome New Faculty	2
Sponsored Awards	3
Mouse Embryo Cryopreservation	3
Erica Marsh Receives Robert Wood Johnson Foundation Award	4
Staff Profile: Nanette Susmarski	4
Student Profile: Alyson Fiorillo	5
Animal Research Corner	5
Upcoming Events	6
Funding Opportunities	6

MEET LINDA VAN HORN, PHD, RD



Professor, Associate Dean for Faculty Development, and Interim Chair, Department of Preventive Medicine

What are your research interests? Generally, my research focuses on the role of diet in the prevention and treatment of disease.

What research projects are you currently pursuing? I am currently working on a number of projects, including the Women's Health Initiative Follow-Up Study. This is a follow-up to a clinical trial in postmenopausal women, ages 50 to 79, to test the overall health impact of three major treatment strategies in a broad and representative group of mature women. These strategies include: estrogen replacement therapy (ERT), with or without progesterone; a low-fat diet; and calcium/vitamin D (Ca/VitD) supplementation. Treatments were compared with placebo (versus ERT), usual diet (versus low-fat diet) and placebos for Ca/VitD.

I am also working on the Diet Intervention Study in Children (DISC) Follow-Up Study. The DISC is a NHLBI-funded clinical trial designed to test the efficacy and safety of a dietary intervention to reduce serum cholesterol levels in 8- to 10-year old, prepubertal children with elevated LDL cholesterol levels.

My current research projects also include a grant proposal for the study, "Maternal Avoidance of Metabolic Adversity." Evidence continues to mount regarding the adverse impact of maternal obesity and excessive gestational weight gain. Not only is this problem detrimental to the health of the mother and potentially the birth outcome, but epidemiologic studies document an increased risk of chronic disease among the offspring as they grow up. There is also new data from Finland showing that careful dietary intervention beginning in early childhood and followed for up to 14 years is associated with lower body-mass index (BMI) and reduced cardiovascular risk. We need studies in this country that document the potential benefits of diet intervention during pregnancy. This work should be aimed at helping new mothers adopt healthier lifestyles themselves and become the role models for guiding their families in the same direction. Our research proposal targets this goal.

What are the objectives of your research interests? I hope my efforts will lead to enhanced awareness of the overall nutrient quality and energy balance that can result through increased intake of fruits, vegetables, whole grains, fish, and unsaturated fatty acids along with regular daily physical activity.

What are some of the challenges you face? The obesity epidemic drives the nutrition focus towards energy restriction and reduction of sedentary behavior, but sustaining enhanced nutrient quality and regular physical activity long term remains a daunting research challenge, especially in this funding climate. This is especially crucial in preventing pediatric obesity, the undisputed and single most effective public health approach to treating the obesity epidemic.

Why did you choose Northwestern? I came to Northwestern because of Dr. Jerry Stamler, the founding chair of the Department of Preventive Medicine and my long-term mentor, colleague, and friend, who is now professor emeritus but still actively engaged in NIH-funded research and remains an inspiration to all of us. More recently, and continually, I value this institution because of the academic excellence, intellectual stimulation, and outstanding collaboration I have had the privilege to experience among my Northwestern colleagues and friends.

WELCOME NEW FACULTY

Mohammed Javeed Ansari joins as assistant professor of medicine. He has held academic appointments in medicine at Harvard Medical School and served as full-time faculty and attending physician in the division of nephrology at Brigham and Women's Hospital. He is a transplant nephrologist conducting basic research in transplantation immunobiology.

Shannon Galvin joins as assistant professor of infectious disease. She holds a MD from the University of Miami School of Medicine. Prior to joining the Feinberg School, she held faculty and clinical appointments at IntraHealth International and the University of North Carolina at Chapel Hill. One of her recent abstracts is titled, "Community provider partnerships encourage HIV/AIDS prevention services utilization in Rwanda." (AIDS 2008, WEPE0060.)

Michael Cuttica joins as assistant professor of medicine. He holds an MD from the Feinberg School and received his graduate medical education at Northwestern Memorial Hospital. He was on the team that received the 2007 Bench to Bedside Award from the NIH Clinical Center under the category of rare diseases for the project titled, "Antiproliferative Therapy for Severe Pulmonary Arterial Hypertension."

SPONSORED AWARDS



Thomas McGarry, MD, PhD
Assistant Professor of Medicine

Project Title:

The Role of Geminin in Hematopoiesis

Sponsor:

National Heart, Lung, and Blood Institute

Stem cells in the bone marrow supply the body with mature blood cells throughout life. This project examines how the protein Geminin maintains a balance between stem cell proliferation and differentiation. The hope is to shed light on the pathological processes that underlie common hematological problems like leukemia, lymphoma, and myelodysplastic syndromes.



Jonathan Leis, PhD
Professor of Microbiology-Immunology

Project Title:

Understanding the Mechanism of Retrovirus Budding

Sponsor:

National Institute of Allergy and Infectious Diseases

Multidisciplinary molecular genetics, cell biology, and biochemical approaches are being used to study the mechanism of release of avian and human retroviruses from cells. These studies follow up recent observations that the two viruses egress from cells by a similar mechanism but use parallel pathways and different cellular protein complexes to accomplish the task.



Robert Vassar, PhD
Professor of Cell and Molecular Biology

Project Title:

BACE1 as a Therapeutic Target for Alzheimer's Disease

Sponsor:

National Institute on Aging

This grant will study the effects of BACE1 reduction on amyloidogenesis, the role of BACE1 in behavior and stress response in vivo, and BACE1 trafficking to the synapse. A combination of cell culture and in vivo animal models of Alzheimer's disease will be used and analyzed by molecular biological, immunohistochemical, genomic, and proteomic techniques.

[Click here for a list of recent FSM sponsored awards](#)

MOUSE EMBRYO CRYOPRESERVATION AT NORTHWESTERN UNIVERSITY

The concept of storing mouse strains as cryopreserved stocks has swept across the international scientific community as investigators struggle with both the technical and monetary resources needed to maintain mouse colonies and the increasing issues impacting the transport of live animals, particularly across international borders. Indeed, thousands of mouse lines are already archived as cryopreserved embryos or sperm at many vendors and repositories around the world, a collegial effort that has created a phenomenal resource of easily accessible research tools. At Northwestern, cryorecovery of frozen mouse lines and cryopreservation of mouse embryos are performed by the Transgenic and Targeted Mutagenesis Laboratory (TTML). Since becoming available in 2006, many NU investigators have taken advantage of these services as an effective means of managing animal colonies and costs, and cryopreservation has become one of our most requested services.

Anticipating an upsurge in the demand for cryopreservation, due partially to the increasingly limited mouse space within the Lurie vivarium, we requested and recently received funds from the dean's office and the office of the vice president for research for additional technical support that will allow us to expand the capacity of embryo cryopreservation and develop new services including sperm cryopreservation.

Embryos for the majority of current projects are generated by in vitro fertilization (IVF) a technique that, while excellent for generating large numbers of embryos using relatively few mice, is time sensitive and labor intensive. Fertilization rates vary significantly among lines and from male to male. Our capacity for embryo cryopreservation will double with the additional technical support and facilitate the flow of projects through the facility in a more timely manner.

Sperm cryopreservation has great potential as a cryopreservation method as this technique is not as labor intensive as embryo cryopreservation and can be performed at virtually any time. This method can be used to preserve lines in the early phases of characterization that can easily be revived and rapidly expanded at a future date if necessary. It can also be performed in an emergency situation in case of a sick or dying male. Jackson Laboratories, a leader in mouse cryopreservation, has recently published a cryopreservation method that overcomes many of the historical limitations associated with mouse sperm cryopreservation, particularly for strains on a C57BL/6 or BALB/c genetic background. Our initial attempts at generating embryos and live pups from cryo-recovered sperm have been successful, and we hope to be able to offer this as a service very soon.

Recent advances in mouse cryobiology have made germplasm cryopreservation easy, safe, and affordable. Not only is cryopreservation an economical means of maintaining colonies, it also ensures against loss of colonies in the event of colony pathogen contamination, reproductive failure, genetic drift, or transgene instability as lines can rapidly be revived and expanded from frozen stocks with relative ease. In addition, cryopreservation can help protect against loss of colonies by accident. For example, liquid nitrogen dewars used to store frozen embryos have withstood both fires and floods at various institutions faced with such disasters, including the floods in New Orleans a few years ago.

For more information on cryopreservation services available at Northwestern University contact Dr. Lynn Doglio (l-doglio@northwestern.edu) or visit our new web site <http://www.cgm.northwestern.edu/TTML/index.htm>.

ERICA MARSH RECEIVES ROBERT WOOD JOHNSON FOUNDATION AWARD



In September of 2008, Dr. Erica E. Marsh was awarded the Harold Amos Medical Faculty Development Award from the Robert Wood Johnson Foundation (RWJF). The RWJF is the nation's largest philanthropic organization devoted exclusively to improving the health and health care of Americans. The organization funds approximately \$500 million in support of programs and projects each year. The Harold Amos Medical Faculty Development Award is a program in the foundation's human capital focus area that provides up to four years of funding support for junior medical faculty researchers. Dr. Marsh was one of twelve award recipients nationwide.

Dr. Marsh joined Northwestern University's Feinberg School of Medicine three years ago when she came here for her fellowship in reproductive endocrinology and infertility. Prior to that, she had attended Harvard University for college and medical school and had done her residency training in obstetrics and gynecology at the Harvard Integrated Residency Program in Obstetrics and Gynecology at Brigham and Women's Hospital and Massachusetts General Hospital. During her fellowship, Dr. Marsh worked in the laboratory of Dr. Serdar Bulun where she conducted basic science and translational research that led to the identification of a novel pathway for the induction of aromatase in uterine leiomyoma involving the hormone leptin. Dr. Marsh received a number of intramural and extramural grants to fund her research and published multiple scientific papers on the pathogenesis of leiomyoma. After the completion of her fellowship, Dr. Marsh joined the Feinberg School as assistant professor of obstetrics and gynecology.

The Robert Wood Johnson Award will provide Dr. Marsh with a substantial amount of protected time for her research while still allowing her clinical time to stay connected with patients. Uterine leiomyomas continue to be the leading cause of hysterectomy in women in the United States. Their associated symptoms can include pelvic pain, heavy menstrual cycles, infertility, recurrent pregnancy loss, and pressure symptoms. Dr. Marsh looks forward to the time where women have a medical treatment option and ultimately a medical preventive option for these benign but very morbid tumors.

STAFF PROFILE: NANETTE SUSMARSKI



*Senior Research Technologist,
Department of Microbiology-
Immunology*

How long have you been at NU? I was hired in 1988—so 20 years!

Where are you from? I grew up here in Chicago, on the southwest side of the city. I lived two blocks west of Midway Airport and so I listened to a lot of loud planes (taking off and landing) when growing up. Since then I married and moved to the suburb of Oak Lawn.

What's your degree in? I attended Loyola University of Chicago and graduated with a BS in biology. I went on to attend the Illinois Institute of Technology (going to night school while working during the day), but I never did finish my master's degree. I wasn't getting any financial aid, and the tuition was too steep for me at the time, so I quit after a year.

What is your role at the department? I work in Dr. Patricia Spear's lab, studying herpes simplex virus. My main role in the lab is to do tissue culture work, which involves passing and freezing cells and setting up cell orders for people to use in their experiments. I am also responsible for expanding and freezing down virus stocks. I work in the capacity of a lab manager as well, ordering supplies, maintaining equipment, keeping inventory and freezer records, and basically making sure all of the lab personnel have what they need to carry out their experiments. I insure quality control, making certain our lab and cell lines stay contamination free.

What's a typical day like for you? Typically, a portion of my day involves working on the computer, placing requests for supplies

into our purchase order system. I phone-in orders and "mark as received" those that have arrived. I pass cells and set up cell orders for those people in the lab who request them. I also make, filter, and autoclave sterile solutions that are needed in the lab.

Why did you choose to work here? Dr. Spear hired me to work in her lab at the University of Chicago in 1986. Two years later, she accepted the position of chair for the Department of Microbiology-Immunology here at the Feinberg School. She invited me to relocate with her, so I did. I have always been happy with my decision and feel fortunate to work for such a great boss at such a highly respected institution.

What do you like/dislike about your job? I really like the people that I work with here at Northwestern! Our lab is a happy place to come to each day. My coworkers are very hard working, but still take the time to be pleasant to each other. We are like one big happy family. The only thing I dislike about my job is its location. I do not enjoy the commute back and forth between Oak Lawn and downtown Chicago each day.

What do you like to spend your free time doing? I am married with three kids so truly do not have a lot free time. When I am not at the lab, I am very involved with my kids, their sports/clubs, and their homework and school projects. My youngest son is a Cub Scout and so my whole family is involved with the Scouts. We run the kitchen and sell concessions at all of the Cub Scout functions.

I enjoy photography, backgammon, walking at the track (with my kids or my sister) and doing the *New York Times* crossword puzzle. I like comedies and romance movies, particularly the old Meg Ryan movies from the 80s and 90s and (surprisingly, I'm not ashamed to say) those comedies from the Austin Powers series. My favorite movie of all time is "Gone With the Wind."

STUDENT PROFILE: ALYSON FIORILLO



Alyson entered the Integrated Graduate Program (IGP) in 2004 after pursuing a BS in chemistry from Marist College in Poughkeepsie, New York. Although her undergraduate degree is in chemistry, she became interested in biological sciences after working on her senior thesis project, which focused on the bioremediation of pollutants in the Hudson River. She joined the laboratory of Dr. Charles Clevenger in the Department of Pathology and Lurie Comprehensive Cancer Center to pursue her PhD.

What are your research interests? Research in the Clevenger lab focuses on prolactin—a hormone that promotes lactogenesis in women post-pregnancy, but has also been shown to play a role in the pathogenesis of breast cancer. My thesis project focuses on characterizing the role of the prolactin receptor, which binds to prolactin and consequently activates multiple signaling pathways that turn on genes that promote cell survival, growth, and differentiation. What we have found is that the prolactin receptor, besides its signaling capabilities, can directly modulate gene expression by direct action in the nucleus. These data is incredibly exciting because it gives new definition to how a hormone or cytokine receptor might function, and consequently give us a greater understanding of how normal or tumorigenic cells are regulated.

What attracted you to IGP? I chose to pursue a PhD within the IGP at the Feinberg School because of the interdisciplinary training it offered and because it emphasized biological research with medical application. Ever since I was given a taste of biology research in undergrad, I knew this was something that I was passionate about. Also, during my weekend interview at Northwestern, I absolutely fell in love with Chicago (even though it was freezing during that time!). Overall, the IGP seemed like a great program with amazing faculty who were excited about the research they were doing, and all of this was in the heart of Chicago.

How would you describe the faculty at FSM? My mentor, Dr. Charles Clevenger, is always there to remind me of the “big picture” in my project and give me invaluable writing and presentation advice. And, I think his mentorship is representative of the outstanding faculty members at the Feinberg School.

Outside of my own laboratory, I have also found those faculty members who are always there to give words of advice and reassurance. Our assistant program director, Dr. Steve Anderson, has been instrumental in creating an atmosphere of community within the IGP and has always been there to offer words of advice and support to all students within our program. In addition, some have even taken the time to host student-organized seminars that may last until 7 or 8 p.m. I think these examples exemplify the emphasis that FSM faculty place not only on research, but on the overall student community.

What are your interests outside of research? Every year my fiancé and I volunteer at a muscular dystrophy camp in Rochester, New York. The camp is one week long, and it has been one of the best learning experiences outside of the laboratory, and one of my favorite ways to spend vacation time. I serve as a cabin head to 15 to 21 year-old girls, and after five years they have definitely become like a second family. Throughout the week we swim, perform karaoke, make arts and crafts, sing songs around the campfire, and even use a zip line that is suspended about 30 feet in the air. I think this camp reinforces the reason why I engage in medical research—I see a need to find therapies for genetic disorders to give a better quality of life to these amazing kids that I work with year after year.

In addition to that, I am the academic co-chair of the Chicago Graduate Student Association. In years past, we have organized alternative career forums, invited faculty members to speak about the ethics of preimplantation genetics, science, and religion and the definition of life. I think this is a great way for students to look outside the box and think about how our research impacts the outside community.

Since I have a love for athletic competition and for being in the water, I swim with a club team several days a week. A few years ago, I started to compete in triathlons. This past summer I was lucky enough to be chosen for the elite competition at the Accenture Chicago Triathlon, which was nerve-racking but also a lot of fun!

Besides my sports endeavors, I love taking in all that Chicago has to offer. My fiancé (whom I met here in Chicago and is also a member of the IGP) and I have become huge fans of the Chicago-based band, Wilco, and try to never miss a concert. We are also fans of the Chicago Cubs and Bears and have been to games at both Wrigley and Soldier Field. We also enjoy the free sights of the city such as Millennium Park, summer street festivals, Navy Pier fireworks, and the Lincoln Park Zoo.

ANIMAL RESEARCH CORNER



The IACUC has established a set of standard animal procedures that can be cited in your animal protocols. These standard procedures are referred to as Approved Animal Procedures (AAPs). The AAPs are listed on the IACUC website <http://www.research.northwestern.edu/oprs/acuc/>. Once on the website, click on Policies and AAPs on the left. You will have to enter your net id and password to access this page.

Thus far there are AAPs for the following procedures: tail biopsy, retro-orbital bleeds, thoracotomy-perfusion, and embryo harvest. Each AAP includes instructions on how to cite it in your animal protocol form. The IACUC welcomes new suggestions for AAPs from the research community. If you have a common procedure that is likely used by other labs, please describe it in detail (copying from your protocol should be sufficient) and e-mail this suggestion to Erica Armstrong, assistant director OPRS/IACUC (erica-armstrong@northwestern.edu).

IACUC Policies can also be accessed from the same web site as the AAPs. The policies set guiding principles for topics like breeding and satellite facilities. It is highly recommended that you review those policies that pertain to your areas of research.

Look for weekly event announcements and funding opportunities in your email.

UPCOMING EVENTS

Office for Sponsored Research Proposal Submission to Grants.gov Workshop

Chicago Campus - 303 E. Superior St., Lurie Medical Research Center, Baldwin Auditorium

Monday, December 22, 10 a.m.-noon

Monday, January 19, 9:30-11:30 a.m.

Evanston Campus - 1970 Campus Dr., University Library IT Computer Lab Lower Level, Rm B183

Friday, December 19, 10 a.m.-noon

Tuesday, January 20, 10 a.m.-noon

Contact David Hull at d-hull2@northwestern.edu for reservation and indicate what day and campus you wish to attend.

Feinberg Cardiovascular Research Institute Seminar

"Novel Molecular Mechanisms Regulating Leukocyte Emigration"

William A. Muller, MD, PhD, Magerstadt Professor and Chairman, Department of Pathology, Feinberg School of Medicine

Thursday, January 8, 2009, 8:00-9:30 a.m.

303 E. Superior St., Lurie Building, Baldwin Auditorium - Chicago Campus

Contact: Feinberg Cardiovascular Research Institute - Donna Ray, 312-503-2296

<http://planitpurple.northwestern.edu/event/355236>

NUIN Student Sponsored Seminar Series

Christopher A. Walsh, MD, PhD, chief, Division of Genetics, Children's Hospital, Howard Hughes Medical Institute, BIDMC, Bullard Professor of Neurology, Harvard Medical School

Friday, January 16, 2009, 12:30-1:45 p.m.

303 E. Superior St., Lurie Medical Research Center, Hughes Auditorium - Chicago Campus

Contact: Interdepartmental Neuroscience Program (NUIN) - Sharon Stade, 312-503-4300

<http://planitpurple.northwestern.edu/event/376390>

Event organizers are encouraged to submit calendar items on [Plan-it Purple](#). For more events, visit www.feinberg.northwestern.edu/research/calendar/.

SAVE THE DATE!

5th Annual Lewis Landsberg Research Day Thursday, April 2, 2009

303 E. Superior St.
Lurie Medical Research Center
Ryan Atrium & Hughes Auditorium
Chicago Campus

Stay tuned for more info!

FUNDING OPPORTUNITIES

LIMITED FUNDING OPPORTUNITY: Integrating Medical Knowledge into Graduate Education Program

Howard Hughes Medical Institute (HHMI)

<http://www.hhmi.org/grants/institutions/medintograd.html>

Internal and HHMI LOI deadline: 1/6/2009

Internal proposal upload deadline: 2/8/2009 (by 5:00 p.m.)

Amount: Awards will range from \$400,000 to \$1 million over the four years of funding

Synopsis: HHMI will grant four-year awards to institutions offering a PhD in the biomedical sciences. These awards may be used to enhance existing graduate training programs or initiate new programs to develop a cadre of PhD researchers who are prepared to conduct research at the interface of biomedical science and clinical medicine.

LIMITED FUNDING OPPORTUNITY: Integrative Graduate Education and Research Traineeship Program (IGERT)

The National Science Foundation (NSF)

<http://www.nsf.gov/pubs/2009/nsf09519/nsf09519.htm>

Internal LOI deadline: 1/9/2009

Internal proposal upload deadline: 1/14/2009 (by 5:00 p.m.)

Amount: For new awards, requests may not exceed \$400,000 in the first year and \$600,000 in years two through five. A special allocation of \$200,000 may be requested for new awards in the first year for new awards.

Synopsis: This program has been developed to meet the challenges of educating U.S. PhD scientists and engineers who will pursue careers in research and education, with the interdisciplinary backgrounds, deep knowledge in chosen disciplines, and technical, professional, and personal skills to become, in their own careers, leaders and creative agents for change. The program is intended to catalyze a cultural change in graduate education, for students, faculty, and institutions, by establishing innovative new models for graduate education and training in a fertile environment for collaborative research that transcends traditional disciplinary boundaries. It is also intended to facilitate diversity in student participation and preparation, and to contribute to a world-class, broadly inclusive, and globally engaged science and engineering workforce.

For more funding opportunities, visit:

www.feinberg.northwestern.edu/research/funding-opportunities/

We want to hear from you!

Your feedback and suggestions are always welcomed!

Feinberg School of Medicine Office for Research

E-mail: fsm-research@northwestern.edu

Phone: 312-503-1499 Fax: 312-503-2790

www.feinberg.northwestern.edu/research/