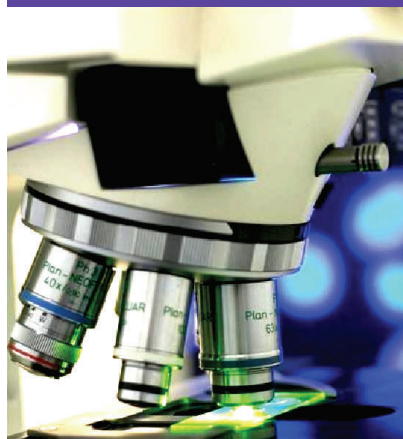




NORTHWESTERN  
UNIVERSITY

# FSM Researcher

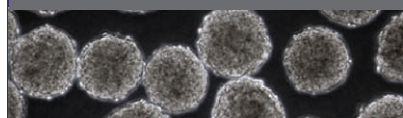
Feinberg School of Medicine - Office for Research



March 2010

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## CONNECT WITH FEINBERG

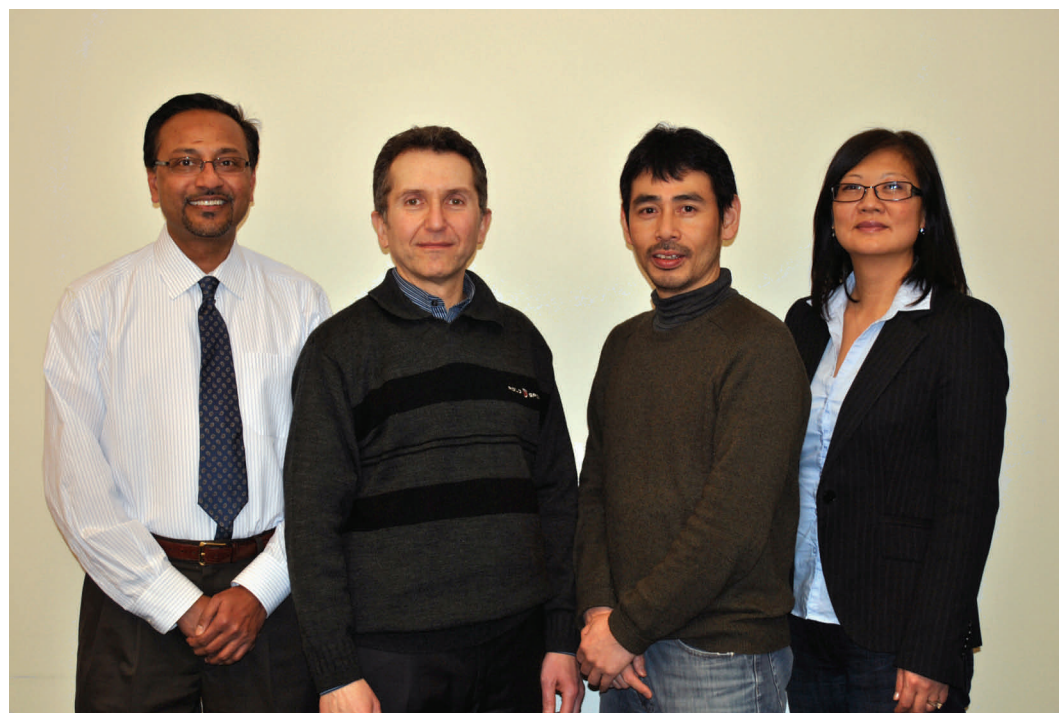


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PICTURED: DEBU CHAKRAVARTI, PHD, SERDAR BULUN, MD, TAKESHI KURITA, PHD, AND J. JULIE KIM, PHD.  
TEAM MEMBERS NOT PICTURED: ROMANA NOWAK, PHD, AND ERICA MARSH, MD.

## New Feinberg Grant Sustains the Only NIH-Funded Uterine Fibroid Research Center in the U.S.

Uterine fibroids, also known as uterine leiomyoma, are the most common tumors found in women. As many as 75 percent of women have them, and about half of those women become symptomatic at some point during their reproductive lives — experiencing irregular uterine bleeding, anemia, pelvic pain or recurrent pregnancy loss.

“Uterine fibroids represent the most prevalent benign gynecologic problem in our nation,” says [Serdar E. Bulun](#), MD, George H. Gardner Professor of Clinical Gynecology and chief of the [Division of Reproductive Biology Research](#) in the Feinberg School of Medicine Department of Obstetrics and Gynecology. “This is truly an understudied area and a serious public health problem.”

Bulun’s research suggests they are stimulated by the hormone progesterone, which enables and activates fibroid growth during childbearing years. The mechanisms regulating the development and growth of these tumors are still not well understood, however, so treatment options for fibroids are limited. They’re typically treated surgically, through a myomectomy or hysterectomy, or using newer technologies involving interventional radiology or high intensity ultrasound. GnRH agonists, developed in the 1980s, are the only class of drugs available to treat fibroids, but its success is extremely limited and its side effects prevent long-term use of the medication.

A renewable five-year P01 Program Project, funded by the Eunice Kennedy Shriver Na-

*(Continued on page 2)*

(Continued from page 1)

tional Institutes of Child Health and Human Development, offers Bulun and his colleagues the opportunity to find answers to these uncertainties so as to eliminate the suffering caused by uterine fibroids. The grant also allows for the continued existence of the Uterine Fibroid Research Center at Northwestern, which was established in 2006.

"This is the only center of its kind in the U.S. and possibly the world," says Bulun, who hopes this funding, totaling more than \$5.7 million, will help to raise awareness for uterine fibroid research.

As the principal investigator of the center grant, Bulun is focused on studying the cause of this chronic problem, as well as treatment options — investigating hormonal pathways and defining molecular targets for existing or upcoming pharmaceutical compounds to develop novel and alternative management options.

Here's a look at the three main NIH-funded projects being accomplished under Bulun's leadership:

### Project One

The first study, led by Bulun, considers how uterine fibroids are affected by progesterone and whether anti-progestins affect leiomyoma tissues and cells. Ping Yin, MD, PhD, a senior research associate, produced a great deal of the preliminary data for this investigation. The research has shown that anti-progestin compounds shrink fibroids, but the compounds have had negative side effects.

"My team is trying to understand how these compounds work," Bulun says. "We hope to solve this puzzle and address the side effects associated with anti-progestin use."

### Project Two

The second study, led by J. Julie Kim, PhD, assistant professor of obstetrics and gynecology, and Debu Chakravarti, PhD, associate professor of obstetrics and gynecology, looks at how progesterone affects a different hormonal pathway — AKT-FOXO1. This pathway has been targeted in other malignancies with early success, and the team has found a novel link between the progesterone and AKT-FOXO1 pathways. Preliminary studies indicate that AKT-FOXO1 inhibitors significantly decrease fibroid growth.

"We have exploited the AKT-FOXO1 pathway in a number of different tumors and have found that the tumors shrink without affecting other tissues," says Bulun.

### Project Three

For the third project, the Northwestern investigators are collaborating with Romana Nowak, PhD, professor of animal sciences at the University of Illinois at Urbana-Champaign. Fibroid tumors produce large quantities of fibrosis (excess connective tissue) through activation of the growth factor TGF $\beta$ ; in turn, fibrosis may facilitate cell growth in fibroid tumors. Thus, Nowak, together with Bulun and his colleagues, is studying antifibrotic (anti-TGF $\beta$ ) compounds as potential therapeutics for uterine leiomyoma.

Under the three largest projects, Bulun and his colleagues examine the common mechanisms that bring together progesterone, AKT-FOXO1 signaling and TGF $\beta$  pathways to understand endocrine-related growth, cell death and fibrosis formation in uterine fibroids.

Another study being completed at the center is led by Takeshi Kurita, PhD, research associate professor. Kurita's research uses a mouse xenograft model to determine the effects of hormones and new drugs in human fibroid growth. This



ILLUSTRATION: UTERINE FIBROIDS

research looks at fibroid growth properties in mice, as well as drug response — finding selective effects of estrogen versus progesterone.

"This model will be an extraordinary contribution to the fibroid field, as it's clinically relevant, and other researchers will be able to use it as a key tool to study this disease," Bulun says.

In addition, Erica Marsh, MD, MSci, assistant professor and co-investigator on project 1, is in charge of building a fibroid tissue bank from hundreds of patients with tumors and various genetic risk factors.

"We hope our research will encourage the pharmaceutical industry and clinicians to set up clinical trials," says Bulun. "This center is a unique entity. We approach the translational aspects of uterine fibroids in a multidisciplinary manner."

To learn more about the Uterine Leiomyoma Research Center, contact Serdar E. Bulun: [s-bulun@northwestern.edu](mailto:s-bulun@northwestern.edu).



core facilities through an annual competition. A description of the FSM Cores Program is available on the [program web site](#), along with FY2011 funding applications for [new](#) and [existing](#) cores.

For more information, please contact [jeff-weiss@northwestern.edu](mailto:jeff-weiss@northwestern.edu).

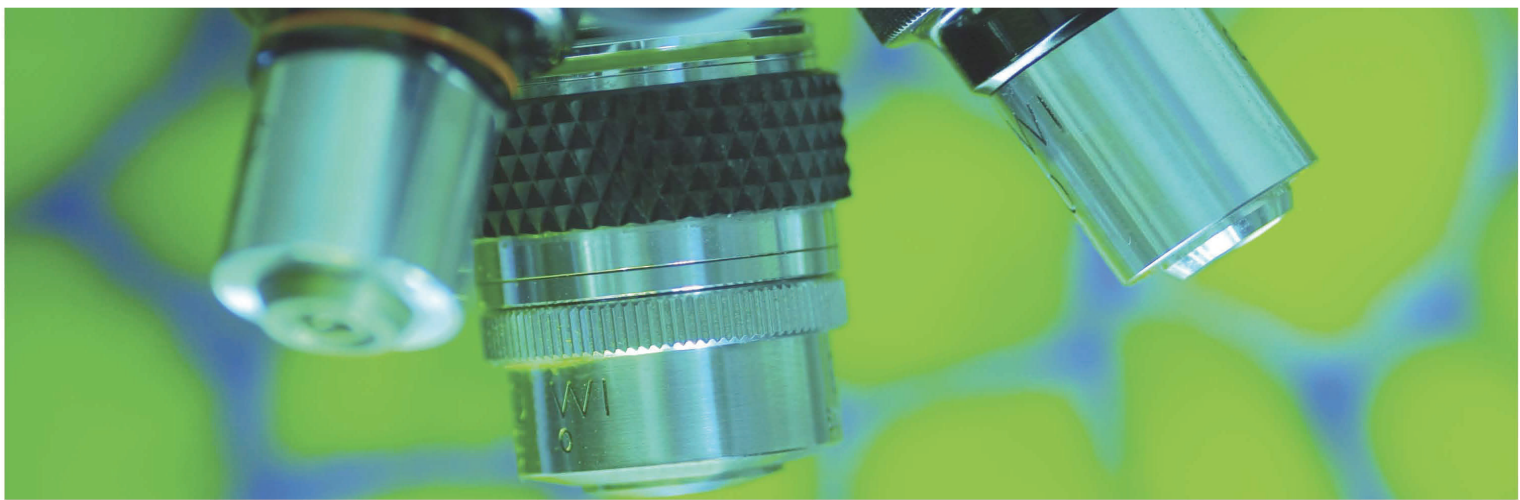


Northwestern University Feinberg School of Medicine



SIXTH ANNUAL

# Lewis Landsberg Research Day



## THURSDAY, APRIL 8, 2010

Robert H. Lurie Medical Research Center  
303 E. Superior Street

## CALL FOR ABSTRACTS

SUBMISSION DEADLINE: Monday, March 22, 2010

The sixth annual Lewis Landsberg Research Day will be held on Thursday, April 8, 2010.

The event is open to researchers in the following categories:

- Faculty
- MD-PhD students
- Postdoctoral researchers/fellows
- Graduate students
- Graduate students
- Medical students
- Clinical residents and fellows
- Undergraduate students

Awards will be presented in the areas of basic science, clinical research and women's health research. Those interested in participating must [submit an abstract online](#) no later than **Monday, March 22**.

For more information, please call the Feinberg School of Medicine Office for Research at (312) 503-1499 or visit [www.feinberg.northwestern.edu/research/research\\_day/2010](http://www.feinberg.northwestern.edu/research/research_day/2010).

## Meet Murali Prakriya, PhD, Assistant Professor in the Department of Molecular Pharmacology and Biological Chemistry



DR. MURALI PRAKRIYA

After earning his bachelor's degree in electrical engineering at the Indian Institute of Technology, [Murali Prakriya](#), PhD, assistant professor in the Department of Molecular Pharmacology and Biological Chemistry at the Feinberg School of Medicine, went on to earn his master's degree in biomedical engineering from University of Miami and PhD in neuroscience from Washington University in St. Louis. Prakriya performed a post doctoral fellowship at Stanford University before coming to Northwestern to pursue his interests.

During his first year at Feinberg, Prakriya was awarded the Scientist Development Award from the American Heart Association, which recognizes promising scientists in the early stages of their career. Since then, he's published articles in numerous peer-reviewed publications including *Proceedings of the National Academy of Sciences of the United States of America* (PNAS), *Nature* and *Journal of Physiology*.

FSM Researcher recently caught up with Dr. Prakriya to learn about his research and current projects.

### What are your research interests?

My research interests are centered in the realm of cellular signaling, a world where small organic and inorganic molecules operate within the confines of the cell to

sustain various tasks essential for life.

In particular, we study signaling mediated by calcium ( $\text{Ca}^{2+}$ ) ions.  $\text{Ca}^{2+}$  is one of the most ubiquitous intracellular signaling messengers found in nature, mediating many cellular functions such as gene expression, chemotaxis and neurotransmitter release. Cellular  $\text{Ca}^{2+}$  signals generally arise from the opening of  $\text{Ca}^{2+}$  permeable ion channels, a diverse family of membrane proteins.

We are focusing on  $\text{Ca}^{2+}$  signals arising from the opening of a  $\text{Ca}^{2+}$  channel subtype known as the store-operated  $\text{Ca}^{2+}$  channel (SOC). SOC is found in the plasma membranes of practically all mammalian cells and are activated through a decrease in the calcium concentration ( $[\text{Ca}^{2+}]$ ) in the endoplasmic reticulum (ER), a vast membranous network within the cell that serves as a reservoir for stored calcium. Human patients with mutations in SOC suffer from a devastating severe combined immunodeficiency, underscoring their vital importance. We are studying the molecular and cellular mechanisms by which SOC are activated and the mechanisms by

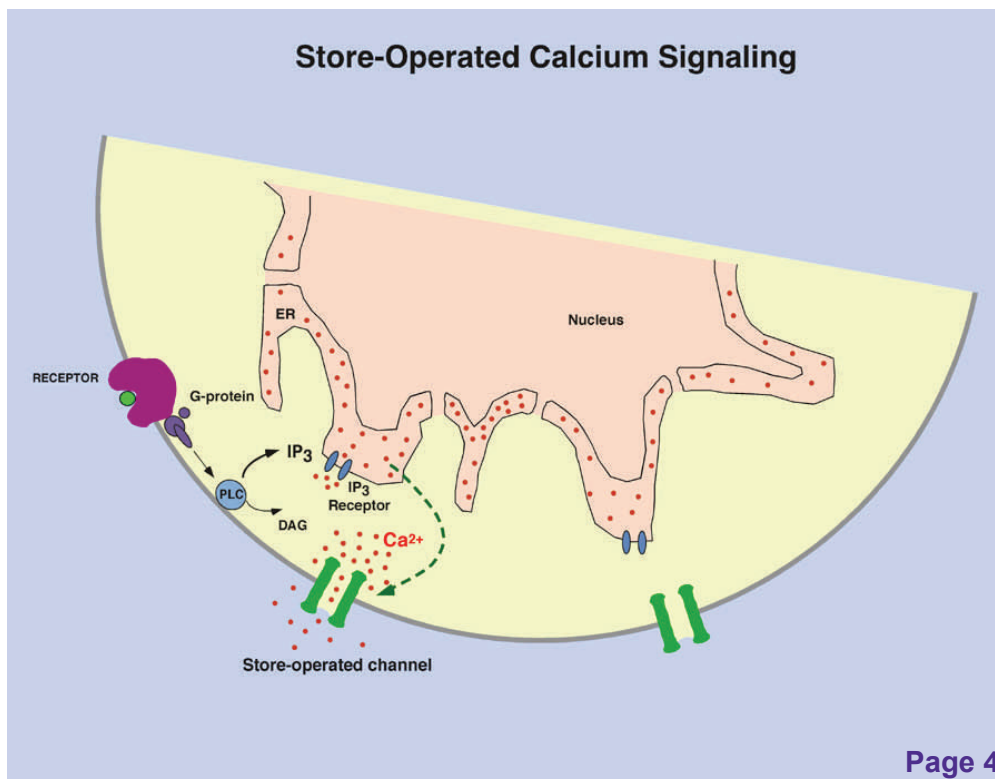
which they regulate gene expression, immune cell function and the development of neural stem cells.

### What research projects are you currently pursuing?

We have three major themes.

One effort is to understand the molecular mechanisms of store-operated channel function. How does depletion of  $\text{Ca}^{2+}$  in the ER trigger the opening of store-operated channels in the plasma membrane? What are the key molecular and structural features of store-operated channel proteins? How are store-operated channels regulated? We have learned that store-operated channels are activated by an unusual mechanism involving coordinated redistributions of the ER  $\text{Ca}^{2+}$  sensor (a molecule called STIM1) and the CRAC channel, which results in both molecules gathering at the same peripheral sub-cellular sites. This type of activation process, where the stimulus brings the sensor and the channel together in opposite membranes, is unprecedented among ion channels. We

(Continued on page 9)



## What You Need to Know About eNOTIS: A New Subject Enrollment Tool for Clinical Research

A new subject registration system for all Institutional Review Board (IRB) approved clinical research at Northwestern University, [eNOTIS](#), will launch later this winter.

Developed by the [NUCATS Institute's](#) Northwestern University Biomedical Informatics Center ([NUBIC](#)), eNOTIS is designed to track participant accrual for research studies under IRB oversight, which includes any study run through NUCATS, Northwestern Memorial Hospital, Northwestern Memorial Faculty Foundation and the Rehabilitation Institute of Chicago. Children's Memorial Hospital has a separate IRB; currently the bulk of CMH clinical studies are not tracked in eIRB.

"eNOTIS will provide a scalable solution for tracking research study participants and can provide accrual reports required for Northwestern periodic reviews," says Warren Kibbe, PhD, associate director for NUBIC and director of bioinformatics for the Center for Genetic Medicine and the Robert H. Lurie Comprehensive Cancer Center (Lurie Cancer Center).

eNOTIS allows researchers to see whether subjects are participating in multiple studies, view accrual information and read general descriptions of studies on a current and historic basis. However, users only have read/write access to specific details on their own studies and subjects.

"The ability of eNOTIS users to unambi-

guously couple clinical research participants with clinical patient identifiers through the Northwestern Medicine master patient index is a huge benefit for the many researchers whose studies span clinical research and clinical care," says Kibbe. "In conjunction with other tools such as the Northwestern Medicine Enterprise Data Warehouse, eNOTIS will dramatically lower barriers to translational research and accelerate innovation at Northwestern."

Designed to become the centralized repository for subject enrollment, eNOTIS will provide a rich source of data for reporting and ease the management burden on researchers and administrators in tracking approach, consent, participation and completion on all IRB-approved studies. The centralization of this information promotes better collaboration and compliance. This effort is in direct response to investigator requests for a coordinated, cross-institutional system, and is part of the larger goal of re-engineering the clinical trial research process. The eNOTIS concept was highly endorsed by the clinical research process taskforce.

The first phase of eNOTIS is aimed at tracking research participant accrual and completion. eNOTIS offers import mechanisms to allow researchers to work with other clinical trial systems, such as drug company studies, with minimal additional effort. However, non-anonymous tracking of participants in eNOTIS does require information such as race and eth-

# eNOTIS

NEW TOOL COMING SOON

nicity on participants to satisfy IRB periodic reviews, facilitate [clinicaltrials.gov](#) reporting and NIH requirements.

The second phase of eNOTIS will include a centralized patient study calendar. Later phases will address adverse event reporting and financial billing processes.

Steve Rosen, MD, director of the Lurie Cancer Center, and Tim Kuzel MD, Feinberg professor of medicine, were the executive sponsors for the project, originally NOTIS, in 1998, and Rex Chisholm, PhD, dean, Feinberg Office for Research, and Phil Greenland, director, the NUCATS Institute, are the current executive directors for the project.

eNOTIS is supported by joint efforts across Northwestern's medical enterprise including the Feinberg School of Medicine, the Feinberg Office for Research and the NUCATS Institute.

Over the coming weeks, more information, including training and documentation materials will be available.

If you have questions or would like more information, contact [enotis@northwestern.edu](mailto:enotis@northwestern.edu).



Please join us for the First Annual International  
SCIENCE OF TEAM SCIENCE CONFERENCE

LAMBERT FAMILY COMMUNICATION  
CONFERENCE in collaboration with Research Team  
Support (RTS) within the Northwestern University  
Clinical and Translational Sciences (NUCATS)  
Institute on the Science of Team Science

THURSDAY-SATURDAY, APRIL 22-24, 2010  
Wyndham Chicago



## Staff Profile: Margarita Chung, Business Administrator, NU Clinical and Translational Sciences (NUCATS) Institute



MARGARITA CHUNG

### *How long have you been at Northwestern?*

I started at Northwestern in 1996 in the Department of Preventive Medicine. I left in November 1998 for a brief stint in corporate America, but decided I liked working in a University environment, so I returned to Northwestern in April 2000.

### *Where are you from?*

I was born in Asuncion, Paraguay in South America and lived there for eight years. Then, my family immigrated to the United States and settled in the Chicagoland area, where I've been living ever since.

### *What's your educational background?*

I received a bachelor's degree in business administration with a concentration in marketing from the University of Illinois at Chicago.

### *What is your role in the department?*

I am the business administrator in the NUCATS Institute.

### *What's a typical day like for you?*

A typical day in NUCATS involves working with administration of the Institute and managing payroll, finances, people, facilities and/or answering questions from faculty and staff. Some days tend to be less typical than others, but ultimately, I do whatever is needed to ensure the business operations of the Institute run smoothly.

### *Why did you choose to work here?*

I came back to Northwestern after being gone for one and a half years because I missed working in an academic environment. The work/life balance and benefits here were two positives that attracted me.

Prior to working at NUCATS, I was the program administrator for public health in the Department of Preventive Medicine for seven years. Although I loved

what I was doing there working closely with faculty and students, I decided to take the business administrator position at NUCATS because I was ready to take on new challenges and learn new skills.

### *What do you like about your job?*

I like the people I work with. I think we work in a great team environment at NUCATS.

### *What do you like to do in your free time?*

I enjoy reading thriller novels like those written by James Patterson. I also enjoy getting together with friends over dinner trying a new restaurant at least once a month. My husband and I love to travel, and we try to take trips at least once a year. The last vacation we took was to Banff, Canada over the summer. I just recently bought a digital SLR camera to take photos of our vacations or of family. I like to create photo books with the pictures. When I have time, I like to watch old black and white movies. I find it fascinating how life as it was depicted in those movies decades ago was so different and simple, but yet, the experiences or topics portrayed in those movies are much the same today.

## BIO International Convention Offers Specials for Northwestern

Northwestern University is a host sponsor for this year's BIO International Convention, happening May 3-6, 2010 at Chicago's McCormick Center. Northwestern researchers are invited to participate in a number of ways which will result in special attendance rates:

- **Volunteer.** Give BIO two days of your time, and they'll give you two-days access to the convention for free. This is a great way for students to get access to the convention. Note: volunteers must be older than 21, and the volunteer program requires someone on a BIO Committee as a reference. All those seeking to volunteer should contact Jim Bray, assistant director for translational innovation, the NUCATS Institute at [j-bray@northwestern.edu](mailto:j-bray@northwestern.edu).
- **Bring two students.** BIO is giving academics an incredible value this year: a three-for-one registration for \$595. This discount is being offered to professors for full conference access, a value normally in excess of \$1,100. As part of this deal, investigators can bring two students with them for free. The student passes are valid for sessions only (no receptions or keynote lunches). Note: this exclusive offer is not advertised anywhere on the BIO site, so contact Jim Bray at [j-bray@northwestern.edu](mailto:j-bray@northwestern.edu) for more information.
- **Attend the translational research forum.** Of additional interest, there will be a translational research forum on the first day of BIO for an extra \$30 on top of any level of registration. This will be a whole day of programming with speakers and panels. Mark your calendars for this event on May 3, 2010, and check the [convention web site](#) for more details.

## Student Profile: Christine Ackerman, Integrated Graduate Program (IGP) in the Life Sciences



CHRISTINE ACKERMAN

### *Where is your hometown?*

I grew up in a small town called Pilot Butte in the province of Saskatchewan, Canada.

### *Where did you complete your undergraduate degree?*

I received my undergraduate degree from the University of Alberta in Edmonton, Alberta, Canada.

### *What are your research interests?*

I have always been a genetics geek. My undergraduate training was in plant genetics, but my interests have since shifted to human genetics. I am particularly interested in understanding the genes implicated in human disease and how variation in genes causes the phenotypes we see in complex human diseases.

### *What exciting projects are you working on?*

My supervisor, Dr. Margrit Urbanek, has a number of exciting projects in her lab that I have been lucky enough to be a part of, most of which focus on teasing apart the genetics of a female endocrine disorder called Polycystic Ovary Syndrome (PCOS).

Part of my thesis project focuses on determining whether variation in certain genes correlates with phenotypes observed in disease using a statistical genetics approach. The other half of my project concentrates on understanding, on a molecular level, how those variations may be contributing to the disease phenotypes. Specifically, I am using genetic tests of association to determine if genes implicated in PCOS are associated with measures of maternal glucose and fetal growth in a cohort of pregnant women and their newborns called the Hyperglycemia and Adverse Pregnancy Outcome (HAPO) cohort. I am also trying to understand how one of the genetic loci associated with PCOS, a dinucleotide repeat in an intron of the fibrillin-3 (FBN3) gene, influences the expression and function of the gene.

### *What attracted you to the IGP program?*

I was attracted to the IGP program because it is well-established, and the number of faculty at Northwestern participating in the program is very impressive. I knew for my graduate degree that I wanted to focus on translational re-

search, and the program was a good fit for me due to the fact that it is associated with Feinberg.

### *What has been your best experience so far?*

I have been lucky enough to find a thesis advisor, Dr. Urbanek, who has given me the freedom to take my projects in the direction I wish, while at the same time providing motivation, guidance and expertise. She is not only my thesis advisor, but also my mentor and an example of the type of scientist and person I want to model myself after.

### *How would you describe the faculty at Feinberg?*

I have the utmost respect for the entire Feinberg faculty because they are passionate about their research. Most of the faculty members are considered experts in their respective field and many are internationally recognized in their specialty. The faculty are enthusiastic about collaborating both within and outside Feinberg and promoting interdisciplinary research.

### *What are your plans for after graduation?*

After I graduate, I plan to continue my training in a post-doctoral position likely at an institution on the West Coast. I love being hands on and working at the bench, so for the first part of my professional scientific career, I would like to be in a position that would allow me to do that.

## ANIMAL RESEARCH CORNER



Every year in April, surrounding the week of 24<sup>th</sup> of the month, animal activists from around the United States and the world coordinate activities to protest the use of animals in research. This week is known as World Laboratory Animal Liberation Week and has traditionally been a time when animal activists have organized rallies, protests, news conferences, literature tables and other events. This year, activists will focus their activities between Saturday April 17<sup>th</sup> and Sunday April 25<sup>th</sup>. For those of you that have been at the University for several years, you may recall that in 2008 there were protesters outside of the Ward building. Northwestern University is currently not listed as a site for activist activities, and the Northwestern University Police Department (NUPD) will continue to monitor activist websites.

During these dates, we ask everyone to be extra vigilant for suspicious activities and persons. The University typically has increased security in buildings that house animals and will request to see NU identification when entering these areas. If you see animal activists protesting or leafleting, please do not engage them or get into altercations with them. If you witness anything that strikes you as out of place or character, please notify either the staff at CCM or the NUPD.

## Sponsored Awards



DR. COLUM  
MACKINNON

### Colum MacKinnon, PhD

*Assistant Professor and Associate Chair of Research  
Department of Physical Therapy and Human Movement Sciences*

**Project Title:** Relationship Between REM Behavior Disorder and Freezing of Gait in Parkinson's Disease

**Sponsor:** Michael J. Fox Foundation for Parkinson's Research

Colum MacKinnon (Department of Physical Therapy and Human Movement Sciences) and Aleksandar Videnovic (Department of Neurology) have received a grant from the Michael J. Fox Foundation for Parkinson's Research to study the relationship between idiopathic REM sleep behavior disorder (RBD) and freezing of gait in people with Parkinson's disease.

It has recently been shown that the presence of RBD is an important risk factor in the development of Parkinson's disease (PD). RBD is a disease characterized by excessive muscle activity and acting out of dreams during the REM stage of sleep. Dysfunction and degeneration of specific regions of the brain stem is thought to cause RBD. Degeneration of a similar subset of regions of the brain stem is also thought to contribute to postural instability and gait disturbances, such as freezing of gait, in a subset of people with PD.

This project will use brain imaging (diffusion tensor imaging), polysomnography (sleep studies) and quantitative measures of gait and postural control to examine the relationships between the two disorders. Four groups of subjects will be studied: people with RBD alone, people with PD who have severe freezing impairment, people with PD who do not have freezing impairment and control subjects. The results of this study will provide initial insight into the commonalities of brain stem degeneration and gait impairment between people with PD who have freezing and people with RBD. These findings could ultimately lead to the development of early screening tests and therapeutic interventions.

This project will be conducted through a collaboration between Feinberg, the University of Illinois at Chicago (Drs. David Vaillancourt and Joseph Zhou) and University of Maryland (Dr. Mark Rogers).

## Research in the News

### USA Today February 19

*Should med schools use live patients to teach pelvic exams?*

Dr. Carla Pugh was quoted.

### UK Times February 13

*Study reveals common bond of children who hate to be hugged*

### BusinessWeek February 10

*Autism-related hypersensitivity better understood*

Dr. Anis Contractor's research was featured.

### ABC 7 News (Chicago) February 11

*HealthBeat Report: Quitting time*

Dr. Brian Hitsman was interviewed about a new smoking cessation clinical trial.

### JAMA February 10

*New item on pediatric menu: Food allergy*

Dr. Ruchi Gupta was quoted.

### Chicago Sun-Times February 10

*Prescription warnings too darn confusing*

Dr. Michael Wolf's research was featured.

### MSNBC.com February 8

### Reuters February 8

*Religious folks may not be healthier, after all*

Dr. Donald Lloyd-Jones' research was featured.

### NBC 5 News (Chicago) February 7 and 8

*The face of AIDS*

Dr. Robert Murphy was interviewed.

### Wall Street Journal February 2

*New ways to calculate the risks of surgery*

Dr. David Bentram was quoted.

### UPI February 1

*Nanomaterial spurs cartilage growth*

Research by Dr. Samuel Stupp was featured.

For more headlines, visit:

[www.feinberg.northwestern.edu/](http://www.feinberg.northwestern.edu/)

## Top Honors



Sandy Weintraub, PhD, was named president-elect of the International Neuropsychology Society (INS), the world's largest organization of neuropsychologists.



## Welcome New Faculty



**Malcolm DeCamp, Jr., MD**, joins as professor and chief of thoracic surgery. He most recently served as visiting professor of surgery at Harvard Medical School and chief of the Division of Cardiothoracic Surgery at Beth Israel Deaconess Medical Center, Boston. Previously, he directed the lung transplant program at Cleveland Clinic. His research focus is on genetic, phenotypic and physiologic mechanisms

to explain the response to interventions for severe emphysema.



**Agnella Izzo Matic, PhD**, joins the Department of Otolaryngology as an assistant professor. She previously was a postdoc fellow in the department and also earned her doctoral degree in biomedical engineering from Northwestern University. She is currently studying pulsed infra-red neural stimulation (INS) for use in the auditory system to improve the function of cochlear implants and other neuroprostheses.

(Prakriya—Continued from page 4)



are studying the molecular and cellular events of this process by patch-clamp electrophysiology and various live-cell imaging techniques such as fluorescence resonance energy transfer (FRET) microscopy, total internal reflection (TIRF) microscopy and confocal imaging.

In a second project, we are studying the functions of store-operated channels in neural stem cells. Early in neural development, uncommitted neural stem cells divide furiously to generate committed progenitors, which in turn divide, migrate, and ultimately differentiate into billions of neurons. Calcium signals mediate a key role in influencing their ultimate developmental fates, yet, the mechanisms by which they are generated remains mysterious. We have discovered that neural stem cells utilize store-operated channels to generate their Ca<sup>2+</sup> signals. We are using numerous approaches including knock-out and transgenic mice to unlock the full significance of these findings and understand the functions of store-operated channels for the biology of stem cells.

In a third project, we are studying the properties and functions of store-

operated channels in airway epithelial cells. Epithelial cells do not merely comprise a passive barrier in the lung but play an active role in orchestrating inflammatory responses, tuning both innate and adaptive immune reactions through the production of a wide array of secreted factors and through their interactions with various cells of the immune system. We have found that store-operated channels serve as a major route of Ca<sup>2+</sup> entry in lung epithelial cells and are important for gene expression and the production of proinflammatory cytokines. We are taking a multi-faceted approach to understand how CRAC channels in epithelial cells orchestrate inflammatory responses in the airway with the long-term goal of illuminating their role in airway diseases such as asthma.

*What is the ultimate goal of your research?*

Aberrant Ca<sup>2+</sup> signaling in general, and store-operated channels in particular, are involved in a host of diseases ranging from Alzheimer's disease to severe combined immunodeficiencies. Moreover, because store-operated channels are widespread and found throughout the body, they are likely involved in many functions that are as yet unknown. The goal of our research is to illuminate the functions of store-operated channels in various organ systems and facilitate the dis-

covery of novel and more powerful therapeutic approaches to manage the debilitating diseases caused by their malfunction.

*What brought you to the Feinberg School of Medicine?*

The strength of research community here was very influential in attracting me to Northwestern. I was impressed by the breadth and depth of basic and clinical research and the various collaboration opportunities at Northwestern. After a long, slow period, my own field of research has seen rapid progress following a series of major breakthroughs a few years ago. The opportunity provided by the environment at Northwestern — to expand our work to new areas, as well as to bring in newer technologies from other laboratories to our traditional research area — was hard to pass-up.

*What are some of the challenges you face?*

Managing time to balance the competing requirements of research, teaching and grant writing has been a difficult learning process. Funding remains at all-time low levels, and I continue to be amazed (and discouraged!) by how much time is spent trying to gain funding to run the research enterprise. I also have a family with small children, and finding the right balance between work and home life has been tricky.

Look for weekly funding opportunities and events announcements in your e-mail

## Funding Opportunities

### **Keck Foundation Medical Research Program**

<http://www.wmkeck.org/programs/medical.html>

Submission deadline: May 1, 2010

**Amount:** Grants range from \$500,000 to \$5 million

**Synopsis:** The W.M. Keck Foundation's Medical Research Program seeks to advance the frontiers of medicine to benefit humanity by supporting high-risk, high-impact projects that are distinctive and novel in their approach to intractable problems, push the edge of their field, or question the prevailing paradigm. Research projects should focus on basic research and not be clinical in nature. Medical research projects conducted in hospitals are not eligible.

### **Research Scholar Grants in Cancer Control: Psychosocial and Behavioral Research**

<http://www.cancer.org/>

Submission deadline: April 1, 2010

**Amount:** \$960,000

**Synopsis:** Support investigator-initiated research projects in psychosocial, behavioral, and cancer control research, including epidemiologic approaches to psychosocial and behavioral research.

To view more funding opportunities, visit:

[www.feinberg.northwestern.edu/research/funding-opportunities/](http://www.feinberg.northwestern.edu/research/funding-opportunities/)

## Featured Upcoming Events

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### **"Human Cytomegalovirus Infection: Intrinsic Blocks and Cell Cycle Clocks"**

Robert Kalejta, PhD, assistant professor of molecular virology and oncology, McArdle Laboratory for Cancer Research, University of Wisconsin Madison School of Medicine and Public Health, Madison, WI

**Date/Time:** Tuesday, March 9, noon to 1 p.m.  
**Location:** Lurie Medical Research Center  
 303 E. Superior St. (Chicago campus)  
**Contact:** Dr. Gregory Smith (312) 503-3745

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### **Department of Physiology Seminars: Serena Dudek, PhD**

Serena Dudek, PhD, investigator, synaptic and developmental plasticity unit, neurobiology, National Institute of Environmental Health Sciences

**Date/Time:** Friday, March 12, noon to 1 p.m.  
**Location:** Ward Building, 5-230  
 303 E. Chicago St. (Chicago campus)  
**Contact:** Jocelyn Brown (312) 503-1961

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### **"Selective Regulation and Proinflammatory Genes by Chromatin and NF- $\kappa$ B"**

Stephen Smale, PhD, professor and vice chair, Department of Microbiology, Immunology and Molecular Genetics, University of California at Los Angeles

**Date/Time:** Tuesday, March 16, noon to 1 p.m.  
**Location:** Baldwin Auditorium, Lurie Medical Research Center  
 303 E. Superior St. (Chicago campus)  
**Contact:** Dr. Susan Winandy (312) 503-3075

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### **NCCO/Endocrinology Seminar Series: "The Skinny on Body Fat: Developmental Origins of Obesity"**

C. Ronald Kahn, MD, professor and director, Joslin Diabetes Center, Harvard University

**Date/Time:** Thursday, March 10, 3 to 4 p.m.  
**Location:** Baldwin Auditorium, Lurie Medical Research Center  
 303 E. Superior St. (Chicago campus)  
**Contact:** Paul J. Yim ([p-yim@northwestern.edu](mailto:p-yim@northwestern.edu))

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### **ACCR Lecture: Annual Disclosure of Professional External Relationships - The Feinberg Experience**

**Date/Time:** Friday, March 19, noon to 1 p.m.  
**Location:** Northwestern Memorial Hospital Conference Center—Feinberg Pavilion, 3rd Fl., Conference Rooms B and C  
 251 E. Huron St. (Chicago campus)  
**Contact:** [nucats-ed@northwestern.edu](mailto:nucats-ed@northwestern.edu)

Your feedback and suggestions are always welcome.  
 Contact the Feinberg School of Medicine  
 Office for Research:

[kristin-jacobsen@northwestern.edu](mailto:kristin-jacobsen@northwestern.edu) or  
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On the Web: [www.feinberg.northwestern.edu/research/](http://www.feinberg.northwestern.edu/research/)

For more events, visit :

[www.feinberg.northwestern.edu/research/calendar/](http://www.feinberg.northwestern.edu/research/calendar/)

Event organizers are encouraged to submit  
 calendar items on [Plan-it Purple](#).