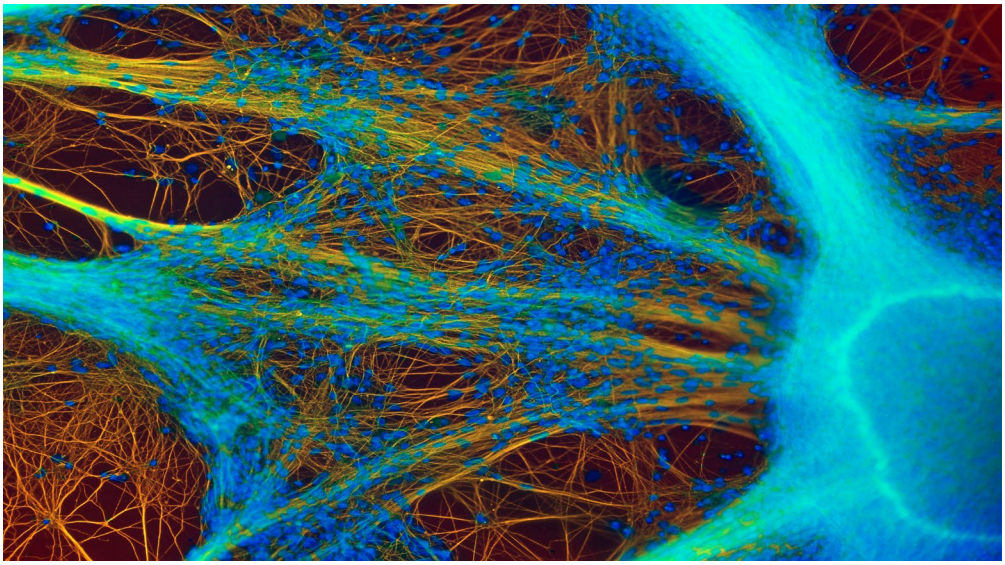
Northwestern University Feinberg School of Medicine

FSM Researcher

Feinberg School of Medicine Research Office

January/February 2014



Neurons derived from skin fibroblasts of a patient with Parkinson's disease are used to examine disease mechanisms and test potential new therapies.

Krainc, New Center Reimagine Approach to Neurodegeneration

A rare disorder might just save your life.

"As the population ages and more people survive ailments like cancer, the long list of neurodegenerative diseases with no cure becomes an ever-increasing concern," said **Dimitri Krainc, MD**, chair of neurology. "Rare conditions provide a unique window, acting as models that we know much more molecular detail about."

In his lab, Krainc explores the connection between Gaucher's disease, a genetic disorder affecting thousands of children, and Parkinson's disease (PD), which disrupts the nervous system of approximately 10 million people worldwide.

The two are intrinsically linked because individuals with Gaucher's are about 30 times more likely to develop PD.

"We know that Gaucher's is caused by the mutation of a specific enzyme and we've shown that that enzyme is linked to the development of PD," said Krainc, the Aaron Montgomery Ward Professor and director of the medical school's new Center for Rare Neurological Diseases (**CRND**). "The idea is that if we can activate that enzyme and hold the Parkinson's in check, we might be able to target it in broader populations."

Arriving at Feinberg six months ago, Krainc quickly fortified projects with Rick Silverman, PhD, professor of chemistry; Milan Mrksich, PhD, professor of biomedical engineering and **cell and molecular biology**; and Chad Mirkin, PhD, professor of chemistry and **medicine**.

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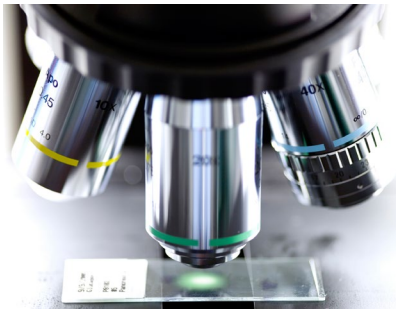

In this issue...

2 Krainc, ctd.
3 Research Day call for abstracts
4 Faculty profile: Konrad Kording, PhD
5 Staff profile: Jill Johnson
6 Student Q&A: Adenike Adewuyi
7 Sponsored research
8 Sponsored research, ctd. New faculty, NIH news
9 NUCATS corner
10 In the news High-impact news
11 Funding and events

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NORTHWESTERN UNIVERSITY FEINBERG SCHOOL OF MEDICINE

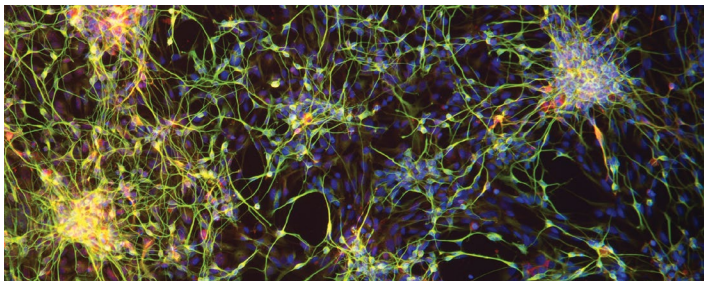
Krainc, continued from pg. 1

"One of the attractions of Northwestern was the fact that there are these world-class minds in medicinal chemistry, biomedical engineering, and nanotechnology," Krainc said. "I am fascinated by the different scientific languages they speak and recognize that where our interests merge, the possibility for major breakthroughs exists."

A physician-scientist who works to expand his global partnerships to help others form new collaborations, Krainc doesn't underestimate the notion that who a person bumps into from time to time matters. That's one of the reason he's working to create a critical mass of innovative people within the **Ken and Ruth Davee Department of Neurology**.

As director of the CRND, Krainc is excited to capitalize on the uniqueness of being located between the nation's top rehabilitation facility, Rehabilitation Institute of Chicago (RIC), and the Evanston campus, which features groundbreaking research in nano- and biotechnology.

"I was quite impressed with the tools being used at RIC, particularly for people with spinal cord and brain injury, and I'm hoping to bring the technologies being developed at Northwestern University into neuroscience," Krainc said. "It's great that the president's national brain initiative is based around technology development, because I believe it is needed to advance the field."



Dopaminergic midbrain neurons derived from the skin of patients with Parkinson's disease,

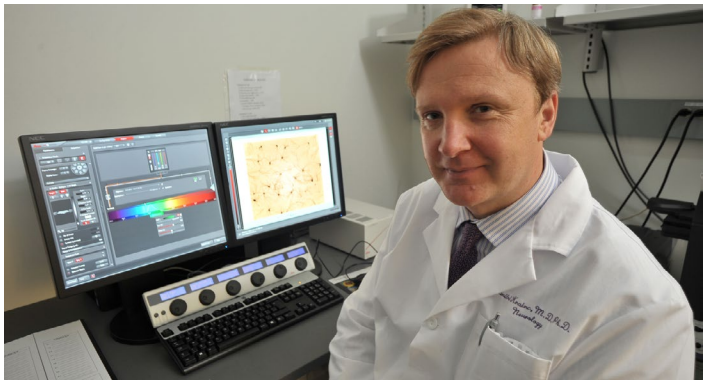
A New Approach

There exists no cure for Alzheimer's disease, no remedy for Parkinson's, and no answer for ALS.

"Neurodegeneration has been hard to tackle from a therapeutic standpoint, and I think we need to step back to understand why we've failed to find cures," Krainc said. "I think a big issue is that we haven't produced enough detail about the pathogenesis of these diseases. That is something we hope to change with the CRND."

The unorthodox approach involves using rare disorders linked to common conditions.

By focusing on rare lysosomal diseases, the center will work to identify specific targets and mechanisms that contribute to neurodegeneration. It is expected that such defined targets will facilitate therapeutic development for neurodegenerative disorders that affect children and adults.



Dimitri Krainc, MD, PhD, chair of neurology and director of the Center for Rare Neurological Diseases, studies rare diseases linked to Huntington's and genetic forms of Parkinson's disease.

Lysosomes serve as recycling organelles in neurons. They remove debris and toxic waste that accumulate in neurons during normal and pathological neuronal activity. When lysosomes do not work at sufficient capacity to remove misfolded proteins and dysfunctional organelles, neurons accumulate and store these toxic products that in turn lead to neurodegeneration.

"When you look at the history of scientific discovery, it's likely that the big breakthroughs for Alzheimer's and related diseases will come from unexpected places," Krainc said. "What we have at Northwestern Medicine is a leadership core that has created a very permissive environment, allowing young scientists to pursue their curiosities."

With diversified public and private funding that includes support from the National Institutes of Health and Michael J. Fox Foundation, Krainc has built a career on the notion that there's no prescription for discovery.

"I like rare diseases because they tend to be neglected as too rare to deliver a good profit margin. In academia we don't worry about profit and can instead focus on helping people," Krainc said. "Another reason is that they tend to be genetic, which means they have a specific gene that we can target therapeutically; a big advantage."

Building alliances across departments and institutions, Krainc looks to refocus the idea of discovery on the patient perspective.

"We still have many incurable diseases that people die from, and it's our mission to find those cures," he said. "The patients are where I get the motivation to wake up every morning and go to work. Our academic research mission means we have the chance to solve the suffering that families of neurodegenerative disease endure."

Tenth Annual Lewis Landsberg Research Day
Call for Abstracts

Submission Deadline: Monday, March 3 at 5 p.m.

The 10th Annual Lewis Landsberg Research Day will be held on April 3, 2014 from 1 to 5 p.m. on the Chicago campus, in the Robert H. Lurie Medical Research Building and at Northwestern Memorial Hospital's Conference Center (3rd Floor, Feinberg Pavilion). Research Day is an opportunity to share work with colleagues, find new collaborators, and learn about research taking place at Feinberg.

This event features a poster competition open to researchers in the following categories:

- Faculty
- Graduate students
- MD-PhD students
- Medical students
- Postdoctoral researchers and fellows
- Clinical residents and fellows
- Research staff

Awards will be presented in the areas of clinical research, basic science, public health and social sciences research, and women's health.

Those interested in participating in the 2014 event must submit an abstract online **no later than 5 p.m. on Monday, March 3**. Registrants will not be able to enter information on the web site after that date. Space is limited and will be assigned on a first-come, first-served basis. For this reason, all applicants are encouraged to submit early when possible.

Please review abstract guidelines prior to submission. Those that do not follow the template will not be accepted.

For more information, please call the Feinberg Research Office at (312) 503-1499 or e-mail researchday@northwestern.edu.

Faculty Profile: Konrad Kording, PhD

Associate Professor in Physical Medicine and Rehabilitation and Physiology

Last year, Konrad Kording, PhD, associate professor in **physical medicine and rehabilitation** and **physiology**, asked how well the success of professors could be predicted by measuring their future h-index. The h-index captures the quality (citations) and quantity (number) of papers, therefore measuring a scientist's success. Kording's most controversial discovery, he found a new metric far better at making predictions than the h-index.

"While most scientists agree that our predictions are better, they often feel that our research—highly visible by being published in ***Nature***— by improving indices, might give administrators an excuse to ignore committees and overly focus on numbers," he said.

One of many discoveries, Kording's interests lie in building computational models to allow for better patient rehabilitation and to solve other problems his lab finds interesting.

Q&A

What are your research interests?

I am interested in how we can make sense of data about people and brains. The brain is making sense of the world given the data it has, which is a deep statistical problem. Focusing on uncertainty and statistical issues my lab runs behavioral experiments and develops new data analysis methods with relevance to cognitive science and rehabilitation. But above all, we search for important data questions that have been overlooked.

To obtain more data about the brain, we work in collaboration with colleagues at various universities on very large scale neural recording techniques that could increase the amount of simultaneously recorded data.

What is the ultimate goal of your research?

The ultimate goal is to develop models that describe vast amounts of data about the brain and human behavior. The results could be used to cure diseases, limit suffering, and build cool things.

What collaborations are you involved in?

We collaborate with **Lee Miller, PhD**, Edgar C. Stuntz Distinguished Professor in Neuroscience and professor in physiology/physical medicine and rehabilitation and **Mark Segraves, PhD**, associate professor of neurobiology at the Judd A. and Marjorie Weinberg College of Arts and Sciences, where we ask how brains compute in animal models.

In these collaborations a joint team asks computational questions based on our collaborators' experimental techniques. Team members get training in both animal physiology and data analysis techniques. There are multiple other local collaborations in neuroscience and rehabilitation. Beyond our institution we collaborate with many labs on specialized questions.

We believe that deep collaborations are far more effective than any alternative because each scientist can focus on one thing that they are best at.

How does the RIC/Northwestern collaboration foster scientific discoveries?

The **Rehabilitation Institute of Chicago** sees a broad set of patients with rehabilitation needs. Being a data lab in such an environment opens up a broad set of possibilities. Some examples of our projects include using mobile phones to monitor patients with Parkinson's disease and using Nintendo Wii Fit to train patients and analyze their movement. We are also involved in a broad range of projects related to stroke, aphasia and other neurological diseases.

How did you become interested in this research?

I have been excited about big data biology since I was a high school student. It always seemed like the natural way of thinking.

What are some of your personal hobbies?

I love salsa dancing with my wife; it's just so relaxing. I also love snowboarding and I take by skateboard to work almost every day. I enjoy going to the Museum of Science and Industry with my three young kids.

Who inspires you?

Peter Dayan of Gatsby Computational in London, is a great inspiration to me. He spearheaded much of the use of Bayesian statistics in computational neuroscience, influenced machine learning and drove a highly successful research program in psychiatry and neuroscience. And yet, he will take the time to give detailed feedback on manuscripts sent to him by young scientists he barely knows. Despite his success, he is one of the most humble people I know.

Staff Profile: Jill Johnson

Program Manager, Institute for Bionanotechnology in Medicine

Where are you originally from?

I grew up in Grayslake, Illinois.

What is your educational and professional background?

I received a Bachelor of Arts degree in communications and journalism at Columbia College Chicago.

During college I worked at Lake Forest Hospital, now Northwestern Lake Forest Hospital, for a group of urologists. I had a range of responsibilities from basic medical assistant work to office administration. After graduation, I worked for Nancy Sassower, MD, at Chicago Lake Shore Medical Associates, a large physicians group ranging from primary care physicians to specialists in dermatology, cardiology, immunology, and neurology. The group, located in the Arkes Family Pavilion has since been integrated into Northwestern Medicine.

Why did you choose to work at Northwestern?

I have always enjoyed working in the medical field, and Northwestern has given me the opportunity to be a part of both the clinical and research sides. The atmosphere and location of the medical school campus is also quite an attraction. It is not your typical medical school campus and definitely adds to the pleasure of working at Northwestern.

What is your role at the medical school?

I recently transitioned into a new role as program manager for the Institute for Bionanotechnology in Medicine (**IBNAM**) and our new center, the Simpson & Querrey Center for Regenerative Nanomedicine (**CRN**). In this position I will work with new networking and outreach programs for the center, the CRN Catalyst Awards and other institution-based awards with my current role as the event and website manager. This role also supports the director of the institute and center, **Samuel Stupp, PhD**, IBNAM director.

How do you contribute to the school's research mission?

I do my best to engage researchers in the lab on a social front in hopes that will help motivate them to do great work here by simply enjoying themselves. I believe a friendly work environment can make all the difference in a person's demeanor and attitude.

What is your favorite part of the job?

I love the social part of my job. Organizing large- and small-scale events, high-profile meetings, and VIP visits is what I enjoy and look forward to doing the most. It gives me a chance to meet new people and engage in the Northwestern community. I also take pleasure in the creative aspect of my job, which includes designing our two websites and institute advertising materials.

What do you like to do in your spare time?

I love being active and spending time outdoors. I enjoy more high-impact activities such as long distance running and snowboarding, but also just being outside (when it's warm), working in my garden or hanging with my dogs is something I can't get enough of.

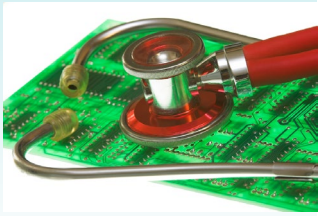
Anything else we should know about you?

I am expecting my first child in May!

2014 Innovation to Commercialization Fellowship

Graduate students from McCormick, Kellogg, Law, and Feinberg who are interested in spending eight weeks working collaboratively on commercializing Northwestern University technologies are invited to apply to be a 2014 Innovation to Commercialization (I2C) Fellow. The fellowship runs from June 23 to August 15. **More information** can be found on the Innovation and New Ventures Office (**INVO**)'s website.

Feinberg graduate students should contact **Steve Anderson** for more details.



Student Q&A: Adenike Adewuyi

Medical Scientist Training Program

Adenike Adewuyi found the challenges that partial hand amputees face fascinating. As a Medical Scientist Training Program (MSTP) student in the Center for Bionic Medicine at the Rehabilitation Institute of Chicago, under the mentorship of Todd Kuiken, MD, PhD, and Levi Hargrove, PhD, she based her PhD thesis project on this challenge. Adewuyi is working to develop algorithms to improve the control of artificial limbs.

What is your educational background?

I earned my bachelor's degree in engineering sciences at Harvard University and I'm in my fifth year of the MSTP at Feinberg. I've completed two years of medical school and am in my third year of the PhD program.

What are your research interests?

My thesis project focuses on creating algorithms for partial hand prostheses and improving control of powered, myoelectric partial hand prostheses.

In our lab, we use a machine learning algorithm to learn the patterns of electric signals that the muscles produce. When you open your hand, muscles in the forearm generate one pattern of electric signals. Closing your hand generates a different pattern of electric signals. Even though upper-limb amputees may be missing part of their arm, their muscles still generate these electric signals when they think about moving their hand and fingers.

Once a computer "learns" the patterns of muscle electrical activity associated with certain hand movements, we can give it a pattern of electrical muscle signals to determine what the person intended to do. This means that an amputee can control a prosthesis just by thinking about the action. We record these signals, the computer determines what motion the amputee is trying to do and sends the information to the prosthesis, which moves according to the user's intentions.

Unlike individuals with amputations in the arm or forearm, partial-hand amputees retain movement in the wrist. When using pattern recognition control, the old algorithm worked well in one wrist position—patients could do the grasps I asked them to do. But if I asked them to do the same thing using a different wrist position, they couldn't do it; it's a change in the way the muscles work and the signals produced are different.

The goal of my project to develop a way to control the prosthesis with pattern-recognition but still allow the amputee to use their own wrist.

How did you choose this research project?

I chose this project because it is clinically orientated, and I get to interact with a diverse group of people including surgeons, engineers, orthotists, prosthetists, and therapists. I also love that it merges my background in engineering and interests in neuromotor control.

Why did you pick Kuiken's lab for your research?

I was looking for something both computational and clinically relevant. I talked to Sandra Lee in the MSTP office, who suggested Kuiken's lab. I ended up working in this lab because it was a great balance of clinically-relevant and engineering research in a diverse and uniquely cooperative environment.

What do you like to do outside of the lab?

Outside of research I like to sing, dance, play piano, and I'm very active in my church as a deacon. I volunteer with PRISM, a program started by MSTP students. PRomoting Inner-City Youth in Science and Medicine (PRISM) encourages inner-city youth to explore science and medicine careers opportunities. I volunteer because I love interacting with younger students, and teaching them about how totally incredible science and engineering can be.

Medical Scientist Training Program (MSTP) students mentor teens as part of the PRomoting Inner-city Youth in Science and Medicine (PRISM) program. Over the course of 10 weeks, MSTP students create hands-on learning experiences and provide career-planning advice.

Sponsored Research

Gregory Dumanian, MD,
Chief of Plastic Surgery and Professor in Surgery- Plastic, Neurological Surgery, and Orthopaedic Surgery

Project title: Targeted reinnervation as a means to treat neuromas associated with major limb amputation

Sponsor: U.S. Army Medical Research and Materiel Command

The power of sustained collaboration between faculty members is demonstrated in the efforts of Gregory Dumanian, MD, Feinberg's chief of plastic surgery.

Dumanian met Todd Kuiken, MD, PhD, Feinberg professor of physical medicine and rehabilitation, engineering, and surgery, and associate dean for hospital academic affairs at the Rehabilitation Institute of Chicago (RIC), in their mutual care of pressure sore patients. Over dinner one evening, the two disucussed a long-forgotten surgical procedure for the independent control of a prosthetic thumb for transradial (below the elbow) amputees. Dumanian showed little interest in essentially creating a fanciful skin tube on the forearm.

Kuiken continued to describe his PhD thesis, which showed in animal models that local muscle could amplify the electric signals in an amputated nerve. He hypothesized that the newly reinnervated muscle would be able to signal a myoelectric prosthesis. Discussing what type of large animal model would be needed to test this hypothesis, Dumanian shared that this was an unusual application of peripheral nerve surgery, and that it would not be unreasonable to go straight to a human amputee. In addition, rather than attempting to gain just one signal, a single muscle could be separated using the concepts of plastic surgery to receive multiple nerve inputs.

The entire field of targeted muscle reinnervation (TMR) for the control of myoelectric prosthesis control was begun by Dumanian in Room 3 in the Feinberg operating room in 2002. TMR procedures now number in the hundreds, and have been successfully performed in numerous centers in the U.S. and around the world. Together, Kuiken and Dumanian have developed a field of inquiry that competes with hand transplantation for the rehabilitation of upper extremity amputees. Numerous plastic surgery residents (O'Shaugnessy, Ko, Kim, Agnew, Souza, and Cheesborough) have since been guided to dive deeper into the phenomenum of nerve transfers central to the TMR procedure.

A central puzzle was the nerve coaptation site itself. It was long hypothesized that nerve ends must be sewn together perfectly for any chance of nerve regeneration. TMR nerves are of greatly different sizes, and so standard nerve surgery wisdom would predict painful neuromas at the coaptation sites. Rather than create pain for these patients, Kuiken and Dumanian noticed that pain was better.

In collaboration with the San Antonio Military Medical Center (SAMMC), also performing these procedures as taught by Kuiken and Dumanian, 26 patients were noted to have a marked decrease in pain after surgery.

In the laboratory, animal surgeries mimicking the TMR procedure performed in the Wound Regeneration and Repair Laboratory of Robert Galiano, MD, assistant professor of plastic suregery and Thomas Mustoe, MD, Orion and Lucille W. Stuteville Professor of Plastic and Reconstructive Surgery, noted a "cure" of neuroma morphology with nerve transfers. The mantra of "give the nerves somewhere to go and something to do with TMR" was born in the Division of Plastic Surgery.

Painful end-neuromas occur in up to 25 percent of both lower and upper extremity amputees. Pain in an amputated limb is a much bigger problem than improving prosthetic control. The painful cut nerve endings often prevent effective fitting and use of even the most rudimentary prosthesis. Collaboration with David Cella, PhD, chair of medical social sciences, and Sally Jensen, PhD, research assistant professor of medical social sciences and organ transplantation, introduced the PROMIS tool in the investigation of the treatment of end-neuroma pain. The result is a Congressionally-funded multi-institutional study in the most appropriate treatment for painful end-neuromas in amputees. The war wounded will be treated at Walter Reed Medical Center and SAMMC, while civilian traumatic amputees will be studied at Northwestern Memorial Hospital and the University of Washington.

Standard treatments of end-neuromas will be compared in randomized fashion to a TMR-style nerve coaptation. PROMIS will be the primary measuring tool to determine efficacy. The pain outcomes of these procedures will be compared to a population-based study in post-amputee pain using PROMIS that is currently ongoing. Ironically, standard treatments for painful end-neuromas were devised by hand surgeons who had trained 15 years earlier at the same hand fellowship attended by Dumanian.

At the end of this study, Dumanian expects to be able to measure the chronic localized pain from end-neuromas (as well as their distinct but different phantom sensations), and give the patient an idea of what the outcome would be from treating the amputated nerve endings.

Continued on pg. 8

Sponsored research, continued from pg. 7

Jing Liu, PhD,
Assistant Professor in Medicine– Pulmonary

Project title: Regulation of Inflammation and Acute Lung Injury by the Transcription Factor Miz1

Sponsor: National Heart, Lung, and Blood Institute

The long-term goal of our research is to investigate the molecular mechanisms underlying pulmonary disorders, thereby identifying potential therapeutic targets for prevention and treatment of lung diseases. In this award, we will study how the transcription factor Miz1 regulates inflammation and acute lung injury (ALI).

Inflammation is a double-edged sword: it is beneficial for the host to defend against invading pathogens, including bacteria and viruses; however, it can be detrimental if unchecked, causing tissue damage and organ failure, such as acute lung injury (ALI). Using multifaceted approaches, we have recently uncovered that Miz1 inhibited TNF or LPS-induced inflammatory response and expression of C/EBPδ, which contributes to persistent inflammation, in a transcription-dependent manner in lung epithelial cells.

Interestingly, Miz1 is phosphorylated upon TNF stimulation. More importantly, the loss of Miz1 transcriptional repression activity augmented inflammation and ALI induced by LPS (bacterial lipopolysaccharide, a principal surface component of Gram-negative bacteria) in mice. We hypothesize that upon TNFα (or LPS) stimulation, Miz1 is phosphorylated leading to repression of C/EBPd expression, thereby preventing inflammation and ALI.

In this award, we will study how the transcription factor Miz1 keeps inflammation in check, thereby preventing excessive inflammation and ALI. This study put forward a novel paradigm regarding the mechanisms that control inflammation and ALI, which has significant clinical implications in pneumonia and chronic pulmonary obstructive diseases (COPD).

Welcome New Faculty

Joseph Mazzulli, PhD, joins as assistant professor of neurology.

He received his Doctor of Philosophy degree in neuroscience from the University of Pennsylvania and completed a post-doctoral fellowship in neuroscience at the Children's Hospital of Philadelphia. He then completed a research fellowship in neurology at Massachusetts General Hospital and Harvard Medical School and served as an instructor in neurology at Harvard.

Mazzulli's research interests are cellular self-renewal mechanisms, amyloid formation in the brain, and the relationship of these processes to neurodegeneration and aging. He primarily uses human neurons made from induced pluripotent stem cells as well as in vitro protein aggregation models to delineate the pathogenic mechanisms of age-related neurodegenerative diseases such as Alzheimer's and Parkinson's disease.

Jody Ciolino, PhD, joins as assistant professor of preventive medicine.

She received her Doctor of Philosophy and master's degrees in biomedical sciences with an emphasis in biostatistics from Medical University of South Carolina.

Her research interests are clinical studies applied to a wide range of disorders and diseases, clinical study design, randomization, data analysis, and interim analyses. Her recent work focuses on the effects of continuous baseline covariate imbalance on interim and final analyses.

NIH News

The National Institutes of Health is releasing funding opportunities to build a new arsenal of tools and technologies for unlocking the mysteries of the brain. The NIH action is in support of President Obama's Brain Research through Advancing Innovative Neurotechnologies (**BRAIN**) Initiative. The six opportunities announced were developed in response to high priority areas identified by the NIH Advisory Committee to the Director's BRAIN Working Group in September 2013. Awards are expected to be announced in September 2014 and will constitute NIH's initial investment of $40 million in the initiative. **Learn more**.

NUCATS Corner

MyResearch Creates a Readily Accessible Patient Portal to Research Opportunities

Imagine that you see a patient in your clinic who expressed interest in getting involved in research at Northwestern. Do you know how to easily connect them with a registry?

If you are a patient interested in participating in research, do you know where to register for current and future studies?

NUCATS recently developed MyResearch, a convenient place for patients to register for research studies. MyResearch is a portal within the Northwestern Medicine MyChart patient site.

MyResearch tracks patient research interests, which complements how MyChart stores patient medical information. MyResearch does not pull any medical information into the registry at sign up; instead it lets the patient identify their research interests, and feeds this information directly into the General Registry found in the Registar application. When there is a study match, potentially eligible patients are notified. Sign-up takes approximately five minutes. Since August 2012, more than 640 people have signed up with MyResearch. MyResearch is NU IRB-approved and secure.

New Master of Science in Law at NU

Northwestern University School of Law is proud to offer the Master of Science in Law (MSL), a new one-year program focused on legal training for professionals in science, technology, engineering, math, and medicine.

Often using team-based projects, the master's program will contextualize the complex web of intellectual property, regulatory, business contracting, and licensing issues that scientists, engineers, medical practitioners, and other STEM professionals around the world face. They will learn within the context of bringing the next new product to market, creating a startup, running a lab, or developing a company's innovation and patent strategy.

The MSL is open to STEM-trained individuals who wish to study and understand the legal and business implications of their technical work.

The degree is not meant to turn professionals with STEM backgrounds into lawyers. Rather, graduates of the MSL program will be better prepared to do what they do best and focus on the business of innovation and entrepreneurship. The difference is that they will do so with a solid understanding of how law and regulation affects opportunities, constraints, and perspectives on business goals and strategies, both locally and globally.

Please visit the MSL website for more details.

Feinberg's 2013 Year in Review

The past year provided an outstanding time of growth and success at Northwestern University Feinberg School of Medicine.

"The medical school had an exceptional year in 2013," said Eric G. Neilson, MD, vice president for medical affairs and Lewis Landsberg Dean. "We enhanced the strength of the Northwestern Medicine brand by integrating our clinical organization, established a number of innovative institutions and centers, made great strides in medical science, and recruited more high-quality faculty. I anticipate another year of groundbreaking research, institutional growth and academic excellence as we begin 2014."

Visit Feinberg's year in review to see the school's biggest breakthroughs and best moments from 2013.

Research in the News

Huffington Post, January 27
Electronic health records may make doctors bad at patient eye contact
Enid Montague's study was featured.

***TIME*, January 23**
Why it's still a big deal if your teen smokes pot
Matthew Smith and Hans Breiter's research was featured.

***The Atlantic*, January 22**
Newly insured Americans don't understand basic health terms
Sofia Garcia contributed to this article.

NBC News, January 17
Man kept awake during brain surgery
Matthew Tate was featured.

***Boston Globe*, January 17**
Finding a way to erase harmful memories
Jelena Radulovic was quoted.

***The New York Times*, January 15**
Can heavier people be healthier?
Mercedes Carnethon's research was featured.

***US News & World Report*, January 15**
'Microparticles' show promise in healing damaged hearts
Stephen Miller's research was featured.

***Boston Globe*, January 13**
Does eating late really make you gain weight?
Kelly Glazer Baron was quoted.

PBS Newshour, January 4
Making sure young brains get the benefits of music training
Nina Kraus was interviewed.

***Chicago Tribune*, January 3**
After surgery, kidney donor discovers personal connection to patient
Michael Abecassis was quoted.

Reuters, January 3
Northwestern Medicine helps Parkinson's patients fight back
Tanya Simuni was quoted.

More headlines

High Impact Factor Research: November and December 2013

Hauner KK, **Howard JD**, **Zelano C**, **Gottfried JA**. Stimulus-specific enhancement of fear extinction during slow-wave sleep. *Nature Neuroscience*. 2013 Nov;16(11):1553-5.

Jariwala D, Sangwan VK, Wu CC, Prabhumirashi PL, Geier ML, Marks TJ, Lauhon LJ, **Hersam MC**. Gate-tunable carbon nanotube-MoS2 heterojunction p-n diode. *Proceedings of the National Academy of Sciences U S A*. 2013 Nov 5;110(45):18076-80.

Kim J, Park H, Bruce J, Sutton E, **Rowles D**, Pucci D, **Holbrook J**, **Minocha J**, **Nardone B**, **West D**, **Laumann A**, **Roth E**, Jones M, Veledar E, Ghovanloo M. The tongue enables computer and wheelchair control for people with spinal cord injury. *Science Translational Medicine*. 2013 Nov 27;5(213):213ra166.

Kulkarni S, Qi Y, O'huigin C, Pereyra F, Ramsuran V, McLaren P, Fellay J, Nelson G, Chen H, Liao W, Bass S, Apps R, Gao X, Yuki Y, Lied A, Ganesan A, Hunt PW, Deeks SG, **Wolinsky S**, Walker BD, Carrington M. Genetic interplay between HLA-C and MIR148A in HIV control and Crohn disease. *Proceedings of the National Academy of Sciences U S A*. 2013 Dec 17;110(51):20705-10.

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Help Feinberg Track Journals

The Feinberg Research Office regularly tracks research published by Feinberg investigators. The citations are used on web pages, in newsletters and social media, for internal reporting, and more. To more accurately track these journals, the Research Office asks that Feinberg investigators use the following institution name in the address field when publishing in peer-reviewed journals: "Northwestern University Feinberg School of Medicine."

Funding Opportunities

Grand Opportunity in Medications Development for Substance-Use Disorders (U01)
More information

Sponsor: United States Department of Health and Human Services, National Institutes of Health, National Institute on Drug Abuse (NIDA)
Submission Deadline: March 27
Upper Amount: $15 million

Synopsis: The purpose of this funding opportunity announcement is to accelerate the development of medication for the treatment of substance-use disorders by encouraging research applications to support a diverse array of preclinical and/or clinical research projects. The goal is to fund medication studies that will have high impact and quickly yield the necessary results to advance medications closer to FDA approval.

Stem Cell Investigator Awards
More information

Sponsor: New York Stem Cell Foundation (NYSCF)
Submission Deadline: March 22
Upper Amount: $1.5 million

Synopsis: The goal of this initiative is to foster bold and innovative science with the potential to transform the field of stem cell research, and advance understanding and use of stem cells for the treatment of human disease. In addition to providing funding, NYSCF would partner with the investigator to advance translational goals of the research.

Evaluating Natural Experiments in Healthcare to Improve Diabetes Prevention and Treatment (R18)
More information

Sponsor: United States Department of Health and Human Services, National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)
Submission Deadline: March 5
Upper Amount: $2.5 million

Synopsis: This opportunity supports research to evaluate large-scale policies or programs related to healthcare delivery that are expected to influence diabetes prevention and care. It is not intended to support new policies or programs. Research support is for the evaluation of effectiveness of programs and/or policies implemented independent of NIH funding. The goal is to support research that meaningfully informs clinical practice and health policy related to prevention or management of diabetes.

View more funding opportunities

Featured Events

2.14 **RHLCC: 2014 San Antonio Breast Cancer Review**
A comprehensive summary of the most up-to-date research and clinical data presented at the recent San Antonio Breast Cancer Symposium.
Date: Friday, February 14, 1:30 to 5 p.m.
Location: Northwestern Memorial Hospital Feinberg Pavilion
251 E. Huron (Chicago campus)
Contact: cancer@northwestern.edu
More information

2.17 **Center for Behavioral Intervention Technology & Center for Engineering and Health Seminar**
"Adventures in Providing Internet-Delivered Psychological Treatments for People with Anxiety and Depression. From Proof of Concept Trials to National Treatment Service," presented by Nick Titov, PhD, Macquarie University (Australia).
Date: Monday, February 17, Noon to 1:30 p.m.
Location: 680 N. Lake Shore Drive, Prev Med Dept Suite 1400 (Chicago campus)
Contact: l-rubio@northwestern.edu
More information

2.18 **Lectures in the Life Sciences**
"Recent Progress in Human Hematopoietic Stem Cell Expansion," presented by Ronald Hoffman, MD, Mount Sinai School of Medicine.
Date: Tuesday, February 18, 4 to 5 p.m.
Location: Lurie Research Center — Hughes
303 E. Superior St. (Chicago campus)
Contact: TeresaDeluca2014@u.northwestern.edu
More information

2.25 **Microbiology-Immunology Seminar**
"Staphylococcus aureus Immune Evasion and Virulence," presented by Frank DeLeo, PhD, National Institutes of Health – NIAID.
Date: Monday, January 6, Noon to 1 p.m.
Location: Lurie Research Center — Baldwin
303 E. Superior St. (Chicago campus)
Contact: h-seifert@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.