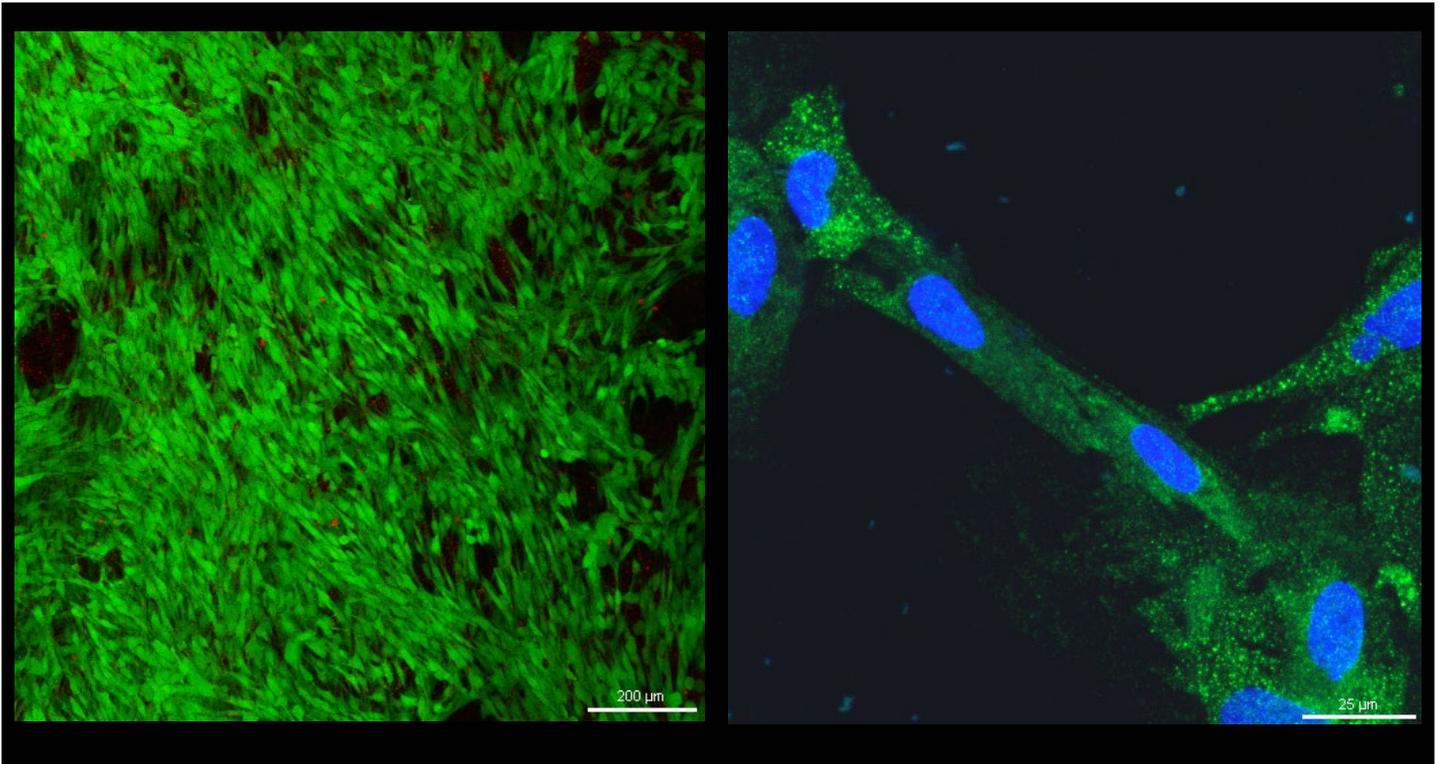


Breakthroughs

Feinberg School of Medicine Research Office

June 2015



In the Galiano lab, scientists are exploring ways to regenerate muscle using a bioreactor, a device that creates an environment that promotes cell growth. Left: Cell seeding on a muscle hydrogel. Right: Confocal of stem cells becoming muscle on muscle hydrogels.

Scientists Combat Issues in Military Medicine

With funding from the U.S. Department of Defense (DOD), scientists at Feinberg are uncovering mechanisms of traumatic injuries and developing new therapies for use in military medicine and beyond.

Feinberg scientists received 22 awards from the DOD in the past year, totaling more than \$16 million, to support a variety of research, including projects dealing with physiology, neuroscience, tissue engineering, and cancer.

“Medicine and science can uniquely address challenges faced by men and women in uniform, and the solutions can have broad application for society,” said [Rex Chisholm, PhD](#), Associate Vice President for Research at Northwestern University

and Vice Dean of Scientific Affairs and Graduate Education and Adam and Richard T. Lind Professor of Medical Genetics at Feinberg. “This funding enables timely innovation across many departments, and often brings together investigators from different disciplines.”

Here’s a look at four DOD-funded projects at Feinberg.

Regenerating Muscle for Craniofacial Reconstruction

Feinberg is one of 14 institutions leading the second phase of the Armed Forces Institute of Regenerative Medicine (AFIRM) program, which aims to develop new treatment options for severely wounded military service members.

(continued on page 2)

Scientists Combat Issues in Military Medicine

(continued from cover page)

As part of AFIRM’s craniofacial repair research area, [Robert Galiano, MD](#), associate professor in [Plastic Surgery](#), leads a project exploring ways to regenerate muscle using a bioreactor, a device that creates an environment that promotes cell growth.

“In warriors with head and neck injuries and severe burns, there is a need to regenerate the small, delicate muscles in the face to restore facial expression and function,” he said.

Galiano uses stem cells from fat, called adipocyte stem cells, and manipulates specialized differentiation media and signaling factors to encourage them to develop into muscle cells. His team collaborates with [Ramille Shah, PhD](#), assistant professor in [Surgery](#) and at [McCormick School of Engineering](#), to use bioprinting techniques to create living-cell hydrogels that can serve as a specialized scaffold for the stem cells to grow onto. With scientists at University of Texas at Arlington Research Institute, Galiano is investigating ways to carry out functional assays that test the stretch and strength of regenerated muscle tissue.

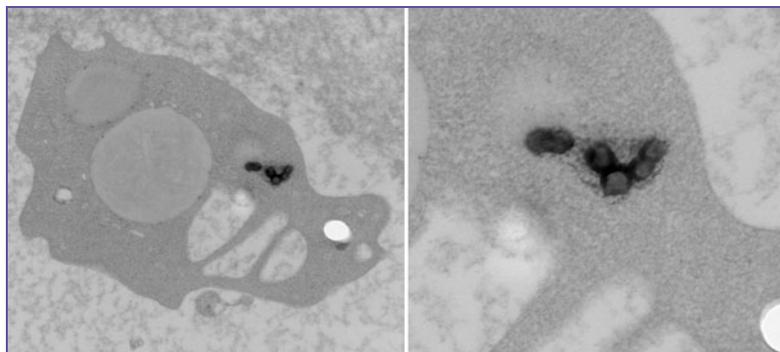
According to Galiano, his techniques could allow surgeons to use the scaffold to regenerate muscle and then transfer it into the mouth of a wounded member of the armed forces to reconstruct the oral cavity.

Linking Traumatic Brain Injury and Alzheimer’s Disease

[John Disterhoft, PhD](#), professor in [Physiology](#), and [C. Savio Chan, PhD](#), assistant professor in Physiology, are evaluating the effect of explosions on military service members, the resulting inflammation in the brain, and the long-term risk of those patients developing Alzheimer’s disease. The project is funded by U.S. Army Medical Research and Materiel Command.

Disterhoft uses mouse models to evaluate the behavior of normal mice versus those with the genetic risk of developing Alzheimer’s disease. He has observed that after going through a simulated blast, mice with Alzheimer’s risk factors have trouble remembering how to do a learned task.

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The image, from the lab of Susan Clare, MD, PhD, shows nanoshells (dark spots) inside a macrophage in the middle of a tumor. At right, the same image, magnified, shows a black rim—the outer gold shell—and glass in the nanoshell’s center.

Chan examines living cells in cultured tissue slices from mouse brains and tests two categories of cells—projection neurons and glial cells—to observe the changes in the appearance of cells and phenotypes after the explosion. He also measures the electrophysiology of neurons to better understand their ability to communicate with each other before and after traumatic brain injury.

“If we can show the sequence of changes with traumatic brain injury, and how it may contribute to Alzheimer’s disease, then ideally a pharmacological intervention could be used as a preventive measure in soldiers with a high risk of developing Alzheimer’s disease,” Disterhoft said.

Nanoparticles for Drug Delivery in Brain Metastases

Other labs are working with DOD to find solutions to issues outside of military medicine, including [Susan Clare, '88 PhD, '90 MD](#), research associate professor in [Breast Surgery](#).

Funded by the DOD Breast Cancer Research Program, Clare has found a way to use the immune system to deliver chemotherapy to secondary brain metastases that can occur in survivors of breast cancer.

“This is an important problem, as women are living longer after having survived breast cancer, and they are experiencing secondary metastases in their bones, liver, and brain,” Clare said. “The idea is two-fold: get drug delivery into the brain and get the drug right where it needs to be, that is, at the tumor.”

Clare is working with collaborators at Rice University on the synthesis of nanoparticles that will deliver the therapy. Macrophages, a type of white blood cell, will act as a “Trojan horse,” carrying the nanoparticle across the blood-brain barrier and to tumors. The nanoparticle consists of a glass interior and gold exterior with the therapeutic agent locked between two strands of DNA, which are on the surface of the gold. Once at the tumor site, the therapeutic can be released from the DNA strands using laser light.

Once the nanoparticles have been developed, Clare plans to test their delivery in mouse models.

(continued on page 3)

Congratulations to the Class of 2015 Research Graduates!

The Driskill Graduate Program in Life Sciences, Northwestern University Interdepartmental Neuroscience Program, Medical Scientist Training Program, Clinical Psychology PhD, and Doctor of Physical Therapy-PhD Engineering programs have begun to confer doctorate degrees to the class of 2015 at ceremonies held at various times throughout the year. The faculty and staff of Northwestern University congratulate these students on their well-deserved achievement.

Students who have been profiled on these pages during their time at Feinberg are linked to their web profiles.

Driskill Graduate Program (DGP)

Irena Antic
 Meghan Bliss-Moreau
 Hsiang-Chun (Jimmy) Chang*
 David Escobar*
 Nehal Gosalia
[Jennifer Heller](#)
 Shauna Houlihan
 Jessica Huszar
 Amit Jairaman
[Sin Yi Kong](#)
 Sankar Krishna
 William Liu
 Adrienne Long*
 Abbye McEwen*
 Michelle Oliveira Fernandes
[Dipal Patel](#)*
 Alexander Radian
 Stacy Ryu
 Michael Schieber*
 Ka Tat Siu
 Charles Smarr
 Benjamin Smith-Goldenson*
 Elizabeth Tarasewicz

Leidamarie Tirado

Sushant Tripathy
 Gregory Tyson
 Jessica Tyson (Schmitt)
 Richard Watson*
 Hanwei Yin

Northwestern University Interdepartmental Neuroscience Program (NUIN)

James Antony
 Nicholas Bowman
 Prajwal Ciryam*
[Garry Cooper](#)
 Jeremy Eagles
 Emma Flores
 Shoai Hattori
[James Howard](#)
 Kristan Leech
 Derek Miller
 Liuliu Pan
 Jane Rodgers
 Sheena Sharma
 Benjamin Suter



Members of the Class of 2015, including MSTP graduates, celebrate at the spring Feinberg commencement.

Wei-Chun Wang

[Jessica Wilson](#)

Keng Nei Wu

Xinyu Zhao

Clinical Psychology PhD Program

Sarah Ballou
 Allison Clarke
[Tamar Gefen](#)
 Mara Gustafson
 Jennifer Hershfield
 Angel Mehta
 Anjali Pandit
 Michal Rischall
 Lindsey Sankin

DPT-PhD(Eng) Program

Laura Miller

*Designates students that are part of the MSTP program.

Additionally, the following MSTP students received their Doctor of Medicine degrees in 2015:

Oyinlolu Adeyanju
 Alison Affinati
 Marina Bayeva
 Andrew Karaba
 Sara Karaba
 Betty Kong
 Jessica Queen
 Michael Schieber
 Laura Sena
 Robin Skory
 Craig Smuda
 Joshua Waitzman
 Ye Yuan

Scientists Combat Issues in Military Medicine

(continued from page 2)

Mechanism Behind Maturation of GABA Signaling in Fragile X Syndrome

In early 2014, [Anis Contractor, PhD](#), associate professor in [Physiology](#), found that normal maturation of signaling by the neurotransmitter GABA is delayed in the mouse model of fragile X syndrome, the most common known cause of autism. Normally, there is a switch in polarity of GABA signaling from excitatory to inhibitory function during early development, but in fragile X syndrome, this switch doesn't occur at the proper time and can lead to long-term hyper-excitability.

Contractor and his team showed that a chloride transporter,

which can be inhibited by the drug bumetanide, might control the switch. Through a grant from the U.S. Army Congressionally Directed Medical Research Program, he is testing the drug in the fragile X mouse to determine if this can rectify the GABA polarity switch and relieve some of the changes in sensory cortical function.

"We want to know what causes the switch. What is the mechanism behind it? And is there a way to rectify the switch?" Contractor said.

As part of the project, he and collaborators are also testing whether there are alterations in GABA maturity in human-induced pluripotent stem cells to support findings in mouse models, and further studying circuit defects in fragile X mice.

Applying New Techniques to Cancer Prevention

Lifang Hou, MD, PhD, Associate Professor of Preventive Medicine



As a molecular epidemiologist with a background in medicine and basic science, [Lifang Hou, MD, PhD](#), associate professor of [Preventive Medicine](#)—Cancer Epidemiology and Prevention, focuses her research on identification of risk factors, disease development, and progression in environment pollutant exposures, and identification of biomarkers that may serve as indicators of an individual's past exposure to disease risk factors.

Over the past three years, Hou expanded her research to cancer prevention by conducting early-phase cancer chemoprevention clinical trials in at-risk individuals. She is chief of the [Division of Cancer Epidemiology and Prevention](#) in Preventive Medicine and co-director of International Relations at the [Robert H. Lurie Comprehensive Cancer Center of Northwestern University](#), where she provides leadership to expand the Lurie Cancer Center's global alliances.

Hou joined Northwestern in 2007 after serving as research associate at the National Cancer Institute.

Q&A

What are your research interests?

I focus my research on the identification of risk factors for the development and progression of diseases that stem from pollutants and other environmental exposures, and biomarkers that can serve as biological indicators of an individual's past exposure to risk factors and/or predictors of diseases, particularly cancers.

Specifically, I have been conducting studies that use leading-edge, high-throughput technologies to examine the role of epigenetic biomarkers in the etiology and prediction of cancer and other chronic diseases in populations, including Caucasian, African, African-American, Asian, Latino, and Arabic populations. Over the last three years, I have expanded my research into studies to identify molecular biomarkers that can detect individuals at risk for cancers and to conduct interventions in such individuals.

What is the ultimate goal of your research?

My overarching research goal is to integrate traditional epidemiologic methods with the ever-advancing molecular and omic techniques in cancer research to identify risk factors and molecular markers that may serve as tools for disease prediction and prevention.

How is your research funded?

My research has been funded by both the National Institutes of Health and the National Science Foundation.

What types of partnerships are you engaged in across campus and beyond?

The nature of my research requires collaborations with scientist in different fields. At Northwestern I have developed numerous collaborations within Feinberg and with faculty members on the Evanston campus.

For example, I collaborate with [Vadim Backman, PhD](#), in the Department of Biomedical Engineering in the Robert R. McCormick School of Engineering and Applied Science to study pancreatic cancer early detection biomarkers using the technology invented by Dr. Backman.

I have also developed collaborations with investigators from other prestigious universities in the US, such as Harvard University, the University of North Carolina at Chapel Hill, the University of Michigan, Vanderbilt University Medical Center, and the University of Chicago. Furthermore, I have collaborated internationally with researchers in Europe, China, and the Middle East, including investigators at the University of Aberdeen in the UK, the University of Milan in Italy, the Karolinska Institute in Sweden, Sultan Qaboos University in Oman, and Fudan University in China.

Who makes up your research team?

My research team includes PhD students, master's students, postdoctoral fellows, international visiting scholars, and global health exchange students. We also recruit high school students and master's students interested in epidemiological research for internships. Each team member brings unique ideas and expertise to the research. They also receive hands-on research training in the design and conduct of population-based studies, including generating research ideas and hypotheses, measuring biomarkers using laboratory techniques, conducting field visits, analysis of 'omic,' informatic, and epidemiological data, manuscript preparation, data interpretation, and grant writing.

Comedic Instincts, Academic Appreciation

Meg Kennedy, Executive Assistant, Feinberg Dean's Administration



Where are you originally from?

I am originally from Rye, New Hampshire, and lived in Boston for years, so I am a lifelong New Englander at heart. (Go Red Sox!)

What is your educational background?

I graduated with a Bachelor of Arts degree from Boston College with a major in film studies and a minor in history. During that time, I also studied abroad at Melbourne Uni-

versity in Melbourne, Australia.

Please tell us about your professional background.

Prior to working at Northwestern, I worked professionally as a video editor and videographer. One of my major gigs was filming weddings, so if you or a loved one has gotten married in Chicago, there's a good chance I filmed their wedding.

Before moving to Chicago, I was a substitute teacher at the elementary school in my hometown, which is both where I attended school, and also where my mother currently works. She was the best carpool buddy a girl could ask for!

Why did you choose to work at Northwestern?

I had been working as a freelance videographer when my friend Erin said they needed a temp for a few weeks in Faculty Affairs here at Northwestern. I started temping, and when I was asked me to fill the position fulltime, I couldn't say no! The work environment is so positive, and I get to work with really great people every day. Education has always been an important part of my life, so I appreciate that I get to work in that world now.

How do you help scientists at the medical school?

I think my biggest contribution to scientists and research students here at Feinberg is being able to serve as a bridge of communication between them and Rex Chisholm, PhD, Associate Vice President for Research at Northwestern University and Vice Dean of Scientific Affairs and Graduate Education and Adam and Richard T. Lind Professor of Medical Genetics, and William Lowe, Jr., MD, Vice Dean for Academic Affairs, Thomas D. Spies Professor of Genetic Metabolism, and professor of Medicine-Endocrinology.

What is your favorite part of the job?

My favorite part of my job at Northwestern is, honestly, the people I get to work with. I am really lucky to have found a work environment as supportive as Feinberg. Coming from the freelance art world, this was a big professional shift, but I look forward to coming to work because I have fantastic coworkers and awesome bosses, and the work I am involved with is exciting from both an education standpoint as well as a social standpoint.

What do you do in your spare time?

I am an active member of the Chicago comedy scene. I am an improviser and actor, and I perform at multiple theaters around the city. I typically leave work every night to go directly to a rehearsal or a show. I moved to Chicago to pursue comedy, so all of my spare time is devoted to writing or performing, which is my biggest creative passion. If anyone would like to see me perform, please feel free to reach out! I love any opportunity to share my comedic world with new audiences.

Anything else we should know about you?

I will happily discuss any of the following things with people: Boston sports, vegetarian cuisine, comedy, New Hampshire's epic motto ("Live Free or Die"), how Runts are an underrated candy, and/or the best music for a road trip. I also love getting to know people and chatting in general, so feel free to stray from that list of suggestions and stop by my desk to say hi!

Welcome New Faculty



Lisa Wilsbacher, '03 MD, '01 PhD, joins as assistant professor of Cardiology, Pharmacology, and the Feinberg Cardiovascular Research Institute. She most recently was adjunct assistant professor of Cardiology at University of California-San Francisco (UCSF). She earned her Doctor of Medicine and Doctor of Philosophy in neuroscience degrees from Northwestern University, and completed her internship, residencies, and cardiology fellowship at USCF.

Wilsbacher's research focuses on cardiac development and cardiomyocyte maintenance in the setting of pathological stress. Currently, her laboratory investigates the G protein-coupled receptor sphingosine-1-phosphate receptor 1 (S1Pr1) and its unexpected role in cardiomyocyte proliferation and cardiac development. She aims to identify the signaling mechanisms that underlie these cardiac developmental effects and investigate whether S1Pr1 signaling contributes to cardiac remodeling in the adult heart.

Understanding Early Cognitive Decline

Stephanie Kielb, Clinical Psychology PhD Program



Stephanie Kielb, a third-year PhD student in Northwestern University's [Clinical Psychology Program](#), studies the cognitive and psychosocial changes that occur in normal aging and neurodegenerative disease.

She is interested in identifying early symptoms of dementia to better plan treatments and design clinical trials. Kielb received her bachelor's degree and a

master of public health degree from The Johns Hopkins University in Baltimore, Maryland.

Q&A

Where is your hometown?

I grew up in Lancaster, Pennsylvania, which is about one hour west of Philadelphia.

What are your research interests?

My research is focused on identifying the cognitive and psychosocial changes that occur in normal aging and neurodegenerative disease. The goal of this work is to facilitate the early identification of dementia, which is important for planning treatments and designing clinical trials. Specifically, I am interested in studying older adults who report decline in their cognitive abilities, but perform normally on objective cognitive tests. Their subjective concerns may represent the earliest symptoms of impending dementia, which are too subtle to be detected with standard assessment tools. I hope to quantify neurological and behavioral features of older adults with subjective cognitive concerns through the use of highly sensitive, computer-adaptive instruments.

What exciting projects are you working on?

I work on a very exciting project directed by [Emily Rogalski, PhD](#), research associate professor in the Cognitive Neurology and Alzheimer's Disease Center (CNADC), studying "[SuperAgers](#)"—adults over age 80 who have superior memory abilities. Our goal is to identify the biological and behavioral factors that have protected these SuperAgers from developing cognitive decline and dementia. We collaborate with the Foley Center

for the Study of Lives to conduct life story interviews, which are analyzed for intrapersonal and narrative themes, including resilience and wisdom. Through this work, I hear many personal stories of intense struggle, loss, and accomplishment, which are so inspiring and show how truly super these individuals are.

What attracted you to the PhD program?

I was initially drawn to the unique research and clinical opportunities available at Northwestern, which is one of only a few clinical psychology programs located within an academic medical center. I was also excited about the prospect of receiving both research and clinical training from my mentor, [Sandra Weintraub, PhD](#), professor of Psychiatry and Behavioral Sciences and Neurology.

During my interview at the Cognitive Neurology and Alzheimer's Disease Center (CNADC), I remember seeing social work offices located next door to a neuropathology lab. I realized then that the CNADC was a rare and multidisciplinary environment that I wanted to be part of.

What has been your best experience at Feinberg?

"AD Day" is always one of my favorite days of the year. Feinberg investigators and community members have the opportunity to learn about aging and dementia research within the University. I enjoy being able to share my research with patients and their caregivers, whose volunteer participation makes our research possible. The day is also a great showcase of the multidisciplinary mission of the CNADC, as presentations span from basic neuroscience to behavioral interventions.

How would you describe the faculty at Feinberg?

Collaborative is a good word to describe the faculty at Feinberg. They have high expectations, but provide excellent mentorship and are enthusiastic about furthering my professional development.

What do you do in your free time?

I spend my downtime with friends and family. Playing basketball with my niece and nephews is definitely a favorite activity, but I also like to exercise, explore Chicago, and go to the beach on sunny days.

What are your plans for after graduation?

I plan to complete a post-doctoral fellowship and eventually work in an academic medical center where I can practice clinical neuropsychology and conduct research on aging and dementia.

Research in the News

UPI May 30

Study finds way to starve HIV, keep it from reproducing
Richard D'Aquila's research was featured.

Crain's Chicago Business May 28

Northwestern med school snags \$15 million grant to boost heart health
Abel Kho was quoted.

US News & World Report May 26

Soy supplements won't ease asthma, study finds
Lewis Smith's research was featured.

► This study also was covered in *The Washington Post*, *Philadelpha Times*, *International Business Times*, *MedScape*, and more.

Chicago Sun-Times May 26

Another step in fight against deadliest brain cancer
Alexander Stegh's research was featured.

Chicago Tribune May 22

WHO warns: Careful with names of diseases
Stanford Shulman was quoted.

Washington Post May 18

'Groundbreaking' cystic fibrosis treatment could improve quality of life for thousands
Susanna McColley's research was featured.

► This study also was covered in *US News & World Report*, *BBC News*, *Detroit Free Press*, *FOX News*, *International Business Times*, and more.

CBS News (National) May 1

Changes in the blood can predict cancer years in advance
Lifang Hou's research was featured.

► This story also appeared in *The Chicago Sun-Times*, *The Telegraph (UK)*, *Daily Mail (UK)*, and more.

WBEZ-FM Chicago (NPR) May 1

Culturally-sensitive workouts yield health results for immigrants
Namratha Kandula's research was featured.

[More media coverage](#) available online.

Northwestern University

NUCATS
Clinical and Translational Sciences Institute

NUCATS Corner

CRC Support Service Available to Pediatric Researchers

The [Clinical & Translational Research \(CTR\) Program](#) at [Stanley Manne Children's Research Institute](#), the research arm of [Ann & Robert H. Lurie Children's Hospital of Chicago](#), is now offering the services of trained clinical research coordinators to pediatric researchers. Their new Clinical Research Coordinator (CRC) Staffing Service can be deployed to assist researchers on an hourly basis according to their needs. It provides investigators with the flexibility to request support from a study coordinator for a few hours per week on part-time basis, or full-time for a number of weeks on a temporary basis.

In partnership with the [NUCATS Institute](#), the CTR program has aligned CRC Staffing Service with nurse and non-nurse [study coordination services](#) offered by NUCATS' [Center for Clinical Research](#). Both programs enable investigators to initiate new research projects that otherwise might have been too burdensome.

Study coordinators in the CTR program are available to handle all of the day-to-day activities involved in clinical research. Their support includes assisting with pilot projects targeted towards grant applications, facilitating study start-ups, completing IRB submissions, supporting study enrollment and consenting, and participating in monitoring visits and audits. This service can be utilized for newly funded projects that are without adequate existing staff, or for existing funded projects with gaps in staffing (family leave, resignations, etc.).

For additional information on CTR's CRC Staffing Service, please contact [Timothy J. Babin, MBA, MHAc, CCRC](#), administrative airector of CTR Operations.

Sponsored Research



PI: Abel Kho, MD
Assistant Professor of General Internal Medicine and Geriatrics, Center for Healthcare Studies, and Preventive Medicine-Health and Biomedical Informatics

Sponsor: Agency for Healthcare Research and Quality

Title: "Healthy Hearts in the Heartland"

Although quality improvement strategies have been shown to improve care around the ABCS of cardiovascular disease (aspirin prescribing, blood pressure control, cholesterol management, and smoking cessation counseling), most studies of these strategies have been conducted in well-resourced academic institutions or integrated healthcare delivery systems. It is unclear whether these strategies can be effectively implemented in independent primary care practices with more limited resources and less developed quality improvement infrastructure.

This project brings together the four Regional Extension Centers covering Northeastern Illinois (including Chicago), Southeastern Wisconsin, and Northern Indiana (including Indianapolis). This tri-state corridor is a highly diverse population of more than 16 million people, and the cooperative will collectively serve over 300 primary care practices. The project's multi-stakeholder team is comprised of State Departments of Public Health, the American Medical Association, the Alliance of Chicago, Telligen (Illinois' Medicare Quality Improvement Organization), PurdueREC (Regional Extension Center for Indiana), IL-HITREC (Regional Extension Center Metastar for Illinois outside the 606XX area codes), and Metastar (the quality improvement organization and Regional Extension Center for Wisconsin).

Kho and his team ultimately plan to test the feasibility and effectiveness of point-of-care strategies (i.e., at the time of a visit) and population management strategies (i.e. systems-based approaches to preventive and clinical care) in EHR-enabled primary care practices.

Practices involved in the project must have less than or equal to 10 providers, be focused on adult primary care, have certified EHR systems in place, and not be part of a health system that provides significant quality improvement support.

Specific aims include:

- Evaluating the ability of small practices in the region to implement point-of-care and population management quality improvement strategies to improve the ABCS.

- Implementing PopHealth, open-source performance measurement software, to evaluate performance and enable regional benchmarking.
- Conducting a practice-randomized trial to determine whether point-of-care strategies improve ABCS performance measures compared to baseline, and whether adding locally-tailored population management strategies to these strategies improves performance on the ABCS measures more than point-of-care strategies alone.

The group will perform a mixed-methods evaluation to examine changes in practices' perceived capacity for quality improvement. They will also examine whether access to comparative quality data within a region improves the capacity of practices to sustain their quality improvement program around the ABCS and provides a long term framework for practices to implement new quality improvement activities.

The program will create a robust and sustainable quality improvement infrastructure positioned to translate patient-centered outcomes research findings efficiently into primary care practices within a region.



PI: Juned Siddique, DrPH
Associate Professor of Preventive Medicine-Biostatistics and Psychiatry and Behavioral Sciences

Sponsor: National Heart, Lung, and Blood Institute

Title: "Statistical methods to correct for measurement error in self-reported dietary data from lifestyle intervention trials"

The presence of measurement error is considered to be an inevitable condition associated with self-reported diet assessment, and the role of measurement error in attenuating or distorting the association between diet and disease risk is well understood.

In lifestyle intervention trials, where the goal is to change a participant's weight or modify their eating behavior, self-reported diet is typically an outcome variable that is measured repeatedly throughout the intervention.

In this setting, measurement error can affect the estimation of intervention effects by reducing the power to detect a

(continued on page 9)

Sponsored Research

(continued from page 8)

treatment effect, as well as by biasing estimates of treatment effectiveness. As a result, measurement error in intervention studies has handicapped the development of effective interventions aimed at changing and maintaining healthy behaviors.

Siddique and his team have proposed to develop a statistical framework to correct for measurement error in self-reported dietary data from longitudinal lifestyle intervention trials where objective validation data do not exist. They have obtained four validation studies that contain both self-reported and objective measures (i.e. recovery biomarkers) of dietary intake.

Using these data sets, they will estimate the relationship between self-reported and objective measures of diet, and borrow this information to correct for measurement error in longitudinal lifestyle intervention trials that only include self-reported dietary measures.

This approach uses a missing data framework that views unmeasured objective data as missing data. There are a number of advantages to this approach including:

- It allows the team to draw upon many computational and statistical methods for handling missing data.
- It facilitates the use of sensitivity analysis to address the effect of unverifiable measurement error assumptions on subsequent inferences.
- Corrected measurements of diet can be imputed so that users of measurement error-corrected data sets can use standard statistical methods to perform their analyses.

The overall goal of this project is to develop a statistical framework for correcting for measurement error in longitudinal self-reported dietary data which makes use of external validation data. Specific aims are to investigate the implications of measurement error in self-reported dietary outcomes when performing longitudinal analyses to estimate treatment effects; to develop and assess a statistical framework to correct for measurement error in longitudinal lifestyle interventions where outcomes are measured with error and measurement error may vary over time and can differ between treatment groups; and to develop and assess methods for combining external validation studies with intervention trials using propensity score methods.

This work will allow researchers to more accurately and precisely measure the effects of a lifestyle intervention and its mechanisms. This information will facilitate the development of more effective interventions to improve the diet of at-risk populations.

Funding

Advances in Patient Safety Through Simulation Research (R18)

[More information](#)

Sponsor: Department of Health and Human Services, Agency for Healthcare Research and Quality (AHRQ)

Submission deadline: September 25

Upper Amount: \$1.05 million

Synopsis: AHRQ is interested in funding a diverse set of projects that develop, test, and evaluate simulation approaches for the purpose of improving the safe delivery of health care. Simulation in health care serves multiple purposes. As a training technique, it exposes individuals and teams to realistic clinical challenges through the use of mannequins, task trainers, virtual reality, standardized patients or other forms, and allows participants to experience in real-time the consequences of their decisions and actions. The principal advantage of simulation is that it provides a safe environment for health care practitioners to acquire valuable experience without putting patients at risk. Simulation also can be used as a test-bed to improve clinical processes and to identify failure modes or other areas of concern in new procedures and technologies that might otherwise be unanticipated and serve as threats to patient safety. Yet another application of simulation focuses on the establishment of valid and reliable measures of clinical performance competency and their potential use for credentialing and certification purposes. Applications that address a variety of simulation techniques, clinical settings, provider groups, priority populations, patient conditions, and threats to safety are welcomed.

Partnerships for the Development of Novel Assays to Predict Vaccine Efficacy (R01)

[More information](#)

Sponsor: Department of Health and Human Services, National Institutes of Health, National Institute of Allergy and Infectious Diseases

Submission deadline: August 30-LOI, September 20-Application

Upper Amount: \$1.05 million

Synopsis: The purpose of this funding opportunity announcement is to solicit applications for projects focused on development or improvement of preclinical assays to predict human efficacy for specific investigational vaccines.

[View more funding opportunities](#)

High Impact Factor Research

April 2015

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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."

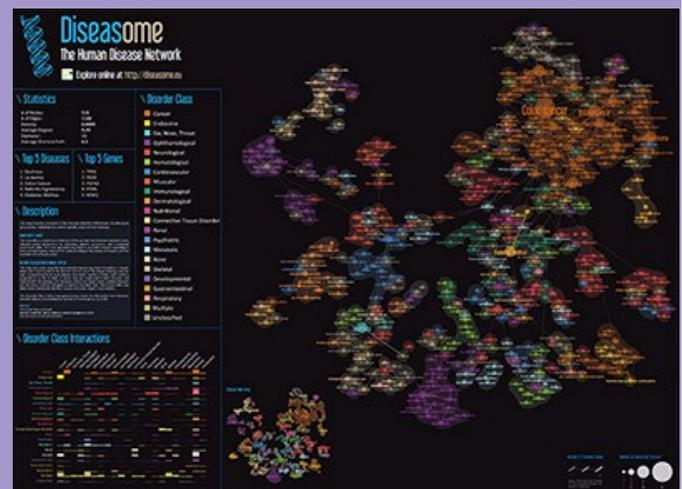
Science Maps on Exhibit at Galter Library Embrace the Power of Data

In *Places & Spaces: Mapping Science*, a visiting exhibit at the Galter Health Sciences Library, maps guide exploration of not only the physical world, but also of abstract ideas.

The 100 maps on display through September 23, 2015 represent a diverse array of human knowledge. One (pictured right) illustrates the relationships between 1,284 human diseases and 1,777 genes by connecting disease nodes that share at least one gene with associated mutations.

"This exhibit reveals the power that a good visualization has to convey complex information," said Kristi Holmes, PhD, director of the Galter Health Sciences Library and associate professor in Preventive Medicine-Health and Biomedical Informatics. "Visualizations tell the story of data in a way that isn't readily evident when you're only looking at raw numbers."

Read more in the Feinberg News Center.



Calendar

Tuesday, June 30

Subcontracts: Deciphering ESPR

Presented by NURAP. Entering subcontract requests into the Electronic Sponsored Projects Request system (ESPR) can be tough. This session will break down step-by-step how to enter a new subcontract request and an amendment for a subcontract into ESPR.

Time: Noon to 1 p.m.

Location: Lurie Medical Research Building — Hughes
303 E. Superior St. (Chicago campus)

Contact: m-blaszak@northwestern.edu
[More information](#)

Friday, July 10

ASCO 2015 Oncology Review

The 2015 Oncology Review: Coverage from the 2015 American Society of Clinical Oncology's (ASCO) Annual Meeting is a comprehensive summary of the most up-to-date research and clinical data presented at ASCO's Annual Meeting. Free to students, residents, and fellows.

Time: 8:30 a.m. to 4:15 p.m.

Location: Northwestern Memorial Hospital Conf. Center
3rd Floor Feinberg Pavilion, Conf. Room A
251 E. Huron St. (Chicago campus)

Contact: megan.cahill@northwestern.edu
[More information](#)

Monday, July 13

Navigating the Research Enterprise: 1st Mondays

This month's topic is "For Clinician Scientists: Deciding on & Designing a Strategy to Achieve the Level of Research that Fits Your Career- Consultant, Collaborator, Co-Investigator or PI?" RSVP Required.

Time: Noon to 1 p.m.

Location: Lurie Medical Research Building — Searle
303 E. Superior St. (Chicago campus)

Contact: nucats-ed@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.

NIH News

Enhancing Reproducibility in NIH-Supported Research through Rigor and Transparency

NIH has clarified long-standing expectations regarding the importance of rigor in scientific research. [A recent notice](#) outlined expectations for the scientific community about describing the rigor of the research proposed in grant applications, with additions to the review criteria used to evaluate proposals.

These changes will prompt applicants and reviewers to consider issues, which, if ignored, may impede transparency needed to reproduce key results and thereby slow scientific progress. Included in clarifications about rigor is NIH's expectation for scientists to address sex among other biological variables, in order to improve transparency of this fundamental aspect of science in shaping biological processes and outcomes critical to health. Additionally, applicants are asked explain how key biological and chemical resources are authenticated to ensure identity and validity.

Health Disparities Research Feedback Request

The National Institute on Minority Health and Health Disparities (NIMHD) issued a [Request for Information](#) soliciting input and guidance on the NIH vision for the science of health disparities research. This vision will guide the development of health disparities research for the next decade, ensuring these research efforts continue to build on technological advances and scientific breakthroughs. Responses are due by July 31.

Disparities in the Physician-Scientist Pipeline

A new [data snapshot](#) provides an overview of racial and ethnic disparities in the physician-scientist pipeline, workforce, and NIH funding. The findings were compiled using data from the National Science Foundation's 2014 Physician-Scientist Workforce Report and AAMC data on MD and PhD medical students and faculty.

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