

# Breakthroughs

Feinberg School of Medicine Research Office

September 2020



Rebecca Krier (right) research lab manager in the Division of Allergy and Immunology, and Ashley Queener, (left) a student in the Walter S. and Lucienne Driskill Graduate Training Program in Life Sciences, work on experiments in a lab while wearing masks and practicing social distancing.

## Persevering Through Pandemic: Science During COVID-19

By Will Doss

In late March, the world came to a virtual standstill. The COVID-19 pandemic forced leaders around the world to limit large gatherings and shutter schools and businesses. Illinois Governor J.B. Pritzker issued a shelter-in-place order on March 21, recommending Illinoisans stay at home except for essential activities such as going to the grocery store or pharmacy. The order lasted more than two months.

For Feinberg's research enterprise, this was a serious disruption — but science kept moving forward. While some projects were deemed essential and employees navigated a new world of socially distant laboratories and facilities, other scientists worked from home, analyzing data and devising new experiments. This effort was only possible through the hard work of investigators, research staff, administrators and the essential employees caring for animals and cell cultures.

"Our people were able to respond to the need to go to essential work only on campus, be productive at home and devise plans so that we didn't lose a lot of important work and projects," said [Rex Chisholm, PhD](#), vice dean for Scientific Affairs and Graduate Education and the Adam and Richard T. Lind Professor of Medical Genetics. "It was also impressive to see the passion of our people who pivoted their programs to COVID-19 research, it was truly incredible."

One investigator who made that pivot was [Michael Ison, MD, MS](#), professor of [Medicine](#) in the Division of [Infectious Diseases](#) and director of the Northwestern University Clinical and Translational

Sciences ([NUCATS](#)) Institute's Center for Clinical Research. Ison studies viral infections, sometimes in transplant recipients, but those projects had to be put on hold.

"Our non-COVID research ground to a halt," said Ison, who is also a professor of [Surgery](#) in the Division of [Organ Transplantation](#). "We decided not to do trials this year because of the complexity of COVID-19 with the respiratory virus season."



Michael Ison, MD, MS

Rather, Ison quickly adapted a current project studying influenza to instead collect blood samples from patients with COVID-19. While it was challenging to obtain additional approvals and limit direct contact with patients, Ison has obtained more than 60 samples from patients.

"The processes that we learned from this will improve our clinical research moving forward," Ison said.

Ison also worked with other Feinberg investigators on a variety of COVID-19 projects, including evaluating the effectiveness of convalescent plasma therapy, studying cardiovascular outcomes and working to understand antibody response in patients.

"The biggest thing I have learned during this time are the opportunities to collaborate with incredible researchers," Ison said.

### Fresh Air

Other investigators, such as [Mary McDermott, MD](#), the Jeremiah Stamler Professor and a professor of [Medicine](#) in the Division of [General Medicine and Geriatrics](#), were forced to get creative to continue their clinical trials. McDermott studies interventions for peripheral artery disease, meaning her patients are older people

(continued on page 2)

Science During COVID-19 (continued from cover page)

with cardiovascular disease — a population at high risk of complications from COVID-19.

To minimize contact with patients, McDermott and her team converted in-person exercise sessions to telehealth visits and mailed medications to patients who would have normally received their study medications at clinical visits. Measuring outcomes is another matter.



Mary McDermott, MD

To measure efficacy of drug or exercise interventions, patients take six-minute walk tests throughout the trials. However, these tests are usually conducted during clinical visits in downtown Chicago, at Northwestern Memorial Hospital.

In order to properly socially distance, McDermott received approval to conduct these tests outdoors on Northwestern’s downtown campus. In cases where study participants felt unsafe traveling to the medical center, McDermott and her team went to them, setting up the walk tests in condo hallways and suburban driveways.

While certain secondary outcomes of the trials had to be left behind, McDermott said not a single patient dropped out of the trials due to the pandemic, a testament to both patient enthusiasm and the flexibility of her investigative team.

“It’s not just about the science and the funders, it’s the participants who have dedicated their time and energy to each trial and we don’t want to let them down,” said McDermott, who is also a professor of [Preventive Medicine](#) in the Division of [Epidemiology](#). “Even the patients who have already completed the trial participated in good faith that their efforts were contributing to important scientific endeavors. It is important that we complete the trials that we started with the highest integrity possible, so that we can deliver the truth about the benefits of the treatments studied.”

Deep Freeze

For some investigators working in wet laboratories, the stay-at-home order forced a definitive pause. [Bruce Bochner, MD](#), the Samuel M. Feinberg Professor of Medicine in the Division of [Allergy and Immunology](#), studies mast and eosinophil cells and diseases related to these cells such as allergies. When the shutdown order came, Bochner’s group had to practically close up shop — storing cell lines in freezers and maintaining just a couple vital animal models.

“We essentially emptied the incubator and stopped working with nearly all cells and cell lines,” said Bochner, who is a member of the [Robert H. Lurie Comprehensive Cancer Center](#) of Northwestern University.

They weren’t generating any new data for about three months, but this gave Bochner and his laboratory members time to analyze previously collected data and plan for future experiments. Weekly laboratory meetings — held on Zoom and scheduled around nap time to accommodate parents on the team — turned into journal discussions and featured guest lecturers, to keep everyone abreast of new developments in the field.

Now, the laboratory is back up to about 60 percent capacity and they’ve pulled their cell lines out of the freezer and are running experiments again. The liminal phase was productive — they submitted several papers and grants — but laboratory members are glad to get back to the bench.

“We’ve learned a lot during forced hibernation, and it hasn’t changed our eagerness or enthusiasm for science,” Bochner said. “If anything, we’re itching to get stuff going again.”

Behind the Scenes

This work is enabled by the long hours and dedication of administrators across the Office for Research and Feinberg who bring a breadth of expertise to support the research enterprise. Since early March there have been more than 270 Institutional Review Board (IRB) submissions for COVID-19 new projects, 220 of which are now being conducted by Feinberg-affiliated investigators. The Northwestern IRB team was working to quickly assess these projects, according to Nathalia Henry Whitely, executive director of the IRB Office at Northwestern.

“Effective, timely communication and collaboration between the IRB Office, various research administrative offices and the research community was essential to smooth and quick IRB review of COVID-19 submissions,” Henry Whitely said. “As one example, we were able to have an expanded access protocol for Remdesivir approved within four business days, which allowed for smooth enrollment of patients that obtained an expanded-access Investigational New Drug (IND) status for the drug.”

There are more than 10,000 research subjects involved in Feinberg COVID-19 research projects, many who are involved in [COVID-19 antibody test studies](#). The Northwestern Research Safety team has been dedicated to creating new protocols to keep everyone safe while working during the pandemic.

“At times, multiple meetings were held per week to get through as many protocols as possible in a timely fashion,” said Andrea Hall, director of Northwestern’s Research Safety Chicago Office and biosafety officer. “It was very difficult and many Institutional Biosafety Committee members and biosafety staff members worked well into the nights and most weekends to make sure the investigators could perform their research.”

In addition, the [Office for Sponsored Research](#) has supported a range of investigations throughout the pandemic, representing the interconnected research ecosystem throughout the entire Northwestern University system.

Continuing research, maintaining current projects and starting new ones during a pandemic required enormous effort from every part of the Feinberg research infrastructure. While the future of life under COVID-19 remains uncertain, the experience has reinforced the principles of biomedical science, according to McDermott.

“Flexibility in research has always been important,” McDermott said. “Things never go exactly as you hope, obstacles always come up. I have never encountered an obstacle like a pandemic before, but it required creativity, leadership and courage from all of us.”

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# Honoring the 2020 Mentors of the Year

By **Melissa Rohman**

Every year the Medical Faculty Council ([MFC](#)) honors two faculty members with the Mentor of the Year Award. This year's recipients were to be honored at the annual Lewis Landsberg Research Day, which was canceled this year due to the ongoing COVID-19 pandemic.

This year's Mentors of the Year honorees are [Karl Bilimoria, MD, MS, '10 GME](#), vice chair for quality in the Department of [Surgery](#), and [Melissa Simon, MD, MPH, '06 GME](#), vice chair for clinical research in the Department of [Obstetrics and Gynecology](#) and director of the [Center for Health Equity Transformation](#) in the Institute for Public Health and Medicine ([IPHAM](#)).

## Watch Videos

Two videos were produced by the Feinberg Office of Communications and Feinberg's Instructional Design & Development team to honor each recipient. These videos were to be shown at Research Day. Watch Bilimoria's video [here](#) and Simon's [here](#).

## Never Stop Learning

Bilimoria was nominated by [Anthony Yang, '02 MD, '09 GME](#), associate professor of [Surgery](#) in the Division of [Surgical Oncology](#), who also introduced Bilimoria at the March workshop.

"Dr. Bilimoria's proactive support in my career development is extraordinary to me and in regards to those he currently mentors, I can attest that they feel the same," Yang said.

Bilimoria joined Feinberg's faculty in 2003. He earned his medical degree in 2003 from Indiana University School of Medicine and completed his residency in general surgery at McGaw Medical Center of Northwestern University. He has completed fellowships at the MD Anderson Cancer Center, the American College of Surgeons and the National Institutes of Health and holds a master's degree in clinical investigation from Feinberg.

Bilimoria is the vice chair for quality in the Department of [Surgery](#), the John B. Murphy Professor of Surgery and the director of the Surgical Outcomes and Quality Improvement Center of Northwestern University ([SOQIC](#)), a center of 50 faculty and staff focused on national, regional and local quality improvement research and practical initiatives.

He is also vice president for quality and clinical integration for the Northwestern Medicine health system and a member of the [Robert H. Lurie Comprehensive Cancer Center](#) of Northwestern University. He is currently the president of the Association for Academic Surgery, has published more than 350 peer-reviewed publications and is widely recognized as an expert in healthcare quality and delivery improvement.



*The Medical Faculty Council featured the 2020 Mentor of the Year Award recipients at a workshop, March 10, where awardees Melissa Simon, MD, MPH, and Karl Bilimoria, MD, MS, (from left) discussed their mentorship experiences.*

## Lifting Up Others

Simon was nominated and introduced at the workshop by [Betina Yanez, PhD, '13 GME](#), associate professor of [Medical Social Sciences](#).

"Having worked with Melissa for several years now, I have seen and experienced how her mentorship has made her mentees productive scientists and thoughtful scholars and practitioners... she continues to be a champion for health equity, a role model for so many students, especially among diverse and underrepresented backgrounds, and an enthusiastic leader," Yanez said.

Simon earned a master's in public health at the University of Illinois at Chicago in 1996 and earned her medical degree at Rush Medical College at Rush University in 2000. She then completed her residency in obstetrics and gynecology at Yale-New Haven Hospital and a fellowship in family planning at Northwestern University's [McGaw Medical Center](#).

At Northwestern, Simon is the George H. Gardner Professor of Clinical Gynecology, vice chair of clinical research in the Department of Obstetrics and Gynecology, founder and director of the Center for Health Equity Transformation and the Chicago Cancer Health Equity Collaborative, a Northwestern Medicine physician, and co-program leader for cancer control and survivorship and outreach and engagement at the Lurie Cancer Center.

She is a member of the United States Preventive Services Task Force and the National Academy of Medicine's Roundtable on the Promotion of Health Equity, and has published more than 200 peer-reviewed publications.

# Investigating Acute Lung Inflammation and Injury

Benjamin Singer, '07 MD, '10 GME, assistant professor of Medicine in the Division of Pulmonary and Critical Care and of Biochemistry and Molecular Genetics



[Benjamin Singer, '07 MD, '10 GME](#), is an assistant professor of [Medicine](#) in the Division of [Pulmonary and Critical Care](#) and of [Biochemistry and Molecular Genetics](#). He is a physician-scientist specializing in pulmonary and critical care medicine as well as internal medicine. His [laboratory](#) focuses on the determinants of resolution and repair of acute lung inflammation and injury and how these factors can be used as therapies. His laboratory also explores how aging and metabolism affect the lung's immune system through regulatory T cells and other lymphocyte subsets.

Singer is also director of the Department of Medicine's [Physician-Scientist Training Program](#) and a member of the Northwestern University Clinical and Translational Sciences Institute ([NUCATS](#)) and the [Simpson Querrey Institute for Epigenetics](#).

## Q&A

### What are your research interests?

I'm a physician-scientist, so I approach scientific questions from a clinical angle. Something that we've been interested in for a number of years, but that's been highlighted by the COVID-19 pandemic, is severe respiratory failure due to infections, specifically pneumonia. We've been asking the question in my lab since we started at Feinberg in 2015, "How does the lung recover?" Again, this is really highlighted now with COVID-19 because this is a question many more people are asking. On a day-to-day basis in the lab, we get to go in both directions, into the actual biochemistry and molecular mechanisms underlying these phenomena all the way into the ICU, and we have a number of projects that involve patients at the bedside.

### What is the ultimate goal of your research?

The ultimate goal would be to uncover a mechanism, a pathway, a target that could be leveraged using a molecule, a cell or some therapy that we could use to get patients better, faster.

### How did you become interested in this area of research?

When I was a medical student at Feinberg, during my internal medicine residency here and then certainly as a pulmonary critical care fellow at Johns Hopkins, I saw uncountable numbers of patients with severe respiratory failure from pneumonia who were on the ventilator and just stayed sick. The idea that pneumonia is a curable disease, I think, is an incorrect one because we can give people antibiotics, or if it's a virus like COVID-19 we have a medication that can treat the virus, but people still remain critically ill. A lot of focus has gone into how these diseases make people sick and I've taken a different view and ask the question: "How do they get better?"

### How is your research funded?

We're funded by the National Institutes of Health through the National Heart, Lung and Blood Institute, the National Institute of Allergy and Infectious Diseases and the National Institute on Aging.

### Where has your work been published?

We're particularly proud of a project that was published in [Nature](#) last year. We've also published in the [Journal of Clinical Investigation Insight](#) and the [Journal of Biological Chemistry](#).

### Who inspires you? Who are your mentors?

I have a really cool job because our research stems from very basic biochemistry all the way through the clinical aspects of disease. My primary appointment is in the Department of Medicine in the Division of Pulmonary and Critical Care, but I also have an appointment in the Department of Biochemistry and Molecular Genetics. [Ali Shilatifard](#) has been an enormously helpful mentor for me on the basic molecular side, and then in pulmonary, [Scott Budinger](#) and [Richard Wunderink](#) who are master clinicians have also been incredible mentors both in the laboratory as well as in the ICU. I also owe a huge amount of gratitude to [Navdeep Chandel](#), who has been a scientific mentor since I was a student at Feinberg, and [Diane Wayne](#), who has been an inspiration since the early days of my career.

# Focused on Drug-Resistant Bacteria

## Megan Nas, a seventh-year student in the Driskill Graduate Program in Life Sciences and Program in Public Health



Megan Nas, a seventh-year student in the Driskill Graduate Program in Life Sciences and Program in Public Health, is focused on infectious disease research. She studies drug-resistant bacteria in the laboratory of [Nicholas Cenciotta, PhD](#), professor of [Microbiology-Immunology](#), and worked with the Healthcare Epidemiology and Infection Prevention Program at Northwestern Memorial Hospital to address the association between high alarm volume and infection spread in the hospital environment.

I am fortunate to be in a dual degree PhD/MPH program at Northwestern. I have been able to pursue exciting projects with Northwestern's Infection Prevention team regarding multi-drug resistant organisms and factors leading to patient room contamination.

### What attracted you to your program?

During my interview weekend for the Driskill Graduate Program at Northwestern, two things were immediately clear: there was inspiring science being performed and the faculty and current students fostered a supportive environment that was unmatched.

### What has been your best experience at Feinberg?

It is difficult to select just one best experience, but I have felt very fortunate to be a part of the discovery process in the Cenciotta laboratory. I am grateful to be advised by a principal investigator who is dedicated to my growth as a scientist and to be surrounded by supportive, creative lab mates. This group fosters inspiring discussions that, along with the importance of the work itself, make it enjoyable and fulfilling to be researching.

Another unforgettable experience at Feinberg was completing an internship with the Department of Infection Prevention as a part of the Program in Public Health. I was able to shadow infection preventionists and work on a project with them on the relationship between high alarm volumes in the hospital and contamination of the patient environment.

Additionally, I had the great fortune of being able to teach a microbiology course to Northwestern School of Professional Studies students. The challenge of leading this course and communicating science to a group of engaged and hardworking students was rewarding.

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

The Feinberg faculty so clearly care about both the work and the students. I have felt supported since I began the program in 2014. My PI, my thesis committee and the administrators clearly communicate their interest in my scientific career while inspiring me with their science and their dedication.

### What do you do in your free time?

In my free time, I enjoy various forms of exercise like yoga sculpt, weightlifting and dancing. I grew up playing the piano and that remains a good stress reliever every so often. I particularly find delight in learning Mozart Sonatas and Chopin Waltzes. Also, I am half Turkish and have recently loved learning from my parents to make some of the Turkish recipes I grew up indulging in.

### What are your plans for after graduation?

I have many interests that I will explore as I enter the job search. I look forward to finding an avenue where I can combine my passions for scientific problem solving, infectious disease control and science communication.

## Q&A

### Where is your hometown?

I grew up in Grand Blanc, Michigan, a small city southeast of Flint. I completed my undergraduate studies in Ann Arbor at the University of Michigan.

### What are your research interests?

I have a longstanding passion for studying infectious diseases. I am particularly interested in two major public health concerns: antimicrobial resistance and hospital-acquired infections. My program at Northwestern has allowed me to research these topics in several different contexts.

### What exciting projects are you working on?

As a PhD candidate in the lab of Dr. Nicholas Cenciotta, I am studying the pathogenesis of the multidrug-resistant bacterial species, *Stenotrophomonas maltophilia*. This gram-negative pathogen is naturally found in soil and water but is increasingly being recognized as an important hospital acquired infection.

The study of *S. maltophilia* virulence is still in its beginning stages, and it has been exciting to contribute to the discovery process. I have begun to characterize the role of its type IV secretion system. One interesting phenotype I have discovered is the type IV dependent secretion of anti-bacterial factors. I have determined these factors act against *Pseudomonas aeruginosa*, which is interesting given that these two bacterial species co-colonize the Cystic Fibrosis lung.

I have also discovered that *S. maltophilia* produces a siderophore, important in chelating iron. I am working to characterize the structure of the *S. maltophilia* siderophore, which we hypothesize is distinct from known siderophores. The discovery of a novel siderophore could have clinical implications in both antibiotic delivery and treating iron overload.

## Managing Labs and Centers with Expertise

Patricia Bustamante, MPH, research project manager at the Northwestern University Data and Coordination Center



Patricia Bustamante, MPH, research project manager at the Northwestern University Data and Coordination Center, helps launch and keep multicenter clinical science running smoothly.

### Q&A

#### Where are you originally from?

I grew up in Willowbrook, Illinois.

#### What is your educational background?

I have a Bachelor of Science in biology and a Master of Public Health.

#### Please tell us about your professional background.

I started as a laboratory technician in Dr. Steven Wolinsky's laboratory in the [Department of Medicine Division of Infectious Diseases](#). Our laboratory focused on the Multicenter Aids Cohort Study (MACS) and performed high throughput sequencing on several sequencing platforms.

After completing my public health degree, I moved out of the lab and into the infectious disease clinic as a study

coordinator. As a study coordinator, I met study participants who have been dedicated to this study by coming in every 6 months for over 30 years. Many of these men started in their thirties and are now at retirement age.

I recently accepted a new position in February 2020 with Northwestern University Data and Coordination Center ([NUDACC](#)) as a research project manager.

#### Why do you enjoy working at Northwestern?

Northwestern employs a diverse population of people from all over the world with different backgrounds. You never know who you will meet.

#### What is your favorite part of the job?

NUDACC is a new center at Northwestern, working on various projects. Working here is fast-paced, but fun. My co-workers also consist of highly motivated and intelligent people who inspire me to perform at a high level.

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

We are currently working on launching our first multisite study, Glycemic Observation and Metabolic Outcomes in Mothers and Offspring (GO MOMs). Be on the lookout!

#### What do you like to do in your spare time?

I love to play and watch live tennis.

## Research in the News

#### **CNN, July 28**

[COVID-19's impact on the heart: Two new studies suggest 'the plot thickening'](#)

Clyde Yancy, MD, MSc, was mentioned.

#### **Yahoo! News, August 3**

[Study: Kids Under Five May Carry Higher Levels of Coronavirus Than Adults](#)

Taylor Heald-Sargent, MD, PhD, was mentioned.

- This research was also featured in *The Washington Post*, *HealthDay* and *WebMD*.

#### **Crain's Chicago Business, August 12**

[Study: Artificial Intelligence Can Help Pinpoint Specific Type of Autism](#)

Yuan Luo, PhD, was mentioned.

#### **Chicago Tribune, August 14**

[Study: Deaths from heart failure and high blood pressure are rising in the U.S., and Black men and women suffer more severely](#)

Nilay Shah, MD, and Sadiya Khan, MD, MSc, were mentioned.

#### **HealthDay, August 21**

[Study Questions Need to Wait Days to Give Baby New Foods](#)

Ruchi Gupta, MD, MPH, and Waheeda Samady, MD, were mentioned.

- This research was also featured in *U.S. News & World Report*.

[More media coverage](#)

## KL2, TL1 Programs Provide Opportunity for Career Development

Three esteemed early career investigators joined the NUCATS Institute's prestigious KL2 Multidisciplinary Career Development Program this summer. They will receive two years of dedicated mentorship, education and career development opportunities while conducting translational, multidisciplinary, clinical research. They are:

- [Hadijat-Kubura Makinde, PhD](#), Research Assistant Professor of [Medicine](#) in the Division of [Rheumatology](#)
- [Lisanne Jenkins, PhD](#), Research Assistant Professor in the Department of [Psychiatry and Behavioral Sciences](#)
- [Ravi Patel, MD, MSc](#), Instructor of [Medicine](#) in the Division of [Cardiology](#)

Among two-dozen previous KL2 Scholars, all but one remains engaged in clinical and translational science research. Since 2008, KL2 program alumni have authored or co-authored nearly 1,000 publications. Learn more about the KL2 program [here](#). The NUCATS Institute has also appointed one predoctoral and two postdoctoral fellows to its [TL1](#) Multidisciplinary Training Program in Child and Adolescent Health.

Ethan Johnson, PhD, a Biomedical Engineering postdoctoral fellow at Northwestern; Siam Racharaks, PhD, an Environmental Engineering postdoctoral fellow at Northwestern; and Jake



From left, [Hadijat-Kubura Makinde, PhD](#), [Lisanne Jenkins, PhD](#), and [Ravi Patel, MD, MSc](#), NUCATS scholars.

Winter, a Bioengineering doctoral student at the University of Illinois at Urbana-Champaign and the program's first predoctoral student, join the group of highly successful TL1 scholars.

The incoming cohort will take part in a novel program that seeks to promote interactions among both mentors and trainees in pediatrics and engineering in order to encourage creative thinking and new approaches in child health research. Of the 12 NUCATS Institute TL1 appointees who have completed their postdoctoral training, 11 remain engaged in clinical and translational science, two are in industry and nine have accepted faculty positions at Northwestern or other institutions. Learn more about the TL1 program, [here](#).

## Welcome New PhD Students

New PhD students from around the world have arrived on the Chicago campus to join the [Driskill Graduate Program in the Life Sciences](#) (DGP), [Northwestern University Interdepartmental Neuroscience](#) (NUIN) program, [Medical Scientist Training Program](#) (MSTP), [Clinical Psychology PhD Program](#) and [Health Sciences Integrated PhD Program](#) (HSIP).

### Clinical Psychology

Bram Diamond, Connecticut College  
John-Christopher Finley, Bloomsburg University Of Pennsylvania  
Patricia Garibaldi, Boston College  
Andrea Haidar, University of Chicago  
Mitra Kumareswaran, University of Georgia  
Joeann Salvati, Syracuse University  
Payton Solk, University of Michigan-Ann Arbor  
Chloe Warlick, University of Arizona  
Sophia Weiner-Light, University of California-Los Angeles

### HSIP

Lixuan Cong, Johns Hopkins University  
Alexandra Harris, Columbia University  
Sarah Philbin, Columbia University  
Steven Tran, University of Texas at Austin  
Sae Han, Columbia University  
Kevin Yu, Northwestern University  
Songzi Liu, University of North Carolina-Chapel Hill

MSTP welcomes 15 new students hailing from institutions from coast-to-coast, including Harvard University, Stanford University and Northwestern. This year the Clinical Psychology program had a record 560 applicants for just under 10 spots. HSIP enrolled seven students into the 2020 cohort and DGP has 25 incoming students, which includes two students who are entering as part of the dual PhD/MPH program.

### MSTP

Eliana Crentsil, University of Maryland, Baltimore  
Naedum DomNwachukwu, Cornell University  
Vivienne Fang, Davidson College  
Connor Forsyth, University of Illinois  
Evan Kaspi, Northwestern University  
Alec Koss, Duke University  
Luke Kramer, Harvard University  
Caroline Kratka, Rutgers University  
Lucy Luo, McMaster University  
Haley Province, Johns Hopkins  
Zachary Shaver, Davidson College  
Zachary Tripathi, University of Texas  
Austin Wang, University of Michigan  
Esther Yoon, Indiana University  
Sophia Zhang, Stanford University

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# Sponsored Research

**PI: Bonnie Spring, PhD, chief of Behavioral Medicine in the Department of Preventive Medicine and professor of Preventive Medicine, Psychology, and Psychiatry and Behavioral Sciences**



**Sponsor: National Institute of Diabetes, Digestive and Kidney Diseases**

**Title: Methodological and Data-Driven Approach to Infer Durable Behavior Change from mHealth Data**

Most diet, physical activity and weight loss interventions are costly and burdensome. These interventions could be more cost-efficient if we could tell when people's patterns of health behavior change, so that treatment could be tapered and then stopped without behavioral relapse. Theories of habit formation might be assumed to address this problem, but they have not proven actionable to guide treatment decisions because they do not specify measurable criteria to reliably detect acquisition of a durable behavior pattern. Hence, we propose to identify behavior patterns that precede and predict maintenance of target-level behavioral improvement that persist after an intervention ends.

[Read more](#)

**PI: Anis Contractor, PhD, professor of Physiology**



**Sponsor: National Institute of Neurological Disorders and Stroke**

**Title: Glutamate Receptor Signaling Pathways in the Circuit Integration of Adult-Born Neurons**

Adult neurogenesis in the hippocampus occurs in the well-defined neurogenic niche in the sub-granular zone of the dentate gyrus. Newborn neurons are continuously generated and mature over the course of weeks to integrate into the hippocampal circuit. Adult-born immature dentate gyrus cells (DGCs) have unique functional properties that give them a privileged role in circuits that define specific behaviors and that are critical to episodic memory formation and retrieval. In particular, these neurons play important roles in an animal's ability to separate similar patterns and disambiguate overlapping memories, processes that become impaired during normal aging and in neurodegenerative and neuropsychiatric disorders.

[Read more](#)

## New PhD Students

*Continued from previous page*

### NUIN

Mark Agrios, College of William and Mary  
 Jacob Bhoi, Rice University  
 Nancy Castro-Borjas, Moorhead State University  
 Samantha Cermak, Binghamton University  
 Christopher Cyr, University of Michigan-Ann Arbor  
 Molishka Flores-Narvaez, Pontifical Catholic University  
 Sheridan Goldstein, Tulane University  
 Eduardo Guadarrama, Amherst College  
 Qianzi He, McGill University  
 Sophia Jenz, Northwestern University  
 Yuejun Liu, Northwestern University  
 Kristine McLellan, University of Chicago  
 Eliska Mrackova, Lake Forest College  
 Nkatha Mwenda, Kalamazoo College  
 Peter Salvino, John Hopkins University  
 Miranda Torres, The University of Texas at Dallas  
 Annie Zalon, University of Michigan-Ann Arbor

### DGP

Rosemary Bauer, Lawrence University  
 Carolina Clark, University Of Miami  
 Daphne Cornish, Washington University

Ashley Cunningham, The University Of Texas at Austin  
 Elizabeth Duvall, Virginia Polytech Institute And State Univ  
 Yuheng Fu, Washington University  
 McKenzie Fulcer, Colorado State University  
 Alexander Glasco, University of Michigan-Ann Arbor  
 Estefany Guzman, Loyola University Of Chicago  
 Maureen Haynes, University of Tulsa  
 Dalton Huey, Virginia Commonwealth University  
 Radhika Iyer, University of California-Davis  
 Sophia Lamperis, University of Chicago  
 Hannah Mubarak, Jamiat Al-Malik Saud  
 Jesus Ortega, California State University-Fullerton  
 Claire, Phoumyvong, University of Pennsylvania  
 Carla Reyes Flores, University of Puerto Rico - Mayaguez  
 Hyebin Roh, Olivet Nazarene University  
 Annika Schroder, Gustavus Adolphus College  
 Evelyn Suva, University o California-Santa Cruz  
 Amy Tang, Northeastern University  
 Anneke Thorne, University of Chicago  
 Pranathi Vadlamani, Indiana University-Bloomington  
 Alexander Willis, University of Illinois at Urbana  
 Zhuolin Yang, McMaster University

# Funding

## Center Without Walls for Mechanisms of Neurodegeneration in Frontotemporal Dementia (FTD) (U54 Clinical Trial Not Allowed)

[More information](#)

**Sponsors:** National Institute on Aging and National Institute of Neurological Disorders and Stroke

**Letter of Intent Deadline:** October 2

**Submission Deadline:** November 2

**Amount:** \$3.4M to fund up to two awards in fiscal year 2021

**Synopsis:** This funding will support multidisciplinary, diverse teams to undertake an in-depth investigation into the mechanisms underlying one of the various forms of FTD. The investigator team should address a specific challenge to identified in the [2019 ADRD Summit](#) and propose recommendations (e.g., data, tools, resources, services, etc.), that can be shared with the research community by the end of the five-year project period. The challenge to be investigated and proposed recommendations should be accomplished through a collaborative, multi-investigator, multidisciplinary, complementary team-based approach, as opposed to independent investigator mechanisms. The inclusion of investigators with FTD expertise as well as investigators that may not have FTD expertise but have unique expertise or skill sets relevant to the approach(es) proposed is encouraged to support multidisciplinary approaches to addressing the focus of the center.

## National Cancer Institute Pediatric In Vivo Testing Program (U01 Clinical Trial Not Allowed)

[More information](#)

**Sponsors:** National Cancer Institute (NCI)

**Letter of Intent Deadline:** October 10

**Submission Deadlines:** November 9

**Amount:** \$5.1M to fund up to eight awards in FY 2021

**Synopsis:** This award will fund a team of investigators to form the NCI Pediatric In Vivo Testing Program (Ped-In Vi-

vo-TP). Ped-In Vivo-TP will determine the activity of pediatric anticancer drug candidates using preclinical models relevant to the cancer(s) on which their team focuses and will work in concert with the Ped-In Vivo-TP Coordinating Center (supported under [RFA-CA-20-041](#)). The team will use genomically characterized pediatric cancer models to develop a rigorous preclinical testing program that will generate reliable data that can be used to inform new agent prioritization decisions for childhood cancer clinical testing.

Ped-In Vivo-TP is envisioned as a way for NCI to support the Foundation for the National Institutes of Health-organized Public-Private Partnership for pediatric preclinical testing, which is being developed to accelerate the pace and to broaden the scope of pediatric preclinical testing of agents being developed for adult cancer indications.

## RESolution of Inflammation in Environmentally Related disease (RESTORE) (R01 Clinical Trial Not Allowed)

[More information](#)

**Sponsor:** National Institute of Environmental Health Sciences (NIEHS)

**Letter of Intent Deadline:** January 11, 2021

**Submission Deadline:** February 11, 2021

**Amount:** \$3M to fund up to six awards in FY 2022

**Synopsis:** The purpose of the RESTORE program is to advance the understanding of the role of inflammation resolution pathways at the cellular and molecular level and how exposure to environmental pollutants interferes with these pathways, resulting in exposure-induced chronic systemic inflammation and ultimately chronic disease conditions. The initial phase of this program is focused on understanding how chronic exposure to air pollution interferes with resolution of inflammation in pulmonary, cardiovascular and metabolic systems and diseases.

[View COVID-19 funding opportunities](#)

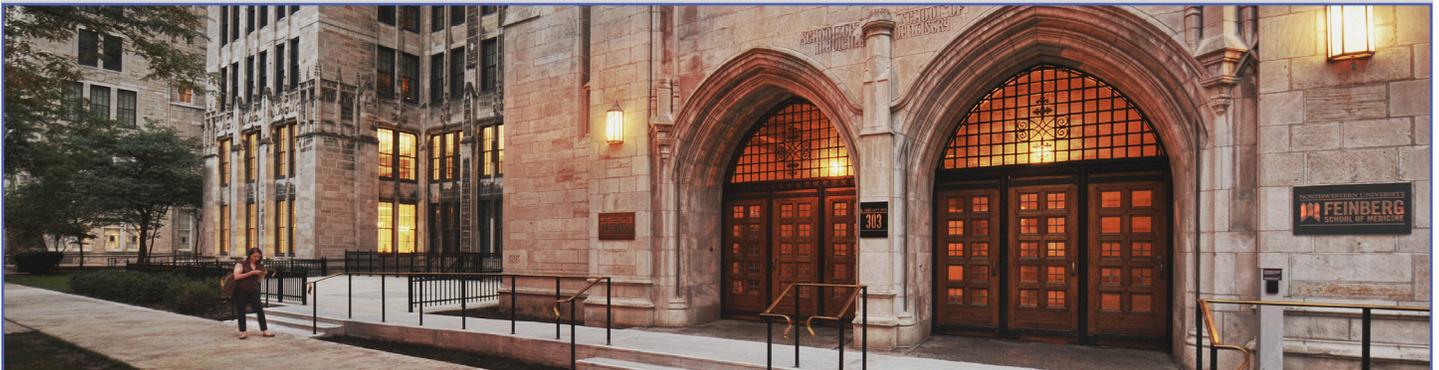
[View more funding opportunities](#)

## Welcome New Faculty

[Yanis Bumber, MD, PhD](#), joins as associate professor of [Medicine](#) in the [Division of Hematology and Oncology](#). A physician-scientist, he was drawn to Northwestern for its excellent reputation in both high-quality patient care and innovative cancer research. He has a particular interest in lung cancer and other chest malignancies, such as mesothelioma, thymoma and thymic carcinoma, as well as head and neck cancer. His lab investigates signaling pathways and biological processes controlled by MSI2 in lung cancer and developing novel therapeutic approaches to target MSI2 in the disease. Currently, Bumber is actively engaged in clinical research and is serving as a PI and co-PI for multiple thoracic and head neck clinical trials. Before joining Feinberg, he was assistant professor in the Department of Hematology/Oncology at Fox Chase Cancer Center in Philadelphia.



# Forging Data Connections: A New Clinical Data Retrieval and Management Program



By Sara Gonzales, Data Librarian

Advances in clinical data warehouse architectures, clinical coding standards, and HIPAA-compliant access and dissemination methods have made accessing data from sources like [Northwestern Medicine's Enterprise Data Warehouse](#) (NMEDW) a more vital piece of the clinical research puzzle than ever before. Yet these same advances often create barriers for researchers requiring access to these resources in the form of the advanced technical knowledge necessary to meaningfully access them. Clinical research data education and training have been identified as crucial needs for today's researchers, yet, can be difficult to meet due to the many other competing demands for time.

To meet these needs, [Galter Health Sciences Library and Learning Center](#) has partnered with the NMEDW through a grant from the [Network of the National Library of Medicine Greater Midwest Region](#) to create a data retrieval and management training program for clinical researchers. The goal of this program is to meet the end-to-end training needs of researchers as they work to access, use, and re-use clinical data.

The foundation of the program will be a series of trainings about how clinical data is collected, stored and retrieved and best practices for managing and manipulating data. Researchers will learn how to identify a population of interest in the NMEDW and how to create a workflow of data query and retrieval using SQL. The program will also promote increased collaboration between researchers and data analysts, through which expertise can be shared and partnerships on research projects can be reinforced. In the final phase of the program, researchers will learn about local tools for preserving workflows and enabling the reproducibility of NMEDW search queries, research reports and other research documentation. These tools include the next-generation research data management system [InvenioRDM](#), currently in collaborative development by [CERN](#) Galter Library, and several other international partners. This system will soon form the new back-end architecture of Feinberg's institutional repository.

Classes are currently being offered through Galter Health Sciences Library in the area of [Data Management](#) and include Best Practices in Research Data Management and Sharing and Cleaning Spreadsheet Data with OpenRefine. Future offerings will include Understanding and Implementing the FAIR Data Principles, Introduction to Clinical Databases and SQL, and Sharing and Preserving Biomedical Data.

Daniel Schneider, Manager of Research Analytics for the Northwestern Medicine Enterprise Data Warehouse, is a partner on the training program and is excited by collaboration opportunities that the training program offers. "One of the largest gaps I currently see in the translational research landscape is the lack of a coordinated technical training program connecting the technical expertise to the clinical expertise needed to fully understand and execute complex health care analyses. As each group becomes more familiar with each other's terminology and methodology, these groups can become far more effective collaborators in the research enterprise. We look forward to collaborating on trainings that will increase clinical researchers' knowledge of data querying, manipulation, reproducibility, storage and long-term preservation."

[Kristi Holmes, PhD](#), director of Galter Library and professor of [Preventive Medicine \(Health and Biomedical Informatics\)](#) and [Medical Education](#), is also thrilled about the grant. "This innovative new program will support our investigators as they leverage the incredible data resources of the NMEDW in support of research, clinical, operational and educational priorities. We're thrilled to partner with the NMEDW team and look forward to this unique opportunity to support and advance data-driven discovery and innovation."

For more information on the data retrieval and management training program for clinical researchers, contact project lead Matthew Carson at [matthew.carson@northwestern.edu](mailto:matthew.carson@northwestern.edu). For general data management help, education, or to submit a help request, visit the [Galter DataLab](#) or [email the DataLab team](#) today.

# High-Impact-Factor Research

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## Follow Feinberg Social Media



## Featured Core

### Mouse Histology & Phenotyping Laboratory

The [Mouse Histology & Phenotyping Laboratory](#) assists Northwestern University investigators with tissue histopathology for animal research experiments by providing histology services for all rodent species, including phenotyping consultation of organs and tissues, dissection and tissue processing, and one-on-one consultations with investigators.

The laboratory generates unstained paraffin and frozen sections for investigators to be used for special staining and immunohistochemistry, and pathologist consultation is also available. In addition, the laboratory provides opportunities for researchers to learn histology techniques and phenotyping analysis.

Members of the [Robert H. Lurie Comprehensive Cancer Center](#) of Northwestern University who require additional guidance with their projects have priority access to schedule a one-on-one consultation with the laboratory's new director, [Rebecca Obeng, MD, MPH, PhD](#).

#### The laboratory offers the following services:

- Dissection and tissue collection
- Consultation with an animal pathologist
- Tissue clearing
- Histopathology (slide interpretation)
- Photo documentation of histopathology
- Training in necropsy techniques including perfusion of mice and special tissue dissection
- Assistance with development of animal pathology protocols
- Immunohistochemistry — Using tyramide signal amplification and ABC methods (automated), with DAB chromogenic substrate
- Immunofluorescence — Single and multiple staining
- TUNEL assay
- Freezing and embedding of tissues for histology
- Frozen sections
- Paraffin block processing and paraffin sections
- Hematoxylin and eosin staining of sections
- Specialized histochemical staining of sections (i.e. trichrome, PAS, Luxol fast blue, cresyl violet, and many other stains)
- RNAScope ISH Staining

**Contact:** Director, Rebecca Obeng, MD, MPH, PhD  
[robeng@northwestern.edu](mailto:robeng@northwestern.edu)  
 Operations Manager, Katherine Gruner  
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 (312) 503-2695

**Location:** Olson Pavilion 8-333, 710 North Fairbanks Court

## NIH News

### Institute and Center Award Rates and Funding Disparities

Multiple studies have demonstrated that African American and Black applicants, who received grant awards from the NIH, receive lower rates than their White counterparts ([Ginther 2011](#); [Ginther 2016](#); [Erosoheva 2020](#)). As an extension of these findings, the NIH reported that African American and Black principal investigators (PI) are more likely to propose research on topics that are less likely to be funded ([Hoppe 2019](#)). The NIH study found that topic choice has little or no effect on whether an application is chosen for discussion, but after considering a number of confounders, it accounts for over 20 percent of the gap in funding success for applications that are discussed.

Application review is not the only determinant that considers whether any given application will be funded. Applications are also assigned to a study section for review and independently assigned to a funding institute or center (IC), largely based on the topic of the work. The NIH study also found that ICs have widely varying award rates (the ratio of funded applications to all applications). Notably, five ICs that received a higher than average proportion of applications from African American and Black PIs – Minority Health Disparities, Nursing Research, Child Health and Human Development, Environmental Health Sciences and Allergy and Infectious Diseases – had an award rate that is below the NIH average. Read more and review key data in a [blog post](#) by NIH Deputy Director Michael Lauer, MD.

### Save the Date: Fall 2020 NIH Virtual Seminar on Program Funding and Grants Administration

New to the world of NIH grants? Mark your calendar for October 27 through October 30 for the Fall 2020 NIH Virtual Seminar on Program Funding and Grants Administration – four days of sessions and an on-demand video library! Registration is FREE. [Click here](#) to learn more and register.

### Reporting Requirements for the Inclusion Across the Lifespan Policy

The Inclusion Across the Lifespan policy requires submission of de-identified, individual-level participant data, including participant age at enrollment, in progress reports. This simple template, [linked here](#), is approved for use to provide the Inclusion Enrollment Report in the Human Subjects System (HSS). The .csv file template allows you to provide the required data and then aggregates the summary data in the inclusion enrollment report. It is important not to modify the format of the template. The categories set in the columns should not be deleted or edited; the data for each participant can be entered in rows. For more information on how to use the template, check out the instructions available in the [HSS Online Help](#) thread or [this instructional video](#). For more FAQs on the Inclusion Across the Lifespan policy, [click here](#).