

# Breakthroughs

Feinberg School of Medicine Research Office

September 2019



## NUCATS Awarded \$46 Million to Transform Scientific Discovery into Treatments

By Clare McFadden Gorski

Northwestern University has received a five-year, \$46 million grant from the National Institutes of Health (NIH) to renew the Northwestern University Clinical and Translational Sciences (NUCATS) Institute.

With the new Clinical and Translational Science Award (CTSA), funded by the NIH's National Center for Advancing Translational Sciences (NCATS), NUCATS will continue to collaborate with Northwestern investigators to accelerate their clinical and translational discoveries.

"Northwestern's amazing investigators are making transformative discoveries every day that can advance human health and quality of life," said [Donald Lloyd-Jones, MD](#), senior associate dean for Clinical and Translational Research and director of NUCATS.

"At NUCATS, we have been working since 2007 to accelerate the translation of those new discoveries so that our patients here

in Chicagoland, and others around the world, can benefit from them as soon as possible."

By bringing clinical research to a much more diverse collection of practice settings and participants, NUCATS will ensure participation in clinical research becomes common, welcomed, easy, safe and efficient for all. The grant also includes funding for the TL1 and KL2 career development awards.

"NUCATS is critical to the medical school's research enterprise," said [Eric G. Neilson, MD](#), vice president for Medical Affairs and Lewis Landsberg Dean. "All the hard work done for this renewal by extraordinary faculty and staff demonstrates the continued evolution of NUCATS in advancing clinical and translational science for our entire academic health system. This funding will allow us to further advance our mission of improving health by accelerating the translation of discoveries into real-world cures and treatments."

### Breaking Down Research Barriers

Over the next five years, NUCATS will focus on expanding research opportunities across our academic health systems

**NUCATS** (continued from cover page)

and collaborating with patients and communities throughout Chicagoland to incorporate diverse perspectives and enhance the health of all.

For example, NUCATS will further integrate research into the clinical care systems and processes through the new Research Enabled and Accelerated in Community Healthcare (REACH) initiative. This program will ultimately ensure that every clinical encounter can be an opportunity for research participation, precision medicine and learning to improve human health. NUCATS and the two other Chicagoland CTSA, which include seven local institutions, are developing a new online Chicagoland clinical research recruitment portal. This innovative initiative will provide Chicagoland residents with a single, robust online portal to learn about and match with research studies that are publicly recruiting across several Chicagoland institutions. NUCATS will continue to leverage the Trial Innovation Network to connect Northwestern investigators who are involved in multi-site clinical trials or studies with the nationwide clinical research consortium.

“This new CTSA award will catalyze efforts to bring cutting-edge science, and opportunities to participate in research studies, to the point of care for doctors and patients across our growing health system and our community,” Dr. Lloyd-Jones said. “We will also train the next generation of young researchers and study teams to answer the critical questions needed to improve human health.”

### Propelling Careers in Clinical Research

The award also enables new programs to empower the scientists who drive all of this research.

“My professional development as a new translational pediatric brain tumor researcher has been significantly impacted by NUCATS providing a rich environment to foster skills and collaborative relationships to achieve my career goals,” said [Amanda Saratsis, MD](#), assistant professor of [Neurological](#)

[Surgery](#) and [Biochemistry and Molecular Genetics](#), and attending physician at Ann & Robert H. Lurie Children’s Hospital of Chicago. “The mentorship, resources and community NUCATS provides has been invaluable for me to shape and carry out my research vision and, ultimately, to make a true impact with my work.”

NUCATS will partner with Northwestern University’s Kellogg School of Management to develop a four-day course, “Business for Clinical and Translational Scientists,” to prepare junior investigators to effectively and efficiently manage and run a research team.

“NUCATS has been a critical resource for me as an early career physician-scientist,” said [Lisa VanWagner, MD](#), assistant professor of [Medicine](#). “I engaged with NUCATS 10 years ago when I began the Master of Science in Clinical Investigation program. Since then, NUCATS has provided me with grant support through its pilot grant program and voucher programs, biostatistical and library services support, grant-writing support and career development funding as a recent KL2 scholar. The resources and support that NUCATS offers to the Northwestern community are invaluable, particularly to early career physician-scientists.”

### Revolutionizing Healthcare with Informatics

NUCATS will continue to contribute to the digital research infrastructures across Northwestern University and its clinical partners. The award will enable the enhancement of Study Tracker, a clinical trials management system, improving recruitment and efficiency so patients are empowered to participate in research more easily and fully. This includes a new tab that provides every NMHC patient with online visibility to Study Tracker data about studies in which they participate, including study information and their participation status.

“I believe that a critical factor that enabled this award is Northwestern’s strength in translational informatics and data science,” said [Justin Starren, MD, PhD, FACMI](#), deputy director of NUCATS and director of the Center for Data Science and Informatics. “For over a decade, the Feinberg School of Medicine and our clinical partners have seen the potential for informatics to revolutionize healthcare and research, and have invested in the development of informatics systems to enable that vision. The Enterprise Data Warehouse is a national model of clinical and research collaboration. Study Tracker, which provides end-to-end digital management of clinical studies, will become available across our clinical network. The creation of the Center for Data Science and Informatics positions Northwestern for the future of artificial intelligence in medicine. These resources have already support hundreds of researchers and thousands of studies. The award will enable us to make them even better.”

*The new CTSA activities are funded by NCATS grants UL1TR001422, TL1TR001423 and KL2TR001424.*

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# Welcome New PhD Students

*The new NUIN students hail  
from near and far.*



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](#)).

DGP welcomes 32 new PhD students. Two of those students are PhD/MPH dual-degree earners. This group includes individuals with undergraduate degrees from Midwest schools and schools as far away as China and Bangladesh. These students will complete courses and lab rotations during their first year, which allow them to explore several areas of research before selecting a dissertation lab and project.

The new NUIN students hail from across the United States as well as from India, Taiwan and Japan. The entering class size is 22.

MSTP welcomes 15 new students who will earn both a MD and PhD degree at Northwestern. They will complete two years of medical school before starting their doctoral program in a lab.

Once they earn their PhD, they will return to medical school to complete their Doctor of Medicine degree. This year's entering class has earned undergraduate degrees from institutions that include Yale University, University of Pennsylvania and Northwestern.

Nine new students are beginning the Clinical Psychology PhD program. They will spend six years at Feinberg for training in the clinical practice and science of psychology, along with specific training needed for careers as clinical psychologists conducting research and/or clinical work in academic medical centers or other healthcare settings. Students in this year's class come from schools across the nation.

Finally, five new students joined HSIP. Founded in 2012 and unique to Northwestern, HSIP trains students in processes and methodologies in clinical and population sciences through the [Institute for Public Health and Medicine](#).

Congratulations to all the new PhD students in these programs.

## Driskill Graduate Program in the Life Sciences

Ellen Bakke  
Armando Barajas  
Jiexi Chen  
Zhangying Chen  
Junlong Chi  
William Cisneros  
Karis D'Alessandro  
Kaitlyn DeMeulenaere  
Saya Dennis  
Kathleen Foley  
Jamie Guillen  
Samuel Hamilton  
Meghan Hutch  
Natalia Khalatyan  
Megan Larmore  
Ted Ling Hu  
Carolyn Lorch  
Cydney Martell

Katiannah Moise  
Dominik Nahotko  
Tatiana Ortiz Serrano  
Jenny Pokorny  
Aishwarya Ramamurthy  
Celeste Rosencrance  
Sarah Sanchez  
Aubrey Sawyer  
David Scholten  
Mohammad Anwar-Siddique  
Christopher Stephens  
Cristina Vaca  
Yidan Wang  
Lenore Yalom

**Northwestern  
University  
Interdepartmental  
Neuroscience Program**  
  
Damonick Baxter  
Melissa Fajardo

Nikolas Hayes  
Andrew Hunter  
Eriko Kamiki  
Erin King  
Zach Ladwig  
Hayley McMorro  
Nicolette Moya  
Naomi Murata  
Rachel O'Sullivan  
Amber Ruccia  
Miranda Salvo  
Joseph Salvo  
Sajishnu Savya  
Ling-Kai Shih  
Nirvik Sinha  
Ciarra Smith  
Alexandra Sutter  
Bryna Webb  
Kelsey Wright  
Nai-Hsing Yeh

## Medical Scientist Training Program

Bakare Awakoaiye  
Alexandru Buhimschi  
Sidhanth Chandra  
Kathleen Cheng  
Margaret Fain  
Noah Forrest  
Hendryck Gellineau  
Tobias Holden  
Danielle Pi  
Yannick Schreiber  
Jerica Tan  
Garima Tomar  
Jacquelyn Trujillo  
Tianming You  
Emily Zaniker

## Clinical Psychology PhD Program

Samuel Battalio  
Gina Belli  
Melanie Freedman  
Ashley Heywood  
Kyle Jozsa  
Emily Landau  
Linzy Pinkerton  
Eloisa Serrano  
Nanzi Zheng

## Health Sciences Integrated PhD Program

Angela Freeman  
Abhijit Grewal  
Jae Young Lee  
Yikuan Li  
Yishu Qu



# Programming Bacteria to Perform Useful Functions for Basic Science, Engineering and Medicine

Arthur Prindle, PhD, assistant professor of Biochemistry and Molecular Genetics



[Arthur Prindle, PhD](#), assistant professor of [Biochemistry and Molecular Genetics](#) and member of the Center for Synthetic Biology, was recently named a Pew Biomedical Scholar. He will receive a four-year, \$300,000 grant to study the genetic signals that prompt bacteria to migrate from densely-packed communities called biofilms. Prindle joins 21 other junior faculty from institutions across the U.S. who were selected by the Pew Charitable Trust for their promise in contributing to science relevant to human health. Last year, Prindle was also [named](#) a 2018 Packard Fellow, which includes a five-year grant from The David and Lucile Packard Foundation. He is a member of the [Robert H. Lurie Comprehensive Cancer Center of Northwestern University](#).

## Q&A

### What are your research interests?

I am fascinated by self-organization and the emergence of complexity in biology. Despite lacking many of the features of multicellular organisms, a community of simple bacteria can orchestrate surprisingly complex dynamic behaviors through collective regulation. It is fascinating to think about how the seemingly out-of-reach features of “higher organisms” may have been stumbled upon in early evolution by these communities of “lowly” bacteria. By revealing these surprising functions, we are poised to challenge the traditional view of unicellular bacteria and forever change the way we think about how bacterial communities function. These insights will spur advances in both basic microbiology and biomedicine in the context of the human microbiome.

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

My lab is trying to develop new ways to program bacteria to perform useful functions for basic science, engineering and medicine. We have recently learned that our bodies are filled with about as many bacterial cells as human cells. My vision is to engineer these bacterial communities (called the microbiome) to monitor and treat diseases such as diabetes and cancer. In the future, we may be able to eat a spoonful of yogurt that contains probiotics that continuously emit signals for non-invasive monitoring of disease. These probiotics could even deliver drugs directly to the site of disease.

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

I was originally trained as a chemical engineer and became interested in biology (and research in general) when I learned about the new field of synthetic biology. The goal of synthetic biology is to reprogram cells to perform new and useful functions that don't exist in nature by applying tools and concepts from engineering. This was such an exciting idea to hear as an undergraduate and continues to motivate my work today. My joint faculty appointment in the Center for Synthetic Biology and at Feinberg signal Northwestern's commitment to developing my career as a junior faculty member whose research spans engineering, genetics and human health.

### What types of collaborations are you engaged in across campus (and beyond)?

I started my lab at Northwestern almost two years ago and have been actively exploring collaborations on both the Chicago and Evanston campuses spanning multiple departments in the areas of basic science, engineering and medicine.

### How is your research funded?

My research is currently funded by the Career Award at the Scientific Interface (CASI) from the Burroughs Wellcome Fund, Pew Biomedical Scholarship, Packard Fellowship in Science and Engineering, Hippocratic Cancer Research Foundation Scholar Award, H Foundation Intraprogrammatic Synergy Award and a Young Investigator Award from the Army Research Office. One of the amazing aspects of these awards is the freedom they provide. My lab has the freedom to explore new directions of research that might be considered too risky or preliminary by other funding agencies.

### Where have you recently published papers?

I have published a number of papers over the years, but the most impactful are probably my [first paper as a graduate student](#) and [first paper as a postdoctoral fellow](#). While they are focused on different biological systems and applications, they deal with the common theme of how relatively simple cell-to-cell interactions give rise to sophisticated emergent behaviors in bacterial communities.

# Seeking to Understand the Causes and Consequences of Trauma—and Improving Outcomes

Tawny Spinelli, Clinical Psychology PhD Program, JD/PhD Combined Degree Program



## Q&A

### Where is your hometown?

I am originally from Cleveland, Ohio, but have also lived in east Tennessee, Nashville, Southern India, and now, Chicago.

### What are your research interests?

As a member of the Mental Health Services and Policy Program, my research is cross-disciplinary and

aims to mitigate trauma and improve outcomes for youth and families involved in the child welfare and/or juvenile justice systems. [Neil Jordan, PhD](#), and [Cassandra Kiesel, PhD](#), serve as my mentors, and we regularly work in conjunction with the Illinois Department of Children and Family Services and the National Child Traumatic Stress Network. My passion for working with kids in care stemmed from my own experience in the foster care system. Because of this, I feel strongly about doing work that improves these systems.

### What exciting projects are you working on?

I'm working on several exciting projects! This summer, I completed the Urban Leaders Fellowship in Denver, where I researched statewide policy and advocating for individuals experiencing homelessness. Over the past year, at Northwestern, I've been working on two main projects: One that examines how family support impacts placement stability for children in foster care; and another, in partnership with the Cook County Juvenile Court Clinic, that explores how parental experiences of childhood adversity impact child protection court outcomes.

### What attracted you to the JD/PhD program?

I'm pursuing my PhD in clinical psychology so I can better understand the causes and consequences of trauma and resilience especially for young offenders and youth in foster care. I'm pursuing the JD so I can better understand systems

policy and legislation, because I am interested in researching which policies best help system-involved youth and families improve long-term outcomes. Not only does Northwestern have one of the few psychological research laboratories that studies child welfare and policy, but it also has a law school that has been nationally recognized for its dedication to helping young offenders. I was attracted to the JD/PhD program because I have a lot to learn and because Northwestern values what I value — people.

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

My best experience thus far at Feinberg was taking the law and psychiatry didactic for psychiatrists who were completing their certificate in forensic psychiatry. I'm not sure I was supposed to be in the class, but I absolutely loved reading all of the case law about mental health, being challenged based on the legal precedents and being asked to think about how psychiatrists might interpret those cases today in practice.

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

I feel grateful to work with the faculty at Feinberg. The school's psychology and psychiatry professors are not only passionate about their work, but are also passionate about teaching their craft. The faculty treat us as colleagues and offer the right balance of support and autonomy to help each student as we create our own pathways to success. Additionally, as I'm the first JD/PhD in Feinberg's clinical psychology program, I've appreciated the flexibility the faculty have shown, encouraging me to pursue out-of-the box opportunities that interest me.

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

In my free time, I love to travel and explore new places. I also enjoy hiking, yoga and playing guitar.

### What are your plans for after graduation?

Ask me this question again in four years — just kidding! After graduation, I aim to be in a position that incorporates teaching, mentoring, clinical work and researching how to align policy with what we know about childhood development and trauma. What can I say? I want it all!

# Ensuring that Everything is Running Seamlessly Behind the Scenes

Julia Yoshino Benavente, Program Director, Health and Literacy Learning Program (HeLP)  
in the Department of Medicine's Division of General Internal Medicine and Geriatrics



## Q&A

### Where are you originally from?

I was born in Oklahoma but moved to Middleton, Wisconsin, when I was young. After growing up there, I spent the better part of a decade on the West Coast before moving to Chicago in 2013.

### What is your educational background?

I have a bachelor's degree in molecular and cell biology and public health from the University of California, Berkeley. I also have a Master of Public Health degree in epidemiology from the University of Washington.

### Please tell us about your professional background.

I have been involved in clinical research for many years, primarily as a research manager. Before coming to Northwestern, I spent time working in the Department of Infectious Diseases at the Children's Hospital and Research Center Oakland; in the Melanoma and Kidney Cancer Program at the Seattle Cancer Care Alliance; and the Early Phase Clinical Trials Unit at the University of California, San Francisco.

### Why do you enjoy working at Northwestern?

Northwestern is a great place to work! The research enterprise is huge and dynamic, and I've been fortunate to have many opportunities for professional growth within my current research program. There is an openness for collaboration and connection here that I haven't experienced at other places I've worked.

### How do you help scientists and or research students at the medical school?

In my role as the program director of HeLP, I have an opportunity to work with researchers in a variety of capacities. I train research interns and coordinators on research study protocols and interviewing techniques, and provide project management guidance to our project managers and leads. In

addition, I work closely with many principal and co-principal investigators and support their research endeavors from pre-award all the way through publication. I do my best to ensure that everything is running seamlessly behind the scenes to enable our program to be highly functional.

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

I work with an incredible group of coworkers who are smart and fun and make me laugh every day! They have taught me so much about problem-solving, perseverance and communication. It's also gratifying to be surrounded by innovative people who have dedicated their lives to finding practical solutions to simplify the healthcare system for older adults and their families.

### What exciting projects are you working on?

When I came to Northwestern in 2013, I was hired to manage a large, ongoing, longitudinal cohort study called LitCog. This study examines health literacy and self-care skills among older adults and how changes in cognitive function impact one's ability to manage health over time. Earlier this summer, we were able to convene over 200 study investigators, collaborators, participants and their family members to celebrate LitCog's 10th anniversary. We are hoping to extend the study for another 5 years and to continue using study findings to inform primary care practices and healthcare systems to better support the needs of aging patients.

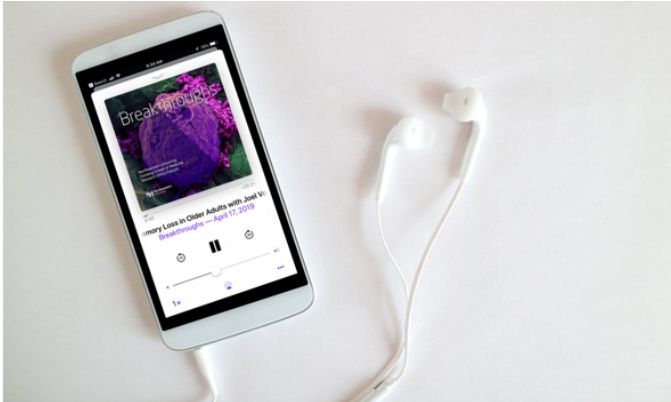
### What do you like to do in your spare time?

My favorite thing to do is spend time with my husband, two kids (4 years old and 15 months old) and my dog. You can usually find us at the library, museums or at the park. I love to try out new recipes — bonus if my kids will eat it! — and have recently taken up gardening, with moderate success.

### Anything else we should know about you?

I love all kinds of dance and was a ballet and modern dancer for over two decades. Post-kids, I haven't been able to carve out the time to indulge my favorite hobby, but I'm hoping to start taking classes again this year.

# Earn CME Credits for Listening to the Breakthroughs Podcast



Did you know that you can claim Continuing Medical Education (CME) credit for listening to the *Breakthroughs* [podcast](#)?

At Feinberg, we are driven by our mission to impact human health beyond the individual patient. We believe better answers come from discovery. *Breakthroughs* aims to broadcast these discoveries to contribute to the larger conversation surrounding human health.

Each episode includes an interview with a Feinberg faculty member about their work and its impact. Featured experts and topics intersect all our medical disciplines at Feinberg – [dermatology](#), [ophthalmology](#), [nephrology](#) or wherever else your area of interest lies.

After listening to an episode, you will be able to identify the research interests and initiatives of Feinberg faculty and discuss updates in clinical and translational research. If you would like to claim CME credit for listening to *Breakthroughs*, visit the [Continuing Medical Education website](#).

The Northwestern University Feinberg School of Medicine is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians. The Northwestern University Feinberg School of Medicine designates this Enduring Material for a maximum of 0.5 AMA PRA Category 1 Credit(s)<sup>™</sup>. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

If you have additional questions about processing CME credits, please [contact](#) the Office of Continuing Medical Education.



## NUCATS Corner

### Coaching Scientists to Play Well Together

The NUCATS Team Science Program offers [training modules](#) and resources that are [proven to significantly improve knowledge, attitudes and skills needed to support the practice of team science](#).

Over the past two decades, translational science has become a team-based endeavor that leverages the strengths and expertise of scientists trained in different fields. Through coaching, interdisciplinary teams can learn to commit to interdependence, joint ownership and collective responsibility, between and among scientists.

In addition to the free online training tools available at [teamscience.net](#), the Team Science Program offers customizable workshops that provide hands-on facilitation of strategic team mapping, role identification and accountability, meeting management, team dynamics and conflict resolution, and collaboration enhancement. The goal of these interactive and experiential workshops is to strengthen participant competencies necessary for effective performance as a team. The Team Science Program also offers consultations on team management, culture, growth, new funding opportunities and transition planning, as well as tools and processes needed to help interdisciplinary teams function efficiently.

To learn more about the available Team Science resources that NUCATS offers, [click here](#).



# Sponsored Research



**PI: Lynn Yee, MD, MPH, assistant professor of Obstetrics and Gynecology in the Division of Maternal Fetal Medicine**

**Sponsor: National Institute of Child Health and Human Development**

**Title: Patient Navigation to Improve**

**Outcomes Among Low-Income Women in the Postpartum Period**

Uptake of healthcare during the postpartum period is critical to optimizing women's long-term health and the health of their subsequent pregnancies. Yet postpartum care in the United States remains inadequate, and substantial racial/ethnic and socioeconomic disparities in healthcare uptake, quality and outcomes exist. Improving health for all women requires the development of new approaches to postpartum and interconception care.

Patient navigation is a barrier-focused, longitudinal, patient-centered intervention that offers support for a defined set of health services. In this study, the investigators will evaluate whether implementation of a postpartum patient navigation program improves health outcomes among low-income women.

Yee's team previously developed a postpartum patient navigation program, called Navigating New Motherhood (NNM), which introduced a clinic-level intervention in which a patient navigator assumed postpartum supportive and logistical responsibilities for low-income women. In an observational investigation, navigation was associated with improvements in outcomes (retention in care, contraception uptake, vaccination and depression screening) compared to those of a historical cohort. The group now proposes to test the efficacy of the updated NNM model — called "NNM2" — via a clinical trial randomizing 400 pregnant or postpartum women with publicly-funded prenatal care to NNM2 navigation versus usual care.

Completion of this study will fill an evidence gap by demonstrating whether postpartum patient navigation is an effective mechanism to improve women's short- and long-term health, enhance healthcare utilization and improve patient and provider satisfaction.

[Read more about this project.](#)



**PI: Murali Prakriya, PhD, professor of Pharmacology**

**Sponsor: National Heart, Lung and Blood Institute**

**Title: Regulation of Airway Epithelial Cell-Mediated Inflammation by CRAC Channels**

Ca<sup>2+</sup> is a ubiquitous signaling messenger mediating many essential functions such as excitability, exocytosis and transcription. In the airway epithelial cells (AECs) lining the conducting airways of the lung, Ca<sup>2+</sup> signals are implicated in numerous cellular functions through effects on enzymatic cascades and transcriptional factors. Ca<sup>2+</sup> homeostasis is also closely integrated with other signaling systems, including that of reactive oxygen species (ROS), which has many cellular functions of its own and is implicated in allergic lung diseases and injury.

Prakriya's team has recently shown that store-operated Ca<sup>2+</sup> release-activated Ca<sup>2+</sup> (CRAC) channels serve as the main pathway for Ca<sup>2+</sup> entry in bronchial epithelial cells and their activation leads to increases in levels of numerous proinflammatory cytokines. However, the broader significance of CRAC channels in AECs for mediating airway inflammation and potential crosstalk with ROS and other signaling pathways mediating inflammation remains unknown.

The group hypothesizes that CRAC channels are a major mechanism for controlling the generation of inflammatory mediators from AECs in response to stimulation of cell surface G-protein coupled receptors such as protease-activated and ATP receptors, and are an essential mediator of pulmonary inflammation in diseases such as asthma.

Findings from these studies will advance understanding of how inflammatory responses in the airways are activated and aid the quest for the development of new therapies to tackle airway diseases such as asthma.

[Read more about this project.](#)



## Welcome New Faculty

Patricia D. Franklin, MD, MPH, MBA, joins as professor of Medical Social Sciences and of Orthopaedic Surgery. Following a residency in Preventive Medicine at University of Rochester, she completed a fellowship there in Health Services Research emphasizing large database design and analysis and inter-disciplinary chronic care models. This training laid the foundation for a career in quality improvement and outcomes research. She serves as principal investigator of FORCE-TJR, a P50 (AHRQ) for comparative effectiveness research in total joint replacement (TJR) outcomes. This national effort enrolled over 30,000 TJR patients from 200 orthopedists to determine best practices to achieve optimal patient-reported pain relief and physical function. Among her ongoing research is a multi-site pragmatic trial of real-time shared decision reports using predictive analytics to estimate individual patient-reported and clinical benefits (and risks) of electing TJR.



# Funding

## Explainable Artificial Intelligence for Decoding and Modulating Neural Circuit Activity Linked to Behavior (R01 Clinical Trial Optional)

[More information](#)

**Sponsor:** National Institute of Mental Health (NIMH)

**Letter of Intent Due:** February 10, 2020

**Submission Deadline:** March 10, 2020

**Amount:** Application budgets are not limited but need to reflect the actual needs of the proposed project

**Synopsis:** Explainable Artificial Intelligence (XAI) aims to provide strong predictive value along with mechanistic understanding of AI by combining machine learning techniques with effective explanatory techniques. NIMH solicits applications in the area of XAI applied to neuroscientific questions of encoding, decoding and modulation of neural circuits linked to behavior. Collaborations between computationally and experimentally-focused investigators is encouraged. NIMH seeks the development of machine learning algorithms that are able to mechanistically explain how experimental manipulations affect cognitive, affective or social processing in humans or animals. Also: Proof-of-concept applications aimed at improving the current state of the technology that uses XAI to provide unbiased, hierarchical explanations of causal relationships between complex neural and behavioral data are also appropriate.

## NCI Outstanding Investigator Award (R35 Clinical Trial Not Allowed)

[More information](#)

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

**Letter of Intent Due:** October 6

**Submission Deadline:** November 6

**Amount:** \$600,000 direct costs per year (project period may not exceed seven years)

**Synopsis:** NCI invites applications in any area of cancer research. The objective of the grant is to provide long-term support to accomplished investigators with outstanding

records of cancer research productivity who propose to conduct exceptional research. This grant is intended to allow investigators the opportunity to take greater risks, be more adventurous in their lines of inquiry or take the time to develop new techniques. Applications from institutions nominating established program directors/principal investigators (PDs/PIs) for the NCI Outstanding Investigator Award (OIA) are allowed. It is expected that the OIA would provide extended funding stability and encourage investigators to embark on projects of unusual potential in cancer research. The research projects should break new ground or extend previous discoveries toward new directions or applications that may lead to a breakthrough that will advance biomedical, behavioral or clinical cancer research.

## Exploring Epigenomic or Non-Coding RNA Regulation in the Development, Maintenance or Treatment of Chronic Pain (R61/R33 Clinical Trial Optional)

[More information](#)

**Sponsors:** National Institute on Drug Abuse; National Center for Complementary and Integrative Health

**Letter of Intent Due:** October 13

**Submission Deadline:** November 13

**Upper Amount:** \$1.95M

**Synopsis:** The purpose of this initiative is to encourage research that investigates the role of epigenetic or non-coding RNA regulatory pathways in the development, maintenance or treatment of chronic pain. Ultimately, research in the area will provide foundational knowledge that can be exploited to develop novel and non-addictive pain medications or to develop biomarkers that predict chronic pain progression or treatment response.

[View more funding opportunities](#)

## Moving Up with Year Up

The first Year Up Chicago cohort in Feinberg's Research Administration recently completed the program, and the following secured full-time positions with Northwestern: Jaleen Gibson is now a Financial Specialist with the Department of Surgery, Vianey Rodriguez is a Grants Assistant in the Office for Sponsored Research and Ayinde Hill is a Program Assistant in the Department of Obstetrics and Gynecology. Welcome to new interns Nysa Teruel, Khamaali Hudson, Chailey Ramirez, Alejandro Rodriguez and Tabitha Rogers!

Year Up is an intensive skills-training program for under-served young adults. To learn more, contact [Cyndie Shannon-Hutchinson](#), Director of Research Administration in the Office for Research.



Left to right: Jaleen Gibson, Mercedes Roncone, Jennifer Servin, Vianey Rodriguez and Ayinde Hill.

# Online Resources for Historic Medical Data: From Public Domain to Virtual Machines



By Sara Gonzales, Data Librarian

Publicly available historic medical data comes in a wide variety of formats and can be plumbed for the study of many conditions and phenomena. Links between environmental events and epidemics, neighborhoods and life expectancies, and public health funding and the spread of disease can all be explored through tools such as the [Federal Statistical Research Data Centers](#) and the [Centers for Disease Control and Prevention](#). Medical information, however, is not only available in tables in graphs. Some researchers find a wealth of information in historic photographs, which “express elements of the history of medicine that are ‘rarely disclosed’ elsewhere.”<sup>i</sup> Since the use of photographs, considered creative works, brings up copyright concerns, how can one be sure of finding useable historic medical photographs for research?

Updates to copyright laws in the late 1990s extended copyright protections to creative works until 95 years after their date of creation. Shifts and patches in the law led to some U.S. works created before 1923 receiving extended copyright protections, which have ended as of January 1, 2019. From the beginning of this year these materials have become available and will join others from 1922 and previous years as full-text versions available in [Google Books](#), the [Internet Archive](#) and other venues. Automatic updates to the sites’ content, particularly for Google Books, will take place each January 1<sup>ii</sup>.

In practice, this means that Civil War or World War I-era images available through sites such as the [HathiTrust Digital Library](#) or the [Otis Historical Archives](#) of the [National Museum of Health and Medicine](#) will be in the public domain. The Otis collection is particularly strong in disease research, prosthetics and reconstructive surgery. As with many collecting institutions, formal research and image reproduction requests must be submitted in advance, although intriguing previews can be seen in the Otis Archives’ [virtual exhibits](#).

Publicly accessible collections such as the [HathiTrust Digital Library](#) offer immediate access to their digital, public domain images and text resources. HathiTrust has even gone a step further in the data-sharing game by allowing use of some of their materials that are still copyright protected for the purposes of natural language processing and analysis. Using the [HathiTrust Data Capsule](#), researchers can create their own virtual machine to store and perform computational analyses of copyright-protected HathiTrust works. As long as the research is non-consumptive (meaning that the researcher queries resources without fully reading or “consuming” them) and the resulting dataset to be downloaded is derived (not allowing reconstruction of significant portions of text from the original work), then researchers can legally work with copyright protected datasets less than 95 years old.

While working with potentially copyright protected sources for historic data may always be a challenge, there are additional resources through which both source material and assistance can be found. The [Archives and Modern Manuscripts Collection](#) of the [National Library of Medicine](#) is a national resource chronicling the work of American medical professionals since 1850. Closer to home, Galter Health Sciences Library & Learning Center’s [Rare Books and Special Collections](#) department contains institutional archives of the Feinberg School of Medicine and Northwestern University Dental School, as well as personal collections of former students and staff. Finally, a helpful primer on copyright can be found in this [LibGuide](#) by Northwestern copyright librarian Liz Hamilton.

<sup>i</sup>Mifflin, Jeffrey. *Visual Archives in Perspective: Enlarging on Historical Medical Photographs*. *The American Archivist*, Vol. 70 (Spring/Summer 2007): 32-69.

<sup>ii</sup>Fleishman, Glenn. *A landslide of classic art is about to enter the public domain*. *The Atlantic* (online). April 8 2018. <https://www.theatlantic.com/technology/archive/2018/04/copywritten-so-dont-copy-me/557420/>



# High-Impact Factor Research

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# Research in the News

**HealthDay**, July 25

[For asthmatic kids in tough neighborhoods, family is key](#)

Edith Chen, PhD, was quoted.

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

**CNN**, July 30

[Trial underway in U.S. uses CRISPR gene-editing in people with severe sickle cell disease](#)

Alexis Thompson, MD, MPH, was quoted.

**Crain's Chicago Business**, July 31

[An eye on shark spines](#)

Stuart Stock, PhD, was featured.

**The New York Times**, August 2

[Sesame allergy more common than once thought, study finds](#)

Ruchi Gupta, MD, MPH, was quoted.

► This research was also featured in *U.S. News & World Report*, *NBC News*, *HealthDay*, and *Fox News*.

**Crain's Chicago Business**, August 14

[Which hospital rating system is best?](#)

Karl Bilimoria, MD, MS, was quoted.

[More media coverage available online.](#)

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# NIH News

## Conference Explores the Promotion of a Culture of Research Integrity at Institutions

Northwestern University partnered with the U.S. Department of Health & Human Services Office of Research Integrity and the Council of Graduate Schools to host the 2019 Research Integrity Conference. The conference, held May 22 through 23 at the Shirley Ryan AbilityLab, sought to engage university and college leaders in lively discussions. It also provided the chance to share resources and tools for promoting research integrity for current and future scientists and scholars at institutions nationwide. NIH Deputy Director for Extramural Research Michael Lauer, MD, delivered the keynote address, which provided approaches that institutions may take to foster a culture of research integrity. To watch a video of Lauer's talk, click [here](#).

## Sample Grant Applications, Summary Statements and More

The National Institute of Allergy and Infectious Diseases lists examples of funded R01, R03, R15, R21, SBIR/STTR, K and F applications, summary statements, sharing plans, leadership plans and more on their [website](#), which may be helpful for drawing inspiration during the development of a grant application. NIH offers the following tips and best practices when referencing these resources:

- Read and carefully follow the instructions in the funding opportunity announcement to which you are responding and the current [application instructions](#) carefully. Sample applications were developed using the application forms and instructions that were in effect at the time of their submission. Forms and instructions change regularly.
- The best way to present your science may differ substantially from the approach taken by those who wrote the example applications. Seek feedback on your draft application from mentors and others.
- Talk to an [NIH program officer](#) in your area of science for advice about the best type of grant program and the Institute or Center that might be interested in your idea.

## NIH Grant Review Criteria

Wondering how review criteria affects the scoring of your NIH grant application? Check out this table for the different types of review criteria.

Types of Review Criteria

Category*	Criteria (Research)	Criterion Scores?	Affect Overall Impact Score?
Scored Review Criteria	Significance Investigators Innovation Approach Environment	Yes	Yes
Additional Review Criteria	Study Timeline (CT only) Human Subjects** Vertebrate Animals** Inclusion** Biohazards	No	Yes
Additional Review Considerations	Foreign Institutions Selected Agents Resource Sharing Authentication of Key Resources	No	No

\* Found in every Funding Opportunity Announcement  
\*\* If Unacceptable, award cannot be issued until resolved

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