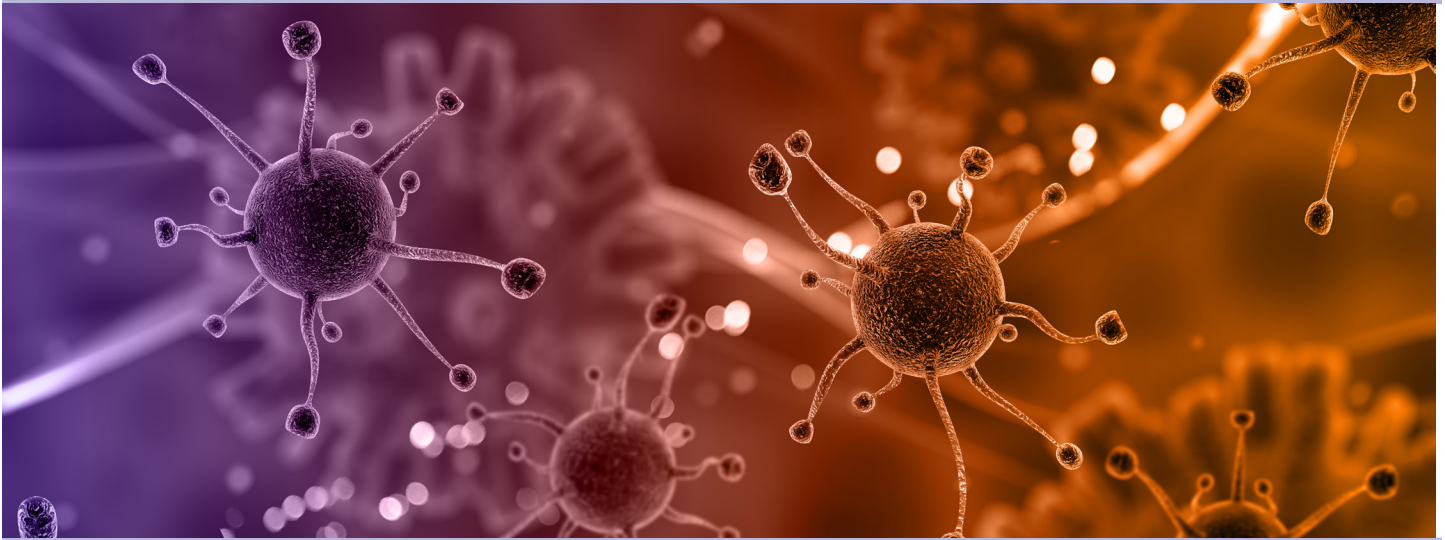


Breakthroughs

Feinberg School of Medicine Research Office

June 2018



Leading World-Class Investigations Into Infectious Diseases

By Anna Williams

**Growing threats of antimicrobial resistance.
Emerging diseases like dengue and Zika.
Complications of aging with HIV/AIDS — and the
continued quest to develop a cure.**

These are just a few of the significant, global challenges that investigators are confronting through collaborative, cutting-edge basic and clinical research within the Division of [Infectious Diseases](#) in Feinberg's Department of [Medicine](#).

While committed to discovering underlying mechanisms behind a wide range of infectious diseases, scientists in the division also keep an eye toward the clinic; their aim is to ultimately translate novel findings into new approaches for prevention, diagnosis and treatment around the globe.

“We see so much discovery that comes from bench research, but that research has to be translatable,” said [Babafemi Taiwo, MBBS, '06 GME](#), chief of Infectious Diseases. “To do that, we encourage strong collaboration between laboratory scientists and clinical scientists to really get at the questions that are most important in the field.”

Scientists Focus on a New Paradigm in HIV Care

Although the last few decades have been marked by major advancements in prevention and therapy, human immunodeficiency virus (HIV) remains a significant health challenge worldwide.

There is no cure for HIV, and antiretroviral therapy (ART) — medications that suppress the virus — must be used by a patient every day, for life. Patients with HIV are now living longer than ever, and new questions of how to manage HIV alongside aging are also arising for the first time.



Babafemi Taiwo, MBBS, '06 GME, chief of Infectious Diseases

Feinberg scientists are leading investigations to address each of these areas. In particular, improving therapeutics for people living with HIV — by reducing the frequency or length of administration of ART — is a primary focus. Taiwo and collaborators published some of the first studies in this area. Now, Northwestern is participating in several phase III clinical trials evaluating the efficacy of a reduction in HIV treatment.

Infectious Diseases

(continued from cover page)

“If somebody is taking three drugs, whereas they needed only two, we want to avoid whatever cost that third brings, whether it’s financial or toxicity,” said Taiwo, also the Gene Stollerman Professor of Medicine. “This could be a game-changing shift in how HIV is treated globally.”

The clinical team is also working closely with laboratory scientists. “We’re going back to the lab to ensure that the promising results we’re seeing in clinical practice are not translating to potential harm on the cellular level,” Taiwo said. “It’s a fine collaboration between clinical investigators and bench scientists.”

Through discoveries that offer critical new insights into the biology of the virus and its susceptibilities, scientists in the division are also contributing to the ultimate goal: finding a cure for HIV.

[Eun-Young Kim, PhD, ’02 GME](#), research associate professor of Medicine in Infectious Diseases, is dedicated to identifying host gene variations that influence susceptibility to infections like HIV.

“A differential advantage in responding to HIV is associated with variances in the genes relevant to the virus life cycle and immunity,” Kim said. “Our studies focus on the host defense pathways that promote natural resistance to the viral infection. This may prove practical for identifying strategies to achieve a cure for HIV.”

In 2016, Northwestern Medicine scientists [published](#) findings in *Nature* that demonstrated HIV is still replicating in lymphoid tissue, even when it’s undetectable in the blood of patients on ART — providing critical insights into how HIV persists in the body.

The study, led by [Steven Wolinsky, MD ’82 GME](#), the Samuel Jefferson Sackett Professor of Infectious Diseases, and co-authored by Kim, may help chart a path to a cure.

“Finding a cure for HIV is possible,” Taiwo said. “There aren’t any clear answers right now, but we’re looking at some very exciting leads.”

New Frontiers in HIV Co-morbidities

As the HIV-infected population has aged, certain conditions are now known to be more common in people with long-standing HIV infection — including cardiovascular disease, some cancers, neurocognitive disorders, and liver infections like hepatitis B and C.

“Despite all the progress that has been made in HIV, we know that people with HIV are still dying earlier than people who are HIV-negative,” Taiwo said. “Trying to understand how to manage the aging HIV population — and ultimately, to equalize life expectancy — is a focus of a lot of our work.”

As such, the division has formed collaborations with investigators in other disciplines to address such co-morbidities — including [Matthew](#)

[Feinstein, ’11 MD, ’17 MS, ’13 ’17 GME](#), assistant professor of Medicine in [Cardiology](#), who researches cardiovascular complications of HIV infection, as well as scientists in [The Ken & Ruth Davee Department of Neurology](#), the Division of [Hepatology](#) and the [Robert H. Lurie Comprehensive Cancer Center](#).

[Claudia Hawkins, MD, ’06 GME](#), associate professor of Medicine in Infectious Diseases, investigates the relationship between HIV and viral hepatitis B and C, especially through epidemiologic studies in Tanzania and Nigeria. She [published](#) some of the first data on the prevalence of hepatitis B and C co-infection in HIV infected populations in these countries, as well as the effect of viral co-infection on liver disease progression and death.

“We now have a much better picture of the true impact of the hepatitis B virus (HBV) globally in HIV-infected populations and how viral hepatitis B co-infection impacts HIV,” said Hawkins, who is also involved in developing clinical trials for potentially curative agents for hepatitis B. “Because of our work overseas in HBV endemic areas, it’s also improved our understanding of HBV locally, where the burden of infection is typically much lower.”



Eun-Young Kim, PhD, ’02 GME, research associate professor of Medicine in Infectious Diseases



Claudia Hawkins, MD, ’06 GME, associate professor of Medicine in Infectious Diseases

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Infectious Diseases

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In fact, a global health reach is central to the Division of Infectious Diseases. Over half of the research out of the [Center for Global Health](#) overlaps with the division, Taiwo notes, and there is also an extensive partnership with Northwestern's Department of [Biomedical Engineering](#) to address the global need for rapid diagnostics for the range of infectious diseases.

Uncovering the Genetics of Antimicrobial Resistance

Antimicrobial resistance — the ability of bacteria and other microbes to persist despite medications — has been recognized by The World Health Organization as a global threat.

“The word ‘global’ is used, but it’s also a present threat, even in Chicago,” Taiwo said. “This is going to shape the next decade, and we want to be well-prepared as a division to lead in solving that problem.”

In order to address this public health threat, scientists throughout the division are probing the pathogenesis of resistance, with an emphasis on the genetic mechanisms responsible for virulence.

Within his lab at Feinberg, [Egon Ozer, MD, PhD, '08 '12, GME](#), assistant professor of Medicine in Infectious Diseases, studies the genomics of bacteria, in particular a common strain named *Pseudomonas*, which is often associated with hospital exposure and shows increasing resistance to antibiotics.

Through novel bioinformatic techniques, Ozer uses comparative genomics to identify why some strains might become more infectious or lead to worse outcomes.

“We want to get down to the genetic level and determine what makes pathogens different, which could be used to develop new diagnostics that identify infections more quickly and accurately, or might be targets for therapeutics in the future,” Ozer said. “We want to be able to move the personalized medicine movement into pathogens.”

The Future of Research

Given their public health prominence, investigations into HIV treatment and antimicrobial resistance will remain central focuses in coming years.

But Taiwo notes that the division is also forging into other research areas as well, including emerging diseases like dengue and Zika. Research into infections that surround transplantation — due to the immune suppression patients must undergo — is also an emerging strength of the Division, Taiwo said, noting the asset of Northwestern's [Comprehensive Transplant Center](#).

“Along with HIV and antimicrobial resistance, we want to evolve into a world-class program for transplant infectious disease research,” Taiwo said. “We have a real opportunity to lead in helping to better understand the risk factors associated with these infections, as well as identifying optimal ways to treat them.”



Egon Ozer, MD, PhD, '08 '12, GME, assistant professor of Medicine in Infectious Diseases

Listen to the *Breakthroughs* Podcast

Listen to the latest episodes of the *Breakthroughs* podcast on [iTunes](#) or [Soundcloud](#). Each episode features a conversation with a Feinberg scientist who is making leading-edge discoveries in their field. The latest episode highlights the evolution of fatherhood and some important scientific findings about modern-day fatherhood that might surprise you.

[Craig Garfield, MD](#), associate professor of [Pediatrics](#) in the [Division of Hospital-Based Medicine](#) and of [Medical Social Sciences](#), is the featured guest. He has published dozens of papers about child health within the context of the family. Listen to his episode: [Modern-Day Fatherhood and the Health of Dads with Craig Garfield, MD](#)

Other recent episodes to download or stream:

- [A New Way to Diagnose Glioma Brain Tumors with Daniel Brat, MD, PhD](#)
- [Understanding the Biology of Autism with Feinberg Scientist Peter Penzes, PhD](#)



Craig Garfield, MD, is the latest faculty featured in the Breakthroughs Podcast.

Regenerative Technologies in Orthopaedic Surgery

Erin Hsu, PhD, Associate Professor of Orthopaedic Surgery



Erin Hsu, PhD, serves as research associate professor of [Orthopaedic Surgery](#) and assistant director of the Simpson Querrey Institute for BioNanotechnology (SQI). At the SQI, Hsu works on strategic initiatives and new programs designed to foster collaborations between SQI members and other faculty in the Northwestern community. Hsu also leads her own laboratory — the Laboratory for Regenerative Technologies in Orthopaedic Surgery — along with her husband, [Wellington Hsu, MD](#), the Clifford C. Raisbeck, MD, Professor of Orthopaedic Surgery and an associate professor of [Neurological Surgery](#).

Q&A

What are your research interests?

My lab studies bone biology, with the major areas of focus being bone regeneration and bone toxicology. Our bone regenerative studies aim to replace current sub-optimal clinical approaches for bone healing with safer and more effective alternatives, especially in the spine. Along with my clinician-scientist husband, who plays an active role in our laboratory's research, I was invited to join the SQI as resident faculty in 2016.

SQI has a primary mission to enable efficient cross-disciplinary collaboration to solve clinical challenges — as resident faculty, my laboratory is located in very close proximity to those of many of my collaborators. We work closely with these collaborators — such as [Samuel Stupp, PhD](#), director of the SQI, professor of [Medicine](#) in the Division of [Endocrinology](#), and [Ramille Shah, PhD](#), assistant professor of [Surgery](#) in the Division of [Organ Transplantation](#) — to create improved solutions in the bone regeneration arena.

Our orthopaedic toxicology work aims to understand how environmental toxins adversely affect bone and inhibit bone healing, so that we can develop better approaches to prevent such effects. For instance, we study the role of the aryl hydrocarbon receptor in cigarette smoke-mediated inhibition of bone healing, and we investigate the utility of phytochemical-based antagonists of that receptor to provide protective effects in that setting.

What is the ultimate goal of your research?

The goal of our research is to improve our understanding of how bone and bone progenitor (stem) cells respond to both endogenous and external stimuli. This knowledge allows us to manipulate the biological system, for instance by directing stem cells to more efficiently become bone-forming cells in a pre-clinical model of bone healing, or by protecting bone cells from adverse external insult that could impair their function and cause harm to the patient's musculoskeletal system. Ultimately, we aim to use this information to create safer and more robust approaches to healing bone in various clinical settings and to improve bone health overall.

How is your research funded?

Our research is funded by grants from various sources, including the National Institutes of Health's National Institute of Arthritis and Musculoskeletal and Skin Diseases and various industry partners, as well as foundations and specialty research societies.

Where have you recently published papers?

We've recently published in *Nature Nanotechnology*, the *Journal of Bone and Joint Surgery* and *Science Translational Medicine*.

Which honors are you most proud of and why?

My husband and I were [recently named](#) co-recipients of the Feinberg Medical Faculty Council's Mentor of the Year Award. My husband is a practicing spine surgeon in the Department of Orthopaedic Surgery, and he plays an integral role in both our laboratory research and in mentoring our students. The field of orthopaedics is highly competitive and each year we accept several research fellows who hope to gain the laboratory experience necessary in order to match successfully in an orthopaedics residency.

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American Skin Association Honors Green

The American Skin Association's (ASA) presented one of its top awards to [Kathleen Green, PhD](#), Joseph L. Mayberry, Sr., Professor of [Pathology](#) and of [Dermatology](#). She was presented the David Martin Carter Mentor Award and the Research Achievement Award at the Annual Meeting of the Society for Investigative Dermatology. Green is also [associate director of Basic Sciences Research](#) at the [Robert H. Lurie Comprehensive Cancer Center of Northwestern University](#).

Since 1989, ASA's David Martin Carter Mentor Award has honored members of the dermatology community who embody the characteristics that made the late David Martin Carter, MD, PhD, an inspiration to many dermatologists, investigators, colleagues and medical students throughout the world. Dr. Carter and ASA's late founder, George Hambrick, MD, were dear friends who worked tirelessly to grow ASA into a leading force in efforts to defeat melanoma, skin cancer and other skin diseases.

Green has influenced the field of dermatology as a distinguished scientist and an esteemed mentor and educator. She is a notable author, having worked on hundreds of scholarly articles. Green's

lab's goal is to understand the molecular basis for how cells stick together, not only to provide mechanical strength to tissues, but also to regulate chemical signals important for development and differentiation. Her lab provides an open, collaborative, congenial research environment, promoting high impact research while mentoring students and fellows for a future as independent scientists and educators.



Kathleen Green, PhD

"Throughout her distinguished research career, she has brought cutting-edge basic molecular research techniques to the study of important skin diseases," said David Norris, MD, chair of the ASA Medical Advisory Committee. "In so doing, she has prepared a generation of young scientists for careers in investigative dermatology."



\$65 million in Funding to Boost Medical Innovation

Northwestern University and Deerfield Management have announced the launch of Lakeside Discovery, LLC, with the mission to accelerate the translation of transformative biomedical technologies. Deerfield will provide up to \$65 million of targeted funding and deep development expertise to advance promising Northwestern research.

"Lakeside Discovery, together with the 2019 opening of the Louis A. Simpson and Kimberly K. Querrey Biomedical Research Center, will further strengthen Northwestern's position as one of the leading academic medical research centers in the world," said Alicia Löffler, executive director of Northwestern's Innovation and New Ventures Office (INVO). "Northwestern has a long history in therapeutic innovation that started with the discovery of Lyrica 30 years ago. Lakeside will accelerate the translation of these life-saving innovations.

"Lakeside will highlight Chicago as a preeminent hub for tomorrow's cures, with the best medical researchers and clinicians working to improve the lives of patients," said Löffler, who is also the university's associate provost for innovation and new ventures and associate vice president for research. "We are excited to partner with Deerfield Management on this transformational new venture."

Lakeside will tackle projects approved by a joint steering committee comprised of members from the Northwestern and Deerfield scientific leadership teams. Northwestern members will initially include Eric G. Neilson, MD, vice president for Medical Affairs and the Lewis Landsberg Dean in the Feinberg School of Medicine; Richard Silverman, the Patrick G. Ryan/Aon Professor of Chemistry and Molecular Biosciences in Weinberg College of Arts and Sciences; and Löffler. [Read more.](#)

Understanding Calcium Signaling Pathways

Priscilla Yeung, Medical Scientist Training Program



Priscilla Yeung, a sixth-year student in the [Medical Scientist Training Program \(MSTP\)](#), studies calcium signaling in the laboratory of [Murali Prakriya, PhD](#), professor of [Pharmacology](#).

Q&A

Where is your hometown?

This is a tough question! My family moved around a

lot throughout my childhood. I have lived in Ann Arbor, San Francisco, Hong Kong, Taipei and Shanghai before attending college in Philadelphia. Nowadays, I call Chicago home, since the six years that I've been here is the longest that I've ever lived in a city.

What are your research interests?

Broadly speaking, I'm interested in understanding the structural and molecular basis of human disease. In my undergrad, I studied how amyloid-beta proteins misfold to cause Alzheimer's disease.

For my PhD work, I am currently working with Murali Prakriya on an ion channel called the CRAC channel, which constitutes an important calcium-signaling pathway in a variety of cell types. Developing a better understanding of their gating mechanism—how these channels open and close—could be useful for developing drugs to help patients with diseases arising from dysfunctional CRAC channels.

What exciting projects are you working on?

My main focus in the Prakriya lab is to better understand the activation mechanism of CRAC channels. Typical CRAC channels are made up of two proteins: Orai1, which forms the calcium-selective channel pore in the plasma membrane, and STIM1, a protein in the endoplasmic reticulum membrane that activates Orai1.

When I first joined the lab, I helped out on a project looking at the conformational changes that occur in the Orai1 channel pore following STIM1 binding. Now, I am examining how the various other parts of the Orai1 protein work together to contribute to pore opening.

Based on the discovery of numerous mutations in Orai1 that cause either gain-of-function channels that are open in the absence of STIM1 or loss-of-function channels that cannot be gated by STIM1, we have identified a crucial interface between the pore and the rest of the channel that regulates Orai1 activation.

What attracted you to the MD/PhD program?

I was drawn by the strong MSTP community at Northwestern, and I was particularly impressed by the MSTP Grand Rounds course that engages students between different years to collaborate on interesting clinical cases.

What has been your best experience at Feinberg?

I have enjoyed participating in PRISM, which is an after school program organized by Northwestern MSTP students to teach science and medicine to high school students.

We get to put our creative minds together for the curriculum design and the students are always fun to work with. Some memorable activities include burning various food items to estimate their caloric value, using sunscreen to protect bacteria from UV damage and visiting the Feinberg anatomy lab.

How would you describe the faculty at Feinberg?

While the faculty here often challenge students beyond their comfort zones, most are willing to invest time in students to help them succeed.

The research environment at Feinberg is very collaborative. It is not only common, but also feels very natural, to collaborate with scientists from other labs and even other departments.

What do you do in your free time?

In the past year, I've started volunteering at Habitat for Humanity to build safe and affordable homes in the southern part of Chicago. Apart from helping out the community, it's a great workout and always an interesting learning experience.

I also spend a significant amount of my free time following Chicago sports teams—Go Bulls!

What are your plans for after graduation?

I plan to continue my clinical residency and research post-doctoral training and hopefully pursue a career as a physician-scientist.

Helping the Feinberg Community Stay Connected

Yesenia Navarro, MEd, Communications Assistant, Office of Communications

Q&A

Where are you originally from?

I was born and raised in the near-by town of Cicero. It wasn't until college, that I began to branch out a bit more. I currently live in Chicago and while I have experienced and visited other major cities, I cannot say that there are any other cities quite like Chicago.



What is your educational background?

I have a bachelor of arts in anthropology from the University of Illinois at Urbana-Champaign, a second bachelors in medical science (BMS) from Dominican University and a Master of Education (MEd) in Higher Education Administration from Loyola University.

Please tell us about your professional background.

My professional career began in retail service, which helped put me through college, and later led to retail management. Shortly after graduating with my bachelors in medical science, I was recruited to a small medical device company that specializes in therapeutic hospital beds and surfaces. There, I held three roles — beginning as a customer service representative, then as a recruiter and ending my tenure with the company as sales support coordinator. Each role was distinct in many ways but similar in that each role provided essential operational and administrative support, while serving as a brand ambassador and liaison.

I learned so much wearing many hats, but felt a calling to do more. I wanted a career that took the skills I had honed, in a setting where I could maximize impact. My professional aspirations, coupled with my own struggles as a first-generation high school and college graduate, led to my desire to have a career in higher education.

While at Loyola as a master's student, I served as program manager for a newly launched student-alumni mentoring/networking program by facilitating engagement and enhanced program visibility through outreach. Shortly after graduating with an MEd, I joined the Feinberg Office of Communications team as a communications assistant.

Why did you choose to work at Northwestern?

I chose to work at Northwestern because it is a values-based institution committed to performance excellence. As a recent graduate, I am always actively seeking ways to grow and develop. While I am personally motivated by challenge, I also appreciate and value an institution that will push me to be innovative, think critically and be my best self.

Additionally, I chose Feinberg because of my affinity to medical science. Once upon a time, I wanted to become a pathologist. While I ultimately decided that that career path was no longer for me, I remain innately interested in science and love being a part of a community that is dedicated to cutting-edge research.

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

A part of my role on the communications team is to help Feinberg departments, centers and institutes get their message across to the Feinberg community. I manage a bulk email system, which disseminates information about relevant events, seminars, funding and career-enhancing opportunities and more.

What is your favorite part of the job?

One of my favorite parts to my role is being able to work across our department units and with external offices, centers, etc., on a daily basis. I really enjoy the versatility that is required to effectively engage with diverse individuals and groups. This really keeps me on my toes.

Another part of my role that I enjoy are instances where I can provide support for student and resident recruitment. For example, every year Feinberg is represented at the Student National Medical Association conference. This year, my role was to assist in the purchasing of marketing materials, the redesign of our informational flyers and posters, social media posting and general event coordination through to the end of the conference. I also work with resident and fellowship programs to update their recruitment materials and produce informational inserts they can share with prospective students, residents and fellows.

What do you like to do in your spare time?

In my spare time, I enjoy exploring this ever-changing city we live in with my spouse. We are both major foodies so we are always on the search for hidden gems. I also have two grey tabby cats, Luna and Sheldon, who anxiously await my return after a day at work to get their daily dose of cuddles and love. For me, it's the little things in life that provide the most happiness.

Connect with Yesenia on [LinkedIn](#).

Research in the News



CNN, April 30

[These 5 healthy habits could help you live a decade longer, study suggests](#)

Douglas Vaughan was quoted.

U.S. News & World Report, May 10

[Take Online Reviews of Plastic Surgeons With a Grain of Salt](#)

John Kim was quoted.

► This research was also featured in *WebMD*, *HealthDay* and *Reuters*.

The Wall Street Journal, May 10

[The Deadly Risk of Losing Your Financial Nest Egg](#)

Lindsay Pool was quoted.

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

TIME, May 15

[13 Ways Being a Night Owl Could Hurt Your Health](#)

Kristen Knutson was quoted.

Chicago Tribune, May 18

[Gay and bisexual male teens use adult dating apps to find sense of community, study shows](#)

Kathryn Macapagal was quoted.

Chicago Tribune, May 21

[New efforts to save lives with early detection](#)

WebMD, May 23

[New Guidelines Mean 1 in 3 Adults May Need BP Meds](#)

Clyde Yancy was quoted.

[More media coverage available online.](#)

NUCATS Corner

Receive Biostatistics Support for Your Projects

[The Biostatistics Collaboration Center's](#) (BCC) statisticians can help scientific teams, from the initial idea for a research project through the publication of the final manuscript. The master- and doctoral- level statisticians are available for a single consultation, assistance with specific portions of a research project or as co-investigators for studies.

The BCC statisticians can also help teams design studies that are statistically sound and promote reproducible research. They are available during grant and contract proposal writing to advise on experimental design, formulating a hypothesis and sample size calculation and can even assist with writing the statistical section of the grant.

If your team needs help analyzing your data, the BCC statisticians can assist in identifying the best methods and providing sound analysis. Once all the data is collected they will work to interpret the results in a meaningful way. Finally, as you prepare your manuscript or support, statisticians will write the statistical methods and statistical analysis portions and help with manuscript review. To get started, [schedule an initial consultation](#).

Help Feinberg Track Journals

The Feinberg Research Office regularly tracks studies published by Feinberg investigators. The citations are used on web pages, in newsletters and social media, for internal reporting, and more.

To more accurately track these journals, the Research Office asks that Feinberg investigators use the following institution name in the address field when publishing in peer-reviewed journals: "Northwestern University Feinberg School of Medicine."

Sponsored Research



PI: Christina Zelano, PhD, assistant professor of Neurology in the Division of Comprehensive Neurology

Sponsor: National Institute on Deafness and Other Communication Disorders

Title: “The function of respiratory-linked local field potential oscillations in human olfactory and limbic brain regions”

Zelano’s work is focused on the human olfactory system and its impact on other limbic brain regions involved in emotion and memory.

This study will explore olfactory and limbic networks involved in odor coding and sampling behaviors (controlled nasal inhalations). This has direct implications for neurological diseases involving limbic brain areas and respiratory dysfunction, including sudden unexpected death in epilepsy, the most common cause of death in patients with epilepsy, which involves respiratory dysfunction and disruption of limbic activity, and Parkinson’s disease, which involves olfactory and limbic brain regions and presents with reduced sniffing ability.

This project will also elucidate olfactory-limbic networks, including the amygdala, that are involved in threat detection and their dysfunction in patients with anxiety.

[Read more about the project](#)



PI: Chyung-Ru Wang, PhD, professor of Microbiology-Immunology

Sponsor: National Institute of Allergy and Infectious Diseases

Title: “The role of non-classical MHC class I molecules in immune responses to Mycobacterium tuberculosis infection”

Wang’s lab is focused on the immune function of major histocompatibility complex (MHC) class Ib molecules in normal and diseased states.

She is interested in understanding how MHC class Ib-restricted T-cells are selected and regulated during development and how they contribute to the control of autoimmunity, anti-tumor immunity and infectious diseases. Her lab is also interested in identifying microbial antigens recognized by MHC class Ib-restricted T-cells with the goal of developing new T-cell-based vaccines for microbial infection.

MHC class Ib molecules play an important role in the immune response against Mycobacterium tuberculosis (Mtb), the causative agent of tuberculosis. This study proposes to use novel animal and bacterial models to examine the function of various MHC Ib T-cell memory responses following vaccination. It will also examine the role of MHC Ib molecules in regulating the immune response against Mtb. Such studies may lead to identification of new targets and strategies for T-cell based vaccines against mycobacterial infection.

[Read more about this project](#)



Welcome New Faculty

Arthur Prindle, PhD, joins as an assistant professor of [Biochemistry and Molecular Genetics](#) and a member of the Center for Synthetic Biology. His research combines synthetic biology and computational modeling to understand the collective behaviors in microbial communities. The goal of his work is to explore new approaches to challenging biomedical problems through microbiome engineering. Prindle earned his PhD in bioengineering and completed a postdoctoral fellowship in molecular biology at the University of California, San Diego. In addition to the numerous awards for his research, he has published 15 journal articles and is currently a fellowship recipient of a Career Award at the Scientific Interface.

HSU

(continued from page 4)

We feel very honored to mentor such talented and driven individuals, and to guide them in this course. The incredible growth that we see over their time in the lab never fails to impress us, and we take great pride not only in their individual successes, but also in helping shape the next generation of researchers within the field of orthopaedics.

Who inspires you? Or, who are your mentors?

I am fortunate to work with and around a great many nationally renowned scientists and clinicians here at Northwestern. Among these, I have been particularly inspired by Samuel Stupp, who has not only built his own phenomenally successful research program, but has also shown me the importance of aiming bigger in everything I do. It is in no small part because of him that I no longer see ceilings — anywhere.

Most importantly, I feel uniquely fortunate to have the same dedicated and talented partner in both my work and my personal life; it is a special thing to be able to share every aspect of what I do with one person (my husband), and for that person to have the capacity to fully understand its significance. The term “team-based approach” has special meaning for us.

Northwestern Medicine Magazine

Check out the latest issue of *Northwestern Medicine* Magazine. Here are some of the stories you'll find:



Northwestern Medicine investigators are developing better treatments and care for patients with the cardiovascular diseases.

[Read more.](#)

Novel research is changing the way we approach healthcare for mothers and their babies.

[Read more.](#)

Funding

Leukemia & Lymphoma Society's Career Development Program

[More information](#)

Sponsors: Leukemia & Lymphoma Society

Eligibility Due: September 1, 2:00 p.m.

Upper amount: \$625,000

Synopsis: The Leukemia & Lymphoma Society's (LLS) Career Development Program provides support so that you can devote yourself to researching questions of direct relevance to hematological malignancies and/or relevant pre-malignant conditions. LLS offers career development awards to postdoctoral fellows and instructors, as well as early career, independent investigators.

Part of the Cloud Translational Research Funding

[More information](#)

Sponsor: Alzheimer's Association

Letter if Intent: July 12

Upper Amount: \$750,000

Synopsis: This grant program aims to fill the gap in Alzheimer's disease drug development by providing support for early phase studies of potential Alzheimer's therapeutics or validation of biological markers of disease progression. The aim of this initiative is to increase research efforts in phase I and phase II (proof of concept) clinical trials directed towards Alzheimer's disease and related dementias. Contact [Michelle Melin-Rogovin](#) to apply.

Investigators in the Pathogenesis of Infectious Disease

[More information](#)

Sponsor: Burroughs Wellcome Fund

Submission deadline: July 16

Upper Amount: \$500,000

Synopsis: The Investigators in the Pathogenesis of Infectious Disease award supports investigators at the assistant professor level to study pathogenesis, with a focus on the interplay between human and microbial biology, shedding light on how human and microbial systems are affected by their encounters.

[View more funding opportunities](#)

Librarians Can Help with Systematic Reviews



The number of published systematic reviews has risen exponentially in the last decade as physicians and scientists try to distill masses of biomedical literature into more readily-accessible content. Rather than read 50 articles with conflicting views on a topic, finding a well-done systematic review to give you the bottom line has become a key part of the decision-making process. As more scientists recognize the value of systematic reviews, they are also discovering topics that lack coverage and are stepping in to fill the gap.

So you want to write a systematic review. Where do you start? How many databases should you search? How do you come up with the different search strategies in unfamiliar databases? What tools should you use to screen the articles? What's a systematic review protocol? What are PRISMA guidelines?

If you have questions like this, you might want to consult with a systematic review expert such as a Galter librarian. In 2017, Galter librarians collaborated with Northwestern Medicine scientists on over 30 reviews and meta-analyses. They know what it takes to produce a high-quality review and are ready to share their wisdom with the Northwestern Medicine community.

Before you embark on a systematic review, think about your answers to these questions.

Do you have a protocol?

Like any well-designed research study, a systematic review should begin with the development of a protocol (a detailed description of the rationale, objectives, and methods of the review). Galter librarians can recommend resources on developing protocols, including existing standards and examples. We can also assist in developing the section of the protocol that describes the literature search methodology.

Do you have a team?

Many tasks in the systematic review process should be performed by more than one individual (e.g. screening search

results) or require individuals with specialized skills. Sharing tasks also increases efficiency and reduces risk of bias. Do you have appropriate expertise in all the required domains for completing a rigorous review? Ideally, your team should include subject specialists, a systematic review methods expert, a librarian or information specialist with training in systematic review methods, and a quantitative methods/meta-analysis specialist.

Do you have a plan for managing search results?

Literature searches for systematic reviews may produce thousands of records. Your ability to organize and manage these results will impact your ability to complete the systematic review efficiently and in a timely manner. Librarians can guide you on the available tools such as EndNote, Covidence or other systematic review management platforms.

Do you have time to screen the results of comprehensive literature searches?

The records retrieved during a systematic review search must be systematically and independently screened by research team members. Be prepared to document and report decisions made during the initial screening and full-text review. Librarians can recommend tools and software designed to help you streamline workflows associated with several of these tasks.

What is your timetable for the systematic review?

Like other study types, systematic reviews require substantial time to complete (one year or longer is a realistic expectation, though motivated reviewers can complete a review in a shorter time frame). Establishing a timetable for your project will help the librarian develop a reasonable schedule for conducting searches and delivering results. Getting a librarian on board sooner than later is key!

Are you ready to begin a systematic review? [Contact your liaison librarian at Galter](#) to get started.

High Impact Factor Research

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Calendar

Tuesday, June 19

2018 Pulmonary Lung Symposium

The day-long event includes morning lectures, a poster session, scientific abstract awards and a keynote lecture by Irina Petrache, MD, the Wollowick Chair in COPD Research, division chief and professor of Pulmonary, Critical Care and Sleep Medicine at National Jewish Health in Denver, Colorado.

Time: 8:30 p.m. to 5:00 p.m.

Location: Prentice Women's Hospital
3Canning Auditorium
250 E. Superior, Chicago

Contact: kmsbarnes@northwestern.edu

[More information](#)

Thursday, June 28

IPHAM Seminar Series

Stan Sonu, MD, of the Cook County Health and Hospitals System will present: "Adverse Childhood Experiences and Public Health: Why a Public-Health Framework is Needed to Address the Long-Term Effects of Childhood Adversity"

Time: Noon to 1 p.m.

Location: Robert H Lurie Medical Research Center
Baldwin Auditorium
303 E. Superior, Chicago

Contact: a-mizrachi@northwestern.edu

[More information](#)

Wednesday, July 11

TEAM Minisymposium

A minisymposium co-sponsored by the Tumor Environment and Metastasis Program of the Lurie Cancer Center and the Department of Neurological Surgery presents: "Reshaping the Tumor Microenvironment for the Treatment of Brain Tumors"

Time: 3:30 p.m. to 6:30 p.m.

Location: McGaw Pavilion
Daniel Hale Williams Auditorium (2nd floor)
240 E. Huron, Chicago

Contact: mark.tortoriello@northwestern.edu

[More information](#)

NIH News

Stipend and Benefit Increases for National Research Service Award Recipients

Those supported by [Ruth L. Kirschstein National Research Service Awards T32 \(NRSAs\)](#) will receive a two percent stipend increase for Fiscal Year 2018. There are approximately 15,000 NRSA training grant appointees and fellows spanning career stages from undergraduates, graduate students and postdoctoral scientists who will benefit from this announcement.

Advisory groups at NIH, including those focused on physician scientists, recommended that NIH adopt a practice of regular stipend increases. They also recognized that post doctoral researchers on research project grants, such as those on R01 awards, for example, typically receive better benefits than postdoctoral trainees or fellows receiving NRSA support. It was also noted that inadequate benefits may deter post docs from applying for fellowships or accepting a slot on a training grant.

In addition to the stipend increases for post docs, NIH will support increases in training related expenses provided with institutional training grants. Institutional allowances awarded with fellowships will also be increased to support enhanced benefits, particularly health insurance. [Read more](#) about this announcement.

ICARE Academy: June 18-20, Itasca, Illinois

The Interagency Collaborative Animal Research Education (ICARE) will host a three-day academy in the Chicago-area to use active learning and backward design to train Institutional Animal Care and Use Committee members, staff and institutional animal program personnel to meet their responsibilities for animal welfare oversight.

The Chicago-area academy will take place Monday, June 18, to Wednesday, June 20, at the Eaglewood Resort & Spa in Itasca, Illinois.

The number of attendees at an ICARE Academy is limited to 36. Space will be filled on a first come-first serve basis. If the program is sold out, you will have the option to add your name to the waitlist on the registration form. [Register here](#).

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