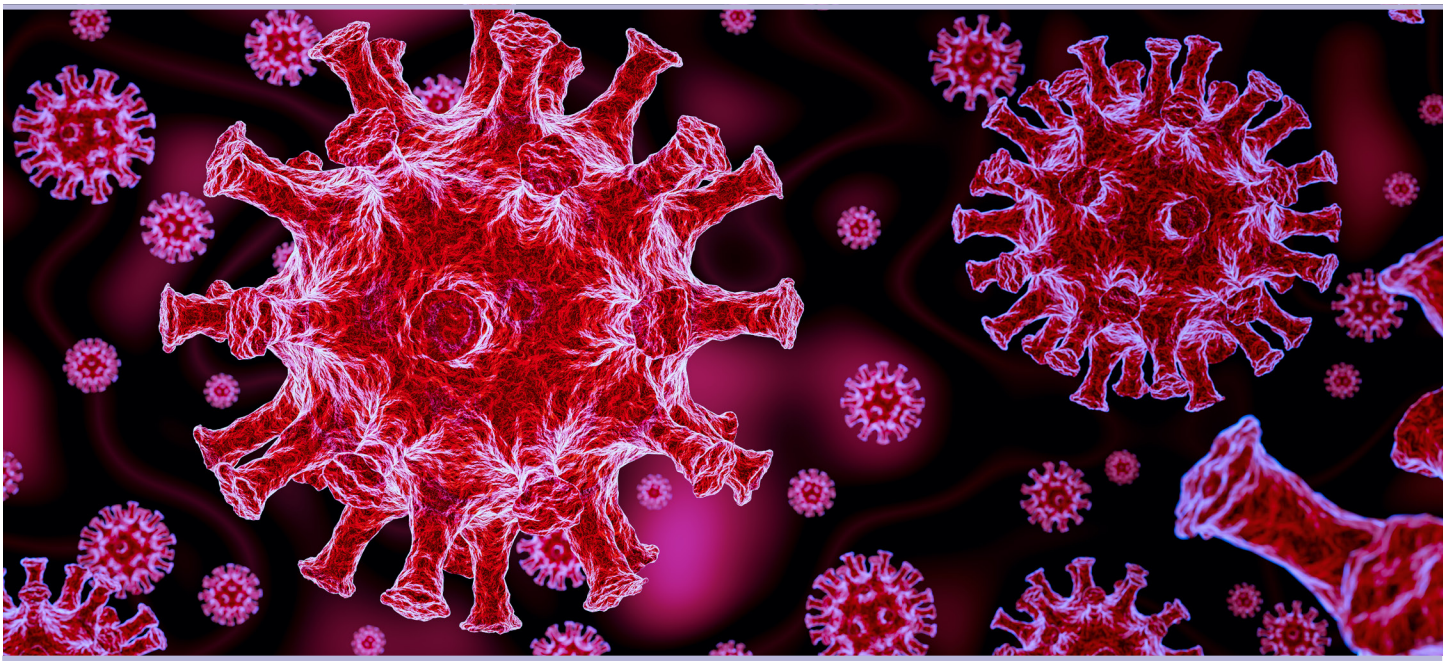
Breakthroughs

Feinberg School of Medicine Research Office

April 2020



COVID-19 Research and Response at Feinberg

As it became clear that COVID-19 was developing into a deadly global pandemic, members of Feinberg's research community sprang into action to help combat the novel coronavirus. Faculty and staff activated dozens of new projects related to COVID-19, some from their labs on the Chicago campus as essential workers, others from their home offices while practicing social distancing.

A Feinberg COVID-19 taskforce is now cataloging all COVID-19–related research being performed by Feinberg faculty and staff and is connecting appropriate projects with clinical information and samples and encouraging people with similar ideas to work together. The taskforce is focused on:

- Interventional studies
- Data and analytics
- Discovery, diagnostics and specimens

Northwestern Medicine®

"We want to maximize our research impact and minimize intrusions on critical healthcare pathways," said Rex Chisholm, PhD, the Adam and Richard T. Lind Professor of Medical Genetics and vice dean for scientific affairs and graduate studies.

More than 130 COVID-19 projects and ideas have been reported to the taskforce, ranging from new clinical drug trials in patients with the virus to innovative public health outreach campaigns. Any faculty or staff who are starting or contemplating a project that has not been submitted to a university unit such as the Institutional Review Board, the Institutional Biosafety Committee, the Office of Sponsored Research or NUCATS should send a one-paragraph description by email to Rex Chisholm, PhD, and Abby Cosentino-Boehm, DrPh.

Lab Space Transformed for COVID-19 Testing

After the FDA announced a new policy allowing certain laboratories to develop diagnostic tests for coronavirus, leadership from Northwestern Medicine and Feinberg began working together to increase the healthcare system's capacity

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COVID-19 (continued from cover page)

to test patients for the virus.

For this coordinated operation, staff from NUSeq Core Facility in the Center for Genetic Medicine (CGM) pick up patient samples from the hospital and bring them to NUSeq in the Tarry Research Building for testing, using the facility's real-time quantitative polymerase chain reaction machines. The testing data is then sent back to the health system for analysis and reporting. Six Feinberg research staff trained for this protocol began working in shifts around the clock to more than quadruple Northwestern Memorial Hospital's testing capacity.

"These steps all came together over about 10 days, including two weekends — a remarkable feat," said Xinkun Wang, PhD, director of NUSeq and research associate professor of Biochemistry and Molecular Genetics. Wang is leading this effort, along with Elizabeth McNally, MD, PhD, the Elizabeth J. Ward Professor of Genetic Medicine, professor of Medicine in the Division of Cardiology and director of CGM. Read more.

Clinical Trial Underway

Northwestern Medicine has enrolled its first participants in a new international clinical drug trial for COVID-19. The drug being tested is remdesivir, a novel anti-viral drug developed to treat Ebola and which has subsequently been found, in animal models, to have antiviral activity against coronaviruses, including MERS and now SARS-Cov-2, the virus that causes COVID-19.

The randomized, placebo-controlled, double-blind trial will evaluate the safety and efficacy of the drug in hospitalized adult patients diagnosed with COVID-19. The first Chicago-area patient to enroll in the trial at Northwestern Medicine is an 89-year-old man in intensive care. "His family was very excited about it," said principal investigator Babafemi Taiwo, MBBS, chief of Infectious Diseases in the Department of Medicine.

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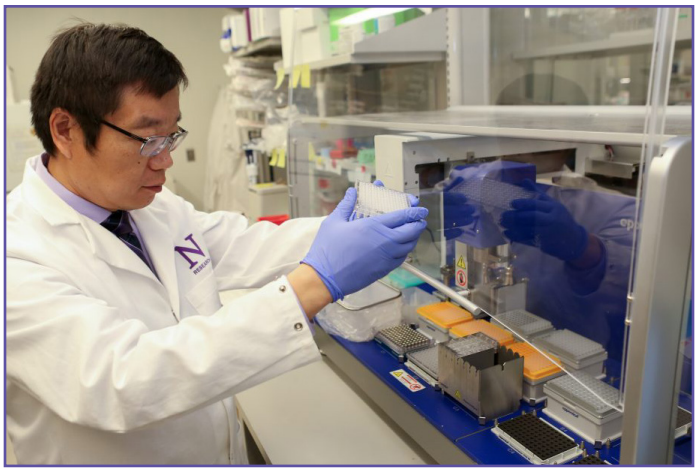

Xinkun Wang, PhD, research associate professor of Biochemistry and Molecular Genetics, and director of the NUSeq Core Facility in the Center for Genetic Medicine, which has established testing facilities for COVID-19 in cooperation with Northwestern Medicine hospitals.

"I think it's fantastic this trial is off the ground," Taiwo said. "It puts something in our hands that we can investigate in a rigorous fashion in the quest for therapies that may be effective and widely adopted to treat the pandemic."

Before the clinical trial, remdesivir was used to treat a handful of patients on a compassionate access program basis. "It's too early to say if there is an effect because some of them are still receiving the treatment," Taiwo said. Read more.

Potential Drug Targets identified

Since mid-January, Karla Satchell, PhD has been leading a multi-institution, international effort to investigate the structure of the novel coronavirus as the director of the Center for Structural Genomics of Infectious Diseases (CSGID) at Northwestern. By rebooting previous research related to SARS, the center was able to quickly begin investigating the protein structures of the virus with the goal of finding new drug targets for COVID-19. Four different protein structures of potential drug targets have been determined by the CSGID team of scientists so far.

"I think that the pace of research has been unprecedented," Satchell said. "Also, it's been amazing to see the sharing of resources. It used to be that if you had a new drug target, the first thing you did is kept it quiet. Now people are making a lot of information public and that is I think just a great a blueprint for the community to follow, not only for this but for the future." Listen to a podcast with Satchell about the project.

Public Health interventions

In response to the pandemic, the open, crowdsourced Chicago COVID-19 Resource Repository was created by Feinberg faculty and staff in the Center for Community Health's Alliance for Research in Chicagoland Communities (ARCC) program, which has presence in the Institute for Public Health and Medicine (IPHAM) and the Northwestern University Clinical and Translational Sciences Institute (NUCATS).

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COVID-19 (continued from previous page)

The public document was first shared on Monday, March 16, with ARCC and Center for Community Health community partners. The repository offers lists of resources for physical/mental health, housing, food, financial and legal services, substance use disorder services, internet access, childcare, education, volunteer opportunities, donations, entertainment and more.

"Surprisingly, something as awful as the COVID-19 epidemic has ignited a vigorous groundswell of selfless collaboration and commitment toward a common goal of preserving every life we can. In the midst of calls for each of us to remain personally isolated, the social fabric of our university and our city has rebounded with resilience in an overwhelming response against this shared enemy," said Ron Ackermann, MD, MPH, director of IPHAM and senior associate dean for public health.

IPHAM is also currently involved in the coordination of the Chicago COVID-19 Coalition, which involves faculty, staff and trainees across multiple Chicago-area academic centers, state and city health departments, numerous regional health systems and other stakeholders. Read more.

Other Feinberg Contributions

Nicholas Soulakis, PhD, assistant professor of Preventive Medicine in the Divisions of Health and Biomedical Informatics and Epidemiology, is taking a leave of absence from the medical school to work as an epidemiologist in the Illinois Department of Public Health's (IDPH) Office of Policy, Planning and Statistics.

Soulakis, who specializes in epidemiological surveillance, will help the IDPH understand the number of Illinoisans infected with COVID-19 and predict how long the outbreak will last.

"To be called on to serve in a time of crisis, you train your whole career for that moment," said Soulakis, who is also a professor of Medical Social Sciences. "At 20, by chance, an epidemiologist introduced me to 'The Disease Detectives,' 'The Hot Zone,' Ebola, AIDS, polio eradication — it's all I ever wanted to do." Read more.

Across the medical school, webinars and podcasts have shared updates and the latest information. View or listen here:

- Northwestern Medical Grand Rounds: COVID-19: An Update on the Current Situation
- Institute for Global Health Seminar Series: COVID-19: Global Emergence, Epidemiology and Response
- Breakthroughs podcast: COVID-19 and the Epidemiological Response with Chad Achenbach, MD, MPH
- Breakthroughs podcast: Staying Positive During Social Isolation with Judith Moskowitz, PhD, MPH

In the News

NBC News, **March 16**
Social Distancing Could Have Devastating Effect on People with Depression
Judith Moskowitz, MD, was mentioned.

Associated Press, **March 17**
Hospitals fear shortage of ventilators for virus patients
Jacqueline Kruser, MD, MS, was mentioned.

Los Angeles Times, **March 21**
Coronavirus Treatments: Where We Are and What We Know
Karla Satchell, PhD, was mentioned.

CNBC, **March 24**
Trump wants 'packed churches' and economy open again on Easter despite the deadly threat of coronavirus
Tina Tan, MD, was mentioned.

The New York Times, **March 25**
Supplements for Coronavirus Probably Won't Help, and May Harm
Linda Van Horn, PhD, RD, was mentioned.

U.S. News & World Report, **March 31**
Does Smoking and Vaping Make Coronavirus Worse?
Jeffrey Linder, MD, was mentioned.

Chicago Tribune
The next coronavirus test will tell you if you're immune. And it's fast.
Elizabeth McNally, MD, PhD, was mentioned.

Fox News, **April 6**
How is the coronavirus mutating into different strains?
Karla Satchell, PhD, was mentioned.

WebMD, **April 6**
Mysterious Heart Damage Hitting COVID-19 Patients
Robert Bonow, MD, was mentioned.

HealthDay, **April 6**
Trials Begin for Potential COVID-19 Drug Remdesivir
Babafemi Taiwo, MBBS, was mentioned.

The New York Times, **April 9**
Feeling Scatterbrained? Here's Why
Inger Burnett-Zeigler, PhD, was mentioned.

HealthDay, **April 15**
Early On, Many Seniors Were Unfazed by Coronavirus Warnings, Study Finds
Michael Wolf, PhD, MPH, was mentioned.
- This research was also featured in the Chicago Tribune

Unraveling the Genome

Elizabeth Bartom, PhD, assistant professor of Biochemistry Molecular Genetics

Elizabeth Bartom, PhD, is an assistant professor of Biochemistry and Molecular Genetics. The focus of her research is to better understand how cells properly and improperly function, as well as unraveling the mechanisms of how cells use the genome to encode information both genetically and epigenetically. She is a member of the Center for Genetic Medicine, the Northwestern University Clinical and Translational Science Institute (NUCATS) and the Simpson Querrey Center for Epigenetics.

Q&A

What are your research interests?

I am interested in understanding how the genome is organized and used, and how this changes in response to evolutionary pressures, such as the development of cancer. Within this broad topic, I often focus my interest depending on the research goals of my many collaborators. I am a "dry lab" biologist – my research takes place purely on a computer. I leverage the many sources of public data that have been generated in various consortium projects, as well as the private data generated by collaborators to answer interesting biological questions. I am also interested in issues of data quality and reproducibility, and how we can double-check sample labels through data analysis. For example, to what extent can we learn what a sample is by studying the sample itself and its relation to known controls.

How did you become interested in this area of research?

When I was a child, my family moved to Europe. I went to school on an American army base and lived in a German village. I became very interested in language and culture, and the relationship between how things work and how they are encoded. In the early 90's, I saw a PBS special called "The Secret of Life," all about DNA and how it encoded all of life and decided that was the language I wanted to understand. Genomics felt to me like an opportunity to study the encoding of biological information in context – not just one gene at a time, but the whole genome, together. The human genome project was finished while I was in graduate school, but there was obviously a lot of work to be done in understanding the sequence and how it can give rise to a cell and an organism.

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

I am a team scientist faculty member, and I collaborate a lot. I have been working with the Peter Lab to better understand the phenomenon of DISE – Death Induced by Survival gene Elimination. Through this mechanism, short RNAs are loaded into the RISC, targeting a wide variety of essential mRNAs for degradation. Although we first discovered short RNAs derived from the CD95L/Fas ligand gene, triggering this process, it can be triggered by other sequences as well. We are working to understand the role of DISE in other cytotoxic contexts, such as in chemotherapy and neurodegeneration.

I also collaborate with the Shilatifard Lab, working to understand the role that mutations in core epigenetic and transcriptional machinery can play in driving cancer. We use sequencing technologies such as ChIP-seq and RNA-seq to understand both the localization of wildtype and mutant proteins in the cell and the cell's transcriptional profile, and the relationship between these two types of profiles. Comparing healthy and diseased cells and perturbing them both genetically and pharmaceutically provides insight into the molecular basis of cancer, which can lead to new cancer therapies.

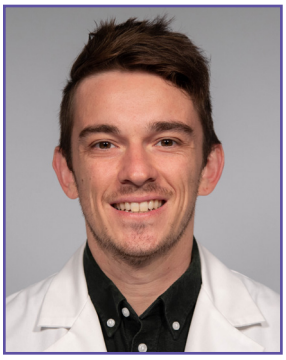
My collaborations generally fit into one of two patterns: Either I directly analyze data generated by a wet lab collaborator, or I mentor a trainee with wet lab expertise in how to pick up the computational skills required to start doing some of their own computational analysis.

How is your research funded?

The majority of my research is funded by an NCI R50 grant. This is an innovative funding mechanism intended specifically for collaborative researchers who provide a special expertise to existing NCI-funded research programs. It's a five-year, renewable grant, and it has been a great funding mechanism for me to provide computational and genomic expertise to interdisciplinary teams of cancer researchers. In addition, I am a co-investigator on several non-cancer grants, and co-director of the Biostatistics and Bioinformatics Core for the Brain Tumor SPORE grant.

Merging Research with Compassionate Care

Trevor Hedberg, MPH, first-year student in the Physician Assistant Program



Trevor Hedberg, MPH, credits Feinberg's Physician Assistant Program's problem-based learning approach with effectively preparing him for his next chapter, while giving him a new group of friends: his fellow students.

Q&A

Where is your hometown?
I grew up in Melbourne, Florida, and lived in New York City for the past five years before moving to Chicago for school.

What are your research interests?
Much of my educational and professional background is focused on infectious diseases. Prior to starting Northwestern's Physician Assistant Program, I completed a two-year Centers for Disease Control and Prevention (CDC) fellowship during which I worked as an epidemiologist at a local health department in Florida. From this experience, I was able to acquire a better understanding of how infectious organisms, such as tuberculosis and hepatitis C, affect various populations differently. I was able to witness first-hand how social determinants — such as access to medical care — play a direct role in individuals' health and wellbeing.

After completion of my fellowship, I received my Master of Public Health in Infection Control at the University of South Florida. I completed my thesis on the evaluation of HIV Pre-exposure prophylaxis (PrEP) programs in community health settings. I then worked as a city research scientist with the New York City Department of Health and Mental Hygiene, where I was responsible for the implementation and coordination of an HIV PrEP patient navigation program across the city's sexual health clinics.

All of these experiences fueled my passion for public health and led me to apply to PA school. As a future clinician, I hope to incorporate research into my career, while providing compassionate care to the patients I serve.

What exciting projects are you working on?
In my former role as a city research scientist, I had a remarkable opportunity to be on a team to design and implement two training curricula for health department staff to promote Lesbian, Gay, Bisexual and Queer (LGBQ), and Transgender and Gender Non-conforming (TGNC) cultural competency. Both trainings aimed to enhance the skill set of medical providers and allied health staff who provide services to LGBQ and TGNC patients in the city's Sexual Health Clinics. In the future, I would like to implement LGBQ and TGNC trainings in other healthcare settings during my PA career and help educate other medical providers to better serve these populations.

During my time at Feinberg, I have been participating in a Sustained Dialogue interprofessional work group that brings students from multiple Feinberg programs together. The purpose of the group is to have students from diverse backgrounds engage in active listening and discussion to address challenging topics that affect our roles as students and future healthcare professionals. One of the topics the group focused on for much of the past several months was determining best strategies on how to bolster collaboration among students from all Feinberg programs.

Over the next few months we hope to use data from surveys that we created and sent to students to inform our decisions and promote inter-professionalism efforts.

What attracted you to your program?
Based on my previous academic and professional experiences, I knew that I enjoyed collaborating with others and working as part of a team to develop and work toward achieving goals. Therefore, the problem-based learning (PBL) format of the curriculum attracted me the Northwestern PA Program. During the interview day, I had the opportunity to participate in a mock PBL classroom session with a faculty member and acquired a glimpse of how PBL brings students together to work as team to effectively approach and manage the care of patients using real-life scenarios. Also, it was apparent that the program's professors were dedicated to student education and provided ample guidance. As a result, I knew right then and there that the PBL learning style was the right fit for me.

What has been your best experience at Feinberg?
By far my best experience at Feinberg has been meeting my current peers. Since the first day of class, my thirty-five colleagues and I began developing strong relationships that have enhanced my learning. I particularly enjoy working with them in PBL groups and using our various healthcare backgrounds and experiences to work through patient case scenarios.

Outside of the classroom, we often spend time hanging out and exploring the awesome neighborhoods that Chicago has to offer. Before school, I never expected to have such an incredible opportunity to make a new group of friends.

How would you describe the faculty at Feinberg?
The faculty in the PA Program go above and beyond to ensure that my peers and I receive the best education possible. Each member is unbelievably intelligent and passionate about medicine and the PA profession and inspire me to work harder. They provide us with unlimited resources and any tool necessary to prepare us to become future PAs who provide the highest quality of care.

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Smoothing the Research Funding Process

Seletta Nichols, associate director of Research Administration in the Department of Preventive Medicine

Q&A

Where are you originally from?
I am a native Chicagoan, but I lived in Jackson Mississippi for almost 11 years.

What is your educational background?
I have a bachelor's in economics and accounting from a small historically black college, Tougaloo College in Jackson, Mississippi. I also have a master's in public policy administration with a specialty in health services policy from Northwestern University.

Please tell us about your professional background.
Prior to coming to Northwestern I worked for Blue Cross Blue Shield of Mississippi for almost five years, and more than two years in corporate reinsurance at Kemper Insurance in Illinois.

But I've had a storied journey working at Feinberg, having held seven positions across five departments — I've worked in the Department of Medicine two separate times — over the past 16 years. I started out at Feinberg as a coordinator of finance in the Division of General Internal Medicine and at the Institute for Health Care Studies, and I am currently the associate director of Research Administration for the Department of Preventive Medicine, the Institute for Public Health and Medicine (IPHAM) and Northwestern University Clinical and Translational Sciences Institute (NUCATS).

Why do you enjoy working at Northwestern?
I enjoy working at Northwestern because of the amazing people I've met and get to work with every day. There is definitely a spirit of collegiality and camaraderie amongst my coworkers, and for the most part we all just want to do a good job and help others to do a good job.

How do you help scientists and research students at the medical school?
While I don't support faculty scientists directly in my current role, over the years, I've worked with faculty in various capacities. From transferring their grants from other institutions and then helping them to acclimate to the Feinberg way of doing things, to helping them juggle their efforts across 10–15 grants or helping them balance academic or research activities with their clinical responsibilities.

What is your favorite part of the job?
The most rewarding part of my job is helping faculty and staff to be successful at what they do. Currently, my primary responsibility is to provide tools, resources and training that empowers the research administrators who support faculty to proactively manage the research administration process. I enjoy working with our team to problem solve the daily challenges and to come up with creative solutions to some pretty complex issues.

What do you like to do in your spare time?
In my spare time, I enjoy spending time with my family, volunteering in our community, and attending athletic, musical and cultural activities in Chicago. My family is big on Sunday brunches so I love trying out new brunch spots on the weekend. I also look forward to the Chicago running season, and I usually sign up for three or four races between spring and late fall.

Welcome New Faculty

Jennifer Banayan, MD, joins as associate professor of Anesthesiology. Banayan received her MD from Rush University in 2006. She then completed a residency in anesthesiology at the University of Chicago followed by a fellowship in cardiothoracic anesthesia. In 2011, she joined the faculty in the Department of Anesthesiology at the University of Chicago where she had a large presence in both obstetric anesthesia and cardiac anesthesia. Her clinical and academic focuses on maternal safety with a specific interest on maternal mortality, cardiac disease in the parturient, maternal resuscitation and increasing provider utilization of focused cardiac ultrasound (FCU) in the obstetric patient.

Blazing a New Trail

NUCATS Corner
Clinical and Translational Sciences Institute

Endeleo Institute Executive Director Melvin Thompson becomes inaugural Community Partner on NUCATS Executive Council

Not many executive bios begin with a crowning achievement in the eighth grade.

"Graduating as class president from Horace Mann Elementary School was a big deal. My mom was a teacher there and it helped fulfil early dreams she had for me as I matriculated to St. Ignatius College Prep," says Melvin Thompson, executive director of the Endeleo Institute, a nonprofit focused on creating a culture of health in Chicago's Washington Heights neighborhood.

For Thompson, health, family and community are intrinsically linked. In service to those priorities, he recently accepted an appointment as the inaugural Community Partner on the Northwestern University Clinical and Translation Sciences (NUCATS) Institute Executive Council.

"Joining the Executive Council seems a natural progression from the community-engaged research that today forms a foundational pillar of our programming work in health, education and community development at the Endeleo Institute," says Thompson, who is also a member of the Alliance for Research in Chicagoland Communities (ARCC) Steering Committee in NUCAT's Center for Community Health. "For me, it means blazing a trail where no path existed."

As a member of the Executive Council, Thompson will participate fully in council discussions and help develop an implementation strategy for the Research Enabled and Accelerated in Community Healthcare (REACH) initiative. REACH will further integrate research into the clinical care system to ultimately ensure that every clinical encounter can be an opportunity for research participation, precision medicine and learning to improve human health.

Melvin Thompson, executive director of the Endeleo Institute and inaugural Community Partner on the NUCATS Executive Council

"Mr. Thompson's appointment to NUCATS' Executive Council represents the culmination of his deep engagement and leadership with our Alliance for Research in Chicagoland Communities Steering Committee," said Donald Lloyd-Jones, MD, senior associate dean for clinical and translational research, the chair and Eileen M. Foell Professor of Preventive Medicine, and director of NUCATS. "He has been a force for making our community engagement activities deeper, broader and much more meaningful. His insightful leadership will now assist us with even broader initiatives, while substantially enhancing the diversity of perspectives on our senior leadership team. He is a remarkable and inspiring individual, and I am so pleased he has agreed to assume this role."

Hedberg (continued from page 5)

I would like to give a special shout out to my advisor, Kristine Healy, MPH, who often goes out of her way to check in and provide me with networking opportunities with other healthcare professionals. The dedication of the faculty here continuously reminds me of why the Northwestern PA Program was and is my top choice for education.

What do you do in your free time?

I am an avid reader so in my free time you can usually find me with my head buried in a science fiction novel. I also love to run in Lincoln Park and along Lake Michigan. Prior to starting PA school, I was learning how to knit which I really enjoy. In addition, I try to use every opportunity that I have to travel to New York and Florida to visit friends and family.

What are your plans for after graduation?

My experiences in the didactic year of the program have sparked interests in other areas of medicine, such as nephrology, that I look forward to learning more about in my clinical year. As of right now, I plan to pursue a career in LGBTQ primary care after graduation. Eventually, I would like to work in infectious disease once more, but I am open to exploring other areas of medicine.

Listen to the Latest Breakthroughs Podcasts

If you would like to claim CME credit for listening to Breakthroughs, visit the Continuing Medical Education website.

Staying Positive During Social Isolation with Judith Moskowitz, PhD, MPH

COVID-19 and the Epidemiological Response with Chad Achenbach, MD, MPH

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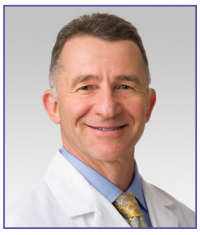
Sponsored Research



PI: Igor J Koralnik, MD, chief of Neuro-infectious Disease and Global Neurology in the Department of Neurology, Archibald Church Professor of Neurology, professor of Neurology in the Division of Neuro-Infectious Disease & Global Neurology

Sponsor: National Institute on Drug Abuse

Title: Contribution of the Virome to HIV/AIDS Pathogenesis

This project stems from two decades of my research experience in neuro-virology and neuro-immunology, but involves a new and bold line of investigation. This new direction will allow me not only to contribute to HIV/AIDS research, but it will also help develop the nascent field of viromics and define its impact to elucidate the pathogenesis associated with drug use.

The key gap in our knowledge is the contribution of ALL viruses, defined as the "virome," to HIV/AIDS pathogenesis, and whether it is associated with drug use. However, deep sequencing alone (also called next-gen sequencing) is sub-optimal for viral studies due to the enormous imbalance between size and abundance of human genomic DNA/RNA and viral nucleic acids. Furthermore, accessing brain areas of interest or cerebrospinal fluid samples for targeted virological studies in the CNS represents another major obstacle.

We have developed a novel target-enrichment deep sequencing-based platform for detection of the entire Virome in clinical samples, named ViroFind. This assay can detect all 561 DNA or RNA viruses known to infect humans, and potentially, yet undiscovered viruses. Compared to deep sequencing alone, ViroFind could enrich viral sequences present in brain samples up to 127-fold. We will define the entire virome in the brain, CSF and blood of HIV/AIDS patients with and without drug use, using ViroFind. These include known viruses, viral variants and potentially yet unknown viruses. We will use banked samples of several cohorts of HIV/AIDS patients, as well as CSF samples from HIV+ patients seen at Northwestern Memorial Hospital and at our Global Neurology Program in Zambia. We will also determine the expression pattern of viral species formalin-fixed, paraffin-embedded samples, and characterize their cellular localization in the brain.

The major challenge that needs to be addressed is to go beyond the mere characterization of viral sequences, and to develop the nascent field of viromics. This will allow us to integrate virological data together with genomics, transcriptomics, metabolomics, immunomics and pathobiology in the human host using a systems biology approach, aiming to define possible interventions and therapeutic targets.

Read more

PI: Edward Thorp, PhD, associate professor of Pathology and of Pediatrics

Sponsor: National Heart, Lung, and Blood Institute

Title: Efferocytosis-Directed Inflammation Resolution and Repair in the Hypoxic Heart

Heart failure after acute myocardial infarction (AMI) is a significant cause of morbidity and mortality. Though pharmacological advances have significantly reduced mortality, the residual risk of post AMI-induced heart failure is increasing. This compels the development of new approaches to preserve the integrity of cardiac tissue after injury. The extent of tissue damage in the acute phase of AMI is a critical determinant of the degree of subsequent adverse remodeling that leads to impaired cardiac performance. As such, an important goal is to minimize infarct size and its expansion, which are a function of cardiomyocyte death and inefficient tissue repair. Efficient phagocytic removal of dying cardiomyocytes by efferocytosis is critical to initiating resolving inflammation and to heart healing. For example, reduced efferocytosis of dying cardiomyocytes is directly correlated with increased morbidity and mortality post AMI.

Recent studies have also shown macrophage subsets to be differentially responsible for phagocytic and repair functions in the heart. Beyond the cellular level, the molecular pathways within myocardial phagocytes that regulate efferocytosis-directed inflammation resolution in the heart remain unknown. The Thorp laboratory has made the recent discovery that maladaptive inactivation of efferocytosis signaling pathways worsen heart repair after AMI, paving the way for a new class of molecular targets to enhance heart healing. Our studies newly reveal that the apoptotic cell receptors of the TAM family, MerTK and AXL, surprisingly act though distinct mechanisms to regulate cardiomyocyte efferocytosis and myocardial inflammation resolution. Our data in non-gene targeted mice and humans also suggest that AXL is naturally inhibited during AMI by proteolysis.

These initial findings led to important new lines of investigation. This includes: (I) The degree to which AXL uniquely functions in macrophages to regulate AMI repair in the hypoxic heart, including how this may be exploited for therapeutic intervention. (II) Novel TAM receptor-dependent and -independent immunometabolic mechanisms of efferocytosis and inflammation resolution and (III) the unknown causal role of AXL proteolysis post AMI in mice and patients.

Thus, these new aims are poised to make significant advances in the still relatively understudied process of efferocytosis in heart, efferocytic immunometabolic signaling, and the basic biology of TAM receptors. Newly created tools, including novel gene-engineered experimental animals, will assist in rigorous testing of the aforementioned principles and are of significance to both cardiac inflammation and broader principles of tissue injury.

Read more

Funding

Research to Reduce Morbidity and Improve Care for Pediatric, and Adolescent and Young Adult (AYA) Cancer Survivors (R01 Clinical Trial Optional)

More information

Sponsors: National Institutes of Health (NIH), National Cancer Institute (NCI)

Submission deadline: July 31, 2020

Amount: NCI intends to commit $50 million total across the fiscal years (FYs) 2021 and 2022 to fund up to 14 awards

Synopsis: The NCI intends to support research projects that improve the care and/or quality of life for childhood, and adolescent young adult (AYA) cancer survivors. Specifically, the NIH and NCI are looking for applications that use mechanistic, observational and interventional study designs to understand and to address one or more of the domains related to survivor outcomes.

Patient-oriented Research to Mitigate Health Disparities and Lessen the Burden of Chronic Diseases Within the Mission of NIDDK (R01 Clinical Trial Optional)

More information

Sponsor: National Institutes of Health (NIH), National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)

Submission deadline: May 22

Amount: NIDDK intends to commit $12,000,000 in FY 2020 to fund 2-3 awards

Synopsis: This grant invites applications to conduct patient-oriented clinical research studies designed to develop strategies to mitigate health disparities in people with one or more chronic diseases or conditions within the mission of the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK). Populations of interest include those disproportionately burdened with multiple chronic conditions and/or disparities in social, behavioral and/or biological risk factors. Only studies that involve interaction with human participants will be considered appropriate.

Rising Star Awards (Neuropsychiatric Disorders)

More information

Sponsor: One Mind

Submission deadline: May 13

Amount: $300,000

Synopsis: The One Mind Rising Star Awards identify and fund pivotal, innovative research on the causes of and cures for brain disorders by supporting the most promising emerging leaders in the field of neuropsychiatry. Proposals for studies on any of a wide range of neuropsychiatric conditions are in scope, with studies focusing on bipolar disorder of special interest, including applications that would advance therapeutics for bipolar disorder, ranging from biomarkers to promising therapeutic modalities including neurostimulation.

Pew Scholars Program in the Biomedical Sciences Award Nomination

UPDATE: CLOSED FOR SUBMISSIONS

Sponsor: The Pew Charitable Trusts
Amount: $300,000 in flexible support, $75,000 per year for a four-year period
Synopsis: The Pew scholars program supports assistant professors of outstanding promise in science relevant to the advancement of human health. To nominate a candidate, a member of the internal selection committee must complete the online survey found here, or copy and paste https://www.surveymonkey.com/r/L3SHKPC into the browser.

View more funding opportunities

COVID-19 Awards More information

Sponsor: Northwestern University Institute for Global Health
Submission deadline: Immediately and up to June 1, 2020. Funding decisions will be swift.

Synopsis: The Institute for Global Health is currently accepting applications for COVID-19 research support as well as non-research COVID-19 projects for affiliated Northwestern faculty.

View more COVID funding opportunities

Share and Preserve Your Work from Conferences and Meetings on DigitalHub

by Susan Wishnetsky, Assistant Collections Librarian

Conference season is upon us, and it's already a season like no other. As meetings are canceled or move to virtual spaces, researchers have been forced to adjust to the new landscape and perhaps find different ways to disseminate research findings. DigitalHub, Northwestern Medicine's institutional repository can help.

DigitalHub can host a wide variety of faculty scholarly outputs, not just articles and datasets. Whether the material is old or new, posting your conference output to DigitalHub helps to preserve the history of scholarship at Feinberg, while making your work more discoverable and enhancing your scholarly profile. Materials in DigitalHub receive persistent, unique identifiers (DOIs) for reliable use in citations, and descriptive metadata to ensure discoverability by search engines such as Google. Access metrics — data on the numbers of views and downloads of your deposited works — are also provided.

If your conference publishes its proceedings, you may be concerned about copyright issues. Most conferences do not require a copyright transfer for session materials, such as posters and slides, but it is advisable to contact the conference organizers to make sure.

Perhaps you plan to publish an article utilizing or based upon your conference materials. During the article submission process, you will need to disclose any related material — posters, preprints, abstracts, slides, etc. — that has been made publicly available, including in an institutional repository. Publishers generally do allow prior posting of posters or other images in an article, but it is always advisable to consult the publisher's website to find out their policies, and contact them directly to deal with any questions or concerns.

Even if your conference or publisher doesn't permit your materials to be openly available, or requires an embargo period before they may be publicly accessed, you can still store and preserve your material in DigitalHub by using the "private" or "NU only" setting, which prevents the material from being viewed by the public at large. The setting can easily be changed to make the material public at a later date.

Don't let a canceled conference prevent you from sharing your work with your colleagues. Make your presentation available by uploading to DigitalHub.

If you have questions or need help in finding out whether your conference output can be posted, please submit your questions or concerns to the DigitalHub team using DigitalHub's contact form, send an e-mail to DigitalHub@northwestern.edu, or contact your liaison librarian.

High-Impact Factor Research

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Featured Core

The Comprehensive Transplant Center Microsurgery Core

The Comprehensive Transplant Center Microsurgery Core provides microsurgical services to support all principal investigators in need of small animal surgical models and also offers consultations on issues pertaining to microsurgical techniques in small animal models. The overarching goal of the core is to help investigators develop novel animal models that complement ongoing studies and to help investigators explore novel ways to test their hypotheses in vivo.

The microsurgical core facility has four surgical stations, each equipped with state-of-the-art dual-headed operating microscopes to perform microscopic animal surgery and training. The core is staffed by experienced surgeons who have successfully performed rodent procedures, including heart, kidney, liver, intestine, ovary and pancreas transplantation, as well as skin grafting and ileocecal resection. In addition, the core also has two bioanalyzers that allow for blood chemistry tests (liver function, renal function, gas analysis, etc.) for rodents and other animal models. The core also provides training for students and fellows at Feinberg, as well as trainees from other institutions. Services offered and more information here.

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NIH Director Emphasizes the Importance of Social Distancing in *The Atlantic*

"There are estimates that if nothing goes right and if we fail to flatten the curve and if health systems are overwhelmed, we might see the deaths of as many as a million and a half people in the United States."

—Francis Collins, Director of the NIH

Read the full article here.

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NIH News

Late Application Policy Pertaining to COVID-19

When delays occur because the applicant or recipient organization is officially closed or unable to submit grant applications due to the effects of COVID-19, the NIH will consider accepting applications late, on a case-by-case basis, in accordance with the NIH Grants Policy Statement, Section 2.3.9, under the following circumstances:

- Institutions must submit applications or reports as soon as possible after reopening or resuming operations so that grant applications can be submitted, not to exceed the number of days the institution was officially closed or unable to submit grant applications.
- Institutions must submit a cover letter with the applications with enough detail about the delay so that NIH staff can make a determination whether circumstances justify accepting the application late.
- Institutions need not request advance permission to submit late due to this declared emergency.
- NIH will be issuing additional guidance related to this public health emergency in the near future.

More information is available here.

Guidance for NIH-funded Clinical Trials and Human Subjects Studies Affected by COVID-19

NIH recognizes the significant effects that this emergency is having on NIH-funded clinical trials and other human subjects studies. First and foremost, NIH is concerned about the safety and welfare of human subject participants and research staff. Institutions should take all steps necessary to ensure the safety of all human participants and research staff involved in NIH-funded clinical trials and human subjects studies.

At this time, NIH encourages recipients to consult with their IRB and institutions about potential measures to protect participants and research staff. Examples of such measures are:

- Limiting study visits to those needed for participant safety or coincident with clinical care
- Conducting virtual study visits
- Arranging flexibilities for required laboratory tests or imaging needed for safety monitoring to occur at local laboratories or clinics
- Canceling large gatherings of 50 or more people
- Limiting or suspending unnecessary travel

More information available here.