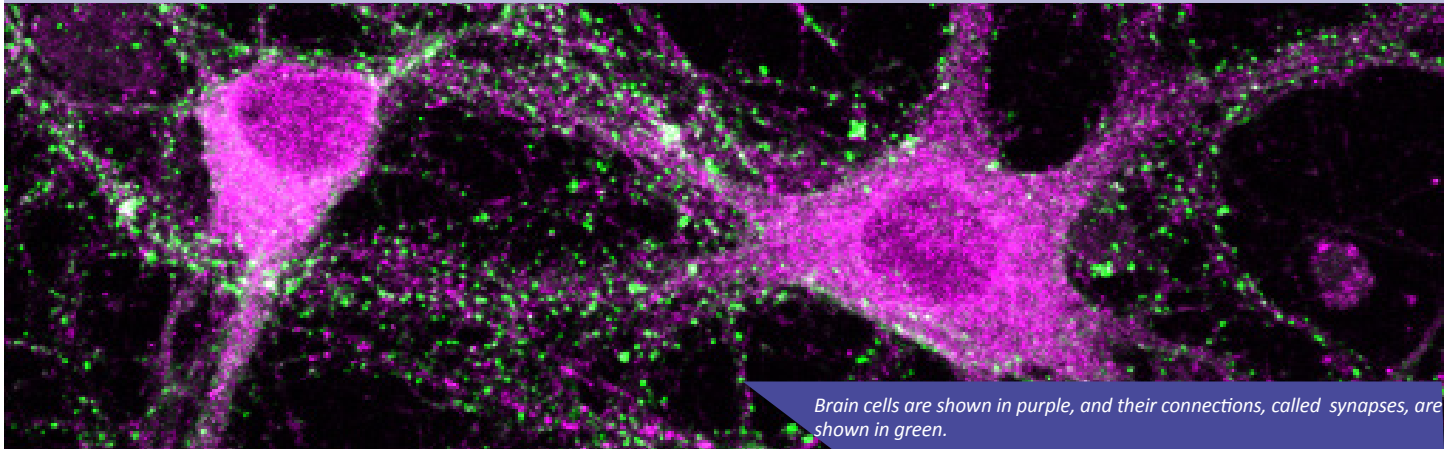


Breakthroughs

Feinberg School of Medicine Research Office

March 2018



Brain cells are shown in purple, and their connections, called synapses, are shown in green.

Defining the Biology of Autism

When approaching faculty to gauge interest in a new Feinberg center focusing on autism, [Peter Penzes, PhD](#), Ruth and Evelyn Dunbar Professor of [Psychiatry and Behavioral Sciences](#), received puzzled responses from some professors and scientists.

“It turns out there are a range of scientists and labs at Northwestern studying various aspects of autism and its development at a basic science level or a clinical level — but many of them didn’t know about each other.”

Penzes hopes those days are in the past with the launch of the new Center for Autism and Neurodevelopment ([CAN](#)), a translational science hub that aims to investigate the neurobiology of autism and facilitate the development of new treatments.

Penzes, as director of the center, recruited 28 scientists from basic science, translational and clinical specialties; a bottom-up approach that will both foster collaboration and train the next generation of scientists in the fields of autism and neurodevelopment.

In addition, CAN will host nationally renowned speakers in a monthly seminar series, to inform Northwestern and the larger community about the latest in autism research across the globe.

“This center is the glue that will bring all these people together,” Penzes said.

A Blank Slate

In comparison to other neurological diseases such as Parkinson’s disease or Alzheimer’s disease, the neurobiology of autism is relatively unstudied, according to Penzes.

“Up until ten years ago, all we knew about autism was based on symptoms displayed by patients,” Penzes said.

Today, advances in genomic sequencing technology and the realization that autism is much more common than previously thought — now estimated at one in 68 children — have placed the genetic component of autism at the forefront.

However, even with strong efforts over the past five years, the specific genetic mechanisms remain opaque, according to Penzes. Some children’s autism may be traced back to a single gene, but those cases are rare — more common are hundreds of small gene variations that cumulatively result in an autism spectrum disorder, making it difficult to zero in on the genes that lead to specific neurophysiological changes.

In addition, there’s no established biomarker for autism, further complicating investigations. While diseases such as Parkinson’s or Alzheimer’s have protein deposits that can indicate disease, there’s no objective measure of autism, according to Penzes, making it difficult to determine if a treatment is working, for example.

(continued on page 2)

Autism

(continued from cover page)

CAN hopes to build personalized treatments from the ground up, grouping together patients with similar genetic mutations, identifying the exact time and place where normal brain development is diverted off course and developing drugs to treat those biological changes.

Western Blots to Pills and Shots

While identifying groups of patients with similar mutations may sound simple, about 1,000 genes have been linked with autism so far, and that number is only growing. Narrowing the pool by studying conditions linked to autism but with a more homogenous genetic cause is a strategy used by some scientists, including [Anis Contractor, PhD](#), professor of [Physiology](#).

Contractor studies fragile X syndrome (FXS), a genetic disorder in which about half of all patients are also diagnosed with autism — making it the single largest monogenic (linked to a mutation in a single gene) cause of autism in the United States. While most genetic mutations that cause autism are rare, patients with FXS have the mutations in a single gene on the X chromosome, so FXS can be used as a laboratory model for certain aspects of autism, including sensory hypersensitivity.

“A lot of patients don’t like loud sounds or don’t like to be touched,” Contractor said. “When I talk to parents of children with autism, some tell me these sensory issues lead to many other problems, because the kids are withdrawn or socially isolated.”

The exact neurobiology behind this symptom is unknown, so Contractor tracked the development of the sensory cortex in mouse models of FXS, finding there were several “critical periods” of synapse formation that were delayed in the mouse model of the disorder.

“The timing of these critical periods has to be perfect — if you mistime them, the whole system doesn’t wire properly,” Contractor said. “In the FXS mouse, the sensory response from the whiskers excites more neurons in the cortex than it should; we think that is partially responsible for the hypersensitivity

symptoms.”

Digging deeper, Contractor traced the critical period shift to an imbalance of intracellular chloride. He said a drug originally approved for hypertension could possibly be used to correct the critical period shift, due to its action on chloride transporters in developing neurons.



Peter Penzes, PhD, director of the Center for Autism and Neurodevelopment

“They’ve actually conducted clinical trials of this drug in France and given it to children with autism,” Contractor said. “While it was a small population and the drug’s not perfect, it improved behavioral scores significantly.”

Through the Looking Glass

Genetics aren’t the only starting point for the translational pipeline — imaging will also have a role to play at CAN, according to [John Csernansky, PhD](#), chair of [Psychiatry and Behavioral Sciences](#).

“Using imaging to better understand brain function in subjects with autism may help us to identify the precise brain circuits that are affected by the disorder, which could lead to new interventions such as drugs or behavioral therapies,” said Csernansky, also the Lizzie Gilman Professor of Psychiatry and Behavioral Sciences. “The new center will help us identify new collaborators and start new projects.”

Techniques are available that can help autistic patients ease into studies that include imaging, according to Csernansky.

“Patients with autism can be uncomfortable being confined in closed spaces, such as the MR scanner,” said Csernansky. “However, individuals with autism can become more comfortable with MR scanner by having them spend time in a ‘mock’ scanner, which simulates the space and noise of the MR scanner.”

Ahead of the Pack

The field of autism neurobiology is ripe for discovery: It’s historically understudied and new technology now allows scientists to quickly and cheaply sequence a patient’s genome or grow models of a patient’s brain and test therapies.

While other institutions may have some form of autism research initiative, CAN is unique for its singular focus on translational science, according to Penzes.

“Most autism centers are doing only patient care,” Penzes said. “There are very few places where you have 28 scientists from across disciplines that are brought together with the unifying goal of understanding the neurobiology of autism.”

“If there are new drugs for autism, this is where they are going to come from,” Penzes added.

CONTENTS

Faculty profile: Shi-Yuan Cheng, PhD	3
Research Day keynote speaker/Mentor Workshop	4
Student profile: Brittany Hopkins	5
Staff profile: Elizaeth Panke	6
In the news and NUCATS corner	7
Sponsored research/New faculty	8
Funding	9
Galter Library connection	10
High-impact research	11
Events and NIH news	12

Advancing the Discovery of Treatments for Glioblastoma

Shi-Yuan Cheng, PhD, professor of Neurology



In his laboratory at Feinberg, [Shi-Yuan Cheng, PhD](#), professor of [Neurology](#) in the Division of [Neuro-Oncology](#), is dedicated to improving understanding of the molecular mechanisms that drive cancer development and progression, as well as developing novel approaches to treatment. His laboratory is particularly focused on investigating glioblastomas, a common and aggressive form of brain tumor.

In recent high-impact publications, for example, Cheng and his collaborators [identified](#) a mechanism of tumor survival in glioblastoma that could represent a new therapeutic target, as well as [provided](#) new insights into signaling pathways in subtypes of glioblastomas.

Cheng is also a member of the [Northwestern Medicine Lou and Jean Malnati Brain Tumor Institute](#) of the [Robert H. Lurie Comprehensive Cancer Center of Northwestern University](#) at Northwestern Memorial Hospital.

Q&A

What are your research interests?

The research in my laboratory focuses on studying molecular mechanisms that regulate the phenotypes and therapy responses of glioblastoma, the most malignant brain tumor in humans. In particular, we are investigating how oncogenic signaling is modulated at levels of chromosome, DNA, RNA and proteins through protein post-translational modifications (phosphorylation, methylation and acetylation), non-coding RNAs such as microRNAs and long non-coding RNAs, DNA methylation and RNA splicing.

We are using patient glioma tumor-derived cancer stem cells, patient tumor-derived xenografts, established glioblastoma cell lines and clinical tumor specimens as our model systems. Our research approaches include biochemical, molecular biology, cell biology, epigenetics, histological, bioinformatics, orthotopic tumor xenografts, and other modern technology.

What is the ultimate goal of your research?

The ultimate goal of my research is to advance our current understanding of cancer biology in general and ultimately to translate our discoveries from our laboratory to clinic for developing novel therapies and improving the efficacy of treatments for patients with glioblastoma. Glioblastoma is one of the most aggressive and malignant cancers in humans, with extremely poor survival. I believe that by working with an outstanding multidisciplinary neuro-oncology team at Northwestern and investigators across the campus, the U.S. and the world, we are making significant progress toward this goal.

How did you become interested in this area of research?

I have been interested in cancer research since I was in college and in my PhD studies. However, I did not have the chance to do cancer research until my postdoctoral trainings. My first postdoctoral lab was a signal transduction lab where I learned so much about intracellular signaling. My second postdoctoral lab, where I stayed for five and a half years, was a cancer biology lab where I started to study cancer biology and tumor angiogenesis/VEGF signaling in glioblastoma. Since I started my own lab in 1999, my research has been evolving into cell signaling and invasion of glioblastoma. After I joined Northwestern University in 2012, I continued our research on novel cell signaling and epigenetics in glioblastoma. We have been focused on the roles of post-translational modification, i.e. protein phosphorylation, methylation and non-coding RNAs.

Where have you recently published papers?

During the past several years, our lab has published papers in *Cancer Cell* (December 2017), *Nature Communications* (2016), the *Journal of Clinical Investigation* (2014), and *Neuro-Oncology* (2015). We also have co-authored many collaborative papers that were published in *Cancer Cell*, *Nature Cell Biology*, *Nature Communications*, *Proceedings of the National Academy of Sciences*, *Cell Reports*, *Cancer Research*, *Oncogene*, *Molecular Cancer Research* and other peer-reviewed journals.

(continued on page 9)

Keynote Speaker for Lewis Landsberg Research Day 2018

Mina J. Bissell, PhD, will deliver the keynote address at the 14th Annual Lewis Landsberg Research Day, Thursday, April 5. The title of her talk is: "From laminins to lamins and p53: How does a breast cell know to be a breast, and what happens when it forgets?"

The 1:00 p.m. keynote address in the John Hughes Auditorium, Robert H. Lurie Medical Research Center, will kick-off the [14th Annual Lewis Landsberg Research Day](#) activities, which include a poster session with more than 400 presenters from the Feinberg community and end with an awards ceremony.

Bissell is a distinguished scientist, the highest rank bestowed at Lawrence Berkeley National Laboratory (LBNL) and serves as senior advisor to the laboratory director on Biology. She is also faculty of four Graduate Groups at UC Berkeley: Comparative Biochemistry, Endocrinology, Molecular Toxicology and Bioengineering (joint program with UC San Francisco).

Having challenged several established paradigms, Bissell is a pioneer in breast cancer research and her body of work has provided much impetus for the current recognition of the significant role that extracellular matrix signaling and microenvironment play in gene expression regulation in both normal and malignant cells. Her laboratory developed novel 3-D assays and techniques that demonstrate her signature phrase: after conception, "phenotype is dominant over genotype."

Bissell earned her doctorate in microbiology and molecular genetics from Harvard Medical School, won an American



Mina J. Bissell, PhD, pioneer in breast cancer research

Cancer Society fellowship for her postdoctoral studies and soon after joined LBNL. She was the founding director of the Cell and Molecular Biology Division and later the associate laboratory director for all life sciences at Berkeley Lab, where she recruited outstanding scientists and developed a strong program in cell and molecular biology and breast cancer.

Bissell has published more than 400 publications and is one of the most sought-after speakers in the field. She has received numerous honors and awards, which include the U.S. Department of Energy's E.O. Lawrence Award, AACR's G.H.A. Clowes Memorial Award, the Pezcoller Foundation-AACR International Award, Susan G. Komen Foundation's Brinker Award, BCRF Foundation's Jill Rose Award, Berkeley Lab's inaugural Lifetime Achievement Prize, American Cancer Society's Medal of Honor, MD Anderson Cancer Center's highest honor – the Ernst W. Bertner Award, the Honorary Medal from the Signaling Societies in Germany, ASCB's highest honor – the E.B. Wilson Medal and the 2017 AACR Award for Lifetime Achievement in Cancer Research.

Bissell is an inspiring mentor and in her honor the University of Porto, Portugal, established the Mina J. Bissell Award, which is given every three years to a person who has dramatically changed a field. She is the recipient of honorary doctorates from both Pierre & Marie Curie University in Paris, France, and University of Copenhagen in Denmark.

Bissell is not only an elected fellow of most U.S. honorary scientific academies, including National Academy of Sciences, National Academy of Medicine and American Philosophical Society, but she also sits on many national and international scientific boards and continues to engage in full-time research, among other scientific activities.

Mentors of the Year Workshop

The [Medical Faculty Council](#) have announced the 2018 Faculty Mentor of the Year Award Recipients. They are:

- [Mercedes Carnethon, PhD](#), vice chair and chief of [Epidemiology](#) in the Department of Preventive Medicine
- Co-recipients: [Wellington Hsu, MD](#), the Clifford C. Raisbeck, MD, Professor of [Orthopaedic Surgery](#) and of [Neurological Surgery](#) and [Erin Hsu, PhD](#), research assistant professor of Orthopaedic Surgery

They will be honored at the 14th Annual Lewis Landsberg Research Day, Thursday, April 5. This year's winners will host a mentoring workshop Tuesday, March 27.

Details about the workshop:

What: Mentor of the Year Workshop

When: Tuesday, March 27, Noon to 1:15 p.m.

Where: Robert H. Lurie Medical Research Center, Baldwin Auditorium, 303 E. Superior St.

A light lunch will be provided. RSVP to [Meg Kennedy](#) by Wednesday, March 21, if you plan to attend the workshop.

Examining the Role of Cytokine Receptors

Brittany Hopkins, Northwestern University Interdepartmental Neuroscience



Brittany Hopkins, a fourth-year student in the Northwestern University Interdepartmental Neuroscience (NUIN) program, studies in laboratory of [Richard J. Miller, PhD](#), the Alfred Newton Richards Professor of [Pharmacology](#).

Q&A

Where is your hometown?

I grew up in the northwest suburbs of Chicago. While I was away at college, my family moved to Chicago proper. It's great to have my family so close; they are a great support system, and it means I don't have travel far for the holidays, which is a bonus.

What are your research interests?

The brain has always fascinated me. My interest started in the science section of a local bookstore and eventually led to me studying neuroscience in college. My research in undergrad was focused on microglia, the immune cells of the brain, where we examined their non-immune roles in visual system plasticity. I have always found the brain's ability to change fascinating, and joining NUIN has exposed me to the many different facets of neuroscience research, which has led me to develop a deeper interest in neuropharmacology.

What exciting projects are you working on?

The Miller lab has always had an interest in a group of signaling molecules called chemokines. One of my projects focuses on a chemokine receptor that was discovered about 13 years ago but has remained understudied partially because the receptor functions atypically. It has been very exciting and rewarding to not only learn more about the function of the receptor, but

also to show that it can't be ignored because of its atypical signaling. I also do a lot of drug discovery work through a collaboration we have with the [Center for Molecular Innovation and Drug Discovery](#) and [Gary Schiltz, PhD](#), research professor of [Pharmacology](#). It has been very gratifying to be a part of this academic drug discovery effort and examine the effects of novel compounds on different chemokine receptors.

What attracted you to the PhD program?

I was most impressed by the interdisciplinary nature of the NUIN program, and Feinberg in general, which I think is really an embodiment of how science is done today. NUIN has over 170 labs, and I knew that I would find a lab that fit both my interests and my preferred mentorship style. Because NUIN spans both the Chicago and Evanston campuses, I liked that I would be exposed to an even broader spectrum of all the amazing research at Northwestern. Of course, having lived in the Chicago area all my life, I also knew how much the city had to offer!

What has been your best experience at Feinberg?

I have had so many amazing experiences, but one thing that I have really enjoyed is the ability to meet so many faculty that come to Northwestern to talk about their own research. These interactions with outside faculty always renew my enthusiasm for research. Talking with them about my own work also reminds me about how cutting-edge our research is and how it contributes to the broader field.

How would you describe the faculty at Feinberg?

All of the faculty that I have interacted with have been so supportive and great mentors. It's been such a privilege to be surrounded by people that are so passionate, knowledgeable and willing to help students.

What do you do in your free time?

Outside of the lab I enjoy reading, particularly mysteries and non-fiction, cooking and snowboarding. I also love to try new restaurants both here in Chicago and whenever I get a chance to travel.

What are your plans for after graduation?

I'm considering opportunities both in academia and in industry, but regardless I hope to continue studying the brain and pharmacology.

Connect with Brittany on [LinkedIn](#).

Streamlining Space on the Chicago Campus

Elizabeth Panke, Facilities Coordinator, Office for Research



Q&A

Where are you originally from?

I was born and raised in St. Louis. I moved to Chicago after college, in the summer of 2012, and have been here since. And yes, I am a Cardinals baseball fan. I grew up going to those games with my dad when I was younger, so if he is reading this, I will always be a Cardinals fan.

What is your educational background?

I graduated from Vanderbilt University with a major both in English and communications.

Tell us about your professional background.

I worked first as an account coordinator for a company called News America Marketing. We worked with major consumer packaged goods brands, as well as smaller brand teams, across the nation, offering them marketing services through our newspaper, in-store and digital platforms. It was a great learning experience and I became an absolute whiz at Excel. I was there for two years before being recruited out by a staffing group downtown called Addison Group.

I worked in the IT group, specifically on the sales side. While I was there I was starting to see what I really liked about my job and what I knew I wanted to continue in the future – working with fascinating people, being methodical and thoughtful in my daily tasks, a company that values its employees and ultimately being in a customer-centric role. I stayed at Addison Group for three years, leaving in December 2017, for my current position.

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

My role is really about how university space affects functionality for all the departments at Feinberg. I get to work with different PIs and department administrators on how their space and facilities can better serve their day-to-day tasks, which in turn better serves the university and productivity. So I not only consult on that from a very “micro” view, for example helping them get furniture they may need, to the “macro” view of office and lab moves, updating current spaces, new construction, etc.

There is so much that goes on behind the scene, and I get to be a part of all of that. I also get to act as a liaison to help faculty and staff get in touch with the correct contacts or vendors depending on their needs, so I like to think of that as getting to

act as a “connector” too. I am constantly on my feet, which I also love, checking on various rooms or meeting with different groups to see what they may be looking to do in the next year or two and how I can help in that mission. I think that’s what I love most: being a part of something greater than yourself and working at a university that is truly mission driven.

What exciting projects are you working on?

The second I started I was really thrown in with two feet, and I love that. I have gotten to manage our freezer farms, update our furniture inventory and oversee that process, work directly with a number of vendors, be involved in some upcoming floor and lab renovations and act as an ambassador for our new Facilities Connect system. I think I was setting up a move within my first week!

Two especially exciting projects I am working on are [Research Day](#) and the new [Simpson Querrey Biomedical Research Center](#) that is currently being built. My supervisor [Eric Boberg, PhD](#), and my teammate Maureen Mwangi, have been incredibly helpful in my transition. They answer any of my questions and encourage them, but they also let me work independently and take projects on as my own. Eric has let me take full reign with Research Day planning and has also started to pull me in on the details of the new building. I think this next year is going to be busy!

What do you like to do in your spare time?

My spare time is filled with pretty much two things: running and eating. I am totally one of those obsessed marathoners who trains all year round. I started running with my dad in high school and really became very serious when I moved to Chicago and joined Fleet Feet for one of their training programs and ran my first marathon, the Chicago Marathon, in 2013.

Running has just been the love of my life. I ran for the Fleet Feet Nike Racing Team for a year, joined the New Balance team and currently run for an endurance brand called CWX. So far, I have run Chicago three times, New York, Boston and Berlin and this year, I plan to run the California International Marathon. So you can imagine that after a long run the best thing is a good meal! I am a total foodie and am pretty adventurous in trying various types of cuisines. I keep a running list of restaurants I want to try in the city and have not even come close to trying half of them. And of course I watch all the food channels. This has sadly not led to any cooking skills of my own but I CAN bake a mean dessert... if I follow a recipe!

Connect with Beth on [LinkedIn](#).

Research in the News

**Reuters, February 2**

[Sun safety may not be a top priority in daycare](#)

June Robinson was quoted.

Reuters, February 5

[Pfizer's Xtandi delays prostate cancer spread in early stage disease](#)

Maha Hussain was quoted.

Today, February 5

[Bringing home a preemie feels more stressful to dads than moms](#)

Craig Garfield was quoted.

The New York Times, February 8

[Two Prostate Cancer Drugs Delay Spread of the Disease by Two Years](#)

Maha Hussain was quoted.

Chicago Tonight, February 13

[Study: Scientists Discover Huntington's Cancer Weapon](#)

Marcus Peter and Andrea Murmann were quoted.

National Public Radio (Boston), February 16

[New Research Shifts Thinking On Pregnancy Dilemma: Induce Labor At 39 Weeks?](#)

William Grobman was quoted.

Associated Press, February 22

[Superagers' youthful brains offer clues to keeping sharp](#)

Emily Rogalski was quoted.

U.S. News & World Report, February 27

[Should You Exercise Your Face?](#)

Murad Alam was quoted.

The New York Times, February 28

['Obesity Paradox' Fails to Hold Up in Study](#)

Sadiya Khan was quoted.

[More media coverage available online.](#)

NUCATS Corner

Register for EQuaTR Conference

The upcoming [Enhancing Quality in the Translational Research Workforce \(EQuaTR\) Conference](#) provides clinical research professionals with the opportunity to gain knowledge on current trends and issues in clinical research. The conference is open to professionals in clinical and translational research including investigators, clinical research coordinators, monitors, project and site managers, regulatory staff, research assistants and allied health professionals.

This year, the topics covered will include: anticipating major trends disrupting the clinical research enterprise, clinical research in the media, managing research teams, the key to professional growth and the administrative life cycle of a trial.

Plenary speakers are Kenneth A. Getz, associate professor, director of Sponsored Programs, Center for the Study of Drug Development (CSDD), at Tufts University School of Medicine, and Elizabeth Ness, MS, BSN, RN, nurse consultant, Education, Center for Cancer Research at the National Cancer Institute.

What: EQuaTR Conference

When: May 4, 2018, 8:30 a.m. to 5:00 p.m.

Where: Northwestern Memorial Hospital, 251 E. Huron St., Chicago, IL

Regular registration closes April 20. The 2017 event sold out, don't wait to register! [Register online.](#)

This continuing nursing education activity is under review by the NUCATS Institute. Provider approved by the State of California Board of Registered Nursing, Provider Number CEP 15198.

Sponsored Research



PI: Richard Wunderink, MD, professor of Medicine in the Division of Pulmonary and Critical Care

Sponsor: National Institute of Allergy and Infectious Diseases

Title: "Successful Clinical Response In Pneumonia Therapy Systems Biology Center"

The Successful Clinical Response In Pneumonia Treatment Systems Biology Center seeks to delineate the complex host/pathogen interactions occurring at the alveolar level that lead to unsuccessful response to therapy in serious pneumonia.

Wunderink's team will leverage their unique access to alveolar fluid collected as part of routine clinical care in mechanically ventilated patients to generate clinical phenomic, transcriptomic, epigenomic and metagenomic data that describe the host response, pathogen characteristics and microbiome of the alveolar space during pneumonia. They will then integrate this comprehensive phenotypic data into an ecosystem-based model to generate predictive biomarkers of pneumonia outcome for subsequent validation in a second cohort and tested for causality in a humanized alveolar macrophage mouse model.

[Read more about this project.](#)



PI: Karen Mestan, MD, associate professor of Pediatrics in the Division of Neonatology

Sponsor: National Heart, Lung, and Blood Institute

Title: "The Role of Placental Maternal Vascular Underperfusion in Neonatal Pulmonary Hypertension"

Neonatal pulmonary hypertension (PH) is a serious condition that affects up to one third of premature infants with bronchopulmonary dysplasia (BPD). This entity, known as BPD-associated PH (BPD-PH), is fully established by one-to-three months of age and incurs a four-fold increased risk of death. Survivors of BPD-PH have prolonged and recurrent hospitalization and are at risk for chronic cardiopulmonary and metabolic problems.

No preventative treatment currently exists for BPD-PH. Through completion of the proposed work Mestan's team will gain novel insight into how placental vascular disease impacts neonatal lung development, and advance the long-term goal of identifying early predictive markers and therapeutic targets. Identification of fetoplacental mechanisms that drive the development of BPD-PH would represent a major advance in this complex field.

[Read more about this project.](#)



Welcome New Faculty

Adam Sonabend, MD, joins as assistant professor of Neurological Surgery. His research focuses on using precision medicine to find treatments for patients with glioblastoma. His clinical work is focused on the surgical management of brain tumor, as well as developing translational research and surgical clinical trials for his patients.

Previously, he was an assistant professor of neurological surgery and director of the Translational Brain Tumor Laboratory at Columbia University. Sonabend earned his medical degree from Universidad Nacional Autónoma de México in Mexico City and he completed his residency in neurological surgery at Columbia University.

He has published more than 50 journal articles and is currently principal investigator on several grants funded by the National Institutes of Health. Sonabend has received numerous awards for his research, including the prestigious five-year NIH Director's Early Independence Award, which he received in 2015.

Cheng

(continued from page 3)

How is your research funded?

My research projects are currently funded by grants from the National Cancer Institute and National Institutes of Neurological Disorder and Stroke at the National Institutes of Health; Northwestern Medicine Lou and Jean Malnati Brain Tumor Institute at the Lurie Cancer Center; and Phi Beta Psi Sorority.

Who makes up your research team and what role does each individual play in your research?

Our current research team includes [Dr. Bo Hu](#), research associate professor of Neurology; five postdoctoral fellows, Drs. Tianzhi Huang, Angel Alvarez, Xiao Song, Yongyong Yang and Xuechao Wan; and a graduate student, Namratha Sastry of the Northwestern University Interdepartmental Neuroscience Program. Dr. Hu is a driving force in my laboratory. We have been working together as a team since 2002. Almost all research ideas and hypotheses have been products of our ongoing discussions. Each of the postdoctoral fellows and the student have their own research projects that cover the research areas described above. The lab members are highly collaborative in our research activities. We have regular lab meetings and individual meetings with each of the lab members on a bi-weekly basis. We often interact and help each other. Our collaborative nature in the lab has resulted in multi-author publications in all our papers that have been published. Our goal is to provide the best training and research environment that will foster each of our lab members to become independent investigators in the future.



Listen to the Podcast

Listen to the first episode of the *Breakthroughs* podcast on [iTunes](#) or [Soundcloud](#). Each episode features a conversation with a Feinberg scientist featured in the *Breakthroughs* newsletter.

Funding

Limited Submission

NIMH Biobehavioral Research Awards for Innovative New Scientists

[More information from the Office of Research](#)

Sponsors: National Institute of Mental Health (NIMH)

Submission deadline: June 20

Upper amount: \$1.625 million

Synopsis: The NIMH Biobehavioral Research Awards for Innovative New Scientists (BRAINS) award is intended to support the research and research career advancement of outstanding, exceptionally productive scientists who are in the early, formative stages of their careers and who plan to make a long term career commitment to research in specific mission areas of the NIMH. This award seeks to assist these individuals in launching an innovative clinical, translational, basic or services research program that holds the potential to profoundly transform the understanding, diagnosis, treatment, or prevention of mental disorders.

Life Science Research Grants

[More information](#)

Sponsors: Human Frontier Science Program

Submission deadline: March 28

Upper amount: \$450,000

Synopsis: Human Frontier Science Program supports international, preferably intercontinental, collaborations in basic life science research. Applications are invited for grants to support innovative approaches to understanding complex mechanisms of living organisms.

Collaborative Science Awards

[More information](#)

Sponsors: Chan Zuckerberg Initiative

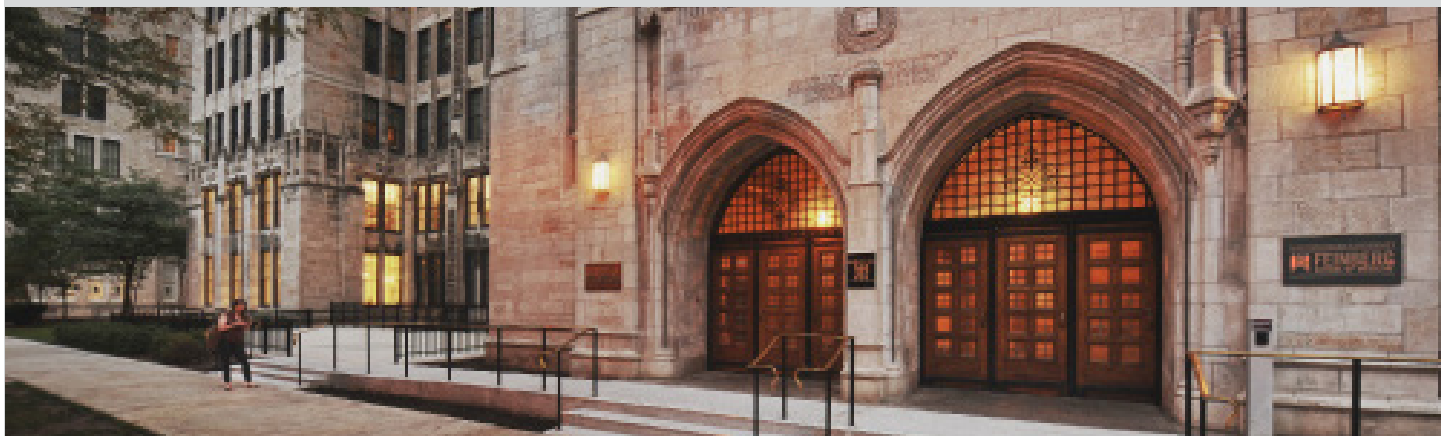
Submission deadline: April 3

Upper amount: \$1.05 million

Synopsis: These three-year grants are for small group interdisciplinary collaborations. They are aimed to support innovative, bold, high risk/high impact projects at the interface of basic and disease biology. The scope of these collaborations should focus on foundational science (as opposed to translation and clinical application), aligned with clinical context. At least one member of the collaboration should be a physician with active clinical engagement in an area relevant to the proposal.

[View more funding opportunities](#)

Assistance with Open Access Publishing for Authors



Open access (OA) publishing can present a myriad of options and challenges to authors. Though many funders require research outputs to be made publicly accessible, there are authors who wish to publish OA regardless of any funder-related mandate. These authors have many decisions to make, including selecting appropriate OA journals and deciding which type of OA publishing suits their needs. Ultimately, the decision to publish OA can be hindered by the requirement and cost of article processing fees. Below are ways Northwestern University provides support for authors publishing with OA in mind.

BioMed Central or Springer Open

Northwestern University's membership in [BioMed Central](#) (BMC) and [Springer Open](#) (both part of Springer Nature offering over [250 OA journals](#) and [200 OA journals](#), respectively) gives authors a 15 percent discount on article processing charges. For more information see our [membership page](#), or Galter Library's [Open Access Publishing Guide](#). See a list of [Springer Open journals](#) and [BMC journals](#) indexed in Scopus, along with their [CiteScores](#). Recent examples of Feinberg authors in BioMed Central or Springer Open journals:

Gill TM, Beavers DP, Guralnik JM, Pahor M, Fielding RA, Hauser M, Manini TM, Marsh AP, **McDermott MM**, Newman AB, Allore HG, Miller ME. [The effect of intervening hospitalizations on the benefit of structured physical activity in promoting independent mobility among community-living older persons: Secondary analysis of a randomized controlled trial](#). BMC Med. 2017;15(1).

Yadlapati R, Kahrilas PJ. [When is proton pump inhibitor use appropriate?](#) BMC Med. 2017;15(1).

Malojic B, Giannakopoulos P, **Sorond FA**, Azevedo E, Diomedio M, Oblak JP, Carraro N, Boban M, Olah L, Schreiber SJ, Pavlovic A, Garami Z, Bornstein NM, Rosengarten B. [Ultrasound and dynamic functional imaging in vascular cognitive impairment and alzheimer's disease](#). BMC Med. 2017;15(1).

Proceedings of the National Academy of Sciences

Northwestern University's current yearly-subscription to the [Proceedings of the National Academy of Sciences](#) provides corresponding authors a [discounted open access fee of \\$1,100](#). This is a savings compared to the regular fee (\$1,450) and makes the articles immediately free online. Authors of accepted papers should note the reduced fee (\$1,100) on the PNAS billing forms included with the author proofs. See [PNAS](#) in Scopus, along with its [CiteScore](#). Recent examples of Feinberg authors in PNAS:

Feng G, **Ingvalson EM**, Grieco-Calub TM, Roberts MY, **Ryan ME**, **Birmingham P**, Burrowes D, **Young NM**, Wong PCM. [Neural preservation underlies speech improvement from auditory deprivation in young cochlear implant recipients](#). Proc Natl Acad Sci U S A. 2018;115(5):E1022-31.

Smith BM, Traboulsi H, Austin JHM, et al. (including **Liu K**). [Human airway branch variation and chronic obstructive pulmonary disease](#). Proc Natl Acad Sci U S A. 2018;115(5):E974-81.

Gaydos L, Schorpp KM, **Chen E**, **Miller GE**, Harris KM. [College completion predicts lower depression but higher metabolic syndrome among disadvantaged minorities in young adulthood](#). 2018;115(1):109-14.

BMJ Case Reports

Northwestern University's subscription to [BMJ Case Reports](#) allows authors (called "fellows") to read, submit, and publish case reports free of cost. However, there is a £250 article processing fee to make the case report open access. Contact Galter Library for the current "fellowship" number in order to submit case reports for the journal. See [BMJ Case Reports](#) in Scopus, along with its [CiteScore](#). Recent examples of Feinberg authors in *BMJ Case Reports*:

Tibrewala A, Freed BH, Akhter N. [Importance of temporal changes in myocardial strain in takotsubo cardiomyopathy](#). BMJ Case Rep. 2017.

Schneider AL, Hicks KE, Matsuoka AJ. [Cervical oesophageal perforation secondary to food consumption in a well-appearing patient](#). BMJ Case Rep. 2017.

Webster G, Schoppen ZI, George AL. [Treatment of calmodulinopathy with verapamil](#). BMJ Case Rep. 2017

Northwestern University Open Access Fund

The [Northwestern University Open Access Fund](#) supports Northwestern scholars who wish to make their journal articles openly available immediately upon publication. Authors must publish in a journal that publishes all of its articles as open access and allows for freely available access immediately upon publication, with no embargo of any content. See the fund's website for more information.

If you have any questions about publishing in OA journals, please contact your Galter [liaison librarian](#) for assistance.

High Impact Factor Research

Demenais F, Margaritte-Jeannin P, Barnes KC et al. (including **Kumar R, Smith LJ**). [Multiancestry association study identifies new asthma risk loci that colocalize with immune-cell enhancer marks](#). *Nature Genetics*. 2018 Jan;50(1):42-53.

Eroglu Z, Zaretsky JM, Hu-Lieskovan S, Kim DW, Algazi A, Johnson DB, Liniker E, Kong B, Munhoz R, Rapisuwon S, Gherardini PF, Chmielowski B, Wang XY, Shintaku IP, Wei C, **Sosman JA**, Joseph RW, Postow MA, Carlino MS, Hwu WJ, Scolyer RA, Messina J, Cochran AJ, Long GV, Ribas A. [High response rate to PD-1 blockade in desmoplastic melanomas](#). *Nature*. 2018 Jan;553(7688):347.

Feldman T, Mauri L, Kahwash R, Litwin S, **Ricciardi MJ**, van der Harst P, Penicka M, Fail PS, Kaye DM, Petrie MC, Basuray A, Hummel SL, Forde-McLean R, Nielsen CD, Lilly S, Massaro JM, Burkhoff D, **Shah SJ**, Investigators RL-HI. [Transcatheter Interatrial Shunt Device for the Treatment of Heart Failure With Preserved Ejection Fraction \(REDUCE LAP-HF I Reduce Elevated Left Atrial Pressure in Patients With Heart Failure\): A Phase 2, Randomized, Sham-Controlled Trial](#). *Circulation*. 2018 Jan;137(4):364-375.

Feng G, **Ingvalson EM, Grieco-Calub TM, Roberts MY, Ryan ME, Birmingham P, Burrows D, Young NM**, Wong PCM. [Neural preservation underlies speech improvement from auditory deprivation in young cochlear implant recipients](#). *Proceedings of the National Academy of Sciences of the United States of America*. 2018 Jan 30;115(5):E1022-e1031.

Fernandez CV, Mullen EA, Chi YY, Ehrlich PF, Perlman EJ, **Kalapurakal JA**, Khanna G, Paulino AC, Hamilton TE, Gow KW, Tochner Z, Hoffer FA, Withycombe JS, Shamberger RC, Kim Y, Geller JJ, Anderson JR, Grundy PE, Dome JS. [Outcome and Prognostic Factors in Stage III Favorable-Histology Wilms Tumor: A Report From the Children's Oncology Group Study AREN0532](#). *Journal of Clinical Oncology*. 2018 Jan;36(3):254.

Friedman DJ, Piccini JP, Wang TR, Zheng JY, **Malaisrie C**, Holmes DR, Suri RM, Mack MJ, Badhwar V, Jacobs JP, Gaca JG, Chow SC, Peterson ED, Brennan JM. [Association Between Left Atrial Appendage Occlusion and Readmission for Thromboembolism Among Patients With Atrial Fibrillation Undergoing Concomitant Cardiac Surgery](#). *JAMA*. 2018 Jan;319(4):365-374.

Ganguli A, Ornob A, Spegazzini N, Liu Y, Damhorst G, Ghonge T, Thornton B, Konopka CJ, Dobrucki W, **Clare SE**, Bhargava R, Smith AM, Kosari F, Bashir R. [Pixelated spatial gene expression analysis from tissue](#). *Nature Communications*. 2018 Jan;9:9.

Gaydos L, Schorpp KM, **Chen E, Miller GE**, Harris KM. [College completion predicts lower depression but higher metabolic syndrome among disadvantaged minorities in young adulthood](#). *Proceedings of the National Academy of Sciences of the United States of America*. 2018 Jan 2;115(1):109-114.

Grossman DC, Curry SJ, Owens DK, Barry MJ, Davidson KW, Doubeni CA, Epling J, Kemper AR, Krist AH, Kurth AE, Landefeld S, Mangione CM, Phipps MG, Silverstein M, **Simon MA**, Tseng CW, Force USPST. [Screening for Adolescent Idiopathic Scoliosis US Preventive Services Task Force Recommendation Statement](#). *JAMA*. 2018 Jan;319(2):165-172.

Lu AT, Xue LT, Salfati EL, Chen BH, Ferrucci L, Levy D, Joeannes R, Murabito JM, Kiel DP, Tsai PC, Yet I, Bell JT, Mangino M, Tanaka T, McRae AF, Marioni RE, Visscher PM, Wray NR, Deary IJ, Levine ME, Quach A, Assimes T, Tsao PS, Absher D, Stewart JD, Li Y, Reiner AP, **Hou LF**, Baccarelli AA, Whitsel EA, Aviv A, Cardona A, Day FR, Wareham NJ, Perry JRB, Ong KK, Raj K, Lunetta KL, Horvath S. [GWAS of epigenetic aging rates in blood reveals a critical role for TERT](#). *Nature Communications*. 2018 Jan;9:13.

Magdy T, Schuldt AJT, Wu JC, Bernstein D, Burrig PW. [Human Induced Pluripotent Stem Cell \(hiPSC\)-Derived Cells to Assess Drug Cardiotoxicity: Opportunities and Problems](#). *Annual Review of Pharmacology and Toxicology*. 2018 Jan 6;58:83-103.

Purnell TS, Luo X, Cooper LA, Massie AB, Kucirka LM, Henderson ML, **Gordon EJ**, Crews DC, Boulware LE, Segev DL. [Association of Race and Ethnicity With Live Donor Kidney Transplantation in the United States From 1995 to 2014](#). *JAMA*. 2018 Jan 2;319(1):49-61.

Ramsuran V, Naranbhai V, Horowitz A, Qi Y, Martin MP, Yuki Y, Gao X, Walker-Sperling V, Del Prete GQ, Schneider DK, Lifson JD, Fellay J, Deeks SG, Martin JN, Goedert JJ, **Wolinsky SM**, Michael NL, Kirk GD, Buchbinder S, Haas D, Ndung'u T, Goulder P, Parham P, Walker BD, Carlson JM, Carrington M. [Elevated HLA-A expression impairs HIV control through inhibition of NKG2A-expressing cells](#). *Science*. 2018 Jan 5;359(6371):86-90.

Reges O, **Greenland P**, Dicker D, Leibowitz M, Hoshen M, Gofer I, **Rasmussen-Torvik LJ**, Balicer RD. [Association of Bariatric Surgery Using Laparoscopic Banding, Roux-en-Y Gastric Bypass, or Laparoscopic Sleeve Gastrectomy vs Usual Care Obesity Management With All-Cause Mortality](#). *JAMA*. 2018 Jan;319(3):279-290.

Skinner OS, Haverland NA, Fornelli L, Melani RD, Do Vale LHF, Seckler HS, Doubleday PF, Schachner LF, Szentetic K, **Kelleher NL**, Compton PD. [Top-down characterization of endogenous protein complexes with native proteomics](#). *Nature Chemical Biology*. 2018 Jan;14(1):36.

Smith BM, Traboulsi H, Austin JHM, Manichaikul A, Hoffman EA, Bleecker ER, Cardoso WV, Cooper C, Couper DJ, Dashnaw SM, Guo J, Han MK, Hansel NN, Hughes EW, Jacobs DR, Jr., Kanner RE, Kaufman JD, Kleerup E, Lin CL, **Liu K**, Lo Cascio CM, Martinez FJ, Nguyen JN, Prince MR, Rennard S, Rich SS, Simon L, Sun Y, Watson KE, Woodruff PG, Baglioni CJ, Barr RG. [Human airway branch variation and chronic obstructive pulmonary disease](#). *Proceedings of the National Academy of Sciences of the United States of America*. 2018 Jan 30;115(5):E974-e981.

Turcan S, Makarov V, Taranda J, Wang YX, Fabius AWM, Wu W, Zheng YP, El-Amine N, Haddock S, Nanjangud G, LeKaye HC, Brennan C, Cross J, Huse JT, **Kelleher NL**, Osten P, Thompson CB, Chan TA. [Mutant-IDH1-dependent chromatin state reprogramming, reversibility, and persistence](#). *Nature Genetics*. 2018 Jan;50(1):62.

Zeuzem S, Foster GR, Wang S, Asatryan A, Gane E, Feld JJ, Asselah T, Bourliere M, Ruane PJ, Wedemeyer H, Pol S, Flisiak R, Poordad F, Chuang WL, Stedman CA, **Flamm S**, Kwo P, Dore GJ, Sepulveda-Arzola G, Roberts SK, Soto-Malave R, Kaita K, Puoti M, Vierling J, Tam E, Vargas HE, Bruck R, Fuster F, Paik SW, Felizarta F, Kort J, Fu B, Liu R, Ng TI, Pilot-Matias T, Lin CW, Trinh R, Mensa FJ. [Glecaprevir-Pibrentasvir for 8 or 12 Weeks in HCV Genotype 1 or 3 Infection](#). *New England Journal of Medicine*. 2018 Jan 25;378(4):354-369.

Zhang C, Hediger ML, Albert PS, Grewal J, Sciscione A, **Grobman WA**, Wing DA, Newman RB, Wapner R, D'Alton ME, Skupski D, Nageotte MP, Ranzini AC, Owen J, Chien EK, Craigo S, Kim S, Grantz KL, Louis GMB. [Association of Maternal Obesity With Longitudinal Ultrasonographic Measures of Fetal Growth: Findings From the NICHD Fetal Growth Studies-Singletons](#). *JAMA Pediatrics*. 2018 Jan 1;172(1):24-31.

Zhao BB, Mei Y, Cao L, Zhang JX, Sumagin R, Yang J, Gao JH, Schipma MJ, Wang YF, Thorsheim C, Zhao L, Stalker T, **Stein B, Wen QJ, Crispino JD, Abrams CS, Ji P**. [Loss of pleckstrin-2 reverts lethality and vascular occlusions in JAK2\(V617F\)-positive myeloproliferative neoplasms](#). *Journal of Clinical Investigation*. 2018 Jan;128(1):125-140.

Zunke F, Moise AC, Belur NR, Gelyana E, Stojkowska I, Dzaferbegovic H, Tokar NJ, Jeon S, Fredriksen K, Mazzulli JR. [Reversible Conformational Conversion of alpha-Synuclein into Toxic Assemblies by Glucosylceramide](#). *Neuron*. 2018 Jan;97(1):92.

The Feinberg Research Office regularly tracks research published by Feinberg investigators. The citations are used on web pages, in newsletters and social media, for internal reporting and more. To more accurately track these journals, the Research Office asks that Feinberg investigators use the following institution name in the address field when publishing in peer-reviewed journals: "Northwestern University Feinberg School of Medicine."

Calendar

Thursday, March 15

Microtubules, microscopes and maggots: Using *Drosophila* to understand neuronal polarity and injury responses

Melissa Rolls, PhD, Penn State University, will present.

Time: 11:00 a.m. to Noon

Location: Physiology Conference Room, Ward 5-230
303 E. Chicago Avenue

Contact: [Barbara Jaron](#)

[More information](#)

Monday, March 19

Creating, Sharing, and Privacy: Designing Social Technologies for Older Adults

Anne Marie Piper, assistant professor of communication studies at Northwestern University, will present.

Time: Noon to 1 p.m.

Location: Arthur Rubloff Building, 10th Floor,
750 N Lake Shore Dr., Chicago

Contact: [Lucia Ontiveros](#)

[More information](#)

Thursday, April 5

The 14th Annual Lewis Landsberg Research Day

The event includes a keynote, poster session and awards ceremony.

Time: 1 p.m. to 5 p.m.

Location: Robert H. Lurie Medical Research Center John Hughes Auditorium and Patrick G. and Shirley W. Ryan Family Atrium and Northwestern Memorial Hospital's Feinberg Pavilion, Third Floor Conference Center.

Contact: researchday@northwestern.edu

[More information](#)

Follow Feinberg Social Media



NIH News

NIH FY 2017 By the Numbers

In 2017, the NIH supported approximately 2,500 organizations and about 640 of these organizations received funding for competing research project grants which involved over 11,000 principal investigators.

The average size of RPGs increased by over four percent, from \$499,221 in FY 2016 to \$520,429 in FY 2017. Similarly, in FY 2017 the average size of R01-equivalent awards increased from \$458,287 to \$482,395 (by over five percent). [Read more](#) about this year's numbers.

Online CME Course Every Wednesday

Continuing Medical Education (CME) activities are offered by the NIH with The Johns Hopkins University School of Medicine as the CME provider. The weekly NIH "Wednesday Afternoon Lecture Series" provides a mechanism for presentations on state-of-the-art discoveries.

Its target audience includes M.D., M.D./Ph.D., D.D.S. or equivalent doctoral level scientists with professional and research backgrounds that allow them to benefit from lectures on current topics in laboratory and clinical research. Lectures occur on most Wednesdays from September through June from 3:00 to 4:00 p.m. and can be viewed on the NIH [videocasting website](#). [Browse](#) upcoming topics.

Strategic Plan for Data Science

To capitalize on the opportunities presented by advances in data science, the NIH is developing a strategic plan for data science. This plan describes NIH's overarching goals, strategic objectives and implementation tactics for promoting the modernization of the NIH-funded biomedical data science ecosystem. As part of the planning process, NIH has published a [draft of the strategic plan](#) along with a [Request for Information](#) to seek input from stakeholders, including members of the scientific community, academic institutions, the private sector, health professionals, professional societies, advocacy groups, patient communities, as well as other interested members of the public.