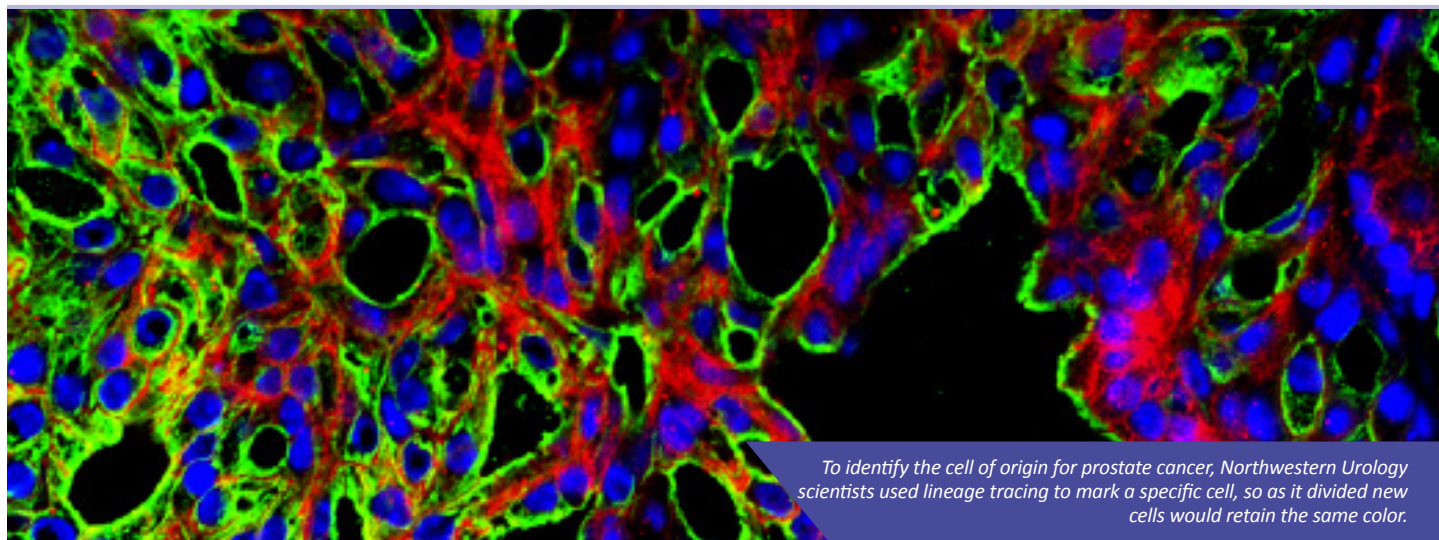


# Breakthroughs

Feinberg School of Medicine Research Office

May 2018



## Science Inspired by Patient Needs

By Will Doss

**For more than two decades the Department of Urology at Feinberg has been focused on developing research programs that find solutions to unmet patient needs.**

“Our department’s culture is one where patient questions inform us as to what matters for urologic diseases,” said [Edward Schaeffer, MD, PhD](#), chair and Edmund Andrews Professor of [Urology](#). “Our goal is to translate scientific discoveries into meaningful solutions for our patients. We really go from bedside to bench, rather than bench to bedside.”

### A Team-Based Approach

The bedside-to-bench philosophy is due in part to the physician-scientist ideal embodied by Schaeffer, who is also a member of the [Robert H. Lurie Comprehensive Cancer Center of Northwestern University](#).

“One hundred percent of the clinical faculty are engaged in research,” he said. “This is unique, but essential to developing novel and more effective treatments to improve the overall

survival and well-being of urology patients.”

Clinicians and scientists in the department have expertise in the following urology specialty areas: benign prostate diseases, bladder health, endourology, infections, inflammation and pelvic pain, male infertility and sexual dysfunction, prostate cancer, reconstructive surgery, robotic surgery and urologic cancer.

“Our residents are afforded the opportunity to train under fellowship-trained faculty from all subspecialties in urology,” Schaeffer said.

The patient-centric, highly agile program encourages residents to apply key basic science discoveries to real-life problems while working to improve their overall understanding of the conditions they treat. Schaeffer’s translational mindset is reflected in Feinberg ranking second in scientific funding among U.S. urology departments.

Aside from his clinical and leadership roles, Schaeffer is committed to his own ongoing research projects. He is part of a consortium of Northwestern urologists dedicated to eliminating the racial disparity in prostate cancer among African-American men, who are twice as likely as Caucasian men to die from prostate cancer.

“While socioeconomic factors contribute to these racial disparities, prostate cancer is biologically different and

*(continued on page 2)*

## Urology

(continued from cover page)

more aggressive in African-American men,” he said. “I hope to identify additional unique aspects of African-American prostate cancers to improve the identification of prostate cancer in African-Americans and to help inform the selection of treatment.”

### Leaders in Research and Discovery

One of the premier research programs within the department is the [Specialized Programs of Research Excellence \(SPORE\)](#), a \$11.3 million grant directed by [William Catalona, MD](#), professor of Urology. One of the four projects within the SPORE is led by [Sarki Abdulkadir, MD, PhD](#), vice chair for research in the Department of Urology and the John T. Grayhack, MD, Professor of Urological Research.

The project involves targeting EPHB4, a receptor involved in blood vessel development that is upregulated in prostate cancer. He is currently recruiting participants for a Lurie Cancer Center-based clinical trial. The trial was conceived because Abdulkadir’s animal model showed that the receptor is important for early formation of arteries and veins, but cancer cells can co-opt the receptor and allow the cells to grow and survive.

“EPHB4 is a cell-membrane receptor, so there’s part that’s sticking outside the membrane and part that’s inside — that’s how the signal is transmitted,” Abdulkadir said. “The drug is really just the outer portion of the receptor, made in a way that it fuses to proteins in the bloodstream and shuts down the signaling pathway.”

Abdulkadir and Catalona are both members of the Lurie Cancer Center.

Another angle of attack on prostate cancer is led by [Jennifer Wu, PhD](#), the Mary and Patrick Scanlan Professor and a professor of Urology and of [Microbiology-Immunology](#) and member of the Lurie Cancer Center, who’s

investigating how a class of molecules produced in prostate tumors — major histocompatibility complex class I chain related (MIC) molecules — can render immunotherapy useless.

“In early-stage cancer, the MIC molecule is a stress molecule, but in later-stage cancer this molecule is released by the tumor and it tricks the immune system, eventually shutting it down,” she said. “That’s why some patients don’t respond to immunotherapy.”

However, there may be a solution: an antibody formulated to isolate and contain MIC molecules, which has shown therapeutic promise in mouse models, according to a *Science Advances* study [published](#) last year, of which Wu was the senior author.

“When you combine our antibody and FDA-approved immunotherapy, you can actually cure tumors in mice,” Wu said. “That’s exciting!”

[Shad Thaxton, MD, PhD](#), professor of Urology and member of the Lurie Cancer Center, has also developed targeted nanoparticle based therapies. He hopes to collaborate with urologists in the department to determine if there is a way to leverage his findings into meaningful clinical solutions for patients.

This emphasis on translational research extends beyond the oncology wing of the department — there’s an entire branch of the department dedicated to benign urological conditions, focusing on disorders of the bladder, prostate and urinary tract.

[David Klumpp, PhD](#), the Anthony J. Schaeffer, MD, Professor of Urology, is the national primary investigator of the National Institute of Diabetes and Digestive and Kidney Diseases’ Multidisciplinary Approach to the Study of Chronic Pelvic Pain, which aims to better understand the underlying causes of the two most prominent chronic urological pain disorders — interstitial cystitis, otherwise known as chronic bladder pain, and chronic prostatitis/chronic pelvic pain syndrome.

Two to six percent of all men will suffer chronic pelvic pain syndrome, an umbrella syndrome for a variety of painful symptoms with no defined cause, according to [Praveen Thumbikat, PhD](#), the O’Connor Family Research Professor of Urology and associate professor of [Pathology](#).



Edward Schaeffer, MD, PhD, chair and Edmund Andrews Professor of Urology.

## CONTENTS

<a href="#">Feature story continued/2018 Nemmers prize</a>	3
<a href="#">Faculty profile: Daniel Brat</a>	4
<a href="#">Student profile: Sarah Bassett</a>	5
<a href="#">Staff profile: Bethany Ekesa</a>	6
<a href="#">In the news and NUCATS corner</a>	7
<a href="#">Sponsored research/New faculty</a>	8
<a href="#">Funding</a>	9
<a href="#">Galter Library connection</a>	10
<a href="#">High-impact research</a>	11
<a href="#">Events and NIH news</a>	12

“It’s a very heterogeneous group and the symptoms are really just pain — that’s it,” Thumbikat said. “There’s no effective treatment, so there’s a huge unmet need.”

Thumbikat has investigated the mechanistic basis of this syndrome and much of his work has pointed in the direction of the immune system — specifically, to mast cells. According to a 2012 study [published](#) in *The Journal of Urology*, Thumbikat discovered bladder inflammation was caused in part by mast cells near nerves and found a combination of histamine blockers and mast cell stabilizing drugs reduced pain in their models.

“When you combine these two agents, you get a dramatic increase in effectiveness,” he said. “There’s some sort of synergistic effect on pain receptors.”

Today, Thumbikat is leading a clinical trial that’s testing these drugs in human patients, in a bid to finally develop a disease-modifying therapy for the painful syndrome. “We’re looking forward to seeing its effectiveness,” he said.

### Patient-Inspired Investigations

As the fourth-most common cancer in men, bladder cancer is also one of the deadliest, with only 35 percent survival at five years in cancers that have metastasized to other parts of the body. Because of the poor prognosis, alternatives to chemotherapy are in high demand, according to [Joshua Meeks, MD, PhD](#), assistant professor of Urology and [Biochemistry and Molecular Genetics](#). He is currently enrolling patients in trials to better understand the expression of certain genes and genetic changes that occur in bladder tumors as well as to evaluate new therapies for patients with muscle-invasive bladder cancer.

One such drug is called “programmed cell death protein 1,” which reinvigorates the body’s immune system to fight off cancer. However, the drug has considerable negative side effects, according to Meeks, who is also a member of the Lurie Cancer Center.

“So we thought, instead of exposing patients to all these other side effects, if you give them the drug directly into the bladder, can we avoid those side effects?” Meeks said. “It’s a service we offer to patients here at Northwestern, and if it’s effective it could save patients from having their bladders removed.”

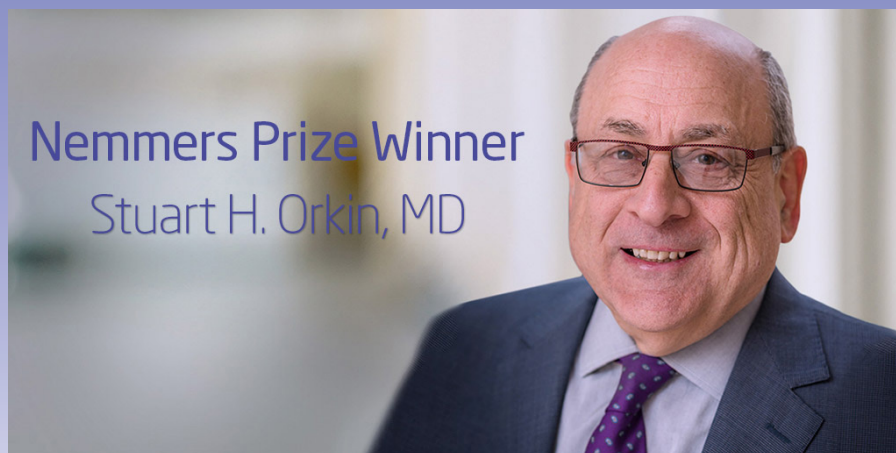
Offering patients hope is important to Meeks, and gaining a deeper sense of the ups and downs a patient experiences during treatment is important to the entire department. [Shilajit Kundu, MD](#), associate professor of Urology, is enrolling patients in trials to investigate psychological factors urologic cancer patients face, such as fear of cancer progression. He also wants to gauge patient satisfaction with treatment choice and how it influences quality of life.

### Looking to the Future

Schaeffer is looking to precision medicine to provide individually targeted care for urologic oncology patients in the future. Genomic sequencing will permit the development of personalized treatment plans based on the tumor’s unique genomic profile.

“We have the tools and we have the experts to interpret those tools,” Schaeffer said. “I hope to continue to leverage off the prior success of the department and its tradition of research excellence and clinical excellence to provide the best care for patients throughout the world.”

## 2018 Nemmers Prize in Medical Science



Stuart H. Orkin, MD, a Howard Hughes Medical Institute investigator at Boston Children’s Hospital and professor at Harvard Medical School will be honored with the 2018 Mechthild Esser Nemmers Prize in Medical Science at Northwestern University. [Read more](#) about his landmark discoveries in blood cell development and the genetic basis of blood disorders.



# A New Understanding of Diffuse Gliomas

Daniel Brat, MD, PhD, chair of Pathology



[Daniel Brat, MD, PhD](#), serves as chair and Magerstadt Professor of [Pathology](#). A neuropathologist and scientist, Brat has spent nearly two decades studying diffuse gliomas — the most common type of brain tumor — and the mechanisms that drive their progression. His basic and translational research has led to a number of breakthrough findings, including the identification of a novel way of classifying gliomas based on their genetic makeup, published in the *New England Journal of Medicine* in 2015.

Brat, who joined Northwestern Medicine in September 2017, is also a member of the [Robert H. Lurie Comprehensive Cancer Center of Northwestern University](#).

[Listen to Brat](#) talk about his findings in the most recent episode of the *Breakthroughs* podcast.



## Q&A

### What are your research interests?

I am interested in a group of neoplastic diseases that affect the brains of children and adults called the diffuse gliomas. These are all relatively resistant to current therapies and are ultimately fatal, but have highly variable times to malignant progression. My main interest is in determining the mechanisms by which these become high grade and rapidly progressive. As a part of these investigations, we study how brain tumors become hypoxic (low in oxygen), since this is important to rapid growth, and how they become enriched in stem cells, new blood vessels and immune cells.

We use many approaches for these studies, including *Drosophila* (fly) models to study stem cell biology; mouse models where we microscopically visualize the tumor through a skull window as it undergoes malignant transition; and large molecular databases of the human diseases using bioinformatics techniques.

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

Those of us who went into pathology are intrigued by disease and want to know how they arise at the cellular and molecular levels. Ultimately, we believe that if we can uncover the forces that lead to the development and progression of a disease, we can devise better approaches for targeted therapies. Viewed from a different angle, some of the properties that drive diseases can be recognized as vulnerabilities that can be exploited therapeutically. In the diffuse gliomas, it is not possible to completely resect all of the tumor cells neurosurgically, so we would like to target specific cell populations that might more fully eradicate the disease, including brain tumor stem cells that replenish the tumor population, or the immune cell population to help suppress its growth.

### How does your research advance medical science and knowledge?

The most recent significant advances of my work are related to the understanding of the diffuse gliomas as molecular diseases, rather than histologic diseases as they appear under the microscope. Interobserver variability using microscopic methods was unacceptably high and did not predict the clinical behavior of disease, leading to problems in clinical management. [Studies](#) that I led with the Cancer Genome Atlas (TCGA) brought a new understanding of diffuse gliomas as discrete genetic entities and led to a molecular classification that is more reproducible, biologically meaningful and clinically relevant. The TCGA-based results pointed toward a new classification system by the World Health Organization and represented a substantial advancement in precision and reproducibility of diagnosis. We are now developing diagnostic and testing guidelines by the College of American Pathologists and American Society for Clinical Oncology, which will close the circle on the discovery-to-clinic journey.

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

From my earliest days in medical school, I was fascinated by the brain — mostly because it seemed to be an organ above the rest in terms of its complexity and direct relation to human behavior. I knew I wanted to focus on diseases that affected the brain, but didn't know exactly which ones.

(continued on page 9)

# Examining the Power of Emotions & Coping on Health

Sarah Bassett, MA, Health Sciences Integrated PhD Program



Sarah Bassett, MA, a third-year student in the [Health Sciences Integrated PhD Program](#), studies how emotions and coping impact health and disease outcomes in the laboratory of [Judith Moskowitz, PhD](#), professor of [Medical Social Sciences](#).

## Q&A

### Where is your hometown?

I grew up in a little town called Hays, Kansas, about halfway between Kansas City and Denver. However, my family is from Boston and I lived there after completing college at the University of Kansas.

Coincidentally, my parents moved back to the Northeast at the same time that I moved to Massachusetts. I definitely consider Boston to be my home base, and I am happy to have wonderful friends and family members there.

### What are your research interests?

I'm interested in how emotions and coping impact health and disease outcomes. There are both direct and indirect pathways through which this occurs. For example, our emotions can directly impact our stress hormone levels, resulting in immune system changes.

Indirectly, emotions can impact health behaviors, which subsequently impact health outcomes. For example, if you feel happy, you might be more likely to get out and take a walk, which would impact your energy output and help you maintain a healthy BMI.

### What exciting projects are you working on?

I'm currently finishing up two papers. One looks at a pilot study of a positive emotion intervention for people living with co-morbid HIV and depression.

The other is a systematic review of the relationship between positive emotion and medication adherence. The second paper was for a qualifying exam that I did for my program, and it feels good that this milestone has a product that will be useful for my career.

### What attracted you to the PhD program?

The quality of the education and opportunities I would be able to take advantage of and the people that I would be working with were both crucial components of a PhD program for me. It was not difficult to see that the quality of education I would obtain through the Health Sciences Integrated PhD Program would be stellar.

Equally important, and much more nuanced, I found the students in the Health Sciences Integrated PhD Program to be truly inspiring. I knew that I wanted to be around them and be pushed to grow alongside them.

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

My best experience at Feinberg has been seeing how much my research skills have improved over time. I believe this growth has been driven by the T32 training grant that I'm on. The grant is a collaboration between the University of Chicago and Northwestern.

Trainees from both campuses meet together monthly and give work-in-progress talks or job talks. Seeing the questions that other people ask and how they investigate the answers has broadened my thinking and creativity.

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

The faculty at Feinberg are kind and curious scientists. They treat doctoral students as junior colleagues. This creates an atmosphere of professionalism and collegiality that makes me feel comfortable speaking up and sharing my ideas, even as an investigator-in-training.

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

In my free time, I enjoy running along the lakefront, experimenting with gluten-free baking and doing Kripalu yoga. I also really enjoy exploring the city with great friends.

### What are your plans for after graduation?

I'm looking into both private sector positions as well as post-doctoral positions. I want to use my knowledge and skills to help people solve difficult, high-impact problems, and I'm so happy that I'm obtaining the ability to do so.

Connect with Sarah on [LinkedIn](#).

# Navigating the Sponsored Research Process

Bethany Ekesa, Manager of Research Administration, Preventive Medicine



Bethany Ekesa, manager of Research Administration in the Department of [Preventive Medicine](#), helps investigators navigating the sponsored research process stay on track.

## Q&A

### Where are you originally from?

I am from originally from Grand Rapids, Michigan.

### What is your educational background?

I have a double major in English and Spanish from Hope College in Holland, Michigan, and a Masters in Public Policy and Health Administration from Northwestern University.

### Please tell us about your professional background.

I got into health administration originally by being an avid blood donor. I donated blood more than six times before graduating high school and later coordinated “pint-for-pint” blood drives in which participants received a pint of ice cream for donating a pint of blood.

Through those experiences, I found that I enjoyed connecting people with resources, helping to educate and guide people through what can be a daunting process and generally working within a health initiative. That led to a few internships both with a blood department and with a county health department, both of which further confirmed my desire to work in a role that works to improve health outcomes.

I started at Northwestern a little over 10 years ago as an administrative assistant and moved into research and grants management from that role. I found that research administration allows me to help connect investigators with funding that lets them to do work that ultimately works to improve health outcomes, so it’s a great combination of my personal and professional interests.

### Why did you choose to work at Northwestern?

Any fan of the musical “Avenue Q” will appreciate that my degree in English left me wanting to make a difference, but unsure of how exactly to do that. As a result, I sought

out Northwestern because it has a great reputation, does an enormous amount of interesting work across multiple disciplines and could expose me to a wide variety of roles within administration and healthcare. I jumped at the opportunity to join the Northwestern community and I haven’t been disappointed!

### How do you help scientists at the medical school?

I love that I’m able to help investigators navigate sponsor and institutional requirements, work through compliance issues and keep the administrative aspects of their grants in order. Especially for new investigators, I can help walk them through the grant components and submission process, both of which can be overwhelming at first. For more established investigators, I help by keeping the administrative pieces on track so they’re able to focus on the science as well as balancing their clinical, research and/or teaching commitments.

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

I love bringing order to what can be a chaotic and confusing process and working with people from across the university to improve processes and keep things moving in a positive direction.

I’ve also developed a love for color-coded and well-laid-out spreadsheets that I never would have anticipated! What’s more, my day is never the same and there’s always plenty to do, so I like that energy and the team dynamic that exists when everyone works together to make things happen.

### What exciting projects are you working on?

I joined the Institute for Public Health and Medicine (IPHAM) specifically because I was interested in working with investigators who study health policy, public health outcomes and global health. As a result, I find many of the projects I support exciting so it’s nearly impossible to narrow down all of the innovative work going on in IPHAM to just a few projects. Check out our [website](#) for some examples.

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

In no particular order, I spend my spare time traveling, playing with my 1-year old, drinking coffee, sorting or organizing things, jogging along the Lake Shore Drive path, trying to figure out what I want to be when I grow up, and having adventures with friends and family.

Connect with Bethany on [LinkedIn](#).

# Research in the News



## **Associated Press, April 3**

[Midlife 'wealth shock' may lead to death, study suggests](#)  
Lindsay Pool was quoted.

► This research was also featured in *National Public Radio*, *Reuters*, *USA Today*, *The Washington Post*, *TIME*, *HealthDay* and *U.S. News & World Report*.

## **Chicago Tribune, April 3**

[Before they transition, some transgender youth preserve fertility by banking sperm or eggs](#)  
Diane Chen was quoted.

## **TODAY, April 6**

[Food allergies in kids may be result of 'perfect storm' of factors](#)  
Joan Cook-Mills was quoted.

## **The Washington Post, April 9**

[How romance can protect gay and lesbian youths from emotional distress](#)  
Brian Mustanski was quoted.

► This research was also featured in *Chicago Tribune*.

## **Chicago Tonight, April 10**

[Study: US clinicians project better health outcomes for white patients](#)  
Sylvia Perry was quoted.

## **The New York Times, April 12**

[Morning People May Live Longer Than Night Owls](#)  
Kristen Knutson was quoted.

► This research was also featured in *CNN*, *USA Today*, *Huffington Post*, *U.S. News & World Report*, *WebMD*, *TIME*, *NBC News* and *CBS News*.

## **The Wall Street Journal, April 19**

[Gene Therapy Shows Promise in Patients with a Blood Disorder](#)  
Alexis Thompson was quoted.

► This research was also featured in *CNN* and *NPR*.

## **Crain's Chicago Business, April 19**

[Chicago teen gun ownership rises even as it falls in L.A., N.Y.](#)  
Joseph Feinglass was quoted.

► This research was also featured in *U.S. News & World Report*, *Reuters* and *WTTW*.

[More media coverage available online.](#)

## NUCATS Corner

### Improve Study Recruitment Efforts

NUCATS Center for Clinical Research's Recruitment & Retention Program can help you recruit study participants. It offers expertise and services to help you engage your target participants. Services include:

- Consulting services to help you assess your recruitment and retention issues and opportunities
- Developing and managing recruitment and retention strategies, which includes print and/or digital campaigns tailored to the study protocol, budget and study population of focus
- Creating or redesigning study marketing materials, including (but not limited to) social media posts/ads, print materials, transit ads and online advertisements
- Managing media buys and distributing all necessary recruitment and retention materials
- Managing inquiries and pre-screening of potential participants

Contact Ashley Sipocz at [nucatsrecruitment@northwestern.edu](mailto:nucatsrecruitment@northwestern.edu) for more information.

## Channelopathy 2018 Conference

Feinberg's Department of Pharmacology is a sponsor of the upcoming international Channelopathy 2018 conference, to be held June 24 to June 26 at the Robert H. Lurie Medical Research Center. [Register here.](#)



# Sponsored Research



**PI: Robert Lavker, PhD, Jack W. Graffin, M.D. Research Professor and professor of Dermatology**

**Sponsor: National Eye Institute**

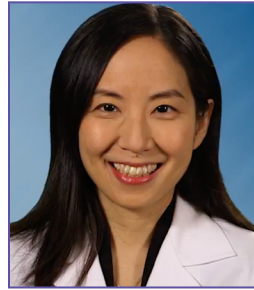
**Title: "The Roles of Autophagy in Limbal/Corneal Epithelia"**

The anterior surface of the eye functions as a barrier to the external environment, protects the delicate underlying structures from injury, supports a tear film and maintains transparency. These functions are achieved, in part, through the corneal and limbal epithelia, which must maintain proper proliferation and differentiation.

Autophagy, a catabolic process by which cells adapt to intrinsic and extrinsic stress-related situations, has been shown to also regulate proliferation and differentiation. Despite the many advances made in our understanding of corneal and limbal epithelial biology, autophagy remains largely unstudied.

Information from this project will have an impact on our understanding of how autophagy contributes to the maintenance of limbal epithelial proliferation and the regulation of corneal epithelial differentiation.

Aberrant differentiation is a feature of numerous corneal epithelial diseases and these studies will provide insight into how modulation of autophagy-associated genes may improve such conditions. Proposed studies will also lead to a better comprehension of how the limbal/corneal epithelia responds to stresses. [Read more about this project.](#)



**PI: Yvonne Lee, MD, MMSc, associate professor of Medicine in the division of Rheumatology and Preventive Medicine**

**Sponsor: National Institute of Arthritis and Musculoskeletal and Skin Diseases**

**Title: "Central Pain Mechanisms, Pain Intensity and Drug Response in Rheumatoid Arthritis"**

Although pain is the most common presenting symptom of rheumatoid arthritis (RA), little is known about the role of central nervous system pathways in the clinical pain experience and drug response.

The central hypothesis of this project is that alterations in central pain mechanisms are associated with heightened measures of clinical pain (pain intensity, pain behavior, pain interference) and poor disease-modifying anti-rheumatic drugs (DMARD) response. The specific aims of this proposal are to: 1) determine the associations between central pain mechanisms and pain intensity, pain behaviors and pain interference among RA patients, and 2) evaluate the effects of central pain mechanisms on treatment response. The proposed study will follow 272 RA patients starting or switching DMARD therapy over 12 weeks.

This proposal examines the association between central pain mechanisms, the clinical pain experience and the assessment of treatment response in RA. The identification of central pain mechanisms associated with clinical pain and drug response will enable us to take the next step in tailoring pain management, using treatments targeted to specific pain pathways. [Read more about this project.](#)



## Welcome New Faculty

Devalingam Mahalingam, MD, PhD, joins as an associate professor of [Medicine](#) in the [Division of Hematology and Oncology](#). His clinical research is focused on finding novel therapeutic targets for patients with gastrointestinal cancers such as pancreatic, liver and colon cancer, as well as genitourinary cancers. Mahalingam earned his medical degree and PhD from the National University of Ireland and completed residency and fellowship in oncology at the Royal College of Physicians in Ireland. He also completed an oncology fellowship at the Institute of Drug Development in San Antonio, Texas, and joined the faculty at the University of Texas Health Science Center San Antonio in 2009 with a focus on drug development and early clinical studies utilizing novel cancer agents. At Northwestern, he will help lead efforts in developmental therapeutics that would give patients access to the best cancer drugs to help control their disease. In addition to the numerous awards for his scientific discoveries and academic achievements, he has published more than 60 peer-reviewed articles and is currently leading several transformative clinical trials.



## Faculty Profile, Brat

(continued from page 3)

My interest in brain tumors came about during my residency in pathology, since I saw the central importance of establishing the correct diagnoses for patients and also recognized the need for better understanding of the cellular and molecular mechanisms that cause them to develop and progress.

Like many people, I think the mentors I had as a student and a trainee played critical roles in shaping my interests, and I gravitated toward people who studied brain tumors who had positive attitudes and a passion for their work.

### Which honors are you most proud of and why?

Prior to joining Northwestern this past year, I received two awards in the same period of time that were very meaningful to me and stood out for the feeling of pride and accomplishment that came along with them. One was the award for Outstanding Support of Residency Training in Pathology and the other was Outstanding Mentor for Post-doctoral Research from Emory University School of Medicine.

These awards meant that someone noticed and appreciated the efforts that I placed on the training of the next generation of physicians and scientists, which has much more impact on the future than individual accomplishments.

### What do you enjoy about teaching/mentoring young scientists in the lab?

Most students begin their journey of education passively as consumers of knowledge. Yet for a subset, there comes a point during undergraduate, medical and graduate school when they begin to understand that they can actually contribute to biomedical advances by participating in investigation.

Witnessing the first time the lightbulb goes on with the realization that they have created something new that didn't exist before, but could someday be important, is very gratifying. It doesn't happen to everyone, but the act of discovery can rapidly transition a student from reader to writer, from reciter to creator, and ultimately from pupil to teacher.

## Funding

### Limited Submission: The Hartwell Foundation Individual Biomedical Research Award

[More information](#)

**Sponsors:** The Hartwell Foundation

**Letter of Intent Due:** June 20

**Amount:** \$100,000 per year, for three years

**Synopsis:** The Hartwell Foundation has invited Northwestern University to nominate two candidates from areas of natural and applied science related to children's health, including biomedical engineering. The foundation seeks to fund innovative and cutting-edge applied research that has not yet qualified for funding from traditional outside sources.

### Impact of Initial Influenza Exposure on Immunity in Infants (U01 Clinical Trial Not Allowed)

[More information](#)

**Sponsor:** United States Department of Health and Human Services, National Institutes of Health and National Institute of Allergy and Infectious Diseases

**Submission deadline:** June 2

**Upper Amount:** \$5M

**Synopsis:** To establish, follow and characterize longitudinal cohorts of infants to determine how initial and repeated natural influenza infections and/or influenza vaccinations shape infant and childhood immunity to future influenza exposures. The ultimate goal of this research is to provide key information to facilitate design of durable, broadly protective influenza vaccines.

### Young Investigator Grants

[More information](#)

**Sponsor:** Breast Cancer Alliance

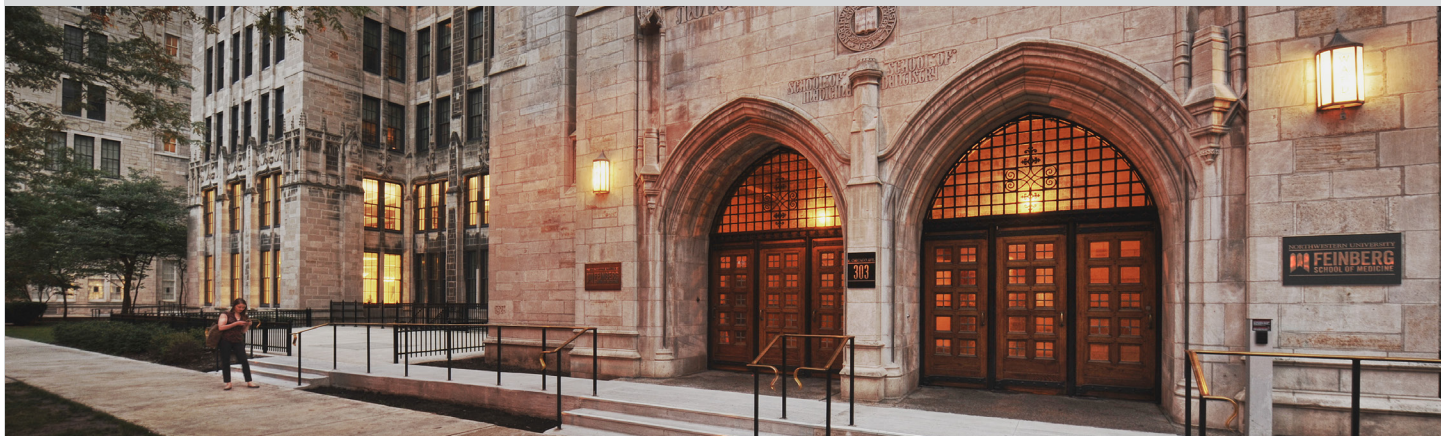
**Submission deadline:** June 20

**Upper Amount:** \$125,000

**Synopsis:** The research project must be directly related to the field of breast cancer. Areas of relevant research may include but are not limited to: diagnosis, etiology, immunology, genetics, therapies, prevention and clinical studies.

[View more funding opportunities](#)

# When and How to Give Acknowledgements



The matter of authorship is an important consideration when professional collaborations result in journal publication. The International Committee of Medical Journal Editors (ICJME) provides two major reasons: “Authorship confers credit and has important academic, social, and financial implications. Authorship also implies responsibility and accountability for published work.”

## Author and non-author contributors

ICJME has developed 4 [criteria](#) for inclusion of authors:

- Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work; AND
- Drafting the work or revising it critically for important intellectual content; AND
- Final approval of the version to be published; AND
- Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

If fewer than four of the criteria are met, ICJME recommends [acknowledgement](#). Its site includes a section, “Non-Author Contributors” that outlines single and group contributions whose activities alone (without other contributions) do not qualify a contributor for authorship. Because acknowledgement may imply endorsement, ICJME also advises that editors require corresponding authors to obtain written permission from all acknowledged individuals.

Succinct recommendations are provided in the author resources section of the [Journal of Biological Chemistry](#) website, advising discussion of authorship in the early stages of the research to publication cycle: “Agree on authorship before writing the manuscript. Authorship is based on substantial contributions.” This agreement is key: for example, librarians who are part of a systematic review team usually meet the requirements for authorship, given the substantial contribution they make in the acquisition of the data that makes the review possible.

## What to include in acknowledgements

Journals’ author instructions vary in the detail provided for what is appropriate in an article’s acknowledgement (credits) section. In a nutshell, these are often statements regarding sources of direct financial support, and recognition of personal assistance. Examples can be found in [Journal of Virology](#) and [Journal of General Physiology](#).

Professional organizations’ style manuals may provide guidance. For example, the [AMA Manual of Style](#) (10th edition) includes this brief synopsis: “Acknowledgments typically are used to list grant or funding support, donors of equipment or supplies, technical assistance, and important specific contributions from individuals who do not qualify for authorship...”

Regarding the financial support information contained in an acknowledgement, government and private funders often outline specific requirements and formats for acknowledging funding in research publications as well as other products. See: [NIH’s Communicating and Acknowledging Federal Funding](#).

## Publishing styles and strategies

When submitting a manuscript, you should consult recommended style and other guidelines specific to the publication. Check out this site curated by University of Toledo’s Mulford Health Sciences Library, which provides links to the [instructions to authors sites](#) for over 6,000 journals in the health and life sciences. All links are to “primary sources” - that is, to publishers and organizations with editorial responsibilities for the titles. Instructions include preferred formats for author listings and acknowledgement statements.

With a little preparation and consultation, it shouldn’t be too difficult to figure out who’s worthy of an authorship credit and who deserves an acknowledgment. Crediting where due fosters good research practices and the development of ongoing, fruitful collaborations.

# High Impact Factor Research

Aebersold R, Agar JN, Amster IJ, et al. (including **Kelleher NL, Mrksich M**). [How many human proteoforms are there?](#) *Nature Chemical Biology*. 2018 Mar;14(3):206-214.

Benjamin EJ, Virani SS, Callaway CW, et al. (including **Wilkins JT**). [Heart Disease and Stroke Statistics-2018 Update A Report From the American Heart Association](#). *Circulation*. 2018 Mar;137(12):E67-E492.

**Cella D**, Escudier B, Tannir NM, Powles T, Donskov F, Peltola K, Schmidinger M, Heng DY, Mainwaring PN, Hammers HJ, Lee JL, Roth BJ, Marteau F, Williams P, Baer J, Mangeshkar M, Scheffold C, Hutson TE, Pal S, Motzer RJ, Choueiri TK. [Quality of Life Outcomes for Cabozantinib Versus Everolimus in Patients With Metastatic Renal Cell Carcinoma: METEOR Phase III Randomized Trial](#). *Journal of Clinical Oncology*. 2018 Mar;36(8):757.

Chai S, Wan X, Ramirez-Navarro A, Tesar PJ, Kaufman ES, Ficker E, **George AL, Jr.**, Deschenes I. [Physiological genomics identifies genetic modifiers of long QT syndrome type 2 severity](#). *Journal of Clinical Investigation*. 2018 Mar 1;128(3):1043-1056.

**Chu LH, Indramohan M, Ratsimandresy RA, Gangopadhyay A, Morris EP, Monack DM, Dorfleutner A, Stehlik C**. [The oxidized phospholipid oxPAPC protects from septic shock by targeting the non-canonical inflammasome in macrophages](#). *Nature Communications*. 2018 Mar;9:16.

Fu HR, Nan KW, Bai WB, Huang W, Bai K, Lu LY, Zhou CQ, Liu YP, Liu F, Wang JT, Han MD, Yan Z, Luan HW, Zhang YJ, Zhang YT, Zhao JN, Cheng X, Li MY, Lee JW, Liu Y, Fang DN, Li XL, Huang YG, Zhang YH, **Rogers JA**. [Morphable 3D mesostructures and microelectronic devices by multistable buckling mechanics](#). *Nature Materials*. 2018 Mar;17(3):268.

Grossman DC, Curry SJ, Owens DK, Barry MJ, Caughey AB, Davidson KW, Doubeni CA, Epling JW, Kemper AR, Krist AH, Kubik M, Landefeld S, Mangione CM, Silverstein M, **Simon MA**, Tseng CW, Force USPST. [Behavioral Counseling to Prevent Skin Cancer US Preventive Services Task Force Recommendation Statement](#). *JAMA*. 2018 Mar;319(11):1134-1142.

Harrison SA, **Rinella ME**, Abdelmalek MF, Trotter JF, Paredes AH, Arnold HL, Kugelmas M, Bashir MR, Jaros MJ, Ling L, Rossi SJ, DePaoli AM, Loomba R. [NGM282 for treatment of non-alcoholic steatohepatitis: a multicentre, randomised, double-blind, placebo-controlled, phase 2 trial](#). *Lancet*. 2018 Mar;391(10126):1174-1185.

Johnston SRD, Hegg R, Im SA, Park IH, Burdaeva O, Kurteva G, Press MF, Tjulandin S, Iwata H, Simon SD, Kenny S, Sarp S, Izquierdo MA, Williams LS, **Gradishar WJ**. [Phase III, Randomized Study of Dual Human Epidermal Growth Factor Receptor 2 \(HER2\) Blockade With Lapatinib Plus Trastuzumab in Combination With an Aromatase Inhibitor in Postmenopausal Women With HER2-Positive, Hormone Receptor-Positive Metastatic Breast Cancer: ALTERNATIVE](#). *Journal of Clinical Oncology*. 2018 Mar;36(8):741.

**Karmali KN, Lloyd-Jones DM**, van der Leeuw J, Goff DC, Jr., Yusuf S, Zanchetti A, Glasziou P, Jackson R, Woodward M, Rodgers A, Neal BC, Berge E, Teo K, Davis BR, Chalmers J, Pepine C, Rahimi K, Sundstrom J. [Blood pressure-lowering treatment strategies based on cardiovascular risk versus blood pressure: A meta-analysis of individual participant data](#). *PLoS Medicine*. 2018 Mar;15(3):e1002538.

Kenney GE, Dassama LMK, Pandelia ME, Gizzi AS, Martinie RJ, Gao P, DeHart CJ, Schachner LF, Skinner OS, Ro SY, Zhu X, Sadek M, Thomas PM, Almo SC, Bollinger JM, Krebs C, **Kelleher NL**, Rosenzweig AC. [The biosynthesis of methanobactin](#). *Science*. 2018 Mar;359(6382):1411.

Kim Y, Bravo E, Thirnbeck CK, Smith-Mellecker LA, **Kim SH**, Gehlbach BK, Laux LC, Zhou X, Nordli DR, Jr., Richerson GB. [Severe peri-ictal respiratory dysfunction is common in Dravet syndrome](#). *Journal of*

*Clinical Investigation*. 2018 Mar 1;128(3):1141-1153.

Ma XT, Liu Y, Liu YL, Alexandrov LB, Edmonson MN, Gawad C, Zhou X, Li YJ, Rusch MC, Easton J, Huether R, Gonzalez-Pena V, Wilkinson MR, Hermida LC, Davis S, Sioson E, Pounds S, Cao XY, Ries RE, Wang ZM, Chen X, Dong L, Diskin SJ, Smith MA, Auvil JMG, Meltzer PS, Lau CC, **Perlman EJ**, Maris JM, Meshinchi S, Hunger SP, Gerhard DS, Zhang JH. [Pan-cancer genome and transcriptome analyses of 1,699 paediatric leukaemias and solid tumours](#). *Nature*. 2018 Mar;555(7696):371.

Martin RW, Des Soye BJ, Kwon YC, Kay J, Davis RG, Thomas PM, Majewska NI, Chen CX, Marcum RD, Weiss MG, Stoddart AE, Amiram M, Charna AKR, Patel JR, Isaacs FJ, **Kelleher NL**, Hong SH, Jewett MC. [Cell-free protein synthesis from genomically recoded bacteria enables multisite incorporation of noncanonical amino acids](#). *Nature Communications*. 2018 Mar;9:9.

McQuade JL, Daniel CR, Hess KR, et al. (including **Sosman JA**). [Association of body-mass index and outcomes in patients with metastatic melanoma treated with targeted therapy, immunotherapy, or chemotherapy: a retrospective, multicohort analysis](#). *Lancet Oncology*. 2018 Mar;19(3):310-322.

Mobadersany P, Yousefi S, Amgad M, Gutman DA, Barnholtz-Sloan JS, Velazquez Vega JE, **Brat DJ**, Cooper LAD. [Predicting cancer outcomes from histology and genomics using convolutional networks](#). *Proceedings of the National Academy of Sciences of the United States of America*. 2018 Mar 27;115(13):E2970-e2979.

**Nekrasova O, Harmon RM, Broussard JA, Koetsier JL, Godsel LM, Fitz GN, Gardel ML, Green KJ**. [Desmosomal cadherin association with Tctex-1 and cortactin-Arp2/3 drives perijunctional actin polymerization to promote keratinocyte delamination](#). *Nature Communications*. 2018 Mar;9:18.

O'Leary B, Hrebien S, Morden JP, Beaney M, Fribbens C, Huang X, Liu Y, Bartlett CH, Koehler M, **Cristofanilli M**, Garcia-Murillas I, Bliss JM, Turner NC. [Early circulating tumor DNA dynamics and clonal selection with palbociclib and fulvestrant for breast cancer](#). *Nature Communications*. 2018 Mar 1;9(1):896.

**Robida PA**, Puzzovio PG, Pahima H, Levi-Schaffer F, **Bochner BS**. [Human eosinophils and mast cells: Birds of a feather flock together](#). *Immunological Reviews*. 2018 Mar;282(1):151-167.

Slogrove AL, Schomaker M, Davies MA, et al. (including **Chadwick EG**). [The epidemiology of adolescents living with perinatally acquired HIV: A cross-region global cohort analysis](#). *PLoS Medicine*. 2018 Mar;15(3):e1002514.

Traina TA, Miller K, Yardley DA, Eakle J, Schwartzberg LS, O'Shaughnessy J, **Gradishar W**, Schmid P, Winer E, Kelly C, Nanda R, Gucaip A, Awada A, Garcia-Estevez L, Trudeau ME, Steinberg J, Uppal H, Tudor IC, Peterson A, Cortes J. [Enzalutamide for the Treatment of Androgen Receptor-Expressing Triple-Negative Breast Cancer](#). *Journal of Clinical Oncology*. 2018 Mar 20;36(9):884-890.

Trombetti A, Hars M, Hsu FC, Reid KF, Church TS, Gill TM, King AC, Liu CK, Manini TM, **McDermott MM**, Newman AB, Rejeski WJ, Guralnik JM, Pahor M, Fielding RA, Investigators LS. [Effect of Physical Activity on Frailty Secondary Analysis of a Randomized Controlled Trial](#). *Annals of Internal Medicine*. 2018 Mar;168(5):309.

Zhang X, Yoon JY, Morley M, McLendon JM, Mapuskar KA, Gutmann R, Mehdi H, Bloom HL, Dudley SC, Ellinor PT, Shalaby AA, Weiss R, Tang WHW, Moravec CS, Singh M, Taylor AL, **Yancy CW**, Feldman AM, McNamara DM, Irani K, Spitz DR, Breheny P, Margulies KB, London B, Boudreau RL. [A common variant alters SCN5A-miR-24 interaction and associates with heart failure mortality](#). *Journal of Clinical Investigation*. 2018 Mar 1;128(3):1154-1163.



# Calendar

Thursday, May 14

## Spring Global Health Day 2018

Medical students and residents will present global health research at a poster session followed by a keynote lecture from Judith Lasker, PhD, N.E.H. Distinguished Professor of Sociology in the Department of Sociology and Anthropology at Lehigh University.

**Time:** Noon to 2:00 p.m.

**Location:** Prentice Women's Hospital  
3rd floor Conference Room L  
250 E. Superior, Chicago

**Contact:** [a-mizrachi@northwestern.edu](mailto:a-mizrachi@northwestern.edu)

[More information](#)

Tuesday, May 15

## Department of Microbiology-Immunology Seminar Series

Evan Snitkin, PhD, University of Michigan will present "Genomic tracking of the intra- and inter-hospital spread of multi-drug resistant organisms."

**Time:** Noon to 1 p.m.

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

**Contact:** [hauser@northwestern.edu](mailto:hauser@northwestern.edu)

[More information](#)

Monday, May 21

## 2018 Feinberg MD Commencement

Class of 2018 convocation and reception

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

**Location:** Grand Ballroom, Navy Pier  
600 East Grand Avenue, Chicago, Illinois

**Contact:** [j-langland@northwestern.edu](mailto:j-langland@northwestern.edu)

[More information](#)

## Follow Feinberg Social Media



# NIH News

## "All of Us" Begins Enrollment in Chicago

On May 6, the NIH opened national enrollment for the [All of Us Research Program](#) — a momentous effort to advance individualized prevention, treatment and care for people of all backgrounds. To mark the occasion, the Illinois Precision Medicine Consortium hosted a Chicago launch event at Millennium Park's Chase Promenade South in Chicago.



[Philip Greenland, MD](#), the Harry W. Dingman Professor of [Cardiology](#) and director of the Center for Population Health Sciences, is the principal investigator of the Illinois Precision Medicine Consortium. [Read more](#) about the role Northwestern will play in the study.

## All About Grants Podcast

The most recent episode of the NIH's [All About Grants](#) podcast focuses on covers letters and the appropriate use of cover letters on applications that are submitted to the NIH. Cathleen Cooper, director of the Division of Receipt and Referral in the NIH's Center of Scientific Review shares the do's and don'ts in this [seven-minute recording](#) or you can read the transcript [here](#).

## New NIH Grants and Funding Website

Congress included the "Next Generation Researchers' Initiative" in the 2016 21st Century Cures Act. This act asked the NIH to support a comprehensive study by the National Academies of Sciences, Engineering, and Medicine (NASEM) on policies affecting the next generation of researchers and to take into consideration the recommendations made in their report.

The National Academy began its study in early 2017 and completed it in April 2018. The NASEM NGRI panel recently released a long-awaited report, "[The Next Generation of Biomedical and Behavioral Sciences Researchers: Breaking Through.](#)" Read the reaction to the report in a [blog post](#) co-written by Michael Lauer, NIH's deputy director for extramural research and Francis Collins, director of the NIH.