

# Breakthroughs

Feinberg School of Medicine Research Office

March 2019



*Northwestern scientists overcome hurdles in maternal-fetal investigations to answer important clinical questions.*

## Findings Overturn Old Assumptions in Maternal Care

By Will Doss

For many women, the checkups during the nine months of their pregnancy are the most contact they'll have with healthcare providers throughout their entire lives. This is not by accident or through an overabundance of caution — maternal health during pregnancy and delivery is critical for both baby and mother, and has lifelong ramifications.

This time period — with a high level of patient motivation and engagement — also presents a golden opportunity for health interventions across a variety of conditions. However, studies in obstetrics have long faced major obstacles, and preconceptions about maternal care can be difficult to change.

Northwestern investigators are skilled in the delicate nature of maternal-fetal investigation, and have built a multi-disciplinary enterprise that is making critical discoveries, with significant clinical implications and real-world consequences.

For example, Northwestern is one of 12 centers that make up the Maternal-Fetal Medicine Units (MFMU) Network, a research network funded by the National Institutes of Health that aims to improve maternal and fetal outcomes through landmark clinical trials.

"It's a real privilege to be part of the MFMU, because it's setting the rules and guidelines for how obstetrics is practiced," said [Alan Peaceman, MD](#), chief and professor of [Maternal-Fetal Medicine](#) in the Department of [Obstetrics and Gynecology](#).

### Making Weight Loss Possible

There is a fundamental obstacle in studying pregnant women: Investigators don't want to risk harming a developing fetus. For example, many interventions that target weight are considered off-limits in pregnant women, according to [Michelle Kominiarek, MD](#), associate professor of Obstetrics and Gynecology in the Division of Maternal-Fetal Medicine.

"As physicians, we always felt like they're pregnant, we can't do anything about obesity or excessive gestational weight gain — you're not supposed to take weight-loss medication and you can't have bariatric surgery," Kominiarek said.

With a full third of Americans suffering from obesity, the negative outcomes from overweight pregnancies or excess weight gain during pregnancy are staggering. Even just higher-than-normal blood sugar during pregnancy can increase the risk of diabetes or obesity for both mother and child, according to a recent study led by [Boyd Metzger, MD](#), professor emeritus

## Maternal Care *(continued from cover page)*

of [Medicine](#) in the Division of [Endocrinology, Metabolism and Molecular Medicine](#), and [published](#) in *JAMA*.

But the wealth of patient-provider contact and motivations during the life transition of pregnancy provide a prime opportunity for interventions.

“It’s a time where behaviors change; people quit smoking or quit drinking, all for the sake of the pregnancy — so let’s use that,” Kominiarek said.

In particular, Kominiarek is investigating whether activity-tracking devices can be combined with health behavior interventions to help pregnant women meet their weight goals, and recently [published](#) preliminary findings.

“We found that patients liked wearing the devices and would recommend them to their friends, and thought the devices helped them stay active during pregnancy,” Kominiarek said. “Northwestern is an ideal place to do these studies because it has the potential for so many multidisciplinary collaborations — not just with medicine, but with nutritionists and health behavior specialists as well.”

Another common stumbling block in maternal research is enrolling participants. Women have been historically excluded from clinical trials, and even today, timing is often not on the investigators’ side.

“Ideally, we’d like to get access to these patients before they get pregnant, or at least in the first couple months,” Peaceman said. “But most often they learn about studies when they go to the doctor for the first time, usually two or three months into the pregnancy.”

Peaceman led a recent study that used online monitoring and teleconference calls with nutritionists to try and reduce excess weight gain during pregnancy, [publishing](#) the findings in the journal *Obesity*. While the intervention was successful in reducing weight gain by an average of four pounds, the reduction did not result in fewer complications, such as cesarean sections or pre-eclampsia.



Alan Peaceman, MD; Michelle Kominiarek, MD; and William Grobman, MD, MBA

“We think that by the time these women are in the second trimester, it may already be too late to change important outcomes,” Peaceman said. “To lower the risk of obstetrical complications, they may have to start changing their lifestyle before or immediately after they conceive.”

Feinberg has a strong recruitment apparatus — one of the best in the nation, according to Peaceman — but there are still improvements to be made.

“We’ve worked hard to maintain a culture where our patients are willing to participate in clinical research,” Peaceman said.

## Changing C-Section Assumptions

Although research in maternal-fetal medicine remains challenging, effective recruitment and a culture of collaboration at Northwestern has made changing preconceptions about maternal care possible, as shown by a recent study [published](#) in the *New England Journal of Medicine*.

Up until now, the prevailing wisdom in obstetrics was that inducing labor increased the risk of caesarean delivery, according to [William Grobman, MD, MBA](#), the Arthur Hale Curtis, MD, Professor of Obstetrics and Gynecology and senior author of the study.

“I can’t express how fundamental this teaching was,” Grobman said.

But the landmark studies from the 1980s were methodologically flawed, according to Grobman, and since then, small observational studies had hinted at inconsistencies. So Grobman, partnering with the MFMU, set up a clinical trial of 6,000 patients at 40 sites across the country.

The investigators found that inducing labor at 39 weeks actually reduced the risk of caesarean delivery — the exact opposite of what had been taught in medical schools for decades. This underlines the importance of keeping an open mind in pregnancy research, Grobman said.

“Sometimes there’s a sort of a kernel of error at the very beginning that then gets perpetuated over time,” Grobman said. “We can’t forget how important it is to go back and look at where these beliefs originated.”



Listen to Peaceman discuss his *Obesity* study in [an episode](#) of the *Breakthroughs* podcast.

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# Keynote Speaker for Lewis Landsberg Research Day 2019

Barbara J. Meyer, PhD, will deliver the keynote address at the 15th Annual Lewis Landsberg Research Day, Thursday, April 4, 2019. The title of her talk is: "Remodeling and Repressing X Chromosomes via Molecular Machines."



*Barbara J. Meyer, PhD, is a pioneer in research on chromosomal expression and sex determination.*

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

Meyer is an investigator of the Howard Hughes Medical Institute and a professor of Genetics, Genomics, and Development in the Department of Molecular and Cell Biology at the University of California, Berkeley.

Research in Meyer's lab explores dynamic chromosome behaviors, including the epigenetic regulation of X-chromosome-wide repression through dosage compensation, X-chromosome counting to determine sex, and meiotic chromosome cohesion, condensation and segregation.

Her doctoral research with Mark Ptashne, PhD, at Harvard University dissected the molecular basis for the lysis-lysogeny genetic switch in Escherichia virus Lambda. Her postdoctoral research with Sydney Brenner, PhD, at the MRC Laboratory of Molecular Biology in Cambridge, UK, launched her studies of *C. elegans* sex determination and dosage compensation. Prior to her appointment at Berkeley, she was a tenured professor at the Massachusetts Institute of Technology.

In 2018, Meyer received the E.B. Wilson Medal from the American Society for Cell Biology in recognition of her far-reaching contributions to cell biology, and the Thomas Hunt Morgan Medal from the Genetics Society of America for lifetime achievement in the field of genetics. She also received the Francis Amory Prize for distinguished achievement in the areas of reproductive medicine and physiology from the American Academy of Arts and Sciences in 2017.

Meyer is a member of the U.S. National Academy of Sciences and the U.S. Academy of Medicine. She is also a fellow of the American Academy of Arts and Sciences, the American Association for the Advancement of Sciences, the American Academy of Microbiology and the American Philosophical Society.

Visit the [15th Annual Lewis Landsberg Research Day website](#) for more information.

## Mentors of the Year Workshop

The [Medical Faculty Council](#) have announced the 2019 Faculty Mentor of the Year Award Recipients. They will be honored during the official Mentor of the Year Award ceremony at the 15th Annual Lewis Landsberg Research Day, Thursday, April 4.

The recipients are:



*Tamara Isakova, MD, MMSc*

[Tamara Isakova, MD, MMSc](#), director of the [Center for Translational Metabolism and Health](#) in the Institute for Public Health and Medicine and an associate professor of [Medicine](#) in the Division of [Nephrology and Hypertension](#)



*John Varga, MD.*

[John Varga, MD](#), director of the [Northwestern Scleroderma Program](#), the John and Nancy Hughes Distinguished Professor of Rheumatology and a professor of Medicine in the Division of [Rheumatology, Dermatology](#) and [Pharmacology](#)

On March 13 in Baldwin Auditorium at the Lurie Medical Research Center, Isakova and Varga hosted a mentoring workshop for members of the Feinberg community. They discussed their backgrounds, experiences and mentoring roles, and answered questions from attendees about mentoring, career planning, and other topics.



# Uncovering Genetic and Epigenetic Pathways to Prostate Cancer

Jindan Yu, MD, PhD, professor of Medicine in the Division of Hematology and Oncology



Jindan Yu, MD, PhD, professor of [Medicine](#) in the Division of [Hematology and Oncology](#) and of [Biochemistry and Molecular Genetics](#), uses integrative genomic and bioinformatics approaches to shed light on the molecular mechanisms underlying prostate cancer progression, findings which could inform the development of novel therapeutics.

Beyond her work in the laboratory, Yu is also the assistant director of education & training and co-leader of the [Translational Bridge Program](#) at the [Robert H. Lurie Comprehensive Cancer Center of Northwestern University](#).

## Q&A

### What are your research interests?

My research interests are to understand genetic and epigenetic regulations of prostate cancer by utilizing cancer genomics, bioinformatics and big data analysis approaches. We are fascinated by contemporary technologies to study gene regulation at genome-wide, systems levels on one end, and at single-cell, base-pair resolution on the other.

Our current research has two major focuses. One is on understanding how the androgen receptor — a hormonal transcription factor at the center of prostate cancer initiation and progression — works in concert with a key set of co-regulators such as FOXA1, GATA2, HOXB13 and mediator proteins. We then examine how disrupted expression of these genes reprograms the androgen receptor and promotes resistance to prostate cancer treatment. Another focus of the laboratory is on epigenetic regulation of prostate cancer with special interest on the polycomb group protein EZH2, and on DNA methylation and de-methylation enzymes, such as TET1.

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

Prostate cancer is a leading cause of cancer-related death in American men. There are two overarching challenges in prostate cancer research today: 1) to distinguish indolent prostate cancer from aggressive ones to avoid overtreatment and 2) to effectively treat late-stage castration-resistant metastatic prostate cancer to prolong patient life. Through mechanistic studies described above, we aim to reveal novel cancer biomarkers and therapeutic targets that can inform the development of new drugs and treatment regimens. The ultimate purpose of my laboratory is to benefit prostate cancer patients.

Currently, we are developing a blood-based cell-free DNA epigenetic signature for newly diagnosed patients to distinguish those with clinically significant prostate cancer in need of treatment from low-risk patients who could be assigned active surveillance. We are also developing new drugs targeting EZH2 and chemokine receptor CXCR7, and promoting several combinatorial drug treatment regimens in clinical trials.

### Where have you recently published papers?

We have three recent publications: In November 2018, we [published](#) a study of TRIM28 in prostate cancer in *Nature Communications*. In a paper [published](#) in *Cell Reports*, we reported a previously uncharacterized role of EZH2 as a transcriptional activator, which does not require its methyltransferase function and is independent of other polycomb subunits. This role of EZH2 is particularly important in prostate cancer as androgen receptor (AR) is a primary target. Our study suggests the insufficiency of enzymatic inhibitors to fully block EZH2 function and the necessity of combining with AR-targeted therapies. In a paper [published](#) in the *Journal of Clinical Investigation* in December 2018, we reported that FOXA1 loss in late-stage prostate cancer leads to activation of the TGF-beta pathway. Preclinical data showed that TGF-beta pathway inhibitors greatly reduced cancer growth and metastasis, directly supporting a clinical trial to test the efficacy of TGF-beta receptor inhibitor galunieritib in combination with standard AR-targeted therapy in castration-resistant prostate cancer. This project is supported by Northwestern's [prostate cancer SPORE](#).

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

The research environment at Feinberg and the Lurie Cancer Center, with the aid of the prostate cancer SPORE, is outstanding and has cultivated a number of collaborations. We

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# Investigating Circadian Control in Regulation of Metabolism

Nathan Waldeck, Driskill Graduate Program in Life Sciences



Nathan Waldeck, a third-year student in the Driskill Graduate Program (DGP), studies the contributions of the body's molecular "clock" to metabolic homeostasis. Waldeck works in the laboratory of [Joseph Bass, MD, PhD](#), chief of [Endocrinology](#) in the Department of Medicine.

## Q&A

### Where is your hometown?

I am from Farmersville, Illinois, a small town of about 800 people near Springfield, where I grew up on a family farm growing corn and soybeans.

### What are your research interests?

My research in undergrad, and initially my master's program, focused on quantitative genetics for crop improvement in soybeans. It wasn't until I began working with genomic sequencing technologies in my master's program at North Carolina State University that I became interested in groundbreaking genomics studies occurring in medical research. At Northwestern, I discovered the research of Dr. Bass, whose lab uses genomic approaches coupled with physiological approaches to answer important questions about the circadian rhythms of metabolism. Currently, my research is exploring the genomic control of distinct neuronal populations on circadian regulation of appetite and metabolic homeostasis.

### What exciting projects are you working on?

Primarily, I am focusing on a phenomenon described in individuals who are trying to lose weight. Following weight loss through a hypocaloric diet, many individuals see a return to their previous higher body weight and may even notice greater weight gain. A "reprogramming" of the body weight setpoint is thought to occur, which makes long-term weight loss difficult to maintain. However, the physiological basis for this event is largely unknown. My investigations are working with populations of neurons in the hypothalamus, which serve as the primary nutrient-sensing cells of the brain. Signals are relayed through the hypothalamus from the body to the brain and vice versa to drive daily feeding habits.

Additionally, our lab is interested in the established contributions of the body's molecular "clock" to metabolic homeostasis. Increased attention is being placed on the importance of proper light exposure and meal timing to an individual's overall health. Through careful genetic targeting of circadian genes in cells regulating feeding behavior, I am

investigating the importance of circadian control in regulation of proper metabolism rhythms and the consequences of dysregulation to overall health.

By investigating neurons known to be involved in hunger drive and metabolic homeostasis, I hope to uncover molecular events connected with the "reprogramming" theory that may lead to a greater understanding of the mechanics necessary for weight loss.

### What attracted you to the PhD program?

The strong research reputation of Northwestern is originally what attracted me to the program. I had particular interest in the DGP because of the translational research focus of many of the labs. Once I attended my interview weekend and saw the thriving research campus located in the middle of downtown Chicago, I was sold. My meetings with enthusiastic faculty also made me confident that I would find a great environment for the next step in my research career.

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

As a "non-traditional" student coming in with a background in plant genetics, I think my best experience has been the availability of resources to familiarize myself with mammalian biology and new techniques that I have found to be essential for my research. Experts teaching in both the core and elective classes, as well as collaborations between different departments, have helped make the transition for me successful. I have also found that my skills in statistics and bioinformatics helped contribute to synergistic collaborations. It really has been a great environment for successful research opportunities.

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

Expanding upon my "best" experience at Feinberg, I think the faculty here are fantastic. One can find experts who have had established labs for 30+ years alongside brand-new faculty who bring with them expertise in developing technologies. I have not had to look far when considering a new approach to my research and have found even the most established PIs to be very approachable and helpful.

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

One draw to working in Chicago was having all of the amenities of a large city available for my down time. I enjoy trying new restaurants, visiting museums and even attending a sporting event or two. Additionally, I am a fan of standup comedy and like to take in a show whenever I can. Even after being here for a few years, I find that there is always something new to explore in the city.

### What are your plans for after graduation?

After graduation, I plan to continue in research. I will pursue a position as a postdoctoral researcher in genetics.

# Finding a Career in the Department of Medical Social Sciences

Hannah Boggs, Program Assistant, Department of Medical Social Sciences



## Q&A

### Where are you originally from?

I am originally from Akron, Ohio, a small town just south of Cleveland. It's where LeBron James grew up, which is the only reason anyone really knows where it is.

### What is your educational background?

I began my college career at the University of Akron until my sophomore year, when I decided to move to Chicago. Originally a marketing student, I changed my major at this time as well. Although I enjoyed marketing, I often thought about how much I missed psychology courses and the social sciences in general. Upon moving to Chicago, I transferred to Roosevelt University, where I graduated in May 2016 with a bachelor's degree in psychology and a minor in English. I intend to begin my master's in health communication at Northwestern this fall.

### Please tell us about your professional background.

I have been at Northwestern, specifically in the [Department of Medical Social Sciences](#) (MSS), since June 2018. I started as a program assistant 1, and in October I was promoted to program assistant 3. I have absolutely loved my time at Northwestern thus far. Prior to this, I was working at Nike Chicago as the operations coordinator for the retail store on Michigan Avenue. I sought out a position at Northwestern because I wanted something with more regular hours that could potentially turn into a career, and I have definitely found that at MSS.

### Why do you enjoy working at Northwestern?

I have always wanted to work in education, although I had never thought of working at a university until my fiancé began working as a financial analyst at Northwestern's Pritzker School of Law. He told me about the program assistant positions at Northwestern, and I thought I'd be a good fit. When I started looking into different positions throughout the university, Medical Social Sciences stood out to me because of my background in psychology and my interest in social sciences. The department is the first of its kind and is already well recognized, despite being only 10 years old. I could not have made a better choice!

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

When I first started here, I was at the front desk of our department, so my job consisted of helping with anything that our faculty and staff needed. This position allowed me to

become acquainted with everyone in my office and acclimated to the environment. Now, I work with [Laurie Wakschlag, PhD](#), vice chair for scientific & faculty development and director of the Institute for Innovations in Developmental Sciences in the Department of Medical Social Sciences. I assist with various tasks for her work, as well as many general tasks within the department. This includes faculty affairs and recruiting efforts, financial transactions and facilities. I am also the hub coordinator — our department consists of four research hubs, and I coordinate monthly talks sponsored by the hubs, and manage the budgets and enrollment for the hubs.

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

I love the people I work with! I have a great relationship with the people in my department, especially my managers. They have provided me with useful insight since I've been here, and have really allowed me to explore different areas and find my strengths. I feel like I am never doing the same thing more than once. It keeps my job interesting and also allows me to explore many different features of my job and our department in general.

### What exciting projects are you working on?

Recently, I helped prepare and launch our new department website. As the hub coordinator, my role initially was to schedule photo shoots for each hub and their co-directors and members for the website. However, over time, I became more involved with the project. We just finished filming a video for our website, for which I managed the scheduling and day-of coordination. I really enjoyed watching the process unfold and learning the ins and outs of video production. We recently debuted the video at our department meeting and received wonderful feedback from our staff and faculty, so it was amazing to watch it come to fruition. Watch the video [here](#).

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

I love to run and work out, and I am extremely passionate about exercise and the positive effects it has on our bodies and minds. I was never athletic growing up, but I was always competitive. Since starting college, I have grown to love sports and exercise. I'm currently training for my second Chicago Marathon this October. In addition to exercise, I am obsessed with everything food related.

### Anything else we should know about you?

I am a diehard Cleveland sports fan, and I love to travel. Recently, I've traveled a lot for games and other events. I've been to London and Denver to watch the Browns in the last two years alone! I also love dogs, and I am currently planning my wedding for August of 2020.

Connect with Hannah on [LinkedIn](#).

# Research in the News

## HealthDay, February 8

[One Key Step Can Help Cancer Patients Quit Smoking](#)

Brian Hitsman, PhD, was quoted.

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

## The New York Times, February 12

[Why Do South Asians Have Such High Rates of Heart Disease?](#)

Namratha Kandula, MD, MPH, was quoted.

## Crain's Chicago Business, February 13

[Grow your own kidney? Chicago researchers are getting closer](#)

Jason Wertheim, MD, PhD, was quoted.

## American Heart Association, February 18

[Living near convenience stores could raise risk of artery-clogging condition](#)

Kiarri Kershaw, PhD, MPH, was quoted.

► This research was also featured in *HealthDay*.

## U.S. News & World Report, February 19

[Metastatic Prostate Cancer: Symptoms, Medications and More](#)

## HealthDay, February 26

[Walking, Not Riding, Boosts Health in Golfers With Knee Woes](#)

Prakash Jayabalan, MD, PhD, was quoted.

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

## The New York Times, February 28

[New Sensors Monitor Sick Babies Without Wires Blocking Hugs](#)

John Rogers, PhD, and Amy Paller, MD, were mentioned.

► This research was also featured in *Associated Press*, *Chicago Tribune*, *San Francisco Chronicle*, *Yahoo! News* and others.

[More media coverage available online.](#)

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Northwestern University  
**NUCATS**  
Clinical and Translational Sciences Institute

## NUCATS Corner

### Learn About the Latest Trends in Clinical Research

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 for application in their professional settings. The conference is open to professionals in clinical and translational research, including investigators, clinical research coordinators, research nurses, monitors, project and site managers, regulatory staff, research assistants and allied health professionals. This year's agenda will include a networking reception at the conclusion of the conference.

#### Plenary Sessions:

- **Research Ethics Consultation: Its Role in a Human Subjects Protection Program**  
Lainie Friedman Ross, MD, PhD, University of Chicago
- **Ctrl-Alt-Del: Clinical Trials in a Digital Era**  
Evan Muse, MD, PhD, Scripps Research Translational Institute
- **Leading Clinical Research Management Efforts by Revitalizing a Workforce Model**  
Denise Snyder, MS, RD, LDN, Duke University

**When:** May 2, 2019 from 8:00 a.m. to 4:30 p.m.

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

This continuing nursing education activity is under review by the Northwestern University Clinical and Translational Sciences Institute (NUCATS). Provider approved by the State of California Board of Registered Nursing, Provider Number CEP 15198.

For more information and to register, [click here](#).



**Why Are Food Allergies on the Rise?** with Ruchi Gupta, MD. Listen [here](#).



**Children in the Juvenile Justice System Face Serious Health Risks** with Linda Teplin, PhD. Listen [here](#).



**Going Wireless in the NICU** with John A. Rogers, PhD, and Amy Paller, MD. Listen [here](#).



# Sponsored Research



**PI: Ankit Bharat, MBBS, the Harold L. & Margaret N. Method Research Professor of Surgery**

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

**Title: Donor nonclassical monocytes initiate lung injury following transplantation**

The indications for lung transplantation have expanded significantly, resulting in a clinical growth of over 50 percent in the last decade. However, the survival following lung transplant is the worst compared to other solid organs, with only 80 percent and 50 percent of patients alive at one and five years, respectively. Freshly transplanted lungs frequently experience a form of acute injury, mediated by the neutrophils of the recipient, which is the predominant cause of both short- and long-term mortality following lung transplantation.

This study will examine the mechanisms by which pulmonary intravascular nonclassical monocytes, which Bharat's group recently discovered to be retained in donor lungs, recruit neutrophils and cause injury to the transplanted lung. The aim is to introduce therapeutic and investigative avenues for the prevention and treatment of this post-transplant lung injury and improve patient outcomes.

[Read more about this project.](#)



**PI: A. Vania Apkarian, PhD, professor of Physiology, Anesthesiology and Physical Medicine and Rehabilitation**

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

**Title: Brain Pathophysiology of Osteoarthritis Pain**

Osteoarthritis (OA) knee pain is the leading musculoskeletal chronic pain condition worldwide, yet little is known about the mechanisms of chronic OA pain, reflected in the fact that current pharmacologic approaches are minimally effective and new treatments have not been developed. In contrast, joint replacement surgery is highly effective in most, but not all, patients with OA. For unknown reasons, around 20 percent of OA knee replacement surgeries (TKR) fail to relieve pain.

This study will seek to characterize the mechanisms responsible for chronic OA knee pain and to define processes that differentiate success/failure of TKR in order to build predictive models of TKR outcomes. The Apkarian laboratory hypothesizes that brain maladaptations due to chronic pain and related personality, and cognitive, emotional, sensory and motor abnormalities, as well as psychosocial properties, are important in the maintenance of OA pain and control persistence of pain in those individuals in whom TKR provides ineffective pain relief. To this end, the team will study these characteristics in a large group of OA patients, follow their pain characteristics over 12 months after TKR, and assess sub-groups with the least and greatest pain response to surgical intervention.

[Read more about this project.](#)



Listen to Apkarian discuss his research in [an episode](#) of the *Breakthroughs* podcast.

## Welcome New Faculty



**Kurt Lu, MD**, joins us as associate professor of [Dermatology](#) and the Eugene and Gloria Bauer Professor of Dermatology. His research examines vitamin D as a therapeutic for sun damage. Lu earned his medical degree from the University of Rochester and completed post-graduate training at Columbia University, Case Western Reserve University and the National Institutes of Health. Most recently, Lu was an assistant professor at Case Western Reserve University School of Medicine. He has published numerous peer-reviewed papers and is currently principal investigator on grants through the National Institutes of Health and The Dermatology Foundation. He is the recipient of numerous awards and honors for his research and teaching achievements, and has mentored many students, fellows and residents throughout his career.



Yu

(continued from page 4)

work very closely with Northwestern prostate cancer SPORE investigators, including Drs. [William Catalona](#), [Maha Hussain](#), [Sarki Abdulkadir](#), [Ximing Yang](#), [Alicia Morgans](#), [David VanderWeele](#), [Bin Zhang](#) and [Denise Scholtens](#), on multiple translational projects. We are also collaborating with Drs. [Massimo Cristofanilli](#), [Edward Schaeffer](#), [Adam Murphy](#), [Qi Cao](#), [Debu Chakravarti](#) and [Jian-jun Wei](#) on campus. Through the SPORE, I've also formed collaboration with many investigators outside of Northwestern University. For our drug development projects, we have been mainly collaborating with Dr. [Gary Schiltz](#) on the Evanston campus.

#### How is your research funded?

My research was initially funded by a K99/R00 pathway to independence award and an R01 from the NIH, a new investigator award from the Department of Defense (DOD) and a Research Scholar Award from the American Cancer Society. My research program is currently funded by a new R01 to study the role of NF90 proteins in prostate cancer, a project in SPORE to perform translational research targeting FOXA1 downstream pathways in late-stage prostate cancer and a Prostate Cancer Foundation Challenge Award to target chemokine signaling and MAPK/ERK pathway. My laboratory is also currently supported by three DOD grants, including an Impact Award to develop novel approaches to target EZH2 in castration-resistant prostate cancer. Nearly half of our research funding supports translational cancer research, while the other half is for basic science research.

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

My laboratory team can be divided into two major groups: dry lab and wet lab, which are supervised by Drs. [Jonathan Zhao](#) and [Will Fong](#), respectively. Dr. Zhao, who has been working with me since 2009, establishes and maintains the infrastructure and pipelines for bioinformatics analysis and has performed bioinformatics, integrative and big data analysis for almost every one of our lab projects. Dr. Fong, who joined my laboratory in 2013, is currently the lab manager of the wet lab. Zhao and Fong have been instrumental to the research program in my laboratory. Other important members of the Yu laboratory include postdoctoral fellows Drs. Nathan Damaschke, Xiaodong Lu, Song Tan and Guihua Zeng; graduate students Galina Gritsina and Kevin Park; and lab technician Rakshitha Jagadish.

## Funding

### Secondary Data Analysis to Examine Long-Term and/or Potential Cross-Over Effects of Prevention Interventions: What Are the Benefits for Preventing Mental Health Disorders? (R01 Clinical Trial Not Allowed)

[More information](#)

**Sponsors:** National Institute of Mental Health (NIMH), National Center for Complementary and Integrative Health (NCCIH), Office of Research on Women's Health

**Letter of Intent:** April 2

**Submission Deadline:** May 2

**Amount:** In FY 2020, NIMH intends to commit \$3M in total costs to fund four to six awards, and NCCIH intends to commit \$500,000 in total costs to fund one award.

**Synopsis:** This funding opportunity encourages the use of existing data sets from preventative intervention trials of mental health disorder cases implemented early in life to 1) examine risk and protective factors relevant to later mental health outcomes in childhood, adolescence and young adulthood; and 2) determine whether preventive interventions delivered earlier in life have long-term effects, and/or cross-over effects on important mental health outcomes, including serious mental illness that typically emerges in adolescence or young adulthood.

### Biology of Bladder Cancer (R01 Clinical Trial Optional)

[More information](#)

**Sponsor:** National Cancer Institute

**Letter of Intent:** 30 days prior to the application due date

**Submission Deadline:** Standard dates apply; the first standard due date is June 5

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

**Synopsis:** Relatively little is known regarding the molecular mechanisms driving initiation, progression and malignancy of bladder cancer. The understanding of biological processes of the normal bladder at the molecular, cell and organ levels is also limited. This funding will be used to gain fundamental knowledge of how molecular and cellular functions of the bladder are altered in cancer to aid the understanding of bladder cancer biology and interventions. Applications that involve multidisciplinary teams and use clinical specimens, or investigate both normal and cancer processes are encouraged.

[View more funding opportunities](#)

# Reporting Your Research: Tips and Guidelines



By Q. Eileen Wafford, Research Librarian

Evidence-based medicine relies on studies that are accurate, transparent and reproducible. Each year, researchers publish millions of scientific articles of varying quality. Poorly reported research with problems that include missing information, ambiguities and misrepresentations can have a negative effect on everyone from the investigator to the patient. Thankfully, there are several tools available to scientists to promote high-quality reporting.

## Reporting Your Results

Authors are expected to deliver concise quantitative and narrative reports on their study estimates, the strength of the figures, outcome measurements, the effects of confounding variables and other findings in the study. This information may be conveyed with statistical models and tests that will vary by research question and study design. Authors should understand and use appropriate estimates and models for their research questions. Check out the range of [books](#) on biostatistics available at Galter for help on presenting a more complete and accurate picture of your research results and findings.

## Eliminating Bias

[Bias](#) is “any influence or action at any stage of a study that systematically distorts the findings” and can occur at any stage of the research process. One [study](#) identified 235 different types of biases in biomedical research, including such common forms as selection, confounding, reporting and publication biases. We see other forms of bias related to [datasets and outcomes](#). [Key biases](#) to watch for are bias through ignorance, by design and by misrepresentation. Authors can take steps to identify and eliminate bias in their studies, including the development of a detailed protocol, such as the PRISMA-P (Preferred Reporting Items for Systematic review and Meta-Analysis Protocols) for authors pursuing a systematic review.

## Assessing Article Quality

Several tools are available for quality assessment of articles, particularly those used in a systematic review. Use the

[critical appraisal tools](#) from the Center for Evidence-based Medicine to get started. Other common scales are [GRADE](#) (Grading of Recommendations Assessment, Development and Evaluation), [Jadad](#) for randomized controlled trials, and [Newcastle-Ottawa](#) for non-randomized studies.

Find more risk of bias and QA [tools for reviewers](#) on the Galter Library website.

## Reporting Conflicts of Interest

To promote transparency, remember to offer a Conflicts of Interest disclosure statement, even if no conflicts exist.

## Reporting Guidelines

Reporting guidelines are tools to identify methodological weaknesses and promote transparency. They are not intended to dictate the design of a study or the conduct of investigators, instead offering recommended frameworks for investigators to consider as they report their research. Reporting guidelines provide “a minimum list of information” ([EQUATOR Network](#)) to help readers form “[a clear and complete account of the research](#)” and are usually developed around a specific study design. Most guidelines have a supplemental explanation and elaboration (E&E) document which gives a description of each item and examples on how to report the item in a manuscript. Many [peer reviewers use reporting guidelines](#) to help them assess the manuscript, so consider submitting the reporting guideline with comments on where you addressed that item in the manuscript along with an excerpt of that section. These extra steps could aid the peer-review and revision process.

Where can you find reporting guidelines? The EQUATOR Network endorses over [400 guidelines](#) while the library’s GalterGuide, [Reporting Research and Evaluating Studies](#), lists guidelines for common study types. You may also want to visit your target journal’s instructions for authors to see if it recommends a specific reporting guideline. And if you use one, remember to cite it.

For more tips and resources on reporting research, see the Galter Library’s related [guide](#) or take the library’s [Reporting Research & Evaluating Studies](#) class.

# High-Impact Factor Research

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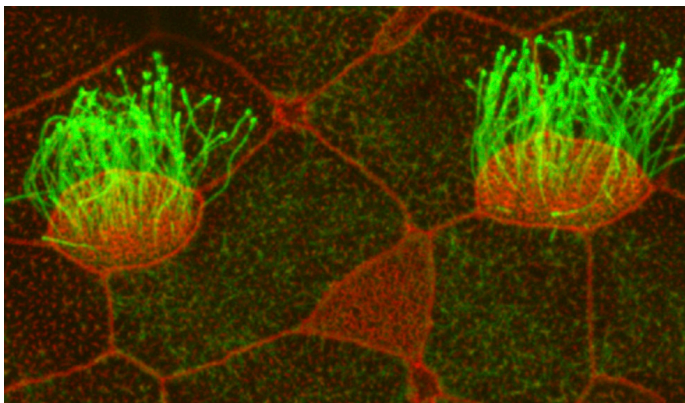
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The Feinberg Research Office regularly tracks research published by Feinberg investigators. The citations are used on web pages, in newsletters and social media, for internal reporting and more. To more accurately track these journals, the Research 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."



# Featured Core



*Multi-ciliated cells on the surface of Xenopus embryos, captured by CAM. Source: [The Mitchell Laboratory](#)*

## The Center for Advanced Microscopy

The Center for Advanced Microscopy ([CAM](#)) offers state-of-the-art instrumentation and services for the study of biological processes at the whole animal, tissue, cellular and subcellular levels.

CAM includes one of nine elite [Nikon Imaging Centers](#) in the world, and the center's services include confocal microscopy, multiphoton imaging, super-resolution microscopy (SIM & STORM), microinjection, ratiometric calcium imaging, laser capture microdissection, high content imaging, whole animal bioluminescent and fluorescent imaging, transmission electron microscopy, platinum replica electron microscopy, scanning electron microscopy and 3D tomography. Many of CAM's microscopes come equipped with temperature, CO<sub>2</sub> and humidity-controlled chambers for live cell observation. The core will also consult on computerized image processing and analysis.

[More information.](#)

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# NIH News

## New Director Named for the NIH Center for Scientific Review

NIH welcomes [Noni Byrnes, PhD](#), as the new director of the [Center for Scientific Review](#) (CSR). Byrnes will oversee an annual budget of more than \$130 million and more than 500 scientific, support and contract personnel. CSR manages the receipt and referral of all grant applications for NIH and for other parts of the U.S. Department of Health and Human Services. Dedicated CSR staff also oversee the peer review of approximately 75 percent of the more than 80,000 grant applications annually. Learn more about NIH peer review in the [NIH Data Book](#) and [CSR website](#).

## Updates to NIH Policy on Early Stage Investigator (ESI) Application Status

To enhance diversity in the biomedical research workforce, NIH [prioritizes](#) the funding of early stage investigators. An ESI is a program director (PD) or principal investigator (PI) who has completed their terminal research degree or clinical training in the past 10 years and has not been a recipient of a substantial NIH independent research award. NIH encourages PDs/PIs to verify and update the date of their terminal research degree or post-graduate training in their eRa Commons Profile before submitting an application, so that they are properly identified as holding an ESI status on R01 or R01-equivalent applications.

In some cases, NIH considers [requests for extension](#) of the ESI period after an application has been submitted, which was formerly a manual change. NIH will now automatically update the ESI status of an application within eRa Commons if a PD/PI updates their degree or residency information after submission, or if they receive an extension of ESI status after submitting an R01 or R01-equivalent application. Read more about this policy update [here](#).

## Reminder to Address Inclusion of Individuals Across the Lifespan in Grant Applications

NIH announced a [guide notice](#) affecting grant applications and progress reports for awards from applications with due dates of January 25, 2019 or later, to justify the age-appropriate inclusion or exclusion of clinical research participants throughout the life of a study. The revised policy requires individuals of all ages to be included in clinical research, unless there are scientific or ethical reasons for exclusion. [Listen](#) to this 7-minute "All About Grants" podcast episode to learn more about this policy change.