

# Breakthroughs

Feinberg School of Medicine Research Office

October 2017



## New Strategic Research Plan for Feinberg

By Will Doss

Over the next few years, Northwestern University Feinberg School of Medicine's research enterprise will undergo an exciting stage of growth, with the planned hiring of hundreds of new scientists and research staff, and the opening of the [Louis A. Simpson and Kimberly K. Querrey Biomedical Research Center](#). At the same time, the medical school is expanding its strategic research plan, adding the following five, new crosscutting themes to its existing plan, which was developed in 2012:

- Healthcare Engineering, Analytics & Outcomes
- Computational Biology and Big Data
- Healthy Aging
- Health Policy and Economics
- Precision Medicine, Pharmacogenomics and Enterprise Data Warehouse

In addition, a new Behavioral Biology disease focus was added to the strategic plan, reflecting the impact mental health can have on all aspects of health.

"These added cross-cutting themes and the new disease focus will strengthen the Feinberg research mission for years to come," said [Rex Chisholm, PhD](#), vice dean for Scientific Affairs and Graduate Education and the Adam and Richard T. Lind Professor of Medical Genetics. "I want to thank all who participated for sharing unique insights on the topics they are so passionate about."

The additions to the strategic plan grew from a [research retreat](#), held in February, where nearly 300 Feinberg scientists gathered for a day of brainstorming and discussion. The retreat's output was reviewed with a broad cross-section of the medical school, including department, institute and center leadership, the retreat sponsor group and the Northwestern University Board of Trustees' Northwestern Medicine committee, to refine and distill the ideas into actionable plans.

"We wanted to understand our strengths and weaknesses along with the environmental trends in healthcare and the trajectory of biomedical research," said [Alfred George Jr., MD](#), chair of [Pharmacology](#). "Quite a few great ideas came out of this enterprise."

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New Plan

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A Plan for the Future

As patients are living longer and the baby boomer generation hits Medicare eligibility, the issue of healthy aging will increasingly affect research and patient care, leading to Healthy Aging being one of the broad focus areas generated by the research retreat attendees.

This trend is illustrated by shifting interests in Human Immunodeficiency Virus (HIV) research, according to [Brian Mustanski, PhD](#), professor of [Medical Social Sciences](#) and director of [the Institute for Sexual and Gender Minority Health and Wellbeing](#).

“Previously, we didn’t ask what someone’s health was like after being on HIV treatment for 20 or 30 years, because they weren’t living that long,” said Mustanski, also a professor of [Psychiatry and Behavioral Sciences](#) and the co-director of the NIH-funded Third Coast Center for AIDS Research.

“Now that people are living near-normal lifespans, we are looking at how to reduce the chronic disease and morbidities associated with living with HIV.”

Another new category with big cross-departmental potential is Computational Biology & Big Data — an explosion in biomedical and genetic data over the past decade has fueled scientists’ need for more processing power and analysts, according to [Elizabeth McNally, MD, PhD](#), Elizabeth J. Ward Professor of Genetic Medicine and the director of the [Center for Genetic Medicine](#).

“Whether you’re dealing with electronic health records, or you’re a geneticist, or a biochemist, every one of us has a need for increasing computational power,” she said. “There’s so much data out there, I think every aspect of our enterprise would benefit.”

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## New Plan

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Equally important as the crosscutting categories is the new disease focus area: Behavioral Biology.

Mental illness is one of the most common diseases in the United States and untreated mental illness correlates with a number of negative outcomes, according to Mustanski.

“Mental health doesn’t just impact an individual; it affects their family, employability, relationships and children,” Mustanski said. “Mental health issues cross over between a lot of specialty areas at Feinberg, and this new disease focus allows us to grow across centers and departments.”

## Inside the Research Retreat

The roots of the retreat stretch back to 2012, when [Eric G. Neilson, MD](#), vice president for Medical Affairs and Lewis Landsberg Dean, began his tenure at Feinberg. He organized the first research retreat, which resulted in the first iteration of the research strategy. The decision to split the Department of Molecular Pharmacology and Biological Chemistry into the separate departments of Pharmacology and [Biochemistry and Molecular Genetics](#) was also made at the last research retreat.

While no changes were proposed to existing departments this time around, the February 2017 retreat at the Fairmont Hotel in Chicago resulted in the generation of the new cross-departmental research priorities, extracted from the suggestions and experiences of the participants.

These large cross-discipline meetings are valuable for collaboration, George said, because without them, scientists can end up in silos, spending a majority of time with other scientists in the same field.

“As investigators, we spend 99 percent of our time hyper-focused on our area of research,” said George, who is also the Magerstadt Professor of Pharmacology and the director of the Center for Pharmacogenomics.



Elizabeth McNally, MD, PhD, leads a breakout session at this year’s retreat.

“Getting out of that comfort zone and opening up your mind to other perspectives is really important.”

McNally, also a professor of [Medicine](#) in the Division of [Cardiology](#) and of Biochemistry and Molecular Genetics, said it was especially important to crowdsource these ideas because it’s often the investigators themselves that are reviewing grants and papers, attending specialty meetings and being involved in conversations with grant funding institutions such as the National Institutes of Health.

“A lot of it is having your ear on the ground, talking to colleagues about what’s emerging,” McNally said. “You hear about what’s important and what pressures are being exerted.”

Another benefit of the research retreat’s democratic process is that it gives investigators ownership over the direction of the organization, according to George.

“Everybody has their own fiefdom with their own ideas, but once everybody starts putting their cards on the table you realize you’re all talking about the same thing — we’re just using different perspectives,” George said. “At the end of the day, this is a grassroots enterprise, and people buy in much better when they have a seat the table rather than simply being told what to do.”

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## Retreat 2017 Recap



[Take a look back](#) at the Feinberg Research Retreat, held Feb. 14, 2017, at the Fairmont Hotel in Chicago.

# Bringing Skin Discoveries from Bench to Bedside

Amy Paller, MD, chair of Dermatology



As both a scientist and an active clinician, [Amy Paller, MD](#), chair and Walter J. Hamlin Professor of [Dermatology](#), is dedicated to translating new discoveries about skin disease from bench to bedside.

Her NIH-funded basic science and clinical research — which ranges from immune-mediated inflammatory diseases in children to diabetic wound healing and topical gene therapy for skin disorders — is frequently published in top journals, including *JAMA*, *The New England Journal of Medicine*, *The Journal of Clinical Investigation* and *Proceedings of the National Academy of Sciences*.

Paller, a faculty member since 1988, also serves as director of the [Northwestern University Skin Disease Research Center \(SDRC\)](#), one of six SDRCs in the country.

“I am so lucky to have a career that encourages collaborative activities, focuses on training the next generation, and transitions research success towards better care of my patients,” says Paller, also a professor of [Pediatrics](#) and a member of the [Robert H. Lurie Comprehensive Cancer Center of Northwestern University](#).

## Q&A

### What are your research interests?

My laboratory has worked for the last few decades on the role of membrane-based glycosphingolipids in signaling in the epidermis. Most recently, our work has focused on the role of ganglioside GM3 in diabetes, especially in suppressing growth factor receptor signaling. We are also probing the role of obesity and diabetes in exacerbating inflammatory skin disease and, in joint studies with [Dr. Daniela Menichella](#) and [Dr. Richard Miller](#), are evaluating the molecular basis for nerve retraction and regeneration, and how it is altered in diabetes.

In collaborative studies with [Dr. Chad Mirkin](#), we have leveraged spherical nucleic acids (SNAs) — nanoconstructs of spherically arrayed siRNA or DNA — for topically-applied gene suppression. We have used these SNAs to down-regulate mRNA expression of GM3 synthase, as a therapeutic tool to reverse impaired diabetic wound healing. We have also used topically applied SNA gene regulation to target the increased cytokine expression in psoriasis and growth factor overexpression in scars.

In the clinical arena, my investigator-initiated research is focused largely on immune-mediated and genetic inflammatory skin diseases. I have been working with collaborators to define the underlying immunophenotype of children with eczema/atopic dermatitis (AD) and of patients with the ichthyoses, a group of genetic disorders characterized by poor epidermal barrier, inflammation and scaling.

Our clinical research unit in dermatology is the largest in the country, and I direct the pediatric dermatology component. In addition to being a lead site for several trials of first-in-kind medications, we also are developing new ways to document disease severity and patient-reported outcomes. I am working with [Dr. Richard Gershon](#) and [Dr. David Cella](#) in testing PROMIS (Patient-Reported Outcomes Measurement Instrument Systems) instruments in children with AD. We are also working with [Dr. John Rogers’](#) group in applying his skin sensor devices.

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

As with any physician-scientist, my interest is to discover what drives disease (of the skin) and whether we can integrate that new knowledge towards intervention. My clinical interests have long been genetic skin disorders and inflammatory skin diseases in children. As a result, I see firsthand the huge unmet need for improved diagnostics and therapy — and have the patient population to test discoveries. During the past 30 years of working at Northwestern, I have had the good fortune of taking many discoveries from bench to bedside, either from my lab or often through collaborative discoveries.

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

I have been fortunate to receive many honors in my career from major organizations, most recently the Livingood Award from the American Academy of Dermatology, the Kung-Sun Oh Memorial Medal from Yonsei University, and the prestigious Stephen Rothman Award from the Society for Investigative Dermatology.

But the recent honor I am most proud of was receiving the Paula Stern Outstanding Women in Science and Medicine Award from Northwestern. As faculty, we are recognized nationally and internationally for our accomplishments and service, but to be honored by peers whom we cherish here at Northwestern (my home for almost 40 years) is priceless. This honor recognized both my research activities and also the

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# Two Years of Construction Progress on the Simpson Querrey Biomedical Research Center



Watch video: Chris Jones, senior superintendent at Power Construction, shares an update on the construction of the Louis A. Simpson and Kimberly K. Querrey Biomedical Research Center. Video and story by Amber Bemis.

In the two years since Northwestern University broke ground, the Louis A. Simpson and Kimberly K. Querrey Biomedical Research Center has progressed from an [extensive underground construction project](#), to a 300-foot tall, 14-story structure.

“Visual progress has really picked up, and it’s been great for the community, scientists and all of Northwestern’s staff to see what this building is going to be one day in the near future,” said Chris Jones, senior superintendent at Power Construction, the general contractor of the project.

Jones manages planning, construction and implementation of the project alongside Perkins & Will architects and the Northwestern facilities management team. He is no stranger to major construction projects on the Chicago campus; his recent projects include the [Shirley Ryan AbilityLab](#) and the [Ann & Robert H. Lurie Children’s Hospital of Chicago](#).

“It’s been a privilege to be a part of the expansions and transformations happening on the Chicago campus,” Jones said. “This project in particular is very exciting. It has a unique design and structure, top of the line interior, all coupled with the fact that it is going to deliver world-class research someday.”

One of the unique design features is the floor plan, which provides clear views, free of columns, creating more spaces for open collaboration. Connecting the new building to existing buildings is also an intentional part of the design, meant to spark collaboration and a sense of connectivity.

“This building is a blend of a new construction and stacking on the Robert H. Lurie Medical Research Center. So we’ll have connecting lobbies; each floor will be connected to the Lurie facility, and it will be wrapped with a full plaza featuring green space on the outside. In addition to this, the building will also have a sky bridge that connects to the Ward Building,” Jones said.

Currently there is extensive mechanical, electrical, duct and piping work taking place behind the exterior of the building. There are typically more than 200 skilled trades workers onsite, working nine to 10 hours per day, six days per week.

“Since we’ve moved above ground, the structure has started to grow, which allows more people to work concurrently. So while steel work might be happening on the top of the building, at the same time we are framing and dry walling electrical closets on the lower floors. This gives an idea of the wide variety of the trades on this jobsite, from ironworkers to painters,” Jones said.

In the next year, the team will finish installing the windows on the outside of the building and work on the bridge connecting the Ward Building will begin. The outdoor plaza work will also start to take shape and the interior work on the lab floors will become a main focus.

# Enhancing the Impact of Research Through Interdisciplinary Collaboration

Fei Chen, Driskill Graduate Program in Life Sciences



Fei Chen, a fifth-year student in the Driskill Graduate Program in Life Sciences (DGP), studies the structure and function of proteins that shape the landscape of chromatin in the laboratory of [Ali Shilatifard, PhD](#), chair of the [Department of Biochemistry and Molecular Genetics](#).

Chen earned his undergraduate degree from Shandong

University and a master's degree from Fudan University. After graduating, Chen plans to complete a postdoctoral fellowship at Memorial Sloan Kettering Cancer Center.

## Q&A

### Where is your hometown?

I am from China. I grew up in a small town at the foot of Huangshan Mountain, one of the most beautiful mountains in China.

### What are your research interests?

I have been fascinated by the complex regulation of our genome since high school, where I learned that there are around 20,000 genes within the human genome and each cell type in our body has its own gene expression network and signature, with its perturbation associated with various diseases. This curiosity drove me to my initial focus in studying the structure and function of proteins that shape the landscape of chromatin — the template whereby our genes are expressed. Now I have extended my research interests toward studying the machineries that directly talk to the genome in order to produce messenger RNA, the template used for protein synthesis, in both physiological and malignant conditions.

### What exciting projects are you working on?

Since joining the laboratory of Ali Shilatifard, PhD, I have been focusing on the elucidation of the mystery of pausing control during transcription elongation. After characterizing the dynamics of pausing on genome-wide scale (*Genes & Development*, 2015), we identified that a factor called Pol II-associated factor 1 (PAF1) is essential for the maintenance of pausing

thousands of genes (*Cell*, 2015). Recently, our follow-up studies revealed a surprising connection between a PAF1-dependent release of pausing and the activation of enhancer, a distal regulatory element of gene expression that is highly mutated in numerous diseases (*Science*, 2017). Currently, I am working with my colleagues to explore the detailed mechanisms of this regulation, hoping to provide therapeutic strategies in targeting enhancer-related diseases, especially cancers.

### What attracted you to the PhD program?

I had always thought that being a PhD student meant dedication to a narrow and specialized research field. After joining DGP, I immediately realized that Northwestern not only allows for in-depth research into important and challenging questions, but also cultivates an interdisciplinary collaboration that vastly leverages the impact of our research and broadens our vision in science.

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

Our lab is a big family with more than 20 people. Most of us have collaborated with other scientists from different departments at Feinberg. It is really fun to discuss science with these people and make friends with them!

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

Most of the faculty I am familiar with at Feinberg are extremely friendly and supportive. I occasionally ask them, especially Dr. John Crispino and Dr. Jindan Yu, for advice on my projects and future plans, and I really benefit from their insight.

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

I play soccer once a week. My favorite team is Barcelona.

### What are your plans for after graduation?

I am planning to graduate at the beginning of next year and then I will join Dr. Joan Massague's lab at Memorial Sloan Kettering Cancer Center for postdoctoral training. Through my research, I hope to decrypt the misregulation of epigenetics in cancer and come up with novel therapeutic strategies targeting cancers.

Connect with Fei on [LinkedIn](#).

# Helping Students and Scientists Excel in the Lab

David Murray, Research Technician, Biochemistry and Molecular Genetics



David Murray is a research technician in the lab of [Ali Shilatifard, PhD](#), Department of Biochemistry and Molecular Genetics. He works closely with members of the lab to perform experiments and troubleshoot new technologies and techniques.

## Q&A

### Where are you originally from?

I originally hail from the small town of Grandview, outside of Columbus, Ohio.

### What is your educational background?

I attended University of South Carolina and received my undergraduate degree in marine science. I continued my education at the College of Charleston, where I completed my graduate work in marine biology.

### Please tell us about your professional background.

While in South Carolina, I was working for the Department of Natural Resources, studying population genetics of fish off the Southeast coast. In 2013, I moved to Chicago and started working at Loyola University, doing research on T-cell receptor gene-modified T-cells. This work led me to pursue my current position in a molecular genetics lab.

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

I love Chicago, and Northwestern is one of the top research institutions in this city. After discussions with colleagues about the culture of Northwestern, I knew this would be a place that would help me excel as a scientist and challenge me professionally.

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

My role is to give those who are conducting research an extra set of hands to perform experiments and troubleshoot new techniques and technologies. Northwestern is highly competitive with universities and institutions globally, and it is my goal to help my colleagues perform their research quickly and effectively to maintain that competitive edge.

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

I have always enjoyed meeting new people, and this lab is a phenomenal group. There are scientists from all corners of the world, with many unique personalities, and all brilliant minds. It has truly been a pleasure working with these wonderful people.

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

In my spare time I enjoy being on the water, playing the ukulele and spending time with my dog, Jaxson.



## Welcome New Faculty

Jeffrey Linder, '97 MD, MPH, FACP, joins as the Chief of General Internal Medicine and Geriatrics in the Department of Medicine. His expertise is in electronic health records and clinical decision support as well as using behavioral science and social psychology to understand and change behavior.

Much of Linder's research focuses on the care of ambulatory patients with acute respiratory infections – the number one symptomatic reason for seeking medical care in the United States – and the appropriate use of antibiotics in ambulatory care. Ultimately, his goal is to improve primary care in the United States. Previously, he was on faculty at Brigham and Women's Hospital and Harvard Medical School.

Linder earned his bachelor's degree in neurobiology and physiology from Northwestern University, his medical degree from Northwestern University Feinberg School of Medicine and his master's degree from Harvard School of Public Health. He has published in numerous journals and is currently involved in projects funded by the Agency for Healthcare Research and Quality and the National Institutes of Health. Read a recent profile about Linder in [Northwestern Medicine Magazine](#).

# Research in the News

## **CNN, September 4**

[Is peanut butter healthy?](#)

Linda Van Horn was quoted.

## **Reuters, September 5**

[Heart benefits of alcohol not seen people with liver disease](#)

Lisa VanWagner was quoted.

## **Reuters, September 8**

[Sedentary time, lack of activity tied to seniors' loss of mobility](#)

Dorothy Dunlop was quoted.

## **HealthDay, September 8**

[Many moisturizers aren't what they claim to be](#)

Steve Xu was quoted.

► This research was also featured in *Time Magazine, U.S. News & World Report* and *Today*

## **Fox News, September 14**

[Program allows transplant patients to hold their old hearts in their hands](#)

Clyde Yancy was quoted.

## **The New York Times, September 14**

[The crisis in gynecological cancer research](#)

Daniela Matei was quoted.

## **The Washington Post, September 18**

[Battling asthma can get harder, and scarier, as you age](#)

Michael Wolf was quoted.

## **Chicago Tribune, September 19**

[Olivia the Ovary part of NU's animated approach to teach reproductive health to kids](#)

Teresa Woodruff was quoted.

## **Chicago Tribune, September 21**

[How to meditate when you can't sit still](#)

Melinda Ring was quoted.

[More media coverage available online.](#)

Northwestern University

# NUCATS

Clinical and Translational Sciences Institute

## NUCATS Corner

### Successfully Navigate the Research Enterprise

NUCATS and the [Faculty Affairs Office](#) are helping early career faculty and postdoctoral fellows kick-start the independent phase of their research careers. Through a twice-monthly seminar series, attendees will be introduced to the numerous research services and resources available at Northwestern.

During each session of "[Navigating the Research Enterprise](#)" seminar series, attendees will learn key skills necessary to succeed as investigators. The series is led by [William Lowe, Jr., MD](#), vice dean for Academic Affairs and [Richard McGee, Jr, PhD](#), associate dean for Faculty Recruitment & Professional Development, and includes presenters from departments and programs across the University.

Upcoming topics include:

- Strategies for Writing Effective Proposals
- National Institutes of Health Grant Review Process
- Individual Career Advancement Plans

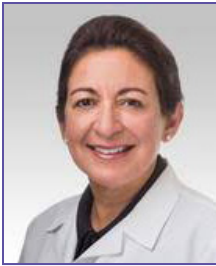
The seminars are held on select Mondays through January 29, 2018, and are free of charge. Browse the [full seminar schedule](#) for the current academic year and to review materials from past presentations and [RSVP](#) for an upcoming event.

## Help Feinberg Track Journals

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."



# Sponsored Research



**PI: Leena Sharma, MD, Chang-Lee**  
Professor of Medicine in the Division of Rheumatology

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

**Title: "Core Center for Clinical Research at Northwestern University"**

The overarching goal of this center is to improve outcomes for persons at risk for rheumatic and musculoskeletal conditions or who are already afflicted.

The theme of the center's work is prevention strategy and intervention development to create lifestyle, behavioral, medical and rehabilitative solutions for individuals with or at risk for these conditions of all ages.

[Read more about this project.](#)



**PI: Hongxin Dong, MD, PhD, research associate professor of Psychiatry and Behavioral Sciences**

**Sponsor: National Institute on Aging**

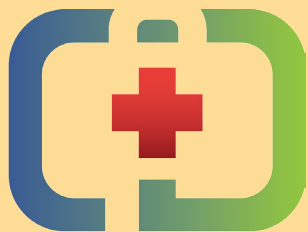
**Title: "Sex Differences in Central Stress Response and Alzheimer's Disease Neuropathology"**

The total Alzheimer's patient population is now estimated to be over 45 million worldwide, and two thirds of those afflicted are women, and yet very little is known about why women are at such a higher risk.

This project will examine how the unique female response to stress, specifically through the CRF1 signaling pathway, contributes to the increased risk for Alzheimer's Disease. The information derived from this project will help to develop new treatment and prevention strategies that benefit both sexes.

[Read more about this project.](#)

## A National Center for Digital Health Innovation



**CENTER FOR  
DATA 2 HEALTH**

Northwestern University, in partnership with Oregon Health & Science University, University of Washington, Johns Hopkins University School of Medicine and Sage Bionetworks, has been awarded a five-year \$25M cooperative agreement from the National Center for Advancing Translational Science (NCATS) to create a new Clinical and Translational Science Award (CTSA) Program National Center for Data 2 Health (CD2H).

This award will coalesce and coordinate informatics activities across the CTSA, a network of more than 50 medical research institutions, to provide collaborative clinical and translational research infrastructure.

"The new National Center for Data to Health offers an opportunity to catalyze the cultural and technological changes necessary for data and informatics to fundamentally impact research and healthcare," said [Kristi Holmes, PhD](#) associate professor in the [Department of Preventive Medicine](#), director of evaluation at [NUCATS](#), and director of the [Galter Health Sciences Library & Learning Center](#), who is a co-director of the new center. "As scientific research is transformed by big data, high-performance computing and real-time publishing, the structure and composition of scientific teamwork is also changing. Here we aim to grow the data and informatics-based architecture needed to support interdisciplinary teams so that diverse contributions are valued and recognized, enhancing knowledge transfer, discovery and impact on health."

The CD2H will be tasked with several priorities to support a vibrant and evolving informatics ecosystem, including: support and enhancement of a collaborative informatics community; development of Good Data Practice; promotion of software standards for interoperability; growth of collaborative innovation across informatics tools, methods and processes; advancement of cutting edge biomedical research informatics; data science education for CTSA Program researchers; and novel methods and tools for the evaluation of the impact of these activities to enhance healthcare through data and informatics.

[Read more about the new center.](#)

## Amy Paller, Faculty Q&A

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difference I made in moving forward the careers of trainees and younger faculty. I am passionate about the discoveries — especially those that have translated into helping my patients — but most important will be the legacy I leave in exciting young people to be superb physicians, excellent investigators, and leaders who make a difference in our world.

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

My greatest pleasure is to watch young people gain knowledge, get excited about concepts and discoveries, and advance their own careers. I have had the pleasure of being both residency and fellowship director, and of mentoring hundreds of students, residents, fellows and junior faculty. Some have gone on to become chairs, leaders of laboratories, and heads of their own specialty programs; most are in academics.

I am sure that I learn as much, if not more, from my colleagues and trainees as I could possibly impart to them. Together, we reinforce our passion for science — and only together are we able to make discoveries that have an impact.

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

I have two wonderful research teams — one in the laboratory and one in the clinic.

In the bench laboratory arena, I wear two hats: one as director of my own lab and the other as PI for the NIH P30-funded Skin Disease Research Center (SDRC). The SDRC has more than 70 members from 14 different departments at the institution.

Our service cores span three major areas to support Northwestern faculty: [Dr. Bethany Perez-White](#) leads the Skin Tissue Engineering Core, which generates human skin equivalents for investigators, and she is ably supported by co-director [Dr. Kathleen Green](#) and our research technologist Paul Hoover. The Morphology and Phenotyping Core, led by [Dr. Joan Guitart](#) and [Dr. Robert Lavker](#), primarily does histological analysis of skin specimens, including mouse skin. With the assistance of research technologist Aya Kobeissi, we are developing new histologic techniques, such as tyramide-based multi-color staining.

This core also holds our skin tissue biobank, which has been growing with the assistance of David Pease, our tissue acquisition specialist. Finally, we have a DNA/RNA Delivery Core, led by [Dr. Irina Budunova](#) and [Dr. Alex Yemelyanov](#), and assisted by research associate Dr. Pankaj Bhalla; this core has generated lentiviruses for several dozens of faculty members, as well as for other cores, and now is specializing

in using CRISPR/Cas technology for introducing genetic material into cells and tissues.

I also direct my own laboratory where a team is engaged in our in vitro and in vivo studies. I am fortunate to have a team of [Dr. Xiaoqi Wang](#), research associate professor; four postdoctoral fellows (Drs. Dam, Bagnowski, Fogel and Liu); two technicians; and several students. Dr. Wang and two of the senior postdoctoral fellows help to supervise — each has his or her own projects, and everyone works as a team.

In the clinical research unit, we are fortunate to have faculty members who are experts in clinical trials administration: [Dr. Dennis West](#), a dermatopharmacologist, and [Dr. Stephanie Rangel](#). They work with me to oversee our pediatric dermatology research group of four MD fellows, a clinical coordinator, four gap-year students, and an administrative assistant, in addition to the infrastructure support of the entire department's clinical research unit.

Each fellow is the primary fellow for a few studies and supervises the students. We have so many clinical studies running that it really takes a team effort to make sure we have sufficient bandwidth for the detail-oriented work in taking care of the patients and all the documentation/regulatory tasks involved.

### Where have you recently published papers?

Since my papers run the gamut from clinical research to basic science bench research, they tend to be in a wide array of journals.

We publish most of our biomarker analyses in *J Allergy Clin Immunol*; our genetic collaborative projects in journals such as *Am J Hum Genet*, *New Engl J Med*, and *J Clin Invest*; our nanotechnology papers in *PNAS* and *J Invest Dermatol*; our basic research on diabetes and signaling in *J Invest Dermatol* or *Molec Pain*; and many others in the leading dermatology or pediatric journals (*J Am Acad Derm*; *JAMA*; *JAMA Derm*; *Br J Derm*; *Pediatrics*).

### How is your research funded?

My research is funded by a variety of sources. Because I do several different types of research, there are options of funding from federal sources (I have been funded during the past 10 years from the NIH — NIAMS and NIAID in particular — and in collaborative work, the DOD and NSF); from foundations (National Psoriasis Foundation; Foundation for Ichthyosis and Related Skin Types; LEO Foundation); and from industry through investigator-initiated grants. I find that having several sources is important to be able to support a large infrastructure for research and be successful.

# Why Should You Care About Open Science



## What is “open science”?

Open science as a concept incorporates the [FAIR principles](#) for research data: research data should be Findable, Accessible, Interoperable and Reusable. It also meets goals such as:

- Transparency in experimental methodology and data collection
- Public access to data and publications
- Enhanced reproducibility and replication of results
- Use of web-based tools to facilitate collaboration

[Read](#) one of the most-used definitions of open science, from the European-funded project [Facilitate Open Science Training for European Research \(FOSTER\)](#).

## Why should you care about open science?

Public access to federally-funded data and manuscripts is a requirement. From the point of view of the public, the issue of taxpayer access to publications and data are probably the most important elements of open science, in addition to “citizen science” projects such as [FoldIt](#) and [SETI@home](#).

Much research in the United States is funded by taxpayer dollars in the form of National Institutes of Health (NIH), National Science Foundation and other federal grants. The U.S. government has a long-standing mandate on public access to NIH-funded manuscripts, but is also developing requirements for public access to government-funded research data. For funder mandates on public access to publications or data, please refer to this [SPARC resource on article and data sharing policies](#).

Additionally, a number of journals (*Nature*, *Science*, *PLOS*, and others) require authors to share data and/or methodological detail as a prerequisite for publication in the journal.

## How can you practice open science?

If you want to – or are required to – share data, code or detailed methodology, there are a number of resources that can help you practice open science.

- Publish in a “data journal;” Data journals do not publish traditional research articles. Instead they provide a platform for publication of descriptions of experimental data and methods and links or instructions for accessing the data. Some options are [Data in Brief](#), [GigaScience](#), and [Scientific Data](#). The University of Edinburgh maintains a [list of data journals](#) for a variety of disciplines.
- Find a data repository; If you don’t know of a discipline-specific repository for your data, consult [re3data](#) to find one. You can also deposit data to [figshare](#) or [Data Dryad](#). Galter Library’s [DigitalHub](#) accepts some research data from FSM investigators. [Contact our repository team](#) for more information.
- Share your code and methods – There are some great options for sharing code for your experimental data analysis. [GitHub](#) is currently the most popular site for storing code, documents or any types of files associated with open research projects. You can also contribute your code to open source software projects such as [Bioconductor](#) for the R statistical environment and [Biopython](#) for the Python programming language.
- Use an open source analysis platform – There are many options available for investigators to run experimental workflows and share them online. For small-to-medium sized genomic data analysis, [Galaxy online](#) is a great choice. You can upload your sequencing data and create custom tracks in the UCSC Genome Browser. If you are a [Cytoscape](#) user, there is a vibrant online community of developers and packages to try out and share.
- Use the Open Science Framework – The [Open Science Framework](#) is a “scholarly commons” developed by the [Center for Open Science \(COS\)](#) to promote and enable open science. On November 6, 2017, Galter is sponsoring a hands-on workshop, hosted by the COS, to introduce the OSF to Feinberg scientists. Please register here: <https://goo.gl/EGWx7T>. Space is limited.

Contact [Matt Carson, data scientist](#) at Galter Health Sciences Library and Learning Center for questions related to open science or for a consultation.

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## High Impact Research

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## Funding

## Physician Scientist Training Awards

[More information](#)**Sponsor:** Damon Runyon Cancer Research Foundation**Submission deadline:** December 1, 2017**Award:** \$460,000

**Synopsis:** The Foundation established a program designed to recruit outstanding U.S. Specialty Board-eligible physicians into cancer research careers by providing them with the opportunity for a protected research training experience under the mentorship of a highly qualified and gifted mentor after they have completed all of their clinical training.

## Arthritis Research Grants

[More information](#)**Sponsor:** Arthritis National Research Foundation**Submission deadline:** January 12, 2018, 5 p.m. PT**Award:** Up to \$100,000

**Synopsis:** The grant provides research support in three grant programs: Arthritis Research, Psoriatic Arthritis and Arthritis & Aging. Scientists working on arthritis and related autoimmune diseases, including but not limited to the following, should consider applying:

- osteoarthritis
- rheumatoid arthritis
- juvenile arthritis
- lupus
- psoriatic arthritis
- gout
- ankylosing spondylitis
- scleroderma
- fibromyalgia

## 2018 Clinical Scientist Development Award

[More information](#)**Sponsor:** The Doris Duke Charitable Foundation**Submission deadline:** December 1, 2017, 3 p.m. ET**Award:** \$150,000 per year for three years

**Synopsis:** The Doris Duke Clinical Scientist Development Award provides grants to junior physician-scientists to facilitate their transition to independent clinical research careers. This award program does not prioritize funding for specific disease areas or clinical research type. In 2017, the Medical Research Program awarded 17 grants to investigators working in a broad range of disease areas.

[View more funding opportunities](#)

# Calendar

Tuesday, October 24

## Engineering Bacterial Protein Superstructures for Therapeutic Applications

**Daniell Tullman-Ercek, PhD, will talk about her research for the Department of Microbiology-Immunology Seminar Series.**

**Time: Noon to 1:00 p.m.**

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

**Contact: [Nicholas Cianciotto](#)**

[More information](#)

Friday, October 27

## Engineered Cardiac Tissues for Drug Testing and Heart Repair

**Milica Radisic, PhD, University of Toronto, will speak about her research in biomaterials, tissue engineering and regenerative medicine.**

**Time: Noon to 1:00 p.m.**

**Location: Lurie Medical Research Center, Searle Seminar Room 303 E. Superior**

**Contact: [Kari LeBeau](#)**

[More information](#)

Friday, November 3

## Temporal Programs in Neural Stem Cell Development and Aging

**Sally Temple, PhD, co-Founder, principal investigator and scientific director of the Neural Stem Cell Institute, to speak.**

**Time: Noon to 1:00 p.m.**

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

**Contact: [Helene Wright](#)**

[More information](#)

# NIH News

## New Review Criteria for Applications Involving Clinical Trials

The NIH is announcing additional review criteria that will apply to clinical trial applications for research projects submitted to due dates on or after January 25, 2018. This comes as the NIH is utilizing a multi-faceted approach to strengthen policies across the life cycle of a clinical trial, from development of the funding opportunity announcement, to the information collected in a grant application or contract proposal, to peer review of the application/proposal and through to monitoring of the award. These actions include the implementation of new and more rigorous review criteria for evaluating clinical trial applications. Addressing these challenges will ensure the highest likelihood of translating research results into knowledge that will improve human health. [Read more.](#)

## Single IRB & Exceptions Process Webinar

Mark your calendar for October 18, from 2:00 p.m. to 3:30 p.m., to learn more about the implementation of the NIH Single IRB policy. The purpose of this webinar is to acquaint applicants and officers with the policy.

Participants will:

- Learn how to implement the NIH single IRB policy
- Understand the expectations for the NIH single IRB policy
- Become familiar with the process to request exceptions to the policy
- Understand the responsibilities of the IRB, the investigator and the institutions in implementing the NIH single IRB policy

[Register now](#)

## Avoid Funding Delays

Grantees should ensure their peer-reviewed manuscripts arising from NIH funds are deposited into PubMed Central upon acceptance for publication, as well as reported in their annual Research Performance Progress Reports (RPPRs), to be compliant with the NIH public access policy. NIH will not process RPPRs until all papers arising from the award are compliant with the NIH public access policy. That means funding for awards with non-compliant RPPRs could be delayed. [Find out more about this policy](#) and step-by-step instructions for putting a paper into compliance.

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