

# Northwestern Medicine



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FALL 2019

## While We Sleep

The integral link  
between sleep,  
circadian rhythms,  
and human health

PAGE • 18

INSIDE

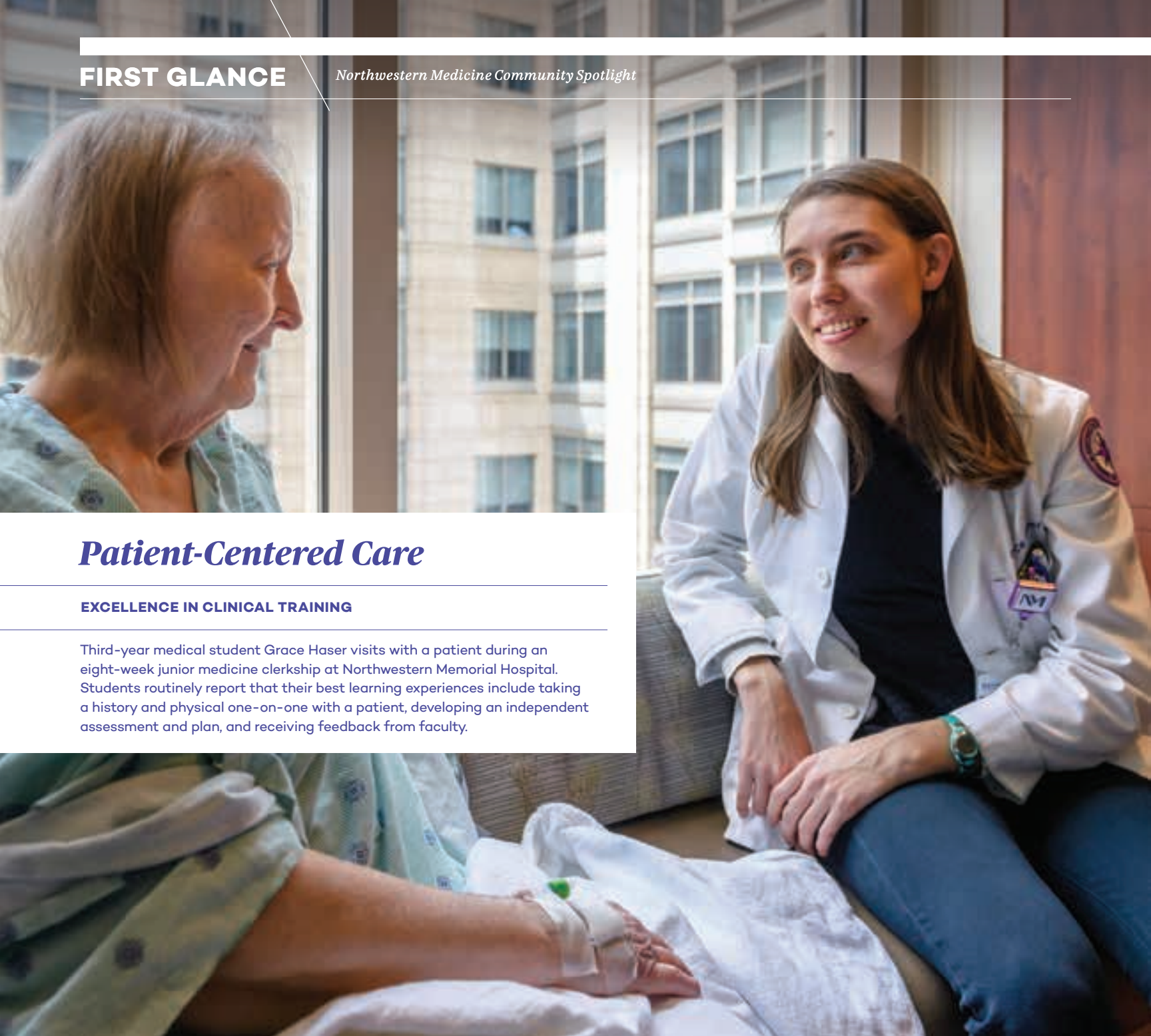
BOLD INNOVATIONS IN  
INTERVENTIONAL MEDICINE • 14

DATA TRUTH-SEEKER DENISE  
SCHOLTENS, PHD • 22

INVESTIGATORS INFORMING  
PUBLIC POLICY • 24

SPOTLIGHT ON JOSEPH  
IANNOTTI, '79 MD • 30





## Patient-Centered Care

### EXCELLENCE IN CLINICAL TRAINING

Third-year medical student Grace Haser visits with a patient during an eight-week junior medicine clerkship at Northwestern Memorial Hospital. Students routinely report that their best learning experiences include taking a history and physical one-on-one with a patient, developing an independent assessment and plan, and receiving feedback from faculty.

Northwestern Medicine magazine is published quarterly for alumni and friends of Northwestern University Feinberg School of Medicine, Northwestern Memorial HealthCare, and the McGaw Medical Center of Northwestern University.

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Features



BACK TO LIFE

Northwestern physicians in myriad specialties are perfecting novel interventional techniques, allowing patients to return to their lives sooner.



WHILE WE SLEEP

To better understand sleep and its implications on health, investigators look to circadian rhythms.



DATA DETECTIVE

Denise Scholtens, PhD, uncovers the nuances of data as the founding director of the Northwestern University Data Analysis and Coordinating Center.



INFORMING POLICY

Linda Teplin, PhD, and Lori Ann Post, PhD, leverage science to drive policy change.

Departments

LEADERSHIP

- 02 Building a Premier Integrated Academic Health System

PULSE

- 03 On Campus  
*Founders' Day, our latest hospital rankings, celebrating Northwestern women in medicine, student achievements, and more*
- 10 Research Briefs
- 12 Media Spotlight
- 13 Faculty Awards & Honors

ALUMNI

- 29 Alumni President's Message
- 30 Alumni Profile  
*Joseph Iannotti, '79 MD*
- 32 Giving  
*Toasting the opening of the Institute for Global Health and the inaugural Byong Uk Chung, MD Global Neurosurgical Lectureship in Neurosurgery*
- 34 Progress Notes

PERSPECTIVE

- 40 The Impact of Academic Societies  
*Gregory Brisson, MD, '94 GME*

WARD ROUNDS®

- 41 Emma Reynolds, the first black woman to earn an MD from Northwestern

ON THE COVER

A colored MRI scan of the human brain, showing ventricles and folds of the cerebral cortex. Read about Northwestern investigators' research on the brain's master circadian clock on page 18. (KH Fung/Science Photo Library)

# Building a Premier Integrated Academic Health System



## TOGETHER, NORTHWESTERN MEMORIAL HEALTHCARE AND

Northwestern University Feinberg School of Medicine are building a premier integrated Academic Health System in service of Northwestern Medicine's *Patients First* mission. Our dedicated team of physicians, scientists, nurses, staff, and students come together with a shared commitment to superior quality, patient safety, academic excellence, and scientific discovery. This collaborative and learning culture is the foundation of a world-class environment to both provide and receive care.

The health system's vision to bring integrated academic medicine close to where patients live and work is achieved through:

- **EXPANDING ACCESS** To meet the needs of our patients and staff, Northwestern Medicine has identified 25 geographies across Chicago to bring world-class care closer to where patients live and work.
- **NEW AND EXPANDED FACILITIES** More than \$250 million in capital was invested last year to expand use of the single electronic medical record, enhance facilities including a new breast imaging center in DeKalb, and consolidate the health system's

diagnostic imaging systems to create a consistent experience for caregivers and patients across all Northwestern Medicine locations.

- **INVESTING IN SMART TECHNOLOGY** Last year, an innovation fund was established to support internal innovative strategies to improve health outcomes for our patients. The MyNM App was released to provide patients, caregivers, and consumers a way to engage with Northwestern Medicine from anywhere at any time. Building from this foundation, the health system is creating a digital platform to expand existing telehealth programs as well as build new specialty telehealth programs, including TelePreOp, TelePostOp, TelePsychiatry, and TeleCardiology, next year.
- **FOCUS ON WORLD-RENOWNED CARE** Our hospitals' academic partnership with Feinberg School of Medicine, talented physicians and caregivers, geographic footprint, success in integrating care, and market-leading brand uniquely position Northwestern Medicine to provide world-renowned care. This year, both Feinberg and four Northwestern Medicine hospitals were recognized by *U.S. News & World Report* for excellence. Northwestern Memorial Hospital was ranked 10th in the nation on the Best Hospitals Honor Roll and first in Chicago and Illinois. Northwestern Memorial Hospital's Cancer, Cardiology and Heart Surgery, Geriatrics, and Neurology and Neurosurgery programs all ranked in the top 10 nationally. In total, 13 Northwestern Medicine specialties were ranked. This would not have been possible without the dedication of our teams across the system.

## • SERVING THOSE MOST IN NEED

Northwestern Medicine serves urban, suburban, and rural communities that are complex and diverse. In nearly every county we serve, our hospitals are the largest employers and providers of charity care. In fiscal year 2018, Northwestern Medicine hospitals provided \$846.5 million in community benefit. We have partnered with community groups to develop innovative programs to support those most in need. One such partnership is with the Chicago HEAL Initiative, collaborating with other Illinois health systems to reduce violence and improve health in 18 of Chicago's most vulnerable neighborhoods.

## • DEVELOPING A CONTEMPORARY APPROACH TO OBTAINING FEEDBACK

To improve the ease and timeliness of receiving patient, employee, and physician feedback, the health system is in the process of implementing new contemporary tools to reduce survey fatigue while providing "real time" feedback to enable accelerated performance improvement.

Northwestern Memorial HealthCare's partnership with Northwestern University Feinberg School of Medicine — and its proven track record of improving care and the performance of new partners — are the foundation of its leading position in Chicago and increasing national recognition.

Thank you for your continuing support of our *Patients First* mission!

**Dean M. Harrison**  
President and CEO  
Northwestern Memorial HealthCare



## ON CAMPUS

# Northwestern Hospitals Ranked Among the Best

Four Northwestern Medicine hospitals have been recognized by *U.S. News & World Report* in its 2019–20 Best Hospitals rankings.



## NORTHWESTERN MEMORIAL HOSPITAL

1

in both the Chicago metro region and Illinois for the eighth consecutive year

10

on the prestigious Best Hospitals Honor Roll (the only hospital in Illinois to receive the honor)

4

clinical programs at Northwestern Memorial are ranked among the top 10 hospitals in the country (5th for Neurology and Neurosurgery, 7th for Cardiology and Heart Surgery, and for Geriatrics, and 10th for Cancer)



## NORTHWESTERN MEDICINE CENTRAL DUPAGE HOSPITAL

6

in Chicago metro region

6

in Illinois



## NORTHWESTERN MEDICINE McHENRY HOSPITAL

20

in Chicago metro region

25

in Illinois



## NORTHWESTERN MEDICINE DELNOR HOSPITAL

15

in Chicago metro region

18

in Illinois

## Shirley Ryan AbilityLab

The Shirley Ryan AbilityLab continues to be recognized as the national leader in Rehabilitation, topping the *U.S. News* list for 29 consecutive years.

## Ann & Robert H. Lurie Children's Hospital of Chicago

*U.S. News* placed Ann & Robert H. Lurie Children's Hospital of Chicago among the top children's hospitals in the nation and ranked its Cardiology and Heart Surgery program 2nd in the nation, Urology 5th, Gastroenterology and GI surgery 8th, and Nephrology 10th.

**“We’re proud to once again have our hospitals recognized among the best in the country,” said Dean M. Harrison, president and chief executive officer of Northwestern Memorial HealthCare. “This recognition reflects the relentless commitment, dedication, and expertise of Northwestern Medicine’s physicians, nurses, and staff across our health system.”**

# First-Year Medical Students Celebrate Founders' Day



Kyle Chan is among the 159 students in the class of 2023.

“I’m very happy right now. It feels like I’ve finally made it,” said Hendryck Gellineau, a first-year medical student. “We’ve been driving through the back roads, and we just turned onto the on-ramp; I’m looking forward to the next four years.”

Founders’ Day, an annual ceremony held August 9 this year, welcomes first-year medical students to campus, honors Feinberg’s founders, and marks the official start of the academic year.

Gellineau was part of the class of 2023 who attended the event, celebrating with their family, friends, and the second-year students who presented the freshmen with their white coats.

“We’re particularly delighted our new students have chosen to begin their medical profession by matriculating at Northwestern, one of the nation’s premier research-intensive universities,” said Eric G. Neilson, MD, vice president for Medical Affairs and Lewis Landsberg Dean.

Neilson spoke about Feinberg’s long history of distinguished physicians and scientists, and invited the class of 2023 to follow their forebears in breaking new ground.

“You may rest assured that within the broad opportunities at Feinberg, you will

▼ First-year students, including Hendryck Gellineau (middle), celebrated at the Nathan Smith Davis Founders’ Day reception.





find a problem to solve conducive to your inclinations,” Neilson said. “Feinberg, as it always has, will prepare you well for whatever path you choose.”

Jonathan Holloway, PhD, provost of Northwestern University, followed with his own remarks.

“Like other medical schools, Feinberg is a complex organism,” Holloway said. “As I suspect you are quickly realizing, there is an impressive infrastructure here that is designed to support you as you move through your medical school education.”

The Founders’ Day address was delivered by Nicholas Volpe, MD, chair and George W. and Edwina S. Tarry Professor of Ophthalmology.

“You will help someone get better, live longer, be healthier and happier, or ameliorate their pain and suffering,” Volpe said. “While so many things have changed, there still remains an exam, the doctor, the patient, and nothing else matters. That’s the essence of our profession.”

Diane B. Wayne, ’91 MD, vice dean for Education and the Dr. John Sherman Appleman Professor of Medical Education, led the white coat ceremony, where students donned their white coats for the first time. This moment was a lifelong dream come true for many students, including Jonathan Roe.

“It’s almost like there’s two stages of my life: before the white coat, and after,” Roe said. “Actually putting on the coat is a tangible representation of our adopting the ethos of a physician.”

Garbed in white, the first-year students recited the Declaration of Geneva, the modern incarnation of the ancient Greek Hippocratic Oath.

“It’s a little nerve-racking because you’re saying these very grand things, but we haven’t really done anything yet,” said Nivedita Potapragada, a first-year student. “It puts us in a frame of mind: These are the expectations that we have to live up to, the expectations of a physician.”

► Students recite the Declaration of Geneva, the modern incarnation of the ancient Greek Hippocratic Oath.

## “IT PUTS US IN A FRAME OF MIND: THESE ARE THE EXPECTATIONS THAT WE HAVE TO LIVE UP TO, THE EXPECTATIONS OF A PHYSICIAN.”

**NIVEDITA POTAPRAGADA**  
First-Year Student



**25**

LANGUAGES  
SPOKEN

**22%**

FROM UNDERREPRESENTED  
MINORITY GROUPS



Eric G. Neilson, MD, vice president for Medical Affairs and Lewis Landsberg Dean, welcomed students, faculty and guests to the celebration.



**THE 2019  
ENTERING  
CLASS**

**83**  
FEMALE

**76**  
MALE



Precious Akanyirige, a second-year medical student, accepted the Student Senate Engagement Award on behalf of the Student National Medical Association.

**159**

STUDENTS  
SELECTED  
FROM A  
POOL OF  
6,878  
APPLICANTS



# Celebrating Women in Medicine

In 1870, Mary Harris Thompson, MD, Northwestern University’s first woman medical school graduate, helped found and was named professor of Hygiene and Clinical Obstetrics and Diseases of Women at the Woman’s Hospital Medical College, which would later become affiliated with Northwestern.

Thompson, also the founder of the Chicago Hospital for Women and Children, was the first woman surgeon in Chicago and one of the most famous surgeons — male or female — in the country at the time.

Harris Thompson and the women who followed in her footsteps broke many barriers, paving the way for today’s generation of women in medicine.

In 2019, women comprise 52 percent of the MD entering class at Feinberg and 50 percent of incoming residents. Feinberg has 1,043 women faculty members, 155 of whom are full professors. Women hold 93 senior administrative leadership roles in the medical school — the most ever in our school’s history.



Mary Harris Thompson, MD,  
Northwestern University’s first  
woman medical school graduate.

“Cultivating intellectual reach and social diversity among our faculty is an important institutional value. In commemorating 150 years of women at Northwestern, we recognize those who attained status of full professor and celebrate our current leadership who work to improve patient care, scientific research, and medical education. They are the vanguard of more to come as we encourage all women to the highest levels of achievement in our academic community,” said Eric G. Neilson MD, vice president for medical affairs and Lewis Landsberg Dean.

To celebrate the remarkable achievements of Northwestern’s women faculty, the medical school has published a website, Women in Medicine ([feinberg.northwestern.edu/sites/women-in-medicine](https://feinberg.northwestern.edu/sites/women-in-medicine)). The site includes a timeline of Northwestern women professors in medicine, an infographic with key statistics, bios of senior medical school leaders who are women, and information about events and news around campus tied to Northwestern’s celebration of 150 years of women.

\$174.0 MILLION FY19 AWARDS		1,043 REGULAR FACULTY		155 FULL PROFESSORS	
52% MD ENTERING CLASS		50% INCOMING RESIDENTS		50% OF ALL WOMEN FACULTY IN PI OR CO-I ROLES	
855 GRADUATE, PHD & MASTERS STUDENTS		93 SENIOR LEADERSHIP ROLES		379 LEADING CLINICAL TRIALS OR CLINICAL RESEARCH	
				38 ENDOWED CHAIRS	





Melissa Simon, MD, MPH, '06 GME, director of the Center for Health Equity Transformation, meets with Sen. Dick Durbin to discuss health disparities, outreach and pipeline programs, and Northwestern's commitment to training the next generation of health disparity researchers.

## Training the Next Generation of Health Disparity Researchers

**N**orthwestern Medicine has been awarded a grant from the National Institutes of Health to fund the Northwestern University Minority Health and Health Disparities Research Training Program (NU-MHRT), which will provide health disparities research training experiences to minority and other underrepresented students and trainees.

"This grant is a dream come true for me and is highly important to Feinberg and Northwestern, as it is the first training grant solely focused on minority health and health disparities research across the research continuum," said principal investigator Melissa Simon, MD, MPH, '06 GME, the George H. Gardner Professor of Clinical Gynecology and vice chair for Clinical Research in the Department of Obstetrics and Gynecology.

"The NU-MHRT will provide experiences from bench to bedside to trainees at the

undergraduate through postdoctoral levels and will include trainees from Chicago area institutions as well," added Simon, director of the Center for Health Equity Transformation.

"This is a great opportunity for early-career scholars to work with our outstanding Northwestern faculty on social epidemiology and community-engaged research addressing health equity and the social determinants of health," said Joseph M Feinglass, PhD, associate director of NU-MHRT and research professor of Medicine in the Division of General Internal Medicine and Geriatrics and of Preventive Medicine.

Supporting 10 trainees per year, the program will be centered in Chicago, a metropolitan area rife with health disparities and a history of incubating innovative research programs aimed at reducing those disparities, including many led by NU-MHRT faculty.



**W**e don't yet know the long-term impact on someone's lungs when they vape. Or if the air quality



where a person grows up puts them at higher risk for respiratory conditions later in life. These issues, and much more, will be examined in a large, first-of-its-kind longitudinal study of lung health led by Northwestern Medicine scientists in partnership with the American Lung Association.

The study, titled "The American Lung Association Lung Health Cohort," is funded by a \$24.8 million grant awarded June 16 by the National Heart, Lung, and Blood Institute (NHLBI), part of the National Institutes of Health (NIH).

Ravi Kalhan, MD, '06 GME, professor of Medicine in the Division of Pulmonary and Critical Care, and a Northwestern Medicine pulmonologist, is the principal investigator of the new grant to investigate millennial lung health.

In this first federally funded U.S. cohort to study millennials, scientists will capture baseline lung health measurements of 4,000 healthy adults between the ages of 25 to 35 to identify an ideal picture of respiratory health and understand the key risk factors and biomarkers that are associated with impaired lung health.

"We've never taken a life-course view of how someone transitions from ideal respiratory health to impaired health to actual lung disease," Kalhan said. "We want to come up with a framework to intercept chronic lung disease before it becomes a problem."

Some study participants will be smokers; some will not. Some will live in cities; others, in rural areas. The aim is to recruit a wide range of healthy adults.

# Students Make Their Mark

*Wherever they are in their Feinberg journey, these students are making an impact inside and outside their regular curriculum.*



## Third-Year Jordan Sell Works to Improve Patient Care

**T**hird-year medical student Jordan Sell has taken full advantage of the wide range of opportunities at Feinberg — on campus and beyond.

He was a coordinator at Devon Clinic, a free clinic run by medical students that serves a South-Asian population in Chicago, and was co-president of the Emergency Medicine Interest Group (organizing medical education events, such as IV insertion and ultrasound practice sessions with emergency physicians).

For his Area of Scholarly Concentration (AOSC) project, he helped design a simulation-based mastery curriculum to train nurses to use ultrasound-guided IV — earning him a second-place prize at Research Day 2019.

“Placing IVs is critical for patient care in the hospital, but lots of patients have difficult placements, which can lead to delays in care and increased costs,” he said. “After our intervention, we saw improvement in skills and an increased utilization of bedside ultrasound, showing an improved efficiency of care.”

## Shivani Baisiwala Pursues Treatments in the Lab, Healthcare Strategy in the Community

**F**or Shivani Baisiwala, medical school is much more than just classes and clerkships. As a fourth-year medical student, she already has a wide array of experiences under her belt — from conducting basic science research into glioblastoma in the laboratory of Atique Ahmed, PhD, assistant professor of Neurological Surgery, to volunteering in free health clinics around Chicago and participating in Second Opinions, a student-run pro-bono healthcare consulting group.

She plans on continuing to do research as a physician. “It’s hard for me to imagine seeing patients, especially with complex neurological conditions,





## Lindsay Zimmerman Earns Presidential Fellowship



**L**indsay Zimmerman, a student in the Health Sciences Integrated PhD Program (HSIP), was recently named a 2019 Presidential Fellow. The fellowship, the most prestigious fellowship awarded to graduate students by Northwestern University, recognizes Zimmerman's significant research, academic achievement, leadership, and future potential.

Zimmerman, a student in the Health and Biomedical Informatics track of HSIP, is currently investigating the relationship between social determinants of health and cardiovascular health. Her research aims to better understand the relationship between social determinants of health and cardiovascular

health, using sequential pattern mining and machine learning techniques.

"This work is vitally important in providing much-needed information about how exposures to social determinants change over time and how they can be used to improve the prediction of patients at high-risk for low cardiovascular health," she said, adding, "Identification of the social determinants of health and trajectory groups that improve the prediction of cardiovascular health may also provide helpful information for programs looking to develop targeted and timely interventions for these high-risk populations."

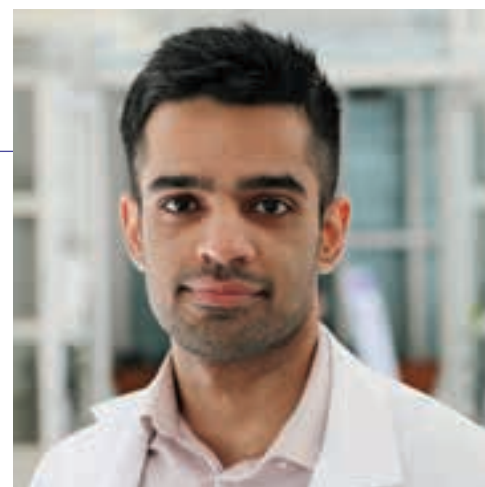
and not being well versed in the research around their condition," she said. "In addition, I can't imagine seeing patients in clinic every day and not doing my own part to further that research. I think being able to have both a clinic and a lab investigating the same condition provides a unique perspective on the disease and allows for some really impactful research that can be translated quicker to patients."

Baisiwal also helps patients through Second Opinions, founded by Northwestern medical students with backgrounds in strategy and consulting. The classmates help community health centers achieve their goals through various projects. "Sometimes, when I'm in the hospital or when I'm studying for medical school classes, it's hard to feel that I'm actually having an impact on patients," Baisiwal said. "However, when we're able to do a really interesting analysis for a clinic or streamline a process that will help patients, I feel like my medical knowledge and business knowledge can actually provide something very valuable to help patients, while I'm on the road to becoming a physician."

## Shahzeb Hassan Promotes Preventive Medicine

**S**hahzeb Hassan, a second-year medical student, founded a preventive medicine interest group to help students like him delve deeper into the field. "We are planning events, speakers, and other programs to help students further engage in preventive medicine and provide opportunities to connect with mentors," said Hassan, who is president of the interest group. Donald Lloyd-Jones, MD, ScM, chair and Eileen M. Foell Professor of Preventive Medicine and senior associate dean for Clinical and Translational Research, is the faculty advisor.

Hassan's interest in preventive medicine extends beyond Northwestern's campus to the national level: He recently co-authored a viewpoint piece, published in *JAMA Internal Medicine*, on the emerging field of precision preventive medicine, which aims to leverage



large-scale data to improve the targeting of preventive measures.

The paper, led by Philip Greenland, MD, the Harry W. Dingman Professor of Cardiology and a professor of Preventive Medicine in the Division of Epidemiology, discussed current limitations in precision preventive medicine and challenges that must be addressed before the field can more broadly impact clinical practice.

# RESEARCH BRIEFS

## SCIENTIFIC ADVANCES

### NEWLY DISCOVERED MECHANISM MAY CONTROL INFLAMMATION



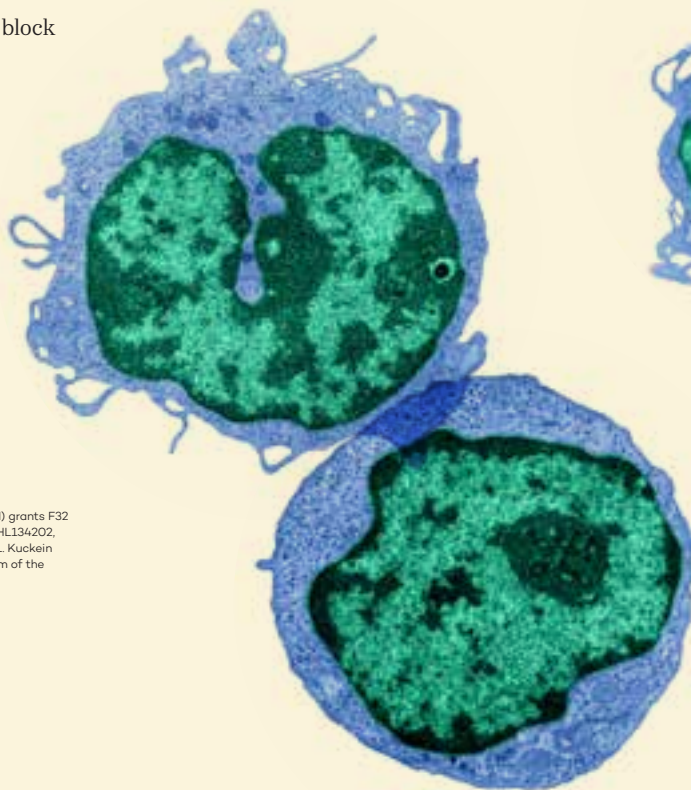
William Muller, MD, PhD, professor of Pathology, was senior author of a study published in the *Journal of Experimental Medicine* discovering new details of a mechanism that facilitates white blood cells traveling from blood vessels into tissue. This process is crucial for the body's inflammatory response, and the ability to modify that response could help treat a variety of conditions, according to Muller.

"Inflammation is at the root of all pathology," he said. "Interrupting

this pathway could be a good way to block unwarranted inflammation, and stimulating the pathway could be a good way to promote inflammation, such as when the body is healing a wound or getting rid of bacteria."

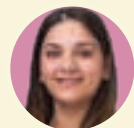
Muller's study suggests that using the IQGAP1 protein to modify LBRC (a complex that shepherds white blood cells through blood vessel walls and into tissue on the other side) may represent a way to fine-tune inflammation without disturbing other processes in the body.

This work was supported by National Institutes of Health (NIH) grants F32 AI084454, R01 HL046849, R21 HL102519, R37 HL064774, F30HL134202, T32GM8152, R01GM087575, an Alpha Omega Alpha Carolyn L. Kuckein Student Research Fellowship, the Intramural Research Program of the NIH, and National Institute of General Medical Sciences.



## CLINICAL BREAKTHROUGHS

### Total Heart Disease Deaths on the Rise



Total deaths from heart disease, stroke, diabetes, and hypertension have been increasing since 2011, according to a new Northwestern Medicine study published in *JAMA*.

Cardiometabolic disease is the leading cause of preventable death worldwide; the study found that while the overall rate of heart disease deaths decreased over time, the rate of decline slowed after 2010. Deaths from stroke and diabetes declined from 1999 to 2010 but leveled off after that. Deaths from

**“We need to shift our national focus toward prevention to achieve our goal of living longer, healthier, and free of cardiovascular disease.”**

high blood pressure increased between 1999 and 2017. Cardiometabolic death rates for black Americans remain higher than those for white Americans, the study found.

"We know the majority of deaths attributable to cardiometabolic disease are preventable," said senior author Sadiya Khan, MD, MSc, assistant professor of Medicine in the Division of Cardiology. "Our findings make it clear that we are losing ground in the battle against cardiovascular disease. We need to shift our national focus toward prevention to achieve our goal of living longer, healthier, and free of cardiovascular disease."

Research reported in this publication was supported, in part, by the National Institutes of Health's National Center for Advancing Translational Sciences, grant number KL2TR001424.



## DISEASE DISCOVERIES

## Role of RNA Methylation in Fragile X Syndrome



A study published in *Cell Reports* led by Yongchao Ma, PhD, associate professor of Pediatrics, found that the protein FMRP — the loss of which leads to Fragile X syndrome — is a novel reader of RNA methylation in regulating neural stem cell differentiation. The findings suggest that defects in this RNA modification process may contribute to Fragile X syndrome, the most common genetic cause of intellectual disability.

In recent years, scientists discovered RNA can be methylated. M6A — the methylation of RNA on N6-adenosine — is the most prevalent reversible modification of RNA. In the current study, the scientists discovered that FMRP binds to m6A, and in doing so, regulates the transport of m6A-modified RNA from the nucleus

of the cell into the cytoplasm — an essential step in protein expression. FMRP is an RNA-binding protein encoded by the FMR1 gene; mutations in FMR1 have been shown to result in Fragile X syndrome.

Mice that were genetically engineered to either lack the FMR1 gene or m6A modification both showed accumulation in the nucleus of many RNAs required for normal brain development. “Simply put, whether you’re missing FMRP or whether you’re missing m6A, it ultimately results in a drastic delay in brain development,” said graduate student Brittany Edens, the first author of the paper.

The study was supported by grants from the National Institutes of Health (NIH) R01NS094564, R21NS106307, The Hartwell Foundation, the Chicago Biomedical Consortium, and Cure SMA.

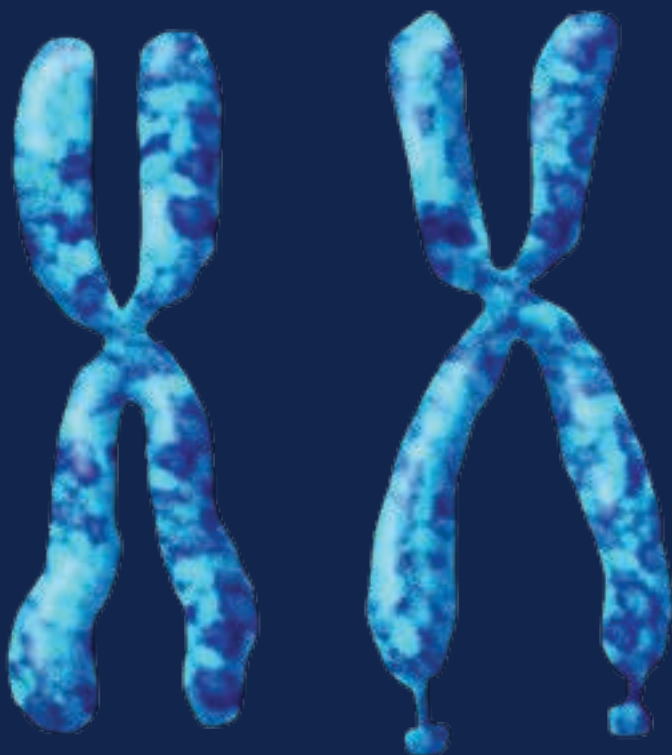


Illustration comparing a normal X chromosome (left) to a deformed X chromosome (right) associated with mental retardation known as Fragile X syndrome. The extra portion dangling off the X chromosome is a genetic condition that causes a range of developmental problems, including learning disabilities and cognitive impairment.



## CLINICAL BREAKTHROUGHS

## SESAME ALLERGY MORE COMMON THAN PREVIOUSLY RECOGNIZED



Sesame allergy affects more than one million children and adults in the U.S. — more than previously known — according to a new study by Ruchi Gupta, MD, MPH, published in *JAMA Network Open*.

But sesame labeling is currently not required by law as are the other top eight allergens like peanuts and milk, and is often labeled in a potentially confusing manner, such as tahini. This increases the risk of accidental ingestion.

“It is important to advocate for labeling sesame in packaged food. Sesame is in a lot of foods as hidden ingredients. It is very hard to avoid,” said Gupta, professor of Pediatrics and of Medicine and director of the Center for Food Allergy and Asthma Research.

The research was supported by the National Institute of Allergy and Infectious Diseases of the National Institutes of Health, grant R21AI135702.

### TOP 8 ALLERGENS

Milk  
Eggs  
Fish  
Crustacean  
Shellfish  
Tree Nuts  
Peanuts  
Wheat  
Soybeans

# MEDIA SPOTLIGHT

*The Washington Post*

## For Some With Chronic Pain, the Problem is Not in Their Backs or Knees But Their Brains

Chronic pain afflicts 50 million adults in the United States. To better understand the malady, scientists are using technology, such as MRIs, to observe the brain while people are in pain. A. Vania Apkarian, PhD, professor of Physiology, Anesthesiology and Physical Medicine and Rehabilitation, has taken precisely this approach. In a study published in *Nature Communications*, he was able to predict who is likely to experience chronic low back pain just by examining brain images and connectivity. He also says he can tell who will respond well to interventions, including placebo. Even before people are exposed to placebo, “their brain properties tell us ... who will respond to the sugar pill,” he said.

*The New York Times*

## The Silent Heart Attack You Didn't Know You Had

Millions of people are unaware that they have had a silent myocardial infarction and are at risk of having another attack that could cause severe damage or death.

“A silent heart attack is not always so silent, but its symptoms — mild chest discomfort, heartburn, nausea, shortness of breath — happen to lots of people and are typically attributed to other causes and not brought to medical attention,” said Robert Bonow, MD, vice chair for Development and Innovation in the Department of Medicine and the Max and Lilly Goldberg Distinguished Professor of Cardiology.

Women, whose symptoms are often vague, are especially unlikely to realize they are having a heart attack.



*The Washington Post*

## A Trailblazing Professor Turns 100 Next Month

The work of Jeremiah Stamler, MD, professor emeritus of Preventive Medicine in the Division of Epidemiology, is so cutting-edge, it recently earned him roughly half a million dollars in funding from a competitive grant program at the National Institutes of Health.

Stamler turns 100 next month.

For his birthday, the Northwestern is throwing Stamler a party he will surely appreciate: one filled with science. Researchers from



across the country will convene to discuss the future of heart health and Stamler's trailblazing work on the topic.

At 99, Stamler still teaches, advises colleagues, and leads research at Northwestern, where he joined the faculty in the early 1960s. His decades-long career has focused on how diet and environment affect heart health and blood pressure — even when such ideas were roundly dismissed by the scientific community.



## Gene-Based Therapy Helps Fight Advanced Prostate Cancer

A new landmark clinical trial found that a drug used to target faulty gene repair may buy more time for some men with advanced prostate cancer. Funded by Astra Zeneca and Merck, the PROfound trial tested a drug called Lynparza (olaparib), which is approved to treat certain patients with breast or ovarian cancers linked to mutations in the BRCA genes.

When BRCA is working properly, it helps repair damaged DNA in body cells that can lead to cancer; when the gene is altered, those repair mechanisms go awry. In addition to breast and ovarian cancers, these mutations also drive some

cases of prostate cancer. The trial included men with advanced prostate cancer who had alterations in BRCA or other genes involved in DNA repair. Investigators found that, compared with standard hormonal therapy, Lynparza delayed cancer progression for a median of about three months. The drug also slowed pain progression.

“Delaying the cancer from growing is meaningful,” said Maha Hussain, a professor of Medicine in the Division of Hematology and Oncology, who led the trial. She added, “At the end of the day, patients want to live longer, and also better.”



# FACULTY AWARDS & HONORS



1

## **Alicia Guemez Gamboa, PhD,**

assistant professor of Physiology, has been awarded the American Epilepsy Society/Epilepsy Foundation Junior Investigator Award. Guemez Gamboa is one of 25 early-career epilepsy scientists awarded a fellowship or grant this year. **📷 1**

## **Issam Ben-Sahra, PhD,**

assistant professor of Biochemistry and Molecular Genetics, was selected as the 2019 Forbeck Young Investigator Scholar in recognition of his achievements, research, and dedication in the field of oncology.

## **Evangelos Kiskinis, PhD,**

assistant professor in the Ken and Ruth Davee Department of Neurology, Division of Neuromuscular Disease, has received a New York Stem Cell Foundation – Robertson Investigator Award. The \$1.5 million award will support the Kiskinis laboratory at the Les Turner



2

ALS Center as they work to understand the mechanisms that cause amyotrophic lateral sclerosis (ALS) and pediatric epilepsy. **📷 2**

## **Daniela Menichella, MD, PhD,**

assistant professor of Neurology in the Division of Neuromuscular Disease and of Pharmacology, has been named a 2019 Wolfe Neuropathy Research Prize winner by the American Neurological Association (ANA). The Wolfe Neuropathy Research Prize was established in 2009 by Winston Wolfe and the ANA to honor outstanding investigators who identify a new cause or treatment of axonal peripheral neuropathy. **📷 3**

## **Thomas Shanley, MD,**

chair of Pediatrics and the Founders' Board Centennial Professor, was selected by the Ann & Robert H. Lurie Children's Hospital of Chicago Executive Committee as nominee for election to president and



3

CEO of the hospital, succeeding Patrick Magoon, who is retiring after 22 years in the role. **📷 4**

## **Joel Voss, '07 PhD,**

associate professor of Medical Social Sciences, Neurology, and Psychiatry and Behavioral Sciences, and **Jason Wertheim, MD, PhD,** the Edward G. Elcock Professor of Surgical Research and vice chair for Research in the Department of Surgery, were among the five Northwestern University faculty awarded the prestigious Presidential Early Career Award for Scientists and Engineers. Voss and Wertheim were honored at a July 25 ceremony in Washington, D.C.

The following three faculty were honored at the 8th annual Driskill Day on September 10:

• **Constadina Arvanitis Castellucci, PhD,** research associate professor of Cell and Developmental



4

Biology, for her efforts teaching cell biology. **📷 5**

## • **Elizabeth Bartom, PhD,**

assistant professor of Biochemistry and Molecular Genetics, for her work teaching data science.

## • **Kathleen Green, PhD,**

the Joseph L. Mayberry, Sr., Professor of Pathology and Toxicology, for her longtime educational support of the Driskill Graduate Program, helping shape its curriculum while teaching.

## **Feng Yue, PhD,**

associate professor of Biochemistry and Molecular Genetics, was named director for Cancer Genomics in the Robert H. Lurie Comprehensive Cancer Center of Northwestern University.

Two inaugural collaborative research Catalyst Awards were given to teams made up of Feinberg faculty clinicians and Northwestern McCormick School of Engineering faculty:

• **Kathleen Bandt, MD,** assistant professor of



5

Neurological Surgery, and **Todd Parrish, PhD (📷 6),** professor of Radiology, are among team members who will tackle early diagnosis and disease-course prediction for Alzheimer's.

## • **Wellington Hsu, MD**

(📷 7), the Clifford C. Raisbeck, MD Professor of Orthopaedic Surgery and Neurological Surgery, and **Erin Hsu, PhD,** research associate professor of Orthopaedic Surgery, will collaborate with **Jonathan Rivnay, PhD,** assistant professor of Biomedical Engineering, to study a novel technique for bone regeneration and spine fusion.

Three Feinberg faculty in the Department of Physical Medicine and Rehabilitation were honored in 40 Under 40 Chicago Scientists at the 2nd annual Halo Awards:

## • **Prakash S. Jayabalan, MD, PhD,**

'16 GME, assistant professor of Physical Medicine and Rehabilitation



6

• **Miriam Rafferty, DPT,** assistant professor of Physical Medicine and Rehabilitation and Psychiatry and Behavioral Sciences

## **Robert J. Vassar, PhD,**

scientific director of Behavioral Neurology in the Department of Neurology and professor of Neurology and of Cell and Developmental Biology, was formally invested as the Davee Professor of Alzheimer Research.

## **Murad Alam, MD,**

'06 MS, '15 MBA, vice chair of Dermatology and professor of Dermatology, Otolaryngology – Head and Neck Surgery, and of Surgery in the Division of Organ Transplantation, was elected to the board of the American Academy of Dermatology.



7

Minimally invasive innovations  
achieve life-changing  
outcomes sooner.

# BACK

# TO

# LIFE

WRITTEN BY *Cheryl SooHoo*  
PHOTOGRAPHY BY *Kim Becker*

Gabriela Vargas, a foodie with an adventurous palate, steadily began to find food to be the enemy. A novel GI procedure, called G-POEM, allowed her to enjoy eating again.





**N**o one wants major “open” surgery when a minor or minimally invasive procedure could yield as good, if not better, results. Most, if not all, patients would prefer to have a choice of the most effective treatment options with less pain, lower risk of infection, little scarring, shorter or no hospital stay, and faster recovery.

Not surprisingly, striving to meet these expectations and achieve better outcomes has accelerated innovations in interventional medicine in ways that would have been unimaginable in the not-so-distant past. Today, many areas of the body can be accessed through less than one-inch incisions or no incisions at all to treat ailments ranging from a faulty heart valve to brain aneurysms.

At the forefront of these advancements, Northwestern Medicine has long promoted a culture of innovation tempered by discipline and clinical-research checks and balances.

“The strong entrepreneurial spirit cultivated here and willingness to creatively use technology to improve care has allowed us to be pioneers,” says Howard Chrisman, MD, MBA, interim chair of the Department of Surgery and professor of Radiology and Surgery. “It is what drives our talented physicians to develop and perform these advanced procedures so that patients leave us healthier than when they came to us.”

To that end, Northwestern physicians in myriad specialties are breaking new ground every day by perfecting novel interventional techniques.

### NOT EASY TO DIGEST

Eat. Sleep. Study. Repeat. As a grad student at the University of Illinois in Urbana-Champaign, Gabriela Vargas needed to follow these daily rituals if she had any hopes of completing her PhD degree in mathematics education. Yet after

undergoing an esophagectomy — surgical removal of the esophagus — in 2016 to treat achalasia, a disorder of low to zero mobility of the esophagus, Vargas, a foodie with an adventurous palate, steadily began to find food to be the enemy. Eating made her nauseous, her stomach felt full after a few bites, and terrible heartburn kept her from sleeping.

“It was an endless cycle of throwing up after meals, being awoken by acid reflux, and having little energy to function at school,” says Vargas. “I often had to negotiate with myself and make the decision to eat even though I knew I would get sick.”

In July 2018, Vargas’ symptoms ramped up after the repair of a diaphragmatic hernia related to her esophagectomy. During the past three years, her nausea, bloating, and feeling of fullness have led to a total weight loss of 60 pounds. This April, further diagnostic testing revealed the root cause of her gastrointestinal distress: gastroparesis, a complex condition that prevented her stomach from

properly emptying. The term gastroparesis literally translates to partial paralysis (paresis) of the stomach (gastro), and the disease may occur for many reasons, from diabetes to foregut surgery. Lack of stomach motility can also result from ➔

“  
The strong entrepreneurial spirit cultivated here and willingness to creatively use technology to improve care has allowed us to be pioneers.

HOWARD CHRISMAN,  
MD, MBA





**We have transitioned from the diagnostic era to the therapeutic era of endoscopy.**

AZIZ AADAM, MD



spasms of the pyloric sphincter, a smooth band of muscle at the end of the stomach that serves as the gateway to the rest of the digestive tract. When the pyloric sphincter relaxes, it allows food to pass into the small intestine. When it doesn't open and close as it should, food lingers in the stomach for far too long.

"Gastroparesis can be very debilitating for patients," says Aziz Aadam, MD, assistant professor of Medicine in the Division of Gastroenterology and

Hepatology. "While diet changes and some medications can help, there aren't many good long-term medical options, especially for patients with refractory disease."

Until now.

### A NOVEL GI PROCEDURE

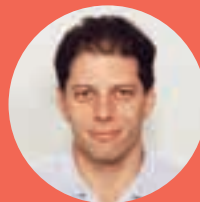
A little over two years ago, Aadam, an interventional gastroenterologist and director of Northwestern's Developmental Endoscopy Program, began performing a novel minimally invasive procedure known as G-POEM (gastric per-oral endoscopic pyloromyotomy). Used to treat gastroparesis, it involves passing a standard endoscope — a flexible tube with a camera on the end — through the mouth and down the esophagus. Once he reaches the bottom of the stomach, Aadam deploys the one-centimeter endoscope through a small internal incision to create a tunnel in the middle layers of the stomach to reach the pylorus sphincter muscle. He then cuts out a strip of the muscle to prevent further spasms, allowing the stomach to empty and the digestive tract to do its job.

Performed on an outpatient basis, G-POEM has the potential to replace traditional open surgery and the now more commonly used laparoscopic approach, which can have drawbacks such as pain at the external incision site. With G-POEM, patients have minimal to no pain and can eat right away. So far, of the some 40 patients who have participated in the G-POEM clinical study at Northwestern, 75 percent have shown improvement with 50 percent able to normalize their gastric-emptying study. This test uses X-ray technology to objectively measure the time it takes for food to move out of the stomach. Within three weeks of her G-POEM procedure this past July, Vargas says she began to enjoy her relationship with food again. "As long as I eat smaller amounts and several meals throughout the day, I am fine."

Aadam works with a multidisciplinary G-POEM team, which includes Darren Brenner, MD, who specializes in gastrointestinal motility disorders and pelvic floor disorders, dieticians, and, uniquely, a clinical health psychologist, Kate Tomasino, PhD. Very much a "brain-gut" disease, emotional states such as depression can exacerbate symptoms, according to Aadam. He has high hopes for the potential of this innovative procedure that he learned how to perform in Japan at the National Cancer Center in Tokyo. In 2015, he spent a month honing his skills in endoscopic submucosal dissection (ESD) used to endoscopically remove early GI cancers. He trained under the mentorship of the foremost expert in colorectal ESD, Yutaka Saito, MD, PhD. G-POEM is a novel extension of ESD.

"We have transitioned from the diagnostic era to the therapeutic era of endoscopy," says Aadam. "Now we are making minimally invasive internal incisions that heal quickly. This really is an exciting new era that puts us at the crossroads between medical and surgical intervention." ■

## GAME CHANGER FOR IMPROVING MEN'S HEALTH



**RIAD SALEM, MD**  
vice chair of  
Image-Guided  
Therapy and  
chief of Vascular  
Interventional  
Radiology in the  
Department of  
Radiology

**T**reatment options have been limited for the 15 million to 20 million men in the United States with enlarged prostates or benign prostate hyperplasia (BPH) — a common disease in men over 50 — and the urinary issues it causes.

A growing prostate puts pressure on the bladder, causing difficulties urinating from increased frequency to problems fully emptying the bladder. TURP (transurethral resection of the prostate) is the current gold standard for improving the often life-altering symptoms of BPH, which can have men going to the bathroom as many as 15 times a night. The risks of this procedure include erectile



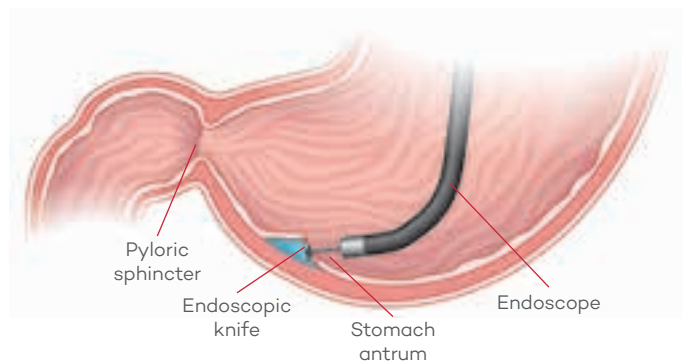
# G-POEM

GASTRIC PER-ORAL  
ENDOSCOPIC  
PYLOROMYOTOMY

G-POEM has the potential to replace traditional open surgery.

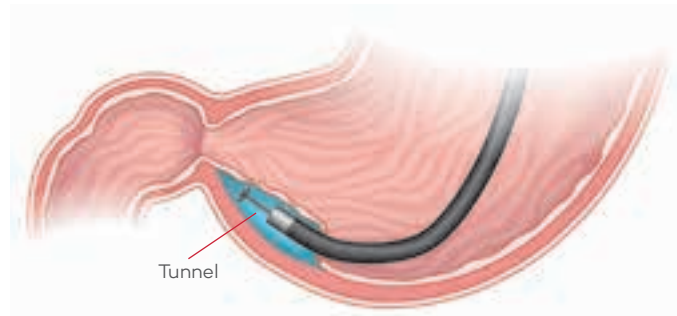
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## MUCOSAL INCISION INTO ANTRUM OF STOMACH



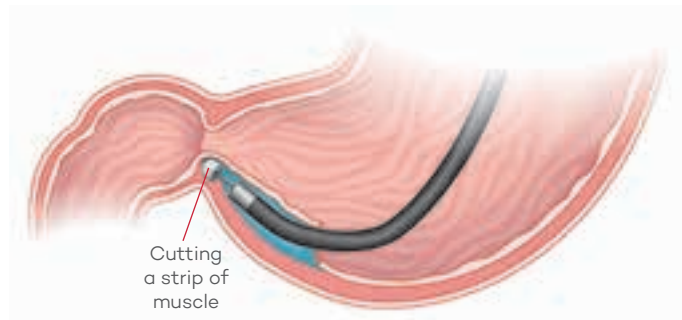
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## TUNNEL CREATION WITHIN STOMACH WALL



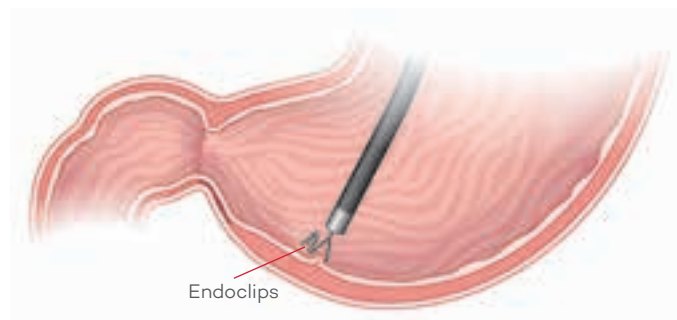
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## PYLORIC SPHINCTER MYOTOMY



4

## CLOSURE OF MUCOSAL INCISION



dysfunction, incontinence, and recurring urinary tract infections, serious side effects that affect quality of life for men as they age.

Enter prostatic artery embolization (PAE), a cutting-edge minimally invasive procedure that shrinks the prostate by cutting off its blood supply via the use of very small microspheres or beads. Leading the way, a multidisciplinary team of Northwestern Medicine interventional radiologists and urologists have been evaluating the innovative procedure in clinical trials.

"One of the most appealing aspects of PAE is that there is no risk of sexual dysfunction," says Riad Salem, MD, vice chair of Image-

Guided Therapy and chief of Vascular Interventional Radiology in the Department of Radiology. "With this minimally invasive outpatient procedure, patients experience very little pain, go home the same day, and can soon get back to normal activities."

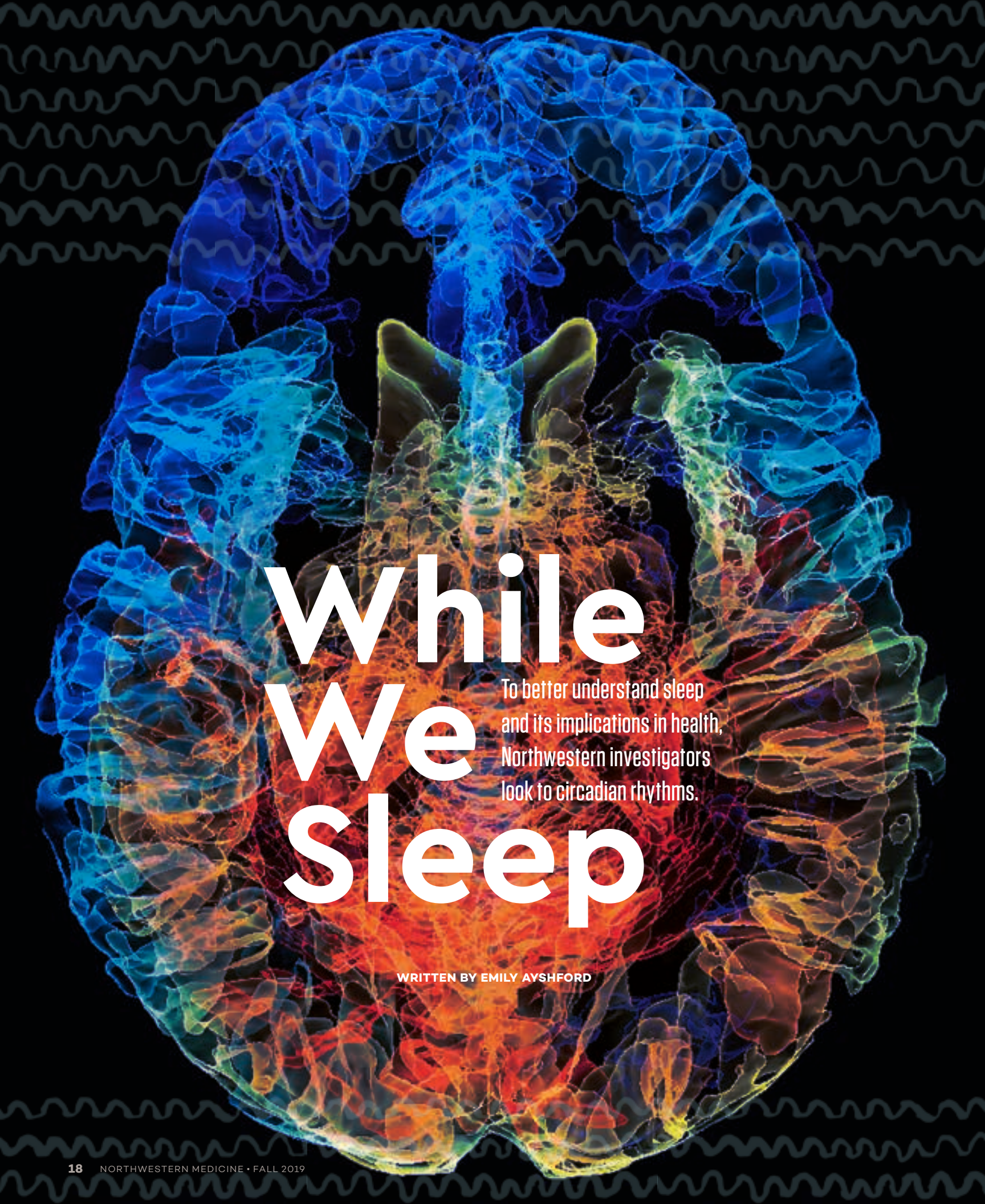
PAE involves threading a catheter up through the femoral artery in the groin to the prostate. Then the interventional radiology team injects the tiny beads so they block off the arteries feeding the prostate. The image-guided procedure effectively reduces the size of prostate, so it no longer presses on the bladder. The Northwestern team of Salem, along with Matthias Hofer, MD, PhD, and

assistant professor of Urology, and Samdeep Mouli, MD, assistant professor of Radiology, has found PAE works best on very large prostate glands (> 80cc) with the necessary vascular architecture. "The arteries feeding larger glands are a better receptacle for the microspheres," says Salem.

As PAE becomes more widely known and accepted, many patients have sought it out, according to Salem.

"We have had good results with PAE that suggest that it should become one of the standards of care for BPH," says Salem. "It is a very attractive first treatment for men with enlarged prostates."





# While We Sleep

To better understand sleep  
and its implications in health,  
Northwestern investigators  
look to circadian rhythms.

WRITTEN BY EMILY AYSHFORD



“We’re at an exciting time when we are beginning to understand just how integrally involved sleep and circadian clocks are with both promoting health and resilience and, when disrupted, increasing the risk for disease.”

Phyllis Zee, MD, PhD

Sleep has become a critical topic, with one main message: Most people don’t get enough of it. In fact, Northwestern research has shown just how detrimental our disrupted sleep and biological rhythms can be for health and productivity.

When we sleep, our blood pressure drops, our tissue is repaired, and our memories are consolidated and stored. But what regulates this is not sleep itself, but the body’s circadian rhythms — the roughly 24-hour cycle every being lives on.

When those rhythms are disrupted, it can affect everything from learning and memory to metabolic and cardiovascular diseases. Feinberg investigators are both undertaking basic science research to understand the implications and turning that information into translational medicine for patients, including new medicines, interventions, and strategies aimed at improving not just sleep, but overall health.

“Circadian rhythms and sleep affect the function of all cells,” says Phyllis Zee, MD, PhD, the Benjamin and Virginia T. Boshes Professor of Neurology and director of the Center for Circadian and Sleep Medicine. “We’re at an exciting time when we are beginning to understand just how integrally involved sleep and circadian clocks are with both promoting health and resilience and, when disrupted, increasing the risk for disease.”

### Night owl or morning lark? It could affect your health.

When you become sleepy in the evening, you can thank your body’s network of clocks. The brain’s master circadian clock, located in the suprachiasmatic nucleus of the hypothalamus, was once thought to control the circadian rhythm across all the body’s peripheral clocks, which are located in nearly every cell and organ in the body.

But the story is more complicated. These clocks — regulated by genes and affected by environmental cues, such as light — work together like an orchestra to regulate not only sleep, but other behavioral and biological processes, including hormone release and eating habits.

That doesn’t mean every human runs on the same circadian clock: Scientists have dubbed those who rise

early as “morning larks,” while those who prefer to stay up late are “night owls.”

Whether you are a morning lark or night owl depends equally on both genetic and environmental factors, but research shows that it could affect your health.

In a study of nearly half a million participants in the U.K. Biobank Study, Feinberg investigators found that night owls have a 10 percent higher risk of dying than larks over the 6 ½ years of the study. The results were published in *Chronobiology International*.

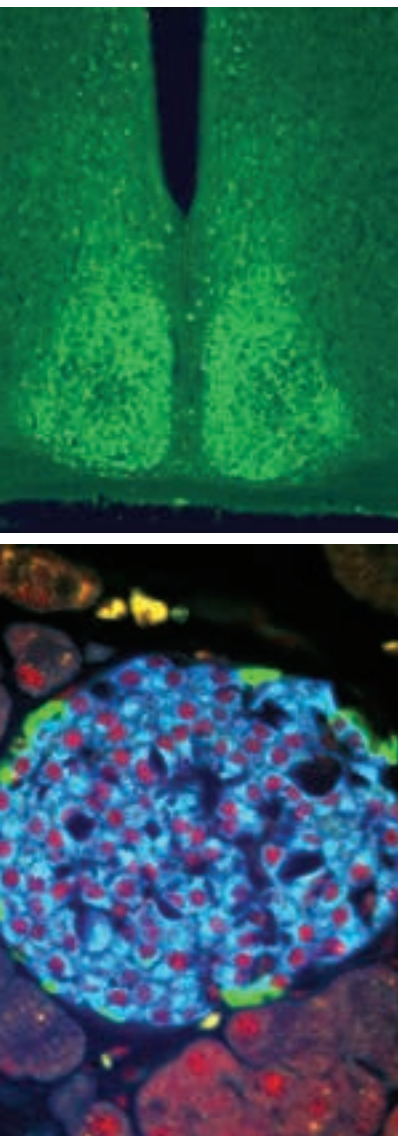
“It could be that people who are up late have an internal biological clock that doesn’t match their external environment,” says co-lead author Kristen Knutson, PhD, associate professor of Neurology. “It could be psychological stress, eating at the wrong time for their body, not exercising enough, not sleeping enough, being awake at night by yourself, maybe drug or alcohol use. There are a whole variety of unhealthy behaviors related to being up late in the dark by yourself.”

### Racial disparities in sleep could lead to higher risk for disease

While living according to an external clock that doesn’t match the internal clock can result in increased mortality, so can reduced sleep due to elevated exposure to social stress, like discrimination.

That was the finding from a Feinberg study published in the *Proceedings of the National Academy of Sciences* that found that African-Americans got 40 fewer minutes of sleep per night compared to European-Americans, and had a 10 percent lower sleep efficiency rate. Poor sleep patterns could explain, in part, the differences in the risk of cardiometabolic disease, said study author Mercedes Carnethon, PhD, professor of Preventive Medicine in the Division of Epidemiology. ➤

◀◀ A colored MRI scan of the human brain, showing ventricles and folds of the cerebral cortex.



<< Top: Cells in the suprachiasmatic nucleus, the region of the brain that controls circadian rhythms. Bottom: A pancreatic islet containing BMAL1 (identified using red immunofluorescent staining), the circadian clock gene essential for glucose metabolism. Images provided by the Bass Lab.

African-Americans have higher rates of cardiovascular disease, stroke, diabetes, and hypertension than European Americans, even when controlling for health behaviors. By studying the sleep patterns of 426 African-American and European-American adults who were included in the Midlife in the United States (MIDUS) study, the investigators found that more than one half of racial disparities in cardiometabolic risk could be explained by sleep disparities.

“This study is one of the first to examine how disparities in sleep are contributing to differences in metabolic diseases,” Carnethon says. “What we hope is that as patients and healthcare providers become aware of these associations, they will prioritize considering sleep as an essential component of a healthy lifestyle.”

### How diabetes and obesity are linked to circadian rhythms

Understanding just what role circadian rhythms play in metabolic disorders like obesity and diabetes is the goal of Joe Bass, MD, PhD, chief of Endocrinology, Metabolism and Molecular Medicine in the Department of Medicine.

In 2005, Bass and his collaborators published a study in *Science* that showed that a misaligned biological clock impaired metabolism, increasing obesity. Since then, Bass has studied how these clocks regulate feeding behavior and glucose metabolism. In 2010, he found that beta-cells in the pancreas require a clock to produce insulin and published the research in *Nature*, and in 2015, he found the precise set of genes in the pancreas that are controlled

by the clock transcription factors. Those findings were published in *Science*.

Bass and Zee are studying how nighttime fasting affects circadian rhythms. “We will look at the peripheral clocks in the body to see how controlled, restricted feeding affects metabolic aging,” Bass says. Other collaborators on the study include Knutson and Kathryn Reid, PhD, research professor of Neurology.

“We think that by not eating for 12 hours or more at night, people will have an enhanced metabolic rhythm, which could have positive effects on conditions like obesity,” Zee says.

### Medicine and sound stimulation for a better night's sleep

In the Center for Circadian and Sleep Medicine, Zee and her collaborators are developing new strategies to help people get more — and better — sleep.

In 2017, they found that a synthetic cannabis-like drug in a pill could be effective in treating obstructive sleep apnea, a sleep disorder in which a person stops or has shallow breathing for 10 seconds or more while sleeping. Sleep apnea patients are at increased risk for heart disease, diabetes, sleepiness, and cognitive impairment. The usual and most effective treatment for the disease is CPAP (Continuous Positive Airway Pressure), a device that delivers pressurized air to open up the airway, but compliance can be poor.

## Measuring Time In and Out of Our Bodies

Phyllis Zee's office is a monument to time. A Dali clock drips from a bookshelf. An hourglass sifts sand on the table. A kinetic clock sculpture circles chaotically on her desk. Timing is everything, she always says, and the saying may be true in medicine, as well. Zee and her collaborators have developed the first simple blood test to identify your body's precise internal time clock as compared to the external time.

Called TimeSignature, the test requires two blood draws and measures 40 different gene expression markers to determine the “time” inside your body. Your body might think it's 10 a.m., for example, when it's really 6 a.m. The investigators — including Rosemary Braun, PhD, MPH, assistant professor of Preventive Medicine in the Division of Biostatistics, as well as Sabra Abbott, MD, PhD, assistant professor of Neurology, and Ravi Allada, professor of Neurobiology — published their results in the *Proceedings of the National Academy of Sciences*.



The test can potentially help physicians and investigators to tell the time of one's internal biological clock and determine if circadian rhythms are misaligned. It can also help them consider when to provide doses of medication. New research indicates medicine might be more effective at different times of day, depending on the timing of a person's circadian rhythms.



## Northwestern Sleep Investigators



Phyllis Zee, MD, PhD



Joe Bass, MD, PhD



Jason Ong, PhD



Roneil Malkani, MD



Mercedes Carnethon, PhD



Kristen Knutson, PhD

The drug, dronabinol, is a synthetic version of the molecule Delta-9 THC (tetrahydrocannabinol), which is in cannabis. It was originally approved by the Food and Drug Administration to treat nausea and vomiting in chemotherapy patients.

“The drug targets the brain and nerves that regulate the upper airway muscles,” says Zee, who is also the chief of the Division of Sleep Medicine. “It alters the neurotransmitters from the brain that communicate with the muscles. Better understanding of this will help us develop more effective and personalized treatments for sleep apnea.”

Some strategies don’t involve drugs at all — instead, they involve just the right noise.

In a study done by Zee, Reid, Roneil Malkani, MD, assistant professor of Neurology in the Division of Sleep Medicine, and Daniela Grimaldi, MD, PhD, research assistant professor of Neurology in the Division of Sleep Medicine, people with mild cognitive impairment found enhanced deep sleep through the use of “pink noise” — gentle sound stimulation at a certain frequency played during specific times of deep sleep.

Because the brain records sound while you sleep — potentially eavesdropping for dangers — the sound could provide a signal to the brain that everything is okay, and that it should protect you while you are in deep sleep, which is important for memory consolidation.

The noise even worked on healthy older people, improving memory by up to 30 percent. “It’s all a race against time,” Zee says. “If we can find strategies that enhance sleep quality, the hope is that maybe we can delay cognitive impairment and improve cardiovascular and metabolic functions for successful aging.”

### A mindful approach to sleep

For Jason Ong, PhD, associate professor of Neurology, getting a good night’s sleep involves not only behavioral changes, but a whole new mindset.

That’s why Ong has encouraged insomnia patients to take a mindfulness-based approach to sleep. Many approaches to falling asleep involve standard behavioral changes — get out of bed if you can’t sleep, spend less time in your bed overall. But Ong found that many patients don’t like to follow such rules, so he developed a mindfulness-based intervention.

By learning how to meditate — how to objectively look at thoughts, but let them continue on, like trains traveling past a station — those with insomnia who participated in a small trial showed improvements not only in sleep but in their daytime moods.

“It’s not about hypnotizing yourself to sleep,” says Ong, who is also a professor of Medical Social Sciences and Psychiatry and Behavioral Sciences. “It’s about being



## Strategies for Getting the Best Sleep

Research has shown that it’s not how much sleep you get — it’s when you go to sleep and wake up that matters. Below, a few tips from Northwestern investigators:

1. Stop eating two to three hours before going to sleep.
2. Two hours before going to sleep, dim the lights.
3. Before going to bed, take a bath. This dissipates heat from your body and signals that it’s time to sleep.
4. Go to bed at the same time every night. If this isn’t possible, keep it within a one-hour window during the week, and a two-hour window on the weekends.
5. Get up at the same time every morning, also ideally within a one-hour window.
6. When you get up, seek out daylight to help tune your circadian rhythms.
7. Exercise, ideally at the same time every day (or however often you exercise).

present in the moment and understanding that maybe you don’t need to be in bed, or maybe you don’t need as much sleep tonight. It cultivates awareness about whether you are truly sleepy. When people are aware, it can help remove the stress of insomnia.”

Such work underscores the role of sleep on nearly every aspect of health, Zee says. That’s why the last decade, when investigators began to understand how circadian rhythms affect the body, has laid the groundwork for an exciting future in the field.

“Circadian rhythms work together like a beautiful orchestra, or jazz band,” Zee says. “We are just beginning to understand how these rhythms underlie so many diseases, and we’re ready to translate that knowledge into real treatments.”

Amanda Morris, Marla Paul, and Anna Williams contributed to this story.

# DATA DETECTIVE

**Denise Scholtens works with investigators to better understand data.**

**STUDY DATA CAN BE INTERPRETED** in multiple ways. Sometimes study designs aren't completely conclusive; other times, subtle components of study design require careful selection and precise application of correct methodology to make sound conclusions.

Shepherding investigators through that process is Denise Scholtens, PhD, chief of Biostatistics in the Department of Preventive Medicine. As a biostatistician, she designs and analyzes research studies, including clinical trials, observational studies, and basic science experiments. She's good with numbers, but her position often requires another skill altogether: being both humble and tough.

Recently, she found herself in that situation with an investigator who was conducting a retrospective review of cancer data. In the investigator's preliminary analysis using one methodology, the results supported the hypothesis that the investigator had developed. But when Scholtens and her student took a look at the data, they found the methodological approach was wrong, and the results completely flipped.

That's not unusual — and neither is the clash that can result. "It led to a healthy discussion, but the key to getting things done is careful listening and offering concerns as to why we aren't on the same page," she says. "Biostatisticians are often not the most popular people in the room, but we've become pretty used to that role. Instead, we strive to be humble — there is a lot of analytic work that is not glamorous — and we must often be tough when pointing out what the data are really saying. The pairing of words 'humble and tough' comes from an essay I read several years ago. As a philosophy for approaching work, it is really motivating for me."

As the amount of available research data explodes (from experimental data to electronic health-record data) shepherds like Scholtens are increasingly important. That's why the new Northwestern University Data Analysis and Coordinating Center (NUDACC), which Scholtens directs, was created. The center will streamline the research process and innovate

new methods that can ultimately improve both clinical practice and public health.

"We are scientists in our own right, but the greatest synergy comes when we're partnering with clinicians or investigators who have questions that apply directly to the care of people," Scholtens says. "NUDACC will help facilitate even more of that collaboration."

## **A perfect blend of math and medicine**

Like many biostatisticians, Scholtens was drawn into the field because she was interested in both math and medicine, but wasn't interested in becoming a clinician. In fact, she started her career as a high school math teacher in Naperville, Illinois. But when her students asked why they needed to learn math, she realized that she continued to wonder about that as well, and longed to use math in an applied way that could help the world.

At the time, Google was a brand-new search engine, and when Scholtens searched for "math, medicine," the top result was biostatistics.

"It was the perfect blend for me," she says. "I could use my strengths to help care for people and support research to address healthcare needs. It seemed like a great space to work in."

She entered a PhD program at Harvard, and when she graduated in 2004, she secured a faculty position at Northwestern. At the time, she was one of only a handful of biostatisticians.

Since then, the field of biostatistics has had a serious evolution. Now, the division has 20 faculty members and 20 staff members. As more data have become available, Scholtens and her colleagues have developed new methodological innovations to keep up with it. Machine learning and predictive analytics joined the classic biostatistics toolkit, and scientific discovery, even within the field of biostatistics itself, has continued to expand.

## **Reaching across the enterprise**

Scholtens collaborates with investigators across the medical spectrum, from oncology to obstetrics, and across Feinberg centers.

One of Scholtens most successful collaborations with investigators has been the Hyperglycemia and Adverse Pregnancy Outcome Follow-Up Study (HAPO FUS). This multi-center project looked at maternal glycemia levels during pregnancy, then examined their association with outcomes, such as large baby size. Scholtens came on board after the original study was completed, but has been involved in follow-up studies, looking at the long-term effects for mother and children, including diabetes and obesity. She coordinates the data for the study with her team and is the primary statistician for the HAPO Metabolomics and Integrated Omics Studies.

"This was my first introduction to working across centers, and the beauty of a large-scale study like this is the rich resources that breed extra investigations," she says. "There is so much to be learned from genetics and metabolomics studies in HAPO's population-based setting, and there's a lot of room for statistical innovation."

Initial results that Scholtens helps analyze have found that a mother's glucose level during pregnancy is associated with her child's body



size both at birth and during childhood, and with her own long-term glucose metabolism. Now, the investigators are launching a new multi-center consortium to study glucose monitoring over the entire pregnancy. Northwestern biostatisticians will help run the study, collect data, conduct quality assurance, facilitate regulatory reporting, and, ultimately, analyze the accumulated data.

“This project is exactly the kind of larger-scale project we want to do more of here at Northwestern,” Scholtens says. “That’s why we needed a new center to provide infrastructure for projects like this.”

#### **New center will streamline research process**

Launched in August, NUDACC includes multidisciplinary faculty and a staff of statistical analysts and programmers who will provide a more sophisticated infrastructure for conducting larger studies and more impactful work in collaboration with both Feinberg investigators and in multi-center research projects.

“We really want to streamline the research process across the life cycle of studies,” Scholtens says. “We’ve gotten pretty good at identifying when existing methods apply and understanding what statistical tools are out there to help meet data analytic needs, and we can analyze data and facilitate correct interpretation for highly impactful work.”

That may mean more difficult conversations with investigators, but Scholtens knows that comes with the territory. “A lot of times we are significantly less biased in terms of what we think the data are saying,” she says. “We serve as sounding boards.”

The center, along with the whole biostatistics division, is increasingly involved in advocating for reproducible research — the

idea that investigators should provide enough information so that another investigator can retrace their path completely and find the same result. Scholtens and her team are developing living documents with explanatory text that can be used to better communicate results.

NUDACC will eventually encompass more than just statistics, thanks to the talented group of people affiliated with the center, according to Scholtens. “I’m so incredibly proud of our really gifted faculty and staff in the division,” she says. “That really motivates me. I’m impressed every day by their work.”

#### **Bringing order out of chaos**

Scholtens is also motivated by her three daughters, who are 11, 13, and 15. Outside of

work, she and her husband love to spend time with them, traveling as a family and watching them grow into their own unique young women. That sort of observing, listening, teaching, and collaborating spans both her personal and professional lives.

“I like learning about what my scientific colleagues are doing,” she says. “I like being able to provide this unique form of collaboration, and I like committing to a project and seeing it through. I want to be this humble and tough collaborator who partners for wisdom, who can bring order out of chaos for new discovery.” ■

“We are scientists in our own right, but the greatest synergy comes when we’re partnering with clinicians or investigators who have questions that apply directly to the care of people.” **Denise Scholtens, PhD**

# Informing Policy



Linda Teplin, PhD



*Linda Teplin and  
Lori Ann Post  
leverage science  
to drive policy change.*

WRITTEN BY GINA BAZER  
PHOTOGRAPHY BY AMANDA DEE

Lori Ann Post, PhD





Two Northwestern investigators are at the forefront of some of the most complex and dire issues facing the United States today, blending rigorous scientific investigation and perseverance to put their findings in the hands of policymakers.

### Pursuing data, against the odds

Twenty-five years ago, Linda Teplin, PhD, set off to do what most people told her would be impossible: the first-ever longitudinal study investigating the mental health and long-term outcomes of youth detained in the juvenile justice system.

“Everyone said, ‘You can’t do this. The kids won’t cooperate, and once they leave detention, you will never find them,’” says Teplin, who is vice chair for research in the Department of Psychiatry and Behavioral Sciences, director of the Health Disparities and Public Policy Program, and the Owen L. Coon Professor of Psychiatry and Behavioral Sciences.

Undaunted, Teplin — along with her associate director, Karen Abram, PhD, and an interdisciplinary team that included biostatistician Leah J. Welty, PhD — developed the Northwestern Juvenile Project (NJP). The project followed a randomly selected sample of 1,829 youth who were arrested and detained in Cook County, Illinois, between 1995 and 1998. Interviewers used standard psychological assessments to query participants about their mental health, substance use, gang membership, firearm involvement, and more. And, says Teplin, “Nearly all of the children wanted to be interviewed.”

Youth were between 10 and 18 years old when Teplin’s team first interviewed them, and every one to two years, they were re-interviewed. Participation rates have been about 90 percent. Participants are compensated for their time, and sent birthday cards, holiday gifts, and baseball tickets donated by the White Sox organization — part of how the investigators maintain contact with them. However, Teplin says that’s not necessarily what motivates them. “Many have told us, ‘You don’t have to pay me. It’s enough that you listen.’ One of our participants wrote to us from prison, saying, ‘Thank you. You are the only people in the world who remembered my birthday.’”

Teplin has been awarded a cumulative \$54 million from the National Institutes of Health (NIH) and 22 other federal agencies and private foundations since NJP’s

***Because we focus on correctional populations, our studies show how to increase resilience in the highest-risk populations. Large-scale epidemiological studies are the first steps needed to address disparities in incarceration and health.***

Linda Teplin, PhD



inception, and her team has gone to great lengths to retain their participants. “We go to their homes, we visit them in jail and prison,” she says. “We interviewed a participant during her dinner break from her job as an exotic dancer and someone else in her boyfriend’s garbage truck.”

The team’s findings over the years — published in journals including *JAMA Psychiatry*, *JAMA Pediatrics*, *Pediatrics*, and the *American Journal of Public Health* — paint a dire picture. The majority of the detained juveniles had one or more psychiatric disorders; by median age 32, more than six percent had died (many by homicide); only half had finished high school or its equivalent; and by median age 30, three-quarters of the sample had been incarcerated one or more times in an adult jail or prison.

African Americans fared the worst. “This is particularly disheartening because African Americans comprise about 13 percent of the population in the U.S., but account for more than 40 percent of youth and adults in corrections,” says Teplin.

Findings from the NJP have been cited in reports by the U.S. Surgeon General, used in amicus briefs to the Supreme Court, presented in congressional hearings, and widely disseminated by federal agencies and advocacy groups.

Their studies also impact policy. For example, data showing that nearly three-quarters of girls and two-thirds of boys entering detention had one or more psychiatric disorders, and half had a substance use disorder, helped spur development of tools used by correctional facilities to screen and treat detainees. Another finding, that girls had substantially different patterns of disorders than their male counterparts, led detention centers nationwide to implement gender-specific programs.

A surprising discovery, that non-Hispanic whites were more than 30 times more likely than members of non-white populations to have an addiction to “hard drugs” (like cocaine and heroin) than African Americans, helped generate support for ➤



Teplin's long-time collaborator Karen Abram, PhD, professor of Psychiatry and Behavioral Sciences, helped develop the Northwestern Juvenile Project which started in 1995.



Teplin became interested in incarcerated populations in the early 1980s. She found that people with psychiatric disorders were being arrested rather than treated because there were few alternatives. "The jail had become the poor person's mental hospital," she says.

policies that address the consequences of the "War on Drugs" for African Americans.

"Our findings added to the growing debate on how the war on drugs has affected African Americans," says Teplin. "African Americans are less likely than other racial or ethnic groups to abuse hard drugs, yet African Americans are disproportionately incarcerated for drug crimes."

"It's a social class issue," she adds. "For example, when wealthy kids sell drugs, their schools usually call the parents first. Their parents may promise to obtain treatment for their child in exchange for leniency. They are also more likely to be able to afford an attorney if needed. In contrast, poor children are more likely to attend schools with 'no tolerance' policies. These schools call the police first, and the child is more likely to be arrested and detained. People presume that we study criminals, but that's incorrect; we study poor people."

### Beyond detention: life after incarceration

Today, the number of original NJP participants has diminished to 1,561; 176 have died, many violently. Most of the participants are now in their late 30s. Many have returned to their communities; some have overcome their early challenges and are thriving, but many continue to be involved with the criminal justice system.

Many, too, have had children. And, last year, a new round of four grants from the NIH and the



***We hope to identify individual, family, and community characteristics that will help at-risk children become resilient to challenging outcomes.***

Karen Abram, PhD



Department of Justice allowed Teplin, Abram, and Welty, along with Amélie Petitclerc, PhD, a developmental and clinical psychologist, and an assistant professor of Medical Social Sciences, to launch the next phase of their research — NJP: Next Generation. Next Generation will address critical questions. How does the parents' involvement with firearms during their own adolescence affect that of their child? What are the collateral consequences (moving homes, changing schools, entering foster care) of parents' incarceration for their children? In addition, are there intergenerational patterns in the development and persistence of substance use disorders?

"We hope to identify individual, family, and community characteristics that will help at-risk children become resilient to challenging circumstances," said Abram. "Our findings will inform the development of new strategies to support families and communities."



In addition to working on policy issues in the United States, Post tackles a range of global health and social issues. Earlier this fall, she spoke before the United Nations Human Rights Council on the gendered nature of opioid overdose.



Erika Ostrander, MA, MS, the clinical research project manager for Next Generation, is currently assembling the team of interviewers who will interview both the original participants and their adolescent children.

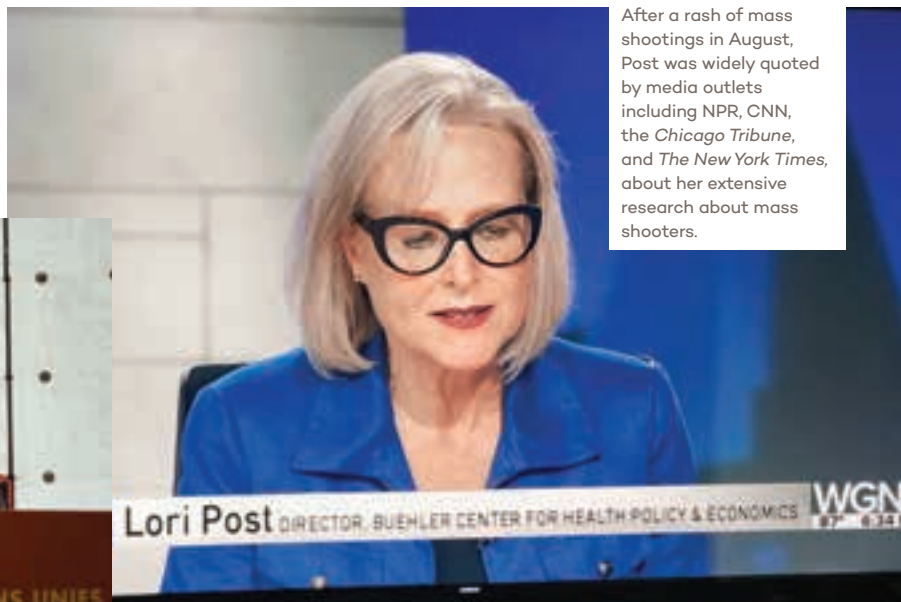
Ten years ago, Ostrander was an interviewer herself, and the story of one young woman continues to haunt her. “She was arrested at the age of 13,” Ostrander says. “Back in the ’90s, children were more often tried as adults and given harsh sentences. The first time I interviewed her, she was in prison and about to be released. She was thrilled to be free. Yet when we spoke a couple years later, it was heartbreaking. Re-entering society had been so difficult, she said she would rather return to prison.”

Despite the devastating stories she hears, Ostrander is optimistic that Next Generation will precipitate change. “Our study will drive policy and help improve lives,” she says.

Teplin, too, focuses on the end goal. “Most large-scale longitudinal studies examine only patients or general populations. They omit correctional populations, who are likely to have the worst outcomes. Thus, findings are biased. Our studies address these omissions. Because we focus on correctional populations, our studies show how to increase resilience in the highest-risk populations. Large-scale epidemiological studies are the first steps needed to address disparities in incarceration and health,” she says.

“  
**Lawmakers  
often create policy  
behind closed  
doors without  
evidence. And the  
question is, ‘Why  
not use science to  
inform policy?’**”

Lori Post, PhD



After a rash of mass shootings in August, Post was widely quoted by media outlets including NPR, CNN, the *Chicago Tribune*, and *The New York Times*, about her extensive research about mass shooters.

## Probing the social context of violence

Using data to call attention to broadly held misconceptions with grave, wide-reaching implications has always been a major motivator for Lori Post, PhD, director of the Buehler Center for Health Policy and Economics at Northwestern.

An epidemiologist who has been studying vulnerable populations and the social context of violence for decades, Post has recently been widely quoted by media outlets including *The New York Times*, *Chicago Tribune*, and CNN, in the wake of the tragic mass shootings in Texas and Ohio. Debunking the idea that these shootings are perpetrated by the mentally ill has been one of her primary focuses.

“Only about four percent of mass shootings are carried out by people with mental illness, and yet that is one of the most common narratives among legislators in Washington,” says Post, who is also a professor of Emergency Medicine and of Medical Social Sciences.

After delving into the data surrounding 98 mass shooting in the U.S. since 1982, Post found that 95 percent of mass shooters were male; they were generally young and overwhelmingly white, and 81 percent used semi-automatic weapons. And, each mass shooting was the product of careful forethought — methodic planning of each detail over the course of weeks and even years. ➡

## Out in the Field

The key to NJP's longevity has been perseverance in tracking participants. For the past 25 years, the project — staffed by anywhere from 20 to 50 people, both in the office and in the field — has resulted in about 18,000 in-person interviews.



Most of the tracking happens before the field work begins. Trackers and field interviewers compile extensive locating information on participants and exhaust all tracking that can be conducted from the office (calls, letters, internet searches) before they set out on their field visits.



Not every quest results in a connection. Sometimes, a new person lives at the address, and it's back to the drawing board — talking to sources and searching for new leads about how to find the participant.



This time, tracking coordinator Rosa Narvaez and field interviewer Ron Cleveland were successful; they found the participant they were looking for — an NJP participant who had just been released after 20 years in prison.



The participant had kept track of trackers' contact information throughout his years incarcerated. When he saw the NJP staffers, he teared up and said, "You guys have been with me since I was just a kid. I got all of your birthday cards."

Photography by Sydney Rinehart

"There are many falsehoods about gun massacres, especially that people who perpetrate massacres have mental health problems, when in fact, massacres require so much organization that an individual with mental health issues is less likely to be able to develop and execute such a plan," Post says.

"As Americans, if we want to make mass shootings stop, we all need to be involved in stopping hate speech, calling it out when it is said or posted on social media, and notifying the police when threats or plans of violence are named, because once an individual has developed a massacre plan, they are extremely dangerous."

Post is also drawing attention to the fact that discussions of gun violence are missing a key component: unreported incidents. According to Post, there really are no accurate numbers on the prevalence of gun shootings in the U.S. She recently co-authored a study in *The Journal of Behavioral Medicine* underscoring the fact that not all incidences of gun violence are reported to the police. Moreover, no single source can possibly account for all gun shootings. The study

**To get accurate data  
on gun violence,  
we need to  
consider several  
data sources.**

Lori Post, PhD

was part of a special issue dedicated to gun violence, created in response to the National Rifle Association's tweet telling physicians who speak out about gun violence to "stay in their lane," a comment that Post and her colleagues across U.S. universities saw as a call to action.

"To get accurate data on gun violence, we need to consider several data sources, such as paramedic services, emergency departments, medical examiners, police records, and even media reports," she says.

It is this kind of big-picture, accurate data that lawmakers need in order to make sound public health policy, and Post believes firmly in the power of academic scholars to provide it. As the director of the Buehler Center, she mentors other Northwestern investigators who want to explore how their research can inform policy decisions as well. The Center provides everything from assistance with designing studies to identifying funding sources to conducting cost-benefit analyses, empowering investigators to put science in front of decision-makers.

"Lawmakers often create policy behind closed doors without evidence," she says, "And the question is, 'Why not use science to inform policy?'"

Kristin Samuelson contributed to this story.





# Mentoring Current Students

*A letter from Rishi Reddy, '00 MD (HPME)*

**H**ello, Feinberg alumni! I hope everyone had a good summer. The Feinberg Class of 2023 has started classes, and your Medical Alumni Association Board has been busy continuing our different engagement and mentoring initiatives.

Recently, we hosted the first “How to Interview for Residency/Medical School” events for current M4s and Northwestern undergraduates. The success of these pilot sessions reminded me that we have very easy mechanisms for our alumni to engage current medical students at any time, even if you aren’t traveling to Chicago.

A popular, intimate program is **DINNERS WITH A DOC**. These are sponsored by alumni who host a dinner with three to five students,

who could provide honest and practical advice,” Dr. DeLeon said. A side benefit of hosting was becoming better equipped to guide her own children and their interests in a medical career. “I greatly appreciate the perspective the students give me on the current medical school climate,”

she added. “I really enjoyed the engaging discussions with these bright, rising physicians.”

Dr. Lakshmi Tummala ('05, '09 MD) is a cardiologist in the Washington, D.C., area who hosted



Other alumni engagement opportunities include: **ALUMNI PHYSICIANS OF FEINBERG (APF)**, which is an informal dinner sponsored by the alumni office for 20 students with one to two academic physicians; **MENTOR CIRCLES**, wherein alumni share their expertise with

**“I was so impressed with their fortitude and insight; after our dinner, I felt very heartened about the future of medicine.”**

LAKSHMI TUMMALA, '96, '09 MD

**“I wanted to share my career and life experiences and also be available as a mentor who could provide honest and practical advice.”**

MARYANN DELEON, '96 MD, '99 GME



matched to the physician according to their clinical fields of interest. Many alumni who have hosted these events have found them to be incredibly rewarding. Dr. MaryAnn DeLeon ('96 MD, '99 GME) is a pediatric hospitalist in the Chicago area who recently hosted a few students.

“I wanted to share my career and life experiences and also be available as a mentor

who could provide honest and practical advice,” Dr. DeLeon said. A side benefit of hosting was becoming better equipped to guide her own children and their interests in a medical career. “I greatly appreciate the perspective the students give me on the current medical school climate,” she added. “I really enjoyed the engaging discussions with these bright, rising physicians.”

that students today develop strong skill sets in research, networking, and advocacy. “I know now that these things, in addition to clinical care, matter for career success,” she said. She also found inspiration in meeting with these students, sharing, “I was so impressed with their fortitude and insight; they were truly much older and wiser than I was at 20, and after our dinner, I felt very heartened about the future of medicine.”

a small group of students online; and the **NORTHWESTERN EXTERNSHIP PROGRAM (NEXT)**, which helps set up a one-day shadowing opportunity for current students (both undergraduate and graduate). The last two programs are part of the **NORTHWESTERN NETWORK MENTORSHIP PROGRAM**, which you can learn more about at [mentor.northwestern.edu](http://mentor.northwestern.edu). To learn more about APF and Dinners with a Doc, check out [feinberg.northwestern.edu/alumni/connect-with-students](http://feinberg.northwestern.edu/alumni/connect-with-students).

I want to personally thank Drs. DeLeon, Tummala, and all of our alumni volunteers for generously sharing their experience and time with our students. If you are interested in participating in any of these programs, please email Dan Schwarzlose of the Alumni Office ([daniel.schwarzlose@northwestern.edu](mailto:daniel.schwarzlose@northwestern.edu)).

Thank you for staying engaged and GO CATS!

Touching many aspects of medicine, Joseph Iannotti, '79 MD, PhD, works to bring healthcare into the future.

# Practicing Innovation

Joseph Iannotti, '79 MD, PhD, has big plans for Cleveland Clinic Florida. As chief academic and innovation officer at Cleveland Clinic, he's looking to expand the institution's academic footprint to make it a clinical and research powerhouse like its namesake in Ohio.

It's a tall order, but in the last several months, Iannotti has made considerable headway. This fall, he and his colleagues will open a brand-new research facility — the home of a new immunology-focused basic research program that is a collaboration among Cleveland Clinic Florida, Florida International University, and the Australian biotechnology company Vaxine.

"Our focus is going to be on development of new vaccines," Iannotti says. "There are a lot of worldwide pandemics, and some of the vaccines we have are not that effective."

The center will also conduct immunobiology research on neurodegenerative diseases and cancer. This ambitious effort is the latest in a career that has spanned three major universities and has married clinical care with research.

"I'm most proud of the fact that I've been able to successfully bridge clinical care with research — not just in my own career but at an institutional level," he says. "I've been able to grow and develop programs I'm very proud of in Cleveland and, now, in Florida."



## Bench to Bedside and Beyond

Attracted to Northwestern by its excellent Orthopaedics program ("It was a great experience and foundational to being a good doctor," he says of his time at the medical school), Iannotti was also drawn to basic science.

After Northwestern, he pursued a graduate degree at the University of Pennsylvania, where he finished his residency in 1984 and his graduate degree in cell biology in 1987. He stayed on at the University of Pennsylvania for 20 years, conducting laboratory-based basic science



CAREER MILESTONES

1979

Graduated Northwestern with MD

1988

Named chief of University of Pennsylvania Shoulder and Elbow Service

2000

Joined faculty of the Cleveland Clinic Lerner College of Medicine of Case Western Reserve University as Chairman of the Department of Orthopaedic Surgery

2018

Named chief of staff of Cleveland Clinic's Florida Health System

2019

Received Cleveland Clinic Lifetime Achievements Award for Innovation

1997

Appointed professor of orthopaedic surgery at the University of Pennsylvania

1984, 1987

Completed residency, followed by PhD in cell biology, at University of Pennsylvania

2011

Received Cleveland Clinic Sones Award for Innovation

research while treating patients with shoulder injuries. He rose to the rank of tenured professor of orthopaedic surgery and head of the Penn Shoulder and Elbow Service before joining the faculty of the Lerner College of Medicine of Case Western Reserve University and Cleveland Clinic in Ohio in 2000.

At the Cleveland Clinic, he became chairman of the Orthopaedic and Rheumatologic Institute and co-director of its Orthopaedic Research Center with a joint appointment at the Lerner College of Medicine's Department of Biomedical Engineering. Receiving a National Institute of Health R01 grant as a co-principal investigator allowed him to focus his research on understanding how rotator cuff tears heal after surgery.

"That work has been important in terms of trying to develop different ways to improve tendon healing after surgery," says Iannotti. He holds 120 U.S. patents, many of which are for implants that are currently widely used for shoulder replacements. In 2016, he was inducted into the National Academy of Inventors.

"I've developed with our team preoperative planning software and patient-specific instrumentation for joint replacement surgery, as well as software and imaging techniques to better analyze the outcomes after shoulder replacement surgery," he adds. He has also authored three textbooks and more than 350 original peer-reviewed articles, review articles, and book chapters.



Being a good doctor is a basic requirement, but if you can advance the field through discovery and innovation, you can contribute more to healthcare and the public."

Iannotti served in those dual research and clinical roles for 18 years before moving to Florida last November to become chief of staff at Cleveland Clinic Florida Health System, which includes five hospitals in Southeast Florida. (He remains a professor of orthopaedic surgery at Case Western.) In his role as chief of staff, he helps boost clinical care, recruit physicians, and grow the organization's clinical enterprise. But he's most passionate about his joint role as chief academic and innovation officer. "I'm in a lucky place to be able to do something I love," he said.

### Forecasting the Future

Some of Iannotti's most recent research focuses on the ways that telemedicine and other technology may advance medical care in the future.

"Telemedicine is an emerging area in the delivery of high-quality care at the right price point," he says. He explains that traditional face-to-face medical appointments that may last just

five minutes, but require making appointments weeks in advance, don't work for many patients. As a result, many patients resort to consulting "Dr. Google." Iannotti sees a middle ground, where technology can help patients get the care they need. CVS and Amazon, he points out, are already trying to find it.

"These large groups are providing healthcare in the seam between the Internet and traditional brick-and-mortar healthcare," he says. He also sees opportunities for innovation in the reams of data becoming available through mobile technology.

Iannotti encourages other physicians to make innovation a central part of their practice.

"Being a good doctor is a basic requirement, but if you can advance the field through discovery and innovation, you can contribute more to healthcare and the public," he says.

# Twelve Years of Global Impact

*Celebrating the New Institute for Global Health at Northwestern*



From left to right: Center for Global Cardiovascular Health director Mark Huffman, MD, MPH, '11 GME; Institute for Global Health associate director Kate Klein, MA, MPH; Center for Global Surgery director Mamta Swaroop, MD; Center for Global Health Education co-director William R. Leonard, PhD; Institute for Global Health deputy director Robert Havey, MD; Institute for Global Health executive director Robert Murphy, MD, '81 '84 GME; Inter-Collaborative Council for Research and Education director Matt Glucksberg, PhD; Center for Global Oncology director Lifang Hou, MD, PhD; and Center for Global Health Education co-director Ashti Doobay-Persaud, MD.



From left to right: Lynn and Dave Kelso talk with Robert Murphy, MD, and Adam Murphy, MD, '10 GME, at the cocktail reception before dinner.



From left to right: Tracy Guo; John Tippet, MD; Ming Liu, PhD; Katie Huffman; and Mark Huffman, MD, MPH, '11 GME.

**O**n September 25, more than 300 people came together to support Northwestern's commitment to improving health worldwide during the 12th Annual Global Health Initiative (GHI) Benefit Dinner. The event, which followed the launch of the medical school's new Institute for Global Health this May, raised a record amount to push forward the Institute's momentum and bright future.

"Since the GHI was founded, we've sent nearly 1,400 Northwestern medical students, residents, and faculty to underserved countries, where they provide care, deliver

supplies, and conduct both laboratory and clinical research," said Robert J. Havey, MD, founder of the GHI and deputy director of the Institute for Global Health. "Our work helps hundreds of thousands of people and helps find new solutions for critical global health problems."

The GHI Fund started 12 years ago with one gift from a grateful Northwestern patient who made a donation to honor his physician and support education at Feinberg. Over the years, the initiative has established educational outreach programs, supported clinics where medical trainees and faculty work, provided

seed funding for research, and worked closely with faculty across the medical campus and the world to support efforts in global health.

In addition to supporting elective rotations for medical students and residents, the GHI Fund has acted as a financial catalyst to support faculty research in a variety of disease-specific areas. The work is critically important, Havey noted, since, "As the world's population expands, the disparities in access to care keep expanding as well, leading to humanitarian, social, and economic problems on a scale never before seen."



## TESTIMONIALS OF IMPACT

**“The only light source available was provided by a camping headlamp, and the operating table was nothing more than a picnic table with wooden slats tied to each side.”**

**DARREN EBLOVI, MD, MPH**, instructor of Pediatrics in the Division of Hospital-Based Medicine, on conditions he witnessed in a small hospital in Africa. In part because of the global health initiative, Eblovi now lives in the Dominican Republic for most of the year to oversee primary care medical missions and is overseeing the construction of a new 25,000-square-foot ambulatory surgical care center.

**“Academic institutions play a very important role in the global health agenda by mitigating global risk of disease and developing sustainable health systems around the world. It doesn't just happen.”**

**ROBERT MURPHY, MD, '81 '84 GME**, executive director of the Institute for Global Health. He said that Feinberg has the highest percentage of medical students — more than 75 percent — completing global health rotations of any school in the country.

**“My time in Zambia gave me hope. It showed me that partnerships can truly provide a way of leading something.”**

**ALEXA KING, MD**, a clinical neuro-physiology fellow in the Department of Neurology. She will return to Zambia next year to focus on women's health and epilepsy, thanks to generous support from the Global Health Initiative.

## CHUNG FAMILY HONORS THEIR PATRIARCH'S LEGACY THROUGH NEUROSURGERY LECTURESHIP

After a residency at Northwestern, alumnus Byong Uk Chung worked as a neurosurgeon for more than four decades.

**T**his August, faculty and trainees in Northwestern's Department of Neurological Surgery gathered for the inaugural Byong Uk Chung, MD Global Neurosurgical Lectureship in Neurosurgery, a unique learning opportunity made possible by generosity from the Chung family to commemorate their patriarch, Byong Uk Chung, MD, '67 GME.

“Dr. Chung had a tremendous passion for teaching and volunteer work, and for international travel and exchange. To honor his memory and contributions to Northwestern, the city of Chicago, and his patients, the Chung family decided to make a very generous gift to support this lectureship,” said Maciej (Matt) Lesniak, MD, chair and the Michael J. Marchese Professor of Neurosurgery.

Born in Seoul, South Korea, Chung earned his medical degree from Oregon Health and Science University and completed his general surgery training and neurosurgery residency at Northwestern. He completed a fellowship at the Karolinska Institutet in Sweden and then went on to practice neurosurgery for more than

40 years in the northwest suburbs of Chicago. He passed away in 2018.

Paying homage to Chung's roots, the first featured guest speaker was Jin Woo Chang, MD, PhD, president of the Korean Society of Neurological Surgeons and professor of Neurosurgery at Yonsei University College of Medicine in Seoul. One of the world's pre-eminent neurosurgeons, Chang delivered a lecture titled “Current and Future Perspective of MR Guided Focused Ultrasound Surgery (MRgFUS) for Brain Disorders.”

“Dr. Chang was an excellent lecturer. His research is very exciting and innovative and will transform neurosurgery treatment for psychiatric disorders, Parkinson's, and hopefully diseases like glioblastoma,” shared Mimi Chung, MD, one of Chung's daughters, who traveled to Chicago from California to attend the lecture.

Endowed lectureships at Feinberg provide the funding and occasion for departments and other groups across the medical school to invite visiting lecturers from distinguished peer institutions to share their knowledge and insights, and to spend substantive time with faculty and trainees during their visit.



From left to right: Peter Chung; Mimi Chung, MD; Julia Chung Pierce; Young Chung, '85 MD; Jin Woo Chang, MD, PhD; and Maciej Lesniak, MD.

# PROGRESS NOTES

*We'd love to hear from you!  
Please share your recent  
news, accomplishments, and  
important milestones with us.*



Send your updates and  
high-resolution photos to  
[medcommunications@northwestern.edu](mailto:medcommunications@northwestern.edu).  
We will publish them in an upcoming  
issue of the magazine.

**JAMES W.  
FINDLING, '75  
MD, CLINICAL  
PROFESSOR OF  
MEDICINE AND  
SURGERY AT  
THE MEDICAL  
COLLEGE OF  
WISCONSIN,  
WAS AWARDED  
THE 2019  
OUTSTANDING  
CLINICAL  
PRACTITIONER  
AWARD BY THE  
ENDOCRINE  
SOCIETY IN  
NEW ORLEANS.**



Members of the nursing Class of 1967 recently celebrated 52 years since graduating from Northwestern. These alumnae gathered together at Gino's East, near the medical campus, to reconnect and celebrate a lifetime full of professional and personal achievements. Back row (left to right): Jannie Cox, Sheila McKinney, Lisa Fack, Janice Jankens, Cheryl Peterson, Jeanine White, Gloria Bauer, and Jane Rosenthal Stein. Front row (left to right): Karen Olsen, Mary deGangi, and Christy Kalter. (Names at time of graduation.)

## 1960s

**Steve Roberts, '61 MD**, retired from direct patient care in East Texas but continues to be active in other pursuits, including travel. Roberts recalls all the fun memories as a medical student at Feinberg and sends his best to all.

## 1970s

**Anthony M. Marinelli, Jr., '75 MD**, who retired from clinical practice on June 30, 2016, recently retired from his duties in quality management on May 31, 2019. Marinelli's daughter, **Melissa Marinelli, '09 MD, '13 GME**, also is a Feinberg graduate.

Since retiring in 2006, **Steven Golbus, '73 MD**, is now in his 12th year as volunteer medical director and attending physician at a free clinic that provides medical care for those without medical insurance. The free clinic is part of a national network called Volunteers in Medicine.

**James W. Findling, '75 MD**, clinical professor of Medicine and Surgery at the Medical College of Wisconsin, was awarded the 2019 Outstanding Clinical Practitioner Award by the Endocrine Society in New Orleans. Findling is an internationally recognized expert on pituitary-adrenal disorders with more than 100 publications and book chapters. He has been involved in many clinical trials on the diagnosis and treatment of Cushing syndrome, and has been a visiting professor at many medical centers in the United States. 📸 1



**Michael J. Holtzman, '75 MD**, director of the Division of Pulmonary and Critical Care Medicine at Washington University School of Medicine in St. Louis, received awards totaling \$7.5 million to support innovative research aimed at defining and controlling chronic respiratory diseases such as asthma and chronic obstructive pulmonary disease.

**Howard Arof, '79 MD, '83 GME**, retired last year from Northwestern Medicine after 35 years of OB-GYN practice. He now lives in Belleair Beach, Florida, where he works as a volunteer physician at the Clearwater Free Clinic.

**William P. Gunnar, '79 MS, '83 MD**, was appointed executive director of the Veterans Affairs National Center for Patient Safety in Ann Arbor, Michigan, by the United States Department of Veterans Affairs. Gunnar previously served as national director of Surgery for the Veterans Health Administration. 📷 2

## 1980s

**Captain Brian Lewis, '86 MD**, serves as chief professional officer, Physician Category, in the Commissioned Corps of the United States Public Health Service (USPHS), an all-officer uniformed service with more than 750 physicians stationed in over 60 state and local health

departments. Capt. Lewis is the primary point of contact between the Office of the Surgeon General and the USPHS physicians, providing leadership and direction and advocating for physician officers. If you would like to learn more about the USPHS or contact Capt. Lewis, email him at [brian.lewis@fda.hhs.gov](mailto:brian.lewis@fda.hhs.gov). 📷 3

## COCO CABREL, '89 MD, DRAWS FROM HER EXPERTISE IN TEACHING ANATOMY, PHYSIOLOGY, AND NEUROSCIENCE, HER WORK AS A REIKI MASTER, AND HER EXPERIENCE AS A FLAMENCO DANCER AND CHOREOGRAPHER.

**Darren E. Wethers, '88 MD, CPE, FACP**, was named vice president, clinical operations, at Blue Cross Blue Shield of Arizona (BCBSAZ) on July 1. In this role, Wethers is responsible for managing medical policy, provider

credentialing, peer review and fraud investigations, clinical vendor oversight, and payment integrity. BCBSAZ is the second largest health plan in Arizona, providing coverage for 1.2 million members. Wethers previously spent four years as chief medical officer for Blue Cross Blue Shield of Arizona Advantage.

**Coco Cabrel, '89 MD**, recently retired after 30 years of university, college, and graduate school teaching, curriculum building, and administration in both health sciences and performing arts, to launch and build her own coaching and consulting company. With Lifestorm Calms, Cabrel draws from her expertise in teaching anatomy, physiology, and neuroscience, her work as a Reiki master, and her experience as a flamenco dancer and choreographer to help professionals — and physicians, students, faculty, and administrators in particular — to quickly calm work stress and develop tools for preventing and easing burnout. Cabrel is becoming a sought-after speaker on the topics of work stress and burnout relief as well as how to achieve harmony in life for artist-scientists. 📷 4

**Sandra L. Weber, '89 MD**, began her term as president of the American Association of Clinical Endocrinologists (AACE) at their Annual Meeting in April 2019. AACE has more than 6,500 members in the United States and 90 other countries. AACE reaches out to



## Earn CME Credits for Listening to Feinberg's Breakthroughs Podcast

Did you know that you can claim Continuing Medical Education (CME) credit for listening to the *Breakthroughs* podcast? Each episode includes an interview with a Feinberg faculty member about their work and its impact. Featured experts and topics intersect all our medical disciplines at Feinberg — dermatology, ophthalmology, nephrology — or wherever else your area of interest lies.

After listening to an episode, you will be able to identify the research interests and initiatives of Feinberg faculty and discuss updates in clinical and translational research. If you would like to claim CME credit for listening to *Breakthroughs*, visit the Continuing Medical Education website at [northwestern.cloud-cme.com](http://northwestern.cloud-cme.com).

The Northwestern University Feinberg School of Medicine is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians. The Northwestern University Feinberg School of Medicine designates this Enduring Material for a maximum of 0.5 AMA PRA Category 1 Credit(s).™ Physicians should claim only the credit commensurate with the extent of their participation in the activity.

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clinical endocrinologists throughout the nation and abroad to enlist their participation in an association dedicated to the principles of patient care, education, and clinical research that have made American medicine the world leader.

## 1990s

**Mark D. Stovsky, '91 MD, MBA, FACS**, was recently elected president of the American Urological Association North Central Section at the society's meeting in September, 2019. Stovsky is past president of the American Association of Clinical Urologists, the Ohio Urological Society, and the Cleveland Urological Society. Stovsky has been named to Castle Connolly Top Doctors and Best Doctors in America. He is currently a staff urologist in the Glickman Urological and Kidney Institute at the Cleveland Clinic and senior director for Emerging Business at Cleveland Clinic Ventures.

**Steven A. Gard, '95 PhD**, executive director of the Northwestern University Prosthetics-Orthotics Center (NUPOC), associate professor in the Department of Physical Medicine & Rehabilitation at Feinberg, and a research health scientist with the Jesse Brown VA Medical Center, was invited by the World Health Organization (WHO) to participate in the second meeting of Global Rehabilitation 2030 that acts to strengthen worldwide health systems that provide rehabilitation. He also participated in the follow-up sessions that establish the WHO global research agenda and attended the WHO meetings in Geneva, Switzerland, in July. 📺 5

**Scott Baker, '96 PhD**, lead biologist at the DOE Environmental Molecular Sciences Laboratory, a national user facility at the Pacific Northwest National Laboratory in the Department of Energy National Laboratory located in Richland, Washington, was elected Fellow of the Society for Industrial Microbiology and Biotechnology (SIMB) in July. He is a former president of SIMB (2015-2016) and will be the 2020 program co-chair and 2021 chair for SIMB's Symposium on Biomaterials, Fuels, and Chemicals, the premier scientific conference for biotechnological advances for production of biofuels, bioproducts, and biomaterials.

**Jennifer G. Goldman, '98 MD, MS, '99 GME**, was appointed section chief of Parkinson's Disease and Movement Disorders at Shirley Ryan AbilityLab in December 2018. She joins as a professor in the Departments of Physical Medicine and Rehabilitation and Neurology at Northwestern University Feinberg School of Medicine. Goldman completed her Neurology residency at Washington University and Movement Disorders fellowship and master of science at Rush University and was on faculty at Rush from 2004-2018 as a professor of neurological sciences.

She is a movement disorders neurologist who specializes in Parkinson's and other movement disorders with a clinical and research focus on cognitive and behavioral issues in Parkinson's and Lewy body disorders, pharmacological and non-pharmacological interventions, and integrated, interdisciplinary care. Goldman is currently the chair of the American Academy of Neurology Movement Disorder Section, International Parkinson and Movement Disorders Pan-American Education Committee, and the Scientific Advisory committee for the Lewy Body Dementia Association. She sees patients at Shirley Ryan AbilityLab and Northwestern Medicine.

## 2000s

**Karin Larson-Pollock, '02 MD, '03 MBA**, is saddened to announce the passing of her father, **James B. Larson, '66 MD**, on August 15. Larson was a proud graduate of the Feinberg School of Medicine. After serving as a flight surgeon in the U.S. Air Force, Larson successfully completed a residency in Internal Medicine and a fellowship in Allergy and Immunology at the Mayo Clinic in Rochester, Minnesota. He was a pioneer in his field and was dedicated to bringing world-class medical care to the West — serving thousands of patients in Montana, Wyoming, and North Dakota. To him, practicing medicine was a calling, which he did for 51 years before finally retiring after being diagnosed with cancer. His daughter writes, "He loved being a physician and still had many close friends from his class up until the end."







**Shamila Gupta Rawal, '02 MD**, proudly announces the opening of her new practice, The Rawal Institute for Hair Restoration and Aesthetic Medicine, in Madison, Wisconsin. Rawal's practice specializes in the surgical and non-surgical treatment of alopecia, rejuvenation of the face and neck, and bioidentical hormone therapy.

After graduation from Northwestern's McCormick School of Engineering in 1998, Rawal attended the Feinberg School of Medicine, followed by completion of a residency in Otolaryngology/Head and Neck Surgery at the University of Illinois in Chicago. Her family recently moved from the Chicago suburbs to Madison, Wisconsin, where her husband Ashish is an orthopedic surgeon/sports medicine physician.

Rawal, who has three beautiful children, is excited for this new adventure and welcomes those interested to visit her website, ([www.therawalinstitute.com](http://www.therawalinstitute.com)) for more information. 📷 6

## In Memoriam

*Northwestern Medicine expresses its condolences to the families and friends of the following alumni (listed in order of their graduation year) and faculty who have recently passed away. All are in 2019.*

### ALUMNI

**John L. Thorsness, '47 DDS**  
Spooner, Wisconsin  
JULY 1

**William B. Spiegel, '48 MD**  
Lake Forest, Illinois  
JUNE 16

**Chafick N. Mansour, '51 MD**  
Oak Park, Illinois  
JUNE 1

**Evan F. Evans, '51 MD**  
Ogden, Utah  
JUNE 28

**A. Charles Alexander, '51 MD, '55 MS**  
Racine, Wisconsin  
JULY 17

**Guillermo M. Pujadas, MD, '52 GME**  
Jacksonville, Florida  
JUNE 15

**David E. Whitehead, '55 MD**  
Coventry, Connecticut  
AUGUST 13

**Robert G. McKillop, '56 MD**  
Portland, Oregon  
MAY 24

**Jack R. Lees, '56 MD**  
St. Paul, Minnesota  
JUNE 13

**Robert L. Johnson, '56 MD**  
Port Edwards, Wisconsin  
JUNE 18

**Vern G. Tolstedt, '57 MD**  
Helena, Montana  
JUNE 13

**Neiland R. Olson, '57 MD**  
Colorado Springs, Colorado  
JULY 9

**Kevin P. Glynn, '61 MD**  
La Jolla, California  
JUNE 16

**Leonard I. Kranzler, '63 MD, '69 GME**  
Skokie, Illinois  
JULY 17

**Robert M. Wendel, '63 MD, '69 GME**  
Tucson, Arizona  
AUGUST 14

**Edward D. Frohlich, '63 MD**  
New Orleans, Louisiana  
AUGUST 16

**James B. Larson, '66 MD**  
Bismarck, North Dakota  
AUGUST 15

**Dixon F. Spivy, '67 MD**  
Chicago, Illinois  
AUGUST 3

**William M. Psaltis, '72 DDS**  
Tucson, Arizona  
AUGUST 27

**Kerry J. Kaplan, '74 MD, '77, '79 GME**  
Palm Harbor, Florida  
JUNE 27

### FACULTY

**Wilson H. Hartz, Jr., '48 MD**  
associate professor emeritus  
of Emergency Medicine  
Cody, Wyoming  
JULY 7

**Howard L. Alt, '71 MD, '75 GME**  
clinical instructor of Psychiatry  
Skokie, Illinois  
SEPTEMBER 11



He and his wife, Tiffany Saucedo, welcomed their second precious daughter, Elena Isabela, on December 15, 2018. 📷 8

**Jonathan Kahn, '08 MD, '09 GME**, writes:

“Adriane Tanjutco and I met on New Year’s Day 2015 at a coffee bar. We hit it off and have been best buds ever since! Our favorites include exploring exotic cuisines and traveling the world to find great Instagram shots. We have a one-year-old puppy named Niles Crane who loves us to pieces. Our wedding was a small luncheon followed by a cocktail party in Brooklyn, New York. We are excited for our two honeymoons in Thailand and Scandinavia.

How we met: Ever hear of swine flu? Adriane was stuck at home with swine flu in late 2014. I found him on a dating app and, luckily, Adriane had time to respond to my “Hi cutie” message. The rest is history.” 📷 9

## GME

**Kalisha Hill, MD, MBA, '03 GME**, chief medical officer and medical director of Pathology at Presence St. Mary’s Hospital, was recently honored by the College of American Pathologists (CAP), receiving the CAP Distinguished Patient Care Award in recognition of her dedicated contributions to patient care and service to the advancement of pathology. Hill is actively involved with the organization and also is a dedicated community health advocate. 📷 7

**James Matthew Saucedo, MD, '13 GME, MBA**, accepted a position at Houston Methodist Willowbrook Hospital in Houston, Texas.

## MPO

**Mike Mullenix, '18 MD**, completed his 12-month orthotic residency in October 2019 with Hanger Clinic in Chicago, Illinois.

Feinberg School of Medicine is on Instagram

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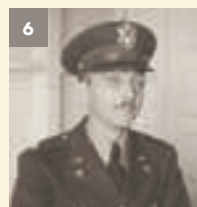
# Honoring Northwestern's WWII Medical History



About a month after Japanese forces attacked Pearl Harbor in 1941, more than 600 Northwestern physicians and dentists, along with Chicago-area nurses and enlisted men from across the country, were activated as the 12th General Hospital Unit. After training in the U.S. for almost a year, they would travel abroad to treat nearly 30,000 patients over the course of World War II.

To honor these men and women, Northwestern's Galter Health Sciences Library and Learning Center created "Operation Saving Lives," a digital and physical exhibit using materials primarily drawn from the papers of Northwestern University Medical School alumni Michael L. Mason, '33 MD, and James A. Conner, '24 MD, '31 GME. This inspiring digital exhibit can be seen here: [sites.northwestern.edu/twelfthgeneralhospital](http://sites.northwestern.edu/twelfthgeneralhospital)

**1** Katherine Baltz and colleague in front of chief nursing office in Ain-el-Turck  
**2** Ambulatory care staff **3** James A. Conner and colleagues at Fort Benjamin Harrison **4** 25th Anniversary celebration program **5** Section of nursing staff  
**6** James A. Conner **7** Michael L. Mason **8** Paul Raber feeding a deer at Fort Custer. Provided by his son, John Raber **9** Disposition Board in session in garden of French villa in Ain-el-Turck: (left to right) Capt. N. Mead, Lt. Col. M.L. Mason, Lt. Col. M. H. Barker, and patient



# THE IMPACT OF ACADEMIC SOCIETIES

Ten years ago, a group of medical students approached Feinberg administration with a bold concept: The students — already divided into four Colleges to provide them with a community that lasts throughout their education — could also benefit from networking with Colleges across the four years of medical school. Thus, four academic societies (Ricketts, Cooper, Lawless, and Thompson) were born. As we approach the 10th anniversary of academic societies this fall, we spoke to Gregory Brisson, MD, '94 GME, clinical assistant professor of Medicine and leader of the societies from 2011–2019, about the major impact this relatively new institution has already had on the student experience at Feinberg.



Cooper Society at Society Olympics a few years ago (Brisson is in the front row, fourth from the left).

## WHAT IS THE OBJECTIVE OF THE SOCIETIES?

Societies make medical school more manageable and improve the student experience. This is especially important in the first two years. As more students opt to live away from campus and attend lectures remotely via telecommunication apps, they may feel isolated from peers. Technology makes studying more efficient, but we still need each other to make it through the rigors of training. The societies remind us that we are all in this together and no one is alone. They're about inclusiveness.

## WHAT ARE THE ORIGINS OF SOCIETIES?

The idea came from students. Societies had been used successfully at a handful of medical schools, and our students instinctively sensed they would add to the Feinberg experience. It turns out they were ahead of their time. Societies, in some form, are now used in over half of all U.S. med schools. Our students helped design the structure at Feinberg: Each society comprises one-quarter of each medical school class, so M1s are linked with upperclassmen from day one. College mentors are included, too, adding a faculty presence. It's very Harry Potter — except there's no Sorting Hat (sorting is random).

## WHAT DO THE SOCIETIES DO?

Over the span of the academic year, each society hosts a series of mentoring sessions in which upperclassmen offer guidance and support to underclassmen in their society. For example, the M2s meet with their M1s just before their first exam to help them prepare and calm their nerves. And M3s meet with the M2s in a session called "Boards to Wards." These sessions are very popular. Students love hearing from those who have recently been in their shoes. Lunch is usually included, so that helps, too.

## WHAT DOES THE FUTURE LOOK LIKE FOR THE SOCIETIES?

The societies continue to evolve. This year we implemented the first Feinberg class organized by society. In "Personal Transition to the Profession," a required M3 course, M4s took over the role of faculty to facilitate small group discussions on the challenges and joys of clerkships. In a session called "Adjusting to the



Apprenticeship," students explored topics such as gaining competency over time and managing the perceived competition between peers. Based on this experience, there will likely be more opportunities to bring the society structure into the curriculum.

And with the start of the 2019–2020 academic year, there is a new society leader: Josh A. Hopps, PhD, assistant professor of Medical Education. He's off to a terrific start.

## CAN YOU SHARE YOUR FAVORITE MEMORY FROM YOUR TIME OVERSEEING THE SOCIETIES?

A highlight of the academic year is the annual Society Olympics. Students from all four societies compete in a variety of low-skill events, like water balloon toss and "rock-paper-scissors." The final event is always a tug of war. Students compete for bragging rights and a trophy, and the event is followed by an all-school party sponsored by Alumni Relations. It's a great way to kick off the academic year. One of my favorite memories is when the Cooper Society posed for a picture after a big kickball victory. Students from all years of training and faculty are mixed together — you can't tell who's who. I love that. It reminds us that, despite the hierarchy so often apparent in clinical training, we are all colleagues.





# 1895

## Equality Advocate

**AGAINST ALL ODDS, EMMA REYNOLDS PURSUES MEDICINE AND SOCIAL REFORM**

*Images courtesy of Galter Health Sciences Library & Learning Center, Northwestern University Feinberg School of Medicine*

**E**mma Reynolds took a winding but determined path to earn her Doctor of Medicine degree from Northwestern University Woman's Medical School in 1895, becoming the first black woman to be awarded an MD from the university.

Born in 1862 near Frankfort, Kentucky, Reynolds had always wanted to be a nurse, but the nursing school she'd hoped to attend rejected her due to her race. She became a public-school teacher instead, yet never gave up on her dream, not only of going into medicine but of fighting for social reforms that would address the pressing health needs of the black community. She asked one of her brothers, a pastor on Chicago's

West Side, to connect her to Daniel Hale Williams, MD — a prominent surgeon and the first African-American physician to graduate from Northwestern in 1883 — to join her in her fight.

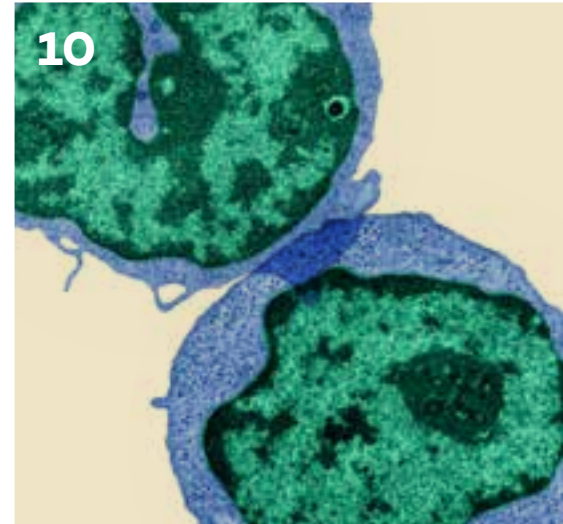
In 1890, Williams and others founded Provident Hospital and Training School, the first interracial hospital and nursing school in Chicago and the first to be entirely owned by African Americans in the country. And, in 1892, Reynolds became one of the first two graduates of Provident's nursing program, before being accepted to Northwestern. With her MD degree in hand, she went on to practice medicine for more than 20 years, continuing to build a legacy of pursuing social justice while pursuing a career in medicine.

MORE ONLINE AT [MAGAZINE.NM.ORG](http://MAGAZINE.NM.ORG).

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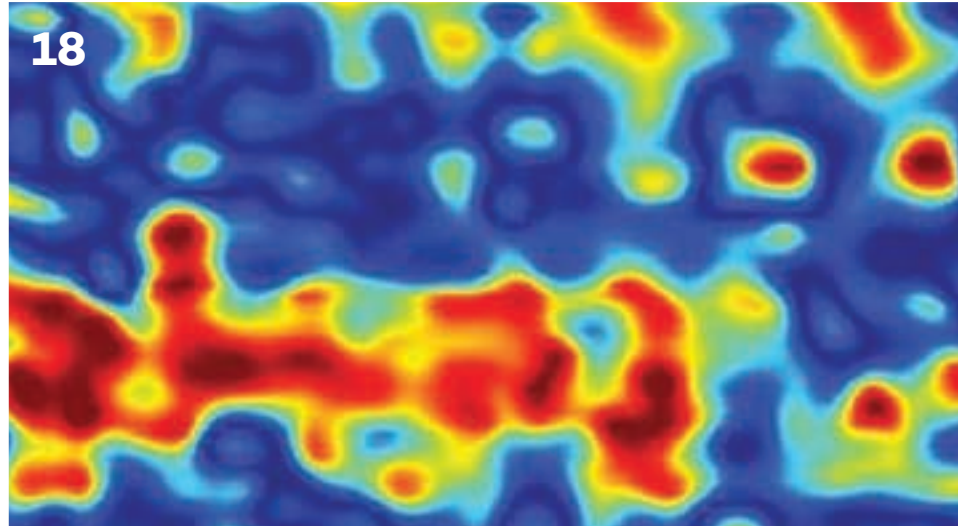
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