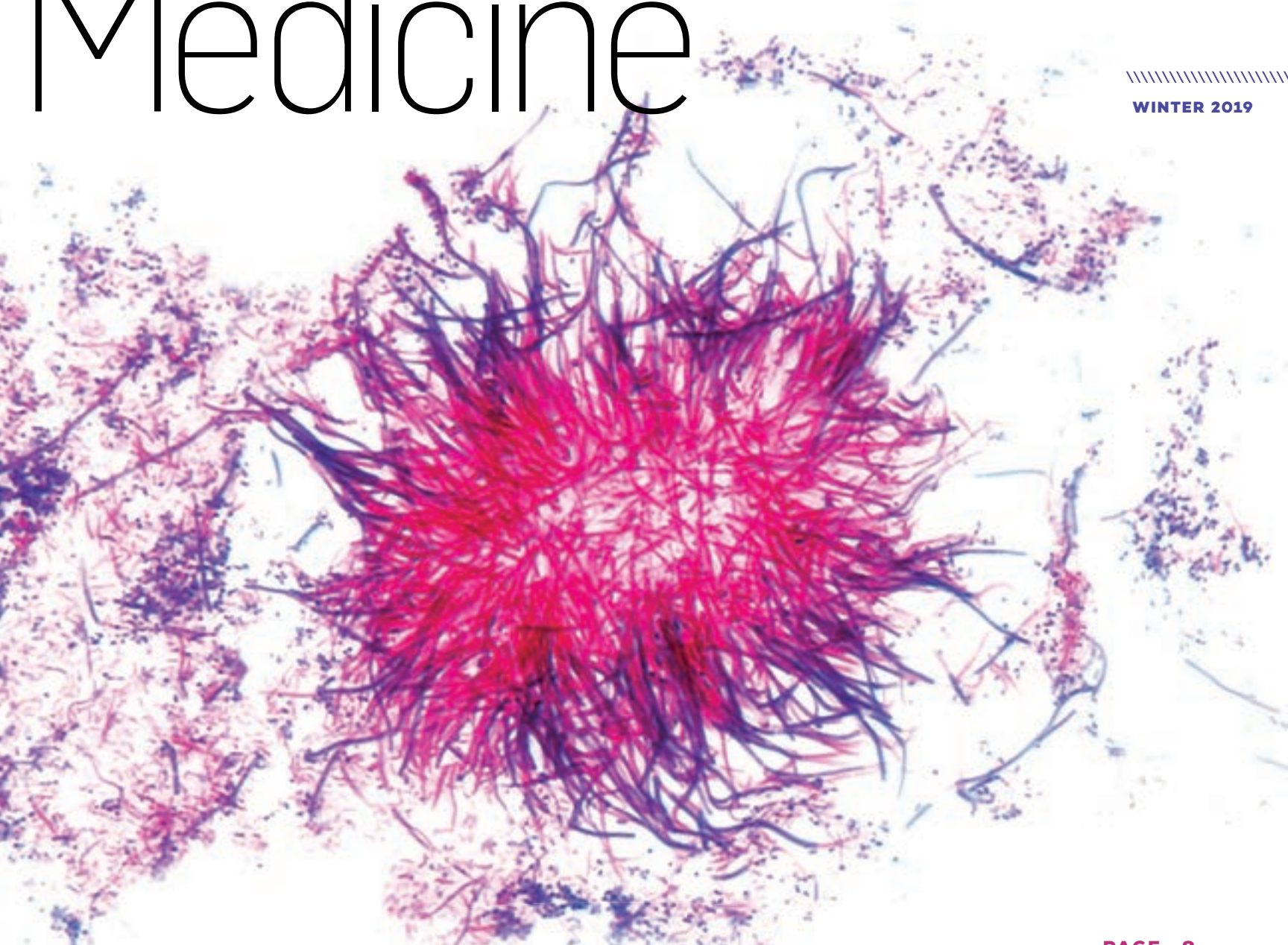


# Northwestern Medicine

WINTER 2019



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## Celebrating 2018

LOOKING BACK ON AN EXTRAORDINARY YEAR OF SCIENTIFIC DISCOVERY

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## Go Baby Go!

### STUDENTS RETROFIT CARS FOR KIDS WITH DISABILITIES

In 2018, Northwestern physical therapy and engineering students collaborated to customize toy cars for children affected by cerebral palsy, Down syndrome and other physical and cognitive challenges, to improve their ability to independently explore their environment. Working with faculty and the children's families, students in the GoBabyGo! program assessed each patient's needs and then modified a motorized car to provide appropriate steering mechanisms and postural support. The kids test drove their new cars on an obstacle course before taking them home.

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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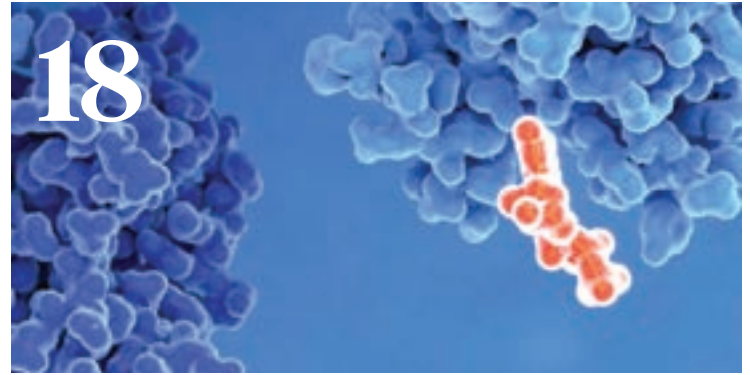
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## Features



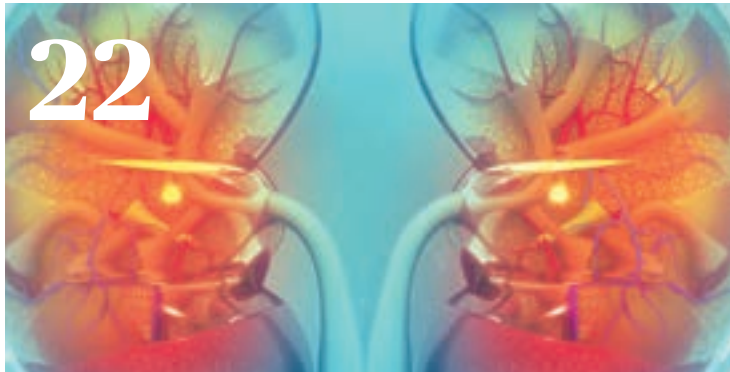
### CONTINUITY OF CARE ACROSS CHICAGO'S COMMUNITIES

In unique longitudinal clerkships, Feinberg students learn to provide primary care to vulnerable populations living in Chicago.



### THERAPEUTIC TOXINS

Northwestern investigators explore the transformative potential of bacterial toxins.



### TRANSPLANTS FOR ALL

One-of-a-kind program reduces Hispanic kidney transplant disparities.



### HEALTH EQUITY CHAMPION

Melissa Simon is on a mission to reduce health disparities in every sector, from education to research to clinical care.

## Departments

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#### ON THE COVER

A gram stain showing actinomycete bacteria in a patient with a tumor in the esophagus. Image courtesy of Maryam Pezhouh, MD, who was a finalist in Northwestern's 2018 scientific images contest for this image.

# Why Community Engagement Matters



**R**ECENTLY, I JOINED NEARLY 200 NORTHWESTERN MEDICINE faculty, students, staff and community partners at the Lawndale Christian Community Center on Chicago's West Side to celebrate the 10th anniversary of the Alliance for Research in Chicagoland Communities (ARCC). Born out of our Center for Community Health, the ARCC was created to catalyze and support community engagement across the research spectrum to improve health and health equity.

Surrounded by colleagues from the medical school, our hospital affiliates and the diverse collaborators they work with across the city — from community, faith and advocacy-based organizations to public agencies like the Chicago Department of Public Health and Chicago Public Schools — I was struck by what we have accomplished together in the past decade. Our partnerships have led to actionable findings and in turn new public policies, community programs, training opportunities and multi-million dollar grant funding for deeper investigations.

For me, the event was a tangible example of how we at Northwestern live our mission to improve human health beyond the individual patient. Community engagement is an

essential part of the work that we do; it guides our research, fosters inclusive education and advances equitable access to leading-edge clinical care in ways that maximize the health and well-being of all people in Chicago, the state of Illinois and beyond.

Every day our faculty, staff, trainees and students embody this thinking: They conduct research in partnerships with community

**Community engagement:** a process for working collaboratively with stakeholders, such as patients, healthcare providers, public health leaders, policy-makers and communities

members and stakeholders who help us understand the needs of the diverse neighborhoods and populations we serve. They engage learners from underrepresented populations in STEM activities, empowering them to seek careers in science and medicine. They travel off campus to provide clinical care to people who don't have easy access to an academic medical center like ours.

In this issue of *Northwestern Medicine* magazine, we share the stories of several of these efforts in community engagement. We highlight a component of our MD curriculum that embeds students in areas of primary care shortage, where they provide longitudinal primary care to low-income, underinsured and uninsured patients under the guidance of attending physicians. We learn about the Northwestern Medicine Hispanic Transplant Program, which serves Spanish-speaking

patients in a culturally sensitive way that has reduced some of the disparities that exist between ethnicities. We also interview Melissa Simon, MD, MPH, director of our new Center for Health Equity Transformation, who has made health equity across populations the focus of all the work she does.

In this complex and busy world, I am continually impressed by our faculty, alumni, trainees and students and the way they instinctively engage with the communities that surround us both near and far. Some do this through partner organizations, while others have launched official programs through the medical school. Particularly touching are those who use their personal time to provide service to free medical clinics and outposts in Chicago or around the world. I thank all of you who participate in the work of community engagement with pride and passion and look forward to seeing what future partnerships will bring.

With warm regards,

**Eric G. Neilson, MD**  
Vice President for Medical Affairs  
Lewis Landsberg Dean

#### LEARN MORE

Visit our website for more stories about our community-engagement efforts:  
[www.feinberg.northwestern.edu/sites/community-engagement](http://www.feinberg.northwestern.edu/sites/community-engagement)

## ON CAMPUS

# Northwestern Hosts Inaugural Population Health Forum

Improving the health of all populations — from lung cancer survivors in the Chicago area to trauma victims in Bolivia and LGBTQ+ groups in Nepal — was at the heart of Northwestern's inaugural Population Health Forum, hosted by the medical school's Institute for Public Health and Medicine (IPHAM).

Ashti Doobay-Persaud, MD, assistant professor of Medicine in the Division of Hospital Medicine and associate director of global health graduate education in IPHAM's Center for Global Health, kicked off the forum with a seminar on “glocal” health, which she defined as bringing a global health approach to communities everywhere.

“At Northwestern, we like to think about [‘glocal’ health] as the individual, their community and the globe. And when we teach it, we teach it from that perspective — where all of these interactions and intersections matter, all with a goal of health equity,” Doobay-Persaud said.

More than 100 medical student, staff, faculty and community partners participated in an afternoon poster session, showcasing projects ranging from creating a dementia-friendly library on Chicago's South Side to developing an international registry for craniopagus twins born around the globe.



Bottom: IPHAM Director Ronald Ackermann, MD, MPH (right), presented Banu Yagci, MBA (middle), clinical quality leader at Northwestern Medicine, with an award for her research on increasing influenza immunization compliance in a large medical group network. The award was named in honor of Rowland Chang, MD, MPH (left), the founding director of IPHAM. Top: Medical student Hannah Weiss discusses her research with Neil Jordan, PhD, director of the Health Sciences Integrated PhD Program at Feinberg.

## \$10M GIFT FOR NEW POLSKY UROLOGIC CANCER INSTITUTE

A \$10 million gift from the Polsky family has funded the creation of the Polsky Urologic Cancer Institute of the Robert H. Lurie Comprehensive Cancer Center of Northwestern University. The institute, to be led by Edward “Ted” Schaeffer, MD, chair of Urology, will offer the most comprehensive approach to treating urologic cancers, including prostate, bladder, kidney and testicular cancers.

Clean energy entrepreneur Michael Polsky, founder & CEO of Invenergy, and Tanya Polsky, philanthropist and former finance executive, and their children, are longtime friends to Northwestern Medicine.

## \$13.5 MILLION GRANT SUPPORTS THE CREATION OF APP-BASED COGNITIVE ASSESSMENTS



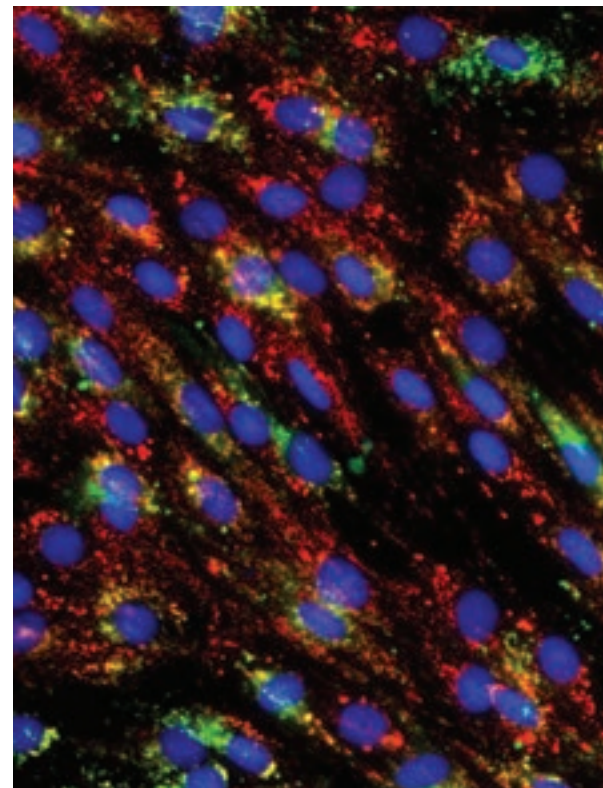
Northwestern was recently awarded a five-year, \$13.5 million grant from the National Institutes of Health to create a platform of app-based tools to remotely assess cognitive function.

The MobileToolbox will be used to help identify abnormal cognitive decline with assessments that can be administrated via smartphone in adults aged 20 to 85. Once developed and

validated, the assessments will further the understanding of dementia risk factors and serve as an important tool in future clinical trials to prevent and treat Alzheimer's Disease.

Currently, it is difficult to distinguish cognitive decline due to typical aging from the early stages of Alzheimer's disease and related disorders. This is partly due to a lack of sensitive assessment tools that can be easily and widely used across the lifespan and in diverse populations and research settings.

"Differentiating normal from pathological cognitive change across the adult lifespan, along with associated risk factors, is essential for both preventing and treating abnormal cognitive decline," said principal investigator Richard Gershon, '96 PhD, vice chair for research and professor of Medical Social Sciences, who will be leading the project with David Condon, '14 PhD, assistant professor of Medical Social Sciences.



## CAMPBELL NAMED VICE DEAN FOR FINANCE AND ADMINISTRATION

**H**eather Campbell, MHS, has been named vice dean for finance and administration for Northwestern University Feinberg School of Medicine.

In her new role, Campbell will be responsible for the planning and management of the budget, capital expenditures and business operations within the medical school. She will have administrative oversight of a professional workforce of more than 1,900 employees.

In addition, Campbell will serve as a member of the leadership team that sets the strategic direction of

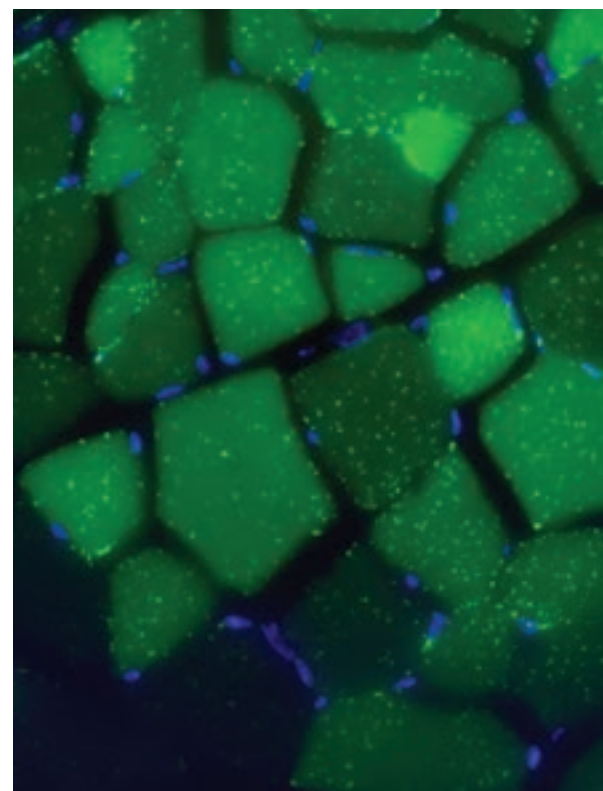


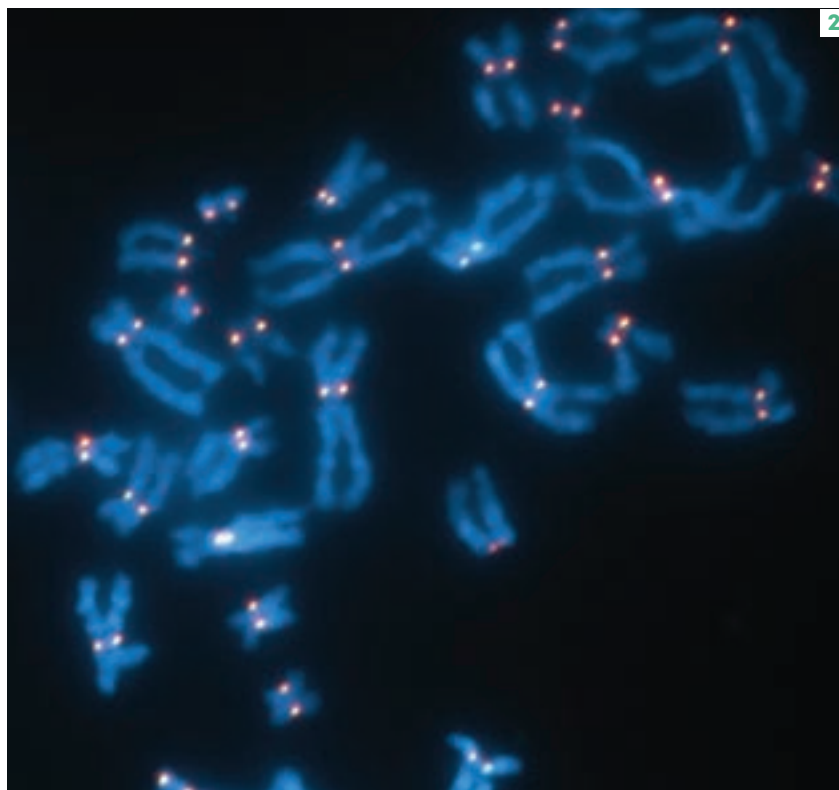
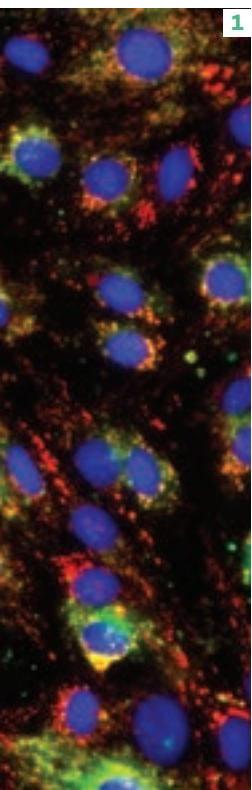
Feinberg in conjunction with its clinical affiliates and the university. She will be responsible for all of Feinberg's business matters.

"In accepting this new role, I am honored and inspired to serve our faculty, staff and students as we advance the Northwestern Medicine vision," Campbell said. "As we expand our academic campus with the Simpson Querrey Biomedical Research Center and grow Northwestern Medicine to enable better health-care access for all Chicagoans, our administrative and financial infrastructure must also evolve.

I look forward to helping further our critical mission to impact the practice of medicine through discovery and education."

Campbell was previously associate dean for administration at Feinberg, where she developed and oversaw Feinberg's administrative and operational initiatives.





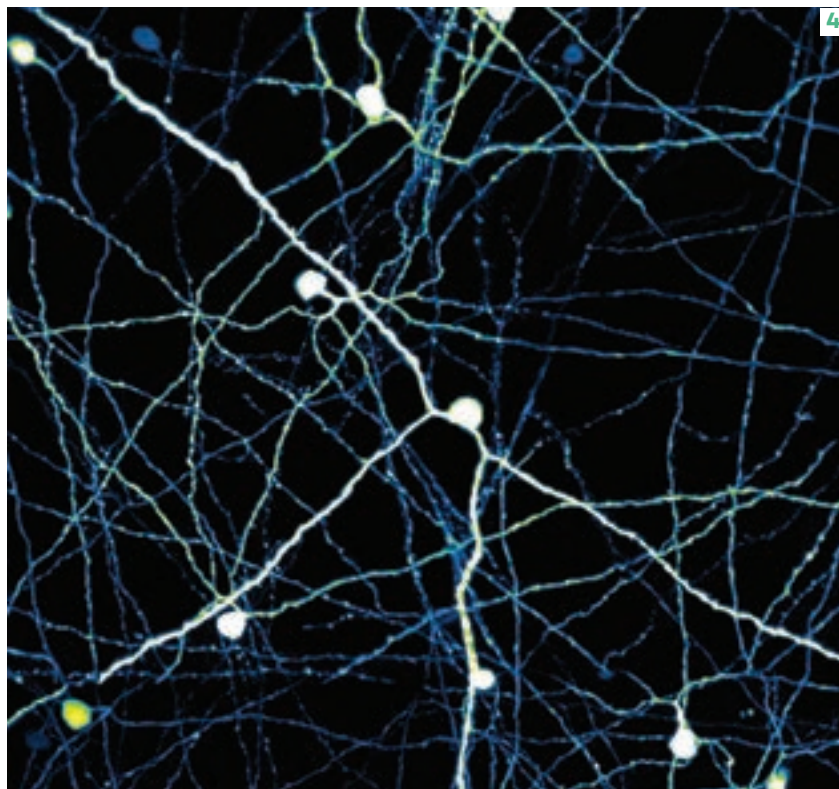
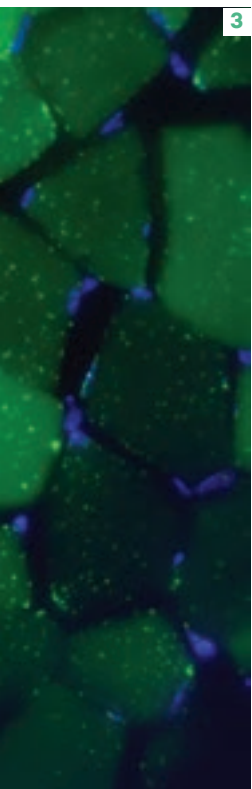
# Striking Scientific Images

**1** Image shows mitochondria in heart cells after the levels of tristetraprolin (TTP) — the master regulator of cellular iron conservation — are reduced. Northwestern Medicine scientists demonstrated that TTP is activated during iron deficiency and lowers iron usage to match availability and prevents mitochondrial dysfunction. (Research published in *Proceedings of the National Academy of Sciences*)

**2** Centromeric nucleosomes, containing CENP-A (red), must be retained in the preceding S-phase for the centromere to correctly assemble and segregate chromosomes during mitosis. Loss of centromere function leads to chromosome instability, which is a common characteristic of cancer cells. (Research published in *Developmental Cell*)

**3** Fasting for 24 hours induced dramatic formation of autophagic vesicles (green dots, labeled by a marker protein LC3 tagged with the green fluorescent protein) in skeletal muscle. Blue indicates stained nuclei. (Research published in *Nature*)

**4** A dense gap-junction network formed between nNOS-2 amacrine cells, the main source of the neuromodulator nitric oxide in the mouse retina. Here, a single nNOS-2 amacrine cell was patched and filled with dye to reveal this network when imaged with a multiphoton laser. The large molecule fluorescent dye Alexa Fluor 488 readily passes through nNOS-2 amacrine cell gap junctions when they are in the most open state in dark conditions. (Research published in *Neuron*)



# RESEARCH BRIEFS

## DISEASE DISCOVERIES

### DIABETES DRUG REDUCES RISK OF HEART ATTACKS, STROKES FROM AIR POLLUTION



A common, safe and inexpensive drug for Type 2 diabetes, metformin decreases the risk of heart attacks and strokes

triggered by air pollution by reducing inflammation in the lungs that triggers clotting, according to a Northwestern Medicine study in human lung tissue and an animal model. The research was published in *Cell Metabolism*.

Metformin flips a switch in immune cells that reside in the lung and continuously sample the air we breathe. It prevents those immune cells, macrophages, from releasing dangerous molecules into the blood that promote heart attacks and strokes after pollution exposure.

“These findings suggest metformin as a potential therapy to prevent some of the

premature deaths attributable to air pollution exposure worldwide,” said co-lead study author Scott Budinger, MD, the Ernest S. Bazley Professor of Airway Diseases and chief of Pulmonary and Critical Care in the Department of Medicine.

More than 100 million people take metformin worldwide.

The drug works by targeting mitochondria — the cell’s energy center — in lung macrophages. When air pollution particles get into the lungs, the mitochondria release hydrogen peroxide that promotes inflammation and clotting. Metformin slows down the mitochondria and the release of hydrogen peroxide.

“The simplest next step would be to validate our study with metformin in people



in China, or other places where exposure to high levels of air pollution is common, to see if it reduces inflammation,” Budinger said.

The study was supported in part by grants ES013995, HL071643, AG049665, ES015024, ES025644 and ES026718 from the National Institutes of Health, Veterans Administration Grant BX000201 and Department of Defense grant PR141319.

 [Listen to a podcast featuring Budinger at magazine.nm.org](http://magazine.nm.org)

## CLINICAL BREAKTHROUGHS

### Inherited Genetic Variants Associated With Bleeding on Common Anticoagulant



A group of gene mutations seen only in African-Americans and people of African ancestry may contribute to an increased risk of serious bleeding while taking warfarin,

a common anticoagulant drug, according to a Northwestern Medicine study published in the *Journal of the American Medical Association*.

These bleeding events are mostly unpredictable with current clinical tools, but incorporating testing for these genetic variants into diagnostic guidelines could make warfarin safer in the future, said senior author Minoli Perera, PharmD, PhD, associate professor of Pharmacology.

“These mutations could be included in the risk-benefit calculations every physician makes with a patient,” she said.



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A PODCAST WITH  
PERERA ONLINE AT  
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Warfarin is an old but effective anti-coagulation drug used to alleviate blood clots. The risk of severe bleeding is well known, so clinicians tailor doses to keep patients’ anticoagulant levels in a moderate range, according to the study.

During a previous investigation, Perera noticed a larger than expected number of African-American patients on warfarin experiencing clinically significant bleeds — bleeds that put these patients in the hospital. This inspired the current study, a genome-wide analysis of 215 patients in which 31 patients experienced serious bleeding while taking warfarin despite no alarming anticoagulant levels.

The analysis revealed four single-nucleotide polymorphisms associated with a higher risk of warfarin bleeding among these otherwise normal patients. These four mutations are inherited together in the same chunk of DNA on chromosome six and are found only in people with African ancestry.

Perera and her colleagues then added the presence of these mutations to a pre-existing survey used to determine the risk of bleeding, finding the addition boosted the predictive power of the survey from about 67 percent to 78 percent.

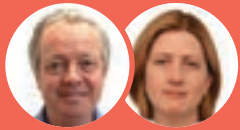
These mutations might have value in a future where a patient’s genomic data is more readily available, Perera said.

The study was funded by National Heart, Lung, and Blood Institute (NHBLI) grants K23 HL089808-01A2, R21 HL106097 and R01MD009217, National Institutes of Health National Institute of General Medical Sciences grant K23GM112014 and American Heart Association Midwest Affiliate grant 10GRNT3750024.



SCIENTIFIC ADVANCES

# New Discovery Opens Path to Treatments for Hearing Loss



Northwestern Medicine scientists have demonstrated that a gene called INSM1 is essential for the development of the ear's outer hair cells — the loss of which is the most common cause of deafness. The study, published in *Nature*, clears the way towards artificially generating outer hair cells as a treatment for deafness.

“This discovery is a milestone toward hearing restoration,” said Teerawat Wiwatpanit, PhD, a recent alumnus of the Driskill Graduate Program in Life Sciences (DGP) and a first author of the paper.

There are two types of cells in the ear's cochlea: inner hair cells (IHCs) and outer hair cells (OHCs). While both cell types are essential for hearing, it is the death of OHCs — whether due to loud noises, toxins or aging — that is the most frequent cause of deafness.

Until now, the genetic factors required to make OHCs, and how the

two types of hair cells differentiate during embryogenesis, were not well understood — thwarting scientists' attempts to artificially generate new hair cells.

The Northwestern team developed mouse models in which inner and outer hair cells were distinctly fluorescence-labeled. “This gave us the ability to separately collect these cells from embryos and study their early genetic makeup to determine the mechanism for generation of these two cell types,” explained Wiwatpanit.

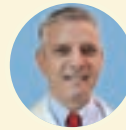
The scientists discovered that INSM1 expressed in OHCs is critical for their formation and showed, for the first time, the genetic mechanism for how the two cell types become different.

Jaime García-Añoveros, PhD, professor of Anesthesiology, Neurology and Physiology, and Anne Duggan, PhD, research assistant professor of Anesthesiology, were co-corresponding authors of the study. Sarah Lorenzen, PhD, who graduated from the DGP in 2016, and Jorge Cantú, a former postdoctoral fellow, were also co-first authors.

The study was supported by National Institutes of Health (NIH) grants DC015903, DC000089 and DC012483. The genetically engineered mice were generated with the assistance of the Transgenic and Targeted Mutagenesis Laboratory, partially supported by NIH grant CA60553 to the Robert H. Lurie Comprehensive Cancer Center at Northwestern University. Imaging work was performed at the Northwestern University Center for Advanced Microscopy, supported by NCI CCSG P30 CA060553 to the Robert H. Lurie Comprehensive Cancer Center. FACS was performed on a BD FACSAria SORP system, purchased through the support of NIH 1S10OD011996-01, at the Flow Cytometry Core Facility supported by Cancer Center Support Grant (NCI CA060553). Next-generation sequencing, TaqMan qRT-PCR, RNA quality control and RNAseq analysis were supported by the Northwestern University NUSeq Core Facility.

DISEASE DISCOVERIES

# INFLAMMATION CAN LEAD TO CIRCADIAN SLEEP DISORDERS



Inflammation, which is the root cause of autoimmune disorders including arthritis, Type 1 diabetes, irritable bowel syndrome and Crohn's disease, has unexpected

effects on body clock function and can lead to sleep and shiftwork-type disorders, according to a new study published in the journal *Genes & Development*.

The study used a new technology — a genetic switch — to turn inflammation on and off in genetically modified mouse models. When scientists deactivated inflammation, the mouse was unable to tell what time it was and to keep an intact rest-activity cycle.

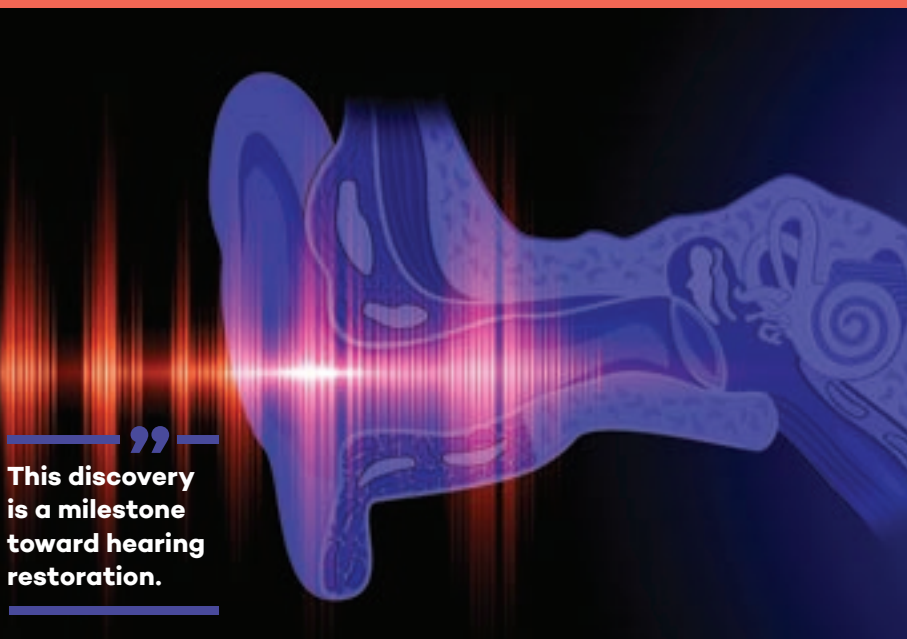
In addition to this new technology, the research was novel because, for the first time, scientists saw a genetic link between what causes inflammation and what controls the body's clock.




In inflammatory diseases, the body experiences an excess of a genetic factor known as NF-kappa beta (NFKB), the study found. NFKB is a catalyst for a set of chain reactions that leads to the pain and tissue destruction patients feel in inflammatory diseases. That same chain-reaction catalyst also controls the body's clock.

“NFKB alters the core processor through which we tell time, and now we know that it is also critical in linking inflammation to rest-activity patterns,” said senior author Joseph Bass, MD, PhD, the Charles F. Kettering Professor of Medicine in the Division of Endocrinology and director of the Center for Diabetes and Metabolism.

This research was supported by National Institute of Diabetes and Digestive and Kidney Diseases grants R01DK090625 R01DK100814 and R01DK108987; National Institute on Aging grant P01AGO11412; Chicago Biomedical Consortium S-007; National Institute of Child Health and Human Development grant R01 HD089552; American Diabetes Association grant 1-17-IBS-137; and a grant from the Association de Langue Française pour l'Etude du Diabète et des Maladies Métaboliques.



“  
This discovery is a milestone toward hearing restoration.”



Blocking the molecule CXCR4 reversed pain and nerve degeneration in models of painful diabetic neuropathy. Pictured, in vitro cultured nociceptive neurons genetically labeled in red ready for analysis of their intracellular calcium concentration using Fura-2 in vitro calcium imaging. (*Journal of Clinical Investigation*) Image courtesy of Daniela Menichella, MD, PhD.

# Celebrating 2018

*Looking back on an extraordinary year of scientific discovery.*

The medley of research published by Northwestern investigators in 2018 exemplifies what has been a banner year for discovery at the medical school. From fundamental new understandings of the cell published in *Nature* to landmark clinical trials in the *New England Journal of Medicine* and cross-disciplinary collaborations in *Science Translational Medicine*, scientists throughout the institution have advanced new knowledge that is already transforming their diverse fields.

In the 2017-2018 fiscal year, Feinberg principal investigators secured more than \$484 million in sponsored research awards, a total that formed the majority of Northwestern University's record-breaking year for research funding. In particular, the medical school's growth reflects a 13 percent increase in funding from the National Institutes of Health.

Take a look back at a few of the exciting research stories that marked the past year at Northwestern.

"The high-impact discoveries made by Feinberg investigators this year reflect the continued growth of our extraordinary research enterprise. The publications we are highlighting here represent just a small sampling of the substantial contributions our faculty members led across a range of scientific disciplines in 2018," said Rex Chisholm, PhD, vice dean for Scientific Affairs and Graduate Education. "As we look ahead to 2019 and the opening of the new Simpson Querrey Biomedical Research Center, I anticipate another year of groundbreaking research."

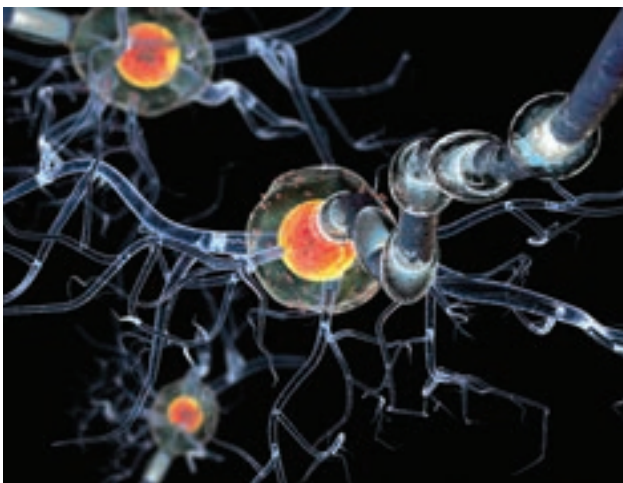
# Genetic Basis Uncovered for Glaucoma

Mice without the growth factor  $ANGPT1$  or the angiotensin receptor  $TIE2/TEK$  have severely deformed and small Schlemm's canals. The signaling pathway is essential to form the drainage system of the eye to regulate intraocular pressure and prevent glaucoma. "These discoveries highlight the central role of this molecular pathway in glaucoma and provide signposts guiding us to a new therapy," said senior author Susan Quaggin, MD, the Charles H. Mayo, MD, Professor and chief of Nephrology and Hypertension in the Department of Medicine and director of the Feinberg Cardiovascular and Renal Research Institute. (*Journal of Clinical Investigation*)



## Testosterone-linked Molecule Explains Gender Differences in MS

A guardian molecule induced by testosterone reverses the harmful immune response seen in multiple sclerosis (MS) and eliminates disease symptoms in female mice. The molecule appears to protect males, who have a lower incidence of the disease. "These findings could lead to an entirely new kind of therapy for MS, which we greatly need," said lead study author Melissa Brown, PhD, professor of Microbiology-Immunology. (*PNAS*)



## Scientists Identify Direct Contact Between Mitochondria and Lysosomes



Two key cellular structures, mitochondria and lysosomes, come into direct contact with each other to regulate their respective functions, a rare fundamental discovery about cell function. "It's a surprising finding that provides new insights into normal cell function and will likely have implications for a number of diseases across the board," said principal investigator Dimitri Krainc, MD, PhD, the Aaron Montgomery Ward Professor and chair of the Ken and Ruth Davee Department of Neurology. (*Nature*)

## Immune Response May Contribute to Pediatric Epilepsy

Irregular concentrations of T-cells in the brain contribute to the development of seizures in pediatric epilepsy. The research suggests anti-inflammatory drugs should be considered for therapy, in addition to the anti-seizure drugs that are typically prescribed, according to senior author Stephen D. Miller, PhD, the Judy Gugenheim Research Professor of Microbiology-Immunology. (*Journal of Experimental Medicine*)

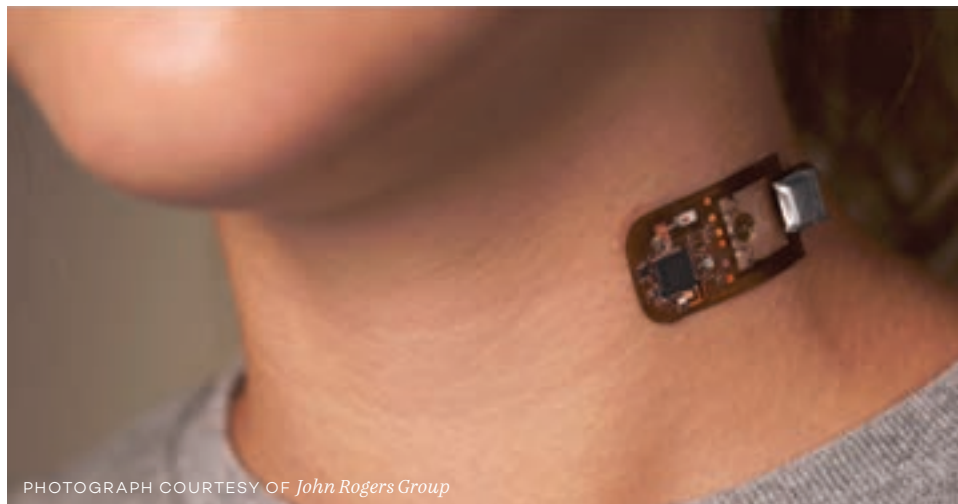
## Scientists Develop New Tool to Study Nicotine Receptors

The creation of a novel light-activated nicotine compound provides a new technique to better understand the effects of nicotine on the brain. “Scientists interested in studying nicotine dependence or acetylcholine — the neurotransmitter that normally binds to ‘nicotine receptors’ — now have a fantastic tool that, when properly employed, may enable us to uncover fundamental principles of cholinergic transmission,” explained corresponding author Ryan M. Drenan, PhD, associate professor of Pharmacology. (*Nature Methods*)



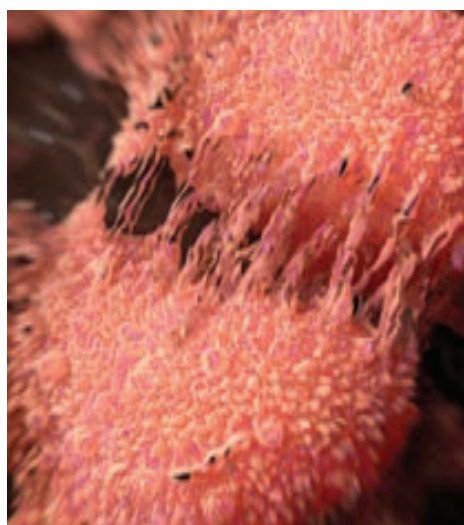
## Resetting the Epigenetic Balance for Cancer Therapy

An epigenetic imbalance silences the expression of tumor-suppressing proteins, allowing cancerous cells to proliferate, but a molecular inhibitor reverses the imbalance and inhibits tumor growth in a lab model. “This is a simple molecular concept with major clinical significance,” said principal investigator Ali Shilatifard, PhD, the Robert Francis Furchgott Professor and chair of Biochemistry and Molecular Genetics and director of the Simpson Querrey Center for Epigenetics. (*Nature Medicine*)



PHOTOGRAPH COURTESY OF John Rogers Group

## Men With Aggressive Prostate Cancer May Get New Powerful Drug Option



An existing drug called enzalutamide significantly lowered the risk of metastasis or death for men with non-metastatic castrate-resistant prostate cancer and a rising PSA level, according to a large clinical trial. The study, led by Maha Hussain, MD, the Genevieve Teuton Professor of Medicine and deputy director of the Robert H. Lurie Comprehensive Cancer Center of Northwestern University, may lead to a new treatment option for men with aggressive prostate cancer. (*New England Journal of Medicine*)



## Skin Sensor Could Improve Life for a Million Hydrocephalus Patients

A new wireless, Band-Aid-like sensor could revolutionize the way patients manage hydrocephalus — a potentially life-threatening condition in which excess fluid builds up in the brain. “It’s a wearable device with a specific but useful mode of operation that’s addressing an unmet need in clinical medicine,” said John Rogers, PhD, professor of Neurological Surgery, who led the research with Matthew Potts, MD, assistant professor of Neurological Surgery. (*Science Translational Medicine*)

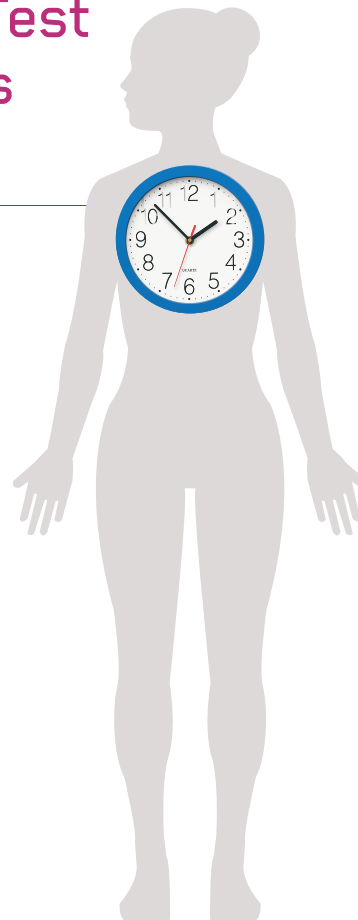
## New Clues Found in Cause of Early Lung Transplant Failure

Northwestern Medicine investigators uncovered the precise immune cells that flow into and harm the lung soon after a transplant. The study, which included animal models and human subjects, may lead to drug therapies that target the destructive cells that contribute to organ rejection, according to co-senior author Ankit Bharat, MD, the Harold L. & Margaret N. Method Research Professor of Surgery and surgical director of Northwestern Medicine lung transplantation. (*The Journal of Clinical Investigation*)



## Simple Blood Test Reveals Body's Internal Clock

A simple blood test can identify a person’s precise internal time clock as compared to the external time, for the first time offering scientists the opportunity to easily examine the impact of misaligned circadian clocks in a range of diseases, from heart disease to diabetes and Alzheimer’s disease. It was developed by a team of Northwestern Medicine scientists, including Rosemary Braun, PhD, MPH, assistant professor of Preventive Medicine in the Division of Biostatistics, and Phyllis Zee, MD, PhD, chief of Sleep Medicine in Neurology. (*PNAS*)

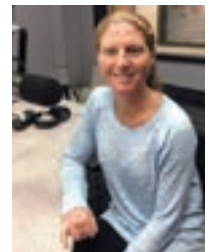


## Listen to the People Behind the Science

In 2018, Feinberg launched the *Breakthroughs* podcast, featuring interviews with many of the medical school’s top scientists. Subscribe now on iTunes, SoundCloud, Spotify or Google Play Music (just search “Feinberg School of Medicine” on any of those platforms to find the series).



Improving LGBTQ Health with Brian Mustanski, PhD



The Genetics of Coffee Drinkers with Marilyn Cornelis, PhD

## MEDIA SPOTLIGHT

THE WALL STREET JOURNAL. **AP** Associated Press  
Los Angeles Times

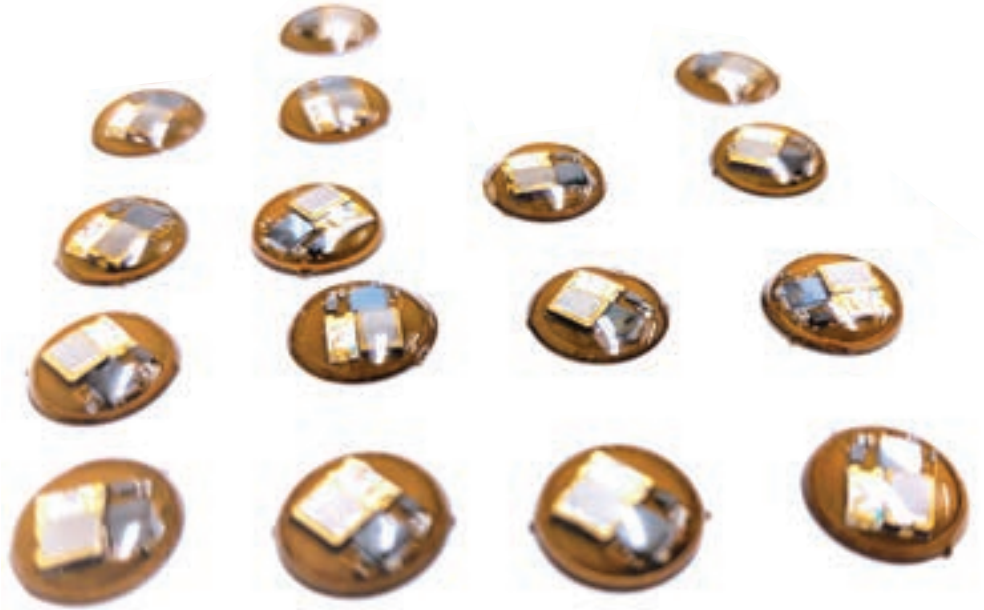
### New Guidelines for Treating High Cholesterol Take a Personal Approach

A patient's family history of cardiovascular disease and in some cases a heart scan are among the factors that physicians should consider before prescribing drugs to lower cholesterol, according to new clinical guidelines. Released at the American Heart Association's annual scientific conference in November, the guidelines update a sweeping overhaul of the way doctors should determine a patient's risk of cardiovascular disease. They urge physicians to do even more to personalize the decision as to whether a patient needs a cholesterol-lowering drug. "Risk is more of a process than a calculation," said Donald Lloyd-Jones, MD, ScM, chair of Preventive Medicine at Northwestern and a member of the panel that wrote the guidelines.

Chicago Tribune THE WALL STREET JOURNAL

### FDA Considers Making Food Labels Disclose Sesame to Help Allergy Sufferers

Sesame is the ninth most common food allergen for kids, and nearly one in three children with a sesame allergy is rushed to the emergency room each year, according to new research that comes as the federal government considers adding sesame to the list of allergens that food manufacturers must include on their labels. "This is an allergen that is causing a lot of reactions, and maybe that's because it is harder to avoid," said lead author Ruchi Gupta, MD, MPH, professor of Pediatrics and Medicine in the Division of Allergy and Immunology. "You can't easily tell if it's in the food." The study was published in the journal *Pediatrics*.



PHOTOGRAPH COURTESY OF John Rogers Group

USNews Chicago Tribune The New York Times

### Too Much Time in the Sun? Skin Patch Might Tell

A new mint-sized, battery-free patch that alerts wearers to potentially harmful sunlight exposure in real time might become a powerful weapon in preventing skin cancer. Powered by the sun while designed to measure its rays, the patch automatically transmits sun readings to a user's smartphone. It works wet or dry, is fully reusable and weighs next to nothing. "In the U.S., we're in a skin cancer epidemic, which is

driven by excessive UV exposure," noted study author Steve Xu, MD, MSc, '18 GME, instructor of Dermatology. He said the device weighs less than a single tic tac, is half the diameter of a dime and thinner than a credit card. What's more, "the devices are virtually indestructible. We've washed them, dunked them in boiling water. They will last forever." The findings were published in *Science Translational Medicine*.

npr NBC NEWS USA TODAY

### For Cervical Cancer Patients, Less Invasive Surgery Is Worse for Survival

Minimally invasive surgery for early stage cervical cancer turns out to be worse than standard surgery, according to two studies published in the *New England Journal of Medicine*. Growing in popularity since 2006 and widely adopted, the treatment involves instruments threaded through small incisions that surgeons use to remove a diseased uterus. But it turns out that, for early stage cervical cancer, the technique has unexpected risks, including a greater likelihood of recurrence.

Research headed by scientists at Northwestern looked at national cancer data and found that after four years, 9 percent of the women with minimally invasive surgery had died, versus 5 percent of the women with open surgery. "That is quite a big deal," said study co-author Masha Kocherginsky, PhD, associate professor of Preventive Medicine and of Obstetrics and Gynecology. "These patients are early stage cancer patients, and the intent of surgical treatment is cure."

# FACULTY AWARDS & HONORS



**Robert Goldman, PhD**, chair of Cell and Molecular Biology and the Stephen Walter Ranson Professor of Cell Biology, was honored at a symposium celebrating his distinguished, nearly 40-year career at Northwestern. Goldman also recently received an honorary doctorate degree and medal from Charles University in Prague, Czech Republic, for his decades of ground-breaking work on intermediate filaments, elucidating their structure and function, and their role in nuclear and cellular mechanics and architecture. [📍 1](#)

**Farzaneh Sorond, MD, PhD**, chief of Stroke and Neurocritical Care and vice chair for faculty development and education in the Ken & Ruth Davee Department of Neurology, has been named associate dean for faculty development at Feinberg. [📍 2](#)

**James Carr, MD, '00 '01 GME**, the Drs. Frederick John Bradd and William Kennedy Memorial Professor



of Radiology and professor of Medicine, was named chair of Feinberg's Department of Radiology.

**Guillermo Ameer, ScD**, professor of Surgery, was elected as a 2018 fellow of the American Association for the Advancement of Science, the world's largest general scientific society.

**Arthur Prindle, PhD**, assistant professor of Biochemistry and Molecular Genetics, was named a 2018 Packard Fellow, recognizing him as one of the nation's most promising early-career scientists and giving him freedom to take risks in his field of study. Prindle's laboratory aims to understand and engineer collective behaviors in communities of bacteria.

**Marla Mendelson, MD, '87 GME**, associate professor of Medicine and Pediatrics, was named co-director of the Northwestern Women's Health Research Institute.



**Teresa Woodruff, PhD**, vice chair for research in the Department of Obstetrics and Gynecology and dean of the Graduate School, was elected to the National Academy of Medicine, an independent organization of professionals from the fields of health and medicine and natural, social and behavioral sciences.

**Dimitri Krainc, MD**, chair of Neurology and the Aaron Montgomery Ward Professor, received the 2018 American Neurological Association Soriano Award.

**Betina Yanez, PhD**, assistant professor of Medical Social Sciences, received the New Investigator Award from the American Psychosocial Oncology Society in recognition of her outstanding contributions to the field of psychosocial oncology. [📍 3](#)

**Michael Markl, PhD**, the Lester B. and Frances T. Knight Professor of Cardiac Imaging and professor of Radiology, was recently named



president of the Society for Magnetic Resonance Angiography. [📍 4](#)

**John Rogers, PhD**, professor of Neurological Surgery, was awarded the 2018 Materials Research Society Medal for his contributions to materials science.

**Kathleen Grady, PhD**, professor of Surgery in the Division of Cardiac Surgery and of Medicine, was elected as a Distinguished Scientist of the American Heart Association (AHA). The award honors AHA members who have made extraordinary contributions to cardiovascular and stroke research. [📍 5](#)

**Nathaniel Soper, MD**, chair and the Loyal and Edith Davis Professor of Surgery, was inducted into the American College of Surgeons Academy of Master Surgeon Educators. [📍 6](#)

**Elizabeth McNally, MD, PhD**, director of the Center for Genetic Medicine and the Elizabeth J. Ward



Professor of Genetic Medicine, was named a 2018 National Academy of Inventors fellow.

**Clyde Yancy, MD**, chief of Cardiology in the Department of Medicine and the Magerstadt Professor, was honored at Cardiovascular Research Foundation's Annual Pulse of the City Gala for his work improving cardiovascular outcomes and advocating equal access to healthcare.

**Calvin R. Brown Jr., MD, GME '82**, professor of Medicine, was given the American College of Rheumatology's Distinguished Fellowship Program Director Award as a reflection of his outstanding contributions to the advancement of rheumatology.

**J. Regan Thomas, MD, GME '79**, professor of Otolaryngology-Head and Neck Surgery, received the Mentor of the Year Award from the Young Physician section of the American Academy of Otolaryngology-Head and Neck Surgery.



**Stephen Hanauer, MD**, the Clifford Joseph Barborka Professor of Medicine, has been awarded the Berk/Fise Clinical Achievement Award by the American College of Gastroenterology in recognition of his contributions to clinical gastroenterology. [📍 7](#)

**J. Chad Duncan, PhD**, associate professor of Physical Medicine and Rehabilitation, has been named director of the Northwestern University Prosthetics-Orthotics Center.

**Melissa Simon, MD, MPH, '06 GME**, director of the Center for Health Equity Transformation and the George H. Gardner, MD, professor of Clinical Gynecology, received the American Public Health's Excellence Award. Simon was also accepted into the 2019 cohort of the Presidential Leadership Scholarship Program, a highly competitive national program dedicated to leadership development (*read more about Simon on page 26*).



**GOOSE ISLAND**  
Northwestern  
Medicine SoNo

**LAKEVIEW**  
Northwestern  
Medicine Lakeview

**ALBANY PARK**  
Erie Foster Avenue  
Health Center

**OLD TOWN**  
Winfield Moody  
Health Center

**HUMBOLDT PARK**  
Erie Family  
Health Center

**AUSTIN**  
PCC Austin Family  
Health Center

**STREETERVILLE**  
Northwestern Memorial  
Hospital Arkes Pavilion

**STREETERVILLE**  
Northwestern  
Memorial Hospital

**NEAR WEST SUBURBS**  
PCC South Family  
Health Center

**STREETERVILLE**  
Northwestern Medicine  
Lavin Family Pavilion





In unique longitudinal clerkships, Feinberg students learn to provide primary care to vulnerable populations living in Chicago.

WRITTEN BY ANNA WILLIAMS

# CONTINUITY OF CARE

## ACROSS CHICAGO'S COMMUNITIES



Vineet Aggarwal was in his early days of medical school in the winter of 2017 when he first met Luis Reyes\*, a patient who had long struggled with diabetes.

For most medical students across the country, such an encounter would typically take place during primary care clerkships that last four to six weeks, and a student would rarely see the same patient twice.

But as a student in Feinberg's Education-Centered Medical Home (ECMH) program, Aggarwal was part of a primary care clerkship dedicated to creating continuity. In ECMH, medical students work with the same patients, peers and preceptor at one clinic over their entire four years of medical school. There, under the guidance of an attending physician, they experience what it truly means to provide primary care over the long run. And in many cases, they bring that care to the underserved patients living across Chicago who need it most.

Reyes was a patient at Erie Foster Avenue Health Center, a federally qualified health center in Chicago's diverse Albany Park neighborhood, where Aggarwal's ECMH is located. A construction worker in his 20s, Reyes had lately been

experiencing numbness in his extremities — a common complication of diabetes — that was affecting his ability to work. Though he longed to get his diabetes under control, he struggled to eat healthily and consistently take his medications. His A1C level, which measures a patient's average blood sugar over three months, was exceeding 9 — a worrisome number indicating an increased risk of complications.

When Aggarwal asked Reyes if he would be interested in follow-up health coaching — which students offer as part of the ECMH program — Reyes was receptive.

Aggarwal began calling Reyes at least once a month, finding 10 or 15 minutes between classes to check in with him. They discussed meal and exercise plans, strategies for remembering to take insulin and Aggarwal provided gentle reminders about logging daily blood sugars and making follow-up appointments.

Over the course of a year and a half, while also continuing to meet with Reyes in the clinic with his preceptor, Aggarwal's impact became evident. Reyes saw his symptoms substantially improve, and lab results mirrored how he felt. His A1C level eventually fell from more than 9 to 7.6.

"That is a remarkable improvement — and it's really a testament to the attention Vineet gave that patient, and the additional resource that students in ECMH can provide," says Miranda Hart, '12 MD, '15 GME, health system clinician in Feinberg's Department of Medicine, Division of General Internal Medicine and Geriatrics, and the ECMH preceptor at Erie Foster Avenue.

Aggarwal, now in his third year of medical school, continues to see patients like Reyes when he attends his ECMH every Thursday afternoon. Experiences like his are transformative not only for patients, but for preceptors and students alike.

"ECMH allows for longitudinal care, and as a result we're able to see medical care actually make a difference in people's lives in the community," says Aggarwal. "As a student, that's very gratifying — because that's exactly what we set out to do by coming into this field."

### A MODEL OF CONTINUITY

ECMH began as a pilot program in 2011, the brainchild of Daniel Evans, '00 MD, '03 GME, a primary care physician and educator frustrated with the lack of continuity in traditional rotations. »

\*Name of patient has been changed

“The beauty of primary care is incremental care, therapeutic relationships and getting to become partners with your patients over the course of years — and most medical students never saw that,” explains Evans, now course director of ECMH, along with Jennifer Bierman, MD, both assistant professors of Medicine in General Internal Medicine and Geriatrics.

ECMH was founded with the goal of continuity — but also on the conviction that students should experience primary care in a variety of settings. By working in clinics throughout Chicago, students deliver primary care to diverse patient populations, while also gaining a better understanding of complex chronic conditions and the range of factors that can affect one’s health.

“At Feinberg, we provide a really good education on social determinants of health and healthcare disparities,” Evans said. “But it’s not enough to just learn about barriers to care in lectures — we also want students to experience

working in a clinical setting where this is relevant and be able to mitigate some of these disparities.”

As such, Feinberg’s ECMHs are housed in a range of sites throughout Chicago, from Northwestern’s own academic medical campus, to community clinics in neighborhoods north, west and south of downtown, like Albany Park, Austin and Humboldt Park. About half of students in ECMH are at clinics in primary care shortage communities, but an estimated two-thirds of all ECMH patients are underserved, underinsured or medically vulnerable.

Whether at clinics on campus or off, the ECMH model — and students’ role in caring for patients — is the same. An ECMH consists of a close-knit team of 16 students (four from each year of medical school) embedded into existing primary care practices, where they work under the leadership of a faculty physician for one afternoon per week.

Senior students are paired with first- and second-years, who team up when meeting with

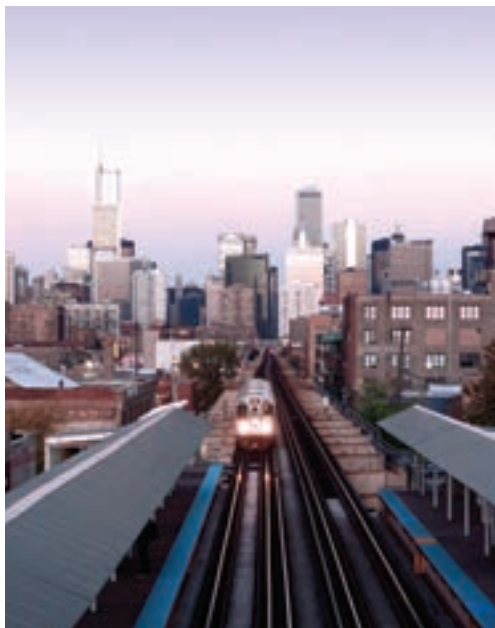
patients in the clinic, presenting histories and discussing care decisions with their preceptor. And for patients with chronic conditions who might need extra support, students offer to maintain contact throughout the year as a health coach, as Aggarwal did for Reyes.

“Because students get continuity with these patients, they have time to understand their lives. They see how things like transportation to appointments and affording medications can be barriers to health,” Hart explains. “They learn how they can be better doctors for their patients, given the limitations of their social situations.”

### EXPANDING ECMH

What began as three pilot sites in 2011 has since grown to more than 20 ECMHs — an expansion fueled by the impact seen not only on medical education but on care for patients around Chicago.

“I hear story after story about powerful patient interactions where students have been working with the same vulnerable patient for



**“ECMH allows for longitudinal care, and as a result we’re able to see medical care actually make a difference in people’s lives in the community. As a student, that’s very gratifying — because that’s exactly what we set out to do by coming into this field.”**

VINEET AGGARWAL, STUDENT



## SERVICE LEARNING AND STUDENT VOLUNTEERING

Northwestern’s MD curriculum encourages students to use their expertise to build healthier, happier communities. In addition to the Education-Centered Medical Home, many students conduct community-engaged research projects in Chicago neighborhoods and participate in global health training electives to learn about complex medical needs spanning across five continents. Still more students donate their time through 40-plus volunteer programs at Feinberg:



**SYDNEY DOE**

Third-year medical student Sydney Doe founded “Calls for Change,” an organization that facilitates weekly phone call and letter writing sessions to government representatives about current health policy. She is also carrying out research on menstrual hygiene management needs and issues among young women in Chicago public high schools.

**“Because students get continuity with these patients, they have time to understand their lives. They see how things like transportation to appointments and affording medications can be barriers to health.”**

MIRANDA HART, PRECEPTOR

two or three years and have really advocated for them — whether it’s calling them to come in for a follow-up for depression or counseling a patient who quit tobacco,” Evans says.

Beyond positive feedback from individual patients, research has also found improved outcomes, including higher rates of cancer screening and flu shots among ECMH patients.

For students, surveys have shown that they prefer ECMH over traditional clerkships, finding gratification in caring for diverse patient populations over the long term, as well as in building close relationships with their team.

The ECMH model may also have an impact on strengthening primary care in more comprehensive ways, such as mitigating burnout among attendings at the clinic, who find it rewarding to work with a group of enthusiastic students, and serving as a pipeline to inspire more future physicians to work with underserved populations.

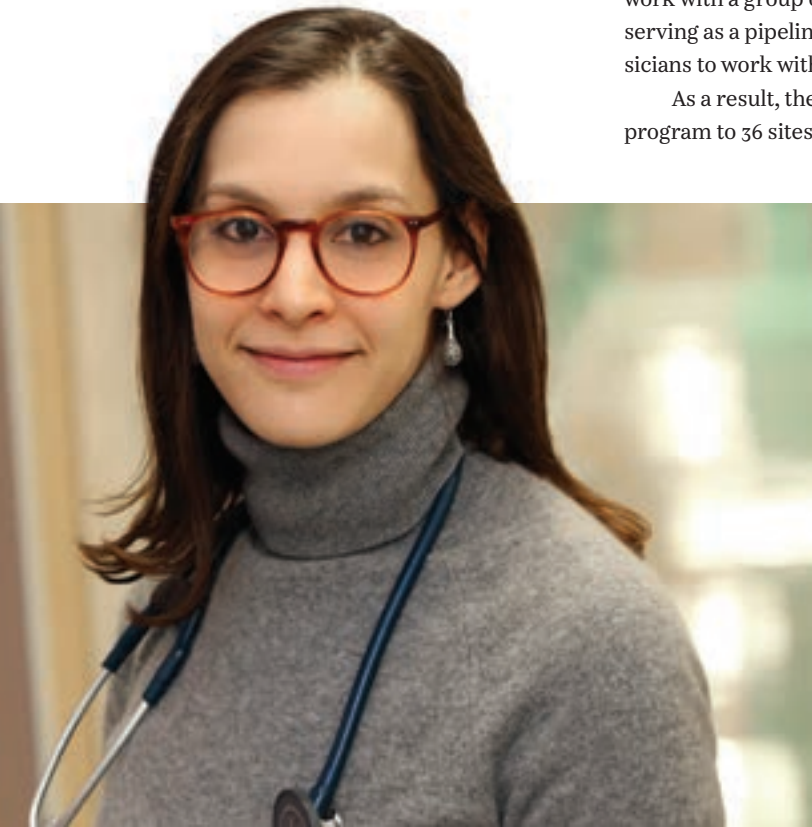
As a result, the goal is now to grow the program to 36 sites, which would allow every

Feinberg student the opportunity to participate in ECMH — and to bring transformative primary care to more patients throughout Chicago.

“We’ve found ECMH to be such a powerful intervention for all involved — students, preceptors, patients and clinics — that we want to expand it to the entire school,” says Diane B. Wayne, ’91 MD, vice dean for Education and the Dr. John Sherman Appleman Professor of Medical Education. “We’re proud of our impact on the community, and we want to make sure this program continues indefinitely.” ■■

#### SUPPORT FOR ECMH

Wayne notes that expansion of ECMH would not have been possible without the support of Posh Charles, vice president of Community Affairs for Northwestern Medicine, Robert Havey, ’80 MD, ’83 GME, of the Global Health Initiative and other partners — as well as Feinberg faculty dedicated to primary care education and caring for the community.



Medical student Tammy Hua conducts a cardiovascular disease risk assessment during a community health fair.



**ALEX AYALA**

Alex Ayala, a second-year student in Feinberg’s MD/MPH Combined Degree Program, serves as president of Chicago Medicine & Street Outreach, a student organization that provides basic care and social support to the city’s homeless population.



**MAYA JACKSON-GIBSON**

As a first-year medical student last year, Maya Jackson-Gibson served as secretary of the Student National Medical Association, a student-run organization focused on the needs and concerns of black medical students in the United States. Over the summer, she traveled to Kenya for almost eight weeks to research the service delivery platform for the PrEP intervention — a daily pill that reduces the risk of HIV infection.

# THERAPEUTIC TOXINS

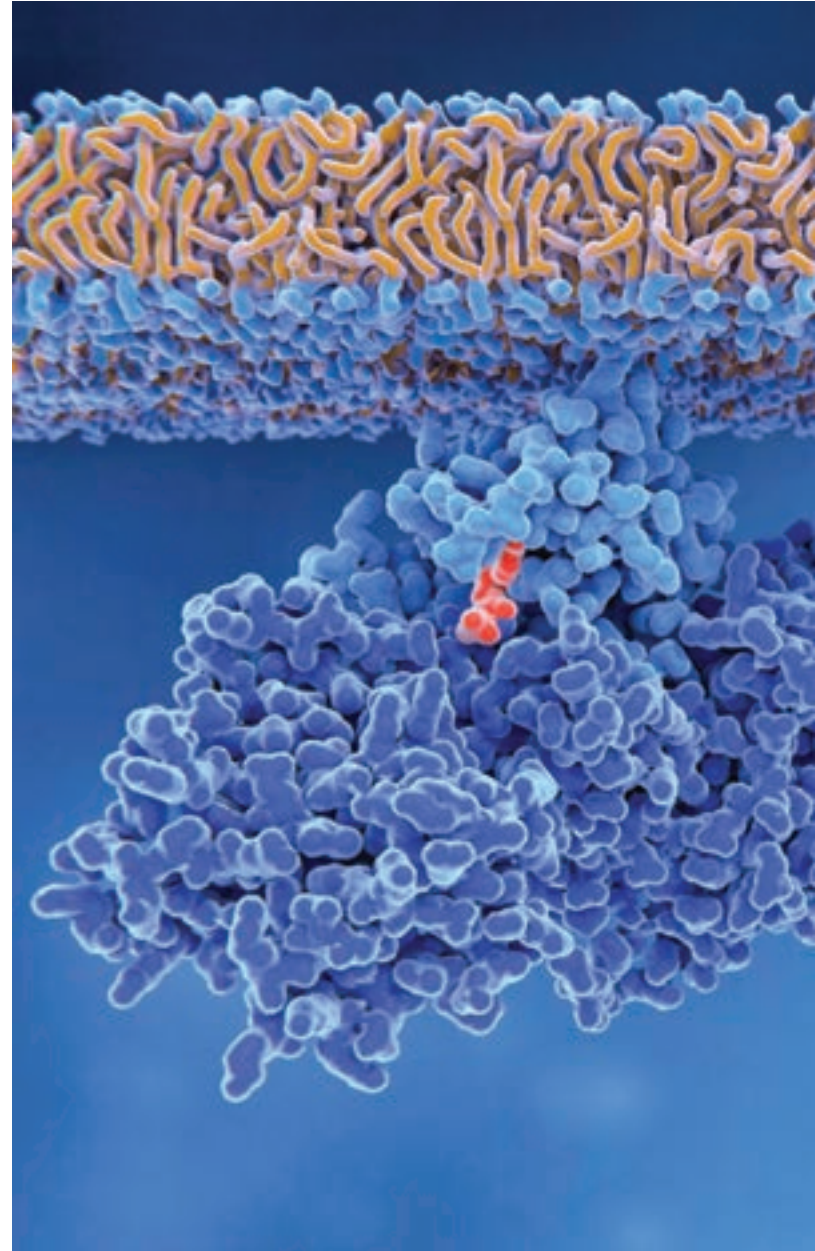
Northwestern investigators explore the transformative potential of bacterial toxins.

WRITTEN BY CHERYL SOOHOO

The human body has a love-hate relationship with bacteria. While trillions of bacteria found on earth — and on and in our bodies — do no harm, the toxic effects of a very small percentage of these microscopic organisms can be downright lethal. But even as bacterial pathogens cause serious health problems such as tuberculosis and meningitis, the toxins they secrete can be turned into therapeutic agents to effectively ward off disease.

Karla Satchell, PhD, professor of Microbiology-Immunology, has spent her career — including nearly two decades at Northwestern — breaking ground in the niche area of toxin biology. In her basic science research, she delves into the mechanisms of bacterial proteins to understand how they result in deadly infections. Focusing on MARTX (multifunctional-autoprocessing repeats-in-toxin) proteins, Satchell discovered a novel toxin of the bacterium that causes cholerae, *Vibrio cholerae*, when she was a postdoctoral fellow at Harvard in the late 1990s. Her research resume also includes the identification of a hypervirulent variant of *V. cholerae* responsible for the 2010 cholera epidemic in Haiti.

Expanding her interest in the MARTX family, Satchell also studies the virulence factors that make the bacterium *Vibrio vulnificus* so dangerous. Every year in the United States, this particular organism and several other



*Vibrio* species infect some 52,000 individuals who eat raw or undercooked shellfish or develop a wound infection after wading or swimming in coastal waters. About one in four people with vibriosis die due to severe sepsis — sometimes within days. Survivors may require limb amputation due to necrotizing fasciitis or what has been dubbed “flesh-eating bacteria.” Teasing out the pathogenesis of this complicated toxin protein, little did Satchell and her team expect to find a promising avenue for inhibiting tumor cell growth.

“*Vibrio vulnificus* MARTX is an exceptionally large and complex single protein that cuts itself into little bits. We have been methodically looking at the biochemical actions of each of those pieces,”



#### ACTIVE PROTEIN

A 3D computer illustration depicting the activation process of a Ras protein. Mutations in Ras genes have been found in many types of cancer, including 95 percent of pancreatic cancer, but effectively targeting Ras proteins has been one of the hardest challenges in cancer research and drug discovery for decades.

“Because mutations of Ras drive 30 percent of cancers, we immediately recognized the importance of this toxin as a potential cancer treatment.”

KARLA SATCHELL, PHD

mutated, though, a breakdown in signaling causes Ras to stay switched on all the time, leading to the proliferation of tumor cells that is the hallmark of cancer. Even cancers with no mutations in Ras have been found to have other alterations that impair the “off” switch in the oncogene.

Additionally, Ras has another task: recognizing pathogens and helping to mount an appropriate immune response.

Satchell’s team found that a specific component of the MARTX toxin of *Vibrio vulnificus*, an effector domain called DUF5, zeros in on and cleaves Ras without modifying it — a novel mechanism for inactivating the protein. A naturally occurring toxic effector domain, DUF5 also inactivates Ras’s co-conspirator in promoting cancer growth, a protein called Rapi.

Now dubbed “RRSP” for Ras/Rapi specific peptidase, this new class of endopeptidase uncovered by the Satchell group has been shown to disable signaling through the ERK1/2 pathway essential for cancer cell survival. Ultimately, the hope is that by inactivating Ras and Rapi signaling, RRSP can paralyze the normal immune response to a pathogen, increase its own virulence and spread throughout the host. Basically, do what harmful bacterial toxins do best: infect, overwhelm and destroy. »

she explains. “One of them turns out to cleave or cut the protein Ras and, by doing so, stops its activity. Because mutations of Ras drive 30 percent of cancers, we immediately recognized the importance of this toxin as a potential cancer treatment.”

In 2015, Satchell’s laboratory revealed this discovery to the scientific community with a publication in *Nature Communications*. Many papers later, Satchell and her team continue to collaborate with Northwestern colleagues and

others at leading institutions to find ways to turn this novel finding into a viable anti-cancer drug.

### INFECT AND DESTROY

Ras oncogenes have been implicated in a variety of cancers, with pancreatic, lung and colorectal malignancies high on the list. Usually Ras proteins contribute to normal cell development, and they cycle between being active and inactive to control cell growth and migration. When

Since the discovery of this novel protein activity, Satchell's laboratory has been fully exploring its anti-cancer capabilities. "We are very interested in breast cancer," says Satchell. "While not typically a Ras-driven disease, signals do flow through the Ras pathway, possibly due to the overexpression of growth factor receptors. This activity provides opportunities for using RRSP to interrupt the cancer process downstream."

The investigators are also looking at colon cancer, of which 45 percent of diagnoses have some Ras mutation involvement. Once the scientists have achieved proof of concept with the other malignancies, they intend to turn their attention to pancreatic cancer — a 95 percent Ras-driven disease. "This is one of the most challenging cancers to treat, with the lowest survival rates," says Satchell, who is also a member of the Robert H. Lurie Comprehensive Cancer Center of Northwestern University. "It is also hard to work with in the laboratory."

At the moment, her group is conducting early pancreatic cancer studies. One member of her team, Marco Biancucci, PhD, a postdoctoral fellow, student, recently published findings from this research in the October issue of *Science Signaling*.

## A BIG DEAL

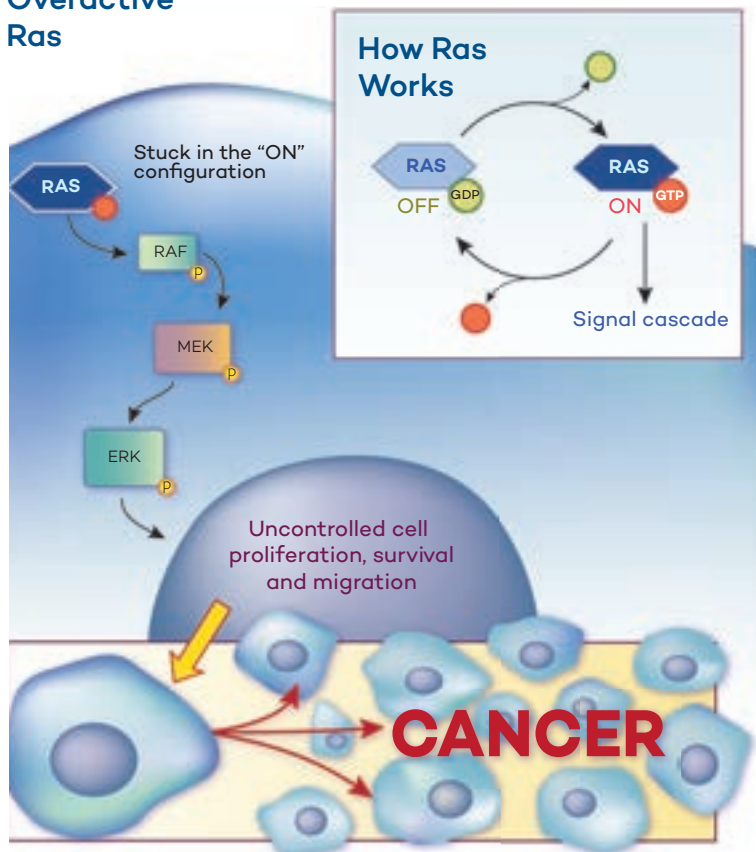
For the past 30 years, knowledge of Ras and its role in cancer development has confounded the cancer research community. To date, attempts

to effectively block Ras gene function have gained little traction, compelling the National Cancer Institute (NCI) to launch the Ras Initiative in 2013 to mobilize scientists around the world to find a solution. (In fact, the Northwestern study recently published in *Science Signaling* was conducted in collaboration with the NCI's Ras Initiative.) But despite the expenditure of millions of dollars and the efforts of many in cancer research and drug discovery, a targeted anti-cancer agent that effectively inhibits Ras proteins remains elusive.

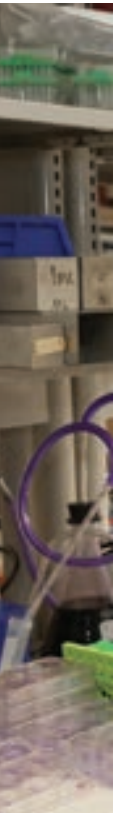
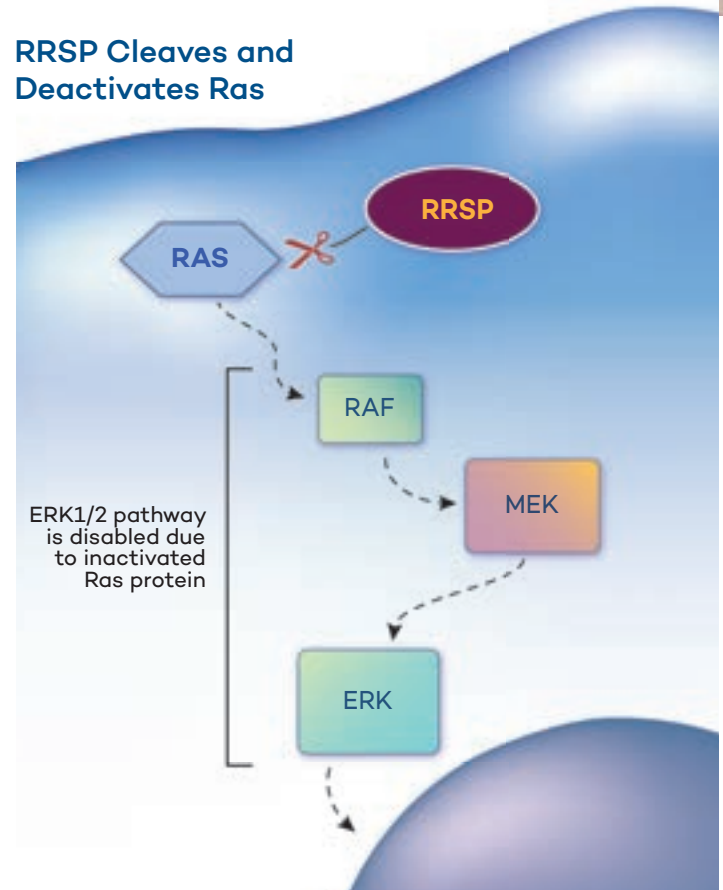
"Everyone is searching for anything that targets Ras," says David Gius, MD, PhD, co-leader of the Women's Cancer Research Program at the Lurie Cancer Center and professor of Radiation Oncology and Pharmacology. "Dr. Satchell has a bacterial protein that binds to Ras. If she can demonstrate proof of principle that this action reverses tumor growth, then that will be a very big deal."

A cancer biologist, Gius and his laboratory provide tumor tissue and mutant Ras tumor models essential for carrying out Satchell's Ras studies. Their collaboration has resulted in the characterization of one of the MARTX toxin proteins as a Ras protease — it breaks down the malicious protein.

## Overactive Ras



## RRSP Cleaves and Deactivates Ras



Satchell with lab member Caleb Stubbs, a student in Northwestern's Driskill Graduate Program in Life Sciences.



“We are taking a slow and steady basic science approach to understand the underlying biochemistry ... to ensure that by the time we can safely test it in humans it will truly work to stop cancer.”

KARLA SATCHELL, PHD

Beyond cancer, Ras has been found to have a role in cardiac arrhythmias and other diseases of the heart and skin. This summer a new Northwestern Medicine study revealed its link between desmoplakin and connexin-43 — the former, a protein that helps cells stick together, controls expression of the latter, a protein that facilitates communication between cells. When mutated, desmoplakin causes cell signaling malfunctions that can lead to conditions such as arrhythmogenic cardiomyopathy, an inherited heart disorder that can result in sudden death in young adults. The use of RRSP as a Ras inhibitor opens the door to another therapeutic use of the bacterial toxin. Satchell was a

Usually, Ras proteins switch on (by binding to GTP) and off (by binding to GDP) as they control cell growth and migration. When mutated, they stay on, leading to the proliferation of cancer cells. Satchell's laboratory discovered that a component of the bacterial toxin MARTX, dubbed RRSP, can specifically inactivate Ras and disable a signaling pathway that perpetuates cancer cell survival.

co-author on the study, which appeared in the June issue of the *Journal of Cell Biology*.

### **OUT(SIDE) FOR DELIVERY**

Therapeutic agents are only as good as their drug delivery systems. Satchell believes she has “good but still untested cargo” in her Ras-cleaving MARTX toxin. She has been “test driving” vehicles for transporting the RRSP into living beings where it would go after intended cancer targets.

A problem generating drugs from the MARTX toxins is that they are about 200 times larger than most proteins. “The toxins I study are enormous,” she says. “They typically can't be druggable because of their sheer size.” One tactic is to fuse the activity domain of the RRSP to another smaller toxin because “toxins are really good at getting into cells,” Satchell explains.

Partnering with external collaborators, Satchell has been exploring a variety of delivery strategies. For example, her group has been

working with scientists from the Massachusetts Institute of Technology (MIT) who have discovered a unique use for the *Bacillus anthracis* bacterium. Leading to the development of lethal anthrax, the bacterial toxin is particularly adept at transporting large enzymes into cells. In 2014, MIT announced that a team of chemists had disarmed the anthrax toxin to deliver small protein molecules, or cargo proteins, into cells to administer cancer drugs.

Satchell and her team's novel approach to solving the mutant Ras cancer conundrum offers much potential. However, she cautions taking too big a leap just yet. Much more work on the activity, efficacy and immunotoxicity of RRSP and its cancer-fighting abilities is still to come.

“Everyone wants to jump to the end when it comes to developing therapeutics and that's why many attempts disastrously fail,” she says. “We are taking a slow and steady basic science approach to understand the underlying biochemistry of what we are doing to ensure that by the time we can safely test it in humans it will truly work to stop cancer.” ■■

# Transplants for All

One-of-a-kind program  
reduces Hispanic  
transplant disparities.

WRITTEN BY EMILY AYSHFORD

PHOTOGRAPHY BY LAURA BROWN

**G**rowing up in Colombia, Juan Carlos Caicedo-Ramirez, MD, '06 GME, wanted to be an engineer, like his parents. But as soon as he realized that he liked working with people more than machines, he turned to medicine. “Machines cannot smile and hug you,” he says.

Caicedo earned a medical degree at Universidad Nacional de Colombia and eventually became a transplant surgeon because he wanted to save lives. “When a patient gets a transplant, they get a second chance,” says Caicedo, associate professor of Surgery in the Division of Organ Transplantation. But in order to continue his education and expand the types of transplants he could do, he needed to learn English. So in 2000, he traveled to Indiana for a short English-language immersion program.

While there, he took a trip to Chicago, stopped in at Northwestern's Division of Organ Transplantation and spoke with its leadership. That fateful meeting ultimately led to a fellowship and an offer to work at Northwestern Memorial Hospital. But Caicedo had reservations about leaving the very people he hoped to save by becoming a transplant surgeon.

“I decided to stay in Chicago, but I wondered if I was letting my people down in Colombia,” he says. “Then I saw the need here. Nobody had any initiatives focused on Hispanics.”

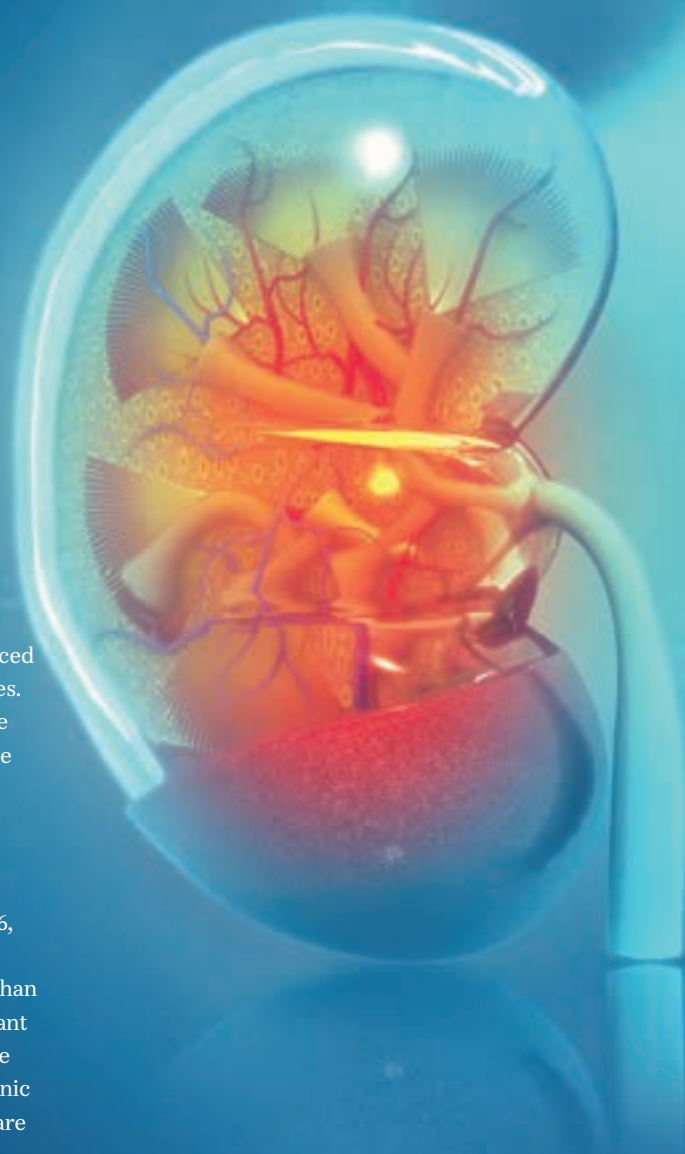
Determined to change that, Caicedo founded the Northwestern Medicine Hispanic Transplant Program, which offers culturally competent and congruent care for Hispanic (both English- and Spanish-speaking) transplant patients and their families. By changing

the way surgeons and support staff communicate with Hispanic patients, the 12-year-old program has brought in more patients, increased the number of living kidney donors for these patients and reduced the disparity that exists between ethnicities.

Now, Caicedo and his collaborators are expanding the program to other healthcare systems, with their eyes on nationwide deployment.

## Reducing Transplant Disparities

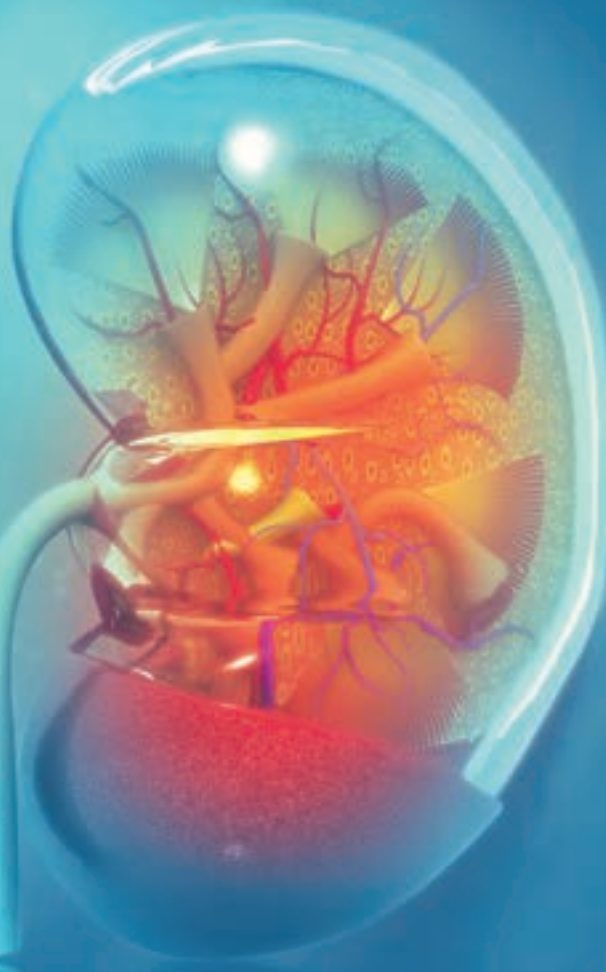
When Caicedo started the program in 2006, the need was clear. Research showed that Hispanic patients often spend more time than other ethnic groups on the kidney transplant waiting list and have a higher mortality rate while waiting for a kidney, often due to ethnic and socioeconomic differences in healthcare





# Trasplantes para Todos

Un programa, único en su clase, reduce la desigualdad de los trasplantes en las personas de origen hispano.



access. They also have lower rates of living donor kidney transplantation, which is considered the best type of transplantation option for better recipient outcomes. This is perhaps due to lack of knowledge about living donation, as well as misconceptions and cultural concerns, like the ability to bear children after living kidney donation.

Statistics show the need. In 2015, there were more than 98,000 patients on the kidney transplant waiting list in the United States, according to the Organ Procurement and Transplant network, a federally mandated network responsible for organ procurement. Of those, 37 percent were non-Hispanic white, 34 percent were African-American and 20 percent were Hispanic. Among kidney transplants that year for Hispanic patients, only 27 percent were from living donors, while for non-Hispanic whites, living donations made up 45 percent of kidney transplants. The Network also reports that only 10 percent of living donors were Hispanic, while 70 percent were white.

“Minorities make up the majority on the waiting list,” Caicedo says.

## Involving Family in Patient Process

When he started the program, Caicedo was its sole champion. But soon he

was joined by medical anthropologist Elisa Gordon, PhD, MPH, professor of Surgery in the Division of Organ Transplantation, whose research focuses on the ethics of organ transplantation and reducing health disparities. Together, they began systematically studying disparities in living kidney donations from Hispanic patients and found that major barriers included lack of knowledge, language, cultural differences, misconceptions about organ donation and transplantation, and lack of community awareness.

A big part of the Hispanic Transplant Program is communication — not only providing information in Spanish, but also communicating to the patient’s entire support network. Patients undergoing transplants are required by law to receive some sort of education, and while many hospitals provide education through nurses or staff, at Northwestern, Hispanic patients receive in-person education straight from Caicedo.

“Many in the Hispanic community highly regard physicians, so when a physician delivers the education, it’s a big deal,” Gordon says. When Caicedo first meets with a patient, he also invites others involved in the decision-making process, be they family, close friends or elders in the patient’s community.

“Getting grandma’s blessing is very important,” Caicedo says. “If you’re going through a big life event, you’re going to talk to grandma.” »

## Educating Donors on Their Role

Educating families is especially important when transplant patients need a living donor. Asking a friend or family member for an organ can be awkward. “Most people won’t do it,” Caicedo says.

Not only does living donation require major surgery, donation can change the relationship between donor and recipient. If the organ is lost, for example, the donor or patient might feel guilty. Or if the transplant is successful, some donors might expect that the recipient take extra care of their organ by not drinking or smoking, and by eating healthy foods and exercising.

outcomes,” he says. “That support network is important.”

Caicedo and Gordon soon found that potential donors needed to be educated on what the surgery meant for them — they often wonder whether they can exercise or have children after the procedure (they can), or whether they will need to take medication for a long time (they don’t). In addition to the in-person meetings, Gordon and Caicedo created *Informaté*, a bilingual, culturally targeted website replete with stories of patients, telenovelas and information on financial and immigrant issues related to transplantation and donation. The website is

## Expanding Program Beyond Northwestern

By every metric, the program has been a success. A 2015 study comparing the six-year period before and after the program began showed that Hispanic patient additions to the Northwestern Medicine transplant waitlist increased by 91 percent. The number of Hispanic kidney transplant recipients increased by 70 percent, and the number of living kidney donations performed on Hispanic patients increased by 74 percent. That meant the program was bringing more Hispanic patients through the door and getting more of them the transplants they needed.



Caicedo started the Hispanic Transplant Program in 2006 after moving from Colombia to Chicago for a fellowship at Northwestern.



Six years later, the program had increased living kidney donations for Hispanic patients by 74 percent.

That expectation, known as the “tyranny of the gift,” can cause friction and is often the reason transplant patients don’t want to accept living donations.

“When you’re taking one organ and putting it into another person, you’re changing people’s understanding of the boundaries of self, and you’re incorporating into your identity the aspects of other people’s identity,” Gordon says.

But the tyranny of the gift can be overcome through education and support. Caicedo sees big Hispanic families as a gift to patients. “Not only for finding a donor, but for patient

available for patients and families to help them learn about living donation and make informed treatment decisions.

Caicedo also grew the clinical team, which now includes more than 20 members, including Spanish-speaking surgeons and clinicians, social workers, nurses, transplant coordinators, assistants and financial coordinators.

“Our team can help us provide the best care, and the best healthcare is when you can communicate effectively in the patient’s language and when the team understands and shares the patient’s culture,” Caicedo says.

“When you’re taking one organ and putting it into another person, you’re changing people’s understanding of the boundaries of self, and you’re incorporating into your identity the aspects of other people’s identity.”



Elisa Gordon, PhD, MPH  
Professor of Surgery,  
Division of Organ Transplantation

The program has also been able to decrease disparities between Hispanic and non-Hispanic whites for living donor kidney transplantation by 70 percent. It is the only program in the nation with this type of positive trend, according to Caicedo.


These numbers fare well against national statistics. For example, while around 30 percent of Hispanic patients nationwide receive a living donor kidney, at Northwestern Medicine hospitals that rate jumps to at least 65 percent, which is even higher than non-Hispanic white and African-American rates. “We’re showing that it’s possible to change these

disparities — you just have to change your approach,” Caicedo says. In 2010, they expanded the program to include liver transplants.


Gordon and Caicedo are now helping the Mayo Clinic and Baylor Health Care System implement Hispanic kidney transplant programs into their transplant centers. They are currently in the process of evaluating whether the new programs are increasing living donation among Hispanic patients and conducting a budget impact analysis to see if the cost of setting up the program is offset by the gains in living donation.

Gordon is interested in exploring whether recipients and donors should be offered genetic testing for this gene variant — the APOL1 may explain those disparities in living donor outcomes. “Although guidelines suggest that potential living donors be informed about the option of testing, it’s unclear as of yet whether testing should become a routine practice,” she says.

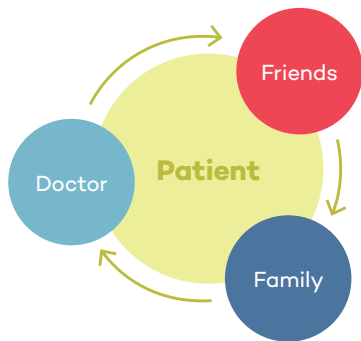
Meanwhile, Gordon is collaborating with Johns Hopkins University on a new project that encourages potential transplant patients to find a “champion” who can use social media to increase awareness of the need for transplantation and



Today, the team includes Spanish-speaking surgeons, social workers, nurses and coordinators.



Disparities between Hispanic and non-Hispanic whites for living donor kidney transplantation have decreased by 70 percent.



“Getting grandma’s blessing is very important. If you’re going through a big life event, you’re going to talk to grandma.”

Juan Carlos Caicedo-Ramirez, MD, ’06 GME Director, Northwestern Medicine Hispanic Transplant Program

Gordon is also thinking about developing culturally targeted initiatives for African-American living kidney donors. Research has found that two variants of the Apolipoprotein L1 gene (APOL1) gene often found in African-Americans are correlated with higher rates of kidney disease. And African-American living kidney donors have disproportionately higher rates of kidney failure post-donation than non-Hispanic whites. Small studies show that living donors who have the two gene variants could have higher chances of getting kidney failure after surgery.

to identify potential living donors. She is currently trying to recruit Hispanic and other patients into the trial.

The ultimate goal is to continue to hone and broaden culturally targeted interventions like these at hospitals across the nation.

“Our Hispanic kidney transplant program has been a pioneer,” Caicedo says. “This country is successful because of its diversity, and we should honor that. When the United States has embraced diversity like this, the United States has flourished.” ■■

# HEALTH EQUITY CHAMPION

Melissa Simon is on a mission to reduce health disparities in every sector, from education to research to clinical care.

**W**hen Melissa Simon, MD, MPH, '06 GME, was an undergraduate in college, her first advisor told her she didn't have a "rat's chance in hell of getting into medical school."

She had grown up in an impoverished neighborhood of Detroit — "in the bottom 1 percent," she says. And she had no connections — didn't know any doctors, for example, except her own pediatrician back home.

But it goes without saying that Simon proved her advisor wrong.

As a kid, she earned a scholarship to a private school outside of Detroit. The only student there from a low socioeconomic background, she witnessed from an early age the stark contrast between the haves and have-nots. But she received a top-notch education, was admitted to the University of Chicago and moved to the new city, sight unseen.

Disregarding naysayers — and her own fears that she did not belong — Simon went on to earn a master's degree in public health at the University of Illinois at Chicago and a medical degree at Rush Medical College. After residency at Yale University, she came to Northwestern for a fellowship in family planning, and she never left. Almost 15 years later, she is not only a physician; she is a scientist, educator and fierce advocate for health equity.

"I saw my family members struggle to get access to the healthcare they needed," says Simon, the George H. Gardner, MD, Professor of Clinical Gynecology and the founding director of Feinberg's new Center for Health Equity Transformation. "Today, everything I do, every sector I cross, is about finding ways to improve health and healthcare delivery so that all types of people, from all types of backgrounds, can achieve the health that they want." »







## INTERSECTIONS WITH HEALTH

Simon's work addresses the many factors that underlie health — and perpetuate healthcare inequities.

“We can’t do ‘business as usual’ if we are going to advance health equity and transform our city’s and country’s health.”

### Thinking Outside of the Box

Much of Simon's work revolves around understanding and revising the underlying structures that perpetuate healthcare inequities.

“So many things intersect with health: housing, physical activity spaces, exposure to violence, food availability, transportation, education opportunities,” Simon explains. “We need to really think about how we can design healthcare delivery while acknowledging and incorporating those factors.”

Simon has done just that in her work developing patient navigation programs across Chicagoland. West of the city in DuPage county, for instance, she found that uninsured Spanish-speaking women were at risk for stalled follow-up care after receiving an abnormal breast or cervical cancer screening result compared to English-speaking patients. Delays can lead to less effective treatment and lower chances of survival. Personal barriers like low income, low health literacy and distrust in the healthcare system played a role in the disparity, but so did external structures.

“We mapped the public transportation routes and the health and human services organizations across the county — they did not match,” Simon says. “DuPage doesn’t have the same infrastructure or public health safety net that we have in the city — there is no public hospital, for instance. Suburbs have not been designed to be accessible to poor people, yet they are the areas where many new immigrants and those from lower socioeconomic backgrounds go.”

Simon's team trained bilingual patient navigators to help these women obtain timely follow-up care after receiving an abnormal test result. Navigators made appointments, provided interpreter services and referred patients to community resources like transportation and legal counseling. With a navigator's emotional and logistical support, disparities in follow-up care disappeared. Simon directs similar programs in Chicago's Chinatown and South Side neighborhoods, and downstate in rural Illinois.

“In all of these projects, we're thinking about how we can design healthcare delivery around the needs of different patient populations so they can have good experiences and outcomes,” Simon says. “The goal is to lift everyone towards health.”

She says one key to improving healthcare for traditionally underserved patient populations is getting them involved in research — as participants in studies, but also as partners



who inform research questions, study design and data analysis and dissemination. Her team is currently collaborating with the Chicago Public Library to raise awareness of clinical trials across demographic groups typically underrepresented in trials.

“The data we extract out of research is only relevant to the people who participated, or the people whose biological specimens were studied,” she says. “This is part of the reason we see disparities between populations.”

For example, in 2007, Simon was part of a team that set out to understand why the death rate from breast cancer was 68 percent higher for black women in Chicago compared to white women. They created the Metropolitan Chicago Breast Cancer Task Force to study the data and talk to stakeholders — women in the community — and learned that African-American women faced barriers to obtaining breast cancer screenings and access to imaging specialists to have their mammograms interpreted. The task force’s research and advocacy led Illinois legislators to pass a new, one-of-a-kind law in 2015 establishing a standard level of breast care for all women in Illinois.

“The breast cancer death rate is now closer to 40 percent — we’ve contributed to closing the gap between black and white women’s mortality,” says Simon.

### Workforce Training

One of the structures Simon feels most passionately about is education — specifically, making sure that young people from underrepresented and nontraditional backgrounds can succeed in the field of healthcare.

“Growing up, I was surrounded by a loving family, but I didn’t have that roadmap ahead of me that I’m able to so well articulate for my four children now,” Simon says. “I was very lucky: I was the beneficiary of philanthropy that funded me through 12 years of private prep school and then college. Without that investment, I don’t know where I would be today.”

To improve diversity in the healthcare workforce, Simon designed a massive open online course called Career 911 that shares strategies and stories to convey to students that a career in medicine and healthcare is attainable. Launched in 2015, the course has supplemented curricula at Chicago Public Schools and academic enrichment programs like the local chapter of GEAR UP, a national organization funded by the U.S. Department

of Education to give low-income students exposure to higher education.

“One of my goals in life is to impart as much social capital to as many people as possible, especially people who would not have had such an opportunity otherwise,” Simon says.

She also runs a research fellowship program through the Chicago Cancer Health Equity Collaborative, funded by a National Cancer Institute grant to the Robert H. Lurie Comprehensive Cancer Center of Northwestern University. Simon founded the initiative with the University of Illinois at Chicago (UIC) and Northeastern Illinois University (NEIU) to build bridges between Chicago universities that aim to reduce cancer disparities in Chicago’s low-income neighborhoods.

“We designed the fellowship program to break down the usual silos that exist across institutions,” she explains. “We have Northwestern undergrads working with UIC, NEIU and Chicago City College students in an intensive research training program for health equity. All the students, regardless of their institution and background, have something to contribute to each other’s learning. Ultimately, we create a stronger community of colleagues that will move forward together.”

### Voices on the Ground

Simon says that she has “grown up with Northwestern” during her nearly 13 years on Feinberg’s faculty, as both she and the institution have solidified a focus on community engagement and outreach. The Center for Health Equity Transformation, a joint center between the Lurie Cancer Center and the medical school’s Institute for Public Health and Medicine, is a natural progression of their work: a hub for students, faculty and staff to work together to build research infrastructure, advance workforce development and collaborate with community partners.

“This center is not window dressing — it is a visible commitment from Northwestern to work side-by-side with community members to try to transform some of the deeply ingrained inequities that exist in this city,” Simon says.

While Simon’s research and training programs are already making a difference to community members on both micro and macro levels, she is also helping individual patients and entire populations through her clinical activities. Every Tuesday, Simon works as an attending physician in obstetrics and gynecology at the Prentice Ambulatory Care (PAC) clinic,

## MANY ROLES

In addition to leading the new Center for Health Equity Transformation, Simon serves as vice chair for clinical research in the Department of Obstetrics and Gynecology and as a professor in the Departments of Preventive Medicine and Medical Social Sciences. She is also co-leader of the Cancer Control and Survivorship Research Program and the Community Engagement and Outreach Program at the Lurie Cancer Center.



Simon walks through Pilsen, one of the Chicago neighborhoods where she works. The area is known for its Latino heritage — and the vibrant murals that depict it.

providing perinatal care to low-income patients who are uninsured or on public aid. And as a member of the U.S. Preventive Services Task Force, she makes recommendations on clinical services spanning from screenings to counseling to medications for primary care clinicians and their patients across the country.

In the PAC clinic, her team is interviewing women about their experiences with violence, trauma and other social factors that impinge on health and the receipt of healthcare. On the task force, meanwhile, she advocates to have more community members review the group’s recommendation statements to ensure they are appropriate for all the diverse populations of the United States.

“Community members are integrated into everything I do,” Simon says. “It’s important to me to have that ground-level voice at every table.”

Despite all of her efforts and successes so far, she insists: “We’ve only scratched the surface. Even if you pick just one disease state or one population or even one community area of the 77 in Chicago, there’s so much work still to be done.” ■■

🔊 Listen to a podcast episode featuring Simon at [magazine.nm.org](https://magazine.nm.org)

# Why I Support Feinberg

*A Q&A with Irene Pritzker, president and chief executive officer of the IDP Foundation, Inc.*

Irene Pritzker first became involved with Feinberg in 2008 when she formed the IDP Foundation, Inc. “One of the things we realized quickly as a foundation was that we wanted to make sure that our grants were going to be leveraged for more funding through organizations like the National Cancer Institute. I was impressed with the work being done at Northwestern then, and I still am now,” she says.

In this Q&A, she shares more about her foundation and giving philosophy.

## **Please tell us a bit about the IDP Foundation and its mission.**

IDP’s mission is to look at sustainable solutions for large global problems, including health and education. We accomplish this through program-related investments as well as rigorously ensuring that we always invest for impact. It’s important to note the initials of the foundation — IDP stands for innovation, development and progress. Those are more than just nice-sounding words — they really drive a lot of what the foundation is about.

Some of the hardest grants for institutions to get are those that fund postdocs, fellows and protected research time. I think that our support of these areas has helped other foundations to follow in our footsteps and put their confidence directly into scientists at Northwestern.

## **You initially supported research at the Robert H. Lurie Comprehensive Cancer Center of Northwestern University but have broadened to other areas at Feinberg. Why have you chosen to strengthen and diversify your support across areas including cardiology, Parkinson’s disease, neuro-gastroenterology, ophthalmology and cancer, among others?**

I had a healthy interest in Parkinson’s disease because of a strong family history of the disease. I started to talk to Department of Physiology

Chair D. James Surmeier, PhD, who helped me to understand the complex science and causes behind this illness, and I got very excited about what Jim was working on.

Over the years, I became connected with doctors across Northwestern, particularly through various medical appointments. I would talk to them about their clinical, research work and funding needs, and ask, “What do you wish you could be doing?” One such area is the Division of Gastroenterology and Hepatology, where for some time clinical research physicians have wanted to use virtual reality solutions to relieve pain and reduce symptoms. It’s being done in California but it’s a new and tricky science to use. The IDP Foundation agreed to help fund this work at Northwestern under the leadership of Darren Brenner, MD.

## **As a donor, what advancements do you want to see through the IDP Foundation’s charitable support?**

I’m already seeing it — the increasing recruitment of cutting-edge scientists, clinicians, programs, clinical trials and beyond. I am seeing it rapidly escalating and, as a donor, that is exactly what I want to see.

## **Why do you give to causes that you care about?**

I think that people give to causes they care about because there is passion there. In the case of a foundation like IDP, it is important to assemble a strong senior management team whose members become experts in those areas of passion. Then we try to give strategically. My philosophy is to give “smart,” to see our grants and investments as

catalytic seed stage funding and to always strive for future scalability, replication and sustainability of any program we support. It is true that scientists are eternally dependent upon funding, but bigger funding often comes as a result of smaller funding. At Northwestern, we see what we are doing as creating stepping stones, but we always want to see where those stepping stones are leading. We have not been disappointed!

## **What would you say to encourage current supporters and new supporters of the medical school at Northwestern?**

If they are genuinely interested in supporting an area, they should get involved and follow that interest. Meet with the scientists, meet with the development office, and let them know you’re interested. While there is a protocol to this sort of thing, it’s incredibly helpful to show interest to the doctors and commit all the way through. I would also tell people that you don’t have to give millions for your gift to matter. Every gift matters, and I think donors should strive to really understand the institutions and causes they want to support.

Below: James Thomas, MD, professor of Medicine in the Division of Cardiology (third from left); Irene Pritzker (third from right); and Robert Bonow, MD, the Max and Lilly Goldberg Distinguished Professor of Cardiology and vice chair for development and innovation in the Department of Medicine (second from right), with other Northwestern scientists.





# Designing a Successful Life and Career

*A letter from Jim Kelly, '73 MD*

Alumni and medical students at a mentoring breakfast in October.

**R**ecently I have been blanketed by questions and discussions about design thinking as a process to answer a multitude of life's most pressing questions. Meanwhile, two of the most frequently asked questions I get as president of the Northwestern Medical Alumni Association are "Why did you decide to pursue your interest in medicine and surgery?" and "Why did you pursue an MBA later in your medical career?" Instead of promoting a surgical specialty or an MBA, I encourage bringing design thinking into the picture when answering those questions for yourself.

I just finished reading the book "Designing Your Life: How to Build a Well-Lived, Joyful Life" by Stanford professors Bill Burnett and Dave Evans. I think the biggest truth that this book revealed to me is that the most important feature of a well-designed life is alignment. It is a life in which who you are, what you believe in and what you do align together. Your well-designed life becomes a collection of adventures, experiences and lessons learned from failures and missteps that evolve through a process of maturation into a life well lived.

But the most interesting concept in this book is that designers don't think their way forward, designers build their way forward. The authors encourage you to build things (prototypes), try things and evolve into yourself during the process. The Stanford Center on Adolescence suggests that only one in five people between 15 and 26 years of age have a clear vision of where they want to go, why they want to go there and what they want to do. So 80 percent of young people do not know what they are passionate about. Passion can only come after trying something and discovering that you like it, not before.

Let's face it: We all spend the majority of our waking days at work. Especially as growing physicians with long residencies, fellowships and professional lives staring us in the face, work can be a source of enormous joy or sheer misery. I think design thinking has the potential to improve our chances



of finding the happiness we all want in our work and life.

The design thinking process involves five mindsets:

**CURIOSITY:** Make everything new and invite exploration. Looking at the same problem from entirely different aspects is a huge advantage.

**BIAS TO ACTION:** Try stuff and build your way forward. Designers can create multiple prototypes, but they embrace change and focus on what happens next rather than on the final result.

**REFRAME THE PROBLEM:** Certain viewpoints can keep you from finding the career and life you are looking for. Exclude prejudices and open up to new solutions.

**AWARENESS:** Let go of your initial ideas and your damaged solutions. Let go of the end goal and focus on the process and see what happens. It is a process.

**COLLABORATION:** Ask for help — this is a key mindset. The best designers know that radical collaboration is key. You should not be alone in the journey. Design thinking is a collaborative process and you must use mentors and support communities to help with your life design. Have good mentors in

your professional life. Mine were Oglesby Paul and Ovar Swenson, both physicians who were experienced role models and mentors who interacted well with students and residents and understood the pressures on young physicians.

I do disagree with one aspect that this life design book speaks to. The authors believe employing the mindset helps people "get good at being lucky." We obviously begin to see things in a more positive light as we pursue a more successful life course, but to bring "luck" into the equation in a critical decision-making process is not realistic. I personally prefer the approach of a fly fishing friend of mine, B. Knight: When luck is called into the formula, he says "Really good things happen to those who work hard."

In my final article as president of the Northwestern Medical Alumni Association, I want to thank all of the alumni relations team for a job well done, including Babette Nyka, Dan Schwarzlose, Jillian Kurtz Brubaker, Meghan Monaghan, Kirsten Byers, Susan Clausen and Larry Kuhn. Thanks to the medical alumni of Northwestern for allowing me to serve.



# Psychiatry Blooms

**DURING THE 60-YEAR CAREER OF ROBERT MICHELS**

**WHEN** psychiatrist Robert Michels, '58 MD, began his career, it was stigmatizing for a person living in the community to talk with a psychiatrist or take medication for an emotional disorder.

Like most psychiatrists of his generation, Michels got his start working in hospital settings with profoundly disabled patients. But throughout his career, he has witnessed a rapid evolution of the field and its place in medicine. In addition to a shift to treating community-dwelling patients with less profound mental health concerns, the science behind psychiatry has matured and produced a host of better medications.

“When I was a resident, we had very few drugs that any patient would want to take unless they were desperately ill, because the effects of the drugs were so devastating on people,” notes Michels, currently the Walsh McDermott University Professor of Medicine at Cornell University in New York. “Now, a great many people take drugs that reduce their anxiety and reduce their depression without devastating their ability to function in the world.”

## Tending the Garden

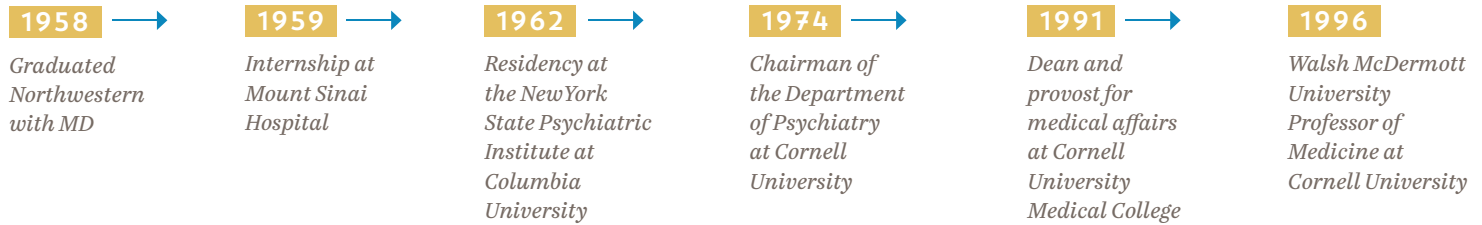
An interest in the brain and how it relates to people’s thoughts, feelings and behaviors drew Michels to take elective courses in the joint neurology and psychiatry department at Northwestern. He notes that at the time just a handful of medical schools still had such joint departments that covered illnesses related to the brain.

“Northwestern had a lively department, which was more focused on neurology than psychiatry,” he explains.

But the fields were already diverging, with neurologists focusing on movement disorders and other brain pathologies, while psychiatrists focused on mental illness.

“My interests shifted over to psychiatry and stayed there,” he says.

## Michels' Career Path



During his time at Northwestern, Michels says he learned from skilled clinician mentors to love talking with patients, getting to know them and helping them. And he took that passion with him to his internship at Mount Sinai Hospital in New York, and later to his residency with the New York State Psychiatric Institute at Columbia University. Throughout his early career, he taught and helped train psychiatrists at Columbia. During that time, he saw psychiatry become more attractive to students, particularly as other medical specialties became more time crunched.

"Psychiatry is one of the few fields where you actually get to know your patients," he says. "A lot of medicine has been forced into almost assembly line-like patterns of care, which are less rewarding for the practitioner."

He eventually became chairman of the Department of Psychiatry at Cornell University — one of the largest in the country with more than 400 inpatient beds, in addition to outpatient care. He served in that role for almost two decades, before becoming dean of Cornell University Medical College for five years.

One of the lessons he learned at Northwestern that he likes to impart on students is the importance of team-based multidisciplinary care. "Physicians have to work as a team and creatively work with

other disciplines," he says. "That's essential to modern medicine."

Though Michels says his teaching and administrative experiences have been "richly rewarding," he continues to find patient care the most fulfilling part of his career.

"I love seeing patients," he says. "It's sort of like Voltaire in his garden. You always know you've done something at the end of the day when you've met with a patient."

### A Blossoming Field

The growing scientific evidence base supporting modern psychiatric care, as well as the development of better and more tolerable treatments, have eased the stigma that has long shadowed mental healthcare, Michels says.

Despite growing acceptance of psychiatric care, the National Institutes of Mental Health has found that only half of patients with mental illnesses receive appropriate care. Michels notes that a shortage of psychiatrists and difficulties accessing care hamper treatment for many. He believes that in the current U.S. health system, patients often receive expensive care that may not be valuable, while

inexpensive care that is beneficial for the individual and the public good may be hard to come by.

"We have to educate the public and our decision-makers on this and reorient the way our resources are devoted," Michels says.

Another challenge that lies ahead is translating scientific discoveries about the basis of mental illnesses into better care, particularly for more severe conditions like schizophrenia and bipolar disorder. Michels is optimistic that the science will continue to advance.

In fact, he notes that at U.S. medical schools, psychiatry departments often boast one of the largest research portfolios.

"It's a wonderfully exciting field," Michels says. "It's going to blossom in coming years. The science is already brilliantly advanced, and the translational steps will follow."

With exciting prospects on the horizon and the opportunity to work closely with patients, Michels highly recommends the field.

"If you're interested in people and how they think, how they act and how they live their lives, I can't imagine a more rewarding career," he says.

**"It's a wonderfully exciting field. It's going to blossom in coming years. The science is already brilliantly advanced, and the translational steps will follow."**

# 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.

1



On November 4, Feinberg hosted a get-together in Austin, Texas, for alumni and friends of the medical school who were attending the Association of American Medical Colleges Conference. *Diane Wayne, '88, '91 MD*, posed for a photo with *John Cluley, MD, '12 GME*, and Cluley's adorable little wildcat, Cannon, who was proudly sporting Northwestern purple. 📷 1

## 1940s

*Charles "Dale" Collins, '47 MD*, retired last month from Maricopa Integrated Health System in Phoenix, after an illustrious 70-year career in obstetrics and gynecology. Collins delivered more than 8,000 babies since first opening his practice in Chicago in 1947.

## 1950s

*Simon Myint, '53 MD*, at age 90, was ranked No. 1 national doubles player and doubles team, and No. 3 singles player for the United States Tennis Association sanctions for his age group (90 and over) in 2018. Myint was a tour-de-force last year, competing in four different states (California, Ohio, Massachusetts and North Carolina) on four different court surfaces between May and October. 📷 2

## 1960s

*Paul Knepper, '68 MD, '73, '74 GME, '80 PhD*, was named a 2019 gold fellow by the Association for Research in Vision and Ophthalmology for his exemplary contributions and dedication to the organization.

## 1970s

*David Skorton, '74 MD*, was selected as the next president and CEO of the Association of American Medical Colleges. A board-certified cardiologist, president emeritus of Cornell

University, past president of the University of Iowa and member of the National Academy of Medicine, Skorton was selected after a year-long, nationwide search. His appointment will take effect on July 15. 📷 3

*Bonnie Typlin, '74 MD*, a pediatrician, retired in February 2019 after 40 years of practice. "The corporatization of my practice took all the fun out of being a pediatrician," she writes. Over the last nine years, Typlin journeyed from Chicago to Tucson and Prescott, Arizona, and has returned back to Tucson.

**ROBERT M. SALTZMANN, '05 MD, HAS HELPED CULTIVATE A GROWING CADRE OF NORTHWESTERN-CONNECTED PHYSICIANS TO HIS PRACTICE, WHICH NOW BOASTS SIX PROVIDERS WITH UNDERGRADUATE, MEDICAL SCHOOL, GME AND/OR FORMER FACULTY AFFILIATIONS.**



**Kimberly Bass, '75 MD**, an ophthalmologic surgeon, gave up her lucrative private practice in Saint Paul, Minnesota, to pursue humanitarian efforts in ophthalmology in developing countries. In 2007, Bass began to volunteer for two organizations that sponsor medical missions — SEE International and Medical Ministry International. Since that time, Bass has operated on over 400 patients in five countries. Her crusades have also become a family affair. In 2013 and 2018, her husband, **Benjamin Gulli, '87 MD**, joined her on a medical mission to Peru as an orthopaedic surgeon, alongside their two children who assisted Bass in the eye clinic and observed eye surgeries. 📷 4, 5

**Nick Retson, '75 MD**, a facial reconstruction surgeon, was featured in the *Chicago Tribune* for his work helping children with physical abnormalities around the world. He has organized 50 medical mission trips to several countries and was recently awarded the humanitarian award by the Indian Medical Association of Northwest Indiana.

## 1980s

**Jeff Unger, '80 MD**, has published his third medical textbook on diabetes management in primary care. He directs the Unger Primary Care Concierge Medical Group in Rancho Cucamonga, California, as well as the Catalina Research Institute. Unger is the former team physician for the Anaheim Angels baseball club and the World Wrestling Federation. 📷 6

**Len Yaffe, '82 MD**, his wife Ruth and friends recently had a great time visiting Bordeaux. “The tours of the vineyards and caves were so impressive that I found the wine tasting at the end practically unnecessary, but I did not want to insult the hosts,” he wrote. In the meantime, his healthcare fund is a top-tier performer for the sixth consecutive year. He can be reached at len@kesssefcapital.com. 📷 7

**Jane Schwebke, '84 MD, '87 GME**, was appointed to the scientific advisory board of Talis

Biomedical Corporation. Schwebke has also served as a faculty member at the University of Alabama for over 20 years. 📷 8

**Kristine E. Ensrud, '85 MD**, was inducted as a master of the American College of Physicians at the 2018 Annual Meeting of the American College of Physicians. She joins her father, **E. Richard Ensrud, '52 MD**, and her husband Timothy J. Wilt, MD, who are also masters of the American College of Physicians. 📷 9

**Janet Prokop Pregler, '88 MD**, was named the Iris Cantor Endowed Chair in Women's Health at the David Geffen School of Medicine at University of California, Los Angeles. Pregler currently serves as director of the Iris Cantor-UCLA Women's Health Center and is on the Women's Health Policy Council.

## 1990s

**Raymond Sanchez, '94 MD**, was recently profiled in *Pharm Exec*, in its “Emerging

NORTHWESTERN UNIVERSITY  
FEINBERG SCHOOL OF MEDICINE

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## ALUMNI WEEKEND REGISTRATION NOW OPEN!

# 2019

## APRIL 26–27

Details and registration at [feinberg.northwestern.edu/alumni/alumni-weekend](http://feinberg.northwestern.edu/alumni/alumni-weekend)

Pharma Leaders 2018.” Sanchez, who is senior vice president of global clinical development at Otsuka Pharmaceutical Development and Commercialization, was chosen from a pool of over 100 candidates for his many contributions to the field.

*Shelly Flais, '99 MD, '02 GME*, published her third parenting book with the American

Academy of Pediatrics (AAP) in 2018, serving as editor-in-chief of the AAP's “Caring For Your School-Age Child: Ages 5-12 Years.” She also authored the award-winning “Raising Twins,” which is now in its second edition, and served as co-editor of “The Big Book of Symptoms.”

Flais is a spokesperson for the AAP and has spoken on behalf of the organization in multiple national public service announcements

in 2018 and 2019. She is also a clinical assistant professor of Pediatrics at Northwestern University Feinberg School of Medicine. In 2018, Flais joined the Feinberg Academy of Medical Educators. She actively practices pediatrics as a partner with Pediatric Health Associates, an independent practice based in Naperville, Illinois. She is mom to four teenagers, including twins, who are growing up way too fast. [10](#)

## 2000s

*Jeanette Bauchat, '02 MD, '03, '07 GME, '16 MS*, has joined the faculty at Vanderbilt University. Bauchat was recently profiled on Vanderbilt's website and described the journey that led to her new appointment as associate professor of Anesthesiology. [11](#)

*Van Krishnamoorthy, '03 MD*, is the physician co-founder of health tech startup trineOMICS, which was formed to end surprise heart attacks. Their consumer brand, Tap Clarity, develops and commercializes innovative DNA and RNA tests for heart disease so that self-insured employers, consumers and wellness clinics can learn about individual risk for heart disease in order to improve outcomes while reducing costs.

*Margaret Wong Gribble, '04 MD, '08 GME*, was recently featured on the cover of *Atlanta Magazine*, in its “Top Doctors” issue. A triple alumna of Northwestern, Wong is an ophthalmologist in Atlanta, specializing in diseases and surgery of the retina, vitreous and macula, as well as inflammatory diseases of the eye, including uveitis. [12](#)

*Robert M. Saltzmann, '05 MD*, was elected by his peers as co-president of Charlotte Eye Ear Nose and Throat Associates, PA (CEENTA), in Charlotte, North Carolina. Saltzmann previously served two terms as chair of Ophthalmology and a member of the board of directors within the practice.

In 2017, Saltzmann served on the steering committee and was a founding member of the North Carolina Glaucoma Society, which worked closely with the American Academy of Ophthalmology and American Glaucoma Society to fight a scope-of-practice battle in the state.

He also remains active on the operations committee for the Charlotte Surgery Center, on the finance committee of Carolinas Physician Alliance (a local clinically-integrated network), and as a board member and membership vice-president for the NU Club of Charlotte. Saltzmann has helped cultivate a growing cadre of Northwestern-connected physicians to his practice, which now boasts six providers with undergraduate, medical school, GME and/or former faculty affiliations (...as well as one spouse who commutes from Charlotte to Chicago weekly and remains on faculty at Kellogg). 📺 13

**Alex Strauss, '05 MD**, continues to be a partner at Centra, PC, a multidisciplinary mental health private practice in Marlton, New Jersey, outside of Philadelphia. He was recently selected to be the consulting sport psychiatrist for the Temple University Athletics Department. In his new role, he's excited to be working with the sport psychology team at the TUWell

Mental Health, Wellness and Performance department in this growing field of mental health sports medicine. 📺 14

**Karuna Dewan, '09 MD**, has authored the book "Dysphagia Evaluation and Management in Otolaryngology." Dewan is an assistant professor of Otolaryngology in the Divisions of Head and Neck Surgery for the Medical Center Line at Stanford University Medical Center. 📺 15

## 2010s

**Brandi Jackson, '15 MD**, and her twin sister, Brittany Jackson, MD, were recently featured on "NBC Nightly News" with Lester Holt and "Windy City Live" to promote their question-and-answer website, [www.medlikeme.com](http://www.medlikeme.com), which seeks to "support and inspire those traditionally underrepresented" in the health-care professions. Through this online resource,

Jackson and her sister hope to change the face of medicine and encourage women of color to pursue a career in the medical field. 📺 16

## GME

**Joseph A. Adashek, MD, '93 GME**, in July 2017 became president of the Clark County Medical Society, which covers all of Las Vegas and Henderson, Nevada. On behalf of the doctors of Clark County, he accepted numerous awards over the past year for the treatment of those injured during the deadliest mass shooting in United States history, which took place in Las Vegas on October 1, 2017. In a 10-minute span, there were more than 400 patients with gunshot wounds, and every patient that presented to the emergency room alive survived.



**Venu Akuthota, MD, '98 GME**, was named the University of Colorado Medicine Endowed Chair in Physical Medicine and Rehabilitation. Akuthota leads a department that includes over 90 academic faculty, four residency/fellowship programs, a doctor of physical therapy program, a PhD in rehabilitation science program and a top five rehabilitation research enterprise. He also oversees clinical practices at UHealth, Children's Hospital Colorado, Denver Health and the new Rocky Mountain Regional Veterans Administration. 📷 17

**Christopher M. Gonzalez, MD, '00 GME, '06 MBA**, has been named the Albert J. Jr. and Claire R. Speh Professor and chair of the Department of Urology at Loyola University Chicago Stritch School of Medicine. Previously, Gonzalez served as chair of Urology and director of the Urologic Institute for University Hospitals of Cleveland.

**Parag Bhanot, MD, '06 GME**, is an associate professor of Surgery at the Georgetown University School of Medicine. Bhanot also serves as executive director of the MedStar Georgetown Center for Abdominal Wall Reconstruction and Hernia Surgery.

**Samir Patel, MD, '14 GME**, recently competed on "Jeopardy!" Patel is an anesthesiologist and faculty member at Feinberg. Visit the Northwestern Now website to learn more about Patel and hear fun anecdotes from his time on the game show. 📷 18

**Aubrey Bonhivert, MD, '17 GME**, has joined Franciscan Physician Network Pediatric Associates of Greenwood, Indiana. Previously, Bonhivert was a pediatric hospitalist at La Rabida Children's Hospital and also was on staff at Ann & Robert H. Lurie Children's Hospital of Chicago.

## DPT

**Margaret Danilovich, '07 DPT, PhD**, Feinberg faculty member, received grants from the Northwestern Third Coast Center for AIDS Research and the National Institute on Aging. The studies will test high intensity walking interventions for older people with HIV and for citizens of retirement communities, respectively. 📷 19

**Jonathan Tsay, '18 DPT**, received the Foundation for Physical Therapy's Kendall Scholarship. Tsay is currently a PhD student at University of California, Berkeley. 📷 20



## 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 dates are in 2018.*

### ALUMNI

**Arnold B. Simon, '46 MD**  
Palm City, Florida  
NOVEMBER 1

**Viola Richardson Reeder, '48 MD**  
Decatur, Illinois  
NOVEMBER 15

**Elwood H. LaBrosse, '49 MD**  
Sykesville, Maryland  
OCTOBER 24

**Robert C. Bain, '50 MD**  
Seattle, Washington  
NOVEMBER 3

**R. James "Jim" Bills, '51 MD**  
Madison, Mississippi  
OCTOBER 30

**Bill P. Maduros, '54 MD**  
Stockton, California  
OCTOBER 1

**Edward E. Waller, Jr., '55 MD**  
Berkeley, California  
SEPTEMBER 27

**Stewart H. Rowberry, '57 DDS**  
Lawrenceville, Georgia  
NOVEMBER 13

**Donald M. Sherline, '58 MD**  
Scottsdale, Arizona  
NOVEMBER 25



**John M. Sproul, '58 MD**  
Mercer Island,  
Washington  
OCTOBER 6

**Laurence A. Greenburg,  
'59 MD**  
Hotchkiss, Colorado  
SEPTEMBER 24

**Peter D. Van Vliet,  
'59 MD**  
Grand Rapids, Michigan  
NOVEMBER 23

**Joseph D. Winterhalter,  
'60 MD**  
Rockton, Illinois  
OCTOBER 1

**Richard S. Gordon,  
'62 MD**  
Palm Coast, Florida  
SEPTEMBER 22

**Eckhard Fischer, MD,  
'63 GME**  
Seattle, Washington  
SEPTEMBER 27

**Roy T. Smith, '63 MD**  
Savannah, Georgia  
NOVEMBER 12

**Patrick D. Sullivan,  
'65 MD, '70 GME**  
Winter Haven, Florida  
NOVEMBER 24

**Andrew R. Yamada,  
'65 MD**  
Rapid City,  
South Dakota  
NOVEMBER 15

**Lawrence C. Hulefeld,  
'69 MD**  
Marblehead,  
Massachusetts  
OCTOBER 15

**Joseph R. Lentino,  
'75 MD**  
Chicago, Illinois  
NOVEMBER 12

**Kevin S. Halstuk, '78 MD**  
Highland Park, Illinois  
SEPTEMBER 1

**Robin P. Gurlitz, '80 PT**  
Newbury, Massachusetts  
SEPTEMBER 23

**Patrice A. Moreno, MD,  
'81 GME**  
Clearwater, Florida  
NOVEMBER 29

**Carol Croneigh Tuckers,  
RN, BSN, '86 MS**  
Barrington, Illinois  
SEPTEMBER 18

**William "Bill" Banzhaf,  
MD, '87 GME**  
Evanston, Illinois  
SEPTEMBER 30

**Arti Hurria, '95 MD**  
Altadena, California  
NOVEMBER 7

**Mokaram Rauf, '15 MD,  
'15 MPH**  
San Francisco, California  
DECEMBER 2

**FACULTY**

**James Lowell Duncan,  
PhD, DDS**  
*associate professor  
of Microbiology-  
Immunology*  
Eugene, Oregon  
DECEMBER 13

**Jerome M. Grunes, MD**  
*clinical associate  
professor of  
Psychiatry and  
Behavioral Sciences*  
Glencoe, Illinois  
OCTOBER 25

**Laszlo Lorand, PhD  
(pictured below)**  
*professor emeritus  
of Cell and Molecular  
Biology*  
Glencoe, Illinois  
DECEMBER 18



**John Paul McGee, II,  
'70 MD**  
*assistant professor of  
Anesthesiology*  
Glenview, Illinois  
DECEMBER 12

**Michael F. Schafer,  
MD, '72 GME  
(pictured below)**  
*chair and Edwin  
Warner Ryerson  
Professor of  
Orthopaedic Surgery*  
Glenview, Illinois  
OCTOBER 17



**Howard D. Simon, MD,  
'69 GME**  
*assistant professor  
emeritus of Neurology*  
Highland Park, Illinois  
OCTOBER 1



**BSPT**

**Lynn Steffes (née Meerschaert), '81 BSPT, DPT**, was awarded the Robert G. Dicus Lifetime Achievement Award by the American Physical Therapy Association's Private Practice Section (PPS) board of directors at the 2018 annual conference in Colorado Springs in November. Steffes has served the physical therapy profession for over 35 years as a clinician, teacher, speaker, writer and passionate advocate. Steffes has served the PPS nationally through the board of directors, nominating committee, marketing and public relations committee and as an advocate through the PPS Key Contact Program. She is known to be a consummate educator, from clinician to practice consultant, to payment and contracting specialist. In addition, Steffes is a guest faculty member in five DPT programs. 📍 21

**MPO**

**Mike Mullenix, '18 MPO**, is currently pursuing a 12-month orthotic residency at American Prosthetics and Orthotics at the University of Iowa Hospitals and Clinics in Iowa City, Iowa.

# A LEADER IN THE CLINIC AND BEYOND

*A physical therapist-turned-CEO used skills he developed while treating patients to lead a company.*

WRITTEN BY *Nora Dunne*

Three years after earning his degree in physical therapy at Northwestern, Stephen Anderson, '80 PT, DPT, opened a clinic through Therapeutic Associates, the largest private practice owned by PTs in the nation. After 16 years as a clinic director, he became CEO of the company, which today includes more than 80 locations across the West Coast. In 2016, after nearly two decades as CEO, he stepped down and founded Orange Dot Coaching to help

others develop leadership skills.

Here, Anderson talks about the trajectory of his career and offers advice to clinicians who want to become leaders in their fields.

## **HOW DID WORKING AS A PT PREPARE YOU TO BE A GREAT LEADER?**

I think it was a combination of things.

After I graduated from

Northwestern, I went to work in a private practice, like so many of us do. There, I had a strong mentor who was very open about sharing not only clinical skills, but also the business side of things like managing budgets and expenses. But I also learned so much working with patients, like how to talk to different types of people who have different motivations and

who respond to different strategies. What I learned translated to working with my peers and eventually to managing people. In my opinion, you need to develop the same skillset whether you're working with patients in a small practice or working as the CEO of a big company.

## **WHY SHOULD PTS AND OTHER TYPES OF CLINICIANS DEVELOP LEADERSHIP SKILLS AS THEY MOVE FORWARD IN THEIR CAREERS?**

I've talked to many students over the years who say, "I don't really want to be a leader. I just want to treat patients." But I can't think of a more perfect example of leadership than a one-on-one experience with a patient. You don't need a title or initials after your name to be a leader; you can be a leader as a staff therapist. You have to be able to inspire patients and work collaboratively with them to reach their goals. All of that requires strong leadership skills, and it's those skills that make the best PTs, in my opinion. So they're worth developing no matter which direction you want to take your career.

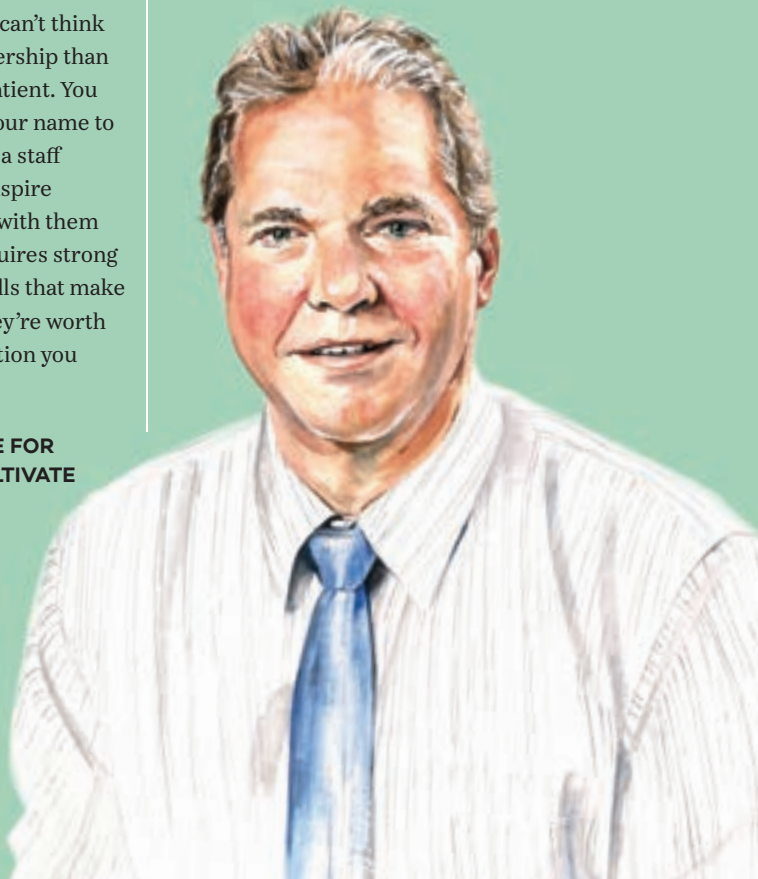
## **SO WHAT ADVICE DO YOU HAVE FOR CLINICIANS WHO WANT TO CULTIVATE THEIR LEADERSHIP SKILLS?**

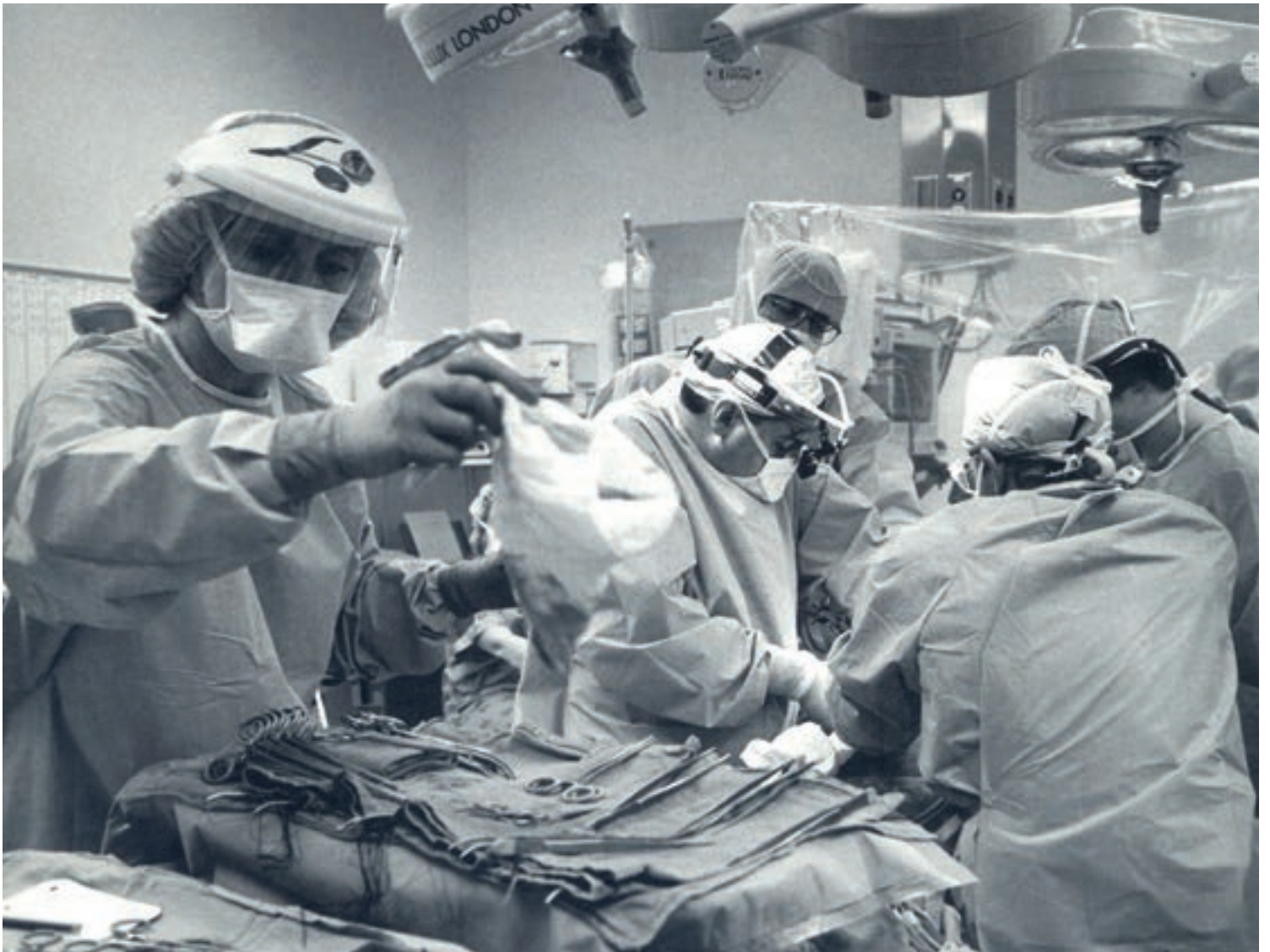
Choose to work in an environment where people encourage you to grow — a learning organization. That's where you're going to blossom, as opposed

to someplace where you're isolated or where people are apathetic about improving and developing their skills.

Definitely look for a mentor, somebody with clinical and leadership skills. Look for someone you admire who will take time with you, and then be bold and ask them for that opportunity. As you go further in your career, consider hiring a coach who can help you work more efficiently with groups and understand your personality and how you come across to others, so you can get to the next level.

**I CAN'T THINK OF A MORE PERFECT EXAMPLE OF LEADERSHIP than a one-on-one experience with a patient. You don't need a title or initials after your name to be a leader; you can be a leader as a staff therapist. You have to be able to inspire patients and work collaboratively with them to reach their goals.**





Michael Abecassis, MD (center), founding director of the Comprehensive Transplant Center, performing a liver transplant in 1993.

## 1993

### First Liver Transplant

2,000 TRANSPLANTS SINCE

**A**lthough Northwestern Memorial Hospital conducted its first kidney transplant in 1964, it did not expand its services to include liver transplantation until 1993. The growth of transplantation in the years since is staggering: The Northwestern Medicine Comprehensive Transplant Center has completed nearly

5,000 kidney transplants and 2,000 liver transplants since the program began. Still, today some 114,000 people suffer from organ failure and are on the national waiting list for organs. More than 95,000 are waiting for kidneys and roughly 14,000 are waiting for livers, according to the Organ Procurement and Transplantation Network.

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

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