

Northwestern Medicine

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SUMMER 2017

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Out of the Woodwork

CLASS OF 2017 GRADUATION

Graduating medical students admire a standing desk handcrafted by Patricia Garcia, MD, MPH, '91 GME. She dedicated the wood desk to the MD Class of 2017. "I wanted to make a gift for your class — something of lasting value to mark your accomplishments," she wrote in her note to the students.

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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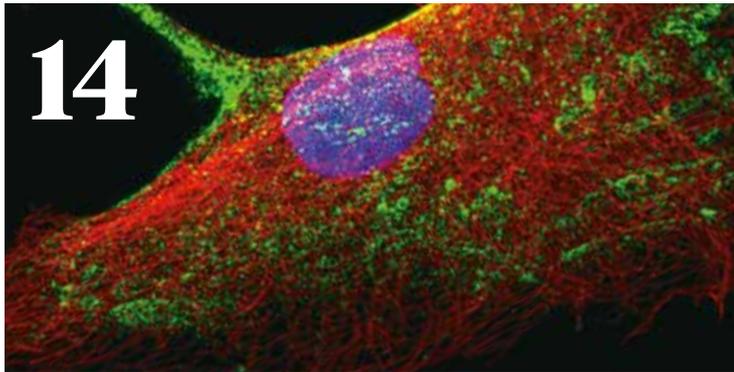
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GOING WITH THE ION FLOW

Northwestern Medicine scientists are diving deep into the structure and function of ion channels to inform new therapies.



PHARMACOGENOMICS FOR ALL

Minoli Perera, PharmD, PhD, is on a mission to bring precision medicine to African-Americans.



TREATING THE WHOLE PERSON

Meet Jeffrey Linder, new chief of General Internal Medicine and Geriatrics.



PROJECT ONE UNITES HEALTH SYSTEM

New electronic health record enables best of the best clinical practice across Northwestern Medicine.

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WARD ROUNDS®

41 The Evolution of Northwestern Medicine Magazine

 Editor's Note: Northwestern Medicine magazine has a new look! We're still including all the content our readers love — campus news, feature stories and alumni updates — just with a refreshed design. We're also introducing an improved website.

ON THE COVER

EAG2 potassium ion channels expressed in medulloblastoma cells. Northwestern Medicine scientists are investigating how ion channels contribute to brain tumors and many other diseases. Image courtesy of collaborator Xi Huang, PhD, of the Hospital for Sick Children and the University of Toronto.

Training the Next Generation of Physicians and Scientists to Improve Healthcare



Eric G. Neilson, MD

Dean M. Harrison

Our 219 new residents are an impressive cohort:

49%

ARE TOP 25 MEDICAL SCHOOL GRADUATES

32%

ARE ALPHA OMEGA ALPHA NATIONAL MEDICAL HONOR SOCIETY MEMBERS

20%

ARE FROM UNDERREPRESENTED MINORITY GROUPS

53%

ARE WOMEN

▶ Meet some of Northwestern Medicine's residents and fellows online at magazine.nm.org.

THIS MAY, WE CELEBRATED OUR superb graduating medical students and all they have accomplished to earn their medical degrees. A group of extraordinarily talented physicians and physician-scientists, the MD Class of 2017 set the bar high for classes to come.

But of course, the journey is far from over for these new doctors, who now take on the challenge of residency. It's a challenge we know they'll face head on and with success. After all, this year 64 percent of our graduating medical students matched at a top 25 school — an all-time high for Feinberg. Northwestern is one of those top schools, and we are happy to welcome back 26 percent of our graduating students as residents at the McGaw Medical Center of Northwestern University.

Our 219 new residents are an impressive cohort: 49 percent are top 25 medical school graduates; 32 percent are Alpha Omega Alpha National Medical Honor Society members; 20 percent are from underrepresented minority groups and 53 percent are women (both of these numbers are higher than the national average).

The McGaw Medical Center, a consortium of hospitals that includes all of our clinical affiliates, currently serves more than 1,100 residents and fellows. Not only do these trainees have access to some of the best hospitals and mentors in the nation, they can also participate in our Resident Physician-Scientist Training Program. This program provides residents and fellows with time, space, equipment and even datasets; it also connects them to resources to help them learn best practices in research, how to attain funding and how to publish their findings. Today, our trainees are exploring questions that span across specialties and the translational research spectrum, from basic science to clinical implementation.

For instance, cardiovascular disease fellow Matt Feinstein, '11 MD, is studying the cardiovascular complications of HIV and chronic inflammatory diseases. Reproductive endocrinology and infertility fellow Ijeoma Okeigwe, MD, MPH, investigates the basic mechanisms that make fibroids grow in hopes of identifies new therapies for women. Internal medicine resident Josh Waitzman, '15 MD, '13 PhD, hopes to create a treatment to help those with kidney disease maintain or regenerate kidney function instead of going on dialysis. And general surgery resident Ravi Rajaram, MD, '15 MSc, focuses on health services research and is exploring federal health policy and surgical outcomes.

All of these burgeoning physician-scientists have an important goal: They want to impact human health beyond individual patient care. This is, of course, a cornerstone of our mission at Northwestern Medicine, and we strive to provide all of our students and trainees with tools to impact the field of medicine. We're proud of all that they have accomplished so far and eager to see the breakthrough discoveries they will inevitably uncover in the future.

Please join us in congratulating both our graduating medical students and our incoming residents!

With warm regards,

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

Dean M. Harrison
President and CEO
Northwestern Memorial Healthcare

ON CAMPUS

Commemorating the 2017 Graduation Season

WRITTEN BY *Anna Williams*

MD CLASS OF 2017 CELEBRATES COMMENCEMENT

During Feinberg's 158th medical school commencement ceremony Timothy Sita, '17 MD, '17 PhD, reflected on his seven-year journey at Feinberg and looked forward to his future as a physician-scientist.

"I feel a mixture of gratitude and humility. Looking around the auditorium, I'm surrounded by friends, family and faculty — without their support, I wouldn't be here celebrating the completion of these degrees," Sita said. During the ceremony, he was hooded by his wife, Elizabeth Sita, '14 MD, whom he met during their first week of medical school in 2010.

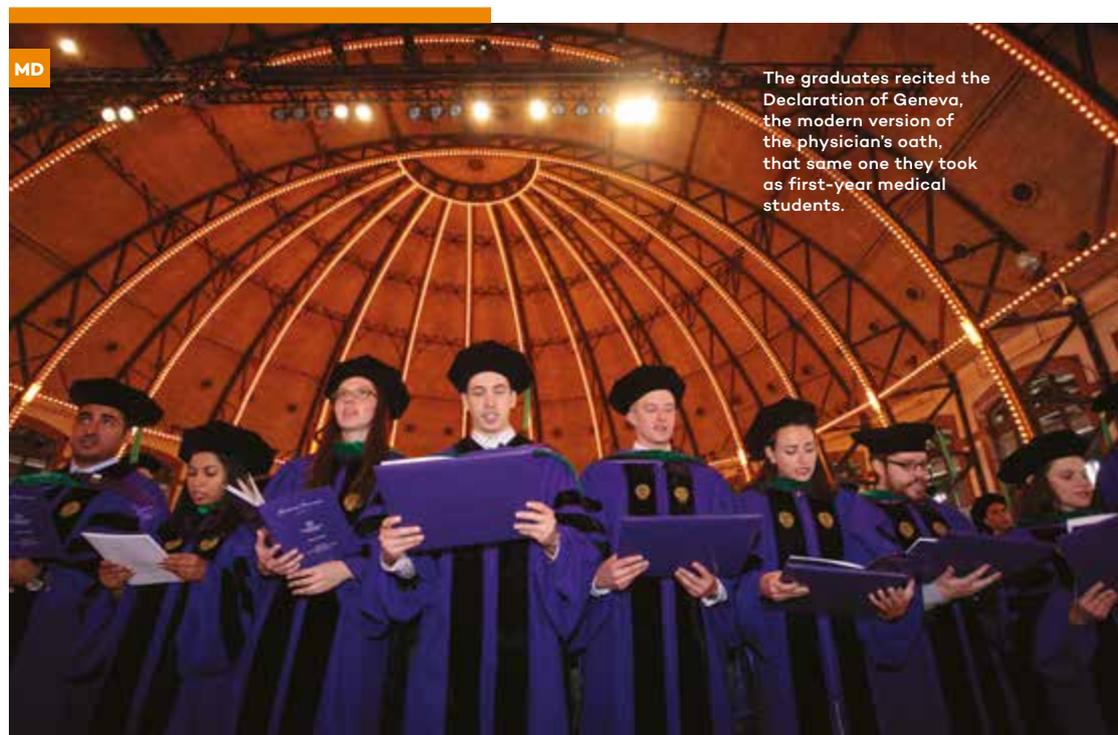
"I also feel a bit humbled by the challenges that still lie ahead," said Sita, who will begin a residency in radiation oncology at the McGaw Medical Center of Northwestern University. "Medicine and research are constantly changing, and I know there's plenty left to learn and master."

The ceremony, held May 22 in the Aon Grand Ballroom at Navy Pier, began with an introduction by Eric G. Neilson, MD, vice president for Medical Affairs and Lewis Landsberg Dean. Then Nancy Andrews, MD, PhD, dean and vice chancellor for academic affairs at Duke University School of Medicine, delivered the commencement address. She encouraged graduates to become leaders in medicine and to continue to stand up for the values of science and truth.

"You have chosen a remarkable profession. You can do everything from treating earthquake victims in Nepal to finding a cure for Alzheimer's disease. You will become part of your patients' lives in the most intimate way, and you will use your skills and talents to change their lives for the better. But in my view, being a physician comes with an added responsibility," Andrews said. "We need your leadership to make sure that the decisions affecting the health and well-being of our society are based on critical review of the best available evidence." ➔

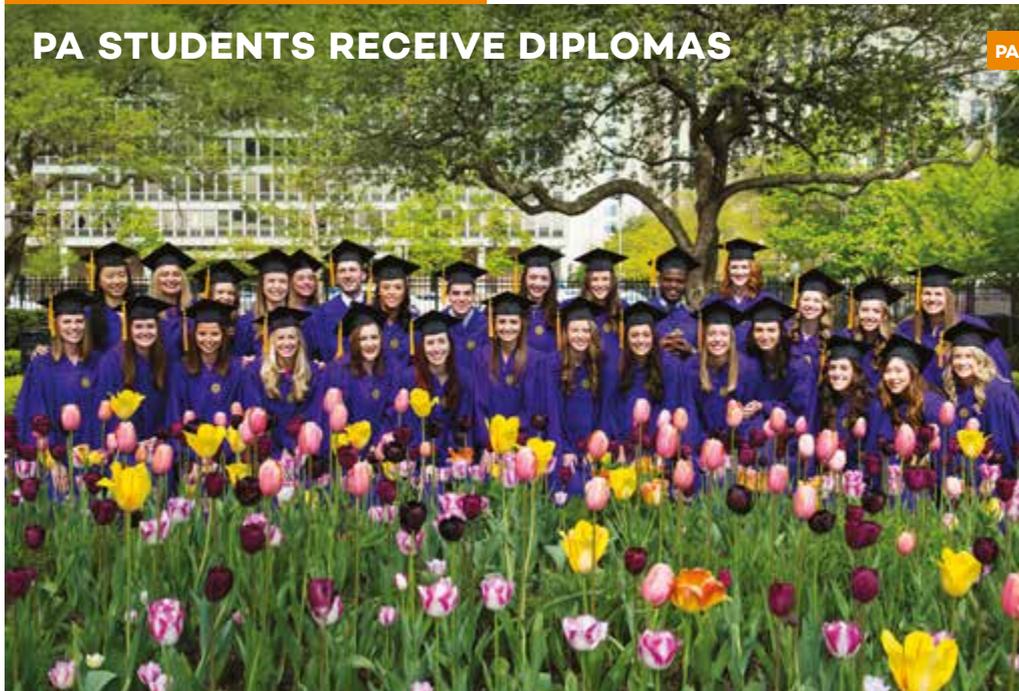


Amy Blood,
'17 MD



MD

The graduates recited the Declaration of Geneva, the modern version of the physician's oath, that same one they took as first-year medical students.



◆ On May 13, the 29 members of the Physician Assistant (PA) Program's Class of 2017 received their Master of Medical Science degrees.

◆ Ninety-one students in Feinberg's Doctor of Physical Therapy (DPT) degree program graduated April 21, at the Navy Pier Grand Ballroom. Pictured (left to right) Jules Dewald, PT, PhD, chair of Physical Therapy and Human Movement Sciences; DPT/PhD Dean's Award Recipients Anita Nayo Hill, DPT, PhD, Mark Hoggarth, DPT, PhD, and Victor Joe Kopke, DPT, PhD; and Robert Rosa, MD, vice dean for regulatory affairs.



◆ The students took the PA Oath, pledging to place their patients' health and welfare first and to continue to expand their knowledge and skills in the pursuit of the highest standards of professionalism.



DPT

◆ (Left to right) Marjorie Johnson Hilliard, PT, EdD, associate chair of professional education; Clinical Education Award Recipients Liesel von Gontard, DPT, and Rachel Krupski, DPT; and Krista Van Der Laan, PT, DPT, assistant chair of clinical education.



DPT

Topping-Off Ceremony Marks Milestone

WRITTEN BY *Anna Williams*

CONSTRUCTION OF SIMPSON QUERREY BIOMEDICAL RESEARCH CENTER MOVES FORWARD

On June 22, a ceremonial steel support beam was set atop the Louis A. Simpson and Kimberly K. Querrey Biomedical Research Center in a

THE BUILDING BY THE NUMBERS: PHASE ONE

200 construction team members

600K square feet

14 stories tall

9 floors dedicated to biomedical research

“topping-off” ceremony that marked a major milestone in the construction of the 14-story, 600,000-square-foot building, which will significantly expand the medical school’s research enterprise.

At the event, Northwestern benefactors, medical school faculty and staff, and leaders from Northwestern Memorial Healthcare and Ann & Robert H. Lurie Children’s Hospital of Chicago signed the steel beam before it was hoisted above Superior Street.

“Today marks a great moment for the medical school and the university, our hospitals, the scientific community and, hopefully, our patients,” said Eric G. Neilson, MD, vice president for Medical Affairs and Lewis Landsberg Dean.

Neilson thanked Louis Simpson and Kimberly Querrey, whose naming gift was critical to the construction of the new center; Stanley Manne of the Stanley Manne Children’s Research Institute, affiliated with Lurie Children’s Hospital; John Potocsnak, whose

gift supported the new building’s lobby and laboratory floors; the Judd A. and Marjorie Weinberg Family Foundation; Andrew and JoAnn Senyei; and Howard Trienens, all who have made generous gifts to fund the new building.

The first phase of the Simpson Querrey Biomedical Research Center is scheduled to be completed in late 2018 with 14 stories, including nine laboratory floors dedicated to biomedical research.

Designed to support collaboration among scientists throughout Northwestern, the building will connect floor-by-floor to the Robert H. Lurie Medical Research Center. Stanley Manne Children’s Research Institute will also occupy four floors in the new building.

“It’s nice to go up in the rankings and all that. But we are in the business of making



Kimberly K. Querrey and Louis A. Simpson

people’s lives better. And that’s what’s going to happen in this building,” said Morton Schapiro, PhD, president of Northwestern University.

After the beam was raised, a lunch followed for both event attendees and more than 200 construction team members on the project.

The Simpson Querrey Biomedical Research Center is also designed to accommodate future expansion, up to an additional 15 laboratory floors during future phases, with an eventual build-out capacity of more than 1.2 million square feet.



The ceremonial steel beam was set in place atop the Louis A. Simpson and Kimberly K. Querrey Biomedical Research Center on Superior Street.

Pipeline Programs Inspire High School Students to Pursue Careers in Medicine

WRITTEN BY *Anna Williams*



Marcus Byrd, center, a first-year medical student at Feinberg, co-led an anatomy lab visit for Northwestern Medicine Scholars last spring.

LUIS ORTIZ JUAREZ has been hooked on medical and science-based TV shows, like *House* and *The X-Files*, ever since he came to the U.S. from Mexico in middle school. But while he has always held a passion for science, the 2017 George Westinghouse College Preparatory High School graduate wasn't sure a career in medicine was for him — until his freshman-year guidance counselor encouraged him to apply for the Northwestern Medicine Scholars Program.

"Although I had considered the field of medicine before, I didn't know if I was going to be able to carry through my studies, and I was really nervous about the pressure," Juarez said. "This program not only expanded my scientific knowledge, but really helped my confidence as well."

Northwestern Medicine Scholars — a partnership between Westinghouse, Feinberg

School of Medicine and Northwestern Memorial Hospital — was designed to inspire outstanding students from underrepresented populations to explore future careers as physicians or biomedical scientists. Founded in 2011 by Erica Marsh, MD, '08 MSCI, '08 GME, adjunct associate professor of Obstetrics and Gynecology, the longitudinal program offers a select group of high-schoolers at Westinghouse the opportunity to attend intensive summer lectures and learning activities, receive one-on-one mentoring from Feinberg faculty, and experience first-hand what it's really like to enter the medical profession.

Juarez's first summer in the program was focused on the field of neurology and neurosurgery, and led by the late Andrew Parsa, MD, PhD, the previous chair of Neurological Surgery. "That's when I realized what I wanted to go into — and I never would have felt that



way if I didn't have the exposure I got in this program," said Juarez, whose current mentor is Jason Ong, PhD, associate professor of Neurology. "I love medicine and now I can't imagine my life without it."

Juarez, who plans to major in neuroscience, headed to the University of Pennsylvania this fall on a full scholarship.

Inspiring Future Physicians and Scientists

Juarez was just one of 18 exceptional students at Westinghouse — a diverse, selective enrollment public high school in Chicago's East Garfield Park neighborhood — enrolled in the Northwestern Medicine Scholars Program last spring.

"Our student Northwestern Medicine Scholars are amazing," said Clyde Yancy, MD, MSc, vice dean for Diversity and Inclusion, Magerstadt Professor and chief of Cardiology in the Department of Medicine. Yancy directs the Northwestern Medicine Scholars Program. "These young men and women from Westinghouse hold our hope for the future. They will be our future healthcare providers, future investigators, future health policy leaders and hospital executives."

The program is one of a variety of such initiatives at Feinberg that aim to bring bright, underrepresented students into the biomedical pipeline, including the Health Professions Recruitment & Exposure Program, which helps students from Chicago high schools discover

careers as health professionals; a summer research program hosted by the Robert H. Lurie Comprehensive Cancer Center; and a massive open online course that helps students explore health careers, developed by Melissa Simon, MD, '06 GME, the George H. Gardner Professor of Clinical Gynecology.

Teresa Woodruff, PhD, chief of Reproductive Science in Medicine in the Department of Obstetrics and Gynecology also heads the Women's Health Science Program, which provides science education programs to young women from underserved communities, as well as the Oncofertility Saturday Academy for high school students.

A Holistic Approach to Success

Students in the Northwestern Medicine Scholars Program apply during their freshman year and continue with their cohort for the next three years. "The program takes high school students from college-naïve families, who are growing up in challenging socioeconomic circumstances but are clearly focused on excellence, and introduces them to role

"OUR ULTIMATE GOAL IS TO HAVE STUDENTS SEE THEMSELVES AS FUTURE PHYSICIANS AND BIOMEDICAL SCIENTISTS, TO GO TO COLLEGE, AND TO PERSIST — AND THEY HAVE BEEN."

models, educational resources and mentors that will prepare them for success at the college level and beyond," Yancy said. "This is how Northwestern Medicine intends to fuel the pipeline that will enable health equity."

At an NM Scholars event last spring, the students joined Yancy on a visit to Feinberg's Anatomy Lab. Led by lab director Larry Cochard, PhD, associate professor of Medical Education and Cell and Molecular Biology, the students spent the afternoon huddled around dissection lab tanks in small groups, exploring basic human anatomy and learning about the medical

school experience from three first-year medical students, Christopher Chung, Ian Hollyer and Marcus Byrd, who assisted with the event.

"I love programs like these, because it's really important for students on the medical track to have mentors every step of the way," said Byrd, who also volunteered with NM Scholars during the summer intensive. "One thing that I feel minority students often lack is social capital, or not having a family member who works in medicine. So it's really great when you can point to someone who looks like you who has done this, and who can help get you on track to where you need to go."

Since its inaugural graduating class in 2014, NM Scholars has seen a 100 percent college matriculation rate. "Our ultimate goal is to have students see themselves as future physicians and biomedical scientists, to go to college, and to persist — and they have been," said Janet Rocha, PhD, a postdoctoral fellow at Feinberg who helps coordinate the program and is currently conducting a study to track the program's alumni.

Luis Ortiz Juarez, left, and Kayla Lambert, center, both high school students from George Westinghouse College Prep, looked on as lab director Larry Cochard, PhD, right, explained the anatomy of a cadaver.



Expert in Ovarian Biology Makes

Revolutionary Strides in Reproductive Health

WRITTEN BY *Anna Williams and Marla Paul*

WOODRUFF RECEIVES GUGGENHEIM FELLOWSHIP

Teresa Woodruff, '89 PhD, chief of Reproductive Science in Medicine in the Department of Obstetrics and Gynecology, has been named a 2017 Guggenheim Fellow in support of her research into reproductive health and fertility preservation.

Woodruff is one of 173 preeminent scientists, scholars and artists selected this year by the John Simon Guggenheim Memorial Foundation. The fellowship is awarded on the basis of past achievement and extraordinary promise.

2013
TIME'S MOST
INFLUENTIAL
PEOPLE

2017
GUGGENHEIM
FELLOW

expert in ovarian biology. She pioneered the field of oncofertility, which pairs oncology with reproductive endocrinology to expand fertility options for cancer survivors, and is the founding director of the international Oncofertility Consortium at Northwestern. She is also a leading advocate for sex inclusion in biomedical research.

"The Department of Obstetrics and Gynecology is extraordinarily proud of Dr. Woodruff for her appointment as a Guggenheim Fellow for her impressive achievements and exceptional promise for future accomplishments," said Serdar Bulun, MD, chair and John J. Sciarra Professor of Obstetrics and Gynecology.

The fellowship will support Woodruff's research into determining how inorganic elements, such as iron or lead, impact the health of egg and sperm cells collected around the globe. "A global accounting of germ cell health from humans to corals is an exciting new venture that will have big dividends as we think about the impact of a changing environment on health," said Woodruff, also the Thomas J. Watkins Memorial Professor of Obstetrics and Gynecology.

Woodruff has been a member of Feinberg's faculty since 1995. She was named one of the 100 Most Influential People in the World by *Time* magazine in 2013, and received the Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring in 2011, among numerous other awards.

Woodruff is also a member of the Robert H. Lurie Comprehensive Cancer Center of Northwestern University and a professor at the McCormick School of Engineering and the Weinberg College of Arts and Science.

WOODRUFF PIONEERED THE FIELD OF ONCOFERTILITY, WHICH PAIRS ONCOLOGY WITH REPRODUCTIVE ENDOCRINOLOGY TO EXPAND FERTILITY OPTIONS FOR CANCER SURVIVORS.



3-D PRINTED OVARIES PRODUCE HEALTHY OFFSPRING

The brave new world of 3-D printed organs now includes implanted ovary structures that, true to their design, actually ovulate, according to a Northwestern Medicine study published in *Nature Communications*.

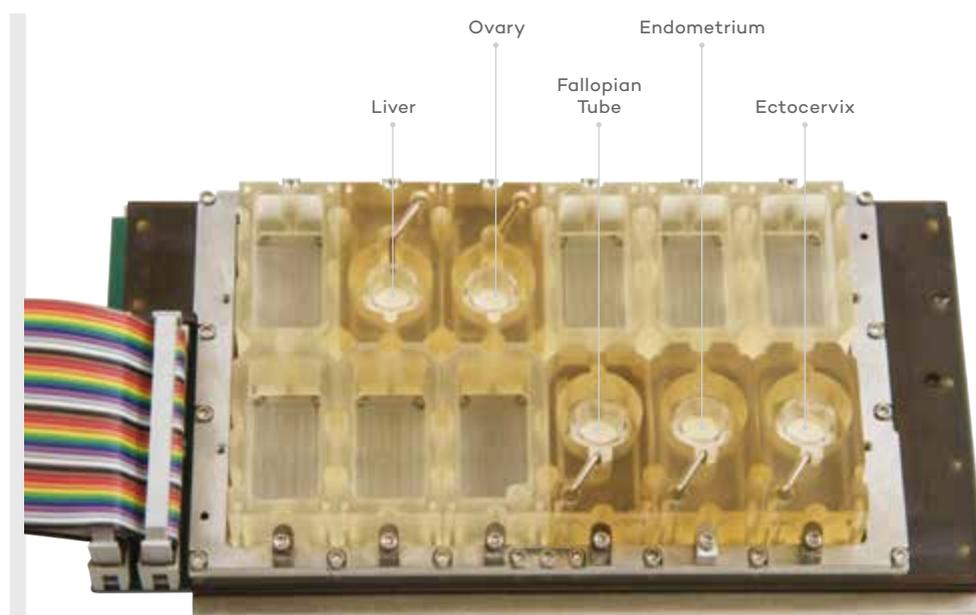
By removing a female mouse's ovary and replacing it with a bioprosthetic ovary, the mouse was able to not only ovulate but also give birth to healthy pups. The moms were even able to nurse their young.

The bioprosthetic ovaries are constructed of 3-D printed scaffolds that house immature eggs, and have been successful in boosting hormone production and restoring fertility in mice, which was the ultimate goal of the research.

"This research shows these bioprosthetic ovaries have long-term, durable function," Woodruff said. "Using bioengineering, instead of transplanting from a cadaver, to create organ structures that function and restore the health of that tissue for that person, is the holy grail of bioengineering for regenerative medicine."

What sets this research apart from other labs is the architecture of the scaffold and the material, or "ink," the scientists are using, said Ramille Shah, PhD, assistant professor of Surgery in the Division of Organ Transplantation and of Materials Science and Engineering at the McCormick School of Engineering.

The scientists' sole objective for developing the bioprosthetic ovaries was to help restore fertility and hormone production in women who have undergone adult cancer treatments or those who survived childhood cancer and now have increased risks of infertility and hormone-based developmental issues.



EVATAR is a female reproductive tract that fits in the palm of one's hand. Each divided compartment within the cube contains a 3-D model of a different part of the reproductive tract, a personalized model of the reproductive system to test new drugs for safety and effectiveness.

FEMALE MENSTRUAL CYCLE IN A DISH

Northwestern Medicine scientists developed a miniature female reproductive tract that fits in the palm of your hand and could eventually change the future of research and treatment of diseases in women's reproductive organs. The research was published in *Nature Communications*.

This new 3-D technology — called EVATAR — is made with human tissue and will enable scientists to conduct much-needed testing of new drugs for safety and effectiveness on the female reproductive system. EVATAR also will help scientists understand diseases of the female reproductive tract such as endometriosis, fibroids (which affect up to 80 percent of women), cancer and infertility.

The ultimate goal is to use stem cells of an individual patient and create a personalized model of their reproductive system.

EVATAR, which resembles a small cube, contains 3-D models of ovaries, fallopian tubes, the uterus, cervix, vagina and liver with special fluid pumping through all of them that performs the function of blood.

"This is nothing short of a revolutionary technology," said Woodruff, lead investigator on the research.

The organ models are able to communicate with each other via secreted substances, including hormones, to closely resemble how they all work together in the body. The project is part of a larger National Institutes of Health effort to create "a body on a chip."

The research was supported by grants UH2ES022920 from the National Institute of Environmental Health Sciences and UH3TR001207 from the National Center for Advancing Translational Sciences, both of the National Institutes of Health. The research also was supported by the Office of Research on Women's Health and the National Institute of Child Health and Human Development.

A microscopic image of an immature mouse egg, surrounded by supportive cells, after it has been housed in a bioprosthetic ovary scaffold for six days.

RESEARCH BRIEFS

CLINICAL TRIALS

COLD VIRUS, STEM CELLS TESTED TO DESTROY DEADLY BRAIN CANCER



Northwestern Medicine investigators are conducting a phase I clinical trial to test a

brand new type of neural stem cell therapy that works with a common cold virus to seek out and attack lethal and aggressive brain cancer in patients newly diagnosed with malignant glioma.

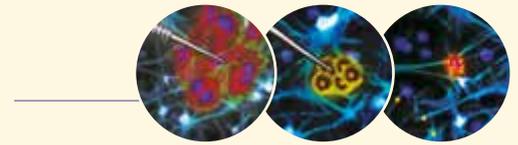
The novel drug to treat malignant glioma, notorious for recurring after typical bouts of standard cancer treatment, was developed

by a Northwestern scientist and has been approved as an investigational drug by the Food and Drug Administration (FDA).

“We have discovered that combining stem cells with a virus causes the new drug to react like a cancer-seeking missile targeting cancerous cells in the brain,” said principal investigator Maciej Lesniak, MD, the Michael J. Marchese Professor and chair of Neurological Surgery (left). “If it works in humans, it could be a powerful weapon against brain cancer and an option that our patients are desperate for.”

One reason malignant glioma recurs so often is because a small subpopulation of cancer cells, often deep in the brain tissue, is highly resistant to chemotherapy and radiation.

The pre-clinical work done by Lesniak and his team has shown that the approach being tested at Northwestern Medicine can target this



population of therapy-resistant cells, further delaying and sometimes even preventing tumor recurrence.

“We haven’t seen significant progress in the last decade for patients with a brain tumor, and that is why it’s crucial to do everything we can to find a better treatment for brain tumors,” said Roger Stupp, MD, chief of Neuro-oncology in the Department of Neurology and a co-investigator on this trial (right). “Combining novel therapy with medical expertise, we are able to get one step closer to eradicating this lethal disease.”

The team of scientists are now starting to test the safety and dosage of the treatment in patients at Northwestern Memorial Hospital.

The study was funded by the National Institutes of Health and the National Institute of Neurological Disorders and Stroke grant U01NS069997.

CLINICAL TRIALS

Spherical Nucleic Acid Drug Injected into Humans Targets Brain Cancer



The first drug using spherical nucleic acids (SNAs) to be systemically given to humans has been developed

by Northwestern University scientists and approved by the FDA as an investigational new drug for an early-stage clinical trial in the deadly brain cancer glioblastoma multiforme.

The drug is able to cross the challenging blood-brain barrier to reach tumors in animals, where it turns down a critical cancer-causing gene. Now, a Phase 0 clinical trial launched at the Robert H. Lurie Comprehensive Cancer Center of Northwestern University and Northwestern Medicine will investigate the drug’s ability to reach tumors in humans.

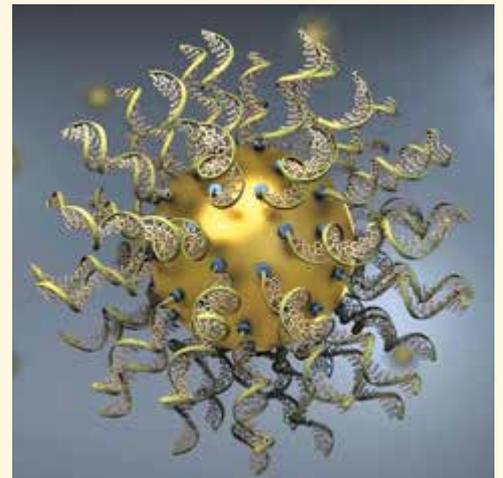
Consisting of short snippets of RNA densely arranged on the surface of spherical gold nanoparticles, the drug changes

the genetic makeup of the tumor cells and dampens their ability to divide. It targets the gene BCL2L12, which is involved in apoptosis, or programmed cell death.

Chad Mirkin, PhD, professor of Medicine in the Division of Hematology and Oncology (left), and his group invented SNAs, and Alexander Stegh, PhD, assistant professor of Neurology in the Division of Neuro-oncology (right) identified the gene to target.

”
The drug changes the genetic makeup of the tumor cell and its ability to divide.

“If the spherical nucleic acids cross the barrier and localize in the brain, the implications go beyond glioblastoma. This would give us the ability to target diseases of the brain by targeting pathways that we know are



Spherical nucleic acids contain short pieces of RNA densely arranged on the surface of gold nanoparticles.

associated with different diseases, including Huntington’s, Parkinson’s and Alzheimer’s diseases,” said Mirkin, who is also the George B. Rathmann Professor of Chemistry at the Weinberg College of Arts and Sciences and director of Northwestern’s International Institute for Nanotechnology.

CLINICAL BREAKTHROUGHS

Leaving Segregated Neighborhoods Reduces Blood Pressure for African-Americans



The systolic blood pressure readings of African-Americans dropped between one to five points when they moved to less segregated neighborhoods, reports a new Northwestern Medicine study published in *JAMA Internal Medicine*.

It is the first study to look at the longitudinal effects of living in less segregated areas on blood pressure and to compare these effects within the same individuals. Previous research showed racial residential segregation is related to a prevalence of hypertension at a single point in time.

“This study provides stronger, more direct evidence that segregation impacts blood pressure and harms the health of African-Americans,” said lead author Kiarri Kershaw, PhD, MPH, assistant

professor of Preventive Medicine in the Division of Epidemiology. “I believe it’s related to the stress of living in these neighborhoods.”

Less stress, achieved by decreasing exposure to violence and improving opportunities for socioeconomic mobility, is likely a key factor in blood pressure reductions, Kershaw said. The change in blood pressure was not related to poverty or household income, but increases in educational attainment were related to reductions in blood pressure.

The study examined longitudinal associations of racial residential segregation with blood pressure in more than 2,000 African-American adults followed for approximately 25 years as participants in the national Coronary Artery Risk Development in Young Adults study.

Systolic blood pressure dropped one to five points after a move to a less segregated neighborhood.



The research is supported by grants P60 MD002249 from the National Institute on Minority Health and Health Disparities, HHSN268201300025C, HHSN268201300026C, HHSN268201300027C, HHSN268201300028C, HHSN268201300029C, HHSN268200900041C and AG0005 from the National Heart, Lung and Blood Institute and the Intramural Research Program of the National Institute on Aging, all of the National Institutes of Health.

NEW DISCOVERIES

SCIENTISTS DISCOVER CAUSE OF DEADLY SYNDROME AFTER LUNG TRANSPLANTATION



A subset of immune cells called nonclassical monocytes (NCMs), previously unknown to reside in the lungs, plays a key role in driving primary graft dysfunction (PGD), the leading cause of death after lung transplantation.

The Northwestern Medicine study, published in *Science Translational Medicine*, also demonstrates that targeting these cells could lead to novel treatments for PGD, a complication that currently impacts more than half of transplant patients.

“This is a widespread, lethal problem and the biggest reason why lung transplant patients experience both early death and long-term problems. So if you can fix PGD, you can really fix a lot about transplantation,” said principal investigator Ankit Bharat, MD, assistant professor of Surgery in the Division of Thoracic Surgery. “Now we know what causes it, and we can develop a treatment for it.”

PGD is a severe form of lung injury that develops when the recipient’s neutrophils — white blood cells — are recruited into the transplanted lung, initiating the inflammatory cascade and causing tissue damage. While it has been understood that neutrophils were the main effector cells seen in PGD, the mechanisms that drive their influx into the lung were unknown. Further, targeting the patient’s neutrophils was not considered a practical strategy for treatment, given that those same cells are critical for defending the body against pathogens.

This study was supported by National Institute of Health grants T32 DK077662, P01 AG049665, P01 HL071643 and HL125940; the American Society for Transplant Surgery; Department of Defense grant PR141319; the Thoracic Surgery Foundation; the American Lung Association; and the Society of University Surgeons.

MEDIA SPOTLIGHT



More Health Problems Reported With Hair and Skin Products

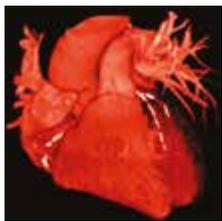


We rub, pour, sprinkle and spray them all over our bodies, so you'd hope cosmetics would undergo serious safety oversight before they get into our hands.

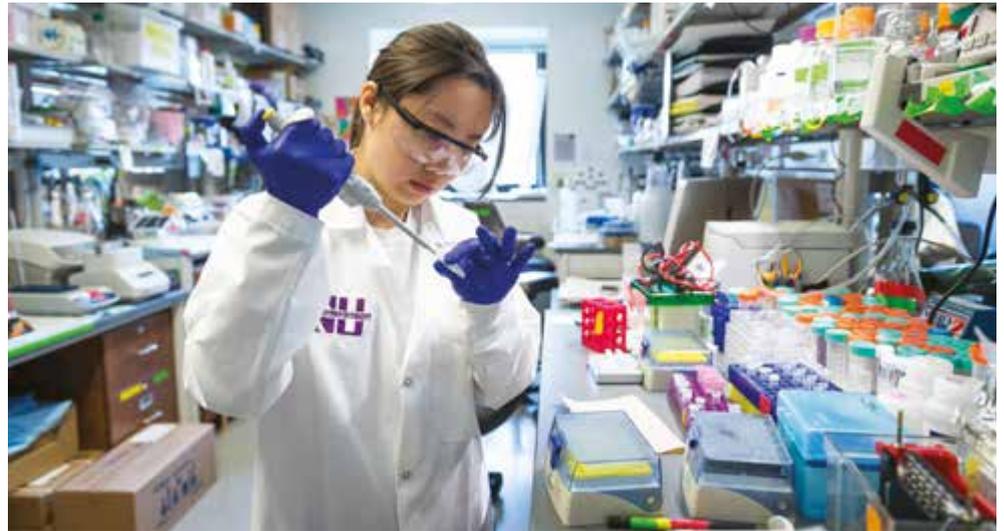
But in fact, the cosmetics industry is largely self-regulated, with no requirements for approval before going on the market. And once on the market, there are few systems in place to monitor the safety of personal care products. "You can start making a cosmetic and start selling it the next day without any kind of permission from the FDA," said Steve Xu, MD, a resident in Dermatology and author of a study on problems with personal care products.

STAT

Risk Scores for Preventing Heart Disease and Stroke Must Take the Long View



"Imagine your financial adviser using information she gathered from you one day in your mid-30s to guide your investments through your mid-60s. That's probably not an effective strategy. Yet it's akin to what cardiologists like us have traditionally done for our patients. We think there's a better way," wrote Kunal Karmali, '07 MD, '14 MS, '14 GME, instructor of Medicine in the Division Cardiology, and Mark Huffman, MD, MPH, '09 GME, assistant professor of Preventive Medicine and of Medicine in the Division Cardiology in an opinion piece.



CRAIN'S
CHICAGO BUSINESS

Romance Blossoming Much Earlier Between Universities and Big Pharma

Engineering new pharmaceuticals is risky, achingly slow and astronomically expensive. In search of better ways to defray those costs and speed the path to success, Chicago's elite research universities are partnering with the major pharmaceutical companies, ushering in a new era of early-phase collaboration.

"Historically, there has always been a relationship (between pharma and universities) to drive clinical trials, but now we try to move that to an earlier, discovery stage," said Leonidas Platanias, MD, PhD, director of the Robert H. Lurie Comprehensive Cancer Center of Northwestern University, which recently struck a deal with AbbVie. Under the deal, Northwestern will gain access to new therapies developed by AbbVie and money to further research them. AbbVie will have exclusive licensing rights to any discoveries that arise.

THE WALL STREET JOURNAL

To Treat Depression, Try a Digital Therapist



Digital interventions for depression need to continue evolving with technology to remain effective, explained Stephen Schueller, PhD, assistant professor of Preventive Medicine. "The future is trying to better understand how to make these apps

and sites engaging. That will include clinical psychologists working with experts in augmented reality, virtual reality and gaming to develop mobile solutions that are truly novel." Schueller heads a website called PsyberGuide that uses a standardized rating system to help consumers select products and apps for various mental-health conditions.

FACULTY AWARDS & HONORS



Daniel Brat, MD, PhD, a prominent neuropathologist and brain tumor investigator, was named chair of Pathology. Brat was previously a professor and vice chair for Translational Programs in the Department of Pathology and Laboratory Medicine at Emory University School of Medicine.

📷 1

Karl Bilimora, MD, '08 MS, '10 GME, director of the Northwestern Surgical Outcomes and Quality Improvement Center and the John Benjamin Murphy Professor of Surgery and Medical Social Sciences, and **Sarki Abdulkadir, MD, PhD**, John T. Grayhack, MD, Professor of Urological Research and professor of Pathology, were inducted into the American Society for Clinical Investigation.

📷 2,3

Shira Dinner, MD, assistant professor of Medicine in the Division of Hematology and Oncology, received a 2017 Cancer Clinical Investigator Team



Leadership Award from the National Cancer Institute (NCI). The award recognizes and supports outstanding mid-career clinical investigators who work at NCI-designated cancer centers and participate extensively in NCI-funded collaborative clinical trials. 📷 4

Donald Lloyd-Jones, MD, ScM, senior associate dean for Clinical and Translational Research and chair of Preventive Medicine, was named Physician of the Year by the American Heart Association. He was also inducted into the Association of American Physicians.

Jeffrey Barsuk, '99 MD, '02 GME, '10 MS, professor of Medicine in the Division of Hospital Medicine and of Medical Education, received the 2017 Excellence in Research Award from the Society of Hospital Medicine for his decade-long research into optimizing clinical performance, using simulation technology



within a mastery learning theoretical framework. 📷 5

Multiple faculty were recognized at Feinberg's fifth annual Honors Day. *Harry N. Beaty Honors Day Speaker: Samer Attar, MD*, assistant professor of Orthopaedic Surgery, was selected by students for this honor. He shared his experience serving as a volunteer physician with the Syrian American Medical Society.

George H. Joost Outstanding Teaching Awards: Thomas Corbridge, MD, professor of Medicine in the Division of Pulmonary and Critical Care and of Physical Medicine and Rehabilitation, for outstanding teaching in a large-group setting during the first year of medical school curriculum.

Katherine Watson, JD, adjunct associate professor of Medical Education and Obstetrics and Gynecology, for outstanding teaching in a large-group setting during the second year of medical school curriculum.



David Salzman, '05 MD, Med, '09 GME, assistant professor of Emergency Medicine and Medical Education, for excellence in the clinical teaching of medical students.

Michael M. Ravitch Award: Cynthia Barnard, '16 PhD, MBA, assistant professor of Medicine in the Division of General



the American Society of Nephrology. This research career development award will fund his work on polycystic kidney disease. *Read more about DeCaen's work on page 15.*

Feinberg's Women Faculty Organization chose **Amy Paller, MD**, Walter J. Hamlin Professor and chair of the Department



and Behavioral Sciences, and Psychology; director of the Institute for Sexual and Gender Minority Health and Wellbeing; and co-director of the Third Coast Center for AIDS Research, was chosen as one of NBC News' #Pride30 changemakers, innovators and rising stars.



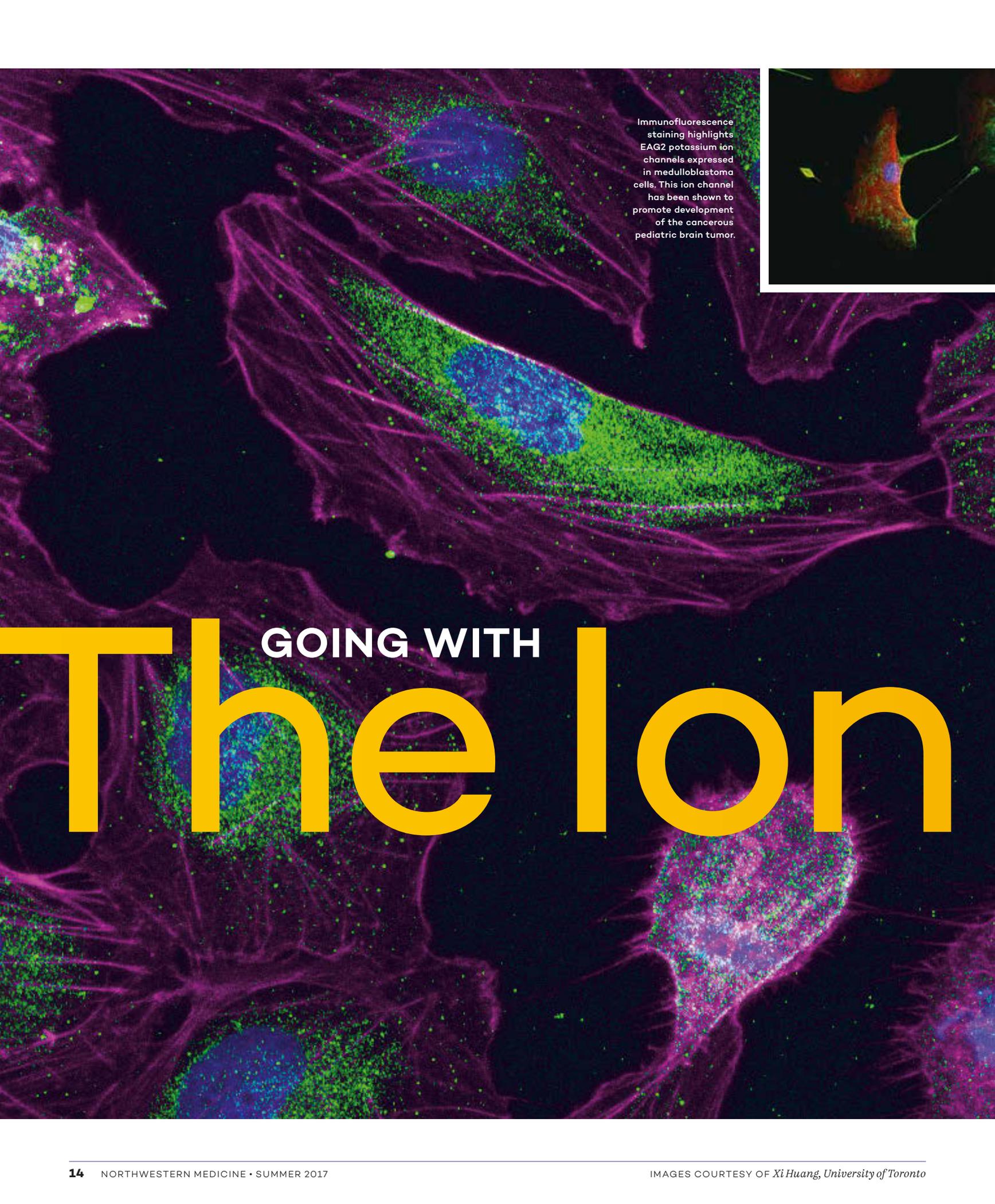
Samer Attar, MD, speaking at Honors Day

Internal Medicine and Geriatrics, for outstanding teaching in a small-group setting. 📷 6

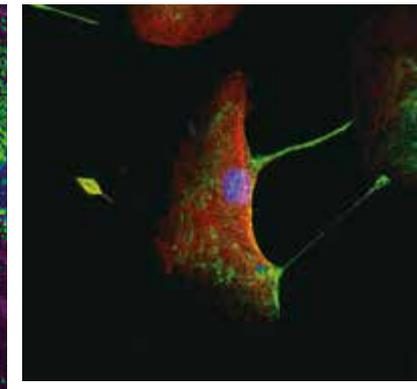
Paul DeCaen, PhD, assistant professor in Pharmacology, received the Carl W. Gottschalk Research Scholar award from

of Dermatology, as the inaugural winner of the first Paula H. Stern Award for Outstanding Women in Science and Medicine.

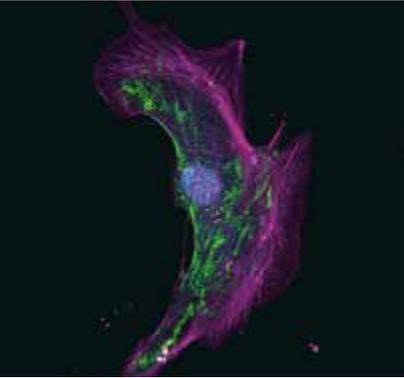
Brian Mustanski, PhD, professor of Medical Social Sciences, Psychiatry



Immunofluorescence staining highlights EAG2 potassium ion channels expressed in medulloblastoma cells. This ion channel has been shown to promote development of the cancerous pediatric brain tumor.



GOING WITH The Ion



A growing cohort of talented Northwestern Medicine scientists is working to unlock the secrets of ion channels and discover how these tiny molecular machines contribute to an array of diseases, from brain tumors and epilepsy to kidney disease and devastating immune deficiencies.

This group of investigators, including seasoned faculty like Alfred George Jr., MD, Magerstadt Professor and chair of Pharmacology, and newcomers like **Paul DeCaen, PhD**, assistant professor in the same department, are not only fundamentally altering understanding of disorders, they're also revealing how existing treatments work and pointing to potential new treatment strategies.

“All of this expertise provides fertile ground for making new discoveries,” says DeCaen, a former Howard Hughes and Harvard University fellow who joined Northwestern in October 2016. “And a world-class hospital here gives us access to the medical perspective on ion channel-linked diseases.”

THE SHAPE OF THINGS

Ion channels are a class of proteins that control the flow of ions such as calcium, sodium or potassium across the membranes of cells, DeCaen explains. Maintaining a proper flow of ions is critical to a multitude of bodily functions, from the transmission of messages between brain cells to the beating of the heart.

a gene called polycystic kidney disease 2 (PKD2). Mutations in the gene had been found in patients who develop large cysts in their kidneys that cause organ failure. Scientists knew the gene encoded an ion channel that controls the flow of ions, but did not know which ions. Work from DeCaen's lab pointed to potassium and sodium.

“We now know what ions move through the channel, but no one had any idea of what it looked like in three-dimensional space,” DeCaen says. “Since function follows form, we figured that this is an important knowledge gap to fill.”

FLOW

NORTHWESTERN MEDICINE SCIENTISTS ARE DIVING DEEP INTO THE STRUCTURE AND FUNCTION OF ION CHANNELS TO INFORM NEW THERAPIES.

“It seems like a simple job, but it ends up frequently being problematic,” he says.

Mutations in the genes that encode ion channels have been linked to many medical conditions. To understand how these mutations lead to disease, ion channel investigators try to piece together the three-dimensional molecular structures of ion channels.

For example, DeCaen and colleagues from the lab of Erhu Cao, PhD, at the University of Utah took this approach to better understand

So, the team chilled the protein to a very low temperature and then used a powerful electron microscope to get the first glimpse of the protein's configuration. The results were published in the journal *Cell* last year.

“Now that we know what the ion channel looks like, we can see how mutations that cause alterations in its structure may cause it to malfunction in the disease state,” he says. “We can start to do some ➔

pie-in-the-sky thinking about developing small molecules that can affect the ion channel's function."

For example, in polycystic kidney disease it is not clear whether mutations cause the PKD2 channel to be continually open, allowing an unending flow of ions, or if the mutation closes the channel. There might even be a mix of on/off effects, depending on the specific mutation. So, DeCaen and colleagues are using electrophysiological techniques to find out. Their results could inform the design of drugs to combat the disease.

DeCaen has also been consulting Northwestern clinicians about complications beyond cysts in patients with polycystic kidney disease. These clinical insights might provide clues on the function of these ion channels throughout the body and potentially suggest treatment strategies.

"In ion channel research, you need a broad range of expertise in medicine," DeCaen explains. "You need a neurologist, a cardiac arrhythmias expert and kidney disease experts. We have that large pool of scientists and clinicians here at Northwestern."

Working with George, and Jennifer Kearney, PhD, associate professor of Pharmacology, DeCaen is also probing the role of ion channels in epilepsy. His lab is recreating the structure of a bacterial version of an epilepsy-linked sodium channel as a first step toward recreating the mammalian version. So far, the work has yielded unexpected clinical benefits.

"This gave us our first glimpse into how anti-epileptic drugs work," DeCaen says. It has also suggested potential antibacterial treatments that would target the channel.

The applications of this line of research go even further: This summer, George and colleagues showed how mutations in a sodium channel called Nav1.9 can lead to a disorder where people are unable to feel pain. The findings, published in *The Journal of Clinical Investigation*, might have implications for the development of novel therapies for pain.

"Ion channels represent an under-appreciated class of druggable protein targets," says George. "A goal for the Department of Pharmacology has been to place ion channels at the center stage of research efforts to find new drug targets."

The molecular structure of a PKD2 channel with a drug blocking the ion pore.



MOVING PARTS

Meanwhile, Murali Prakriya, PhD, associate professor of Pharmacology, focuses on the Ca²⁺ release-activated Ca²⁺ (CRAC) channel. Originally described in immune cells, CRAC channels are found in the plasma membranes of most, if not all, human cells. When the channel opens, it allows calcium ions to flow into the cell, signaling functions such as gene expression and cell proliferation.

A growing number of diseases are associated with abnormalities in CRAC channel function including immunodeficiencies, muscular dystrophy and neurological diseases such as Alzheimer's disease.

"CRAC calcium channels are widespread and important for many biological processes, from the birth of cells to the death of cells," Prakriya says. "Therefore, dissecting how CRAC channel activity is controlled and regulated in different contexts is of great interest."

His lab is working to understand how CRAC channels operate and contribute to immune host defense mechanisms, the detection of allergens in the lung airways, and brain function.

"If you lose CRAC channel function through mutations, human patients develop devastating immune deficiencies and muscle

weakness," he explains. "Children born with these symptoms often die in the first six months of life. The simplest infections are quite dangerous to these children."

In a paper published in *Nature Communications* early this year, Prakriya worked with Megumi Yamashita, PhD, DDS, research assistant professor of Pharmacology, and Priscilla Yeung, a student in Feinberg's Medical Scientist Training Program, to reveal

how the CRAC channel opens and closes. This research identified the molecular structure in the channel that functions as the

gate, as well as the movements in the channel pore that open the gate.

First, the scientists used electrophysiology and microscopy techniques to systematically probe the contributions of different regions of the CRAC channel protein to pore opening, identifying an oily amino acid as the channel gate in the process. Then, computer simulations developed by University of Toronto collaborators helped reveal how this amino acid impedes ion conduction.

"In ion channels, the pore is usually filled with water, so one way to close the pore is to present an oily, hydrophobic chemical group in the pore to prevent water and ions from going through — similar to the way that oil and water don't mix. To open the pore,

"Ion channels represent an under-appreciated class of druggable protein targets."

the hydrophobic group swings out of the way, allowing the pore to fill with water and ions,” Prakriya explains. “The presence of the oily amino acid in the pore creates a closed channel state.”

These conclusions have important clinical implications. Some human mutations in the gene encoding the CRAC channel leave the gate open and cause uncontrolled bleeding, neurological problems and muscle weakness because the cells in these individuals have excessive levels of calcium all the time.

“We showed that one of these mutations affected the oiliness of the gate region, thereby chronically filling the pore with water and ions,” Prakriya says. “As a consequence, ions were going through when they shouldn’t.”

Prakriya’s lab is currently working to understand the molecular signals that open the hydrophobic gate and to identify small molecules that can interact with the gate to alter the channel’s activity. These could correct defects in cell signaling and ameliorate symptoms associated with aberrant CRAC channel activity seen in immune, muscular and neurodegenerative diseases.

TRANSLATING DISCOVERIES

While investigators like DeCaen and Prakriya focus on molecular-level details, Rintaro Hashizume, MD, PhD, assistant professor of Neurological Surgery and of Biochemistry and Molecular Genetics, is using mouse models of brain tumors to begin to translate basic

ion channel discoveries into experimental therapeutics.

Before he joined Northwestern in 2014, Hashizume collaborated with a team of ion channel investigators at the University of California, San Francisco, who figured out that medulloblastoma, a cancerous pediatric brain tumor, was enriched with Ether-a-go-go 2 (EAG2) potassium ion channels.

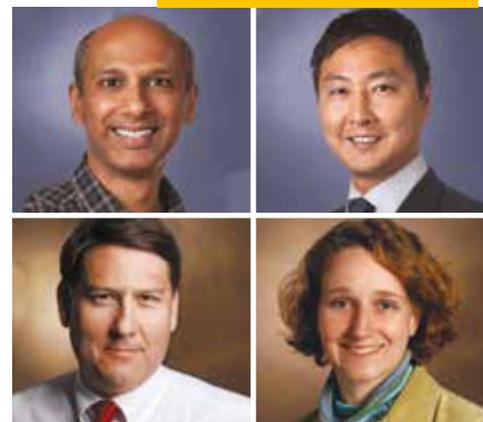
The EAG2 channel helps regulate the cell cycle and volume of cells, so the investigators searched for a drug that could inhibit it. They found that thioridazine, used to treat schizophrenia, did the trick. Hashizume gave the drug to mice with human medulloblastoma and showed that it stopped tumor growth and, more importantly, prevented metastasis, which occurs when the tumor spreads to other parts of the body, decreasing patient survival rates. The findings were published in *Nature Neuroscience*.

“That’s an important therapeutic advantage of the potassium ion channel blocker — if the tumor doesn’t metastasize you can focus on the management of the original tumor,” he says.

Hashizume has since launched a pediatric tumor research collaboration with George. Using cells derived from a Northwestern pediatric patient with a brain tumor, Hashizume created a mouse model that will allow the team to probe how the mutation affects ion channel function and test treatments that might correct the problem.

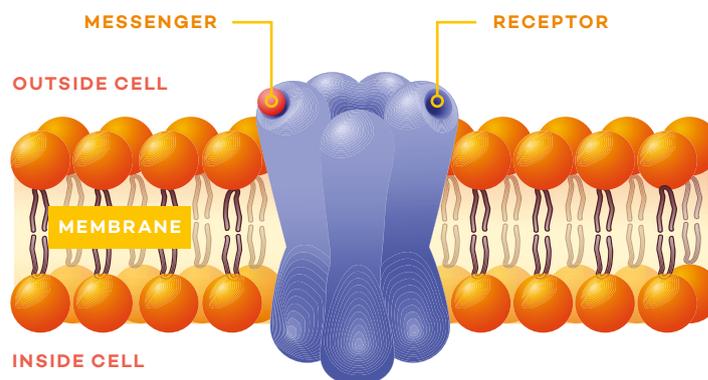
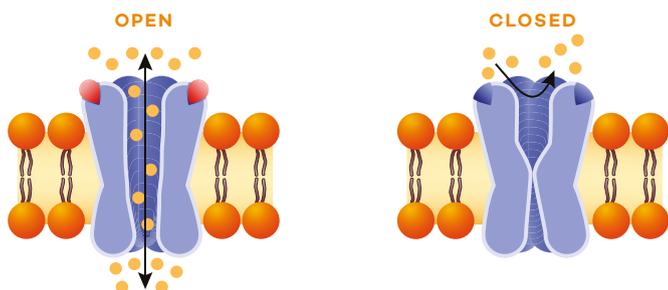
While this type of fundamental science and early translational research may not be fodder for a Hollywood blockbuster, DeCaen notes that it’s the type of research that may lead to big clinical gains in the long run. “When you get down to the nitty gritty of how a protein works, that is where we really make true breakthroughs,” DeCaen says. “Sometimes it takes a lot of sweat and hard work to try to understand the minutiae. But these types of studies have yielded a significant impact towards the development of therapeutic drugs that target ion channels.” ■

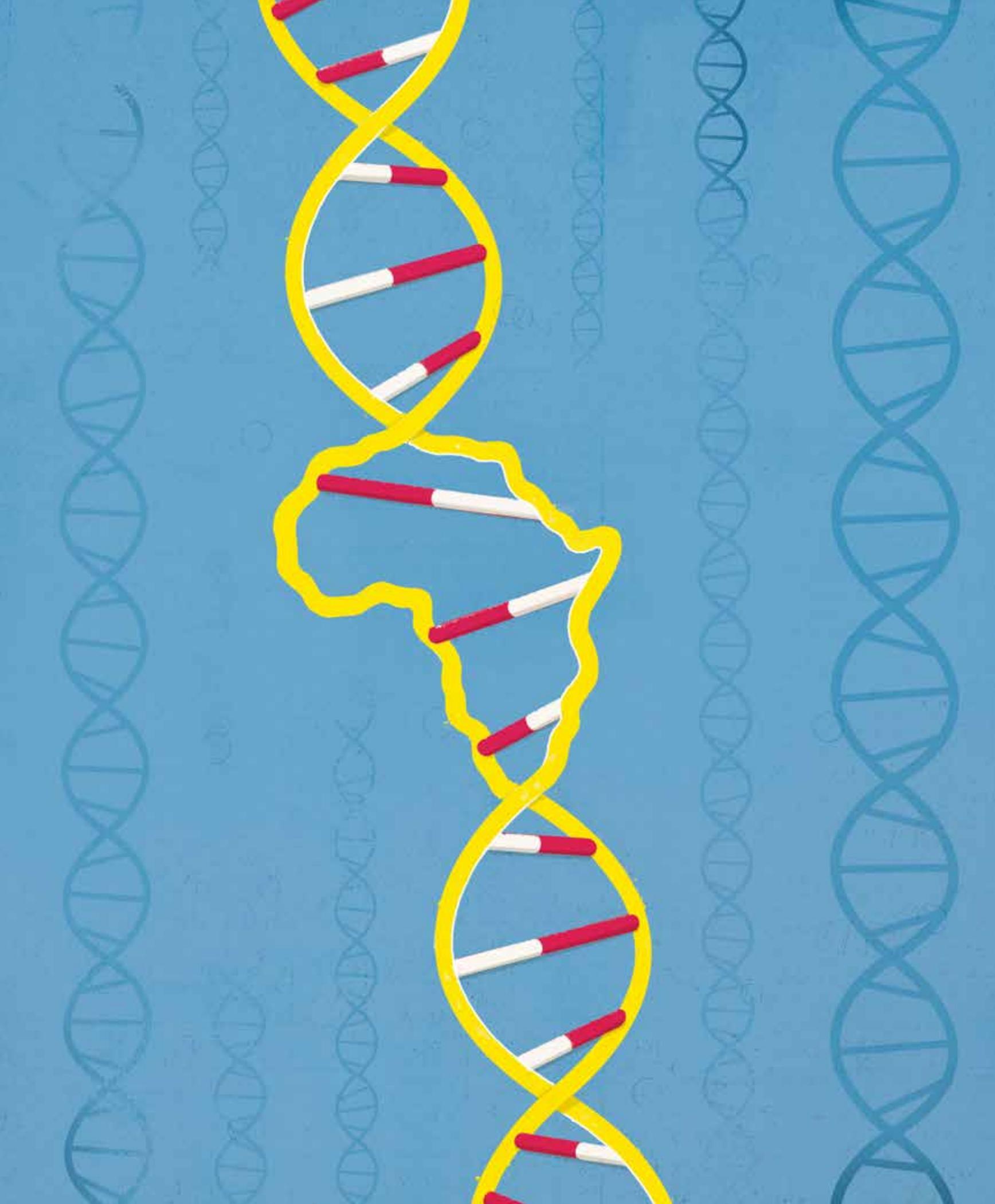
Murali Prakriya, PhD (top left), Rintaro Hashizume, MD, PhD (top right), Alfred George Jr., MD (bottom left), Jennifer Kearney, PhD (bottom right)



ANATOMY OF AN ION CHANNEL

Ion channels are a class of proteins that control the flow of ions such as calcium, sodium or potassium across the membranes of cells.





PHARMACOGENOMICS FOR ALL

Minoli Perera, PharmD, PhD, is on a mission to bring precision medicine to African-Americans.

Sometimes finding the appropriate drug for a patient comes down to an exercise of trial and error. Even though physicians take personalized factors into account when prescribing a medication, such as a patient's age or organ function, it is still common for people to experience adverse reactions or simply fail to respond to an initial therapy. That process is costly, potentially dangerous and means patients can spend time taking an ineffective drug that may unnecessarily expose them to side effects.

Physicians and scientists believe that the emerging field of pharmacogenomics — the study of how genetic variation affects drug response — will bring much-needed optimization to this process. Using key information already encoded in a person's unique genome, physicians hope to predict the medication that will be both safe and most effective for a patient.

"It has become very evident that there are mutations in the genome that predis-

pose people to very serious side effects, and that these relationships are predictable. If you have this information, you must use it," says Minoli Perera, PharmD, PhD, associate professor of Pharmacology. "Ten to 20 years from now, this won't even be a hot topic—it will just be what we do."

Eliminating a Health Disparity

But while the field has made important advancements in recent years, it's also been held back by a key limitation: Almost all research that has identified relevant biomarkers in the genome has been performed exclusively in populations of European descent. As a result, some novel genomic tests currently being pushed into the clinic may be virtually useless in patients of African descent or other minority populations, who carry genetic mutations different than Caucasian patients.

Perera has dedicated her career to making sure this disparity does not remain. A pioneer in the field of pharmacogenomics specifically for African-Americans, Perera is now the principal investigator of a five-year, \$7.5 million grant from the National Institute on Minority Health and Health Disparities.

Awarded last summer, the grant funds a project called ACCOuNT (African-American Cardiovascular pharmacogenomics CONsorTium), which aims to discover genetic variations specific to African-Americans to predict patient response to common cardiovascular drugs. The project will also begin to translate those findings in clinical settings.

For Perera, the motivation behind her work is fueled not only by the pursuit of scientific discovery, but also by a deep sense of social justice.

"Since these studies began 20 to 25 years ago, we have continued to only investigate people of European descent. And I think most people in the scientific community unconsciously don't realize that this is pushing us further back," she says. "There is a real lack of social justice in this world, and we can feel very powerless to do ➔

Some novel genomic tests currently being pushed into the clinic may be virtually useless in patients of African descent or other minority populations.



◀ Little research has been done on genetic variations specific to African-Americans and other minority populations.



▶ Perera lab members Cristina Alarcon, PhD, and Yilin Xu, PhD, work on a DNA gel analysis.

something about it. If this project helps in any way to make people feel heard — or feel that their problems and their experiences matter — then that’s something I can feel very good about.”

Accounting For All Patients

After earning doctorate degrees in pharmacy and pharmaceuticals in 2001 and 2003, Perera began a postdoctoral fellowship in pharmacogenomics at the University of Chicago, where she remained for 10 years until joining Northwestern in July of last year.

“Northwestern seemed like a very exciting institution that really had its eye on the personalized medicine initiative and the push for genome-guided therapy,” Perera says. “Many people say that the slogan for pharmacogenomics is ‘the right drug, at the right dose, to the right patient.’ That’s really the goal of what we’re doing.”

Her lab at Feinberg is now committed to making sure that the benefit of such personalized medicine will be made available to all patients. Along with ACCOuNT, Perera and her collaborators are also actively involved in a number of other research projects, including pharmacogenomics for inflammatory bowel disease and investigating the genome’s role in the regulation of drug-metabolizing enzymes in the livers of African-Americans.

Still, cardiovascular drugs and anticoagulants have always remained a key research focus for Perera.

In part, it’s because the population she studies is at a higher risk. Consider venous thromboembolism (VTE), a type of blood clot that forms in a vein that can be fatal if it migrates to the lungs. African-Americans have a 30 to 60 percent higher incidence rate of VTE compared to other populations, and they also suffer a higher mortality rate from the disease.

Extensive studies have identified two genetic markers that predispose people to clotting, and there are now tests used clinically to identify those most at risk. But the research had only been conducted in people of European descent — and in fact those two key variants don’t exist in populations of African descent.

“Many people say that the slogan for pharmacogenomics is ‘the right drug, at the right dose, to the right patient.’ That’s really the goal of what we’re doing.”

“That means if you had an African-American patient who kept having clots, the genetic test would come back negative — but that doesn’t mean they are not at risk,” Perera explains. “I thought it was important to discover something that would matter for African-American patients.”

In 2016, Perera and her team identified, for the first time, three common genetic variants in African-Americans that double a patient’s risk for VTE. The findings were published in the journal *Blood*.

“There’s still much work to do to get these genetic biomarkers into the clinic, but this is the first step,” Perera says. “I want everything we do to be translatable and useful to the clinic. My whole point is to give physicians tools that they can use if they have a diverse patient population.”

From Bench to Bedside

The goal of the ACCOuNT grant is to discover novel genetic variants relevant to pharmacology in African-Americans, but also to ensure that those findings quickly get translated into clinical use, where they can truly benefit patients.

“There needs to be an acceleration of the discovery and translation of pharmacogenomics in this population. That was the motivation for this grant,” says Perera, who



➤ Minali Perera, PharmD, PhD, associate professor of Pharmacology, has devoted her career to making sure everyone benefits from pharmacogenomics research.



Perera lab members, from left, Jamie Brewer, MD, Cristina Alarcon, PhD, Paula Friedman, PhD, Minali Perera, PharmD, PhD, Tanimia De, PhD, Yilin Xu, PhD, Wendy Hernandez, PhD, and Yizhen Zhong.



will conduct the research in collaboration with investigators at the University of Chicago and other academic medical centers.

The initial basic science component of the project will focus on identifying genetic variants that might affect either the response or dose of anti-clotting and anti-platelet drugs, such as Clopidogrel. The translational side will then use the resulting genetic variants to guide therapy in African-Americans.

The study, the first to investigate pharmacogenomics in African-Americans on this scale, plans to recruit thousands of participants throughout both Chicago and Washington, D.C.

Kevin O’Leary, MD, MS, chief of Hospital Medicine in the Department of Medicine, will help lead the grant’s translational efforts at the Northwestern site, along with Marc Rosenman, MD, associate professor of Pediatrics.

“This exciting project may illustrate new ways for us to improve the safety and effectiveness of medications,” Rosenman says. “We thereby might be able to improve patients’ overall satisfaction with healthcare and improve the regularity with which they take their prescribed medications.”

Beyond its fundamental goals, the project also has the potential to inform medicine in a much broader sense: As part of the grant, the investigators will build an African-American Genomics Common, a first-of-its-kind repository of participants’ genomic, transcriptomic and clinical data that the scientific community at large can access for future research.

“I created this because there are questions I want to answer, for sure. But there are so many questions — more questions than I could ever answer in an entire career in science,” Perera says. “I want to spur interest in this field. For the scientific community to be motivated to look at this population, they must have public data.”

At the same time, Perera notes that while ACCOuNT, and her lab’s research in general, is specifically focused on African-Americans and discovering variants in that group, much work is still needed

in pharmacogenomics for all minority populations.

“I came to this research very scientifically; the science is incredibly interesting, especially when you think about the genome and drug differences between populations,” she says. “But as I started to present my research, I realized how personal this is to so many. Somebody needs to be the voice to advocate for those patients we don’t have data for.”

Rosenman adds that he admires the way Perera thoughtfully elicits input from African-American patients and community organizations to help shape the way the studies will be conducted.

“In research, the United States historically has shortchanged the African-American and other minority populations,” Rosenman says. “Dr. Perera’s project is a step in the right direction in redressing the imbalance.”

“As I started to present my research, I realized how personal this is to so many. Somebody needs to be the voice to advocate for those patients we don’t have data for.”

TREATING WHOLE THE PERSON

Meet Jeffrey Linder, new chief of General Internal Medicine and Geriatrics.

One of the most important conclusions Jeffrey Linder, '97 MD, MPH, has drawn in his research to date is the simple fact that doctors are people, too.

That truth seems intuitive, but it has not always been obvious when investigating strategies to encourage physicians to stop prescribing unnecessary antibiotics.

"Doctors don't always seem to respond rationally, just like everybody else," explains Linder, Feinberg's new chief of General Internal Medicine and Geriatrics in the Department of Medicine. "If we want to change their behavior, we have to address the underlying reasons for it — the way people actually think and behave, not the way we hope they will. Wagging our finger and simply telling doctors they should stop doing something doesn't work."

Linder first became interested in antibiotic prescribing practices during his

residency at the University of California, San Francisco (UCSF).

"A young person who was a smoker came in with a cough. My preceptor said, 'We shouldn't prescribe antibiotics to somebody who has acute bronchitis, but for smokers we usually do,'" Linder recalls. "And I said, 'Why?'"

That question set Linder off on a path that he remains on today, nearly two decades later.

Leveraging Behavioral Science

Acute respiratory infections like the common cold are typically caused by viruses — not bacteria — so antibiotics won't help. But inappropriate antibiotics aren't just ineffective; they can also subject patients to adverse effects and promote the development of antibiotic-resistant "superbugs." Yet research suggests that 30 to 50 percent of antibiotic prescriptions in the United States are unnecessary.

Shortly after residency, Linder answered the very question he had posed to his preceptor and published a paper showing that smokers with acute bronchitis don't actually benefit from antibiotics any more or less than nonsmokers. He carried out several studies demonstrating that antibiotic prescribing rates are too high in general, and then pivoted his efforts to a more actionable line of inquiry: determining interventions to reduce inappropriate antibiotic prescribing.

Investigators have been trying to influence how clinicians make decisions for decades, but previous strategies — publishing clinical guidelines, educating physicians and patients, providing financial incentives — had only modest success.

"The reason doctors don't follow guidelines about antibiotic prescribing for upper respiratory infections is not because they don't know the science," explains Linder's long-time collaborator Stephen Persell, MD, MPH, associate professor of Medicine →

**“THE CHALLENGE IS
PULLING TOGETHER
AS AN INTEGRATED
HEALTH SYSTEM
THAT DOES CLINICAL
CARE, RESEARCH
AND EDUCATION ALL
EXCELLENTLY.”**



Dr. A. Linder, MD, MPH
Chief of General Internal
& Geriatric Medicine

in the Division of General Internal Medicine and Geriatrics. “There are other reasons: perceived patient demand, not knowing how to approach a patient with this expectation, overestimated fear of missing pneumonia and having a bad clinical outcome. Even fatigue may drive this to a degree.”

With the understanding that physicians aren’t always prescribing antibiotics for rational reasons, Linder and his colleagues decided to use insights from behavioral science to develop interventions.

In 2014, they published a study in *JAMA Internal Medicine* in which clinicians signed poster-sized commitments to avoid inappropriate antibiotic prescribing. Displaying the commitments in exam rooms led to a 20 percent decrease in inappropriate prescriptions compared to a control group.

In 2016, Linder’s group published research in *JAMA* demonstrating similar success with two additional inventions: In one, clinicians were required to enter justifications for prescribing antibiotics into patients’ records. In the other, clinicians received emails comparing their antibiotic prescribing rates with

20%

Displaying poster-sized commitments led to a 20% decrease in inappropriate antibiotic prescribing.

same techniques to address opioid prescribing and polypharmacy for the elderly.”

An Alumnus Returns Home

Research is just one area of focus for Linder. He also works in the clinic at Northwestern

Memorial Hospital when he’s not in the office leading the Division of General Internal Medicine and Geriatrics, a role he took on in March.

Linder’s career has come full circle with the new job: He attended Northwestern as an undergraduate student, where he met his wife, Debbie, and then earned his medical degree at Feinberg. After residency at UCSF, he completed a fellowship at Massachusetts General Hospital and received a master of public health degree from the Harvard T.H. Chan School of Public Health.

He went on to spend 15 years on the faculty at Harvard Medical School and as a general internist at Brigham and Women’s Hospital in Boston. He also directed Brigham and Women’s Primary Care Practice Based Research Network.

Now he’s back in Chicago where it all began.

“It’s been pretty cool,” Linder says with a laugh. “The city looks incredible —

much better than when I was a student here 20 years ago. And Northwestern has expanded in incredible ways, too. I left right before the new hospital went up in ’99, and now the whole campus is different.”

That expansion is part of the reason Linder chose to make the move.

“The scale of Northwestern is so impressive. The challenge is pulling together as an integrated health system that does clinical

care, research and education all excellently,” he explains. “I think we have fantastic potential to make that happen.”

“Jeff’s recruitment followed an extensive national search, and we could not have found a better fit for General Internal Medicine and our nascent academic health network,” said Douglas Vaughan, MD, chair of Medicine and Irving S. Cutter Professor of Medicine. “I am certain that he will have an enormous impact on our primary care network as it evolves.”

The scale in Linder’s division alone is formidable: The Department of Medicine’s largest division, with about 300 faculty members, General Internal Medicine and Geriatrics has the potential to touch more students and patients than perhaps any other. Its research programs span from quality improvement and safety to use of electronic health records to reducing disparities for historically underserved communities.

“We’re all interested in delivering, and improving the way we deliver, high quality primary care,” Linder says. “From an intellectual standpoint, being a general internist can be the most challenging, because we’re taking care of the whole person, through thick and thin.”

He hopes to instill his excitement about general internal medicine to the next generation.

“There’s nothing more rewarding, from the patient contact you get, to the unceasing variety,” he says. “As a student here myself, I got great clinical training and exposure to think hard about what we do every day, and the desire to see what we can do to make it better.”

“Jeff brings many skills and talents to the Division of General Internal Medicine and Geriatrics: the ability to critically and thoughtfully appraise the healthcare delivery system, the capability to develop relevant change strategies to improve healthcare, and the leadership needed to conduct vigorous practice-based research to test new approaches,” Persell says. “I am thrilled to work with him at Northwestern.”

Linder has already started a study at Northwestern to measure antibiotic prescribing practices at his new health system, and he won’t soon give up his interest in respiratory infections.

“American healthcare doesn’t do a great job treating these very common, simple infections,” he says. “Yet we have this expectation of doing ‘precision medicine’ very soon. We need to pay attention and get the simple things right, too.” ■



those of “top performers,” who had the lowest rates of inappropriate prescribing.

“People are social creatures, and we respond to the influence and perceptions of our peers. That’s an underutilized facet of human psychology in changing doctors’ behavior,” Linder says. He notes that these interventions are not only effective, they’re also inexpensive to implement and broadly applicable. “We’re hoping to use some of these

*New electronic health record
enables best of the best clinical practice
across Northwestern Medicine.*

PROJECT ONE

UNITES THE HEALTH SYSTEM

In early 2018, Northwestern Medicine will launch Project One, a bold initiative to create a unified electronic health record (EHR) platform across the entire health system. Currently integrating data from myriad clinical, research and educational entities to form a greater whole, Project One continues to be more than just a technological tool.

From averting falls to identifying risk for sepsis, Project One is already having a direct impact on patient care by helping clinicians

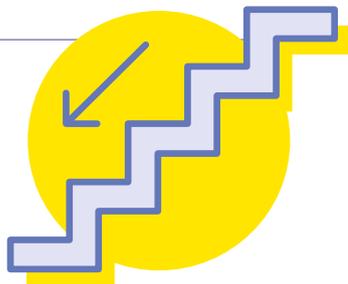
across the health system adopt “best of the best” practices. Clinical collaboratives — multidisciplinary teams focused on quality improvement and safety — have played a starring role in developing standardized protocols for Northwestern Medicine’s Epic-based EHR system.

“Collaboratives bring together clinicians from all our different sites to share successes and challenges on a variety of clinical situations,” says David Cooke, MD, vice president of quality for Northwestern Medicine HealthCare. “From these discussions,

we form multidisciplinary teams to implement best practices.”

Of the 30 clinical collaborative projects currently underway, half have focused on Project One. They’re accelerating collaboration and providing critical content for the unified Epic system. From the downtown Chicago medical center to west and north suburban locations, these teams are recommending essential procedures for the electronic record that will ultimately direct patient care throughout Northwestern Medicine. ➔

PREVENTING FALLS



Accidental stumbles never feel good, but a fall could be devastating for the hospitalized patient.

“In the inpatient setting, we are concerned not only about the patient’s risk of falling but also the risk of significant injury,” says Dave Chilicki, RN, a nurse clinician at Lake Forest Hospital. “If a cancer patient on blood thinners, for example, falls and hits their head, that event could lead to a subdural bleed and possible death.”

Given that falling is a leading cause of hospital-acquired injury across the country, fall prevention made Project One’s short list of critical must-haves for system standardization. “There were different philosophies,” explains Cooke. “Representatives from each of Northwestern Medicine’s regions came together and found the goodness in each of their approaches.”

Prior to the fall prevention collaborative, the west suburban facilities employed the evidenced-based Johns Hopkins Fall Risk Assessment Tool (JHFRAT). They also used a manual color-coded signage system outside patient rooms to alert clinical staff as well as “extended caregivers,” such as members of environmental services or engineering who might be able to intervene if they see a

Project One, the group has voted to exclusively use the original JHFRAT protocol, with a plan for signage in the works. Meanwhile, within the unified EHR, new banner bars and alerts will enhance fall prevention interventions.

“The biggest change will be the ability to electronically designate fall risk and history,” says Chilicki, who represented Lake Forest in the clinical collab-

“Project One is not just about the record. It’s really an unprecedented effort to standardize quality procedures and protocols so that any patient who walks into any one of our institutions can expect the same caliber of care.”

patient at risk of falling. At Lake Forest and Northwestern Memorial Hospital (NMH), a modified JHFRAT or “homegrown” version was used with no established signage. Finding common ground under

orative. “That information will be flagged in the patient’s chart and follow them wherever they go, whether to the doctor’s office or other ambulatory setting within our system.”

WARDING OFF SUICIDE



Suicide ranks as the 10th leading cause of mortality in the United States, according to the Centers for Disease Control and Prevention. Tragically, most people who end their lives have had healthcare-related encounters as little as three months to a year before dying.

“Suicide is truly a public health problem,” says Danesh Alam, MBBS, medical director of Behavioral Health Services at Central DuPage Hospital (CDH). “It’s the responsibility of all

providers, not just mental health professionals, to screen patients for suicide risk.”

Preventing suicide remains one of the top safety concerns of the Joint Commission. Like many medical centers around the nation, Northwestern Medicine has long implemented suicide risk screening at the greatest entry for acute care: the emergency department. Screening typically involves asking questions that elicit state of mind. The exact questions asked,

however, varied from institution to institution until Project One’s Suicide Prevention Project was born to create a system-wide uniform suicide screening tool.

“We were asked about the current screening tool at NMH,” says Patricia Roberts, MSN, RN, director of Psychiatry. “We’ve used validated questions from the VA system.”

Enlisting the help of key multi-location stakeholders such as Alam and Roberts, the Suicide Prevention Project decided to adopt questions used by NMH — one inquiring about feelings of hopelessness and the other about suicidal thoughts. Built into the unified EHR system, this official Northwestern Medicine screening protocol went live at CDH, Delnor

Hospital and Kishwaukee Hospital in late April. When Project One fully launches, all ER patients — no matter what their ailment — will undergo the same system-wide suicide screening when their medical histories are taken by the attending emergency department nurse.

“Any major medical condition or event, whether chronic or acute, is fraught with depression, anxiety or both,” says project participant Allison Johnsen, manager of Business & Program Development for the Behavioral Health Services group at CDH and Delnor. “By asking these simple questions and screening for one of the most dangerous forms of mental health, we can save lives.”

REVISITING PROJECT ONE

In the Summer 2016 issue of *Northwestern Medicine* magazine, we introduced Project One, which aims to connect more than 4,000 practicing physicians and 30,000 employees across the growing health system with a single electronic health record (EHR).

We described how Project One makes a patient's chart available to all healthcare providers in the Northwestern Medicine network, from physicians to lab technicians to pharmacists, eliminating double documentation and ensuring everyone has thorough and accurate information to make the right decisions with their patients. The EHR also allows investigators to pool patient data for research projects.

We're revisiting Project One now to share new stories about how this initiative is leading to better clinical collaboration and improving the patient experience.



KEEPING PATIENTS MOVING



Amy Leonard, RN, doesn't want to be overly dramatic, but in many cases putting a patient in a hospital bed for even a couple of days can actually be detrimental to their health.

"The body confined to bed rest starts to decondition very quickly," says Leonard, program manager for the Performance Improvement Office based at CDH in Winfield. "If we do not aggressively get patients moving, they are at risk of developing secondary issues from pneumonia to bed sores and are slower to heal."

In 2011, Anne Drolet, RN, a nurse practitioner at CDH,

spearheaded "Move to Improve," a nursing-driven mobility protocol to get patients up and about and ultimately out of the hospital faster. She and her colleagues created an algorithm that gave nurses direction and autonomy to advance patient mobility within 72 hours of being admitted. Physical activity could mean many things, from sitting up in bed or standing for a few minutes to walking down the hospital hallway.

"The gold standard is to initiate ambulation activities three times a day," says Drolet. For the most critically ill patients, pulling this off requires teamwork between

nurses and physical, occupational and respiratory therapists.

Exclusion criteria ensure patients who require bed rest, such as for pregnancy complications or certain critical injuries, stay put. But for most patients, getting their bodies — and spirits — in motion does a body good. "Being able to walk to the bathroom on your own, for example, helps alleviate a lot of frustration for patients," says Leonard. "Plus, moving around can help with pain control."

While the mobility protocol has been in play at CDH for seven years, it wasn't being used to its full capacity. It required a doctor's order and a literal click of a box in Epic to initiate. Enter Project One. In the process of adapting the mobility protocol system-wide, the clinical collaborative charged with this task determined that the majority of physicians supported early ambulation but didn't always think to order it.

"So we rebuilt the order in Epic and made it the default," explains Leonard, who worked with the Project One team. "Now physicians must deselect the mobility protocol if they think it's not appropriate for their patient. With this change, we're getting back to the basics of good care."

On the surface, Project One may seem like a project for IT professionals, but it has always been about much more than tech. Now less than a year away from completion, the process of coming together under one electronic platform is engendering one cohesive culture of quality and excellence at Northwestern Medicine.

"Project One is not *just* about the record," Alam says. "It's really an unprecedented effort to standardize quality procedures and protocols so that any patient who walks into any one of our institutions can expect the same caliber of care." ■

Teamwork Behind the Medical Alumni Association Board

A letter from Jim Kelly, '73 MD



The year 1969, as it turns out, was an important year for many reasons. It was the year that 350,000 music fans attended Woodstock, the Apollo 11 mission was accomplished with a successful moon landing, the Beatles released what would be their last album together, “Abbey Road,” and the ARPANET (Advanced

Research Projects Agency, a precursor to the Internet) was installed on a computer at UCLA. The Dow Jones Industrial Average closed that year at 800, gas was 35 cents a gallon and the average cost of a new house was \$15,550.

This year was an important year for me as well, for two reasons. First, I decided to go to medical school. I was really toying with the idea of getting a PhD in chemistry and then working in the agricultural industry. But with a new mentor and a new perspective, it became easier for me to say “no” when I identified the bigger “yes.”

5 BASIC PILLARS OF THE MAAB

- > Engagement
- > Mentoring
- > Strategic Initiatives
- > Philanthropy
- > Global Health

This was also the year I began to understand the merits of team learning. Joel Kosinski, '73 MD, Wayne Jakes, '73 MD, '77 GME, Bob Kloner, '75 MD, '74 PhD, and I were gross anatomy mates in a new four-person lab configuration in 1969. This whole atmosphere of team learning and function was reinforced 36 years later during

my MBA years at the Kellogg School of Management. Likewise, it's the Medical Alumni Association Board (MAAB) *team* that helps the MAAB function.

As an organization, the board objectives are aligned with those of the Feinberg School of Medicine. To map

out short- and long-term goals, Bruce Scharschmidt, '70 MD, former president, Rishindra Reddy '00 MD, president-elect, and I met with Dean Eric Neilson and Alan Krensky, vice dean for Development and Alumni Relations, during Alumni Weekend this April. The MAA is an important bridge between Feinberg and its alumni and, as such, we work to complement the work of the medical school.

Successful partnerships can only be accomplished by understanding the mutual goals of both parties. Bruce, Rishi and I have worked for continuity with our five Basic Pillars — Engagement, Mentoring, Strategic Initiatives, Philanthropy and now Global Health. We convened a special committee of the board in late February to make a recommendation about board status because of the growth and interest of our alumni and students in global health. It was recommended that global health become our fifth area of concentration.

As the MAAB continues to transition from an elected to a nominated and due diligence process, we continue to look for geographic, racial and ethnic diversity. To enrich each of these very important pillars with new ideas and concepts, we have added many new MAAB members since November 2015, for a total of 49 MAAB members.

I invite you to learn a bit more about our MAAB Executive Committee and the people who make up the administrative team that works diligently to help us achieve our goals. All of this is online at magazine.nm.org. And for more information on all-things alumni, please check out the monthly medical alumni newsletter launched earlier this year. We are also still looking for candidates for our MAA Board. Let us know if you are interested in joining us.

”

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(From left to right) Arthur Johnson, '61 MD, '65, '67, '68 GME, Kevin Glynn, '61 MD, Chris Christopher, Donna Crowley, MD, '86 GME, John Holl, '64 MD, and Walter Doren, '61 MD.



Northwestern trustee Andrew Senyei, '79 MD, Holly Casele, '91 MD, and Gregory Stainer, '76 MD.

MAA EVENTS

MAA Goes West and Into Heart of Chicago for Alumni Events

In June, the Medical Alumni Association (MAA) was proud to partner with generous medical alumni hosts Walter Doren '57, '61 MD, '66 GME, and his wife, Barbara, for Feinberg events at their home in California. Eric G. Neilson, MD, vice president for Medical Affairs and Lewis Landsberg Dean, discussed

the state of the medical school and engaged with alumni and friends in a lively Q and A.

Over the weekend of June 3 and 4, the MAA hosted two events on a rooftop overlooking Wrigley Field. Many attendees are members of the medical school's prestigious Nathan Smith Davis Society.



Alumni and friends watched the Chicago Cubs take on the St. Louis Cardinals.

Reuniting at Alumni Weekend 2017



Graduates of the class of 1967 celebrated their 50-year reunion at the Arts Club of Chicago.

MORE THAN 450 ALUMNI AND GUESTS ATTENDED THIS YEAR'S ALUMNI WEEKEND, HELD APRIL 28 AND 29. The annual celebration offered graduates a chance to reconnect with former classmates, reminisce about their time at Northwestern and discover how the medical school has evolved since they were last on campus.

The weekend featured a range of social and educational activities, including campus and hospital tours and faculty-led forums on topics from transplantation to cardiovascular health. Alumni also caught up with old friends over yoga classes, visits to the Museum of Contemporary Art and reunion class dinners, and they chatted with current students during networking lunches.

As he perused class photos in Method Atrium, Walter Huurman, '62 MD, reminisced about the ways the medical school campus has changed over the years. "Walking down Superior is very different today than it was 55 years ago," said Huurman, a retired pediatric orthopaedic surgeon living in Florida. "I enjoy coming back to update myself on others I met while I was here and keep track of all that has developed."

On Friday afternoon, Eric G. Neilson, MD, vice president for Medical Affairs and Lewis Landsberg Dean, delivered an update on the state of the school and discussed the future of Feinberg. He highlighted the medical school's growing research enterprise, including rising rankings in NIH funding, continued recruitment of top investigators

and construction of the Simpson Querrey Biomedical Research Center.

"I believe we can be optimistic in all of the endeavors that we take on in medicine. For me, this is why discovery is so important: It energizes the environment, and we hope it will continue to grow," Neilson said. "We want to be a premier medical center in this country. We think we are already — but we are well on our way to being even better than we thought."

Afterward, more than 75 attendees gathered at the inaugural Women in Medicine Tea at the Drake Hotel. After a panel discussion, alumni offered advice to current medical students in the audience and spoke about career successes, managing work-life balance and forging their own paths in medicine.



1 Anthony Chen, '87 MD, viewed old class photos hung in Method Atrium. **2** The weekend's activities included tours of the Northwestern Simulation Center, where alumni practiced their surgical skills on state-of-the-art devices. **3** Elizabeth Finley-Belgrad, '87 MD, joined others at a yoga class held in the Galter Health Sciences Library. **4** Frances Taylor, '57 MD, and Georgine Steude, '57 MD, reminisced about their time as roommates and medical school classmates during Alumni Weekend. **5** Alumni met up for a chilly early morning Fun Run along Lake Michigan.

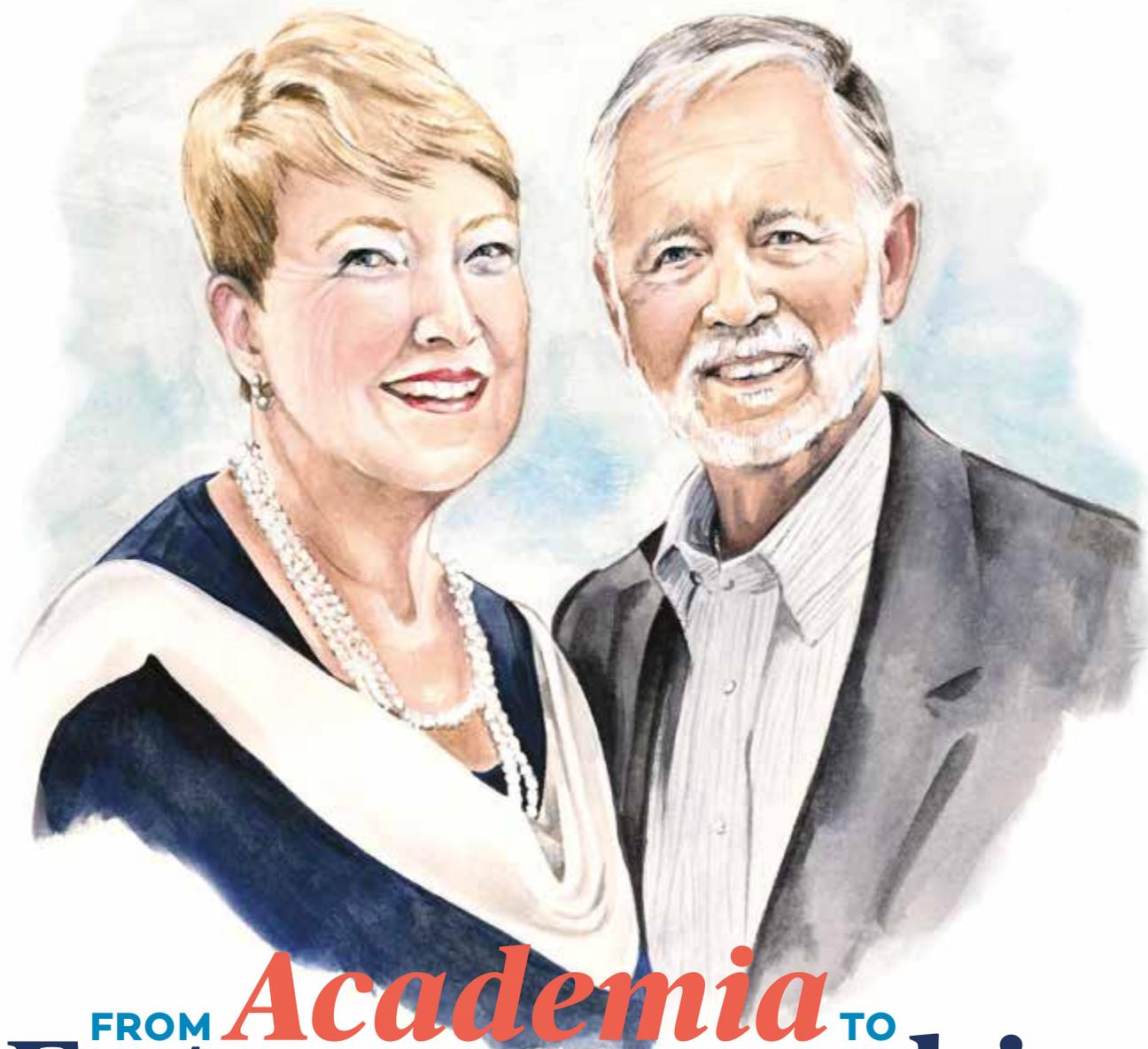
”
Walking down Superior is very different today than it was 55 years ago. I enjoy coming back to update myself on others I met while I was here and keep track of all that has developed.

On Friday evening, alumni gathered for cocktails, dinner and dancing, and a special salute to members of the class of 1967, in recognition of their 50-year reunion. Diane Meier, '77 MD, director of the Center to Advance Palliative Care, received this year's Distinguished Alumni Award.

“I am deeply moved by this incredible honor,” Meier said. “The training I got here was superb, and I learned that when I became an intern and actually had a good sense of what I was doing as a resident in internal medicine.”

Diane Meier, '77 MD, received this year's Distinguished Alumni Award from Dean Eric Neilson.





FROM *Academia* TO Entrepreneurship

Eugene A. Bauer, '67 MD

Over the past 15 years, Eugene A. Bauer, '67 MD, has transitioned from academic dermatologist and dean of a top medical school to healthcare entrepreneur, and launched two dermatology companies.

In fact, even before Bauer served as dean of the Stanford University School of Medicine, from 1995 to 2001, he helped found Connectics Corporation, a dermatology company with a platform technology for delivering skin disease

products that was eventually acquired by Stiefel Laboratories Inc.

"Shifting from academia to entrepreneurship was not hard at all," says Bauer, who received Northwestern's Distinguished Medical Alumnus Award in 2012.

Bauer gives high marks to Northwestern for preparing him to become a broadly thinking individual. "I always believed that being a physician would provide me multiple

opportunities to go in one direction or another, or multiple directions," he says.

After stepping down as dean of Stanford Medicine, Bauer took time off to plan his next move.

"I took a deep breath," says Bauer, now 75. "My wife Gloria and I left the Bay Area and moved to a house in Oregon, literally on the water, with nothing between us and China but about 5,000 miles of water."

While in Oregon, Bauer helmed an executive search practice for Korn Ferry International. “Basically, I searched for deans and heads of hospitals at academic medical centers,” he explains.

Soon afterward, in 2003, the couple moved to Pasadena to be closer to Korn Ferry’s headquarters in Los Angeles. The next year, Bauer became the founding CEO of a startup

“I always believed that being a physician would provide me multiple opportunities to go in one direction or another.”

dermatology company, Neosil Inc., which developed a treatment to promote hair growth in male pattern baldness, as well as a potent topical antimicrobial drug for certain kinds of skin infections.

In 2008, Neosil was acquired by Australian-based Peplin Inc., and Bauer became president and chief medical officer of Peplin, in charge of developing a novel treatment for

actinic keratosis, a type of skin lesion caused by exposure to ultraviolet radiation.

A year later, Peplin was taken over by Leo Pharma A/S in Denmark. “The product we developed is now an important treatment for actinic keratosis here in the United States,” Bauer conveys.

In 2010, Bauer co-founded another dermatology firm, Dermira Inc., which was publicly listed in 2014 on the Nasdaq Stock Exchange. The three products in development are a biologic agent for psoriasis, a topical liquid wipe for the often highly debilitating hyperhidrosis and a totally novel topical acne agent.

Bauer, who continues to serve full time as chief medical officer for Dermira, has no timetable to retire. His wife Gloria, 73, says that her husband once told her that if he ever retired, “He would be like an Irish Setter in a closet. Gene has so much energy that it would drive him crazy. I suspect he will retire the day before he dies.”

Married in 1966, the year after they met at Northwestern, the couple has resided in San Rafael in Marin County, north of San Francisco, since 2005.

Gloria Bauer, '67 diploma in nursing

Gloria Bauer graduated from Northwestern’s now-disbanded nursing program in 1967, the same year her husband graduated from medical school. “This was back in the Stone Age, when you got a three-year diploma in nursing. It was effectively a trade school without a degree program,” she says. “In fact, I have outlived the building in which I was trained, Passavant Memorial Hospital.”

Nonetheless, Northwestern taught Gloria “not what to think, but how to think,” she says.

Nonetheless, Northwestern taught Gloria “not what to think, but how to think,” she says.

After graduation, Gloria worked one year at public St. Louis City Hospital in Missouri. “It was an incredible training ground, although I was pregnant with my first child at the time.” Gloria was employed

in clinical nursing at nearby Barnes-Jewish Hospital at Washington University from 1968 to 1971, where she was exposed to specialties ranging from orthopedics to plastic surgery. She retired from nursing after the birth of the couple’s second child.

Through the years, Gloria has done volunteer outreach for chemical dependency. “I have been very open about my alcoholism,” she says. “I became sober in 1988.” She is also a member of Alcoholics Anonymous and sits on the board of HealthRIGHT 360, an organization in San Francisco that addresses chemical dependency and psychiatric disorders, as well as homelessness and free clinics. Previously, Gloria served on the board of the Women’s Recovery Association.

The Bauers, who have raised four children, say their closest friends from medical school and nursing school are still their closest friends.

A PATH OF DISCOVERY



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.

We may publish them in an upcoming
issue of the magazine.

1950s

Richard D. Sheehan, '55 MD, writes, "I enjoy reading the 'Progress Notes' especially about the classes near mine and about people I know. So in that vein ... I've been retired 25 years working at an Obstetrics and Gynecology practice for over 35 years in San Jose, Calif. Enjoy playing bridge, golf and walking with my buddies. Keep up the good work."

Robert M. Eisendrath, '57 MD, received the Massachusetts Medical Society's 2017 Senior Volunteer Physician of the Year Award.

1960s

Guy S. Clark, '63 MD, recently published "Sharkbait...A Flight Surgeon's Odyssey in Vietnam," now available on Amazon. Clark had 90 combat missions in the Phantom F4-C from 1966 through 1967. He writes, "I dedicated the book to Al Alekna, '64 MD, my Phi Chi fraternity brother. We both served as flight surgeons in Vietnam. He was a dear friend, who died later after the war." 1

Marlene Goodfriend, '69 MD, works for Médecins Sans Frontières — Global First-Responders (MSF) as a mental health advisor based in Amsterdam with frequent trips to the field. She writes, "MSF considers mental health and psychiatric care a priority for populations who experience conflict, displacement and chronic diseases such as HIV/AIDS and tuberculosis. It is an honor and privilege to work for MSF. The first quarter of 2017, I visited projects in Ethiopia, Zimbabwe and Tajikistan. For any of you looking to do humanitarian medical work, consider work with MSF. You will feel needed, appreciated and not bored!" She is looking forward to her 50th medical school reunion in 2019. 2

1970s

David Green, MD, '74 PhD, professor emeritus of Medicine in the Division of Hematology and Oncology at Northwestern, recently authored a book entitled "Linked by Blood: Hemophilia and AIDS." He writes, "It describes the transit of the HIV virus from Africa to the U.S. in the late 1970s and its contamination of the United States' blood supply. Clotting factor concentrates made from this blood infected almost everyone with severe hemophilia. The book describes the epidemic and its aftermath and makes recommendations for increasing awareness of emerging infectious diseases, developing safer blood products and improving access to essential medications."

Ora Hirsch Pescovitz, '79 MD, senior vice president and U.S. medical leader with Eli Lilly, was named president of Oakland University, effective July 1, 2017.

1980s

Jeffrey Kneisl, '81 MD, '87 GME, medical director of Surgical Services at the Levine Cancer Institute and professor of Orthopaedic Surgery at Carolinas Health System, came to Feinberg on May 11 and 12, 2017 as the visiting professor for the Department of Orthopaedic Surgery Resident-Alumni Thesis Day and graduation dinner.

**"I WAS INVITED
BACK TO THE
MEDICAL SCHOOL
AS THE GRADUATION
SPEAKER ON MY
OWN 30TH
ANNIVERSARY FROM
GRADUATING FROM
DR. SCHAFER'S
PROGRAM. THE
PRODIGAL SON
RETURNS, SO TO
SPEAK."** -JEFFREY KNEISL, '81 MD, '87 GME

He writes, "I have a long NU legacy. I started in Evanston in September 1975 in the HPME program, transitioned downtown in September of 1977 and was president of the student senate at the medical school. I matriculated a bit early in December 1980 to enter the U.S. Navy in January 1981; however, I did return to go through the graduation ceremony with Dean Eckenhoff and the remainder of my class in June 1981. Following some sea time with the Navy, I returned to the

medical school for my orthopaedic residency with Michael Schafer, MD, from 1983 to 1987. I had further military obligations, but eventually returned to join him on the Northwestern Orthopaedic faculty in 1990. I left Chicago for Charlotte, N.C., in 1992 and have been here for 25 years. A few years ago, I initiated an endowment in the name of Dr. Schafer for the purposes of advancing orthopaedic education at Feinberg. I was invited back to the medical school as the graduation speaker on my own 30th anniversary from graduating from Dr. Schafer's program. The prodigal son returns, so to speak."

The National Kidney Foundation (NKF) recognized two Feinberg alums at the 2017 clinical meeting held in Orlando, Fla., in April: **Paul M. Palevsky, '81 MD**, chief of the renal section of the VA Pittsburgh Healthcare System and professor of Medicine and Clinical and Translational Science at the University of Pittsburgh School of Medicine, received the J. Michael Lazarus Distinguished Award, which recognizes individuals whose research has yielded novel insights related to renal replacement therapy. 📷 3

Katherine Tuttle, '82 MD, '85 GME, executive director for Research at Providence Health Care in Spokane, Wash., received the Garabed Eknayan Award, which recognizes an individual who has promoted the mission of the NKF in improving the lives of people with kidney disease through exceptional contributions to key initiatives of NKF or clinical research in the field of kidney disease. Her major research interests included diabetic kidney disease, hypertension, renal vascular disease, nutrition in chronic kidney disease and transitional care. 📷 4

Laurie Gutstein, '85 MD, '90 GME, practices teleradiology in locations ranging from Florida to New Zealand, ran her own gourmet food company (Calamondin Café) and has recently joined the board of PatientsDB (which provides operational management and accounting software to hospitals), with fellow classmate, founder and CEO, **John Novotny, '85 MD**. She writes, "Drop us a line, we'd love to hear from you."

KAREN M. SHEEHAN, '89 MD, '92 GME, HAS BEEN NAMED MEDICAL DIRECTOR OF ANN & ROBERT H. LURIE CHILDREN'S HOSPITAL OF CHICAGO HEALTHY COMMUNITIES, A NEW INITIATIVE FOR CHILDREN'S HEALTH IN THE COMMUNITY.

Clinical-stage biotechnology company, PharmaCyte Biotech, appointed **Mark L. Rabe, '87 MD**, as director of cannabis program development. He will be responsible for developing and managing a cannabinoid-based therapy that targets cancerous cells.

Jesse Fann, '89 MD, MPH, professor of Psychiatry and Behavioral Sciences and adjunct professor of Rehabilitation Medicine

and Epidemiology at the University of Washington, and colleague Jeanne Hoffman, PhD, were awarded a \$12.7 million grant by the Patient-Centered Outcomes Research Institute, an independent nonprofit established by Congress in 2010 to improve patient outcomes. With the grant, they will conduct a comparative effectiveness study to improve post-acute care for patients with a traumatic brain injury.

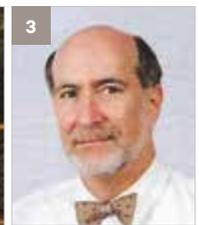
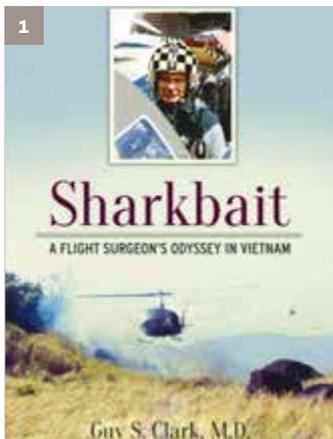
Karen M. Sheehan, '89 MD, '92 GME, has been named medical director of Ann & Robert H. Lurie Children's Hospital of Chicago Healthy Communities, a new initiative designed to maximize the positive impact the medical center has on children's health in the community.

1990s

Aamir Siddiqui, '90 MD, '93 GME, was recently awarded the National Pressure Ulcer Advisory Panel's Thomas Stewart Founder's Award at the organization's 2017 biennial conference. This award recognizes Siddiqui as a leader in the wound care provider community.

William Small, Jr., '90 MD, '91, '94 GME, chair of Radiation Oncology at Loyola Medicine, was named to the board of directors at Loyola University Health System.

Brad A. Racette, '92 MD, '93 GME, was named the inaugural Robert Allan Finke Professor of Neurology at Washington University School of Medicine in St. Louis. He was recognized for his work on manganese neurotoxicity.



Annie Huang, '95 MD, of Wheaton, Ill. recently published “My First Music Book: Instruments,” featuring photographs of different instruments from A to Z. Her previous book, “My First Music Book: Notes and the Keyboard,” highlights music notes and the piano keyboard in rainbow colors. Huang still practices general pediatrics in Glen Ellyn, Ill., with the DuPage Medical Group.

Timothy Pritts, '95 MD, PhD, who served as director of the Division of General Surgery at the University of Cincinnati, will lead the new Section of General Surgery there. This section includes the divisions of trauma, acute care surgery, surgical critical care, general surgery and bariatrics. Pritts will continue to serve the Department of Surgery in his current role as vice chair of compensation and finance. 📷 5

Michael Gallentine, '96 MD, urologist at Great Plains Urology in Nebraska, joined the staff of St. Mary's Medical Group in Indiana.

Risha Raven Fennell, '97 MD, writes, “Thank you for a delightful Alumni Weekend.

I gave up the rush hours of Chicago and have lived in rural Illinois since residency. We have been on a farm with livestock and family since the twins turned one. Four of six kids are still home, with the son born during my residency going to Bradley next year and the daughter born while I was in medical school becoming a senior next year at Northern Illinois University, majoring in Spanish education. My husband, Alan, gave up IT and travel for the family when we married on Leap Day. He added substitute teacher to his titles of dad, scoutmaster and farmer when our six year-old started school.

This year I gave up the title “Dr. Risha O'Connor Raven” and stopped delivering babies after 20 years of loving it. I've merged my personal and professional names after many years of my second marriage and taken “Dr. Risha Raven Fennell” (professionally)...

but some patients just call me doc.

I started by opening a satellite clinic in a rural town in Northwestern Illinois, straight out of residency, and stayed there until I was asked to join the faculty onsite at the rural track for the residency in Lee County, Ill. Then, I moved on to a rural critical access hospital in Whiteside County, Ill., doing urgent care, primary care and whatever inpatient was needed.

We are parting ways this summer, and the future is yet to be discovered. Being a family physician that was trained at Northwestern gives me the option to re-create my life with my family, with professional possibilities not limited by standard models.”

Ali Moinzadeh, '97 MD, was appointed chair of Urology at Lahey Hospital & Medical Center.

H.O.S.T.

Help Our Students Travel

HOST connects MD alumni with fourth-year students during the residency interview season, typically between October and January. With the cost of medical education growing and student indebtedness becoming a national issue, we ask Feinberg alumni to help by participating in HOST.

Alumni hosts help offset the financial burden and stress of traveling for interviews by offering students any of the following: complimentary housing; local transportation; a tour of the area; a meeting to answer questions about residencies, your specialty and/or the local medical community; an introduction to other medical colleagues and potential mentors.

PLEASE SUPPORT OUR STUDENTS BY JOINING TODAY:

[mentor.northwestern.edu/
programs/FeinbergHOST](http://mentor.northwestern.edu/programs/FeinbergHOST)

For more information, contact Dan Schwarzlose at 312-503-4519 or daniel.schwarzlose@northwestern.edu.





Ronald J. Homer, '98 MD, and Suzanne Yoon Homer, '99 MD, of Palos Verdes Estates, Calif., became the proud parents of Kai S. Homer, on Aug. 18, 2016.

2000s

Leigh “Chip” Halpern, '00 MD, '04 GME, writes, “My wife, Dr. Brooke Perl Halpern, and I moved to Austin, Texas, in July 2016, where I am an attending emergency medicine physician with TeamHealth at St. David’s Round Rock Medical Center and Brooke is completing her post-doctoral work in psychology for a private practice group. Most importantly, we adopted our daughter Calliope Hartley Halpern in April 2017. We are so happy to have her in our lives! While we miss Chicago, we’ve developed a great group of friends here in Texas. If any of my old classmates visit Austin, please feel free to contact me for a BBQ get-together or just a few memories over tacos. 📷 6

Larry Zeidman, '04 MD, '08 GME, of Chicago, is a neurologist at the University of Illinois at Chicago. His wife, Miriam Lieberman Zeidman, is a civil rights attorney at a nonprofit organization. The Zeidmans were thrilled to welcome their son, Theodore “Teddy” Avi, into the world on Sept. 25, 2016.

Charles Dabbs, '10 MD, '11 MA, and Danielle Fisher Dabbs of Dublin, Ohio, parents of Audrey and Grant, welcomed their newest addition, Bridget Faith, on Oct. 16, 2016.

2010s

Muthu Vaduganathan, '12 MD, '12 MPH, of Boston is a fellow in cardiovascular medicine at Brigham and Women’s Hospital and a clinical research fellow at Harvard Medical School. He was recognized as a Journal of the American College of Cardiology Heart Failure Fellow and has received many young investigator awards for his work. His research interests focus on

“BEING A FAMILY PHYSICIAN THAT WAS TRAINED AT NORTHWESTERN GIVES ME THE OPTION TO RE-CREATE MY LIFE WITH MY FAMILY, WITH PROFESSIONAL POSSIBILITIES NOT LIMITED BY STANDARD MODELS.”

-RISHA RAVEN FENNELL, '97 MD

drug development and clinical trials in the areas of heart failure and antiplatelet therapy. He married Amulya Nagarur, in Atlanta, on Nov. 25, 2016.

GME

Kenneth G. Busch, MD, '75 GME, was elected to the Illinois State Medical Society Board of Trustees during its recent annual meeting. On staff at Lutheran General Hospital in Park Ridge, Ill., Busch is board certified in psychiatry and is a distinguished life fellow of the American Psychiatric Association.

Yeongchi Wu, MD, '75 GME, retired from Northwestern at the end of March after almost 40 years of service. Wu has mentored and positively influenced generations of physicians, researchers, and Prosthetics and Orthotics clinicians. Throughout his career as a specialist in Physical Medicine and Rehabilitation, Wu has improved the rehabilitative care of patients. His rigid removable dressing system for post-amputation patients has become a best practice at Northwestern Medicine, nationwide and internationally. Wu patented a device for the management of neurogenic bladder and developed a communication board for nonverbal, severely disabled patients. He conducted innovative research in dilatancy technology to reduce time and cost in prosthetics and orthotics fabrication. 📷 7 (Third from left)

Wu’s work has been recognized with honors that include a Presidential Award and lifetime achievement awards. Last October, he was honored with a Lifetime Achievement Award from the U.S. National Society of the International Society of Prosthetics and Orthotics. Wu is also a gifted sculptor and artist.

Some of his artwork was recently on display at the Northwestern University Prosthetics-Orthotics Center, along with a career retrospective slide show.

Glenn W. Drumheller, MD, '77 GME, of Everett, Wash., retired in October after practicing medicine in otolaryngology and allergy from 1978 to 2016. He has travel plans in his future.

“[I AM] FOREVER INDEBTED TO MY EDUCATION AT NORTHWESTERN AND MY PROFESSION. I AM ENJOYING THE FRUITS OF MY LABOR.” -TOM ESSIG, '74 BSPT

Henry Perkins, MD, '78 GME, recently published “A Guide to Psychosocial and Spiritual Care at the End of Life.” His book for health professionals, patients, families, clergy and social workers addresses topics ranging from end-of-life prognostic quandaries, to care for family caregivers, to beliefs about death and the afterlife. Perkins draws on his experiences practicing medicine among the poor of Kenya, Mexico and Texas. In 2012, he retired after 27 years of teaching internal medicine and medical ethics at the University of Texas at San Antonio. He continues as a consultant in bioethics at the Ecumenical Center for Religion and Health in San Antonio.

Emma Nicole Ross was born March 30 to **Michael Ross, '06 MD, '12 GME**, and **Eleanor**

Ross, '07 MD, '13 GME. Michael practices non-invasive cardiology with DuPage Medical Group in Chicago's western suburbs and serves as the co-director of cardiographics at Advocate Good Samaritan Hospital. Eleanor practices pediatric cardiology and serves as the associate director of the pediatric echocardiography laboratory at Advocate Children's Hospital in Oak Lawn, Ill.

John J. Millichap, MD, '10, '11 GME, is a pediatric neurologist and epileptologist at Lurie Children's and assistant professor of Pediatrics and Neurology at Northwestern. He and his wife, Maria Millichap, became the parents of Nina Nancy on Dec. 27, 2016.

Sarah Barnes Kinsella, MD, '13, '14 GME, and Mike Kinsella of Shoreview, Minn., became parents to Edward J., on Dec. 17, 2016.

James Matthew Saucedo, MD, '13 GME, MBA, became partner at the Hand Center of San Antonio. He and his wife, Tiffany Saucedo, welcomed their precious daughter, Gabriela, on Sept. 20, 2016.   

Craig Press, MD, '16 GME, of Englewood, Colo., started as a pediatric neurointensivist at Children's Hospital Colorado last July. He completed a fellowship in pediatric neurocritical care at Lurie Children's.

Ann Jayaram, MD, '15 GME, oculoplastic and reconstructive surgeon at Mid-Peninsula Ophthalmology Medical Group, is a member of the American Academy of Ophthalmology and is fellowship trained in medical and cosmetic eyelid surgery. She advocates for women pursuing careers in surgery, saying, “Women are incredible healers — we pay attention to

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.

ALUMNI

John H. Sterne, '43 MD
Evansville, Indiana
APRIL 13, 2017

Arthur F. Reimann, '44 MS, '45 MD
Elmhurst, Illinois
MARCH 23, 2017

R. Drew Miller, '46 MD
Rochester, Minnesota
APRIL 15, 2017

Jack Stuart “Stu” Pritchard, '46 MD
Philipsburg, Montana
FEBRUARY 23, 2017

William B. Fischer, '47 MD, '52 GME
Fontana, Wisconsin
FEBRUARY 28, 2017

Andreas Dahl, '48 DDS
Onalaska, Wisconsin
JANUARY 3, 2017

Rolf M. Gunnar, '48 MS, '49 MD
Hinsdale, Illinois
MARCH 18, 2017

Daniel W. Hayes, '48 MD
Minneapolis, Minnesota
FEBRUARY 14, 2017

Joseph T. Sheridan, '48 MD
Burr Ridge, Illinois
APRIL 10, 2017

Henry M. Hanson, '49 MD
Waverly, Iowa
MARCH 8, 2017





“WOMEN ARE INCREDIBLE HEALERS — WE PAY ATTENTION TO DETAIL, WE ARE COMPASSIONATE ... VIEW BEING A WOMAN AS AN ASSET IN THE OPERATING ROOM, NOT A HANDICAP.”

-ANN JAYARAM, MD, '15 GME

detail, we are compassionate, we have a gentle, woman’s touch. View being a woman as an asset in the operating room, not a handicap.” She was recently featured in *Beauty Refined* and *Inspire Women in Surgery*. 📷 9 (Right)

DPT

Tom Essig, '74 BSPT, says he is, “forever indebted to my education at Northwestern and my profession. I am enjoying the fruits of my labor.” 📷 10

DDS

Alexis Olsson, '87 DDS, '88 GME, professor and chief of Oral and Maxillofacial Surgery has been elected as a fellow into the American College of Surgeons (FACS). Olsson is a member of the first class of single degree oral surgeons to be elected into the FACS.

Hugh L. Reat Jr., '50 DDS
Napa, California
DECEMBER 8, 2016

Earl Eldred, '51 MD
Northridge, California
MARCH 17, 2017

Glen D. Jorgenson, '51 DDS
St. George, Utah
DECEMBER 11, 2016

F. Warren Lovell, '52 MA/MS, '53 MD
Ventura, California
JULY 15, 2016

James H. Scatliff, '52 MD
Chapel Hill, North Carolina
MARCH 4, 2017

Glenn H. Zimmer, '52 DDS
Golden, Colorado
DECEMBER 9, 2016

Sheldon E. Davis, '54 MD
New Bedford, Mass.
APRIL 13, 2017

Myrl A. Nafziger, '54 MD
Goshen, Indiana
MARCH 30, 2017

John Raich, '54 MD
Edina, Minnesota
APRIL 1, 2017

Gustaf A. Anderson, '56 DDS
Napa, California
OCTOBER 31, 2016

Harlan W. Hawkinson, '55 MD, '56 GME
St. Paul, Minnesota
OCTOBER 25, 2016

Lester P. Nyborg, '56 MD
Saint Anthony, Idaho
MAY 1, 2017

E. Kent Rogers, '56 DDS
Asheville, North Carolina
NOVEMBER 22, 2016

Bruce W. Meek, '57 MD
Frankston, Texas
SEPTEMBER 11, 2016

Dale L. Schwartz, '58 MD
Prescott, Arizona
MAY 2017

Robert M. Smith, '60 DDS
Trinity Center, California
NOVEMBER 30, 2016

Stone Hallquist, '63 MD
Tulsa, Oklahoma
FEBRUARY 24, 2017

William E. Powers, Jr., '63 MD
Carmichael, California
FEBRUARY 15, 2017

Dwight W. Freeman MD, '64 GME
Portland, Oregon
MARCH 18, 2017

Morris Kace, '64 MD
Foster City, California
APRIL 9, 2017

John E. King, '65 MD
Rochester, Minnesota
MARCH 31, 2017

C. Peter Groom, '67 MD, '71 GME
Pocatello, Idaho
MARCH 31, 2017

Charles F. Nawrot, '69 MS
Summerfield, Florida
FEBRUARY 21, 2017

Edward S. Ogata, '71 MD
Chicago, Illinois
FEBRUARY 24, 2017

Michele Michaels Ginsberg, MD, '74, '75 GME
San Diego, California
JULY 24, 2016

Brent Ray Johnson, '75 DDS
Pocatello, Idaho
DECEMBER 15, 2016

Charles Lee, '76 MD
Lexington, Kentucky
AUGUST 29, 2016

Timothy M. Brown, '93 MD
Cresco, Pennsylvania
FEBRUARY 25, 2017

Steven Sooudi, '95 MD
Beaumont, Texas
AUGUST 17, 2016

Victoria J. Taylor, '12 PhD
New York, New York
JUNE 4, 2017

FACULTY

Yuri Geinisman, MD
professor emeritus of Cell Biology and Anatomy
Deerfield, Illinois
NOVEMBER 29, 2016

Esmail Koushanpour, PhD
associate professor emeritus of Physiology
Mundelein, Illinois
FEBRUARY 12, 2017

Milton Paul, MD
professor emeritus of Pediatrics and Biomedical Engineering
Madison, Wisconsin
JANUARY 31, 2017

Ronald L. Stout, '67 MS, '71 PhD
former assistant professor of Pediatrics
Elgin, Illinois
DECEMBER 3, 2016

Lorraine Torkelson, MD
assistant professor emeritus of Obstetrics and Gynecology
Prior Lake, Minnesota
JANUARY 24, 2017

A STROKE OF LUCK

*How Having a Stroke Renewed
My Pride in My Profession*

I had a stroke last summer. In itself, this event is not particularly interesting to read about, as I am only one of almost 795,000 Americans who had a stroke last year, including undoubtedly several thousand physicians. But the one small silver lining to having had a stroke was that I was treated so well within a very complex medical system and had such an excellent outcome that the experience renewed my pride in being a physician.

I am a 57-year-old man in good health except for being overweight. I am a physiatrist (a doctor who specializes in rehabilitation

medicine) and a scientist.

My career has focused on research to improve the control and design of artificial limbs. I am proud of this work, its impact on the lives of patients and its contribution to the fields of medicine and science. But after having a stroke, my perspective on medicine changed in unexpected ways.

My family and I live in Oak Park, Illinois. On July 15, I woke up, showered, dressed for work and began packing in anticipation for a weekend away with my

wife, Lisa. I woke Lisa up to take me to the train that morning, but when I spoke to her she looked at me like I was from the moon. "Sit down and raise your arms over your head," she said. When only one of my arms went up, she called 911. I argued with her that I was fine, as I did not realize I was having a stroke, but

my words were incomprehensible. Lisa knew something was wrong and that she had to act immediately. Here are some of the points I took away from all that followed:

FIRST TAKEAWAY: PUBLIC HEALTH EDUCATION MAKES A DIFFERENCE.

The National Stroke Association's public education slogan to "Act FAST" helped my wife recognize the signs of stroke, as she had remembered the acronym when my speech troubled her (FAST = face, arms, speech, time). Even as I was arguing with her, she knew I was having a stroke and that treatment was time critical. The paramedics arrived at my house within 10 minutes and quickly carted me to a local hospital in Oak Park, where I was seen almost immediately by a neurologist via a telestroke service.

I received a CAT scan and tissue plasminogen activator, two appropriate first-line treatments for stroke. When these treatments were not effective, my team prepared to transfer me to a tertiary care hospital for further treatment. I asked if I could go to "my hospital," Northwestern Memorial Hospital. The Oak Park physicians agreed, and in less

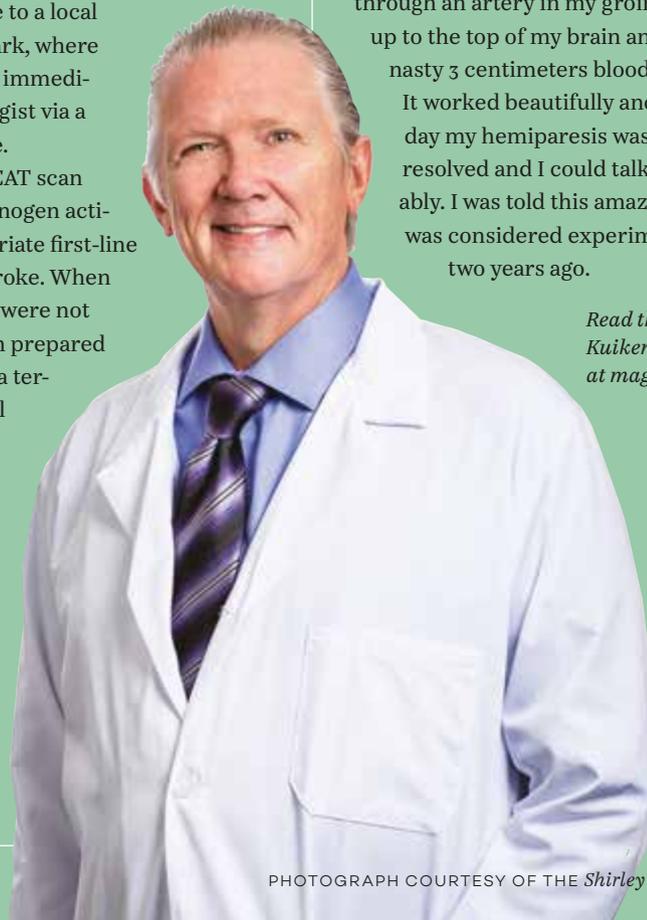
than an hour I was on my way to meet my new care team.

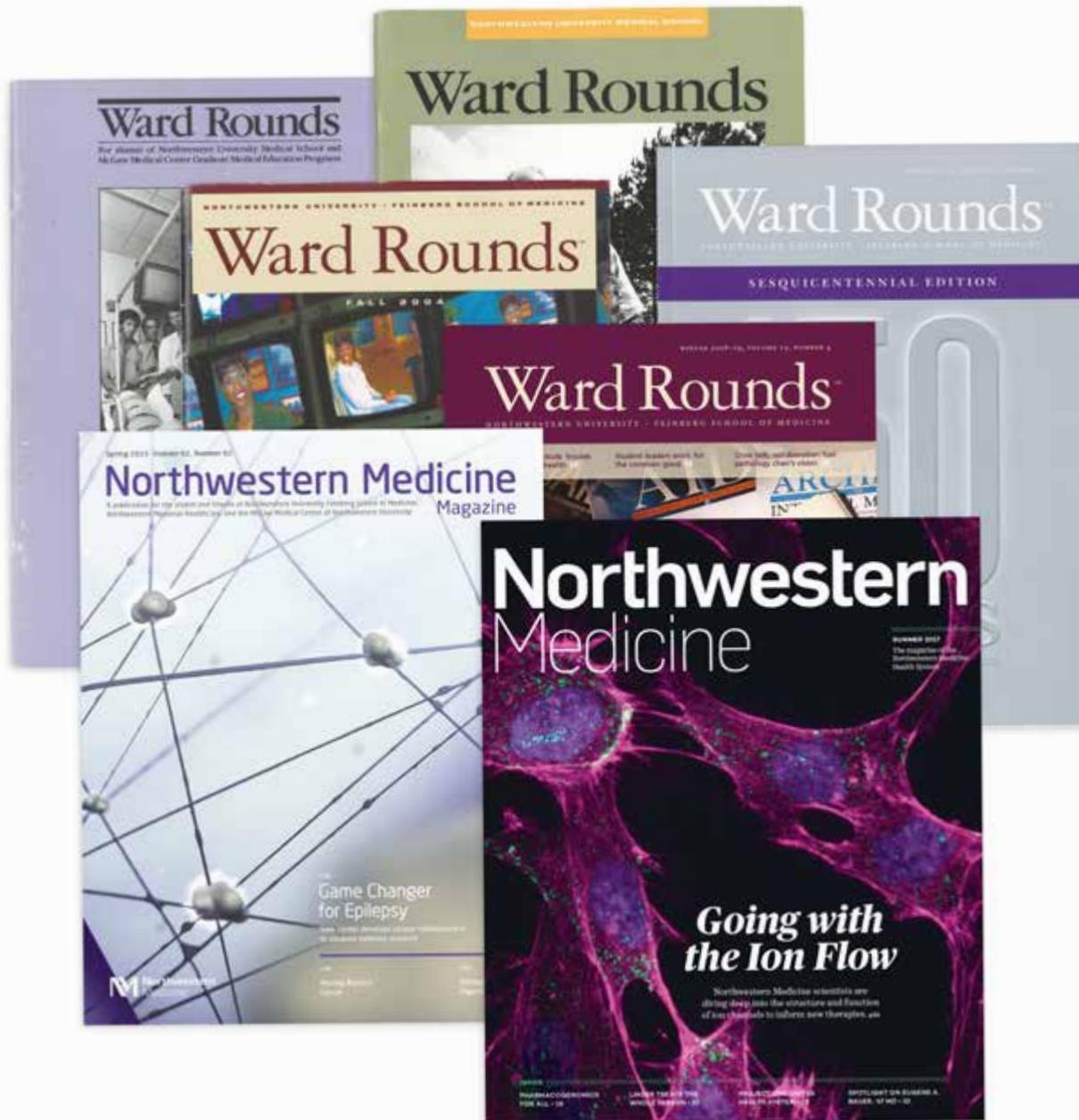
SECOND TAKEAWAY: THE LOCAL EMS AND HOSPITAL DID WELL AND WERE VERY FAST WITH MY CARE.

My trip downtown was much faster by ambulance than my usual commute. I arrived at Northwestern, where my neurologist Dr. Richard Bernstein and my interventional neuroradiologist Dr. Sameer Ansari were waiting. I had an exam and another quick CAT scan; then I was taken to the catheterization laboratory — probably within two hours of having had my stroke. There they performed a thrombectomy; they threaded a catheter through an artery in my groin all the way up to the top of my brain and pulled that nasty 3 centimeters blood clot out.

It worked beautifully and the next day my hemiparesis was mostly resolved and I could talk understandably. I was told this amazing procedure was considered experimental only two years ago.

*Read the rest of
Kuiken's story online
at magazine.nm.org.*





1899–present

The Evolution of Northwestern Medicine Magazine

MAGAZINE RETROSPECTIVE

This issue of *Northwestern Medicine* magazine has a new look and feel, but it represents just the latest chapter in the medical school's catalog of magazines, which have been published off and on for 118 years. The first, *University Medical School Quarterly Bulletin*, was published from 1899 to 1962 (with a break between 1912 and 1940) as both a scientific journal and a medium for medical school news.

A few versions of the magazine later, the first issue of the publication known today as *Northwestern Medicine* magazine was mailed to readers in the fall of 1984 under the name *Ward Rounds*. Fittingly, that issue's first feature story covered anatomy professor Leslie B. Arey, MD, who researched and compiled the school's history for its centennial in 1959 and updated it in 1979. When the story was published, Arey, who had joined the faculty in 1915, was 93 years old and still teaching.

MORE ONLINE AT MAGAZINE.NM.ORG.

