

Northwestern Medicine

//////
SUMMER 2018

NEW BLOOD

Gene therapy delivers a
novel solution for treating
serious blood disease. • 14

INSIDE

REDEFINING WEARABLE
TECHNOLOGY • 18

STEADYING THE SYMPTOMS
OF PARKINSON'S DISEASE • 22

ALS PROBLEM
SOLVER • 26

SPOTLIGHT ON DAVID
SKORTON, '74 MD • 30

Welcome to the Medical Profession

DONNING ACADEMIC REGALIA

Kevin Lewis, '18 MD, is hooded by Jessica Montalvo, MD, '07 GME, his society mentor, at Feinberg's 159th convocation ceremony on May 21. In the United States, doctoral degree recipients wear hoods that are four feet long with four inches of velvet trim (green for doctors of medicine) and satin lining (purple for students at Northwestern).

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.

Editor: Nora Dunne

Editorial Assistant: Yesenia Navarro

Contributing Writers: Andrea Arntsen-Harris, Emily Ayshford, Will Doss,

Ed Finkel, Amanda Morris, Marla Paul, Cheryl SooHoo, Anna Williams, Jon Yates

Editorial Advisors: Eric G. Neilson, MD, vice president for Medical Affairs and Lewis Landsberg Dean; Alan Krensky, MD, vice dean for Development and Alumni Relations; Nicole Mladic, executive director of Communications; Babette Nyka, director of Alumni Relations

Alumni Association: James P. Kelly, '73 MD, president; Rishi Reddy, '00 MD, president-elect




Design: Taylor Design

Call or email us at 312-503-2156 or medcommunications@northwestern.edu @2018 Northwestern University. Northwestern Medicine® is a federally registered trademark of Northwestern Memorial HealthCare and is used by Northwestern University.

Material in *Northwestern Medicine* magazine may not be reproduced without prior consent and proper credit.

Address all correspondence to: Northwestern University, Feinberg School of Medicine, Office of Communications 420 E. Superior Street, Rubloff 12th Floor Chicago, IL 60611

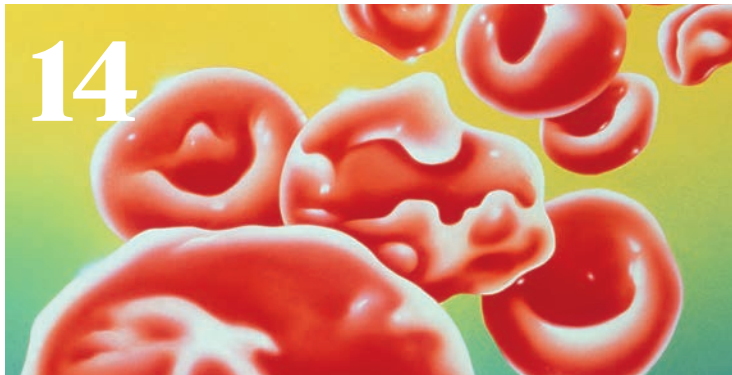
Connect with NM online:

-  fb.me/feinbergschoolofmedicine
-  twitter.com/nufeinbergmed
-  flickr.com/feinbergschoolofmedicine

Don't miss NM web extras!

-  Catch up on the latest Northwestern Medicine news and check out more photos and videos online at magazine.nm.org.

Features



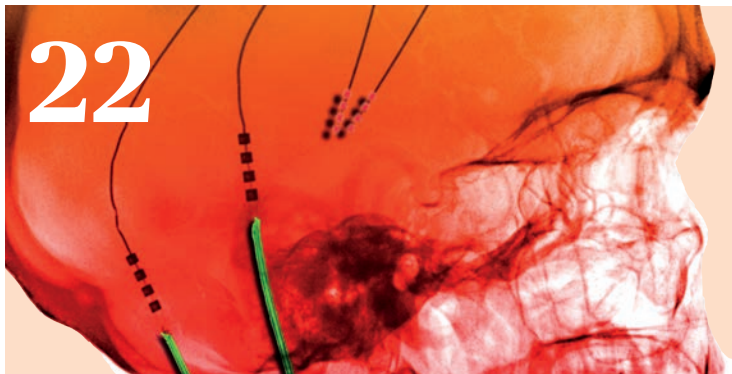
NEW BLOOD

Gene therapy delivers novel solution for treating serious blood disease.



REDEFINING WEARABLE TECHNOLOGY

New stretchable electronic patches could transform rehabilitation and long-term care.



STEADYING THE SYMPTOMS OF PARKINSON'S DISEASE

Improving quality of life with leading-edge deep brain stimulation.



PROBLEM SOLVER

Robert Kalb is moving Northwestern's Les Turner ALS Center forward.

Departments

LEADERSHIP

02 Defining a Great Academic Health System

PULSE

03 On Campus
Latest News, Graduations, Accelerating Discoveries, Unique Learning Experiences
10 Research Briefs
12 Media Spotlight
13 Faculty Awards & Honors

ALUMNI

29 Alumni President's Message
30 Alumni Weekend
32 Alumni Profile
David Skorton, '74 MD
34 Orthopaedic Leader Honored
35 Progress Notes
40 Perspective
Betty Hahneman, '52 MD, '56 GME

WARD ROUNDS®

41 Time Capsule

ON THE COVER

Misshapen red blood cells from a patient with beta thalassemia, an inherited blood disorder that requires lifelong blood transfusions for survival. A new gene therapy spearheaded by a Feinberg investigator may change that reality for patients. Image courtesy of Ann & Robert H. Lurie Children's Hospital of Chicago.

Defining a Great Academic Health System



AS WE CLOSE ANOTHER SUCCESSFUL FISCAL YEAR, one that included the opening of a new hospital in Lake Forest, implementation of a single electronic health record across the health system and advancement of many strategic goals, I am pleased to update you on the next chapter of the Northwestern Medicine (NM) strategic plan. This effort was initiated to better understand characteristics that define a great academic health system. A broad group of internal and external stakeholders shared perceptions of NM's current strengths and where there were opportunities to further elevate performance.

We are grateful for the thoughts and feedback from leaders at Northwestern University and the Feinberg School of Medicine, as well as numerous valued partners, dedicated board members, advisors, patients and employees. We learned:

GREAT ACADEMIC HEALTH SYSTEMS:

- Provide outstanding clinical care informed by groundbreaking research, led by nationally recognized clinicians and scientists;
- Are a destination not only for patients, but for physicians, scientists and others who want to practice in an environment that is patient-focused, collaborative and innovative;
- Achieve consistent results that optimize the patient experience.

NM'S CORE STRENGTHS TODAY INCLUDE:

- The presence of gifted clinicians delivering superb clinical care;
- The Patients First culture and collaborative environment;
- Strong performance focus and consistent practices that deliver results.

THERE ARE OPPORTUNITIES TO ELEVATE NM'S REPUTATION THROUGH:

- Continued investment in research, innovation and the experience of patients, physicians and staff;
- Deepening connections between hospitals and clinicians with Feinberg, the Kellogg School of Management, McCormick

“
Since NM articulated its vision ‘to become a premier integrated academic health system’ in 2015, significant progress has been made to integrate business functions such as finance, information technology and human resources.

- School of Engineering and more broadly, Northwestern University;
- Greater focus on telling the NM story through superior patient outcomes, groundbreaking discoveries and our collaborative culture.

Since NM articulated its vision “to become a premier integrated academic health system” in 2015, significant progress has been made to integrate business functions such as finance, information technology and human resources. NM's 34 business services now are able to efficiently scale with the growth of the health system.

With the implementation of a single instance of an electronic health record, NM's caregivers are now connected across the health system. This technology, along with the formation of system-wide clinical collaborations, positions NM to accelerate clinical integration to improve patient outcomes and safety. One example is the evolution of the Bluhm Cardiovascular Institute (BCVI). Formed in 2004, it has been the No. 1 cardiovascular program in Illinois for 10 straight years. An early result of clinical integration in BCVI is the expansion of the transcatheter aortic valve replacement (TAVR) program to the far western suburbs, effectively scaling and connecting NM's intellectual strength for patients to receive advanced care where they live and work.

Due in no small part to the extraordinary partnership between Northwestern University and Northwestern Memorial HealthCare, Northwestern Medicine is uniquely positioned for greatness in a turbulent and rapidly evolving industry. I look forward to providing further updates on NM's year-end results and the next chapter of NM's “Good to Great” journey.

With warm regards,

Dean M. Harrison
President and CEO
Northwestern Memorial HealthCare

ON CAMPUS

'All of Us' Research Program to Advance Precision Medicine Launches

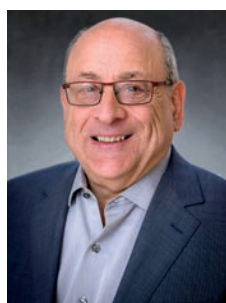


On May 6, the National Institutes of Health opened national enrollment for the All of Us Research Program — a momentous effort to advance individualized prevention, treatment and care for people of all backgrounds.

The Illinois Precision Medicine Consortium, which includes Northwestern Medicine, received a five-year, \$51 million grant to help launch the landmark longitudinal precision medicine research program. All of Us will gather lifestyle and medical data from people across the United States to provide the most diverse biomedical data resource in history.

The overall aim is to enroll one million or more volunteers and oversample communities that have been underrepresented in research to make the program the largest, most diverse resource of its kind.

Left: A live art installation at the All of Us launch event at Chicago's Millennium Park in May.



PIONEERING HEMATOLOGIST RECEIVES 2018 NEMMERS PRIZE IN MEDICAL SCIENCE

Stuart H. Orkin, MD, an investigator of the Howard Hughes Medical Institute at Boston

Children's Hospital and Dana-Farber Cancer Institute and a professor at Harvard Medical School, received the 2018 Mechthild Esser Nemmers Prize in Medical Science at Northwestern University. Orkin is known for his breakthrough discoveries into blood cell development and the genetic basis of blood disorders.

The Mechthild Esser Nemmers Prize in Medical Science, which carries a \$200,000 stipend, was made possible by a generous gift to Northwestern by the late Erwin Esser Nemmers and the late Frederic Esser Nemmers.

Northwestern Medicine Bluhm Cardiovascular Institute, the top-ranked cardiovascular program in Illinois for the last 10 consecutive years, received a \$25 million gift from the Bluhm Family Charitable Foundation, formed by Neil G. Bluhm, a prominent Chicago philanthropist and real estate developer.

The gift will fund, in part, a first-of-its-kind center focused on artificial intelligence (AI) and machine learning to advance the study and treatment of cardiovascular disease.

Northwestern Medicine has already started working with companies to explore new ways to apply AI to clinical care. For example, the Bluhm Cardiovascular Institute partnered with Bay Labs, a West Coast-based technology company developing products that use AI to help clinicians process and analyze cardiac ultrasound images. Cardiac ultrasound, or echocardiography, is considered the gateway to the diagnosis and management of heart disease.





MD

Celebrating 2018 Graduates



MD

“As student physicians, we have each been able to make a difference in small, yet incredibly significant ways.”

Class speaker Varshini Cherukupalli, '18 MD ➔



PHYSICIAN ASSISTANT

➔ On May 12th, 29 students in the Physician Assistant program received their Master of Medical Science degrees. Four students in the class were inducted into Pi Alpha, the National Honor Society for physician assistants.



PA



PA



MD

← DOCTOR OF MEDICINE

As Cynthia Perez, '18 MD, prepared to accept her doctoral hood and diploma at Feinberg's 159th convocation ceremony on May 21, she took a moment to recognize all those who have supported her along the path to medicine.

"Graduating from medical school is surreal. Though I'll be the one crossing the stage, I will be carrying all the efforts of my mother, teachers, friends and community with me," said Perez, who was the first in her family to graduate high school. She is moving on to a residency in pediatrics at NewYork-Presbyterian Weill Cornell Medical Center. "In Mexico, my mother did not have the educational opportunities I had, but made sure I had everything I needed growing up. I'm so thankful for her love and support."

After hearing from Northwestern University leadership and convocation

speaker David Skorton, '74 MD, secretary of the Smithsonian Institution (read more about him on page 32), the students walked the stage at Navy Pier's Aon Grand Ballroom to receive their degrees. Then they listened to a speech from Varshini Cherukupalli, '18 MD, and recited the Declaration of Geneva, the modern declaration of the physician's oath.

"I'm experiencing a lot of emotions," said John Campo, '18 MD, who graduated cum laude and also received the Frederick and Harriett Stenn Award for Humanism in Medicine at the annual Honors Day event. He will train as a resident in emergency medicine at Harbor-UCLA Medical Center. "As I look forward to residency, I am humbled with the knowledge that there is still so much to learn. Despite this, I feel confident in the training and skills Northwestern has provided me with. It's a solid foundation on which I will build upon."



MD

MD JOINT DEGREES

18

PhDs in the Medical Scientist Training Program



6

Master's Degrees in Business Administration

5

Master's Degrees in Public Health

5

Master's Degrees in Medical Humanities and Bioethics



PT

PHYSICAL THERAPY

◆ From left to right, Anne Hamel, '18 DPT, and Allison Rydberg, '18 DPT, present leadership awards to classmates Katherine Coombes, '18 DPT, and James Babana, '18 DPT.



PT

New Initiatives Aim to Accelerate Discovery and Translation to Patients

\$65 Million Launches Lakeside Discovery LLC

Northwestern University and Deerfield Management announced the launch of Lakeside Discovery, LLC, with the mission to accelerate the translation of transformative biomedical technologies. Deerfield will provide up to \$65 million in targeted funding and deep development expertise to advance promising Northwestern research.

During an event introducing the collaboration in June, Chicago Mayor Rahm Emanuel called the partnership “an important part of Chicago’s future,” adding that biomedical research and innovation are an essential part of the city’s growing economy.

“This exciting partnership combines two cutting-edge institutions under one roof to serve patients and save lives,” Mayor Emanuel said. “As a global hub for healthcare innovation, Chicago is the perfect home for this new venture, and we look forward to working together as we continue to advance medical care in the 21st century.”

Eric G. Neilson, MD, vice president for Medical Affairs and the Lewis Landsberg Dean, said Lakeside Discovery provides needed funding that can speed up the research process.

“Society is quite impatient for great advances, but biomedical research is not a sprint — it’s more like a relay,” Neilson said. “It takes an unpredictable amount of time. If society wants to quicken the pace, it has to provide more fuel, and this is where the Deerfield partnership can be a great benefit for our shared goals.”

Combined with the 2019 opening of the Louis A. Simpson and Kimberly K. Querrey Biomedical Research Center, Lakeside Discovery will further strengthen Northwestern’s position as one of the leading academic medical research centers in the world, said Alicia Löffler, PhD, executive director of Northwestern’s Innovation and New Ventures Office.

Lakeside will tackle projects approved by a joint steering committee comprised of members from the Northwestern and Deerfield scientific leadership teams. Northwestern members will initially include Neilson, Löffler and Richard Silverman, PhD, the Patrick G.

Ryan/Aon Professor of Chemistry and Molecular Biosciences in the Weinberg College of Arts and Sciences.

“THIS EXCITING PARTNERSHIP COMBINES TWO CUTTING-EDGE INSTITUTIONS UNDER ONE ROOF TO SERVE PATIENTS AND SAVE LIVES.”

RAHM EMANUEL
Mayor of Chicago

They will use their experiential scientific knowledge, in consultation with Deerfield, to assess each proposal’s potential biological and commercial success. Projects will be selected based on many criteria, with an emphasis on the novelty of biological insight, regardless of its stage of development.

Projects accepted by Lakeside will be supported with a complete development plan, including vital experiments needed to reach Investigational New Drug-readiness in an expedited time frame. Deerfield also will support Lakeside with operational expertise.



Leaders from Northwestern University and Deerfield Management at a June event celebrating the new Lakeside Discovery collaboration.

Setting the Stage for Pharmaceutical and Biomedical Partnerships

The words nobody wants to hear from a pharmaceutical company after presenting a new potential drug that obliterates cancer in mice: “It’s too early.” That’s code for: “We’re not convinced this could actually work and is safe for humans.”

NewCures at Northwestern University is a novel accelerator poised to prevent that brush-off. It will identify the most promising new potential therapies in development at the university for cancer, depression, pain, Parkinson’s disease and other diseases. Then it will fund outside research to answer the key questions a pharmaceutical company typically requires before it agrees to invest in later-stage development, such as clinical trials.

Northwestern is on the crest of an early wave of universities accelerating the development of their therapies as pharmaceutical companies shift from completely developing

in-house drugs to licensing proven technology from academia and startups.

“There’s a new ecosystem of small biotechs spun from academic research collaborating with larger industry partners,” said Karl Scheidt, PhD, NewCures executive director and professor of Pharmacology and of Chemistry at the Weinberg College of Arts and Sciences. “We need to understand what they’re looking for.”

An external advisory board of pharmaceutical executives, venture capitalists and scientific leaders help choose the therapies for NewCures and how to invest in these new technologies.

“You need to understand what other therapies are available and in development, and how a discovery can be turned into a treatment that will help patients better than what is already out there,” explained Scott



Brun, MD, vice president of scientific affairs and head of AbbVie Ventures, who is a member of the NewCures external advisory board.

The seed for NewCures was an earlier pilot program at the Robert H. Lurie Comprehensive Cancer Center of Northwestern University called Compounds for Cures, developed by Scheidt and Leonidas Plataniias, MD, PhD, director of the Lurie Cancer Center, and the Jesse, Sara, Andrew, Abigail, Benjamin and Elizabeth Lurie Professor of Oncology.

Case Study: Hurdling Tall Barriers in Cancer Drugs

Cancer really likes a protein called MYC. If you remove the gene that produces MYC, tumors wither and leukemia remits. But it’s been tough to design a molecule to inhibit MYC. The protein is all smooth, slick surfaces with no handy grooves for a molecule to latch on. Scientists had given up on it.

Enter Sarki Abdulkadir, MD, PhD, vice chair for research in the Department of Urology and the John T. Grayhack, MD, Professor of Urological Research. With Gary Schiltz, PhD, and Rama Mishra, PhD, from Northwestern’s Center for Molecular Innovation and Drug Discovery, Abdulkadir used molecular modeling to test 16 million compounds to see if their geometric structure could bind to the protein.

He discovered several candidates, synthesized the most promising ones and began testing them in animals. They caused regression in prostate cancer and leukemia in animal models. In human cancer cell lines, the compounds inhibited more than a dozen types of cancer.

For a compound to be considered as a candidate drug for clinical trials, Abdulkadir needs funding to conduct extensive testing in larger animals. National Institutes of Health grants cover only basic science and early animal studies.

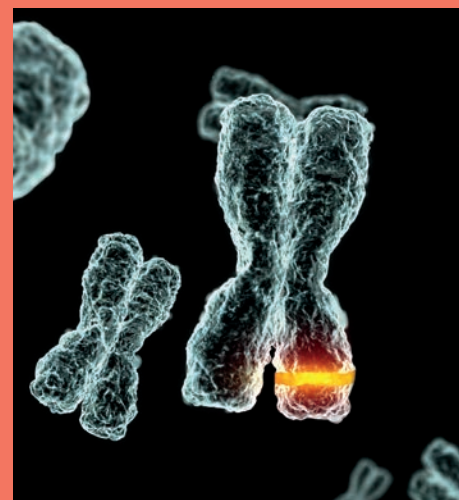
“YOU CAN’T JUMP FROM MICE TO HUMANS. THESE THINGS TAKE TIME AND A LOT OF RESOURCES.”

“If you give a compound to a living organism, where does it go ... to the liver, the kidney?” asked Abdulkadir, also a professor of Pathology and a member of the Lurie Cancer Center. “How is it excreted from the body? Does it stay in the fat for a long time? What’s the safety profile? Is it easy to dissolve in a solution so you can inject it? We need to understand all that. You can’t jump from mice to humans. These things take time and a lot of resources.”

c-myc

Chromosome 8 where the MYC gene is located.

If one of Abdulkadir’s compounds is chosen as a candidate for NewCures, an outside lab will conduct a raft of experiments on the drug so it’s ready for consideration as an investigational drug by the U.S. Food and Drug Administration and a candidate for acquisition.



Unique Learning Experiences Expose Students to Patient Perspectives

Medical Student Creates ‘Day in a Wheelchair’ for Classmates

Samantha Schroth, a second-year MD/PhD student, didn't always plan on becoming a physician. After earning a bachelor's degree in animal science in 2013, she was set to attend veterinary school.

But when an accident that summer left Schroth with a serious spinal cord injury, she realized her true passion lied in human medicine — and she ultimately found her way to

Feinberg's Medical Scientist Training Program.

Since beginning at Northwestern in August 2017, Schroth has dedicated herself not

only to the normal activities of a medical student, but also to advocating for people of all abilities.

In April, during her class's musculo-skeletal module, Schroth developed a unique activity that allowed her fellow classmates to experience what it's like to live a day in a wheelchair.

In the personal essay below, Schroth shares how she hopes this experience helps medical students ultimately become better physicians.

“Wheeling” is a rather recent addition to my life. Five years ago, a week after graduating from college, I was standing in the front yard of a friend's cabin on a beautiful day when a dead tree fell on me — resulting in a spinal cord injury and paralysis below the mid-chest.

Fast forward through three months in the ICU, rehabilitation and many months (if not years) of adjustment and trial-by-error learning.

It's no surprise that becoming a paraplegic is a big change. But I was surprised by some of those changes: how differently I was treated and the countless entities of day-to-day life — curb cutouts, stairs, bathroom stalls — that I now needed to pay attention to and navigate.

This experience isn't uncommon. According to a 2012 report by the U.S. Census Bureau, nearly one in five people self-report having a disability. Why does this matter? Because as future physicians, I and all of my peers will one day have patients who identify as disabled. Understanding the impact disability can have on day-to-day life is vital in treating these patients with both dignity and respect.

It's said that experience is life's best teacher, and I couldn't agree more; thus “A Day in a

Wheelchair” was born. I planned and organized an experience to allow my classmates the opportunity to experience life the way I and many of our future patients do — on wheels.



Medical students Cindy Wu and Francisco Cai wait for public transportation during their “Day in a Wheelchair” last spring.

“I PLANNED AND ORGANIZED AN EXPERIENCE TO ALLOW MY CLASSMATES THE OPPORTUNITY TO EXPERIENCE LIFE THE WAY I AND MANY OF OUR FUTURE PATIENTS DO — ON WHEELS.”

For the duration of our four-week musculoskeletal module, two wheelchairs were available to be “checked out” for an entire day. Students attended classes, traveled to an off-campus location of their choosing and even attempted public transit — all with the intention of developing a greater sense of empathy and appreciation for just some of the many challenges wheelchair users face.

Samantha Schroth, a second-year MD/PhD student and wheelchair user, planned the activity to help her classmates develop more empathy for their patients with disabilities.



Inside look at the Shirley Ryan AbilityLab

Students Look Beyond the Chart at Shirley Ryan AbilityLab

All medical students at Feinberg complete a Physical Medicine and Rehabilitation clerkship, a two-week rotation housed at the Shirley Ryan AbilityLab, the top-ranked rehabilitation hospital in the nation.

Instilling in students an understanding of the connection between illness and ability is a major goal of the clerkship, according to Leslie Rydberg, '05 MD, '09 GME, assistant professor of Physical Medicine and Rehabilitation and clerkship director.

“No matter what field of medicine students choose to go into, patients care about their function,” said Rydberg. “For example, a patient seeing a cardiologist doesn’t necessarily care what their cholesterol number is — they care about how it makes them feel and how it plays into their ability.”

Rydberg was introduced to physical medicine and rehabilitation as a first-year student at Feinberg, and learned the principles of rehabilitation medicine firsthand from leaders in the field.

“I was lucky to have the Rehabilitation Institute of Chicago — now the Shirley Ryan AbilityLab — right on campus,” Rydberg said.

“Once I learned about the breadth and depth of the field, and the focus on function, I knew I had found my specialty.”

During the clerkship, Feinberg students perform physical examinations, attend therapy sessions and coordinate care — activities designed to acclimate them to patients with disabilities, expose them to disability-specific conditions and encourage them to think beyond merely what’s on a patient’s chart.

“We’re trying to get students thinking about how much assistance the patients need, what their homes look like or what kind of therapies they need,” Rydberg said. “How do their impairments limit their ability to function at home or in the community?”

While it’s still a hospital-based rotation, performing patient rounds at the Shirley Ryan AbilityLab is a fundamentally different experience compared to other rotations, according to Charles Cogan, '18 MD, who completed his rotation in April.

“Patients are right in front of you, going through their physical therapy or occupational therapy,” Cogan said. “You get a snapshot of how this patient is doing and get to know them as a person.”

The partnership between Feinberg and the nation’s top-ranked rehabilitation hospital since 1991 — according to rankings by *U.S. News and World Report* — is unique among medical schools, said Rydberg.

“There’s only a handful of schools across the country that have a required PM&R rotation,” she said. “Most facilities don’t have the infrastructure to support an entire class of medical students rotating through.”

Read more about the medical school’s collaborations with the Shirley Ryan AbilityLab on page 18.



RESEARCH BRIEFS

SCIENTIFIC ADVANCES

UNDERSTANDING THE EPIGENETICS OF SEX DETERMINATION



Scientists have identified a key enhancer of Sox9 — a gene critical for male sex development — and demonstrated that deleting the enhancer results in male-to-female sex reversal in mice.

The study, published in *Science*, deepens understanding of the normal process of sex determination in mammals. Its findings could also help improve the genetic diagnosis of patients with differences in sex development (DSDs), in which reproductive organs don't develop as expected. Currently, only about 20 percent of such patients receive a genetic diagnosis.

The Sox9 gene is crucial for male differentiation and the proper formation of testes; if Sox9 is mutated or incorrectly expressed, an individual who is chromosomally male (XY) can develop ovaries instead of testes.

Previously, it was known that some patients with DSDs have changes in their genome near the Sox9 gene that alter its expression and lead to sex reversal. But it was unclear exactly why.

In the current study, scientists identified an enhancer (a short region of DNA that can increase gene transcription) that is necessary to regulate expression of the Sox9 gene.

The *Science* study was a collaboration between the laboratories of the late Danielle Maatouk, PhD, assistant professor of Obstetrics and Gynecology, and corresponding author Robin Lovell-Badge, PhD, of the Francis Crick Institute in London. Alexandra García-Moreno and Isabella Salamone, both fifth-year doctoral students in Feinberg's Driskill Graduate Program in Life Sciences, and Christopher Futtner, a research associate, were also co-authors.

"Often genes important for sex determination are also crucial for other developmental processes, and a mutation in one gene or its regulatory region can impact a patient's health in many ways," explained Salamone. "As we begin to understand the genetic underpinnings of these disorders, we can improve our care of these patients."

The study was supported by the Francis Crick Institute, which receives its core funding from Cancer Research UK (FC001107), the UK Medical Research Council (FC001107), and the Wellcome (FC001107); and by the UK Medical Research Council (U117512772). The study was also supported by the Agence Nationale pour la Recherche (ANR blanc TestisDev) and Feinberg.

DISEASE DISCOVERIES

A New Weapon Against Cancer Metastasis



In a study published in *Science Translational Medicine*, investigators discovered a new compound that halts the spread of cancer cells.

Co-corresponding author Sui Huang, MD, PhD, associate professor of Cell and Molecular Biology, had already identified the complex marker that indicates cancer cells' ability to transform into metastasizing "multiple-headed monsters," as she describes them.

In the new study, she and colleagues found a compound that blows up the monsters and significantly reduced metastasis by human prostate, pancreatic and breast cancer transplanted into mice.

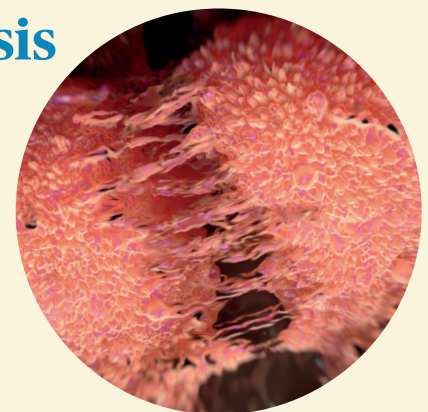
Mice treated with the compound, metarrestin, had fewer metastatic tumors in

the lung and liver, and lived longer than mice that did not receive treatment.

"It's like a dirty bomb against cancer," said Huang, also a member of the Robert H. Lurie Comprehensive Cancer Center of Northwestern University, describing metarrestin's potency against metastasizing cells. "It could potentially result in a better outcome for patients with solid tumor cancers with high potential to spread to other organs. It's promising."

Metarrestin will be submitted to the Food and Drug Administration for approval as an investigational drug in the near future, with the goal of launching a clinical trial. There currently is not a drug aimed at selectively preventing cancer metastasis.

Scientists from the National Cancer Institute (NCI), the University of Kansas,



the National Center for Advancing Translational Science (NCAT) and Chen Wang, a research associate in Huang's lab, worked closely as a team to make this discovery possible.

The study was funded by the National Center for Advancing Translational Sciences and NCI, the National Human Genome Research Institute grant U54HG005031, the National Institute of General Medical Sciences grants R01GM078555 and R01GM0115710, NCI grant 2 P30 CA060553-19, the V Foundation, the Baskes family, the Robert H. Lurie Comprehensive Cancer Center — Translational Bridge Program Fellowship in Lymphoma Research, and the Molecular Libraries Initiative funding to the University of Kansas Specialized Chemistry Center.

CLINICAL BREAKTHROUGHS

Regenerative Bandage Accelerates Healing in Diabetic Wounds



A simple scrape or sore might not cause alarm for most people. But for diabetic patients, an untreated scratch can turn into an open wound that could lead to a limb amputation or even death.

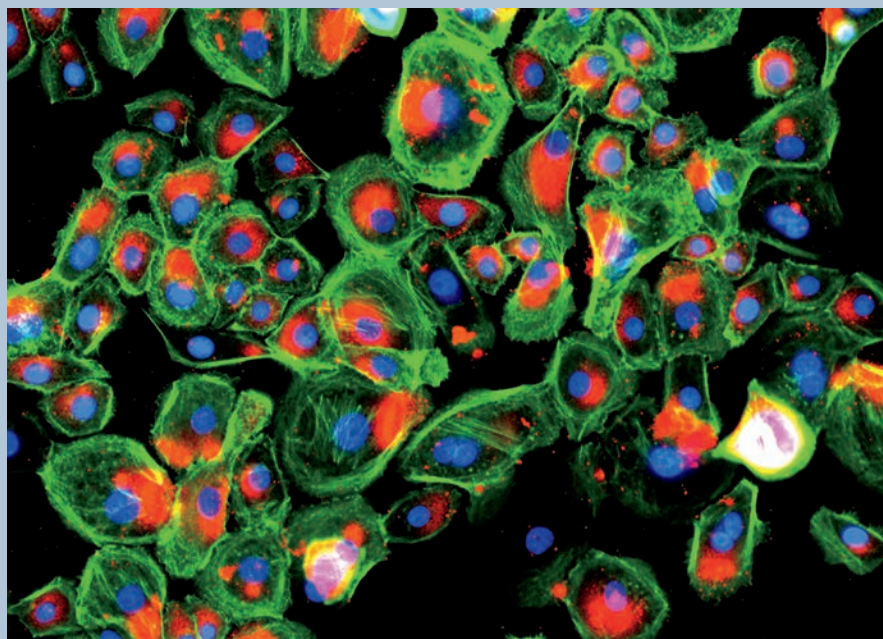
“WITH THIS NEWER APPROACH, WE’RE NOT RELEASING DRUGS OR OUTSIDE FACTORS TO ACCELERATE HEALING. AND IT WORKS VERY WELL.”

A Northwestern University team has developed a new device, called a regenerative bandage, that quickly heals these painful, hard-to-treat sores without using drugs. During head-to-head tests published in *Proceedings of the National Academy of Sciences*, Northwestern’s bandage healed diabetic wounds 33 percent faster than one of the most popular bandages currently on the market.

“The novelty is that we identified a segment of a protein in skin that is important to wound healing, made the segment and incorporated it into an antioxidant molecule that self-aggregates at body temperature to create a scaffold that facilitates the body’s ability to regenerate tissue at the wound site,” said Guillermo Ameer, ScD, who led the study. “With this newer approach, we’re not releasing drugs or outside factors to accelerate healing. And it works very well.”

Because the bandage leverages the body’s own healing power without releasing drugs or biologics, it faces fewer regulatory hurdles. This means patients could see it on the market much sooner. Although Ameer’s laboratory is specifically interested in diabetes applications, the bandage can be used to heal all types of open wounds.

Ameer is a professor of Surgery in the Division of Vascular Surgery and of Biomedical Engineering at the McCormick School of Engineering.



The secret behind the bandage is laminin, a protein that sends signals to cells, encouraging them to differentiate, migrate and adhere to one another. Ameer’s team identified a segment of laminin called A5G81 that is critical for the wound-healing process. Pictured: Stained epidermis cells cultured on the A5G81 peptide. Image courtesy of the Ameer Research Lab.

CLINICAL BREAKTHROUGHS

SMOKE-FREE POLICIES LINKED TO LOWER HEART DISEASE RISK



Laws that ban smoking at work and other public places are associated with a significantly lower risk of cardiovascular disease, even after controlling for a variety of factors, according to a new Northwestern Medicine study.

The study, published in *Circulation*, found that smoke-free policies in workplaces were associated with a nearly 50 percent reduction in risk among middle-aged adults, while policies for bars and restaurants were linked to a reduction of around 25 percent.

Kiarri Kershaw, PhD, MPH, assistant professor of Preventive Medicine in the Division of Epidemiology, was the senior author of the study. Stephanie Mayne, PhD, a postdoctoral fellow in the Department of Preventive Medicine, was the first author.

The findings are consistent with previous studies that have demonstrated a link between smoke-free policies — which aim to decrease exposure to secondhand smoke — and a reduced risk of heart disease among the population. But the current study is the first to account for various characteristics of the study population, including participants’ health behaviors and cardiovascular risk factors, as well as geographic factors like state cigarette taxes, which could confound results.

The study’s findings support the continued expansion of smoke-free policies in indoor public places.

“Our results suggest smoke-free policies may prevent cardiovascular disease among young to middle-aged adults, but much of the U.S. population is not currently covered by smoke-free policies. Only 25 states have laws banning smoking in all workplaces, bars and restaurants,” Mayne said.



Investigators used data from the CARDIA study (Coronary Artery Risk Development in Young Adults), conducted and supported by the National Heart, Lung, and Blood Institute (NHLBI) with the University of Alabama at Birmingham (HHSN268201300025C and HHSN268201300026C), Northwestern University (HHSN268201300027C), University of Minnesota (HHSN268201300028C), Kaiser Foundation Research Institute (HHSN268201300029C), Johns Hopkins University (HHSN268200900041C), the Intramural Research Program of the National Institute on Aging and an intra-agency agreement between the National Institute on Aging and NHLBI (AG0005). Additional support was provided by NHLBI grants R01-HL114091 and T32HL069771.

MEDIA SPOTLIGHT

THE WALL STREET JOURNAL

A Surprise Medical Solution: Hypnosis

Hypnotherapy — when patients enter a trance-like state using relaxation and visual images — is often associated with alternative medicine. But increasingly medical centers are using it to treat digestive conditions like acid reflux, irritable bowel syndrome (IBS) and ulcerative colitis. “It doesn’t get rid of the stimulus. Your GI tract is still moving. It’s just changing the threshold of perception so you’re not paying attention or feeling it with the same intensity,” said John Pandolfino, MD, chief of Gastroenterology and Hepatology. Northwestern Memorial Hospital started offering hypnotherapy in 2006 and has plans to expand to two regional hospitals. Because there aren’t many treatments for IBS, hypnotherapy has become “the front-line therapy,” Pandolfino said.

The Washington Post

New Tools for Taking Control of Your Mental Health



Half of all U.S. counties have no psychiatrist, psychologist or social worker, and that lack of

access, plus cost, has put traditional treatment beyond the reach of many. The breach is being filled with a new field of mental-health technology. IntelliCare, developed at Northwestern’s Center for Behavioral Intervention Technologies, includes a suite of programs aimed at depression and anxiety. Among other features, individuals who are depressed and likely to stay in bed all day might be prompted with “goals” to get out of bed, brush their teeth and eat something. “As you check them off, you’re given harder things to accomplish,” said Stephen Schueller, PhD, adjunct assistant professor of Preventive Medicine and one of the apps’ developers. “People really like being challenged.”







PHOTOGRAPHY BY *Randy Belice*

The New York Times

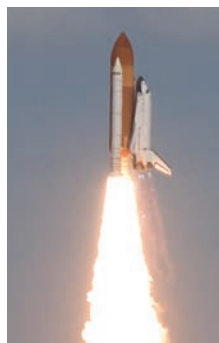
From a Pediatrician, Lessons for Dads-to-Be

In a conference room at Northwestern Memorial Hospital on a recent evening, a group of men sat down for a class on pregnancy and childbirth led by Craig Garfield, MD, associate professor of Pediatrics and Medical Social Sciences. Garfield has found that helping fathers benefits the children they raise — and that some of the health issues new moms face also affect new dads. He discovered that new fathers gain significant weight and that many experience a

major increase in depressive symptoms, which could lead to them being neglectful of their children. He also found that fathers of premature babies experience higher levels of stress than their partners during the transition home. Garfield has called for wider health screening in new and expectant fathers, many of whom do not have primary care physicians. Garfield is working on a pilot study expected to start in August to track health behaviors in new fathers.

 Associated Press  The New York Times  abc NEWS  The Washington Post

Northwestern Microbiome Project on Board SpaceX



In June, a SpaceX rocket launched the first orbiting robot with artificial intelligence and other station supplies. Also on board are two sets of genetically identical brown female mice, or 20 mousetronauts altogether. Northwestern

University scientists, including Fred Turek, PhD, professor of Neurology and of Psychiatry and Behavioral Sciences, want to study the bacteria in the animals’ guts and compare them to their identical sisters on the ground. They did the same with former NASA astronauts and identical twins Scott and Mark Kelly, during Scott’s yearlong space station mission a few years ago.

FACULTY AWARDS & HONORS



Four faculty were recognized for outstanding teaching and mentorship during the sixth annual Honors Day on May 18:

• **Donald McCrimmon, PhD**, associate chair of Physiology and professor of Anesthesiology; **Kristy Wolniak, MD, PhD, '09, '14 GME**, assistant professor of Pathology; and **Bruce Henschen, '12 MD, '12 MPH, '15 GME**, assistant professor of Medicine, each received the George H. Joost Teaching Award.

📍 1 (Henschen)

• **Tod Chambers, PhD**, associate professor of Medical Education and Medicine, received the Michael M. Ravitch Award.

Melissa Simon, MD, MPH, '06 GME, the George H. Gardner Professor of Clinical Gynecology, vice chair for clinical research in the Department of Obstetrics and Gynecology and professor of Preventive Medicine and Medical Social Sciences,

received the Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring.

Maciej (Matt) Lesniak, MD, chair of Neurological Surgery and the Michael J. Marchese Professor of Neurosurgery, and **John Pandolfino, MD, '97 GME, '01 GME, '05 MSCI**, chief of Gastroenterology and Hepatology in the Department of Medicine and the Hans Popper Professor, were inducted into the American Society for Clinical Investigation.

Hossein Ardehali, MD, PhD, professor of Medicine and director of the Center for Molecular Cardiology, and **Philip Greenland, MD**, the Harry W. Dingman Professor of Cardiology, were inducted into the Association of American Physicians.

Daniel Brat, MD, PhD, chair and the Magerstadt Professor of Pathology, and **Eileen Bigio, MD**, the Paul E. Steiner

Research Professor of Pathology, were named president and vice president, respectively, of the American Association of Neuropathologists for 2019-2020.

📍 2 (Bigio)

Susan Quaggin, MD, chief of Nephrology and Hypertension in the Department of Medicine and director of the Feinberg Cardiovascular and Renal Research Institute received the 13th annual Dorothy Ann and Clarence L. Ver Steeg Distinguished Research Fellowship Award.

Katherine L. Wisner, MD, the Norman and Helen Asher Professor of Psychiatry and Behavioral Sciences and of Obstetrics and Gynecology, was awarded the Vivian Pinn Women's Health Research Award.

Michelle Birkett, PhD, assistant professor of Medical Social Sciences and Preventive Medicine, was accepted into the inaugural 18-member

cohort of New Voices in Sciences, Engineering, and Medicine, a new initiative of the National Academies.

📍 3

Kathleen Green, PhD, the Joseph L. Mayberry, Sr., Professor of Pathology and Toxicology, and professor of Dermatology, received the David Martin Carter Mentor Award presented by the American Skin Association during the Society for Investigative Dermatology annual meeting. 📍 4

Panagiotis Ntziachristos, PhD, assistant professor of Biochemistry and Molecular Genetics and Medicine, received the 2017 Hartwell Individual Biomedical Research Award for his research on pediatric leukemia. 📍 5

Rosalind Ramsey-Goldman, MD, the Solovy/Arthritis Research Society Research Professor of Medicine, received the 2018 Paula H.

Stern Award for Outstanding Women in Science and Medicine from the Northwestern Medical Women Faculty Organization.

Brian Mustanski, '99 PhD, director of the Institute for Sexual and Gender Minority Health and Wellbeing, and professor of Medical Social Sciences and of Psychiatry and Behavioral Sciences, received the American Psychological Association Division 44 Award for Distinguished Contribution and Training in recognition of his work disseminating science and scholarship on LGBTQ issues.

Kathryn Hufmeyer, '11 MD, '14 GME, assistant professor of Medicine, and **James Walter, MD, '17 GME**, instructor of Medicine, both received the 2018-2020 Augusta Webster Fellowship Award. 📍 6

Tanya Simuni, MD, the Arthur C. Nielsen Professor of Neurology and chief of Movement Disorders in the Department of Neurology, was awarded the 2018 Edmond J. Safra Fellowship in Movement Disorders.

The following faculty have been invested into endowed professorships:

• **Babafemi Taiwo, MBBS, '06 GME**, chief of Infectious Diseases in the Department of Medicine, as the Gene Stollerman Professor of Medicine. 📍 7

• **Jayesh Mehta, MD**, and **Seema Singhal, MD**, professors of Medicine, as Chez Family Professors of Myeloma Research.

• **Estella Alonso, '85 MD, '88 GME**, professor of Pediatrics and Medical Social Sciences, as the Sally Burnett Searle Professor of Pediatrics and Transplantation.

A microscopic view of red blood cells, showing their characteristic biconcave disc shape. The cells are rendered in a vibrant, glowing red color against a background that transitions from yellow at the top to blue at the bottom. The lighting creates highlights and shadows, giving the cells a three-dimensional appearance.

NEW BLOOD

Gene therapy delivers
novel solution for treating
serious blood disease.



WRITTEN BY CHERYL SOOHOO

They happened to be in the same room discussing the same thing: investigating curative therapies for beta thalassemia, an inherited blood disorder that causes severe anemia and requires lifelong blood transfusions for survival. That's how Alexis A. Thompson, MD, MPH, professor of Pediatrics in the Division of Hematology, Oncology and Stem Cell Transplantation, recalls first meeting scientists from a small biotechnology startup called Bluebird Bio at a thalassemia conference six years ago. More than an exchange of business cards, though, this chance encounter evolved into an international multicenter trial testing a promising gene therapy approach that may revolutionize the treatment of beta thalassemia and related blood diseases.

The results of the collaboration were published earlier this year in a headline-making paper in *The New England Journal of Medicine*. The paper reported findings from an international gene therapy trial known

as Northstar headed by Thompson, plus a separate, smaller study led by investigators in France. The two clinical studies evaluated a novel treatment strategy to replace the disease-causing gene — beta globin — responsible for beta thalassemia. When mutated, this gene impairs the ability of red blood cells to make normal amounts of hemoglobin. The phase I trials used a lentiviral vector manufactured by Bluebird Bio to deliver healthy copies of the beta globin gene into a patient's harvested stem cells. Following transplantation of their genetically modified stem cells, the majority of the studies' 22 participants no longer needed blood transfusions or required far fewer moving forward — a major breakthrough.

Scientists have been working for decades to develop genetic modifications to effectively treat inherited human diseases. Hemoglobin disorders such as beta thalassemia and sickle cell disease have long been a focus of this gene therapy research. "From the beginning, we recognized that if patients could produce enough normal hemoglobin, this approach could be transformative," says Thompson.

Thompson is director of the Comprehensive Thalassemia Program at Ann & Robert H. Lurie Children's Hospital of Chicago, a member of the Stanley Manne Children's Research Institute and president of the American Society of Hematology, the largest hematology organization in the world.

"As soon as it was feasible to initiate a phase I clinical trial, we seized the opportunity to take all of this wonderful basic science work and apply it to two conditions for which it was clearly ideal: thalassemia and sickle cell disease," she says.

Seeking New Options

An iron-binding protein in red blood cells (RBCs) called hemoglobin makes it possible for RBCs to transport oxygen and fuel cells throughout the body. Mutations in the gene for beta globin, an essential component of hemoglobin, adversely impact hemoglobin production: too little or none at all can deprive cells of oxygen and lead to fewer RBCs in general, usually causing anemia. The lives of individuals with the most severe form of »

WHAT IS BETA THALASSEMIA?

- Blood disease caused by inherited mutations in the gene beta globin, responsible for hemoglobin protein
- Results in shortage of red blood cells and lack of oxygen in many parts of the body, leading to serious complications such as organ damage and bone deformities
- Patients need regular blood transfusions to survive



MEET THE PATIENTS

- Wanda Sihanath (above), 22, first patient to receive therapy in 2014
- Zinnia Jones (below), 13, received therapy in 2018



thalassemia depend on blood transfusions every three to four weeks, usually starting before a patient is even one year old. With an estimated global prevalence of nearly 300,000, thalassemia is among the most common blood disorders in the world, affecting an estimated 60,000 infants each year.

While life-sustaining, frequent transfusions can cause a buildup of excess iron. Patients then require iron chelation therapy to remove the iron and prevent damage to organs such as the heart and liver, as well as to lessen side effects like joint pain and fatigue.

The only potentially curative therapy available to patients with transfusion-dependent thalassemia has been allogeneic hematopoietic stem cell transplantation (HSCT) — receiving normal blood-forming stem cells from a genetically similar donor. But not every eligible patient has an appropriate donor, and even under ideal circumstances, problems can arise from these stem cell transplants, such as rejection of the donor cells. In one serious complication, graft versus host disease, donor cells attack healthy tissues and organs in the transplant recipient. Late effects including infertility, growth retardation and poor bone health must also be considered prior to proceeding with HSCT. In general, young recipients with a well-matched donor and minimal iron buildup achieve the best outcomes.

“There has been a real need to develop other definitive therapies for people who don’t have sibling donors or who are older,” says Thompson. “The use of gene therapy represents decades of research to attempt to actually restore or replace a defective protein such as beta globin with a new source of that protein.”

Collect, Modify, Return

Thompson and her colleagues at Lurie Children’s and Feinberg sprang into action once animal studies successfully demonstrated gene therapy could correct beta thalassemia as well as sickle cell disease in mice. The investigators participated in the early development of the clinical protocol that would be used for the Northstar study at sites in the United States, Australia and Thailand.

The experimental gene therapy starts with a thorough evaluation of potential recipients to ensure adequate organ function and their understanding of the potential risks and benefits of the protocol. Then, study sites collect stem cells from patients’ peripheral blood or blood stream via apheresis technology, which is less invasive than bone marrow harvest performed under general anesthesia. The cells are sent to a centralized U.S. manufacturing laboratory for insertion of the new “healthy” beta globin gene into the abnormal stem cells.

With the largest pediatric stem cell transplant and pediatric apheresis programs in Illinois, Lurie Children’s is well suited to conduct this type of cutting-edge gene therapy research. The hospital’s stem cell transplant team oversaw the management and care of close to half of the global study’s participants.

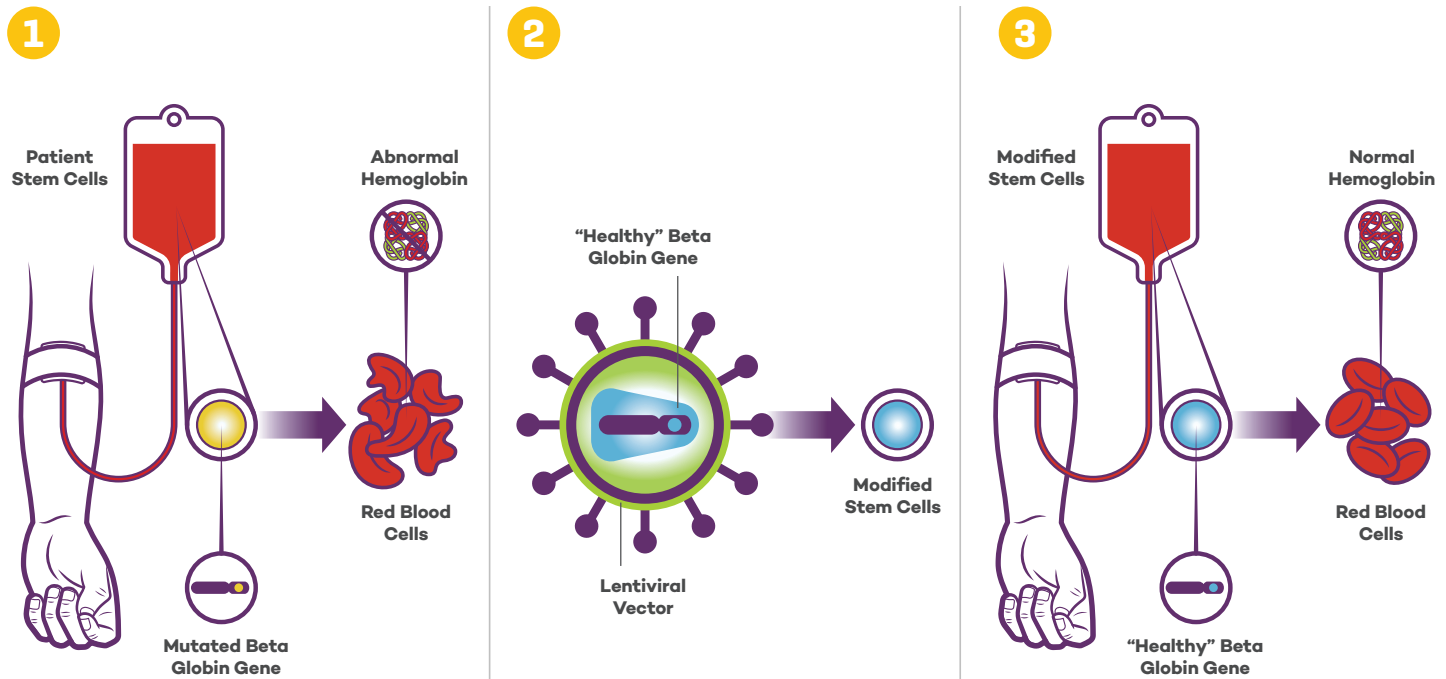
“We have a highly experienced group of transplant physicians and nurses, adept at collecting stem cells from patients with complex conditions,” says Jennifer Schneiderman, MD, MS, ’06, ’07 GME, associate professor of Pediatrics and medical director of Lurie Children’s Therapeutic Apheresis Program. “Harvesting stem cells from thalassemia and sickle cell patients is not straightforward. Their red cells are not normally shaped, and the apheresis machine spins and separates them in a different fashion than what we typically see. Our expertise allows us to modify the equipment to obtain what we need.”

After six to eight weeks at the central processing laboratory, the reprogrammed stem cells are returned to the transplant centers. Patients return to the hospital where they first undergo a rigorous chemotherapy regimen before being reinfused with their gene-modified stem cells. They remain in the hospital for four to six weeks for the management of side effects.

“This therapy carries significant risks,” says Schneiderman, a hematologist who specializes in stem cell transplant. “These patients were very brave to take this leap of faith and try this treatment.”

HOW DOES THE NEW THERAPY WORK?

The clinical trial included 22 patients with beta thalassemia from two studies. After undergoing the therapy, 15 patients no longer require regular blood transfusions to survive and seven patients reduced their need for future transfusions by 70%.



Early Success

At a median follow-up period of 26 months, the investigators found that 15 of the 22 patients, who were once transfusion-dependent, no longer required regular blood transfusions to survive. They also suffered no ill effects from the novel gene therapy. The remaining study participants who didn't become transfusion-independent were able to reduce their need for transfusion by an average of 70 percent.

Building on the findings from the initial Northstar study, Thompson's team has been working on phase II/III gene therapy

With the largest pediatric stem cell transplant and pediatric apheresis programs in Illinois, Lurie Children's is well suited to conduct this type of cutting-edge gene therapy research.

studies. Expanded to include sites in the United Kingdom, Germany, Italy and Greece, these studies are focused on refining the gene therapy — better addressing the specific genetic subtypes of beta thalassemia and boosting the quantity of RBCs genetically modified by the lentiviral vector. For example, more participants with a genotype called non-beta-zero thalassemia who received gene therapy became transfusion independent than those with genotype beta-zero thalassemia. Additionally,

increasing the amount of “healthy” genes taken up by cells appears to enhance the

body's ability to make adequate levels of normal hemoglobin. The results of these studies have prompted Lurie Children's investigators and others to begin evaluating the use of gene therapy to treat sickle cell disease, another inherited blood disorder.

Some have already begun calling gene therapy the definitive “cure” for thalassemia. While not ready to use that four-letter word, Thompson is no doubt thrilled by the early success of this innovative treatment for blood disorders.

“We are incredibly gratified that everyone who participated has had clinical benefit, either the reduction or elimination of regular blood transfusions,” she says. “While we plan to follow these patients for a long time, I am very excited about the early stability of this treatment without serious side effects. We are absolutely headed in the right direction.” ✨

WRITTEN BY EMILY AYSHFORD

Redefining Wearable Technology

New stretchable electronic patches could transform rehabilitation and long-term care.



Our bodies are storytellers. Every heartbeat, joint creak and electric signal of a neuron tells a story of what is going right — and wrong — within the vast, complex system that gives us life.

While we now have the wearable technology to translate some of these stories — think Fitbits or health trackers on our smartphones — for bioelectronics pioneer John A. Rogers, PhD, and his colleagues, those devices only scratch the surface of what we can discern from the body in real time.

Rogers, who joined Northwestern in 2016, develops electronic devices that can bend, stretch, twist and integrate within the human body to both diagnose and treat disease. As the Louis Simpson and Kimberly Querrey Professor of Materials Science and Engineering, Biomedical Engineering and Neurological Surgery, Rogers conducts work that cuts across disciplines to translate innovative research into real medical breakthroughs.

Recently, Rogers became interested in developing a wearable patch that could record acoustics within the body, such as sounds within a joint or vibrations from speech. “We asked ourselves if it would be possible to build a soft, wireless, skin-interfaced device with the form factor of a Band-Aid and the functions of a stethoscope to continuously and precisely measure the body’s subtle mechanical and acoustic signatures?” he says.

MONITORS FOR THE BODY

Sensors could be placed at multiple locations for a full-body picture of a stroke patient's recovery.



JOHN A. ROGERS, PHD

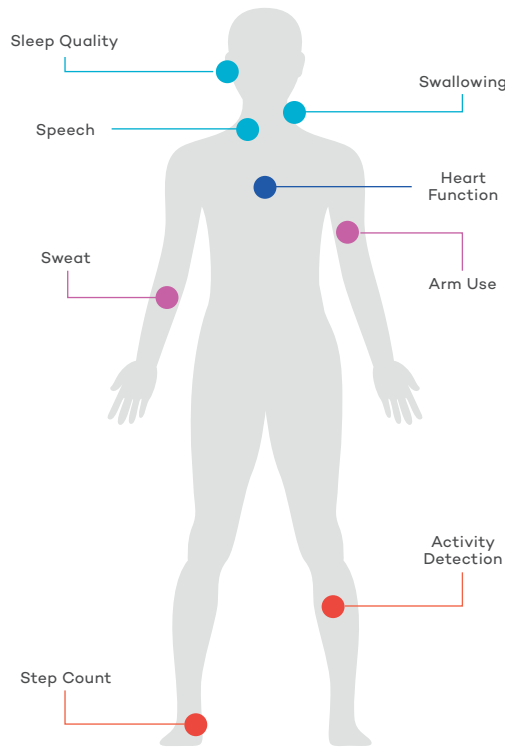
Develops electronic devices that integrate within the human body to diagnose and treat disease

Within a short period of time, and through galvanizing Northwestern connections, what Rogers called an “exploratory exercise in materials science and applied physics” turned into a real diagnostic and treatment tool to measure a rehabilitating stroke patient’s patterns of speech and swallowing. The result, the first wearable device designed for the throat, is a “much more personalized, quantitative approach to rehabilitation,” Rogers says.

The patch is only the beginning. Together with Arun Jayaraman, PhD, associate professor of Physical Medicine and Rehabilitation and his lab in the Shirley Ryan AbilityLab, Rogers has developed sensors that are deployed across the body to give a comprehensive view of patient recovery.

TRACKING SPEECH, WITH COMFORT

The throat sensor is just one in a portfolio of innovations developed in Northwestern’s Center for Bio-Integrated Electronics. There, Rogers and his collaborators have developed materials and design approaches that



ARUN JAYARAMAN, PHD

Develops next-generation technologies for people with disabilities

idea that it might be useful for a new kind of human-computer interface, but they pivoted after being approached by Leora Cherney, PhD, professor of Physical Medicine and Rehabilitation at Feinberg and a research scientist at the Shirley Ryan AbilityLab. She treats patients with aphasia, the loss of the ability to speak or understand speech after a stroke.

She asked if perhaps Rogers’s throat patch could measure patients’ total talk time and the cadence of their speech, giving therapists a better way of tracking patients’ rehabilitation. It could, Rogers said. “The patch can track speech and speech patterns in a way that is completely immune to ambient noise,” he says.

The team quickly realized the device could also measure swallowing. Dysphagia — difficulty swallowing — is another potentially difficult act that affects stroke patients’ quality of life.

“Once we understood that measuring speech and swallowing was important, we could go back and tailor the devices specifically to measure those processes,” he says. »

“We want the technology to have widespread, positive societal impact.”

Rogers has also developed devices that can be worn on the body to measure sweat rate and chemistry or to quantify exposure to solar UV radiation, as well as devices that can be implanted within the body to harvest energy from organs and automatically treat abnormal heart conditions.

Sometimes a device is developed for one purpose, only for investigators to find it has a second capacity. Rogers’s group originally developed the acoustic patch with the

The project involved designing a flexible patch with a battery, radio and acoustic sensor that could stick to the soft part of the throat and, perhaps most importantly, be comfortable for the user.

“The patch had to be constructed so that people forget it’s there once they put it on,” Rogers says. “We strive on the engineering and materials side to make it fully skin-like and physically imperceptible.”

Once the patch was optimized for patients with aphasia and dysphagia, Rogers’s group looked to expand its platform with another Shirley Ryan AbilityLab investigator — one who, like Rogers, takes a multidisciplinary approach to solving problems.

FULL-BODY PICTURE OF RECOVERY

Arun Jayaraman’s space in the Shirley Ryan AbilityLab is the picture of translational medicine. The Max Näder Lab for Rehabilitation Technologies and Outcomes Research not only houses dozens of physical therapists, engineers, computer scientists, physicians and social psychologists, it also has machine shops for building new technologies and space for patients to test them out.

The group develops and optimizes next-generation technologies for people with disabilities. In the case of stroke, “early interventions are critical for long-term recovery,” says Jayaraman, who is also a professor

“Once patients are discharged, we want them to get to a level where they can get back to their lives, back to work. Now we have the ability to monitor them to ensure their rehabilitation is on the right track.”

of Medical Social Sciences and of Physical Therapy and Human Movement Sciences. His team works on more than 30 projects at a time, including prostheses, robotics and adaptive technologies.

“With every question you want to take a multidisciplinary approach,” he says. “Each discipline has a thought process on what might work. When you combine them, that’s when you get the best outcome possible.”

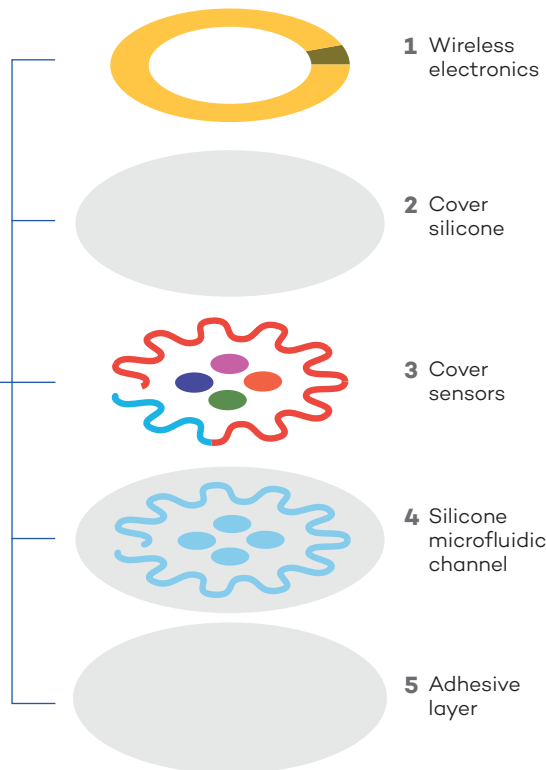
Before he met Rogers, Jayaraman tested new rehabilitative technologies — like a robotic leg that understands its user’s intent and then bends and moves like a real leg — and tracked patients’ responses with commercial sensors. But the sensors were optimized for healthy people, so when a patient with a restricted gait or a Parkinson’s tremor used them, the sensors couldn’t account for the different movements, and the resulting data was incorrect.

Rogers’s innovative sensors made it possible to detect behaviors on new locations on the body, like the throat, but Jayaraman also wondered if Rogers could provide a suite of sensors to give a full-body picture of a stroke patient’s recovery.

With feedback from Jayaraman, Rogers expanded the platform to include full-body motion kinematics. This new suite of sensors could be placed at multiple locations on the body to measure heart function, sleep quality, physical activity and muscle contractions.

THE SWEAT MONITOR

The bio-integrated device, made up of five distinct layers, monitors sweat loss and analyzes sweat chemistry, useful for stroke patients whose sweat rate can vary from the left to the right side of their bodies. Its sensors wirelessly stream data to clinicians’ phones and computers, allowing them to react to patients’ changing metrics in real time.



Increasing Mobility for Amputees and the Elderly

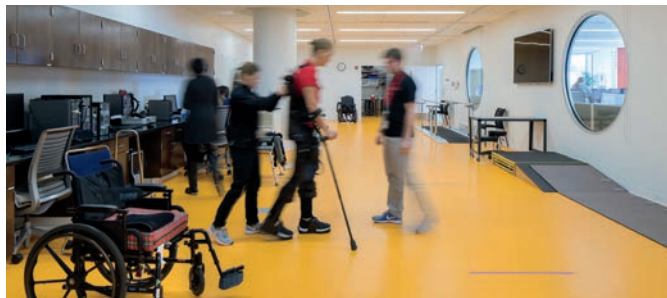
In the Max Näder Lab for Rehabilitation Technologies and Outcomes Research at the Shirley Ryan AbilityLab, Arun Jayaraman has dozens of projects at the interface of rehabilitation and technology.

PREVENTING INJURIES IN WHEELCHAIR USERS

When a wheelchair user spins their chair's wheels with their arms, they run the risk of injury — either by grabbing and pushing the wheel incorrectly, or by using too much force. Jayaraman's lab is developing gloves with sensors that measure the force and movement a user deploys, thereby calculating how much damage their shoulder joints are potentially receiving.

DETECTING AND SOFTENING FALLS

For amputees, falls are an imminent threat to independence. The lab is developing a robotic leg prosthesis that can detect when a wearer has lost their balance. The leg then reacts by slowly lowering itself to a kneeling position. The lab is also working to soften inevitable falls by developing an airbag designed to be worn under the pants, like a pair of boxer shorts. When a wearer falls, the airbag would deploy, and the soft cushion would help prevent hip fractures.



PHOTOGRAPHY COURTESY OF Shirley Ryan AbilityLab

Jayaraman could also deploy Rogers's sweat patch, which monitors sweat loss and analyzes sweat chemistry. This proves especially useful in stroke patients, whose sweat rate can vary from the left to the right side of their bodies.

Jayaraman's team is now developing algorithms to translate data from the sensors and is creating a dashboard interface for physicians and therapists to see how patients' data compares to that of healthy people. In the meantime, his patients are trying out the sensors at home.

"They don't mind wearing them," he says. "Once patients are discharged, we want them to get to a level where they can get back to their lives, back to work. Now we have the ability to monitor them to ensure their rehabilitation is on the right track."

FUTURE OF LONG-TERM CARE

Working with physician-scientists at the Shirley Ryan AbilityLab has been key to making designs as useful as possible, Rogers says. "Being co-located and tightly coupled makes a tremendous difference."

He hopes to continue improving the sensors while looking for more potential uses.

"Ultimately we would like to think of our research with the Shirley Ryan AbilityLab as a stepping stone to broader deployment," Rogers says. "We want the technology to have wide-spread, positive societal impact."

For example, he's connecting with Northwestern Medicine speech pathologists to test the throat patch with their patients and working on a haptic interface that reminds people to swallow, moving the patch beyond diagnostics and into therapy.

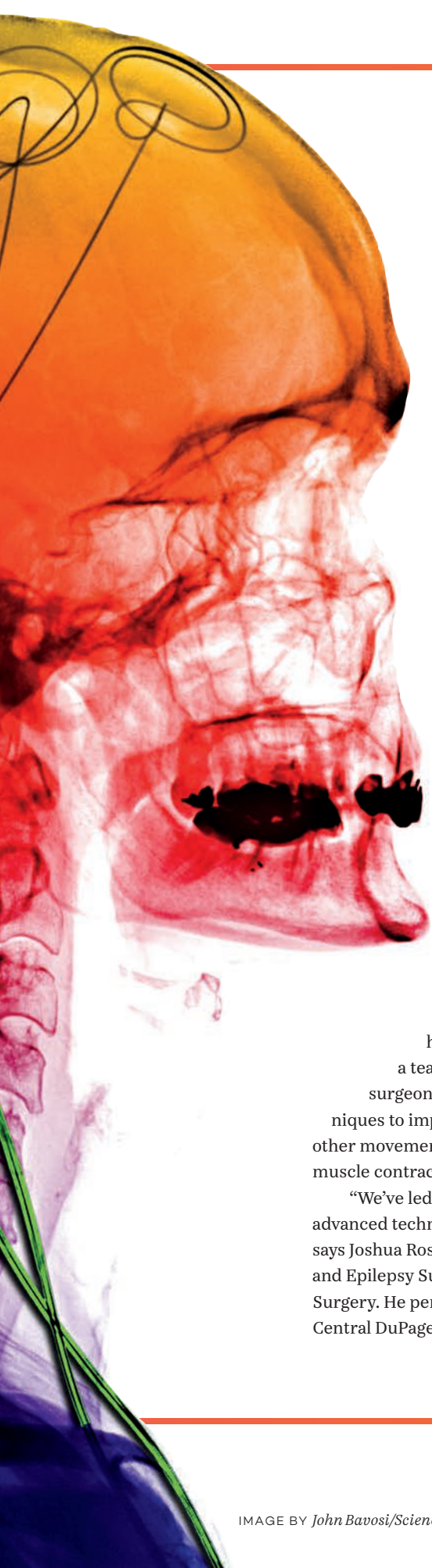
Jayaraman, meanwhile, envisions Rogers's sensors as key to the future of long-term care, especially for the elderly, who could benefit from unobtrusive remote monitoring that could allow them to keep living in their own homes. This could be a large market, considering the number of Americans ages 65 and over is projected to double to more than 98 million by 2060.

"The whole world is aging," Jayaraman says. "If we are able to monitor the elderly at home, it could create a new care model." 🌸

Improving quality of
life with leading-edge
deep brain stimulation.

Steadying the Symptoms of Parkinson's Disease





WRITTEN BY ANNA WILLIAMS

For patients with Parkinson's disease, even everyday tasks like brushing their teeth or signing their name can present significant challenges. Severe tremors, involuntary movements and other motor symptoms characteristic of Parkinson's often prevent patients' from carrying on their day-to-day activities, especially as the disease progresses and symptoms become more difficult to control.

Within the Northwestern Medicine health system, an advanced surgical treatment called deep brain stimulation (DBS) is bringing a sense of control back to these patients.

The remarkable procedure, which involves implanting an electrical system into a patient's brain to regulate the abnormal signaling in Parkinson's, may sound futuristic to those unfamiliar with the treatment. In fact, DBS has been well-established over decades of use. And while the procedure does not cure Parkinson's or alter the underlying course of the disease, DBS can change lives by easing debilitating symptoms.

Today, Northwestern Medicine hospitals are home to the busiest DBS program in the region, where a team of neurology specialists and an expert neurosurgeon are at the forefront in using leading-edge DBS techniques to improve quality of life for patients with Parkinson's and other movement disorders, such as essential tremor and involuntary muscle contractions known as dystonia.

"We've led the way in using advanced devices in DBS and advanced techniques in the operating room to facilitate surgeries," says Joshua Rosenow, MD, director of the Functional Neurosurgery and Epilepsy Surgery Program in the Department of Neurological Surgery. He performs the procedure at both Northwestern Medicine Central DuPage Hospital and Northwestern Memorial Hospital

(NMH), which is ranked #9 in the nation for its neurology and neurosurgery program. "We're always looking to get better. We're always looking to optimize what we do and how we do it to help improve outcomes for patients."

A Look Inside DBS

Deep brain stimulation has been approved by the Food and Drug Administration (FDA) since 1997 for essential tremor and medication-resistant Parkinson's-related tremor. Still, many physicians believe that common misconceptions about DBS lead a large number of patients with Parkinson's — which occurs in 1 to 2 percent of people over the age of 60 — to miss out on potential treatment.

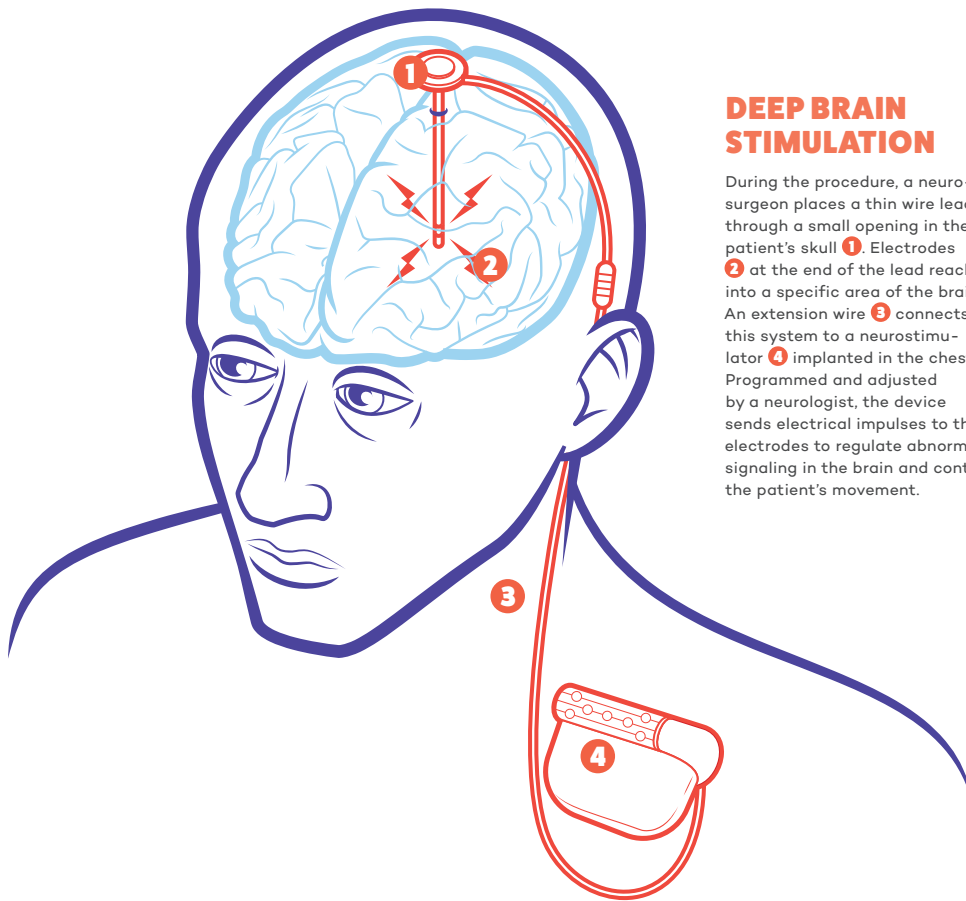
"If you ask movement disorders experts across the spectrum, I think we would all say that deep brain stimulation is still vastly underutilized," says Cindy Zadikoff, MD, associate professor of Neurology in the Division of Movement Disorders, and a neurologist who manages DBS patients at NMH.

"Even today, there are still plenty of patients who see DBS as science fiction or as a last-ditch effort," agrees Rosenow, also a professor of Neurological Surgery, Neurology, and Physical Medicine and Rehabilitation.

Not everyone is a candidate for DBS. Before undergoing the procedure, patients with Parkinson's receive a thorough assessment and discuss potential benefits and risks with their neurologist.

In general, DBS is only considered for patients who have lived with Parkinson's for several years and experience significant symptom fluctuations throughout the day, despite optimal medical management.

"Deep brain stimulation doesn't cure the diseases we are treating — and we spend »



DEEP BRAIN STIMULATION

During the procedure, a neurosurgeon places a thin wire lead through a small opening in the patient's skull **1**. Electrodes **2** at the end of the lead reach into a specific area of the brain. An extension wire **3** connects this system to a neurostimulator **4** implanted in the chest. Programmed and adjusted by a neurologist, the device sends electrical impulses to the electrodes to regulate abnormal signaling in the brain and control the patient's movement.



"Our goal is to allow patients to go back to doing the things they like to do, and used to do."

CINDY ZADIKOFF, MD

response. Neurologists like Zadikoff make adjustments to the neurostimulator settings as needed, and also work with patients on modifications they can make at home to increase effectiveness.

For some symptoms, the effect of DBS can be immediate. "It really is just such a 'wow' moment," Zadikoff says, referring to the point during surgery or programming when tremors settle, and patients can pick up a pen or steadily hold a drink in their hand again.

It can take longer for disorders like dystonia to respond to DBS, as well as other symptoms of Parkinson's, such as bradykinesia (slow movement) and gait difficulty. And in general, DBS doesn't improve Parkinson's symptoms that didn't previously respond to medication.

But for many patients, the therapy's overall impact on quality of life is powerful — whether it's the newfound ability to leave a walker at home, decrease medication or return to hobbies and routines enjoyed before their diagnosis.

"Many studies have now shown that DBS allows patients to reduce their medication and improve their quality of life," Zadikoff says. "And when we simply ask patients, 'how much

a lot of time making sure patients understand that. But for Parkinson's disease, it does take them back to a time when their fluctuations were minimal, and we can reduce medication," explains Zadikoff, also an associate professor of Medical Education. "Our goal is to allow patients to go back to doing the things they like to do, and used to do."

During a DBS procedure, stimulating electrodes are implanted through a small opening in the skull into a specific area of the brain that controls movement (the exact location depends on the patient and his or her condition). Part of the surgery is performed while patients are awake and responsive, which helps ensure that the correct areas are being

stimulated. The electrodes are connected to an extension wire that runs under the skin behind the ear and down the neck to a small device implanted in the chest. That device — a neurostimulator akin to a pacemaker — sends electrical impulses through the wire to the electrodes to regulate abnormal signaling in the brain, restoring normal function to the patient.

Finding the optimal target for stimulation is key. "I kid with patients and students that neurology and real estate are all about the same thing: location, location, location," Zadikoff says. After the device has been properly implanted, programming that takes place after surgery also helps achieve an optimal

better do you think you are?,' they'll usually tell us somewhere between 70 to 90 percent. This therapy really gives a lot back to patients."

Toward Better Outcomes in DBS

Although DBS has been used for almost 30 years, the basic technology has remained largely the same over that time period — until recent years. Investigators at Northwestern and around the world are now helping to refine the technology behind DBS, with the ultimate goal of further improving outcomes for patients.

Zadikoff and Rosenow are both investigators in INTREPID, an ongoing randomized, double-blind clinical trial for a new device, called the Vercise DBS System, which delivers stimulation to the brain in a novel way.

"We're able to stimulate areas in a more refined fashion," Zadikoff explains. "The device is controlled by current, as opposed to voltage, which is a much more regulated and energy-efficient way of delivering this energy."

One-year data from the trial, presented at the American Academy of Neurology meeting in April and the American Society for Stereotactic and Functional Neurosurgery meeting in June, demonstrated that the device

is safe and effective in treating Parkinson's symptoms. Vercise is now FDA-approved.

"We continue to be involved both on the local and national level in these sorts of studies to bring the most cutting-edge therapies to our patients," Rosenow says. He notes that Northwestern Medicine was also one of the first centers to use and validate certain advanced surgical techniques in DBS, such as interoperative CT scanning to inform placement.

Michael Rezak, MD, PhD, a longtime advocate of DBS who directs the deep brain stimulation program at Central DuPage Hospital, also recently received the Distinguished Physician Award from the Parkinson's Disease Research Society, which includes funding for research into movement disorders. He also serves on multiple national committees focused on DBS research.

In the future, investigators will continue to study enhanced DBS systems and surgical techniques, as well as explore new targets for stimulation that might address symptoms DBS



"Knowing how we've helped preserve someone's quality of life... that makes it all worth it for us."

JOSHUA ROSENOW, MD

currently doesn't treat. There is also increasing research into the use of DBS in select cases of other disorders, such as epilepsy and obsessive-compulsive disorder. "I think that in the future, we are going to be seeing greater numbers of indications for DBS,

particularly in the neuropsychiatric world," Zadikoff says.

Of course, Northwestern investigators are also actively investigating a range of other therapies for movement disorders, to expand treatment options for patients who may not elect to undergo DBS.

For now, providers like Zadikoff, Rezak and Rosenow often say that working with patients with DBS remains one of the most rewarding aspects of their practice.

"Seeing the improvement in quality of life for these patients is really one of the most gratifying things we get as surgeons," Rosenow says. "Knowing how we've helped preserve someone's quality of life and improve how they live every day — that makes it all worth it for us." 🌸



PROBLEM SOLVER

Robert Kalb is moving Northwestern's Les Turner ALS Center forward.



Some of the facts we know about amyotrophic lateral sclerosis (ALS) today: It causes neurons in the brain and spinal cord to degenerate, leading to muscle weakness and, eventually, paralysis. An estimated 20,000 or more Americans have the disease at a given time. Their average life expectancy after diagnosis is three to five years, though some may live much longer. What we don't know yet: what causes motor neurons to die, how to stop ALS from progressing and how to cure it.

Despite this grim reality, Robert Kalb, MD, is optimistic about the outlook for ALS.

"ALS is a very hard problem, but I think this is a great time in science to solve the problem," says Kalb, the inaugural director of the Les Turner ALS Research and Patient Center at Northwestern Medicine.

When Kalb was finishing medical school at Cornell University in the early 1980s, scientists and physicians were translating groundbreaking therapies for hypertension and cardiovascular disease, "but it was a desert for neurology," Kalb says. "I think that's what drew me to the specialty in the first place."

Kalb went on to complete an internship and residency in internal medicine at the Albert Einstein College of Medicine's Montefiore Medical Center and then a residency and fellowship in neurology and neurobiology, respectively, at Yale New Haven Hospital.

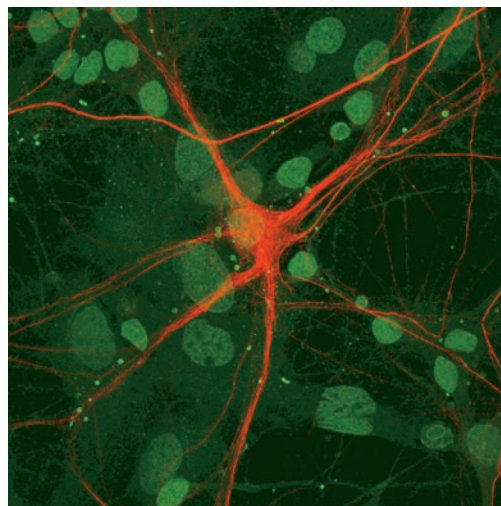
Soon after, he opened a laboratory at Yale, secured funding from the National Institutes of Health (NIH) and began to focus on motor neuron development, studying rats who spent neonatal life at zero gravity on the Space Shuttle. Over time, his interest in motor neurons blossomed into an interest in motor neuron diseases. Today, he studies gene activation and misfolded proteins in familial ALS.

"Never in the history of science have we had such powerful tools for understanding how genes are involved in normal cellular activities and what goes awry in disease states," Kalb says. "When I see patients with ALS, I pinch myself and say, 'how could it possibly be that we don't have a cure for them?' I don't know when we'll have an answer for them, but I really think we can get there."

TWO-FOLD MISSION

Kalb arrived at Northwestern last December, after spending 15 years on the faculty at the University of Pennsylvania.

"Everything was terrific in Philadelphia, but moving to Northwestern seemed like a new adventure and a superb opportunity to make an impact on the lives of individuals with neurological diseases," he says. "Now I have two missions: The first is to make



Mutations in the C9ORF72 gene are the leading genetic cause of ALS. A product of the mutant gene (green) localizes to the nucleus of motor neurons (red) where it inhibits the cellular trash disposal unit, nuclear proteasomes.



“WHEN I SEE PATIENTS WITH ALS, I PINCH MYSELF AND SAY, ‘HOW COULD IT POSSIBLY BE THAT WE DON’T HAVE A CURE FOR THEM?’ I DON’T KNOW WHEN WE’LL HAVE AN ANSWER FOR THEM, BUT I REALLY THINK WE CAN GET THERE.”

the Les Turner ALS Center, which is already great, even better. The second is to grow my own laboratory. There is really high-end basic science going on here, and I am excited about the opportunities for collaboration.”

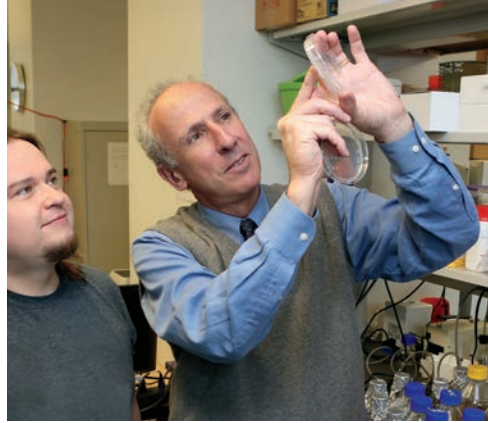
As director of the center, Kalb is responsible for aligning Northwestern’s ALS research with its clinical activities, in partnership with the Les Turner ALS Foundation.

“One priority is to build the translational program so that when a discovery is made in the lab, it reaches patients more efficiently,” he says. “I think this role needed somebody who wears both the basic science hat and the clinical hat to make sure everybody’s working together.”

Kalb is also the Les Turner Professor and chief of Neuromuscular Disease in the Ken and Ruth Davee Department of Neurology and a neurologist at Northwestern Memorial Hospital’s Lois Insolia ALS Clinic.

“Bob is a thoughtful, creative clinician-scientist ideally suited to lead the Les Turner ALS Center during these exciting times,” says Dimitri Krainc, MD, PhD, chair and Aaron Montgomery Ward Professor of Neurology. “I’m confident he’ll bring insights from basic science to the bedside to improve the lives of many patients with ALS.” »

Kalb in his new laboratory at Feinberg, with postdoctoral fellow Patrick Riechers, PhD (left).



BRICK BY BRICK

In his own laboratory, Kalb started studying ALS in tissue cultures and microscopic worms called *C. elegans*. Though only about 10 percent of ALS cases are familial (inherited), he and members of his team focus on that version of the disease because they are able to recreate it in animal models by manipulating genes associated with familial ALS in humans. Then they explore the molecular mechanisms that go wrong during the disease and search for therapeutic targets that could help patients with any form of ALS.

“We have leveraged the awesome power of the worm to discover new genes and new pathways involved in promoting survival in models of familial ALS,” Kalb says. “Now we’ve taken those findings back into rodent systems, and we are working to target pathways with drugs. Ongoing partnerships with the pharmaceutical industry will accelerate the translation of basic science observations into potential therapies.”

Outside the Lab and Clinic

Kalb says that a move to Northwestern would never have been possible without the support of his wife, Marianne Bernstein, an internationally recognized curator of site-specific art shows. They have two grown entrepreneurial sons, one living in San Diego and the other in New York City. Outside of work, Kalb enjoys running, cycling and swimming, as well as reading, especially about history, for pleasure.

enormous resources to clearing that excess. I’m a strong believer that the underlying defect in all neurodegenerative diseases, and ALS in particular, is intimately tied to an inefficient trash disposal unit.”

Interestingly, some scientists studying cancer are going after the same critical pathways.

“In fact, one reason cancer cells stay alive is because they’re incredibly efficient at dealing with trash. The cancer guys want to block that. We in neurodegenerative diseases have the opposite problem: We want to stimulate waste disposal,” Kalb says. “I think there’s a chance that we might all meet in the middle somewhere with the same drugs.”

Despite nearly 30 years of NIH funding and about 100 peer-reviewed publications, Kalb says that his greatest accomplishment is training future scientists.

“Science is such a big, complicated edifice. Very few people in the end make the apex discovery,” he says. “I’ve made observations that are some of the bricks to build that edifice, but helping my graduate students and postdocs move their careers forward, that’s what I’m most proud of.” 🌸

Through the years, his group has found that dysfunctional energy metabolism contributes to neuron death in models of ALS and identified two biological pathways in cells that can be targeted to treat the disease.

Currently, Kalb is interested in how cells’ waste disposal systems may be connected to ALS.

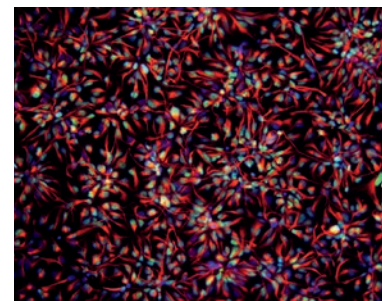
“All cells, and motor neurons in particular, create lots of misfolded, or damaged, proteins that are noxious to cells if permitted to accumulate in them,” Kalb explains. “So cells devote



ALS Discoveries from Feinberg Scientists

Teepu Siddique, MD, is working to determine the causes of and treatments for neurodegenerative disorders, particularly those involving mitochondria and motor neuron function. His lab has identified genetic causes of ALS and engineered the first mouse model for ALS dementia.

Pembe Hande Ozdinler, PhD, explores the mechanisms responsible for selective neuronal vulnerability and degeneration, focusing on upper motor neurons. Her group was the first to isolate these neurons in the brain that die in ALS and give them fluorescent tags so they can be tracked.



Evangelos Kiskinis, PhD, uses neuronal subtypes derived from human stem cells to study the cells primarily affected in ALS. In a recent paper published in *Cell Stem Cell*, he showed how the process of DNA methylation regulates the development of spinal cord motor neurons.

Above right: Neural progenitors cells differentiated from human embryonic stem cells, from the lab of Evangelos Kiskinis.

Up for Debate: IQ Versus EQ

A letter from Jim Kelly, '73 MD

There's a great quote from well-known golf champion Lee Trevino: "The older I get, the better I used to be." After many years as a technical specialist in a surgical subspecialty, I could easily do a highlight tour of simple or complex procedures where an excellent technical operation resulted in a good outcome. But, I recognize that I do have selective memory loss when it comes to the occasional negative outcome as a result of an unforeseen problem arising intraoperatively, usually in an emergency situation in which a technical approach did not foster a good outcome. And hence, I can always fall back on Lee Trevino's famous phrase.

I recently read an article in the February 20th issue of the *Journal of the American Medical Association* (Vol 319, Number 7, pp 651-653) by Ezekiel Emanuel, MD, PhD, and Emily Gudbranson, both from the University of Pennsylvania's Perelman School of Medicine, titled "Does Medicine Overemphasize IQ?" They discuss how everyone wants the best and smartest physician who attended the best medical school and trained in the best hospital system. Many times, these physicians had very high GPAs and MCAT scores in college. But, do these very intelligent students truly make the best physicians? The authors suggest that success in these metrics has little to do with social-emotional intelligence, which correlates much better with being an excellent clinical physician.

As GPAs and MCAT scores have risen over the past two decades, the identification of factors such as self-awareness and the ability to manage emotions and interact with others has helped fill out the equation of what constitutes a successful physician. Picture an oncologist's interaction with a critically ill patient or an ICU intensivist leading a multidisciplinary team of nurse practitioners, students and fellow MDs in a morbidity and mortality conference as two examples of the need for that "other intelligence" to expeditiously solve problems.

Where I disagree with the article is the discussion of how to enhance emotional intelligence (EQ) in medicine. The authors espouse asking admissions committees to deemphasize cognitive IQ and increase the emphasis on EQ in the selection of medical students. They mention eliminating "irrelevant" science requirements and emphasizing humanities-oriented programs in the selection process. Part of this admissions process would be evaluation of EQ by using a relevant scored exam.

I think that much of what the medical community values in self-awareness and EQ can be taught and learned at the medical student level. I do think that basic course work in these areas can be explicitly taught at the medical school and GME level with reasonable expectations of understanding and progressing through the material. Maybe even a series of webinars on the seven factors making up EQ — emotional stability, conscientiousness, extraversion, ability emotional intelligence, cognitive ability, general self-efficiency and self-rated job performance

EQ AT FEINBERG

Feinberg students participate in a four-year longitudinal course called Personal Transitions to the Profession, where they discuss the challenges of careers in medicine and how it may affect them personally and professionally. In small groups facilitated by a trained faculty member, they talk about topics such as perfectionism and dealing with failure and life balance. Students also engage in a mentored assessment portfolio review to reflect on their own performance data and identify areas of strength and self-improvement in competencies including effective communication and interpersonal skills. Students who leave Feinberg are equipped with the knowledge and skills to become outstanding reflective practitioners of medicine.

— could be a requirement for students advancing from M2 to M3 in all medical schools.

Medicine at its highest level of performance requires both IQ and EQ. While we can do some things to raise general intelligence, I think we can do more to raise the level of emotional intelligence in our medical schools, thus avoiding the deselection of high-IQ students at the post-college level because they don't score well on a basic screening EQ test.

COMMITMENT TO SCHOLARSHIPS

Generous alumni and friends were recognized for supporting aspiring physicians at a luncheon during Alumni Weekend.





Alumni and guests toured Northwestern Simulation, 25,000 square feet of meeting, clinical simulation, surgical simulation and virtual reality workspace.

Record-Breaking Alumni Weekend

AFTER GRADUATING FROM MEDICAL SCHOOL, BOTH CRAIG SHOWALTER, '68 MD, AND STEVE EMBRY, '68 MD, JOINED THE MILITARY — WITH THE VIETNAM WAR ESCALATING, YOUNG MEN WITH MEDICAL TRAINING WERE IN HIGH DEMAND.

“I got pulled into the army right out of medical school,” Showalter said. “In fact, they tried to get me out of medical school before I graduated.”

Of his era, Embry said, “I would estimate 95 percent of medical school graduates were serving in the military back then.”

That’s just one of the numerous changes the Class of ’68 has seen since graduating, many of which were on display as Showalter and Embry — and over 500 other alumni and guests — returned to campus for this year’s Alumni Weekend, held April 27 and 28. The event was the largest gathering in the medical school’s history.

Members of the Class of '68 celebrated their 50-year reunion, including Ferdinand Ofodile, '68 MD, pictured below with Quentin Youmans, '15 MD.





1 Melissa Simon, MD, MPH, '06 GME (right), vice chair for clinical research in the Department of Obstetrics and Gynecology, led a panel discussion on Women in Medicine at the historic Drake Hotel. The panel included (from left to right), Shannon Crabtree, MMS, PA-C, instructor in the PA Program, Julia Vermlyen, '11 MD, '11 MPH, '14 GME, instructor of Medicine in the Division of Hospital Medicine, Elizabeth Spinuzza Harris, '86 MD, private practice physician in Texas, and Lois Hedman, DScPT, associate professor of Physical Therapy and Human Movement Sciences. **2** Alumni at the “Celebrate in Chicago” reception. **3** Alumni attended a brunch with members of Feinberg’s Office of Diversity and Inclusion. **4** Alumni met up for an early morning Fun Run along Lake Michigan. **5** Laura Frese, '16 PA-C (right), dispensed advice to PA Program students at the mentoring lunch. **6** Alumni take a trip down memory lane leafing through yearbooks on display.

Graduates reconnected with classmates, reminisced about their time at Northwestern and marveled at how the medical school campus has evolved. They went on tours of the hospitals and education buildings, attended seminars led by Feinberg faculty and visited Chicago attractions like the Museum of Contemporary Art and 875 North Michigan Avenue, formerly known as the John Hancock Center.

“There’s definitely a sense of purple pride that brings people back,” said Kavitha Gandhi, '98 MD, now a clinical instructor of Dermatology at Feinberg. “I still teach here; I jump at every opportunity because it’s fun for me to be back in the classroom, even if I’m on the other side of the lectern.”

On Friday morning, David Kerns, '68 MD, hosted a forum on his recently published novel, “Fortnight on Maxwell Street.” The book borrows heavily from Kerns’ time at the Chicago Maternity Center, an obstetrics clinic

on Chicago’s West Side where many of the Class of '68 rotated to learn about childbirth.

“The neighborhood was a bustling center of immigrant activity, and you could hear live music every Saturday or Sunday — you also of course had the blues clubs,” Kerns said. “The



There’s definitely a sense of purple pride that brings people back. I still teach here; I jump at every opportunity because it’s fun for me to be back in the classroom, even if I’m on the other side of the lectern.

novel captures a lot about the maternity center, but it’s also about the neighborhood and the 1968 Chicago Riots.”

After the morning forums, current Feinberg students joined alumni for a mentoring lunch, where alumni were grouped

by specialty and dispensed advice to interested students. This was the first year that the Physician Assistant (PA) Program participated in the mentoring lunch, and Laura Frese, '16 PA-C, a PA at The Women’s Group of Northwestern, wanted to follow the example of the PAs who came before her.

“I received so much advice about career development and other topics from providers while I was in school,” Frese said. “Coming and speaking with students is a good way to give back to a program that has done so much for me.”



6



RENAISSANCE MAN

He played in a rhythm-and-blues band as a Northwestern undergraduate and dreamed of a career in music. But **David Skorton, '74 MD**, ended up staying at the university for medical school and becoming a cardiologist and university administrator, culminating with stints as president of both the University of Iowa and Cornell University. Then, three years ago, he was named secretary of the Smithsonian Institution in Washington, D.C.



“If I had my druthers in those days, I probably would have been a musician,” Skorton says of his undergraduate years. “But my dad convinced me of the importance of getting a higher education. He never had that opportunity.”

As a psychology major, Skorton developed an interest in the effects of illness on people and considered a PhD program in psychology before

opting to attend medical school. “I decided I could focus on the psyche after becoming a physician,” he says. “Once I got to Feinberg, I found it was quite a holistic education.”

Skorton did an internship, residency and cardiology fellowship, which he finished in 1979, at the University of California-Los Angeles. But he’d always felt a pull toward both general medicine and the treatment of children and

adolescents, so he focused on congenital heart disease as a staff physician at the University of Iowa Hospitals and Clinics, where he practiced from 1980 to 2006. While running an echocardiography lab at the Iowa City VA Health Care System, Skorton also developed an interest in clinical computer image processing.

Skorton moved on to the administrative track as director of general internal medicine

1 Skorton delivering the convocation address to Feinberg’s Class of 2018. 2 Holding Sandy Koufax’s baseball glove. 3 Posing with friends from Star Wars outside of the National Museum of American History. 4 Performing with the Smithsonian Jazz Masterworks Orchestra. 5 Greeting President Obama at the opening of the National Museum of African American History and Culture. 6 Unveiling the president and first lady’s official portraits at the National Portrait Gallery.

starting in 1985, eventually becoming president at Iowa from 2003 to 2006.

“I found medical training to be really good preparation for an administrative career,” he says. “Doctors are used to making decisions under conditions of uncertainty. Physicians are taught to observe and listen first before coming to conclusions. When you’re a physician, you gain big helpings of humility — patients do poorly at times, patients pass away at times.”

At both Iowa and Cornell, where he was president from 2006 to 2015, Skorton says he always focused on the student experience. “It’s easy, when you become an upper-level administrator at a complex

“*I found medical training to be really good preparation for an administrative career. Doctors are used to making decisions under conditions of uncertainty. Physicians are taught to observe and listen first before coming to conclusions. When you’re a physician, you gain big helpings of humility.*”

university, to spend time with everybody but the students — faculty, deans, department heads, other administrators,” he says. “No matter how important the research is, these institutions were developed to serve students.”

Skorton’s wife, Robin Davisson, PhD, a professor and scientist he met at Iowa, came up with creative ideas like holding a “block party” at the president’s house and living with freshmen in the dorms during their orientation period. “Those were gratifying experiences,” he says.

At Cornell, Skorton worked to increase student financial aid to broaden economic diversity, and he focused closely on mental health issues — alcoholism, suicide, depression and the emotional aftermath of sexual and other assaults. “I thought it was very important to do anything I could to reduce the stigma of mental disorders, so people would feel empowered to show up to access services,” he says.

Another passion of Skorton’s that he promoted during his university presidencies was the importance of the arts and humanities. “In an age that’s become more and more STEM-centric, it’s important not to ignore their intrinsic value or the integration of all those disciplines,” he says.

Serving as secretary of the Smithsonian has given Skorton further opportunities to explore his broader academic passions, although he was also motivated by something else his father — a naturalized citizen from what is now Belarus — said to him years ago.

“He was a very patriotic American. He always inculcated in me the importance of voting and said if I had a chance to do something for the country, I should do it,” he says.

In the same way Skorton tried to bring down economic barriers to attending Cornell, he’s inspired by the fact that the vast majority of the Smithsonian’s offerings are free. The organization attempts to break down geographic barriers as well, with 216 affiliated museums across the country, traveling exhibitions and digital displays. “Making sure people have access to

the treasures of the Smithsonian is similar to wanting young people to have access to the university,” he says.

Skorton’s current role reminds him of leading a university for another reason: “I get to learn all the time,” he says. “Yesterday at the National Museum of Natural History, I saw a recently discovered fossil of an early horse. That was amazing.”

In retrospect, Skorton appreciates the academic challenges and student-centricity at Northwestern, which bestowed on him both an Alumni Merit Award in 2006 and a Distinguished Alumnus Award in 2009. He recalls that early in his first year at medical school, a family illness had become quite distracting, and he failed an important histology test at least partly as a result.

“The professor was incredibly understanding — an exemplar of a superb professor,” Skorton says. “He took me under his wing, he personally tutored me and showed me his microscope slides. I’ve never forgotten the personal interest he had in me.”



Orthopaedic Leader Honored

By Trainees, Patients and Friends



Alumnus Michael F. Schafer, '72 MD, served with distinction as the chair and Edwin Warner Ryerson Professor of Orthopaedic Surgery for more than 30 years. Today, he continues to provide important leadership to the department, as well as world-class care to his patients.

The Michael F. Schafer, MD, Fund was created to honor Schafer and recognize his innumerable contributions to the Department of Orthopaedic Surgery and Northwestern. This year, thanks to the generosity and participation of current and former trainees, patients and friends, the Schafer Fund surpassed its endowment goal of \$500,000 — one year ahead of schedule. Now the Schafer Fund will advance the research



Schafer (right) with one of his own mentors, Howard J. Sweeney (left), on Thesis Day at the medical school in 1981.

and training missions of the department in perpetuity.

“It was a privilege and an honor to serve as chair of the Department of Orthopaedic Surgery,” said Schafer. “I was fortunate to have a faculty that was dedicated to the educational mission of our residents. The success of the fundraising for this endowment ensures that our current and future residents will have the resources to enhance their educational pursuits.”

When describing their love of Northwestern and strong connection to the department, supporters often cite their experiences as trainees under the able guidance and mentoring of Schafer.

One is Patrick J. Sweeney, '88 MD, '93 GME, whose connection to Schafer extends even beyond their relationship as trainee and trainer. While a resident himself, Schafer trained under Patrick Sweeney's father, Howard J. Sweeney, '49, '51 MD, associate professor emeritus of Orthopaedic Surgery. Howard Sweeney served as Northwestern's team surgeon for 38 years and is included in the Northwestern Athletic Hall of Fame.

“Dr. Schafer and the entire staff and

faculty of the Department of Orthopaedic Surgery at Northwestern have been pivotal figures in my life. I am forever grateful for the privilege of training under them,” said Patrick Sweeney. “Dr. Schafer is a warm-hearted and gifted surgeon, physician and leader, to whom I credit much of my success and will forever be indebted. The department continues to be a premier one, with Terrance Peabody

carrying on the traditions established by Dr. Schafer. It is an honor to be able to make a gift to recognize their tireless work.”

A Life of Service to Northwestern

Schafer has trained more than 300 orthopaedic surgery residents and fellows during his tenure and provided expert, compassionate care to countless patients.

At the age of 10, Schafer was infected with the life-threatening bulbar form of polio. His experiences while in the hospital led him to pursue a career in orthopaedics as many of his caregivers were surgeons in this field. He distinguished himself early in his career, winning the intern of the year award at Wesley Hospital and the resident of the year award during his first year of training.

Schafer continues to serve with distinction as a professor of Orthopaedic Surgery. He recently received the national William W. Tipton Jr., MD, Leadership Award from the Orthopaedic Research and Education Foundation.

INTRODUCING THE MESULAM CNADC

In May, the medical school announced it has raised \$10 million to support the Cognitive Neurology and Alzheimer's Disease Center (CNADC) and rename it the Mesulam CNADC in honor of its director, M.-Marsel Mesulam, MD, chief of Behavioral Neurology and the Ruth Dunbar Davee Professor of Neuroscience. The capital campaign, supported by many donors including The Davee Foundation, will help the Mesulam CNADC double its work space and create an endowment for research and education.

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 will publish them in an upcoming issue of the magazine.

1950s

William "Bill" Ziering, '56 MD, will represent the United States at the International Triathlon Unions Age Group World Championship for the Olympic class division of ages 85 to 89 this fall in Australia. Ziering anticipates retaining the titles he won last year in Rotterdam and the prior year in Chicago. 📷 1

1970s

George J. Dohrmann, '70 PhD, '71 MD, received the Neuro Spinal Surgeons Association's Lifetime Achievement Award at the annual meeting held in New Delhi, India. Dohrmann is currently a professor of Neurosurgery at the University of Chicago. 📷 2

Robert C. Rankin, '75 MD, has decided to discontinue specializing in obstetrics and gynecology after 40 years of full-time private practice (and more than 6,000 deliveries

and at least 6,000 nights on call). Rankin says, "Although I am certainly not retiring, this decision will allow me more free time to travel and do other things."

Richard A. Moscicki, '76 MD, was appointed to the board of directors of Akcea Therapeutics. Since 2017, Moscicki has served as the executive vice president for science and regulatory advocacy and the chief medical officer at Pharmaceutical Research and Manufacturers of America. 📷 3

IT'S BEEN A BIG YEAR FOR JENNIFER LIM, '86 MD, '87 GME. HONORS INCLUDE THE DEPARTMENT OF OPHTHALMOLOGY FACULTY OF THE YEAR AWARD AT UIC, THE AMERICAN ACADEMY OF OPHTHALMOLOGY LIFETIME ACHIEVEMENT AWARD AND INDUCTION INTO THE AMERICAN OPHTHALMOLOGICAL SOCIETY.

Pierre C. Gilles, '77 MD, has joined the staff of Touchette Regional Hospital in Centreville, Illinois. Gilles is a general and laparoscopic surgeon with extensive teaching experience in surgery and with family medicine residents, as well as nurse practitioners and other ancillary medical services.



1980s

Jennifer Lim, '86 MD, '87 GME, received the Department of Ophthalmology Faculty of the Year Award at the University of Illinois at Chicago (UIC). This year she was also inducted into the American Ophthalmological

Society and given the American Academy of Ophthalmology Lifetime Achievement Award. In October 2017, she was the Inaugural Sweeney Lecturer at the UIC Medical School Alumni Day in October 2017. She is currently secretary of the Retina Society, retina service director at UI Health and the Marion H. Schenk chair and professor of Ophthalmology at UIC. 📷 4

Charles S. Modlin, '87 MD, has developed the African-American Male Biobank, a division of the Minority Men's Health Center and annual Minority Men's Health Fair at the Cleveland Clinic. One of only a select few African-American biobanks in the nation, the African-American Male Biobank will help prove that genetic susceptibility to cancer, hypertension and other conditions combines with environment to trigger certain disease in minorities, with the intention to identify new and more effective medical therapies. 📷 5

Scott Sagerman, '87 MD, is celebrating 25 years in private practice at Hand to Shoulder

CHARLES S. MODLIN, '87 MD, DEVELOPED THE AFRICAN-AMERICAN MALE BIOBANK AT THE CLEVELAND CLINIC TO STUDY HOW GENETIC SUSCEPTIBILITY TO CANCER, HYPERTENSION AND OTHER CONDITIONS COMBINES WITH ENVIRONMENT TO TRIGGER CERTAIN DISEASE IN MINORITIES.

Associates in Arlington Heights, Illinois, where he also serves as chairman of the Department of Orthopedic Surgery at Northwest Community Healthcare. He resides with his wife Stephanie and four children in Long Grove, Illinois. 📷 6

1990s

Cynthia Kertesz, '92 MD, pediatrician and mother of two, was featured in *Right as Rain*, a publication by the University of Wisconsin Medicine. The article is a personal narrative about the untimely and sudden passing of her otherwise healthy 44-year-old husband, Scott. Shortly after a routine outdoor hike, Scott experienced concerning symptoms that led to a doctor's visit and a diagnosis of myeloma syndrome. He passed away just under four months later.

Kertesz shares her story with patients to highlight how important it is that parents

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.

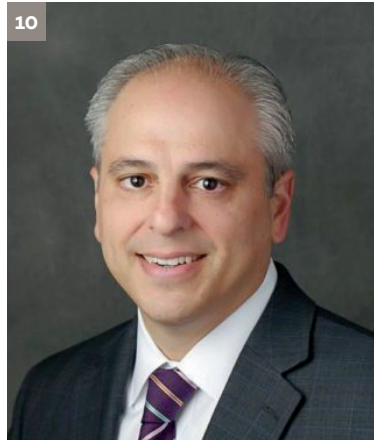
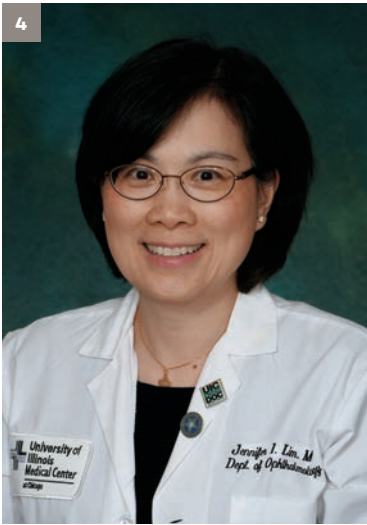
Alumni hosts help offset the financial burden and stress of traveling for interviews by offering students any of the following: complimentary housing; local transportation; a tour of the area; a meeting to answer questions about residencies, your specialty and/or the local medical community; an introduction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



"The interview trail can be very expensive with many students traveling to 15 or more cities across the country. It was invaluable having both a place to stay and a friendly face while I was visiting different cities. My host in D.C. showed me around the city and had insight into cost of living and the culture of different neighborhoods. I consider her now a life-long contact." – BRI KNOLL, '18 MD



have their affairs in order, including a will, life insurance and documentation of important accounts, when planning for a family. 📷 7

Anne M. Lipton, '92 PhD, '95 MD, recently contributed chapters on memory and dementia to the upcoming book, *Putting the Science in Fiction*, which is set for release in October 2018 by Writer's Digest Books. 📷 8

Barbara L. Byrne, '93 MD, '96 GME, MBA, was named chief information officer of Advocate Aurora Health. Byrne first joined Advocate Aurora Health in 2017.

George P. Yang, '94 MD, PhD, a member of Feinberg's Medical Alumni Association board, joined the University of Alabama at Birmingham School of Medicine in the Division of Gastrointestinal Surgery as professor and vice chair of Surgery. Yang will also serve as the associate chief of staff for surgical services in Veterans Affairs. 📷 9

John M. Santopietro, '95 MD, joined Silver Hill Hospital in New Canaan, Connecticut, as its new president and medical director. He was also appointed the first director of behavioral health for the town of New Canaan. Santopietro previously served as chief clinical officer of behavioral health and chair of the Department of Psychiatry at Carolinas Healthcare System in Charlotte, North Carolina. 📷 10

Sudip K. Bose, '99 MD, was recently profiled on the *Texas Country Reporter*, a nationally syndicated television show. The show follows Bose on his shift in the emergency room at the Odessa Medical Center Hospital in Odessa, Texas. Bose shares his experiences both in emergency medicine and as a combat physician in Iraq. While serving in Iraq, Bose was the physician selected to provide medical care to Saddam Hussein after his capture. He holds the record as the longest-serving frontline physician since World War II. Bose is

a clinical professor at Texas Tech University Health Sciences Center, associate professor of Emergency Medicine at the University of Illinois at Chicago and director of paramedic training for the city of Odessa. 📷 11

2000s

Paul Chung, '02 MD, has joined Weill Cornell Medicine as an assistant professor of Clinical Pediatrics and the site medical director for their Brooklyn Heights location. Prior to joining Weill Cornell, Chung was an attending in pediatric hospital medicine at Maimonides Medical Center, as well as associate medical director of the pediatric inpatient unit, director of the pediatric simulation program, site director for the medical student pediatric clerkship and a faculty member at Albert Einstein College of Medicine and NYU School of Medicine. Chung also previously served as



a pediatrician and officer in the United States Army and was awarded the Meritorious Service Medal at the rank of major. 📷 12

On April 22, 2018, an incredible Northwestern alumni effort took place in support of **Alexis Dunne Macaluso, '05 MD, '09 GME**. Macaluso is a former Department of Medicine chief resident who now practices general internal medicine in the western suburbs. One year ago, her husband, Steve, was diagnosed with stage IV angiosarcoma.

The Northwestern Department of Medicine LadyCats, comprised of **Diane Wayne, '91 MD; Clara Schroedl, '06 MD, '09 GME, '13 MSc; Meg Fitzpatrick, MD, '10, '14 GME; Jane Wilcox, MD, '10, '14, '15 GME, '15 MSc; Lisa VanWagner, MD, '10, '11, '14, '15 GME, '11 MSc**; and Elizabeth Wayne quickly formed, and alongside 146 additional runners, stormed the Naperville Women's Half Marathon & 5K to show support and raise awareness for angiosarcoma.

According to VanWagner, "This experience has instilled in all of us the importance

of family, friends and, most importantly, the incredible unwavering spirit and support of the Northwestern alumni community. Once a Wildcat, always a Wildcat." 📷 13

Aderonke Bamgbose Pederson, '15 MD, a third-year resident in Feinberg's Department of Psychiatry and Behavioral Sciences, was selected for a Minority Fellowship Award funded by the American Psychiatric Association and Substance Abuse and Mental Health Services Administration for her proposal: "Examining mental health stigma among racial/ethnic minority populations within federally qualified health centers." Pederson will develop and implement interventions that facilitate participation in mental health treatment and improve mental health outcomes within underserved communities of Chicago.

Richard Adrian Greendyk, '17 MD, was recently awarded the 2018 John Loeb Intern of the Year Award at the Columbia University Department of Medicine. 📷 14

GME

Robert Buckingham, '79 MD, announced his third book, *Trafficking*, published June 2018. He writes, "The book tackles the problem of chronic interstitial space inflammation and how it blocks the capillary cell dance to disable capillary cell control of the feedback loop signaling system between all cells within the interstitial space. Once capillaries lose control of immune arsenal choreography, chronic inflammation will have sway on the interstitial space and dark outcomes will inevitably occur. White blood cells, cytokines, platelets and immunoglobulins will now listen to the beat of a different drummer as the interstitial spaces of different end organs become a harbinger for cancer, thrombosis, scarring, infections and autoimmune disease." 📷 15

Rose Gomez, MD, '81 GME, was inducted into the American College of Psychiatry. Gomez is a distinguished fellow of the American



In Memoriam

Northwestern Medicine expresses its condolences to the families and friends of the following alumni (listed in order of their graduation year) who have recently passed away. All dates are in 2018.

ALUMNI

Arthur R. Colwell, Jr., '48 MD, '51 GME
Sun City, Arizona
APRIL 28

James E. Bennett, '50 MD
Monrovia, Indiana
JUNE 21

Neena B. Schwartz, '50 MS, '53 PhD
Evanston, Illinois
APRIL 15

Paul J. Rosen, '51 MD
Sacramento, California
APRIL 23

Loren E. Hart, Jr., '51 MD, '51 GME
Bellevue, Wisconsin
MAY 24

Arthur D. Poppens, '52 MD
Hartland, Wisconsin
MAY 27

Thomas J. McBride, '53 PhD
State College, Pennsylvania
MAY 23

James M. Kane, MD, '54 MS
Barrington, Illinois
JUNE 3

Robert C. Whitesitt, '54 MD
Helena, Montana
APRIL 19

Eugene J. Goldman, '57 MD
Houston, Texas
JANUARY 15

E. Wilson Staub, '57 MD
Southern Pines, North Carolina
APRIL 17

Willard S. Gold, '58 MD
Tucson, Arizona
MAY 1

Lester H. Davis, '59 MD
Evanston, Illinois
MARCH 22

Eugene S. Kostiuk, '60 MD
Olney, Illinois
APRIL 30

Tom R. Starr, '61 MD, '63 GME
Dayton, Ohio
JUNE 30

Byong Uk Chung, MD, GME '67
Boca Grande, Florida
APRIL 28

Justin A. Zivin, '70 MS, '71 PhD, '72 MD
Rancho Santa Fe, California
FEBRUARY 17

Edmund P. Lawrence, Jr., MD, '79 GME
Perrysburg, Ohio
APRIL 30

Jeffrey L. Kishiyama, MD, '91 GME
Colma, California
MAY 25

Ned B. Chase, Jr., MD, '01 GME
Joplin, Missouri
MAY 12

Psychiatric Association and operates a private practice at the John Hancock Center in Chicago. 📍 16

“THIS EXPERIENCE HAS INSTILLED IN ALL OF US THE IMPORTANCE OF FAMILY, FRIENDS, AND, MOST IMPORTANTLY, THE INCREDIBLE UNWAVERING SPIRIT AND SUPPORT OF THE NORTHWESTERN ALUMNI COMMUNITY. ONCE A WILDCAT, ALWAYS A WILDCAT.”

-LISA VANWAGNER, MD, '10, '11, '14, '15 GME, '11 MSC

PA

Laura (Thometz) Puglessi, '13 PA-C, was awarded a Certificate of Added Qualifications (CAQ) specialty credential in orthopaedic surgery from the National Commission on Certification of Physician Assistants (NCCPA). Dawn Morton-Rias, EdD, PA-C, president and CEO of NCCPA, states that “Certified PAs who earn the CAQ demonstrate a strong commitment to lifelong learning and attention to evolving medical advancements in their area of practice. Not only have they maintained certification through continuing medical education programs and assessments throughout their careers, they have pursued and been awarded this additional credential that attests to their knowledge and skills in their specialty.” Puglessi is on staff at Loyola University Medical Center in Maywood, Illinois.

HOME AT NORTHWESTERN

After her career evolved, a long-time alumna returned to Chicago.

WRITTEN BY Nora Dunne

When Betty Hahneman, '52 MD, '56 GME, started medical school 70 years ago, it was unusual for a woman to pursue a career in medicine — in fact, women made up only 6 percent of physicians in 1950, according to the Association of American Medical Colleges. But that didn't bother Hahneman. "I just thought medicine would be a good combination of my interests," she says.

Here, Hahneman talks to *Northwestern Medicine* magazine about the evolution of her career and why she has stayed involved

with Northwestern all these years.

came back to Chicago and practiced internal medicine and hematology at Wesley. After about 10 years, I went to a neighborhood health center in North Lawndale where I was head of the Department of Internal Medicine. Later I joined the staff at Mount Sinai Hospital, also on the West Side, and practiced there for about 15 years. After that, I moved with my husband to South Carolina, where the climate was better for his health. In 1989, I got my Master of Public Health degree at the University of South Carolina.

WHY DID YOU PIVOT TO PUBLIC HEALTH AFTER PRACTICING MEDICINE FOR 30-PLUS YEARS?

I had developed an interest in population health and the way medicine was organized and practiced and programs that were or weren't available to people who needed them. And South Carolina was a very interesting place to do that — so different from Chicago — with its small towns, many of which had been abandoned when the mills closed. I just found at that point in my life, I was more interested in what was going on in the world around me rather than going into an office and seeing one patient after another.

HOW DID YOU END UP BACK AT NORTHWESTERN?

After my husband died, I returned to Chicago. I talked to Philip Greenland, who was Northwestern's chairman of Preventive Medicine at the time. It was 1995 and they were just starting the Program in

Public Health, so I got involved in its accreditation. We always laughed at my title — I was "associate director in charge of special projects" — but it was very interesting work and I stayed until 2010, when I retired. Now I just do the fun things: attend the students' final presentations, go to graduations and reunions. I also have a new scholarship student, who is in the MD/MPH program. I met him for the first time at Alumni Weekend. My previous scholarship student graduated last year. It's always fun to get together with the students to find out what's going on.

WHAT ADVICE DO YOU HAVE FOR YOUNG ALUMNI JUST STARTING THEIR CAREERS IN MEDICINE?

It's difficult to give advice because medicine has changed so much, but I would say that it's important to continue learning. You should always be open to doing new and different things. You might find out you're interested in public health or another area quite different from where you started.

IT'S DIFFICULT TO GIVE ADVICE BECAUSE medicine has changed so much, but I would say that it's important to continue learning. You should always be open to doing new and different things. You might find out you're interested in public health or another area quite different from where you started.

There were 128 in our class and only eight women. There was only the Ward building, and we shared that with the dental school. We had a very different curriculum than the students today. All we did our first semester was gross anatomy and microscopic anatomy.

AFTER GRADUATION, YOU STAYED AT NORTHWESTERN FOR RESIDENCY AT WESLEY MEMORIAL HOSPITAL (IT WAS AT 250 EAST SUPERIOR STREET, WHERE PRENTICE WOMEN'S HOSPITAL IS NOW). WHERE DID YOUR CAREER TAKE YOU NEXT?

I went to Washington University in Saint Louis for a hematology fellowship, and then I

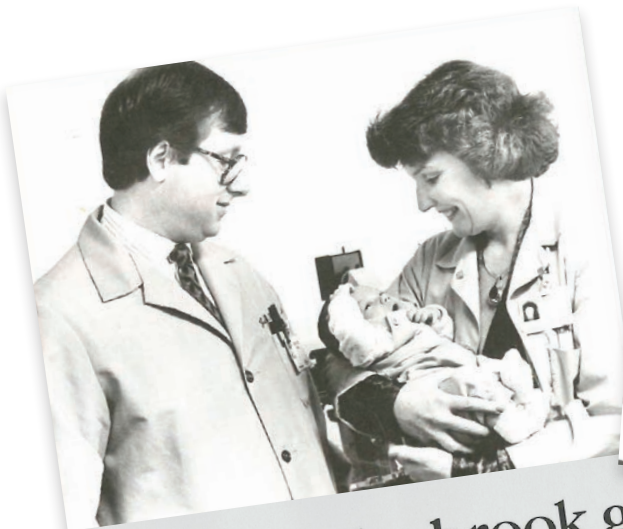


AIDS—the challenge of the 1980s

Northwestern faculty gear up to battle this new disease



“For epidemiological studies and diagnosis, Dr. John Phair (left) uses the enzyme-linked immunosorbent assay (ELISA). This is the most widely used serologic test to detect antibodies to the HIV.”

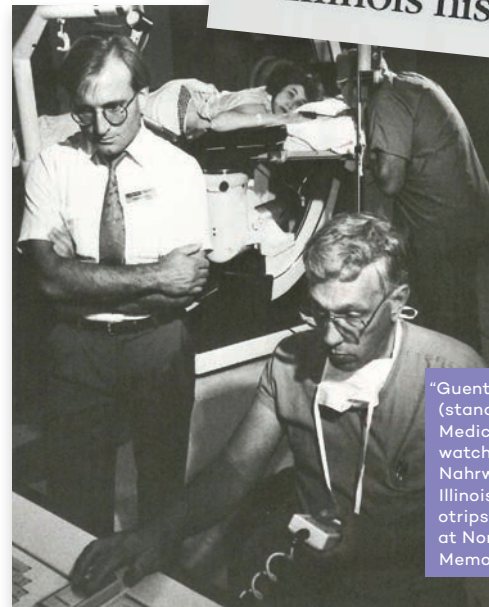


Evanston, Glenbrook go ga-ga over first IVF baby

“Kevin Hill is lucky to have four parents. Steven and Nancy Hill (left) are his real parents, but Dr. John Rinehart and Dr. Marybeth Gerrity (above) played key roles in bringing Kevin into this world.”



NMH’s gallstone lithotripter makes Illinois history



“Guenter Dotter (standing) of Dornier Medical Systems watches Dr. David Nahrwold perform Illinois’ first lithotripsy procedure at Northwestern Memorial Hospital.”

1988

Time Capsule

OLD MAGAZINES CAPTURE AN ERA IN MEDICINE

The 1988 issues of *Ward Rounds*, the medical school’s magazine at the time, provide a glimpse into the state of medicine 30 years ago. The spring issue describes efforts by Northwestern faculty to battle a “new” disease — AIDS — not only through activities in laboratories and clinics, but also in educating healthcare practitioners and members of the public across Illinois. “Physicians wonder how we can work with AIDS patients when it’s such a profoundly disturbing disease — it involves the terminally ill and it has

negative moral implications,” explained one faculty member quoted in the story. “More people are needed who can approach this problem from a balanced point of view — and have a healthy respect for the individual.”

Another article celebrates the first babies born as a result of in vitro fertilization at Northwestern-affiliated hospitals. The fall issue, meanwhile, describes a press conference heralding a new innovation, lithotripsy to fragment gallstones, after “the first procedure of its kind in Illinois” was performed that June.

MORE ONLINE AT MAGAZINE.NM.ORG.

