Northwestern Mecicine winter 2022

TINY DANCERS

Northwestern scientists have developed a new injectable therapy that harnesses "dancing molecules" to reverse paralysis and repair tissue after severe spinal cord injuries. • p. 14

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FIRST GLANCE

Happy Birtho

OTHER:



Ready For Delivery

Zach Cross, a third-year medical student, dons PPE during his night float Labor and Delivery service while on his Obstetrics and Gynecology rotation. Over the course of his rotation, Cross has helped with more than 15 deliveries, and at the end of this shift, he was able to add another to that list. "I am so happy that I had the opportunity to help with the birth of a baby boy," he said. "It is one of the experiences that medical students never forget — a rite of passage, for sure."

Photo by Teresa Crawford

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Winter 2022

Features



TINY DANCERS

Samuel Stupp, PhD, has discovered how to control the collective motion of more than 100,000 "dancing" molecules within a nano-fiber — a revolutionary strategy to enhance cell signaling that has the potential to reverse spinal cord injuries and more.



HEALTHY MOTHER, HEALTHY CHILD

The Maternal-Fetal Medicine division offers a range of programs designed to cater to each pregnant person's individual needs, particularly those who live in neighborhoods affected by violence, food deserts, and other stress-inducing life circumstances.



GLOBAL VISION

Through the Robert J. Havey, MD Institute for Global Health, Robert Murphy, MD, leads research and education initiatives around the world — while combating COVID-19 misinformation closer to home.



OUTSMARTING A TRICKSTER

Gregory Smith, PhD, recently crossed a major marker in his 20-year pursuit of the herpesvirus with his lab's discovery that herpesviruses perform a sneaky maneuver to effectively invade and hide within the nervous system for life.

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LEADERSHIP

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ON THE COVER

An image from the Stupp laboratory showing a longitudinal spinal cord section treated with bioactive nanofibers, captured 12 weeks after injury. Blood vessels (red) regenerated within the lesion. Laminin is stained in green, and cells are stained in blue.

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Bringing Northwestern Medicine Closer to Where Patients Live and Work



NEW HOSPITAL AFFILIATION, EXPANDED COMMUNITY PARTNERSHIPS, NEW CLINICAL locations, and an expanded relationship with Northwestern University to provide care for students and athletes are just some of the highlights of Northwestern Medicine's 2021 efforts to make world-class healthcare

more accessible.

• Building a leading medical presence in the south and southwest suburbs. As we approach the one-year anniversary of the Palos Health affiliation, we have much to celebrate. With 425 beds, Northwestern Medicine Palos Hospital is now the second-largest hospital in the health system. This last year, we advanced clinical integration of our cardiology and oncology services with a vision to make Northwestern Medicine Palos Hospital a regional destination of care in the south and southwest suburbs. Ambulatory site expansion. In addition to a 48,000-square-foot ambulatory care center in Mokena, additional clinics opened in Lake Bluff, Lincoln Square, Bloomingdale, and Evanston. Long-term planning continues for other anticipated site activations, such as the 150,000-square-foot facility in Old Irving Park and 100,000-square-foot site in Bronzeville, led by newly announced medical director, Dr. Kimbra Bell.

We continue to expand clinical collaborations to ensure our advanced resources, renowned physician network, and innovative research are available to every patient, no matter where they enter our health system.

99—

• Comprehensive student health services and athletic training. Northwestern Medicine Student Health Service now provides students and student-athletes greater access to advanced diagnostics and treatments. Students will be able to receive care on the Evanston campus and from locations across the health system. Students will also be able to use Northwestern Medicine's MyChart to make appointments and access their medical records.

- Telehealth options expanded across the health system. Patients are now able to self-schedule immediate care visits as well as choose a virtual care experience that allows them to be evaluated from the comfort of their own home. New virtual eCheck-in and eArrival options make registration and check-in easy and convenient.
- Expanded clinical community partnerships. Northwestern Medicine added two new relationships to its community health network. Inter-City Muslim Action Network and Lake County Health Department Federally Qualified Health Centers have joined Northwestern Medicine to help provide access to care, enhance coordination, and improve community health.

We continue to expand clinical collaborations to ensure our advanced resources, renowned physician network, and innovative research are available to every patient, no matter where they enter our health system. Thank you for your ongoing support. Together, we can make our communities even *Better*.

Best,

Dean M. Harrison President and CEO Northwestern Memorial HealthCare

Northwestern Selected as Home for Journal of Clinical Investigation

ne of the preeminent journals in which Northwestern investigators have long been proud to be published will be calling Feinberg home for the next five

years. Elizabeth McNally, MD, PhD, the Elizabeth I. Ward Professor of Genetic Medicine and director of the Center for Genetic Medicine, has been elected as the journal's next editor-in-chief. She will be the first woman to hold the title of editor-in-chief in JCI's nearly 100-year history.

"The ICI publishes a broad range of molecular medicine, includ-MCNALLY, MD, PhD ing new therapeutic mechanisms.

We have a tremendous depth of expertise here at Feinberg, and we will be drawing on our outstanding scientists to guide the Journal over these next five years. It's really an honor for us at Northwestern and speaks to the growth we've had as a medical school," said McNally, who is also a professor of Medicine in the Division of Cardiology and of Biochemistry and Molecular Genetics.

McNally will succeed Rexford Ahima, MD, PhD, professor and director of the Division

of Endocrinology at the Johns Hopkins University School of Medicine, who has served as the journal's editor-in-chief since July 2018. Previous locations for JCI and its editor-in-

chief have included Duke University, University of Pennsylvania. Columbia University, University of Michigan, University of California San Diego and San Francisco, and Harvard University.

With the transition to Northwestern, JCI's Editorial Board will also be composed of Feinberg faculty who have a broad range of expertise and are active

investigators in their respective fields. The Board will meet weekly to discuss and review manuscripts submitted to the journal.

ELIZABETH

"This is a perfect match: The Journal of Clinical Investigation is the premier destination for influential medical research, and Northwestern is a world-class academic medical center with a reputation for innovative scientific investigation," said Eric G. Neilson, MD, vice-president for medical affairs and the Lewis Landsberg Dean.



JCI is the preeminent journal for research aimed at defining across a wide variety of medical and many more. It is owned and published by the American Society for Clinical Investigation (ASCI), one of the nation's oldest and most respected associations for physician-scientists.

On Campus

PULSE

Investigating Millions of Genetic Variants Causing Global Disease

orthwestern Medicine is part of the research team on a \$185 million National Institutes of Health (NIH) project that will explore the millions of genetic variants that cause disease around the world. The project is called the Impact of Genomic Variation on Function (IGVF) Consortium.

Northwestern and Washington University will receive a \$7 million grant from NIH to co-lead the Data and Administrative Coordinating Center (DACC) for the consortium.

Scientists have identified millions of human genomic variants that differ across the world, including thousands of diseaseassociated ones. However, it has been challenging to pinpoint which variants in the genome are relevant for health and disease.

The NIH's project will address this problem and fund 25 awards across 30 U.S. research sites. Feng Yue, the Duane and Susan Burnham Professor of Molecular Medicine and associate professor of Biochemistry and Molecular Genetics, and of Pathology, will lead the



REX CHISHOLM vice dean for scientific affairs and graduate education and the Adam and Richard T. Lind Professor of Medical Genetics



FENG YUE

the Duane and Susan Burnham Professor of Molecular Medicine and associate professor of Biochemistry and Molecular Genetics, and of Pathology



BARBARA STRANGER associate professor of Pharmacology

Northwestern DACC team, which also includes Rex Chisholm, vice dean for scientific affairs and graduate education and the Adam and Richard T. Lind Professor of Medical Genetics, and Barbara Stranger, associate professor of Pharmacology.

"By incorporating both computational modeling and functional assays, the IGVF

investigators will prioritize and identify key genetic variants in different diseases, and these variants will be used for better diagnoses and facilitating personalized treatment," Yue said. "We are really glad to join this global effort to study and contribute our expertise to study how variants influence human health."

New Canning Thoracic Institute Launched

fter successfully performing the first COVID-19 lung transplant in the United States and offering guidance to transplant centers around the world, Northwestern Medicine has launched the Canning Thoracic Institute (CTI), investing in the fields of thoracic surgery and respiratory medicine to meet the growing patient

demand for lung care.

Supported by

a generous gift

from John and

Rita Canning,

the CTI is

committed

to providing

groundbreak-

ing research,

"We want to create solutions for seemingly impossible problems and be the destination center for diseases of the lung and chest."

ANKIT BHARAT, MD

clinical breakthroughs, and high-quality care for patients with diseases of the lung and chest across the 11-hospital Northwestern Medicine health system.



"The Canning Thoracic Institute will capitalize on Northwestern Medicine's breakthroughs in medicine with a regional, national, and global impact," said John and Rita Canning, whose \$20 million gift launched the CTI. "Our philanthropic contribution will help recruit and educate the top physicians in the nation, pioneer new procedures and clinical trials, incorporate artificial intelligence and machine learning tools, and make the patient experience exceptional. We want the CTI to be known as the leading program for thoracic care, creating a platform that allows patients from all over the country and world to access leadingedge treatment."

"We want to create solutions for seemingly impossible problems and be the destination center for diseases of the lung and chest," said Ankit Bharat, MD, chief of thoracic surgery at Northwestern Medicine and executive director of the Canning Thoracic Institute.

Grant to Support Equity in Biomedicine

he COVID-19 pandemic has exacerbated family caregiving demands, often borne disproportionately by women and people of color. According to a recent report by the National Academies of Science, Engineering and Medicine, faculty in sciences have been especially affected, putting decades of gains in representation at risk.

In response, \$12.1 million was awarded to 22 medical schools in 17 states through a joint effort of the Doris Duke Charitable Foundation, the American Heart Association, the Burroughs



Wellcome Fund, the John Templeton Foundation, the Rita Allen Foundation, and the Walder Foundation.

Feinberg will receive \$550,000 of this funding, which will allow the medical school to award a one-time supplement grant of \$30,000 to \$50,000 to 12 to 17 early-career clinician investigators experiencing research delays due to family caregiving during the pandemic. A larger group of faculty will receive further outreach related to support skills and mentoring to help ensure early-career success.

The medical schools selected for the funding opportunity were recognized for producing a strong body of research, aggressive efforts to provide a more equitable and inclusive environment for faculty and students, and a commitment to further advancing such efforts. **PULSE** On Campus

A BANNER YEAR

The Breakthrough Research That Shaped 2021

orthwestern University Feinberg School of Medicine had an extraordinary 2021. Over the course of the year, the medical school received more than \$610 million in research funding and awards, representing 68 percent of all research dollars at Northwestern. The prodigious work of scientists across Feinberg was published in a range of high-impact journals, presenting a broad spectrum of critical discoveries, from providing a better understanding of the mysterious machinations of COVID-19, to opening the door to treatment for obesity to paving the way toward a much-needed herpes vaccine (you can read more about the latter on page 26). Here is a look back at some of the most exciting stories of the year.



ELENA MARTINELLI, PhD, MPH

Combination Treatment May Prolong HIV Viral Suppression

Science Translational Medicine



A novel combination treatment may increase the ability of monoclonal antibodies to control viral

infection in patients diagnosed with HIV, according to a study published in *Science Translational Medicine*. "This really demonstrates that that we should combine broadly neutralizing antibodies with other immunostimulatory agents, especially those that may impact immune response. If we want to use broadly neutralizing antibodies to cure, we need to find the right combination," said Elena Martinelli, PhD, MPH, research professor of Cell and Developmental Biology and senior author of the study.



PRIYA KUMTHEKAR, MD, '08 '11 '12 GME AND MACIEJ LESNIAK, MD

Crossing the Blood-Brain Barrier to Attack Glioblastoma

Science Translational Medicine, The Lancet Oncology



Two recent breakthrough studies by Northwestern Medicine scientists are helping make progress toward treating a notoriously resilient cancer: glioblastoma. An early clinical trial in individuals with the deadly brain disease showed an experi-

mental spherical nucleic acid (SNA) drug developed by Northwestern scientists was able to penetrate the blood-brain barrier and trigger the death of tumor cells. This study, published in *Science Translational Medicine*, is the first time a nanotherapeutic has been shown to cross the blood-brain barrier when given through intravenous infusion and alter the genetic machinery of a tumor to cause cell death. The drug crossed the blood-brain barrier, dialed down the level of a cancer-causing gene and promoted tumor cell death. "It's a remarkable finding in humans that confirms what we had previously seen in our animal studies," said lead investigator Priya Kumthekar, MD, '08 '11 '12 GME, associate professor in the Ken and Ruth Davee Department of Neurology Division of Neuro-oncology.

Maciej Lesniak, MD, chair and Michael J. Marchese Professor of Neurosurgery, was senior author of another study, published in *The Lancet Oncology*, describing a novel therapy engineered by Northwestern Medicine investigators that improved progression-free and overall survival for patients with newly diagnosed malignant gliomas in a recent phase I clinical trial. In the study, investigators evaluated the safety of the therapy, called NSC-CRAd-S-pk7, an oncolytic adenovirus delivered by neural stem cells, or progenitor cells from the central nervous system that cross the blood-brain barrier to deliver therapeutic molecules to cancer cells.

ROBERT KUSHNER, MD, '80 '82 GME

New Anti-Obesity Medication Could Be a Gamechanger

New England Journal of Medicine



A new anti-obesity medication was shown to be almost twice as effective at helping individuals lose weight than some of

the current weight-loss drugs on the market, according to a new landmark study conducted at Northwestern Medicine and other institutions and published in the New England Journal of Medicine. Semaglutide, typically prescribed for treatment of Type 2 diabetes, was used in a phase 3 clinical trial as a treatment for obesity with very promising results. Taken once a week at 2.4 mg, the drug suppresses appetite centers in the brain. "This is by far the most effective intervention we have seen for weight management when you compare it to many of the currently existing drugs," said Robert Kushner, MD, '80 '82 GME, professor of Medicine in the Division of Endocrinology and of Medical Education, who led the study.



ELIZABETH MCNAILLY, MD, PhD

New Hope for Antibody to Treat Muscular Dystrophy

Science Translational Medicine



Northwestern Medicine scientists have developed an antibody that they believe can be used to treat muscular dystro-

phy, findings that were published in *Science Translational Medicine*. "We believe this can become a therapy for muscular dystrophy, including the many different forms of muscular dystrophy," said senior study author Elizabeth McNally, MD, PhD, director of the Center for Genetic Medicine and the Elizabeth J. Ward Professor of Genetic Medicine. "Given the success with so many other antibodies in treating chronic human diseases like rheumatoid arthritis and psoriasis, we are very optimistic this antibody can translate into the human disease setting." **PULSE** *On Campus*



SCOTT BUDINGER, MD

Why Older Adults May Be More Vulnerable to Lung Infections

Journal of Clinical Investigation



An age-related accumulation of a signaling molecule may be one culprit behind older adults' vulnerability to viral pneumonias,

according to a study published in the *Journal* of *Clinical Investigation*. The molecule, called hyaluronan, caused macrophages in the lung to become "older," decreasing the immune cells' proliferation in response to infection. Lowering levels of hyaluronan could reverse this phenomenon and merits more study, according to Scott Budinger, MD, the Ernest S. Bazley Professor of Airway Diseases, chief of Pulmonary and Critical Care in the Department of Medicine, and co-senior author of the study.

JOHN ROGERS, PhD

Skin-Like 'Sweat Sticker' Can Diagnose Cystic Fibrosis

Science Translational Medicine



A Northwestern University-led team of scientists has developed a novel skin-mounted sticker that absorbs sweat and

then changes color to provide an accurate, easy-to-read diagnosis of cystic fibrosis within minutes, according to a study published in *Science Translational Medicine*. While measuring chloride levels in sweat to diagnose cystic fibrosis is standard, the soft, flexible, skin-like "sweat sticker" offers a stark contrast to current diagnostic technologies, which require a rigid, bulky, wrist-strapped device to collect sweat.

DAVID GATE, PhD

A Possible Therapeutic Target for Lewy Body Dementia

Science



T-cells respond to buildups of alpha-synuclein, the aggregated protein clumps that are a feature of neurodegenerative diseases including dementia with Lewy bodies and Parkinson's disease, according to a study published in *Science*. This autoimmune response proves

harmful, and inhibiting signaling pathways that trigger the response may represent a future therapeutic target, according to David Gate, PhD, assistant professor in the Ken and Ruth Davee Department of Neurology and lead author of the study.





AMANDA PERAK, '09 MD, '18 MS

Mother's Heart Health in Pregnancy Impacts Child's Heart Health in Adolescence

Journal of the American Medical Association



A study from Northwestern Medicine and the Ann & Robert H. Lurie Children's Hospital of Chicago, pub-

lished in *JAMA*, was the first to examine the implications of a mother's cardiovascular health during pregnancy for offspring health in the longer term. The troubling findings build upon previous research from the same institutions that found more than 90 percent of U.S. mothers have suboptimal cardiovascular health levels during pregnancy. "Our new findings suggest that the children of this large group of mothers may be at higher risk for early declines in their own cardiovascular health during childhood," said lead author Amanda Perak, '09 MD, '18 MS, assistant professor of Pediatrics in the Division of Cardiology and of Preventive Medicine in the Division of Epidemiology. "If we can address these underlying causes of children's poor heart health, we can hopefully help them avoid future heart attacks, strokes, and premature deaths as they grow up."

D. JAMES SURMEIER, PhD

Gene Therapy Boosts Benefits of Parkinson's Disease Drug



Nature



D. James Surmeier, PhD, chair of the Department of Neuroscience, was senior author of a study published in *Nature* that explains why dopamine neurons are lost in Parkinson's disease, and demonstrated that a gene therapy targeting the brain's substantia nigra can substantially

boost the benefits of levodopa, an important medication for treating the disease.

CONSORTIUM LED BY RICHARD WUNDERINK, MD

Why COVID-19 Pneumonia Lasts Longer and Causes More Damage

Nature



Bacteria or viruses like influenza that cause pneumonia can spread across large regions of the lung

within hours. In the modern intensive care unit, these bacteria or viruses are usually controlled either by antibiotics or by the body's immune system within the first few days of the illness. But in a study published in Nature, Northwestern Medicine investigators showed how COVID-19 pneumonia is different. This is the first study in which scientists analyzed immune cells from the lungs of COVID-19 pneumonia patients in a systematic manner and compared them to cells from patients with pneumonia from other viruses or bacteria. Instead of rapidly infecting large regions of the lung, the virus causing COVID-19 sets up shop in multiple small areas of the lung. It then hijacks the lungs' own immune cells and uses them to spread across the lung over a period of many days or even weeks, like multiple wildfires spreading across a forest.

The work was done as part of a consortium of investigators participating in the Successful Clinical Response in Pneumonia Therapy (SCRIPT) systems biology center funded by the National Institute of Allergy and Infectious Diseases, led by Richard Wunderink, MD, professor of Pulmonary and Critical Care in the Department of Medicine and medical director of the Northwestern Medicine ICU. \Rightarrow

Training in Session

Medical students develop new skills and pursue their scholarly interests.



Shivani Patel, MBBS, MS, a health system clinician in Pediatrics in the Division of Cardiology and a pediatric cardiologist at Ann & Robert H. Lurie Children's Hospital, leads a cardiac auscultation exercise.

PRACTICING ADVANCED PHYSICAL DIAGNOSIS SKILLS

enior medical students and residents joined together to learn about and practice advanced physical diagnosis skills during a recent workshop. The workshop is part of a series of advanced physical diagnosis workshops organized by the Augusta Webster, MD, Office of Medical Education (AWOME) in partnership with the graduate medical education programs of the McGaw Medical Center of Northwestern University.

"Physicians learn basic physical exam skills early in medical school but being able to identify subtle findings takes focused practice over many years. Mastering the physical exam is fundamental to providing patient-centered, high-quality, and value-based care. It's a winwin when students and residents learn alongside each other," said Toshiko Uchida, MD, associate professor of Medicine in the Division of General Internal Medicine and Geriatrics and of Medical Education.

Participants practiced identifying abnormal heart sounds using a Next Generation Harvey patient simulator. The mannequin simulates cardiovascular disease symptoms and sounds, such as fluctuating pulses, normal and abnormal heart sounds, and murmurs, to help students, residents, and healthcare providers alike sharpen their skills in listening to the heart — a process known as cardiac auscultation. Future workshops, which will be held quarterly, will highlight other physical exam findings.

LEARNING OPHTHALMOLOGY SURGICAL TECHNIQUES

he student-led Ophthalmology Interest Group (OIG) recently held a suturing workshop, offering Feinberg students the opportunity to practice surgical techniques on mock organs. Faculty and residents were on hand to answer questions and guide students through the workshop, which was the first time many students had held a scalpel.

"Opportunities to learn hands-on skills such as suturing don't often present themselves until our third year, so this workshop was a welcome introduction to skills many of us are eager to develop," said Gina Johnson, a second-year student and OIG treasurer.

Hawke Yoon, MD, and Jennifer Rossen, MD, both assistant professors of Ophthalmology in the Division of Pediatric Ophthalmology, led the workshop and instructed students in pediatric ophthalmologic surgical techniques.

Feinberg students practiced surgical techniques on food items standing in for human tissue.







Sunny Abdelmageed, a secondyear medical student, found that infant intraventricular hemorrhages (IVH) heavily impact later functional outcomes.

Erick Masias, a second-year medical student, worked with Chicago groups Communities United and Strengthening Chicago's Youth to design a youth participatory action research project.

SECOND-YEAR STUDENTS PRESENT AOSC PROJECTS

econd-year medical students presented their Area of Scholarly Concentration (AOSC) research projects during a virtual session held this past fall, covering topics including the genetics of lung cancer, how brain damage in infancy can produce functional deficits later in life, surveys designed in collaboration with community organizations, and more.

AOSC is a foundational element of the Feinberg curriculum, giving medical students the opportunity to work through the entire research process.

In his AOSC research project, Erick Masias, a second-year student, worked with Chicago groups Communities United and Strengthening Chicago's Youth to design a youth participatory action research project. Working under the mentorship of Karen Sheehan, '89 MD, MPH, associate chair for advocacy and professor in the Department of Pediatrics, Masias built a survey exploring barriers to mental and behavioral health services to boys and young men of color. Importantly, the questions were developed hand-in-hand with the target population treating them as equal contributors rather than research subjects.

"The partnership is based on the premise that boys and young men of color

with lived experiences are actually in the best position to conduct the research and interpret the findings," Masias said. "We're hoping the results can dispel some narratives about young men not accessing mental health resources because of 'stigma,' and point to other things like cost."

Other projects utilized the resources at Northwestern, including one conducted by Sunny Abdelmageed, a second-year medical student who examined the relationship between infant intraventricular hemorrhages (IVH) and later functional outcomes under the mentorship of Sandi Lam, '98 MD, vice chair for pediatric neurological surgery in the Department of Neurological Surgery. Premature infants are at particular risk of IVH, which can lead to brain damage, but even as premature births have declined, the incidence of hospitalization for IVH has increased, according to Abdelmageed.

Using patient data from Lurie Children's Hospital, Abdelmageed found that greater ventricular dilation — a measure of IVH severity — was associated with worse functional outcomes as defined using a pediatric cerebral performance scale.

"I was surprised how strongly ventricular dilation predicted outcomes, even independent of other confounders and persisting until school age," Abdelmageed said.

MD Program Receives Full LCME Accreditation

n October 2021, Feinberg received a full eight-year accreditation by the Liaison Committee of Medical Education (LCME), the nationally recognized accrediting authority for medical education programs leading to the MD degree in the United States. The recent accreditation efforts culminated a twoyear reaccreditation process that began in the summer of 2019 and included a comprehensive self-assessment of Feinberg's performance across the LCME's 12 overarching standards and 93 elements, an independent student survey and a virtual site visit in April 2021.

"Feinberg is an exceptional place to train medical students, and we graduate phenomenal students who make us very proud," said Marianne Green, MD, vice dean for education and the Raymond H. Curry, MD, Professor of Medical Education.

"While continuous quality improvement is part of everything we do, the LCME accreditation process is an opportunity to collectively review a large dataset and identify additional areas of opportunity. We are very grateful to all of the faculty, students, and staff who participated in this process and are proud of the outcome."

Five subcommittees with representation from across the school were formed to analyze Feinberg's performance on the LCME standards and elements. Members included more than 85 faculty, administrative staff, students, and residents.

The next LCME accreditation site visit is scheduled for academic year 2028–2029.

MEDIA SPOTLIGHT

The New Hork Eimes

Losing Your Hair? You Might Blame the Great Stem Cell Escape.

Why does hair loss happen? Rui Yi, PhD, the Paul E. Steiner Research Professor of Pathology, set out to find the answer. He had expected that the death of a hair follicle's stem cells meant that the hair would turn white and, when enough stem cells were lost, the strand of hair would die. But as he watched individual strands of hair as they grew and aged in mice, he was surprised by what he saw.

When the animals started to grow old and gray and lose their hair, their stem cells started to escape their home, a region called the bulge. The cells changed their shapes and squeezed out of tiny holes in the hair follicle. Sometimes, reported the *Times*, the escaping stem cells "leapt long distances, in cellular terms, from the niche where they lived." Of this unexpected mechanism of aging, Yi said, "If I did not see it for myself, I would not have believed it."

The New York Times

In Chicago, a New Approach to Gay and Bisexual Men With Prostate Cancer

For gay and bisexual men, symptoms after prostate cancer treatment can be physical and emotional and may affect the men's relationships with their partners. These issues may present a challenge to medical professionals more attuned to the relationship needs of straight men.

Recognizing this, Northwestern Medicine created the Gay and Bisexual Men's Urology Program, the first of its kind in the United States.

Historically, the medical system has sort of operated in a don't-ask-don't-tell environment, and that's been problematic," Channa Amarasekera, MD, assistant professor of Urology and director of the program, told *The NewYork Times.* "Fortunately, that's changing. Patients are increasingly open about who they are."



Chicago Tribune

Glioblastomas, the Aggressive Brain Tumors, Might Benefit from Immunotherapy in Some Patients, Northwestern Research Suggests

As a neurosurgeon regularly treating glioblastomas, Adam Sonabend Worthalter, MD, associate professor of Neurological Surgery, has followed the rise of immunotherapy for cancer treatment with interest. But not much promise has been shown for patients with glioblastomas until now.

A new study by Sonabend and colleagues at Feinberg showed that some patients might

benefit from immunotherapy. The investigators studied a subset of participants in previous clinical trials, who did show a robust response to immunotherapy, to see if there was something different about them. They found a biomarker, identified as phosphorylated ERK, that, when present in significant amounts in a patient, made immunotherapy more effective. The research was published in *Nature Cancer*.

WBEZCHICAGO

A New Program Reaches Out to the Front Line of Anti-Violence Efforts in Chicago

An anti-violence strategy in Chicago known as "street outreach" is used to intervene in gang conflicts by convincing young men to put guns down. The outreach workers are often former gang members with the perspective needed to gain entry into the groups.

According to Judith Moskowitz, PhD, professor of Medical Social Sciences, most of these workers have been exposed to extreme trauma, whether they are victims of violence or have committed violent acts themselves. Some have lost friends and loved ones. The violence mitigations work they do also creates extreme stress.

Moskowitz will work with the antiviolence program READI Chicago, training its workers in resilience skills to avoid burnout and secondary trauma. A \$400,000 grant from the National Institutes of Health will fund the training for two years.

FACULTY AWARDS & HONORS













Anthony Yang, MD, MS,

associate professor of Surgery in the **Division of Surgical** Oncology, received an Outstanding Performance Award from the Commission on Cancer's Cancer Liaison Program for his contributions as the physician quality leader of the Robert H. Lurie Comprehensive Cancer Center at Northwestern Memorial Hospital. He is one of just 10 Cancer Liaison Physicians in the nation selected to receive this new award. 🔯 1

Stephanie Eisenbarth,

MD, PhD, adjunct professor of Medicine in the Division of Allergy and Immunology, was named chief of Allergy and Immunology and director of the Center for Human Immunobiology.

Jen Brown, MPH,

lecturer of Preventive Medicine and co-director and co-founder of the Alliance for Research in Chicagoland Communities, has been appointed by the Patient-Centered Outcomes Research Institute (PCORI) as a member of its Advisory Panel on Patient Engagement.

Lauren Beach,

JD, PhD, research assistant professor of Medical Social Sciences and of Preventive Medicine, has been named the 2021 Vanderbilt University School of Nursing "Friend of Nursing," which recognizes significant local and/or national contributions to the profession of nursing. 2

David Palmer. MD

clinical associate professor of Ophthalmology, received the Vincent A. Persico Advocacy Award for demonstrating excellence as an advocate for ophthlamologists and their patients at the Illinois Society of Eye Physicians and Surgeons annual meeting. 10 3

Lucas Pinto, PhD,

assistant professor of Neuroscience, was named a 2021 Next Generation Leader by the Allen Institute. Pinto is one of just six appointed individuals.

Leah Neubauer, EdD,

MA, associate professor of Preventive Medicine in the Division of Public Health Practice, has been named associate director of the Institute for Public Health and Medicine's (IPHAM) Program in Public Health. 10 5

Melissa Simon, MD. MPH. '06 GME.

vice chair for clinical research in the Department of Obstetrics and Gynecology and director of the Center for Health Equity Transformation in the Institute for Public Health and Medicine, was presented with the 2021 Henry P. Russe, MD Citation for Exemplary Compassion in Healthcare Award at the Institute of Medicine of Chicago Leadership Summit.

Susan Quaggin, MD,

the Charles H. Mayo, MD, Professor and chief of Nephrology and Hypertension in the Department of Medicine, was elected as a fellow of the National Academy of Inventors for the 2021 class cohort.

Tina Tan, MD, pro-

fessor of Pediatrics in the Division of Infectious Diseases, was presented with the 2021 Society Citation Award by the Infectious Diseases Society of America.

John Walkup, MD,

chief and professor of Psychiatry and Behavioral Sciences in the Division of Child and Adolescent Psychiatry, is the recipient of the Brain and Behavior Research Foundation Ruane Prize for Outstanding Achievement in Child and Adolescent Psychiatric Research.

Yogesh Goyal, PhD,

adjunct assistant professor of Cell and Developmental Biology, was named a 2021 STAT Wunderkind for his development of a QR code made of DNA that identifies and tracks how tumor cells evade treatment. 67

Elizabeth McNally,

MD. PhD. the Elizabeth J. Ward Professor of Genetic Medicine; Melissa Simon, MD, MPH, the George H. Gardner, MD, Professor of Clinical Gynecology; and Guillermo Ameer, ScD. the Daniel Hale Williams Professor of Biomedical Engineering at the McCormick School of Engineering and professor of Surgery in the Division of Vascular Surgery, have been elected to the National Academy of Medicine (NAM). NAM is one of

three academies that make up the National Academies of Sciences, Engineering, and Medicine, and strives to improve human health by advancing science, accelerating health equity, and providing trusted advice on a national and global scale. McNally was also elected as the next editor-in-chief of the Journal of Clinical Investigation (read more on page 3).

Steven DeVries, MD,

PhD, the David Shoch, MD, PhD, professor of Ophthalmology, has received an International Research Collaborators Award from Research to Prevent Blindness.

Jaehyuk Choi, MD, PhD, asso-

ciate professor of Dermatology and of Biochemistry and Molecular Genetics, was the recipient of an Emerging Leader Award from the Mark Foundation for Cancer Research. By Gina Bazer

TINY DANCERS

Samuel Stupp, PhD, has discovered how to control the collective motion of more than 100,000 "dancing" molecules within a nanofiber a revolutionary strategy to enhance cell signaling that has the potential to reverse spinal cord injuries and more. egenerative medicine is a flourishing area at Northwestern, and Samuel Stupp, PhD, director of Northwestern's Simpson Querrey Institute for BioNanotechnology (SQI), is often leading the charge. He has been for more than two decades — he founded SQI in 2000 as the Institute for Bioengineering and Nanoscience in Advanced Medicine.

Stupp's laboratory engineers molecules that self-assemble into nanofibers, which mimic cell structures and biological signaling. The technology can be used for everything from cartilage repair to regenerative therapies for organ transplantation to potential treatments for inflammatory bowel disease. The possibilities are virtually limitless, so it is no surprise that scientists across disciplines have partnered with Stupp on novel solutions to the vexing challenges in their fields.

Stupp's latest breakthrough is a promising therapeutic approach that can reverse paralysis and repair tissue after severe spinal cord injuries. For this, he leveraged technology — an injection therapy made up of selfassembling peptide amphiphiles, or PAs that he pioneered two decades ago.

In a study published in *Science* this past fall, Stupp and his team administered a single injection of the PA formula into the tissues



Stupp is the founding director of SQI and its affiliated research center, the Center for Regenerative Nanomedicine. In addition to Feinberg, he has appointments at Northwestern University's McCormick School of Engineering and the Weinberg College of Arts and Sciences. surrounding the spinal cords of paralyzed mice, spurring targeted cell signaling by molecules with intense motion that promoted rapid healing. Just four weeks later, the animals regained the ability to walk.

"Currently, there are no therapeutics that trigger spinal cord regen-

eration, and I wanted to tackle this problem," says Stupp, who is also the Board of Trustees Professor of Materials Science and Engineering, Chemistry, Medicine, and Biomedical Engineering. "We are going straight to the FDA to start the process of getting this new therapy approved for use in human patients."

'Dancing molecules' hit moving targets

The secret behind Stupp's new breakthrough therapeutic is tuning the motion of molecules, so they can find and properly engage constantly moving cellular receptors. Injected as a liquid, the therapy immediately gels into a complex network of nanofibers that mimic the extracellular matrix of the spinal cord. By matching the matrix's structure, mimicking the motion of biological molecules, and incorporating signals for receptors, the synthetic materials can communicate with cells.

"Receptors in neurons and other cells constantly move around," Stupp says. "The key innovation in our research, which has never been done before, is to control the collective motion of more than 100,000 molecules within our nanofibers. By making the molecules move, 'dance' or even leap temporarily out of these structures, known as supramolecular polymers, they are able to connect more effectively with receptors."

Stupp and his team found that fine-tuning the molecules' motion within the nanofiber network to make them more agile resulted in greater therapeutic efficacy in paralyzed mice. They also confirmed that formulations of their therapy with enhanced molecular motion performed better during tests with human cells, indicating increased bioactivity and cellular signaling.

"Given that cells themselves and their receptors are in constant motion, you can imagine that molecules moving more rapidly would encounter these receptors more often," >

> Longitudinal spinal cord section treated with the most bioactive therapeutic scoffold, captured 12 weeks after injury. Blood vessels (red) regenerated within the lesion. Laminin is stained in green and cells are stained in blue.

SUPER SIGNALS

By sending bioactive signals to trigger cells to repair and regenerate, Stupp's breakthrough therapy, described in *Science*, dramatically improved severely injured spinal cords in five key ways:

1 Severed axons were regenerated

- 2 Scar tissue was diminished
- Over the second seco
- 4 Functional blood vessels formed, delivering nutrients to cells at the injury site
- 6 More motor neurons survived

After the therapy performs its function, the materials biodegrade into nutrients for the cells within 12 weeks and then completely disappear from the body without notice-able side effects. This is the first study in which investigators controlled the collective motion of molecules through changes in chemical structure to increase a therapeutic's efficacy.



Human stem cells (red and green) treated with a therapeutic material that was modified to have a high degree of "supramolecular motion." The cells began to differentiate into neurons (white) in the presence of the material.



A new injectable therapy forms nanofibers with two different bioactive signals (green and orange) that communicate with cells to initiate repair of the injured spinal cord. Illustration by Mark Seniw.



Zaida Álvarez, first author of the recent *Science* publication and former research assistant professor in Stupp's laboratory

Stupp says. "If the molecules are sluggish and not as 'social,' they may never come into contact with the cells."

Once connected to the receptors, the moving molecules trigger at least two

cascading signals, both of which are critical to spinal cord repair. One signal prompts the long tails of neurons in the spinal cord, called axons, to regenerate. Like electrical cables, axons send signals between the brain and the rest of the body. Severing or damaging axons can result in the loss of feeling in the body or even paralysis. Repairing axons, on the other hand, increases communication between the body and brain. The second signal helps neurons survive after injury because it causes other cell types to proliferate, promoting the regrowth of lost blood vessels that feed neurons and other critical cells for tissue repair.

Universal application

While the new therapy could be used to prevent paralysis after major trauma (automobile accidents, falls, sports accidents and gunshot wounds) as well as from diseases, Stupp believes the underlying discovery — that "supramolecular motion" is a key factor in bioactivity — can be applied to other therapies and targets.

"The central nervous system tissues we have successfully regenerated in the injured spinal cord are similar to those in the brain

"

Our fundamental discovery about controlling the motion of molecular assemblies to enhance cell signaling could be applied universally across biomedical targets."

Samuel Stupp, PhD

affected by stroke and neurodegenerative diseases, such as ALS, Parkinson's disease and Alzheimer's disease," Stupp says. "Beyond that, our fundamental discovery about controlling the motion of molecular assemblies to enhance cell signaling could be applied universally across biomedical targets." *

CONNECTING INVESTIGATORS

SQI and its Center for Regenerative Nanomedicine connect investigators across disciplines to foster translational research partnerships at Northwestern, other U.S. institutions, and around the globe with the goal of improving human health, well-being, and quality of life. A current multi-institution collaboration, involving investigators from Northwestern, the University of Wisconsin, Mayo Clinic, and the Steadman Philippon Research Institute in Vail, Colorado, is focused on accelerating cartilage repair following arthroscopic hip and knee procedures. This work was spearheaded by Northwestern trustee Michael Shannon.

32 faculty members are members of SQI

472 PhD students, medical students, postdocs, and fellows trained at the institute



ADVANCING ORGAN TISSUE REPAIR



Lorenzo Gallon, MD



Guillermo Oliver, PhD



Michael Donnan, '13 MD, '16, '18 GME

The Feinberg Cardiovascular and Renal Research Institute (FCVRRI) is another breeding ground for regenerative medicine study at the medical school. A recent grant through NUGoKidney is funding a partnership between Stupp and Lorenzo Gallon, MD, professor of Medicine in the Division of Nephrology and Hypertension and of Surgery in the Division of Organ Transplantation. The laboratories are working together to develop peptide amphiphile-coated regulatory T-cells to use in a mouse model of kidney ischemia-reperfusion injury, with the long-term goal of using this strategy to prevent ischemia-reperfusion injury and thus improve outcomes after organ transplantation.

FCVRRI scientists are also making innovative inroads by studying the regenerative properties of lymphatics. Guillermo Oliver, PhD, director of the institute's Center for Vascular and Developmental Biology and the Thomas D. Spies Professor of Lymphatic Metabolism, is exploring how lymphatics can help to restore heart function after cardiac injury (he was senior author of a study published in *Nature* in 2020 finding that lymphatics promote cardiac growth and repair in mice). Meanwhile, Michael Donnan, '13 MD, '16, '18 GME, an instructor in the Division of Nephrology and Hypertension, is studying the active role lymphatics play in the response to kidney injury, exploring the possibility of targeting kidney lymphatics for regeneration and/or repair of the organ.

Other Northwestern authors of the Science study include Evangelos Kiskinis, PhD, assistant professor in the Ken and Ruth Davee Department of Neurology and of Neuroscience; research technician Feng Chen; postdoctoral researchers Ivan Sasselli, PhD; Alberto Ortega, PhD; and Zois Syrgiannis, PhD; former graduate students Alexandra Kolberg-Edelbrock, PhD, and Stacey Chin, PhD; and graduate student Ruomeng Qiu. Peter Mirau, PhD, of the Air Force Research Laboratories; and Steven Weigand of Argonne National Laboratory also are co-authors.

PIONEERING REGENERATIVE ENGINEERING

Biomaterials play a critical role in the field of regenerative medicine, especially in the replacement of damaged tissues – an area of study that is also



growing at Northwestern, particularly in the laboratory of **Guillermo Ameer, ScD**, the Daniel Hale Williams Professor of Biomedical Engineering at the McCormick School of Engineering and professor of Surgery in the Division of Vascular Surgery at Feinberg.

Ameer's laboratory is dedicated to the development of biomaterials and nanotechnology for regenerative medicine, specifically tissue engineering, medical devices, drug delivery, and cell delivery applications. A medical product based on a citrate-based biomaterial technology called CITREGEN[™], pioneered in Ameer's laboratory, will soon be widely available for use in reconstruction surgeries that involve attaching soft tissue grafts to bone.

This past fall, Ameer was elected to the National Academy of Medicine (NAM). Membership in the academy is one of the highest honors given to a scientist in the United States.

Below: CITREGEN[™] is the first thermoset biodegradable synthetic polymer ever used in implantable medical devices. Shown here, the implantable device, CITRELOCK[™], received clearance from the Food and Drug Administration (FDA) last year. The CITRELOCK[™] device has a compressive strength comparable to cortical bone and maintains structural integrity during the healing phase, while allowing the implant to be remodeled by host tissue over time.



BY EMILY AYSHFORD

Global Vision

Robert Murphy, MD, leads research and education initiatives around the world — while combating COVID-19 misinformation closer to home.

s a Northwestern resident in the late 1970s, Robert Murphy treated a patient with a mysterious condition: a gravedigger from Indiana who showed up at the VA hospital with big black scabs all over his back and a pulmonary infiltrate but no respiratory symptoms.

At the time, Murphy thought he wanted to be an endocrinologist or a cardiologist. He was used to changing his mind — he'd started off as an aviation major in college before deciding he needed a career that was more "mental than mechanical." He knew he made the right decision when he attended Loyola Stritch School of Medicine. He just had to find the right medical discipline to pursue.

Looking at the gravedigger, Murphy was fascinated. He turned out to have blastomycosis — a fungal infection — but Murphy's interest in infectious diseases was piqued.

"It was fun," he says. "You got to see the most interesting patients. With infectious diseases, you identified them, treated them, and then the patient was cured and went home."

That practice changed after Murphy finished his residency and began his infectious disease fellowship at Northwestern in 1981. Within his first week, the first cases of HIV began to show up in Chicago. From that point on, patients with this new infectious disease weren't cured. They needed long-term, often complex and intensive care. "Now we can really go to the next level with research and education."

ROBERT MURPHY, MD



That set Murphy on a path from Chicago to Nigeria, from running the largest AIDS clinic in the city to eventually setting up AIDS treatment and capacity building programs across Africa. Ultimately, he would find himself running research programs around the world and training healthcare workers in low- and middleincome countries to diagnose and treat disease. For 10 years, he led Feinberg's Center for Global Health and then its successor, the Institute for Global Health, founded in 2019.

Now, with a gift from Northwestern University Trustees and alumni Patrick G. Ryan and Shirley W. Ryan that endowed the Robert J. Havey, MD Institute for Global Health, Murphy, who is executive director of the institute and the John Philip Phair Professor of Infectious Diseases, is looking to expand programming and research to help improve care for billions of people worldwide.

"Now we can really go to the next level with research and education," Murphy says. "We want this to become an important global health institute internationally."

TREATING PATIENTS WITH HIV IN CHICAGO

When the HIV pandemic began in the early 1980s, Murphy was splitting his time between conducting infectious disease rounds and research, and practicing in an internal medicine clinic. At the time, infectious diseases were only treated in hospitals, but as more and more patients with HIV became sick, they needed long-term care and follow up.

So physicians referred patients to Murphy's clinic. Within a few years, 95 percent of his patients had HIV or AIDS. No treatment existed, and every one of his patients died. At one point, he signed more death certificates than any other physician at Northwestern. Often, he couldn't keep up. Because bodies couldn't be released without a signed death certificate, Murphy started pre-signing them in batches. >









Feinberg supports educational activities and provides care in partnership with global ministries of health, universities, medical facilities, and other organizations in more than 20 countries.

Paving the Way

Robert J. Havey, '80 MD, '83, '84 GME, a long-time general internist with Northwestern Medical Group, serves as the deputy director of the Havey Institute for Global Health and as clinical professor of Medicine in the Division of General Internal Medicine and Geriatrics.

In 2008, he established the Global Health Initiative, which provides global health experiences for Northwestern medical students. Through the program, medical students go on rotations at locations around the world, helping to provide clinical care in low- and middleincome countries. Under his leadership, Northwestern now has a higher percentage of medical students going on global health rotations than any other medical school in the United States.

Northwestern University Trustees and alumni Patrick G. Ryan and Shirley W. Ryan made a historic gift to name and endow the Robert J. Havey, MD Institute for Global Health in his honor.



"It was quite traumatic," he says. "I became attached to these young patients and their families. They were stigmatized but appreciative of care."

In addition to the clinic, he ran the AIDS Clinical Trials Unit at Northwestern, where he studied combinations of treatments and potential complications. In 1996, with the advent of antiretroviral therapy, patients began to survive, and fewer were admitted to the hospital.

"But the world was full of HIV in low- and middle-income countries, so I decided to shift my focus there," he says.

CREATING SUSTAINABLE AND BILATERAL PROGRAMMING IN AFRICA

In 2004, Murphy was appointed the country director for Nigeria for the U.S. President's

Emergency Plan for AIDS Relief (PEPFAR). There, he led the program that set up 53 clinics across the country that tested and treated more than 175,000 patients with HIV and AIDS. A sabbatical in Paris led to similar work



Murphy says.

in Mali. At the time, the idea of global health was undergoing a transformation.

"Before this, researchers would come in and send lab specimens back to the United States," he says. "There was very little capacity development. But there was a growing movement to teach people in these countries how to treat the diseases there in a sustainable way."

In 2008, Murphy received a grant from the Fogarty International Center at the National Institutes of Health to start training healthcare workers in Africa to both identify and treat health problems and to get the grants and support they needed to do the work.

That evolved into the Medical Education Partnership Initiative in 2010, through which Murphy helped modernize the medical school curriculums at six Nigerian schools. He also worked with the McCormick School of Engineering's Center for Innovation in Global Health Technologies to develop Nigeria's first academic biomedical engineering departments.

"I'm very proud of all the different programs we've set up," he says. "With everything we do, it's a long-term commitment, we don't just fly in and fly out. We make sure our programs are sustainable and bilateral."

AN INSTITUTE TO PROMOTE GLOBAL HEALTH RESEARCH AND EDUCATION

In 2009, Feinberg launched the Center for Global Health. With Murphy as its director, the center oversaw research and training projects across Africa and the Middle East, addressing

health inequities through research and educational initiatives. That meant expanding beyond HIV research.

"As soon as HIV got under better control in Africa, we found that we were dealing with conditions that the

were dealing with conditions that the people there never worried about before, like hypertension, heart disease, cancer, and stroke,"

Murphy connected with Robert Havey, '80 MD, '81, '83 GME, deputy director of the Havey Institute for Global Health (see sidebar). They joined forces in 2019 to start the institute, expanding programming to Asia and Latin America, leading research projects in both communicable diseases and in cancer and heart disease, and training students and scientists in low- and middle-income countries.

In India, for example, institute members teach clinicians how to identify and treat hypertension. In Rwanda, they teach surgeons how to diagnose and repair obstetric fistulas. Here in



Improving Health for a Better World

Through its various centers, the Robert J. Havey, MD Institute for Global Health is battling global disease on multiple fronts.

Center for Global Communicable and Emerging Infectious Diseases

Director: Claudia Hawkins, MD, MPH Focusing on communicable diseases such as malaria, tuberculosis and HIV, as well as global emerging infectious diseases.

Center for Pathogen Genomics and Microbial Evolution

Director: Egon A. Ozer, MD, PhD Providing specialized expertise in pathogen-specific sequence analysis and bioinformatics for emerging and ongoing infectious disease threats.

Center for Global Health Education

Co-directors: Ashti Doobay-Persaud, MD and William R. Leonard, PhD, Abraham Harris Professor of Anthropology & Global Health

Creating knowledge, capacity, and equity in global health through interdisciplinary education at Northwestern and around the globe.

Center for Global Surgery

Led by a steering committee of 14 Northwestern Medicine surgeons

Improving access to essential surgical care through innovation, research, education, policy, advocacy, training, and building sustainable capacity in regions with health inequities.

Buehler Center for Health Policy & Economics

Director: Lori Post, PhD Leveraging policy to foster healthy pop-

ulations, promote health security, and lead in public health science and practice around the world.

Center for Global Oncology

Director: Lifang Hou, MD, PhD Bringing cancer education, research, and treatment to underserved areas, as over 80 percent of cancer deaths occur in low- and middle-income countries.

Center for Global Cardiovascular Health

Interim director: Anubha Agarwal, MD Improving global cardiovascular health and healthcare across the spectrum of disease prevention.

Ryan Family Center for Global Primary Care

Director: Robert J. Havey, MD, deputy director, Havey Institute for Global Health

Strengthening the global and local effort to improve global primary healthcare quality, access, and impact through partnerships and innovations in research, education, and service.

Center for Innovation in Global Health Technologies

Director: Matthew Glucksberg, PhD Developing and bringing to market healthcare solutions that integrate seamlessly with the lives of patients and medical practitioners in the developing world.

Center for Global Neurology

Director: Igor J. Koralnik, MD Providing neurological care, research, and education to underserved populations, while striving to facilitate the diagnosis and treatment of infections of the nervous system caused by viruses. the United States, the institute runs the Master of Science in Global Health program with Northwestern's School of Professional Studies. More than 200 faculty members now work on a broad range of global health activities under the umbrella of the institute.

Throughout the past two years, Murphy and Havey also helped develop the Center for Pathogen Genomics and Microbial Evolution, which isolated one of the first known variants of SARS-CoV-2, the virus that causes COVID-19. Institute members also helped validate a new 15-minute COVID-19 PCR test developed in Northwestern's Center for Innovation in Global Health Technologies. The device could be on the market as early as this year.

The new funding will "prime the pumps" of each of the centers, giving them the support they need to grow exponentially. That means expanding partnerships in Latin America and Asia, and raising money to endow professorships. "This is going to be an incredible springboard," Murphy says.

COMBATING COVID-19 MISINFORMATION

Of course, the institute has been affected by the COVID-19 pandemic. Travel was restricted, and research pivoted. Murphy has lost three colleagues in Africa to the disease — nowhere near the number of patients he lost during the beginning of the AIDS pandemic, but he sees similarities in the politicization of the viruses.

To combat misinformation, Murphy has become a go-to media expert, appearing in hundreds of news outlets around the world. For much of the pandemic, he appeared on Chicago's WGN Morning News every weekday, answering viewers' questions about the latest guidelines and variants.

Despite new variants, Murphy predicts COVID-19 will continue to surge in smaller and smaller waves, until it becomes a seasonal virus, like the flu. And there is an upside: the research into vaccine technology may lead to better influenza vaccines, or even an HIV vaccine.

Because eventually, he says, "all pandemics end." 🔹

BY MARTHA O'CONNELL

Healthy Mother Healthy Child

Northwestern Medicine goes the extra mile to support people with high-risk pregnancies.

Full Spectrum of Care



LYNN YEE, MD, '08 MD, '15 GME leader in the Diabetes and Pregnancy Program at Northwestern Medicine



EMILY MILLER, MD, ອ MPH, '14 GME

leader in coordinating care for people with perinatal depression and COVID-19





PATRICIA GARCIA, MD, MPH, '91 GME Women's Infectious Disease

Program leader and associate dean for curriculum at Feinberg



haina Herring is no stranger to dramatic births. Her first child arrived at 32 weeks. Her second came at 34 weeks — after she'd gone into labor at 27 weeks and stayed at the hospital until he was born. With baby number three on the way, she was seeking as much peace of mind as she could get.

"I was drawn to Northwestern's Maternal-Fetal Medicine program because I knew I would need monitoring with this pregnancy," she says. "I wanted to be able to assure my kids that everything would be OK."

Herring came to the right place. From her earliest visits, she received cervical ultrasounds, weekly progesterone shots, and her gestational diabetes was promptly identified and addressed.

"A newborn cannot be healthy without a healthy mom," says Janelle Bolden, MD, chief of the division of Maternal-Fetal Medicine (MFM) at Northwestern Memorial Hospital and of the Department of Obstetrics and Gynecology at Feinberg. From mood disorders to HIV/AIDS to birth defects and other challenges, the division is prepared to treat anything that comes up in the critical perinatal period.

But Bolden stresses that care is not always about treatment. Specialists also provide counseling so patients can make informed decisions about health management, reproductive choices, and fetal interventions.

"One might think that MFM's role lasts nine months, plus the two months following delivery, but it's just the opposite," says Bolden, who is also an associate professor of Obstetrics and Gynecology and of Medical Education at Feinberg. "When we care for expectant mothers, we are not just talking about the next couple of weeks or months. We are talking about 10 to 20 years down the line: when things like weight management, mental healthcare, and exercise will continue to make a major difference in overall health."

At Northwestern Medicine, this holistic philosophy is manifested through a range of programs designed to cater to each pregnant person's individual needs, particularly those who live in neighborhoods affected by violence, food deserts, and other stress-inducing life circumstances that pose health risks to both mother and child.

Battling Diabetes as a Team

The obesity epidemic in the U.S. has become the diabesity epidemic, resulting in an enormous need for specialized care for women who either enter pregnancy with diabetes or develop gestational diabetes (putting them at higher risk for Type 2 diabetes



later in life). In the last two decades, MFM has seen the number of individuals in its Diabetes and Pregnancy Program double.

Achieving glycemic control during pregnancy is a constant challenge that requires close monitoring of medications, patient-reported blood glucose numbers, and adherence to healthy eating and regular exercise. Lack of access to nutritious foods and medications make pregnant people with diabetes especially vulnerable to poor outcomes. For patients like Herring, who work nights and don't always have access to



Shaina Herring and husband with baby Orly, born in January. Herring turned to Northwestern Medicine after a history of complicated pregnancies.

"When we care for expectant mothers, we are not just talking about the next couple of weeks or months. We are talking about 10 or 20 years down the line."

JANELLE BOLDEN, MD

healthy foods, care plans and routines often need to be adapted.

"Our goal is to meet patients where they are. Thinking through what barriers they have to overcome in order to adhere to their diets, pick up their prescription, and then take that prescription multiple times a day is a big part of the work we do," says Lynn Yee, MD, '08 MD, '15 GME, a leader of MFM's diabetes program and assistant professor of Obstetrics and Gynecology at Feinberg.

With the significant numbers of pregnant individuals who need care, teaching front-line obstetricians

to manage gestational diabetes on their own has become essential to MFM's approach. In addition, the Prentice Ambulatory Care Clinic, serving low-income patients, provides comprehensive care for pregnancy patients with diabetes.

MFM physicians have also incorporated technology as an effective method for monitoring their patients more accurately. Individuals with Type 1 diabetes often receive wearable glucose monitors that measure glucose levels throughout the day and allowing information about their glucose levels to be easily shared with the medical team.

Yee is taking technology a step further with an app her lab designed to support and motivate pregnant individuals with gestational or Type 2 diabetes. The app, SweetMama, is the first health app to manage diabetes among low-income, socially disadvantaged individuals. Patients receive a customized curriculum according to their gestational age, including health education and logistical help to find stores and food pantries for healthy foods, safe places to exercise, sources to obtain medications, and even nutritional recipes. The app also helps them set and achieve goals such as walking 20 minutes a day, or logging glucose numbers before every clinic visit.

SweetMama received positive reviews from patients during pilot studies, and Yee is continuing to refine the app in the hopes of widespread distribution.



Members of the Women's Infectious Disease Program (from left to right): Sarah Sutton, MD, associate professor of Medicine in the Division of Infectious Diseases, Jordan Levesque (a former social worker at the clinic), Robin Dorman, PhD (former clinic psychologist), Susan Cohn, MD, professor of Medicine in the Division of Infectious Diseases, Saba Berhie, MD (MFM fellow), Ashish Premkumar, MD (MFM fellow), Jennifer Jao, MD, PhD, associate professo of Pediatrics in the **Division of Infectious** Diseases, Brianne Condron, RNC-MNN, Patricia Garcia, MD, MPH, Lynn Yee, MD, and Emily Miller, MD, MPH.

Supporting Women Affected by HIV

Now celebrating its 30th year, the Women's Infectious Disease Program at Northwestern Medicine has come a long way since the days when, tragically, many women with HIV/AIDS had a 25 to 30 percent chance of passing on the virus to their baby and would probably not live to see their child graduate from high school.

Back in 1990, before there were effective therapies to keep people alive or knowledge about how HIV was transmitted to babies, Patricia Garcia, MD, MPH, '91 GME, then a fellow, along with her co-fellow, the late Michele Till, MD, '92 GME, began to care for pregnant women with HIV. Through the generous support of Northwestern Memorial Woman's Board, they slowly garnered the resources necessary to develop

"This is about much more than keeping women alive. It is about our role in advancing research, training the next generation of HIV care providers, and advocating for the resources needed to value and respect people living with HIV."

PATRICIA GARCIA, MD, MPH, '91 GME a clinic with interdisciplinary care and participated in research that eventually resulted in the ability to prevent perinatal HIV transmission.

Decades later, the clinic staff has helped to deliver hundreds of babies free of HIV and keep their mothers healthy. "It takes a village and we have an amazing one that includes our incredible clinic nurse, Brianne Condron, RNC-MNN, and dedicated social worker Siret Beraki, LMSW, along with MFM and infectious disease physicians, pharmacists, and a psychologist. This is what it takes to keep women connected to care and help them to overcome the challenges of stigma, medication adherence, and controlling the virus," says Garcia, who is also associate dean for curriculum at Feinberg.

"Our obligation is to never forget the care and respect that our patients need and deserve; to never take our eye off the problem because, once we do, HIV will come roaring back and so will perinatal transmission," she adds.

Even while HIV has become a potentially controllable disease through an arsenal of effective drugs, as far as Garcia is concerned, that is only half the mission.

"This is about much more than keeping women alive," she says. "It is about our role in advancing research, training the next generation of HIV care providers, and advocating for the resources needed to value and respect people living with HIV."

Expanding Access to Mental Health Care

Depression, which often has roots before pregnancy begins, is one of the most common mental conditions encountered during pregnancy, yet many obstetricians feel unqualified to treat it. That is why, in 2017, MFM specialist Emily Miller, MD, MPH, '14 GME, partnered with colleagues in psychiatry to launch the Collaborative Care Model for Perinatal Depression Support Services (COMPASS).

In addition to depression, COMPASS treats women with all other mental health conditions. About 70 new pregnant or postpartum people enroll in the program every month, some of whom participate in the division's robust clinical trials.

To expand the reach of COMPASS, Miller spends time meeting with obstetric and mental health clinicians across the country to educate them on the collaborative



care model. Her goal is to partner with and educate obstetric clinicians outside the Northwestern Medicine network preparing as many practitioners as possible to confidently care for pregnant and postpartum people with mental health conditions.

"We are able to care for a large number of individuals with perinatal mental health conditions because we know we can empower OBs and midwives to manage standard perinatal depression and anxiety with the support of the collaborative care team," Miller says. She got the idea for

COMPASS after seeing how effective collaborative care models have improved mental health outcomes in internal medicine settings and wanted to adapt this approach to the prenatal and postpartum context.

The initiative has been supported by faculty in the Department of Psychiatry and Behavioral Sciences, as well as the Asher Center for the Study and Treatment of Depressive Disorders, which is led by Katherine Wisner, MD, the Norman and Helen Asher Professor of Psychiatry and Behavioral Sciences and Obstetrics and Gynecology.

Pregnant and postpartum people who are patients of Northwestern Medicine are supported through either psychotherapy and/or pharmacological treatment. Importantly, treatment does not end after pregnancy.

"This is something that is relatively novel in obstetrics — we do not start treatment and send people off without follow-up postpartum. We partner with them up to a full year postpartum," says Miller, who is also an assistant professor of Obstetrics and Gynecology and of Psychiatry and Behavioral Sciences at Feinberg.

COMPASS addresses holistic care for all individuals. Accomplishing a rare feat, the program brings an obstetrician, mental health experts, and social workers together in the same room to ensure that patients' obstetric, mental health, and social needs are answered.

"Having two social workers at the helm of this program really makes us responsive to the social determinants of health. We are lucky. Irrespective of insurance, we are committed to providing care to all our pregnant and postpartum patients with mental health concerns," Miller says.

Preserving the Birth Experience During a Pandemic

The COVID-19 pandemic forced MFM to rapidly put extensive safety measures in place, so that Prentice Women's Hospital, where 12,000 infants are delivered each year, could reassure people giving birth that they and their newborns would be safe.

The MFM team made this possible by designing a space on the ninth floor for pregnant people infected with SARS-CoV-2. The space was outfitted with negative air pressure, optimized infection prevention designs to mitigate healthcare workers' exposure, and a designated staff. The team conducted emergency simulations, and learned how to transport patients with SARS-CoV-2, how to test infants for the virus, how to approach breastfeeding, and more.

"This may all sound simple on the surface, but we have been drinking from a firehose of scientific information that changes monthly about best practices," says Miller, who was at the helm of averting a crisis.

Then, there is the monumental task of preserving a momentous occasion for new parents — that moment when they first have the chance to hold their baby without letting COVID-19 steal it away.

As mounting evidence has shown, newborn separation is no longer recommended and other infection mitigation strategies can keep newborns safe. But in the early days of the pandemic, Miller recalls that members of the team sat at the bedside to comfort pregnant people to try to blunt the trauma of not having the normal contact with the newborn. "I work with a brilliant and empathic group of obstetric clinicians, and Northwestern Medicine has been a real leader in understanding the implications of this virus on pregnancy and childbirth," she says.

As for Herring, the mom who turned to Prentice for her high-risk care, she made it to 38 weeks during the height of the Omicron surge when daughter Orly was born. The baby is doing well, and so is Herring. The MFM team will make sure she does for years to come. \diamond



Eleanor Condie, MSN, RN, a nurse practioner at Northwestern Medicine's Center for Fertility and Reproductive Medicine, worked on the Labor and Delivery COVID Unit, providing postpartum assessment, care, and discharge planning for patients who were COVID positive. She worked closely with a collaborative team of doctors, nurses, social workers, and NICU and ICU care teams to provide comprehensive clinical care and emotional support to the patients and their families.

Gregory Smith, PhD, and his laboratory have discovered how herpesviruses invade the body — paving the way for the development of novel vaccines that promise to elicit a robust immune response.

OUTSMARTING A TRICKSTER

By Melissa Rohman · Photography by Jose Torres/Gr8y Productions

Greg Smith, PhD, and DGP student Caitlin Pegg. 150 -150

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reg Smith, PhD, was a graduate student at the University of Pennsylvania studying food-borne bacterial pathogens when he became fascinated with the ingenuity of herpesviruses and how they manage to invade the immune system.

"I was really amazed at how pathogens are basically the best cell biologists there are," says Smith, who is now a professor of Microbiology-Immunology at Feinberg. "We can learn a lot about ourselves by studying what they know about us. From that point on, I was off and running, trying to learn about how these viruses do the amazing tricks that they do."

Smith's 20-year pursuit of the herpesvirus recently crossed a monumental marker with his lab's discovery that herpesviruses perform a devious maneuver to effectively invade and hide within the nervous system for life.

The understanding of this trickery, described in a recent study published in *Nature*, lays the groundwork for the development of new vaccines that can prevent both herpes simplex virus type 1 (HSV-1) and type 2 (HSV-2) from reaching the nervous system in the first place, Smith says.



PERSISTENT PATHOGENS

Herpesviruses are an ancient family of viruses that cause lifelong infection. While they are treatable, there is no cure. Herpesviruses can infect humans and other mammals, but over time, individual herpesviruses have evolved to infect just one species.

Of the more than 100 known herpesviruses, there are several known to infect the human nervous system and manifest disease, an evolutionary triumph that Smith has been investigating in his laboratory for decades.

HSV-1 and its close sibling HSV-2 are the most well-known herpesviruses that infect humans. According to the World Health Organization, more than half of the world's population are carriers of HSV-1. The virus is transmitted through oral contact, and many who become infected will experience as little as a cold sore. But the manifestation of HSV-1 infection, like any infection, can vary widely. For some, HSV-1 can be life-threatening, causing blindness or severe encephalitis, or inflammation of the brain.

Meanwhile, HSV-2 is sexually transmitted, but can also be passed from mother to newborn during birth as neonatal herpes. The virus can cause brain damage or organ failure for the baby if left untreated.

Smith's laboratory studies two neuroinvasive herpesviruses: HSV-1 and pseudorabies virus, a veterinary herpesvirus that infects pigs. His laboratory uses live-cell fluorescence microscopy, molecular genetics, and neuronal cell biology to study the molecular mechanisms behind neuroinvasion and pathogenesis.

KNOW YOUR ENEMY

The exact molecular mechanisms that herpesviruses employ to invade the nervous system have remained unknown until now.

By performing live imaging of cell cultures manually infected with HSV-1 and pseudorabies virus, Smith's team found that herpesviruses hijack a protein from epithelial cells to help it travel into the nervous system, a phenomenon unlike any other known virus. This allows the virus to invade the nervous

system with incredibly high frequency through a process Smith's team has termed "assimilation."

"The protein is no longer an active participant of your natural cell biology because it's defected to the other team and has become an active component of the virus. It's been 'assimilated' by the virus to be part of it in a productive way," Smith says. Once the virus moves past the outer membrane of mucosal epithelial cells, it must navigate its way through the cell to reach the nucleus to successfully replicate. Like other viruses, herpesviruses journey through the cell by traveling along highways called microtubules, which originate from the cell's centrosome, and use two proteins as their motors: dynein and kinesin.

But dynein and kinesin travel in opposing directions — one travels towards the nucleus while the other diverts away from it. Many common viruses use both dynein and kinesin to travel along microtubules to eventually reach the nucleus. But for herpesviruses, traveling down a neuron is a much longer journey.

"It's about an eight-hour marathon run for the virus to get into our nervous system," Smith says.

The virus first uses the dynein motor to travel through the cell as far as it can until it reaches the centrosome, where it can't travel any further. Determined to reach the nucleus, however, the virus pulls its trick.

It reaches into its stores and pulls out a kinesin stolen from the mucosal epithelial cells. Full speed ahead, the virus uses the foreign kinesin to travel in the opposing

> direction and reach its destination: the nucleus. "We have

described a new principle in virology: viral assimilation — the repurposing of a cellular protein as an essential virion component that drives subsequent rounds of infection," says Caitlin Pegg, a student in the Driskill Graduate Program in Life Sciences (DGP) and lead author of the *Nature* study. The her-

pesviruses steal the kinesin from epithelial cells, carry it with them into the nervous system, and then use it precisely at the moment it is needed.

Assimilation is an evolutionarily triumph for herpesviruses to gain new abilities without having to undergo extensive genetic changes, according to Smith, and may be relevant to many other viruses, such as HIV and SARS-CoV-2. >

"If you want to make a vaccine, if you want to fight your enemy, you need to know and understand your enemy."

GREG SMITH, PHD

From left to right: Jeffrey Savas, PhD, Derek Walsh, PhD, Greg Smith, PhD, graduate student Caitlin Pegg, Vladimir Jovasevic, PhD, research assistant professor in the Department of Pharmacology, and graduate student DongHo Kim, all collaborate in Smith's lab.

More importantly, understanding the robust molecular mechanisms responsible for the neuroinvasive nature of herpesviruses is key to developing new vaccines to treat herpesviruses.

According to Smith, a potential vaccine that inhibits assimilation altogether may be an effective therapeutic approach in preventing herpesviruses from infecting the nervous system in the first place.

"If you want to make a vaccine, if you want to fight your enemy, you need to know and understand your enemy," he says.

PREPARING THE FRONTLINES

Currently, there is only one available therapy known to effectively treat active herpes infections. The antiviral drug, called Acyclovir, prevents herpesviruses from actively replicating. However, it's unable to eliminate a virus after it has already established a latent infection in the nervous system.

"The problem is these viruses can, on occasion, cause severe disease, including being lethal. It's a question of rolling that dice — just because you survived it like most people doesn't mean that somebody else isn't going to get a life-threatening infection," Smith says.

So how can severe infection from herpesviruses be prevented? The answer, according to Smith, is to create a live attenuated vaccine that engages the entire immune system, preparing it to immediately recognize and fend off herpesviruses before they're ever able reach the nervous system.

"Herpes is not playing around. It's a virus on a mission that knows what it needs to do, so



we've got to get the full immune arsenals out there to stop it," Smith says.

Live-attenuated vaccines use weakened forms of a virus to create a long-lasting immune response. This is currently the standard for measles and influenza vaccines, and was the type of vaccine that eliminated smallpox. Smith says this novel non-neuroinvasive herpesvirus vaccine would have to be administered to people before they're exposed to the virus, which most likely means getting the vaccine in early childhood. This would ensure the immune system is prepared and ready to attack the virus at any given moment, reducing the risks of severe disease and complications from life-long infections. Now, Smith and his team are working to make this a reality.

In partnership with Northwestern University, Smith and two of his colleagues founded Thyreos Inc. to produce non-neuroinvasive herpesvirus vaccines. "By discovering how these viruses invade the nervous system, we can now make innocuous virus strains that specifically lack this ability. And in so doing, these viruses can only replicate in mucosal tissues, much like a common cold virus," Smith says. The active replication of these vaccines in the mucosa elicits a potent response from the immune system, and will hopefully achieve what no other vaccine has done before: protect us from herpesvirus infections. •

Other Northwestern contributors to the study are Sofia Zaichick, PhD; and the laboratories of Jeffrey Savas, PhD, assistant professor in the Ken and Ruth Davee Department of Neurology Division of Behavioral Neurology; and Derek Walsh, PhD, professor of Microbiology-Immunology. The laboratories of Duncan Wilson, PhD (Albert Einstein College of Medicine) and Patricia Sollars, PhD and Gary Pickard, PhD (University of Nebraska-Lincoln) also contributed to the study.

CAPTURE, CARRY, CONTROL: MANIPULATION OF THE KINESIN MOTOR BY NEUROINVASIVE HERPESVIRUSES

Neuroinvasive herpesviruses capture conventional kinesin-1 into newly formed virions during infection of epithelial cells. The captured epithelial kinesin is carried between cells as a structural virion component and is deposited into cells (epithelia and neurons) upon the subsequent round of infection. The virus escapes the centrosome by switching microtubule-based transport from dynein to captured kinesin. When the virus is produced in the absence of kinesin, capsids predominately accumulate at the centrosome and do not progress toward the nucleus despite the presence of endogenous neuronal kinesin.



ALUMNI Alumni President's Message



Sunsets, Sunrises, and Our Loved Ones

A letter from Edward S. Kim, '92 BS, '96 MD (HPME)

s we begin 2022, it's important to reflect on our prior experiences and look toward future goals — but also appreciate the present. That's why, this month, I've decided to write about sunsets, sunrises, and loved ones.

Sunsets are the time in the evening when the sun disappears or daylight fades. It is also when something expires or terminates at the end of a fixed period, unless renewed. The setting of the sun represents the completion of the day's work, symbolically the opportunity to rest. In Chinese culture, the sun and moon are seen as a dualism, showing two completely opposite forces coming together and complementing each other. Yin and yang.

In some African cultures, the sun setting and moon rising represent a life cycle from birth to death, with a rebirth happening every morning. Sunsets remind us that, no matter how good or bad the day was, it always comes

to an end, and importantly, the bad moments never last forever. Sunsets teach me to identify the little moments that make life beautiful amidst all the changes.

Sunrises are defined as time in the morning when the sun appears, or full daylight arrives. The sunrise symbolizes birth, growth, new beginnings of all kinds, and resurrection. Every sunrise gives you a new

beginning and new ending. Let the morning be a new beginning to a better relationship and a new ending to the bad memories. It's an opportunity

to enjoy life, breathe freely, think, and love. Be grateful for this beautiful day and appreciate the break of night.

Northwestern scientists have discovered

that exposure to light helps reset our internal clock so that we sleep better - which also helps us maintain weight and even shed pounds. Our rest and sleep are necessary for maintaining routine and structure for our health, as well

as allowing new beginnings to unfold.

Sunsets remind me of the fallen angels in our lives. Personally, this includes my father, David, and my brother, Donald. My father was

a professor of finance, an avid golfer, and a great mentor and role model. His life journey was unexpectedly shortened by cancer. My brother, Donald, suddenly and unexpectedly passed at age 12. He was a hardworking, extremely intelligent, affable young man. He was always surprising us by overachieving, whether in sports, music, or school. I don't mention them often but do often think

and reflect upon my fond memories of them. When I started my new position as chair

of Solid Tumor Oncology and Investigational

Therapeutics at the Levine Cancer Institute in Charlotte, North Carolina, we created an endowed chair position in my brother's name; I was the Donald S. Kim Distinguished Chair

Feinberg School of Medicine in my father and mother's name. The Dr. David J.

for Cancer

Research.

of naming

an endowed

scholarship at

Several years

ago, our family

had the privilege

and Deborah Y. Kim Family Scholarship. This is one of the many ways which I try to honor him. Giving back to the next generation while remembering my father lets him live on in a way, supporting many goals and dreams.

Although I am deeply saddened that they have both passed on, I am constantly reminded that their spirits accompany me with each beautiful sunset and sunrise.

As you tackle the year, taking on new projects, and continuing to navigate the pandemic, it's vitally important to observe as many sunsets and sunrises as possible. These natural events will bring a sense of constancy, calm, and reminiscence of our fallen angels who inspire and support us. I remind everyone to always remember both those close to us, as well as those we have lost, to plan for the opportunities ahead of us, even as we cherish each day.





Harold "Hal" Paz leads with an eye toward personalized health

Building for Tomorrow

t just 40 years old, Harold "Hal" Paz, MD, MS, '86 GME, became the dean of the Robert Wood Johnson Medical School in 1995, making him one of the youngest medical school deans in the United States.

"There was no grand plan, but I'm a big believer in doing what you love and what you think can make an important contribution," Paz said.

Since that early start at what is now called Rutgers Robert Wood Johnson Medical School,

Paz has held leadership positions at four major academic centers as well as one of the largest healthcare companies in the United States, CVS Health. In each role, he has helped guide both regional and national health providers toward a model of community-based, personalized care.

Leaning into Leadership

Paz's path toward leadership may have been set during his residency at Northwestern, when he was asked to stay another year as chief medical resident at Lakeside VA Hospital, which was located on Northwestern's campus in Chicago. He enjoyed both the leadership role and administrative work. This caught the attention of the hospital's then chief of Medicine James Webster, '56 MD, '60, '63 GME, who said he thought Paz would one day be a hospital CEO.

"That was the last thing I was thinking about," said Paz, who planned to focus on research, teaching, and patient care. Paz said his experiences working with the diverse communities served by Northwestern's hospitals also impressed on him the importance of social determinants of health. He noted while some patients in the system had easy access to healthcare, others faced obstacles, including socioeconomic status, education, housing, food insecurity, or lack of transportation.

Webster's comment proved to be prophetic. After completing his fellowships in pulmonary and critical care medicine and environmental health science at Johns Hopkins University in Baltimore in 1988, Paz became the director of medical intensive care units at Hahnemann University Hospital in Philadelphia. There, he started a critical care medicine fellowship for what is now part of Drexel University and quickly rose through the administrative ranks to associate dean for graduate medical education and associate hospital medical director.

In 1994, Robert Wood Johnson Medical School recruited him to be associate dean for clinical affairs. Soon after, he became the CEO of the RWJ University Medical Group and was asked to fill in as interim dean of the medical school during a vacancy.

"I thought, given the circumstances, hopefully I can make an important contribution during the transition," Paz said.

That temporary stint led to Paz being appointed the dean after a national search, a role he served in for 11 years. His goal he said was to leave "a lasting legacy." During that time, he helped create what is now called the Rutgers Cancer Institute of New Jersey, a National Cancer Institute comprehensive cancer center, the Child Health Institute of New Jersey, a stem cell institute, and a cardiovascular institute.

"I'm enormously proud of the people we recruited and the opportunities we had to advance their careers, not to mention



There was no grand plan, but I'm a big believer in doing what you love and what you think can make an important contribution.

graduating more than 5,000 medical and graduate students," Paz said.

He left that role to become senior vice president of health affairs at Pennsylvania State University and dean of the Penn State College of Medicine in Hershey, Pennsylvania. That role included being CEO of the Penn State Milton S. Hershey Medical Center, which he helped build into a large regional health system, now Penn State Health. He helped oversee the construction of eight new facilities, including raising \$300 million to build a children's hospital.

"A children's hospital was desperately needed," Paz explained. He noted that the only children's hospitals serving the area were hours away, in Philadelphia and Pittsburgh. He also expanded the medical school, added physician assistant and advanced nursing programs, and built a new medical campus in State College, Pennsylvania. Paz said the changes greatly expanded the surrounding communities' access to cutting-edge care.

Community-Based Care

After 20 years in leadership roles at academic medical centers, Paz pivoted in 2014 and was recruited to health insurance giant Aetna to develop a clinical strategy as it evolved into a healthcare company. His goal was to find ways to improve members' health and wellbeing and reduce unnecessary premature deaths. He launched a program called AetnaCare that provided home-based telehealth and nursing care for patients with chronic diseases.

His role took on an even greater reach when Aetna merged with CVS in 2018 to become the 300,000-employee healthcare company, CVS Health. The merger allowed the new company to focus on making it easier for patients to access a full range of healthcare services close to home. "It was gratifying to be part of that transformation," said Paz.

Paz retired from CVS Health in 2019 and returned to academic leadership as the first executive vice president and chancellor of health affairs at The Ohio State University (OSU) and CEO of OSU's Wexner Medical Center in Columbus, Ohio, He launched a \$3 billion project to build four suburban ambulatory care campuses as part of the organization's efforts to offer more multi-specialty care outside of its hospitals, a \$2 billion project to replace one of the medical center's existing hospitals, and moved forward with several other large education and research construction projects. He and the team he recruited at OSU also worked to make care more accessible to vulnerable populations through mobile, virtual and digital care, screening events, and partnering with local agencies to increase access to healthy foods.

"We were thinking of ways to drive care in the home and local community," he said. "If we are going to address health and wellbeing, and reduce premature death, we have to begin at home, addressing social, behavioral, and environmental determinants of health."

When the pandemic hit, it posed challenges as well as opportunities to accelerate Paz's focus on home and community-based care.

"We went from 50 telehealth visits a month to 3,000 a day," he said.

When the opportunity to take on the role of executive vice president of health sciences at Stony Brook University arose in the fall of 2021, Paz pursued it. The position offered him the opportunity to help build and develop another community-centered health system closer to home.

"We have a lot of family in the area, and the pandemic reminded me and my wife how important those things are," Paz said.

Throughout his leadership career, Paz said he has drawn on the example set for him by mentors at Northwestern, including Webster, Roy Patterson, MD; John Clark, MD; and Murray Levin, MD.

"They set a framework in my mind of what leadership is all about in the field of academic medicine, and I carried that with me for the rest of my career," he said. *

CAREER TRAJECTORY

1982

Graduated from the University of Rochester School of Medicine and Dentistry

1983-1985

Completed internship and residency at Northwestern University

1985-1986

Served as chief resident at Northwestern University

1986-1988

Completed a postdoctoral fellowship in pulmonary and critical care medicine and environmental sciences at Johns Hopkins University

1992-1994

Became associate dean of graduate medical education at Hahnemann University School of Medicine (now Drexel University)

1994-1995

Served as dean of the Robert Wood Johnson University Medical School and CEO of the RWJ University Medical Group

1995-2006

Served as dean and CEO of the Robert Wood Johnson University Medical School

2006-2014

Headed Pennsylvania State University's College of Medicine and Penn State Milton S. Hershey Medical Center as dean, senior vice president for Health Affairs, and CEO of the health system

2014-2019

Led clinical strategy and policy as executive vice president and chief medical officer at Aetna (now CVS Health)

2019-2021

Became executive vice president and chancellor for health affairs at The Ohio State University and CEO of OSU Wexner Medical Center

2021-present

Became executive vice president of health sciences at Stony Brook University

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

Ernest Wollin, '58 MD, president and chief engineer of Wollin Ventures, Inc., a Floridalicensed engineering corporation that develops intellectual property, particularly for magnetic resonance applications, has been practicing teleradiology part-time for National Radiology Solutions. During Wollin's career, he has conducted prolific personal research and oversaw the pursuit of a number of patents held by Wollin Ventures. Wollin is pictured with a Medical Imaging Poster Award for his work on "Physics of a Novel Magnetic Resonance and Electrical Impedance Combination for Breast Cancer Diagnosis." © 1

1960s

Bertil Glader; PhD, '68 MD, was honored by Stanford University with the award of an endowed professorship, the highest honor that can be awarded to a Stanford faculty member, which will go on to honor him as a

Between Bites

Meet the members of the RODEO! After retiring from active practice, a group of alumni doctors decided to host monthly lunches to keep their friendship active and stimulate interesting conversation. They call their lunches RODEOs ("retired old docs eating out").

The coronavirus pandemic interrupted their routine, but with the help of the alumni office, they were able to host 12 virtual RODEO luncheons to keep their tradition alive. In July, they returned to in-person lunches and greatly enjoyed the opportunity to gather face-to-face once again.



RODEO group members include (from left to right): Marshall Sparberg '57, '60 MD; Robert Wertz, '65 MD, '71 GME; Benjamin Lumicao, MD, '67 GMER, '68 GMER; Melvin Gerbie, '60 MD; Michael Halpern, '69 MD, '75 GMER; Gerald Ujiki '59, '62 MD, '70 GMER; and James Franklin, '64 MD, '68 GME. Group members not pictured: John Shaw, MD, '72 GME, and Stuart Poticha, '59 MD.

leader in hematology oncology. The professorship, known as the Bertil Glader Endowed Professorship in Pediatric Hematology/ Oncology, will ensure that his legacy lives on at Stanford. 10 2

David Winchester '63 MD, '70 GME, former MAA Board president and current board member, will be presented with the American College of Surgeons' (ACS) highest honor, the Distinguished Service Award. Winchester was honored at a virtual convocation ceremony in October during the virtual ACS Clinical Congress. The ACS Board of Regents' Honors Committee selected Winchester for this distinction "in appreciation for his exceptional and continuous service as a fellow of the American College of Surgeons and his role as medical director for the College's Commission on Cancer (CoC), the American Joint Committee on Cancer (AJCC), the National Cancer Database, and the American College of Surgeons Cancer Research Program." Winchester practiced for many years at Evanston Hospital and previously served as professor of surgery and associate dean for medical affairs at Feinberg.

Eugene Bauer, '67 MD, was recently appointed to the board of directors of the American Skin Association. Bauer is professor emeritus at Stanford University School of Medicine and immediate past co-founder, chief medical officer, and member of the board of directors of Dermira, Inc., a biotechnology company. Prior to his pharmaceutical career, he served as chair of the Department of Dermatology and dean of Stanford University School of Medicine and was a National Institutes of Health-funded investigator for 25 years.

Jay A. Perman '68, '72 MD, was named the 2021 inductee into *The Baltimore Sun*'s Business and Civic Hall of Fame. Perman is chancellor of the University System of Maryland. He previously served as professor of Pediatrics and division head at Johns Hopkins, the Jessie Ball duPont Professor and chair of Pediatrics at Virginia Commonwealth University, chair of Pediatrics at the University of Maryland, Baltimore, and dean at the University of Kentucky College of Medicine, prior to his appointment in 2010 to president of the University of Maryland, Baltimore. 10 4

1970s

Drew Senyei, '79 *MD*, appeared in the March 12, 1979 issue of *People* magazine, and his daughter, fellow Northwestern alumna, *Kelly Senyei* '08, was featured in the August 9, 2021 edition. Senyei is a Northwestern University Trustee and successful venture capitalist. Daughter

DAVID WINCHESTER '63 MD, '70 GME, WILL BE PRESENTED WITH THE AMERICAN COLLEGE OF SURGEONS' HIGHEST HONOR, THE DISTINGUISHED SERVICE AWARD. Kelly is the founder of Just a Taste, as well as an on-camera host, professionally trained chef, and cookbook author. 10 5

1980s

Richard B. Lanman, '81 MD, was recently appointed to the board of directors of CirculoGene, Inc., a liquid biopsy company working to transform precision medicine. In 2019, Lanman retired from Guardant Health, Inc., a liquid biopsy company performing genomics testing in cancer patients, where he served as global chief medical officer. Having coauthored over 120 peer-reviewed scientific papers, he also serves on the board of directors of Biolase, Inc., and as an advisor for Forward Health, Inc., Glympse Bio, Inc., and Teiko Bio, Inc. **10** 6

1990s

Steven F. Butz, '93 MD, '94 GME, has been named as one of three elected directors to the Accreditation Association for Ambulatory



ALUMNI

INCLUSION AND ALLYSHIP STORIES

Tasha Weatherspoon, '98 MPT

As a high school student, I had my mind set on becoming a pediatrician. In my junior year of high school, I was enrolled in a career prep course where guest speakers would come and talk to us about their careers. One time, an occupational therapist came to talk to us about occupational, physical, and speech therapy. I hadn't heard of these careers. I was excited to learn more about physical therapy (PT). I volunteered at a local outpatient clinic and shadowed a physical therapist, who spoke highly of Northwestern University and Human Movement Sciences (NUPTHMS). Immediately, I knew that I could see myself in this career. I majored in biology at Knox College in Galesburg, Illinois, and had an



Tasha Weatherspoon, '98 MPT, president of the NUPTHMS Board of Directors

opportunity to do research in any field as a Ronald McNair Fellow. I chose to conduct research in PT at Washington University. My research experience with Dr. Ruth Clark further solidified my desire.

NUPTHMS was the only PT school that I wanted to attend. Even though there were only two other African American students in my class, I felt welcomed. I was surprised at how quickly the faculty learned our names. My classmates at NUPTHMS were amazing. We studied together, celebrated birthdays, and supported one another through tough times. I always look for ways to give back to this incredible university.

Today, the exposure I had as a high school student to careers in healthcare motivates me to participate in similar outreach events. I find it very rewarding. I know from personal experience that these opportunities can be life-changing.

We would love to hear your stories of Inclusion and Allyship. Please submit your story by emailing **gina.bazer@northwestern.edu**.



Weatherspoon was part of a recent outreach event hosted by NUPTHMS with students from My Block, My Hood, My City. Faculty and students helped participants with balancing tasks, put together skeletal bones of lower extremities, and reviewed the anatomy of a brain.

Health Care Board of Directors, effective November 15. Butz specializes in pediatric anesthesiology in the Milwaukee area and is professor of Anesthesiology at the Medical College of Wisconsin and medical director of the Children's Hospital of Wisconsin Surgicenter. 107

Anjali Gupta '91, '94 MD, '96 GME, MAA Board

Women in Medicine subcommittee member, has received Institutional Review Board approval for a study seeking to examine the experiences of women in medicine across a variety of fields, career tracks, and institutions. Participants must have an MD or PhD and currently practice, or have previously practiced, in the United States. To participate in the study, contact her at amg410@georgetown.edu. Gupta also is a certified RYT-200 yoga teacher. 🔊 8

Edward Kim '92 BS, '96 MD (HPME), MAA

Board president, was named one of the inaugural Top 25 Diversity Leaders in Healthcare (formerly known as the Top 25 Minority Leaders) by *Modern Healthcare*. The honorees "demonstrate a commitment to expanding and improving access to care to all patients and creating more inclusive workplaces." Kim is physician-in-chief for City of Hope Orange County and vice physician-in-chief for City of Hope National Medical Center. © 9

2010s

Allison Kessler Vear, '12 MD, '16, '17 GME, MAA Board Inclusion and Allyship subcommittee member, has been appointed section chief of the Renée Crown Center for Spinal Cord Innovation. Kessler directs attending physicians, ensures high-quality, interdisciplinary care, oversees the adoption of evidence-based practices and clinically relevant innovations, and helps translate scientific discovery into clinical practice. Kessler joined the Shirley Ryan AbilityLab in 2017 and is associate director of its Spinal Cord Injury Medicine Fellowship. She also is on faculty at Feinberg, serving as assistant professor of Physical Medicine and Rehabilitation and as Teamwork and Leadership Curricular Thread leader. 10



GME

Sabrina R. Kendrick, MD, '95 GME, MAA Board member, was featured in Northwestern University Leadership Circle (NULC) news for her commitment to supporting Northwestern, its students, and the future of medicine. Kendrick also kicked off the fall's Alumni Physicians of Feinberg series on October 25, which exclusively featured women in medicine. Kendrick was the first Black fellow in Feinberg's Division of Infectious Diseases and specializes in internal medicine and infectious diseases. She is director of the Ruth M. Rothstein CORE Center Clinic and assistant professor in the Department of Internal Medicine in the Division of Infectious Diseases at Rush Medical College. 11

Aruna Ganju, MD, '01 GME, was featured on Northwestern Medicine's Better Edge podcast to discuss the latest advances in spinal column and cord injury treatment, the new Northwestern Medicine Center for Spine Health, and Northwestern Medicine's participation in an industry-sponsored trial to investigate the role of intrathecal administration of an antibody to an inhibitor of neural regeneration in patients with subacute incomplete spinal cord injury. Ganju is associate professor of Neurological Surgery and Orthopaedic Surgery. 1012

Scott C. Wickless, DO, 'o8 GME, MBA, has joined South Osprey Dermatology as a board-certified dermatologist and dermatopathologist. Wickless specializes in medical dermatology, skin cancer, and interpretation of skin biopsies and is a member of the American Society of Dermopathology, International Society of Dermatopathology, American Osteopathic College of Dermatology, and the American Academy of Dermatology. Wickless also previously served as clinical faculty at Feinberg, Loyola University, and the University of Texas Southwestern. © 13 ALLISON KESSLER VEAR, 12 MD, '16, '17 GME, DIRECTS ATTENDING PHYSICIANS, ENSURES HIGH-QUALITY, INTERDISCIPLINARY CARE, OVERSEES THE ADOPTION OF EVIDENCE-BASED PRACTICES AND CLINICALLY RELEVANT INNOVATIONS, AND HELPS TRANSLATE SCIENTIFIC DISCOVERY INTO CLINICAL PRACTICE.



DDS

Brad D. Justesen, '80 DDS, is retiring from dentistry after a long and successful career acknowledged by his patients, peers, and colleagues. After retirement, he will continue to serve in the dental field as a missionary consultant for missionaries in West Africa.

Jennifer R. Farrell, '91 DDS, was awarded the Lawrence J. Chasko Award from the Special Care Dentistry Association (SCDA) at their yearly summer meeting. The award is given for outstanding service to the SCDA in the area of hospital dentistry. © 14

PT

Susan Davis, '77 PT, has published an article, titled "Management of Medial Patellar Luxation in Small Dogs and Cats: An Investigation into the Use of Manual 3D Patellar Repositioning Technique," in the October 2021 issue of *Orthopedic Physical Therapy Practice*, a publication of the Academy of Orthopedic Physical Therapy. Among the co-authors is fellow Northwestern Physical Therapy & Human Movement Sciences alum *Donna Frownfelter* '69 PT. Davis developed this technique, which is described in the article and can be viewed on her YouTube channel, entitled "Joycare Media." in 15 Mark Kaufman '89 PT, ATC, founder, executive chair, and former chief executive officer of Athletico Physical Therapy, recently celebrated the company's 30-year anniversary. Having grown from its first clinic, which opened in Chicago in 1991, Athletico now operates over 550 locations in 12 states and employs over 4,500 expert clinicians, athletic trainers, and other team members. In addition to physical therapy, Athletico also provides athletic training, occupational therapy, specialty programs, and fitness services to high schools, colleges, and professional sports teams.



BRAD D. JUSTESEN, '80 DDS, IS RETIRING FROM DENTISTRY AFTER A LONG AND SUCCESSFUL CAREER ACKNOWLEDGED BY HIS PATIENTS, PEERS, AND COLLEAGUES. AFTER RETIREMENT, HE WILL CONTINUE TO SERVE IN THE DENTAL FIELD AS A MISSIONARY CONSULTANT FOR MISSIONARIES IN WEST AFRICA.

In Memoriam

Northwestern Medicine extends its deepest condolences for the passing of the following alumni (listed in order of their graduation year), faculty, and friends.



Louis A. Simpson Naples, Florida DECEMBER 23, 1936 – JANUARY 8, 2022

Louis A. Simpson was a great and generous friend of Northwestern. For the past two decades, he and his wife, Kimberly Querrey, supported the university in countless ways, including a \$92 million gift in 2015 for

biomedical research. The Simpson Querrey Biomedical Research Center, officially opened in June 2019, was named in their honor.

Simpson grew up in Highland Park, Illinois. He earned a bachelor's degree from Ohio Wesleyan University in 1958 (Hon. LLD 2013), followed by a master's degree in economics from Princeton University. Investing became Simpson's career passion, and he was widely recognized for his business acumen. He devoted more than 30 years of his career to Geico Corporation, owned by Warren Buffett-led Berkshire Hathaway Inc. Most recently, he had served as chair of Gulf Shore Private Capital LLC, established in 2019. And previously, he was chair of the money management firm SQ Advisors LLC from 2011 to 2019. "Lou Simpson was a great man. He had an authentic moral dignity anchored to a deep commitment to science and education through philanthropy," said Eric G. Neilson, MD, vice president for Medical Affairs and the Lewis Landsberg Dean. "A brilliant investor, Lou was instinctively curious, funny, and quick to make you a friend, always remembering what you needed he was the bright light in a room, and everyone drew close. Lou Simpsons only come around once in a while, and it was a privilege to cross his life orbit. I am sure he never prayed for a celebrated life. I suspect he prayed to be a kind person — and that he was."

Simpson joined Northwestern's Board of Trustees in 2006 and became a life trustee in 2010. In 2016, he was appointed senior fellow and adjunct professor of finance at the Kellogg School of Management. Simpson received the Northwestern Alumni Medal in 2018.

"Truth be told, Lou was a professor at heart," said his wife, Kimberly Querrey. "While he appreciated sharing his insights as a trustee and the intellectual aspects of supporting biomedical research and technological innovation, it was the personal interaction with students and professors that gave him the greatest pleasure."

Simpson is survived by Kimberly; his three sons: Irving, Kenneth, and Edward "Ted," a 1996 Kellogg graduate; his five grandchildren: Allie McGuire, and Tyler, Kennedy, Palmer and Beckett Simpson; his three great-grandchildren, Lachlan, Clementine, and Hamish; his nephews Andrew and Robert Querrey; and his "naughter," Melissa Querrey, an MD/PhD candidate at Northwestern.

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All dates are in 2021.

Edward Guy, '50 MD Bigfork, Montana SEPTEMBER 12

Lt. Col. Grace Chicken, '50 MS Port Charlotte, Florida остовек 5

Robert Roux De Wet, '52 DDS Neenah, Wisconsin OCTOBER 14

Henry Singletary, '53 MD Wilmington, North Carolina остовек 8

Robert McCoy, '55 MD Mason City, Iowa OCTOBER 17 Robert Heurlin, '56 DDS, '61 MSD Arvada, Colorado

Gerald Arthur Close, '57 MD Glencoe, Minnesota SEPTEMBER 28

David Lees, '58 MD Sun City West, Arizona AUGUST 18

J. R. Henneford, '58 MD Great Falls, Montana SEPTEMBER 1

Russell Kreider, '58 CERT Danville, Kentucky SEPTEMBER 10

William Rossing, '59 MD Sioux Falls, South Dakota SEPTEMBER 28 **Glen Shugars, '62 DDS** Kalamazoo, Michigan OCTOBER 26

John Weaver, Jr., '62 MD Oakland, California NOVEMBER 12

Kay Litherland, '63 BSN Arlington Heights, Illinois SEPTEMBER 28

Nancy Goodfellow, '64 MS Geneva, Illinois JULY 28

Robert Anderson, '64 MD, '94 MBA Chapel Hill, North Carolina OCTOBER 19

Sharon Konecne, '64 CERT Denver, Colorado AUGUST 13 Kenneth "Ken" DeHaven, '65 MD Broomfield, Colorado JUNE 20

Robert Matlack, DDS, '66 MS Santa Cruz, California AUGUST 3

Jagneswar Saha, DO, '67 PhD Troy, Michigan AUGUST 30

Marjorie K. Lang, '69 BSM Red Bank, New Jersey SEPTEMBER 2

FACULTY

Ivan Ciric, MD, '66 GME professor emeritus of Neurological Surgery Skokie, Illinois NOVEMBER 12

DeBacker Scholarship Inspires Future Primary Care Physicians

or more than a decade, the Association of American Medical Colleges and others have warned of a looming shortage of primary care physicians in the United States as baby boomers age, more physicians retire or burn out, and fewer medical students choose to pursue the specialty. The consequences are dire: Many people, especially marginalized minority and rural populations, won't have access to the ongoing care they need.

In 2009, Noel DeBacker, MD, '80 '82 GME, and a team of his patients decided to help reverse this crisis. Among their achievements is the Noel A. DeBacker, MD, Scholarship, for which they have raised more than \$2 million in outright gifts, pledges, and estate plans to relieve debt for medical students about to begin residencies in primary care fields, which include family medicine, general pediatrics, and geriatric medicine.

"This shortage is a very serious problem that is only getting more serious as time goes on," said DeBacker. "It's already having a significant effect on patient mortality in underserved areas. With the scholarship, we wanted to encourage students to continue on a primary care track."

DeBacker has experienced first-hand how rewarding a career in primary care can be. He recently retired after serving as a general internist and faculty member at Northwestern for more than 38 years. But he also understands how debt can factor into a student's specialty choice. The average debt for medical students graduating from a private U.S. medical school in 2020 was \$219,829 — for Feinberg students it was \$183,836.

Over the years, DeBacker shared his concerns with his patients. John D. Mabie and his late wife, Martha; Randy L. Berlin and her late husband, Melvin; May and Ted Swan, and many others decided to support the cause.

"Dr. DeBacker was our internist for more than 35 years. It was a privilege to have this brilliant, kind, and compassionate physician watching over our health," shared May Swan. "We continue to support the DeBacker Scholarship because we believe it's critically important for patients to have a medical generalist providing continuity of care. An internist is the 'hub of the wheel' and keeps patients on the path to good health."

To date, 19 students have received financial support through the DeBacker Scholarship, including, most recently, Jordan Coleman, '20 MD. Coleman took a unique path to medicine, working as a chaplain for several years beforehand. At Feinberg, he helped launch a street medicine initiative to connect people



A GROWING SHORTAGE

By 2034, the U.S. could be short 17,800 to 48,000 primary care physicians, according to a recent report from the Association of American Medical Colleges (AAMC). David Skorton, '74 MD, president and CEO of the AAMC, testified before Congress on the issue.

"We believe there must be a privatepublic, multipronged approach to bolstering the physician workforce and the diversity of the physician workforce. Academic medicine is committed to working to address the challenges and has made significant investment in

both these areas. At the same time, we believe there must be a corresponding increase in the federal government's investments for a variety of federal programs that are already working," said Skorton during the hearing.

"I sincerely appreciate the donors" support of my efforts and hope to make them proud of my future endeavors as I work toward a more balanced delivery of healthcare."

> JORDAN COLEMAN, '20 Resident, Mount Sinai New York





experiencing homelessness to healthcare, and he conducted research on the cardiovascular impact of incarceration during early adulthood.

"I chose family medicine because of its emphasis on community and population health," said Coleman, who is currently a resident at Mount Sinai Hospital in New York. "I sincerely appreciate the donors' support of my efforts and hope to make them proud of my future endeavors as I work toward a more balanced delivery of healthcare in the United States."

DeBacker is well aware of the challenges new primary care physicians will face — he mentions the burdens of maintaining regulatory compliance and insurance payment structures that reward procedures over time spent with patients. But he feels hopeful when he meets the DeBacker scholars who will become the field's future leaders.

"The students are extremely dedicated, enthusiastic, and optimistic, and I become

more optimistic when I speak to them," DeBacker said.

He also believes investment in primary care educators and research on innovative models for primary care delivery are important. He references the positive impact of the former Christine and Paul Branstad Distinguished Primary Care Educator award, which gave role model faculty protected time to expose medical students to excellent primary care practices in innovative ways.

"Ultimately, what attracted me to become an internist so many years ago was seeing the relationships that develop between physicians and their patients," DeBacker reflected. "I had an extremely satisfying career, and I am so grateful to my patients for their trust in me as a physician and for their generous support to this scholarship and the primary care imperative."

Feinberg has additional scholarships for medical students pursuing careers in primary care, including the Charles D. Dillon, MD, Scholarship for Primary Care; Dr. David Grganto Scholarship; Dr. Edward A. Newman Family Scholarship; Sean D. O'Connor, MD, Scholarship, and Patrick J. Sullivan, MD, Endowed Scholarship.

> For more information about supporting scholarships through outright gifts or in your estate plans, including to honor your physician, please contact Vic Maurer at victor.maurer@northwestern.edu or 773-709-0739.

FOLLOWING IN DAD'S FOOTSTEPS

Growing up in South Bend, Indiana, David Sanderson, '55, '58 MD, heard many stories about Northwestern's medical school from his father, a graduate of the class of 1927 who served as superintendent of their county's tuberculosis sanatorium before opening a practice specializing in the heart and lungs.

"When I was old enough, he often took me with him to work on Saturday mornings, and I would answer the phone and schedule appointments," says Sanderson. "I always aspired to do

We at the Mayo Lung Project were one of the first centers in America to use the fiberoptic bronchoscope, which has now become routine.

ALUMNI

what my father did." Sanderson would go on to fulfill his youthful aspirations and then some. After training at Northwestern, completing his residency at the Mayo Clinic in Rochester, Minnesota,

and serving two years in the Air Force, he returned to Mayo, where he was a pulmonologist, professor of medicine, and chair in the Division of Pulmonary Disease and Critical Care.

When the Mayo Clinic opened in Arizona, Sanderson went to Scottsdale to serve as chair of the Pulmonary Division and chairman of the Department of Medicine. After retiring, he continued to be active with the American Lung Association, the American College of Chest Physicians, and the American College of Physicians.

Throughout the years, Sanderson has maintained connections to Feinberg (affectionately known as NUMS), serving on the alumni national board and leading the group as president from 1995 through 1997. In 2007, he was the winner of the Northwestern Alumni Association Service Award.

What do you remember most vividly about medical school?

In the fall of 1954, one of the deans was making

welcoming remarks to the entering freshman class and said, "You have all been screened, you are all capable students, and we expect that all of you will graduate." I found that very comforting.

What did you do during your downtime?

We had classes Saturday morning, and then some of us would head back to Abbott Hall, where we lived, and play bridge or football. We'd stop at supper time, and then maybe have a date Saturday night. On some Sundays, I would walk over to the Fourth Presbyterian Church over on Michigan Avenue.

Tell us about your training.

I had a wonderful teacher my senior year named Dr. Thomas Laipply, who was head of pathology and director of the intern and resident training program at Wesley. One day, while I was reviewing biopsy slides with him, he asked would I want to intern at Wesley and then maybe go up to the Mayo Clinic for my residency? I ended up doing both. While I was in Rochester, Dr. Arthur Olsen, who was chair of Mayo's Pulmonary Medicine Division at the time, asked me if I'd like to come back and work with him after I completed my training. I said I would, but first I had to complete my military service. After serving two years at Mountain Home Air Force Base in Idaho, which was a Strategic Air Command base, where I was the only internist at 45-bed hospital, I came back to Mayo. During that first year back, I had special training and supervision in endoscopy and performed over 1,000 procedures.

What areas of pulmonary medicine did you specialize in?

Within the spectrum of pulmonary disease, much of my focus was in bronchoscopy. For 15 years, I was involved with Dr. Robert Fontana in the Mayo Lung Project for Early



Lung Cancer detection. We were one of the first centers in America to use the fiberoptic bronchoscope, which has now become routine.

How did you get involved with the Alumni Board and what motivated you to continue to remain engaged all these years?

Jacob Suker, '51, '56 MD, invited me to join the board. I had been an intern on his service when he was a resident in Medicine, and in the '70s, he invited me to join the Alumni Board, which I think was new at the time. That kept me coming to Chicago and the Northwestern campus for years. We also have family connections with Northwestern. My brother, Richard Sanderson, '57, '64 MD, went to Northwestern; two of my children have Northwestern degrees. We have a great fondness for Northwestern. I am also so proud of the Class of 1958 and all the wonderful relationships over the years, and grateful to so many who have supported our endowed class scholarship.

WARD ROUNDS



1991-2021

30 Years of Commitment

A LOOK BACK AT THE LURIE FAMILY'S INDELIBLE MARK ON THE ROBERT H. LURIE COMPREHENSIVE CANCER CENTER OF NORTHWESTERN UNIVERSITY

The late Robert H. Lurie and a bust created in his honor (1, 2); Ann Lurie with: Leon Platanias, MD, PhD, at an annual celebration of cancer survivors (3); Mayor Richard Daley, the late Maggie Daley, and Steve Rosen, MD (4); the late Lewis Landsberg, MD, former dean, Feinberg School of Medicine, Henry Bienen, PhD. president emeritus of Northwestern University, Rosen, and Mayor Daley, at the Robert H. Lurie Comprehensive Cancer Center of Northwestern University ribbon cutting (5); and Mimi and Morton Schapiro, PhD. president of Northwestern University. Platanias, Eric G. Neilson, MD, vice president for Medical Affairs and the Lewis Landsberg Dean, and Dean M. Harrison, president and CEO. Northwestern Memorial HealthCare (6).

little over three decades ago, while receiving treatment for colon cancer at what was then simply known as Northwestern's Cancer Center, Robert Lurie had a conversation with his oncologist and director of the cancer center at the time, Steve Rosen, MD, that would forever alter the course of cancer research and care at Northwestern Medicine.

"He told Bob the worst part of his job was trying to raise money to pay for basic services and overhead," Lurie's wife, philanthropist Ann Lurie, shared with Leon Platanias, MD, PhD, director of the Robert H. Lurie Comprehensive Cancer Center of Northwestern University, in an interview conducted in honor of the 30th anniversary of the naming of Lurie Cancer Center. "Bob said, 'What can I do?"

What Robert and Ann Lurie did from that point on in the form of generous contributions to the cancer center has been transformative. In 1991, Northwestern's Cancer Center did not rank among the country's top cancer programs. Today, Lurie Cancer Center's clinical care, provided through Northwestern Memorial Hospital, is No. 6 in the nation — No. 1 in Chicago and

Illinois - according to U.S. News and World Report's 2021–2022 rankings of the best hospitals for cancer. Lurie Cancer Center has also grown from about 240 members with approximately \$46 million in external research funding in the early 1990s to almost 400 members with an impressive \$260 million in research funding today. This past fall, the center received a Merit Extension Award from the National Cancer Institute, one of only two Comprehensive Cancer Centers in the nation to earn the recognition. The award will provide \$12.6 million, enabling Lurie Cancer Center investigators to maintain their focus on long-range planning and high-impact cancer research.

"There are thousands of people alive today because of work we have done at Lurie Cancer Center that was launched by Bob and Ann's commitment," said Platanias, who is also the Jesse, Sara, Andrew, Abigail, Benjamin and Elizabeth Lurie Professor of Oncology.

The photos gathered here highlight the Luries' gift as well as Ann Lurie's many years of commitment and tireless advocacy for the work of the Lurie Cancer Center.



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