

Northwestern Medicine

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SPRING 2021

MODERN MALADY

**Finding new ways to tackle metabolic
syndrome. Page 14**

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Training in Action

It was an ordinary night of picking up takeout for Alyssa Martinez, a second-year student in the Doctor of Physical Therapy program, when she noticed a man having trouble walking. "He was grabbing onto nearby objects like trash cans and maildrops to help him balance," she said.

Martinez helped him cross the street, and after asking him a few questions, suggested he lower his mask so she could check for asymmetries. One corner of his mouth was drooping, and from there, she knew that she needed to call an ambulance. The next morning, Martinez learned that the man had been having a stroke, and that her swift action had likely saved his life.

"I'm very happy that I was able to be there to help. I'm looking forward to applying this same knowledge and being of help to others throughout my career as a PT," she said.



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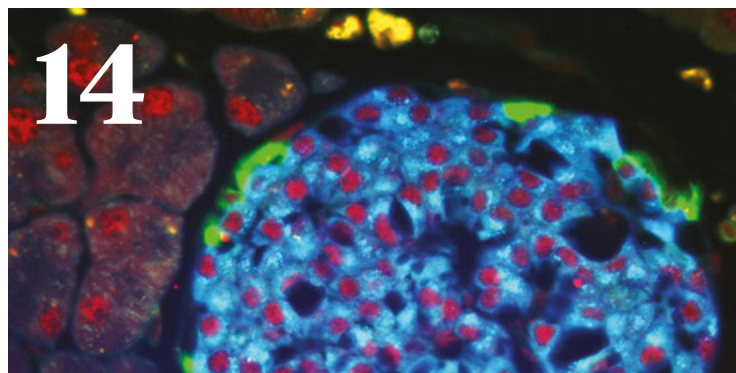
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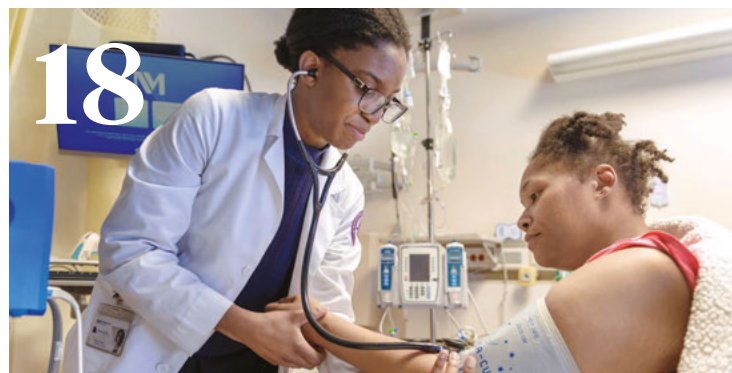
 Catch up on the latest Northwestern Medicine news and check out more photos and videos online at magazine.nm.org.

Features



MODERN MALADY

Feinberg investigators are finding new ways to tackle metabolic syndrome, which affects about one in three adults in the United States.



SCIENCE IN PRACTICE

It can take up to 20 years for evidence from clinical trials to make its way into practice. But an emerging field called implementation science is aiming to change that.



THE LONG HAUL

Northwestern Medicine's Comprehensive COVID-19 Center is committed to caring for and conducting research on behalf of patients who experience long-term complications from COVID-19.



TRAUMA TRAILBLAZER

Hasan B. Alam, MD — whose research focuses on interventions to control bleeding, sepsis, and methods of sustaining life for trauma patients — takes the reins as chair of surgery.

Departments

LEADERSHIP

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ON THE COVER

A computer model showing the structure of an insulin molecule. Semaglutide, a diabetes drug that improves the body's ability to secrete insulin, has been found to be almost twice as effective as current weight loss drugs, according to a new study conducted at Northwestern Medicine and published in the *New England Journal of Medicine*. Read more on page 14. (Image by Kateryna Kon/Science Source)

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Exceptional Leadership in Healthcare



THIS YEAR, NORTHWESTERN UNIVERSITY FEINBERG SCHOOL of Medicine was recognized as one of the best research-oriented medical schools in the nation for 2022, rising three spots to rank No. 15 according to *U.S. News & World Report*. Also, Northwestern Memorial Hospital was ranked No. 1 in Illinois for the ninth consecutive year and was among the top 10 hospitals in the U.S. for 2020–2021, with four of its clinical programs ranked among the top 10 hospitals in the country.

These remarkable achievements would not be possible without strong leaders, grounded in our *Patients First* mission, with a shared vision to transform the future of medicine. As a premier integrated academic health system, we are uniquely positioned to develop the next generation of healthcare leaders. We know that leadership development is a continuous process, and we provide opportunities to support leaders at all stages of professional development. From our pipeline programs for local high school students to executive coaching, no matter where one is on their leadership development journey, we have opportunities available to support them.

From the moment medical students don their white coats, their training emphasizes professionalism, reflection, personal growth, and accountability.

Our distinguished and nationally recognized faculty provide mentorship and hands-on training through a competency- and evidence-based, inquiry-driven curriculum.

Our commitment to developing the next generation of leaders at every stage of their career includes comprehensive programming, such as:

- Integrated pipeline programs. The **Northwestern Medicine Scholars and Discovery** programs provide job shadowing, mentorship, and leadership development opportunities for local high school students interested in pursuing careers in medicine, biomedical sciences, and healthcare professions. These programs enhance students' development academically, personally, and professionally, often through paid career-related opportunities and job shadowing. In the last year, more than 180 students who participated in the programs entered college as well-prepared, confident students.
- Best-in-class training. The **NM Academy** provides employees, physicians, and leaders development opportunities for current and future roles within the health system. Courses range from leadership skill development to preparing new leaders to manage their teams and business operations. NM Academy also offers leadership certificate programs, Continuing Medical Education (CME) and Continuing Nursing Education (CNE) programs. And, it offers accredited clinical training programs in nuclear medicine technology, radiation therapy, radiography, and ultrasound that accept both internal and external applicants. Upon graduating, students are prepared to sit for the national board exam required before starting work in these high-demand fields.

- Collaborative executive education. Programming for faculty, executives, investigators, and practitioners is available across different domains and disciplines. The **NM/Kellogg Executive Education** program offers top administrative and physician leaders access to the Kellogg School of Business where they learn techniques for making decisions and taking strategic action based on both traditional and innovative business practices. The **Northwestern University Leadership Education Advancement Program (NU-LEAP)** provides training for Feinberg School of Medicine faculty to develop as leaders and includes intensive coursework on how to lead initiatives that advance our mission as an academic medical center across the institution. **Northwestern University Actionable Initiatives for Mentoring Excellence and Scholarship (NU-AIMES)** brings together faculty across different domains to create a culture that recognizes personal accomplishments and contributions to the institution. These faculty members regularly attend a skills-development lecture series and work together to develop and implement department-specific faculty mentoring curricula.

Extraordinary leadership talent is on display across our health system every day, in every function — and many examples can be found in the pages of this magazine. Let's keep living up to our leadership potential. As ever, we strive to be *Better*.

With warm regards,

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

Dean M. Harrison
President and CEO
Northwestern Memorial HealthCare

High Marks

Feinberg rises to 15th in U.S. News ranking for research-oriented medical schools.

Northwestern University Feinberg School of Medicine has been recognized as one of the best research-oriented medical schools in the nation, rising three spots to rank an all-time high of 15th, according to the latest *U.S. News & World Report* rankings.

This is the 14th year in a row Feinberg has placed in the top 20 of research-oriented medical schools, and several departments ranked highly among the specialty-specific rankings.

“Our academic medical center is inspired by research that informs education and patient care through the dedication of our faculty, students, trainees, and staff who push the boundaries of scientific discovery,” said Eric G. Neilson, MD, vice president for Medical Affairs and Lewis Landsberg Dean. “That our rise in the ranks of top institutions comes during a time of unprecedented challenges is a testament to the commitment and drive of our entire community.”

This year, five of Feinberg’s specialty programs were also recognized among the best in the nation. Obstetrics and gynecology rose five spots to be ranked 4th, surgery rose twelve spots to be ranked 12th, pediatrics rose three spots to 13th, internal medicine rose one spot to 14th, and radiology remained ranked at 17th. Physical therapy, assessed every four years by *U.S. News*, ranked 4th in the nation in 2020. In the *U.S. News* rankings of public health programs, Feinberg’s public health program was ranked 24th, the second-highest ranking for a U.S. public health program that is part of a medical school.

OVERALL RANKING

15

in the nation for
research-oriented
medical schools

14

years in a row that
Feinberg has been
in the top 20

PROGRAM RANKINGS

4

in the nation for
obstetrics and
gynecology

17

in the nation
for radiology

4

in the nation
for physical
therapy

12

in the nation
for surgery

13

in the nation
for pediatrics

14

in the nation for
internal medicine



Raheem Bell (right), shown with his fiancée, Arielle Eagan, matched into general surgery at Northwestern McGaw Medical Center.

Perfect Match



Back: Benjamin Yu and Dan Im.
Front: Annie Huang, Lindsay Cheu, and Rebecca Xu

On Friday, March 19, fourth-year students eagerly monitored their email inboxes to learn about the next step on their medical journey. Waiting for the page to load felt agonizing for some, including Megan Perez, but the moment represented the culmination of a lifelong desire to help others.

“I wanted to find a specialty where I could improve the quality of life of my patients,” said Perez, who matched into plastic surgery at Northwestern McGaw Medical Center. Her interest in the specialty was sparked during a rotation where she worked with patients undergoing breast reconstruction after cancer.

“I realized that I could help patients feel normal again,” Perez said. “That was so powerful for me — it reminded me of my mother and her battle with melanoma — and it’s a place where I felt I could make a big difference.”

On Match Day, an annual tradition held on the third Friday of March, all fourth-year medical students across the country learn — at the exact same time — where they will train as residents for the next three to seven years.

Students viewed their match online and celebrated virtually, following public health measures restricting public gatherings due to the COVID-19 pandemic. Before matches were revealed, students joined a video chat hosted by the Augusta Webster, MD, Office of Medical Education (AWOME), where they were congratulated by Marianne Green, MD, the Raymond H. Curry, MD, Professor of Medical Education and vice dean for Education.

“We are all so excited for you, and I can tell you that your class has made Feinberg a better institution,” said Green, who is also co-director of the Center for Medical Education in Data Science and Digital Health at the Institute for Augmented Intelligence in Medicine and a professor of Medicine in the Division of General Internal Medicine and Geriatrics.

Residency matches are made by the National Resident Matching Program (NRMP), which uses an algorithm to pair graduating medical students with available training positions at U.S. teaching hospitals. The model takes into account the top choices of both the students and the residency programs.

Madeline Miller matched into physical medicine and rehabilitation at Northwestern McGaw Medical Center.



Other students were thinking back to mentorship experiences at Feinberg, including Jonathan Lamano, who matched into neurosurgery at Stanford Medicine. Lamano's first mentor at Northwestern was Andrew Parsa, MD, PhD, the former chair of Neurological Surgery who passed away in 2015.

"I mentioned to him I was interested in neurosurgery and he said: 'If you're interested, come meet me in my office tomorrow,' and that was the first day of medical school," Lamano said. "Now that I'm coming near the end and getting a concrete start on this journey, I'm definitely thinking of him."



Jonathan Lamano

This year's match took place mostly virtually — because of pandemic travel restrictions and stay-at-home orders, many students matched for their residency at programs they never saw in-person or in cities they didn't have a chance to visit.

Beyond the match, students had also experienced an academic year unlike any other; clerkships at Feinberg were briefly halted in March 2020, many lessons were transitioned to virtual learning, and telehealth was incorporated into many clinical rotations and clerkships.

"These students' perseverance through these circumstances is a testament to their creativity and drive," said Susan Goldsmith, MD, '08 GME, associate dean for student affairs and assistant professor of Obstetrics and Gynecology in the Division of General Obstetrics and Gynecology.

"It is so exciting to see our students successfully match — this day is the culmination of years of hard work, sacrifice and selflessness; it truly is the realization of a lifelong dream," said Goldsmith, who is also director of the Obstetrics and Gynecology clerkship. "I have every confidence they are ready to become the physicians that our world needs. Even during the pandemic, students had the opportunity to make a difference in a clinical setting. Hooman Azad, who matched into obstetrics and gynecology at Columbia University Irving Medical Center, has already helped deliver a handful of babies during his clinical experiences.

"It's such an incredible experience every time; that first moment you share with the family is so special," Azad said. "Feinberg did a good job of getting us back into the hospital as soon as it was safe, making sure we had everything we needed to take care of patients both with and without COVID."

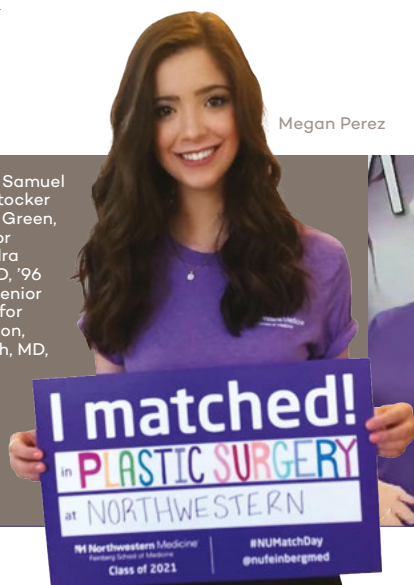
This caregiving mentality also spurred Raheem Bell to apply for general surgery residencies, and he matched at Northwestern McGaw Medical Center.

"As a general surgeon, you deal with some of the sickest patients in the hospital," Bell said. "You can help restore function and health to these patients, and that is something I want to be a part of."

Even in these unusual circumstances, students found ways to celebrate their success as medical students and to look forward to their first few years as physicians.

Madeline Miller, who matched into physical medicine and rehabilitation at Northwestern McGaw Medical Center, had decorated a large map of the U.S. with the locations of residency programs to which she applied. Pinning a large gold star on Chicago, she said she's happy to remain a Wildcat.

"I've wanted to be in physical medicine and rehabilitation since before coming to medical school, and I'm excited to stay at Northwestern where I have great friends, mentors and a family surrounding me," Miller said.



Megan Perez



Left: Kassandra Samuel and Benjamin Stocker
Right: Marianne Green, MD, vice dean for education; Sandra Sanguino, '93 MD, '96 '99 GME, MPH, senior associate dean for medical education, Susan Goldsmith, MD, '08 GME, associate dean for student affairs, and Robert Brannigan, MD, vice chair of Clinical Urology.



Student Spotlight

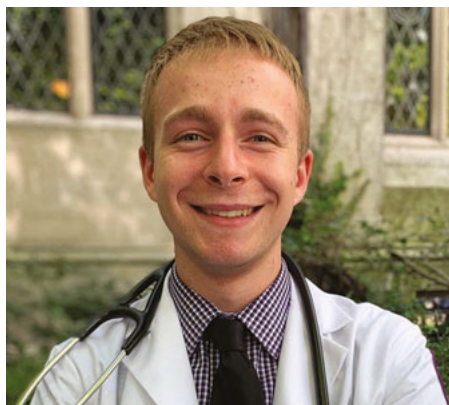
Feinberg students across fields are making impactful contributions to research, while growing as healthcare providers, scientists, and mentors.

DEDICATED TO NEUROSURGERY RESEARCH

Nathan Shlobin, a second-year medical student, is as dedicated to his medical education career as he is to his research. Currently, Shlobin has his mind set on becoming a neurosurgeon and is most interested in specializing in pediatric neurosurgery, with a specific focus on vascular and functional disorders.

Shlobin is also the first author of a systematic review recently published in the journal *Neurosurgical Focus*, which found potential risk factors for spinal cord ischemia, or inadequate blood flow within the spinal cord, related to anterior thoracolumbar spine surgery. According to Shlobin, the risk factors, which include hyperkyphosis — an excessive curvature of the spine — are essential for surgeons to know beforehand and recognize during surgery in order to minimize risk of ischemia and, furthermore, to improve patient care and outcomes.

“I was interested in neurology when I was very young due to experiences with family members who had neurologic diseases,” said Shlobin. “At that point, I was interested in the brain as a general concept. Essentially, I stumbled upon neurosurgery as an accident because I wanted to get involved in research as a freshman undergraduate. Dr. Nader Dahdaleh and Dr. Matthew Potts were the first two neurosurgeons I met. I ended up working



on research with them and had the opportunity to join them in the operating room, clinic, and rounds during the weekend. As a result of those experiences, my interest grew because I realized that I wanted to operate on patients and gain insight into the day-to-day life of trainees and attending neurosurgeons as well as advances in the field.”

As for his interest in pediatric neurosurgery, Shlobin says pediatric neurosurgeons have the potential to help patients for a long duration of their lives. “Children with epilepsy, for example, who experience improvement in seizure frequency after epilepsy surgery often experience a markedly improved quality of life,” he said. “Improving quality of life and the intricacies of caring for pediatric patients are pushing me toward a career in pediatric neurosurgery.”

SUPPORTING BETTER OUTCOMES FOR WOMEN AND GIRLS

Abbey Filicko, a third-year medical student, presented findings from her two community-based participatory research projects on menstrual health management (MHM) policy efforts and implementation at this year’s American Public Health Association virtual annual meeting.

For the first project, Filicko’s team assessed Chicago Public Schools’ availability of MHM products to students in response to Illinois’ passage of the Learn with Dignity Act, which requires all Illinois schools that



FORGING A PATH IN ENGINEERING AND PHYSICAL THERAPY

Nayo Hill, PT, DPT, a student in the Doctor of Physical Therapy/PhD Engineering dual-degree program, recently defended her dissertation on the use of probes to explore the neural mechanisms driving movement impairments following brain injury.

“I chose Feinberg for the unique dual-degree DPT/PhD program, which allowed me to pursue both engineering and physical therapy,”

she said. “As an early biomedical engineering student conducting my research in the Department of Physical Therapy and Human Movement Sciences, I was introduced to several faculty in the DPT program engaged in clinically relevant research. This piqued my curiosity.”

Hill’s clinical and research interests are both focused in pediatrics, and her PhD work involved quantifying upper extremity motor impairment in those with pediatric hemiplegia due to perinatal stroke or cerebral palsy. She said her dual training has influenced the way she thinks about human movement and how she develops her research questions.

“During my training at Northwestern, I learned to use engineering tools to characterize movement. My future goal is to translate this knowledge into the selection and development of interventions that target the underlying mechanism,” she said.



teach grades six through 12 to offer free MHM products in school building student restrooms. The second project involved analyzing MHM policies throughout the U.S. for gender-inclusive language.

“By defining and advocating for the components of equitable and dignified menstrual hygiene management, the MHM movement hopes to better support women and girls through this natural bodily experience,” said Filicko. “Several studies have found that when women and girls have the supplies, privacy, and infrastructure to manage their menses, their physical, psychological, and social outcomes improve. I love that this field is still so new and evolving and that we have an opportunity to make sure we’re promoting equitable and dignified MHM for all people.”

Filicko’s research mentor, assistant professor Leah Neubauer, EdD, MA, assistant professor of Preventive Medicine in the Division of Public Health Practice, has done collaborative school-based sexual health promotion and MHM research work in Kenya for over 10 years. Investigators leveraged insights from Kenya to better understand MHM in Chicago with help from the Institute for Global Health’s catalyzer grant.

MAKING INROADS IN TESTICULAR BIOENGINEERING



Maxwell Edmonds, a third-year medical student in the Medical Scientist Training Program (MSTP), recently defended his doctoral thesis on generating testicular organoids — living models of testes that could be studied to develop fertility treatments.

“This is a young and exciting field, which could help develop methods to derive gametes for use with patients with clinical infertility, to innovate functional testicular

tissue models for use in pharmaceutical drug testing, and to advance developmental biology research,” he said.

Edmonds used microfluidic culture platforms and static culture methods to explore ex vivo spermatogenesis and reproductive endocrine function in human and mouse testis explants. **His dissertation concludes with an in-depth discussion of necessary next steps and future visions between the intersection of human reproduction and bioengineering.**

“I have felt incredibly supported by my adviser and committee throughout my doctoral training,” he says.

Edmonds also passed his love of science on to a new generation as a participant and organizer for the all-student run MSTP organization, PRomoting Inner-City Youth in Science and Medicine (PRISM). PRISM is an after-school program run for high school students at a local Boys & Girls Club.

“I’ve had the opportunity to guide many high schoolers toward a passion for science and healthcare, and onward into college. In fact, some of my mentees from my first years in PRISM are now applying to medical school themselves!” he said.

RESEARCH BRIEFS

DISEASE DISCOVERIES

USING GENETIC MODIFIERS TO PREDICT CARDIOMYOPATHY SEVERITY



A team of Northwestern investigators led by Elizabeth McNally, MD, PhD, the Elizabeth J. Ward Professor of Genetic Medicine,

have identified specific genetic regions that regulate the expression of genes associated with inherited cardiomyopathy, according to findings published in *Circulation*.

Inherited and non-inherited forms of cardiomyopathy have similar outcomes, including arrhythmia and heart failure. The challenge, however, is determining whether someone has inherited cardiomyopathy because its symptoms present similarly to those of non-inherited cardiomyopathy.

“The goal is to use genetic information to predict which patients will have more severe and less severe disease,” said Anthony Gacita, a seventh-year student in the Medical Scientist Training Program (MSTP) and lead author of the study.

Investigators compared epigenomic profiles of human heart tissue samples and stem cell-derived cardio-myocytes to identify

genetic regulators for cardiomyopathy-causing genes.

Mutations in one of the genes, MYH7, are known to alter heart function and cause hypertrophic cardiomyopathy. Other MYH7 mutations can cause the heart to enlarge and weaken.

The investigators identified a prominent genetic enhancer which regulates the expression of MYH7 and the neighboring gene, MYH6. Using engineered heart tissues and CRISPR gene editing, the team found that deleting this enhancer increased MYH6 expression and decreased MYH7, which increased the rate of heart tissue contraction. They also identified a DNA sequence change within a nearby enhancer region, and patients with this variant had faster cardiomyopathy progression.

The study has the potential to help guide the development of novel therapeutic approaches and help clinicians develop more personalized treatment plans for patients.

This work was supported by the National Institutes of Health grants HL128075, HL142187, HL141698 and the American Heart Association grant 18CDA34110460.



SCIENTIFIC ADVANCES

Rethinking Cardiac Repair After Injury



A protein known mostly for its role in the brain may be a key player in the cardiovascular system as well, according to a Northwestern study published in *Nature*.

These findings show that in mice, the Reelin protein promotes cardiac regeneration and repair by reducing cell death after heart injury. Importantly, these findings highlight a new strategy to improve cardiac function after heart attack, according to Guillermo Oliver, PhD, the Thomas D. Spies Professor of Lymphatic Metabolism and senior author of the study.

“Improving proliferation of mammalian cardiomyocytes has so far proven very difficult,” said Oliver, who is also a professor of Medicine in the Division of Nephrology and Hypertension and director of the Center for Vascular and Developmental Biology at the Feinberg Cardiovascular and Renal Research Institute. “Based on this study, reducing cardiomyocyte death could be an alternative approach to improve cardiomyocyte proliferation, and Reelin seems to be very efficient in performing such a job. Furthermore, the use of both strategies simultaneously could provide a synergistic effect.”



This work was supported by National Institutes of Health grants R01HL073402-16, T32 GM00806, HL63762, and NS093382; American Heart Association grants 18CDA34110356 and 5132HL134633; a grant from the Spanish Ministry of Education, Culture and Sports; an EMBO Short-Term Fellowship; Leducq grant TNE-17CVD; an RD16/0011/0019 grant from the Spanish Ministry of Science, Innovation, and Universities; grants VEKOP-2.3.2-16-2016-00002, NVKP_16-2016-1-0039 and Higher Education Institutional Excellence Program of the Ministry for Innovation and Technology in Hungary within the framework of the Molecular Biology thematic program of the Semmelweis University.



Left: The monitoring device components attached to the limb of a patient with a transtibial prosthesis.

CLINICAL BREAKTHROUGHS

Novel Device Provides Continuous Monitoring of Skin and Prostheses



Precise form-fitting prostheses can provide enhanced mobility

and function while promoting overall comfort and wellbeing for patients with amputations, but daily activities can change the volume and temperature of the residual limb, causing potential discomfort, pressure ulcers or uneven bearing of body weight.

“THE NOVEL TECHNOLOGY CONTINUOUSLY MEASURES AND MONITORS PRESSURE AND TEMPERATURE MORE ACCURATELY AND COMFORTABLY THAN CONVENTIONAL METHODS.”

Now, a multidisciplinary team of investigators led by Northwestern scientists have created a wireless, soft and flexible sensor that can constantly monitor pressure and temperature between the patient's skin and prosthesis.

The design and development of the novel technology, detailed in a study published in *Science Translational Medicine*, was led by John Rogers, PhD,

the Louis Simpson and Kimberly Querrey Professor of Materials Science and Engineering, Biomedical Engineering and of Neurological Surgery, and Stefania Fatone, PhD, professor of Physical Medicine and Rehabilitation.

According to Fatone, one particular challenge in prosthetics is troubleshooting the fit of prosthetic sockets, which are uniquely made to fit each patient. Fixing an ill-fitting socket typically involves receiving feedback from the patient or collecting data from traditional pressure transducers and temperature sensors that are rigid, harsh on the skin and wired to external hardware.

In comparison, the novel technology developed by Rogers and Fatone's team continuously measures and monitors pressure and temperature more accurately and comfortably than conventional methods, reducing the risk of irritation and damage to the patient's skin.

This work was supported by the Eunice Kennedy Shriver National Institute of Child Health and Human Development, the National Institute of Biomedical Imaging and Bioengineering grant R01EB019337, and the National Institute on Aging Small Business Innovation Research grant 1R43AG059445-01.

SCIENTIFIC ADVANCES

MOLECULAR RESEARCH BUILDS NEW UNDERSTANDING OF SKIN REGENERATION

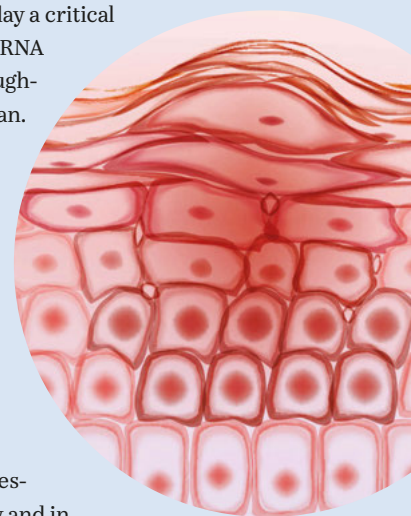


A new Northwestern study published in *Nature Communications* has found new evidence deep within the skin about the mechanisms controlling skin repair and renewal. The study found that formerly ignored introns — often described as ‘genetic junk’ — play a critical role in skin cell differentiation and regeneration.

Introns, non-coding segments of DNA that make up 24 percent of the human genome, actually play a critical role in modulating RNA transcription throughout a tissue's lifespan.

“We found a lot of sites where transcription terminates — not just at the end of a gene, but often within an intron in the middle of a gene,” said Xiaomin Bao, PhD, assistant professor of Dermatology and in the Weinberg College of Arts and Sciences, who led the study. “Even the same genes may have different transcription termination patterns in epidermal stem cells versus terminally differentiated cells.”

The finding may apply to many more self-renewing regenerative systems in the human body. Future research could have implications for carcinoma research.



This work was supported by the National Institutes of Health grants R00AR065480 and R01AR07515, the Searle Leadership Fund to the Bao laboratory, as well as the CMBD training grant and the Northwestern Presidential Fellowship. Bao is also supported by a pilot grant from the NUCATS Institute.

CLINICAL BREAKTHROUGHS

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



A mother's heart health while she is pregnant may have a significant impact on her child's cardiovascular health in early adolescence (ages 10 to 14), according to a new study from Northwestern Medicine and the Ann & Robert

H. Lurie Children's Hospital of Chicago. The study, published in *JAMA*, is the first study to examine the implications of a mother's cardiovascular health during

pregnancy for offspring health in the longer term.

The findings are troubling, as they build upon previous Northwestern Medicine and Lurie Children's research 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 with suboptimal cardiovascular health 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."

Funding for the study was provided by the National Institutes of Health (NIH) (grant K23HL145101), Pediatric Physician-Scientist Research Award; the Eleanor Wood-Prince Grant; the Dixon Translational Research Award; the American Heart Association (grants 17SFRN33660752, 17SFRN33660752, 17SFRN33700101, 17SFRN33700155); the National Center for Advancing Translational Sciences of the NIH (grant UL1TR001422). HAPO and HAPO FUS were funded by NICHD (grants R01HD34242, R01HD34243), National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) (grants R01DK095963, R01DK117491) and The Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD) (grant 1U01DK094830).

90%
OF U.S. MOTHERS
HAVE SUBOPTIMAL
CARDIOVASCULAR
HEALTH LEVELS
DURING PREGNANCY

CLINICAL BREAKTHROUGHS

ANTIBODY DRUG IMPROVES SURVIVAL FOR AGGRESSIVE BREAST CANCER



A new antibody drug used in combination with chemotherapy demonstrated similar efficacy to currently available therapies to treat advanced ERBB2-positive breast cancer, according to findings from an international clinical trial published in *JAMA Oncology*.

The drug margetuximab provides another therapeutic option for patients by helping improve overall survival, said William Gradishar, MD, the Betsy Bramsen Professor of Breast Oncology, chief of Hematology and Oncology in the Department of Medicine and senior author of the study.

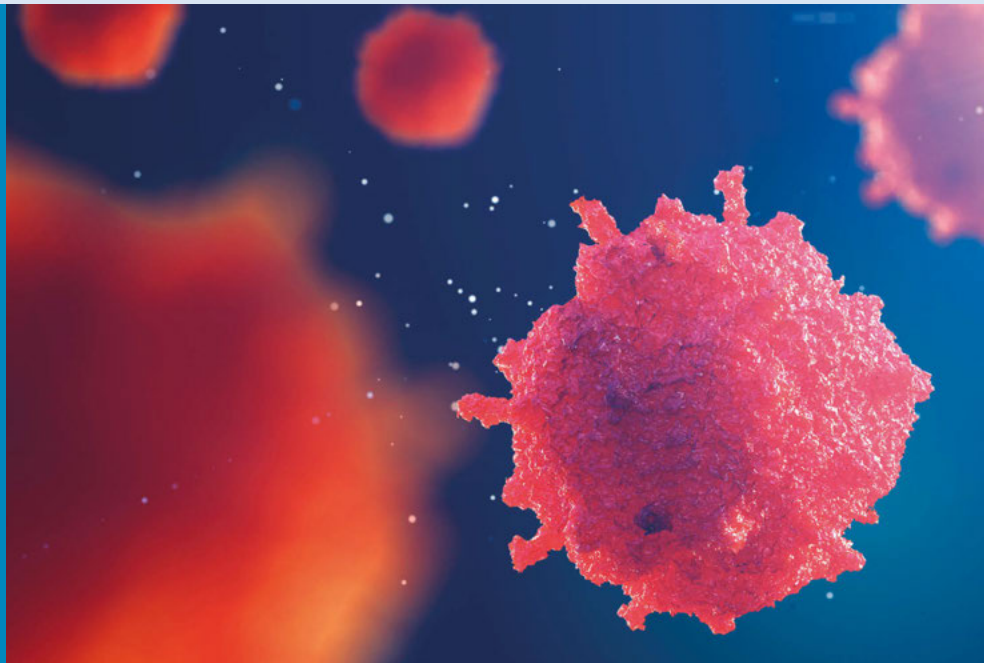
Breast cancer that is ERBB2-positive, also known as HER2-positive breast cancer, is an aggressive subtype of breast cancer where breast tumors have higher than normal levels

of the protein HER2. This protein is located on the outside of breast tumor cells and promotes growth and spread of the disease faster than other types of breast cancer.

When such cancers metastasize to other areas in the body, they are considered incurable, but developments in therapies that target HER2 have significantly improved patient survival.

"If you can offer patients something else that has promise, even if it's for a modest amount of time, that's good for patients," said Gradishar, who is also a member of the Robert H. Lurie Comprehensive Cancer Center of Northwestern University.

This work was supported by MacroGenics, Inc.



SCIENTIFIC ADVANCES

Understanding the Brain

Northwestern scientists unravel brain circuitry that leads to psychiatric disorders, appetite suppression, and drug misuse

PLOTTING THE NEURAL CIRCUITRY OF APPETITE SUPPRESSION



Northwestern scientists discovered that the co-release of two neurotransmitters by locus coeruleus neurons in

the brainstem play a key role in the ability of fear to suppress feeding in hungry mice. These findings, published in *Neuron*, point to techniques to alleviate stress-induced eating disorders and may have larger implications for conditions such as post-traumatic stress disorder (PTSD), according to D. James Surmeier, PhD, chair and the Nathan Smith Davis Professor of Physiology and senior author of the study.

“When you remember a traumatic event, when you get that tingling feeling and your heart begins to race — the locus coeruleus is releasing noradrenaline and arousing your brain,” Surmeier said. “Activation of locus coeruleus neurons is strongly associated with the recollection of traumatic events.”

Stress and fear can cause people to lose their appetite, even when they are hungry. While the brain circuitry underlying excessive feeding is relatively well-known, according to Surmeier, the circuitry mediating stress-induced suppression of eating in PTSD and other eating disorders is less well-characterized.

A CRITICAL NETWORK OF PROTEIN INTERACTIONS



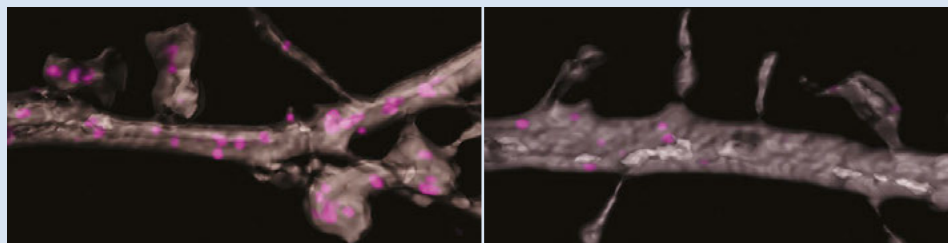
Homer1, a protein that is important for neural plasticity and learning, is part of a large network of proteins in the brain that help ensure new connections are wired correctly, according to a recent study published in *Molecular Psychiatry*.

“This network means it may be easier to find treatments. Because it’s all interconnected, we can look for more therapeutic pathways,” said senior author Peter Penzes, PhD, the Ruth and Evelyn Dunbar Professor of Psychiatry and Behavioral Sciences and professor of Physiology and Pharmacology.

Previous studies have shown Homer1 is important for brain development: Genetically modified mice missing this protein show behavioral abnormalities, and genetic studies of humans have shown a lack of Homer1 is associated with autism, schizophrenia, and depression. However, until now, scientists knew little about Homer1’s protein-protein interactions.

“In the past, these interactions were identified one by one, but now the technology allows the identification of large networks of interactions,” said Penzes, who is also director of the Center for Autism and Neurodevelopment. “It puts these things in a very different context.”

Homer1 and ankyrin-G are abundant in mushroom shaped synapses, as shown by super-resolution microscopy.



POTENTIAL STRATEGY FOR PREVENTING COCAINE-INDUCED REWARD BEHAVIORS



Congcong He, PhD, assistant professor of Cell and Developmental Biology and a member of the Robert H. Lurie Comprehensive Cancer Center of Northwestern University, was senior author of a study published in *Science Advances* finding that inhibiting a specific protein involved in cellular “self-eating,” or autophagy, in dopaminergic neurons may prevent reward-related behaviors induced by cocaine misuse.

Using genetic, cell biology, and behavioral analyses in mice that received doses of cocaine, He and colleagues found that Becn2, a protein essential for autophagy — when the cell removes its own unnecessary or

damaged components — regulates cocaine reward behaviors.

Becn2 selectively degrades an auto-receptor in dopaminergic neurons called dopamine receptor 2 (D2R), an important receptor that switches off excessive dopamine release. The team found that pharmacologically inhibiting Becn2 by upstream autophagy inhibitors stabilized D2R levels and reduced dopamine accumulation upon cocaine exposure, ultimately protecting the mice from cocaine-stimulated hyperactivity and reward behaviors.

Overall, targeting and inactivating Becn2 by autophagy inhibitors may be a potential therapeutic strategy to prevent cocaine-induced behaviors, including drug misuse and addiction.

Penzes’s work was supported by The National Institutes of Health grant R01MH107182 and an Individual Biomedical Research Award from The Hartwell Foundation. He’s work was supported by the National Institutes of Health grants R01-DK113170 and R01-MH109466, the BrightFocus Foundation, Northwestern University startup funds, the Weisman Family Foundation and the Northwestern Memorial Foundation. Surmeier’s work was supported in part by National Institutes of Health Pre-Doctoral Training Grant NUIH-MRS T32 and by the Department of Defense and the JPB Foundation.

MEDIA SPOTLIGHT

AP

More infectious COVID-19 variant identified in Chicago

Northwestern University researchers found the first case of the more infectious Brazil variant of COVID-19, the so-called P.1 variant, in a test sample from a Chicago resident who came down with the disease. The infected person told contact tracers they hadn't recently traveled outside Illinois.

"We identified it through our research program following mutations in the virus over time in the Chicago area," said Egon Ozer, MD, PhD, assistant professor of Medicine in the Division of Infectious Diseases.

The P.1 strain was first found in Brazilian travelers who arrived in Tokyo in early January. It appeared in Minnesota later that month and has since been identified in several other states.

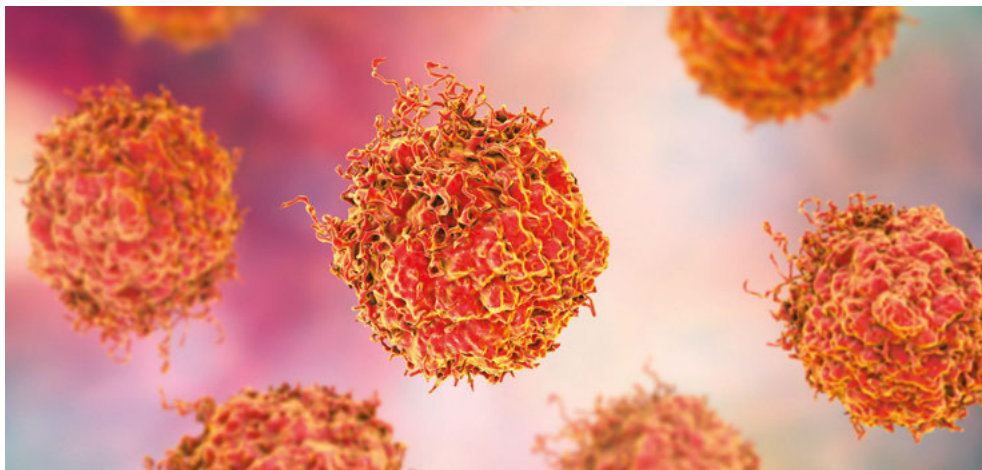
The Pathogen Genomics research team at Feinberg performs molecular surveillance and sequencing of residual diagnostic samples from COVID-19 patients at Northwestern Memorial Hospital. Team members involved in this work include Ozer, Ramon Lorenzo-Redondo PhD, Judd Hultquist, PhD, and Lacy Simons in the Division of Infectious Diseases.

The New York Times

'A game changer': drug brings weight loss in patients with obesity

The drug, semaglutide, made by Novo Nordisk, already is marketed as a treatment for Type 2 diabetes. In a clinical trial led by Robert Kushner, MD, professor of Medicine in the Division of Endocrinology and of Medical Education, and published in the *New England Journal of Medicine*, investigators tested semaglutide at a much higher dose as an anti-obesity medication.

"This is the start of a new era of effective treatments for obesity," said Kushner. Read more on page 14.



US News

Insight into why a prostate cancer therapy works better for black men

Plasma cells could play an important role in prostate cancer immune-responsiveness, according to a study published by Northwestern Medicine scientists in the journal *Nature Communications*.

"If a man's prostate cancer has numerous plasma cells, we found he had improved cancer survival," said Edward Schaeffer, MD, PhD, chair of Urology and the Edmund Andrews Professor of Urology. "Our study suggests plasma cells are important in the body's response to cancer."

Recent research suggests that Black men with advanced prostate cancer have improved

survival rates with immunotherapy, but there hasn't been a way to predict which individual patients — Black or white — may have the best response to immunotherapy drugs.

First author Adam Weiner, MD, a Northwestern Medicine urology resident, said, "The finding comes at a time as researchers are discovering plasma cells may play a greater role in cancer immunotherapy than previously thought."

Weiner added that "testing for plasma cells in prostate cancer may help identify men who will benefit from immune-based treatments."

NBC NEWS

Bisexual women with straight male partners least likely to be out

Bisexual women's health and well-being may be affected by the gender and sexual orientation of their partner, according to a new Northwestern study published in the *Journal of Bisexuality*.


Scientists found that bisexual women in relationships with heterosexual cisgender men were least likely to be open about their sexual orientation.

"Most research about relationships has been focused on heterosexual couples," Casey Xavier Hall, PhD, a postdoctoral research fellow at the Institute for Sexual and Gender Minority Health and lead author on the article, told NBC News. "There is very little relationship research around bi people's relationships. There are meaningful differences in relationships depending on the sexual and gender identity of bi women's partners."

FACULTY AWARDS & HONORS




The following faculty were inducted into the Gold Humanism Honor Society:


Jen Brown, MPH, lecturer of Preventive Medicine in the Division of Public Health Practice, **Mita Goel, MD, MPH**, associate professor of Medicine in the Division of General Internal Medicine and Geriatrics, **Ike Okwuosa, MD**,  1 assistant dean of Medical Education and assistant professor of Medicine in the Division of Cardiology, and **Sara Tranchina, MD**, lecturer of Medical Education.

The following Feinberg faculty members have been elected to the American Society for Clinical Investigation (ASCI):

Peng Ji, MD, PhD, '15 '17 GME, as- sociate professor of Pathology in the Divisions of Experimental Pathology and Hematopathology, and **Jaehyuk Choi, MD, PhD**, the Ruth K. Freinkel, MD, Research


Professor and associate professor of Dermatology and of Biochemistry and Molecular Genetics.  2, 3


The following three Feinberg faculty members have been elected to the Association of American Physicians (AAP):

Scott Budinger, MD, the Ernest S. Bazley Professor of Airway Diseases and chief of Pulmonary and Critical Care in the Department of Medicine, **William A. Muller, MD, PhD**  4, the Janardan K. Reddy, MD Professor of Pathology, and **Dimitri Krainc, MD, PhD**, chair and the Aaron Montgomery Ward Professor of Neurology.

The following two Feinberg faculty members have been honored by the Society of General Internal Medicine (SGIM):

• **Diane Wayne, MD**, the Dr. John Sherman Appleman Professor of Medical Education

and professor of Medicine in the Division of General Internal Medicine and Geriatrics, received the 2021 SGIM Career Achievement in Medical Education Award. This award recognizes those medical educators whose lifetime contributions have profoundly impacted the field of medical education.  5

• **Mary McDermott, MD**, the Jeremiah Stamler Professor of Medicine in the Division of General Internal Medicine and Geriatrics and of Preventive Medicine in the Division of Epidemiology, has won the 2021 SGIM John M. Eisenberg National Award for Career Achievement in Research.  6

Guillermo Oliver, PhD, director of the Feinberg Cardiovascular and Renal Research Institute – Center for Vascular and Developmental Biology, the Thomas D. Spies Professor

of Lymphatic Metabolism and professor of Medicine in the Division of Nephrology and Hypertension, was the recipient of the 2021 Earl P. Benditt Award in recognition of his numerous contributions to the understanding of the cell biology and lymphatic system.

Melinda Ring, MD, executive director of the Osher Center for Integrative Medicine at Northwestern University, and clinical associate professor of Medicine in the Division of General Internal Medicine and Geriatrics and of Medical Social Sciences, has been awarded the Bravewell Distinguished Service Award by the Academic Consortium for Integrative Medicine & Health.

James Cox, MD, professor of Surgery in the Division of Cardiac Surgery, was presented with the Jacobson Innovation Award of the American College of Surgeons.


Cox is best known for developing the Cox-Maze procedure, which has been the “gold standard” for surgically treating AFib for over 30 years.

Kristi Holmes, PhD, director of Feinberg's Galter Health Sciences Library and professor of Preventive Medicine in the Division of Health and Biomedical Informatics and of Medical Education, has been appointed to the Board of Regents for the National Library of Medicine.

Guillermo Ameer, ScD, professor of Surgery in the Division of Vascular Surgery and at McCormick School of Engineering, has been named the recipient of the 2021 Clemson Award for Contributions to the Literature from the Society for Biomaterials.

Peiwen Chen, PhD, assistant professor of Neurological Surgery, has received a Cancer Research Foundation Young Investigator Award.

He intends to study a type of glioblastoma that is deficient in PTEN, a type of protein that controls cell division and acts as a tumor suppressor.

Linda Suleiman, MD,  7 director of Diversity and Inclusion, McGaw Medical Center of Northwestern University, assistant dean of Medical Education and assistant professor of Orthopaedic Surgery and of Medical Education, and **Quentin Youmans, MD**, chief fellow in cardiology, were named to the National Minority Quality Forum's “40 Under 40 Leaders in Health” list.

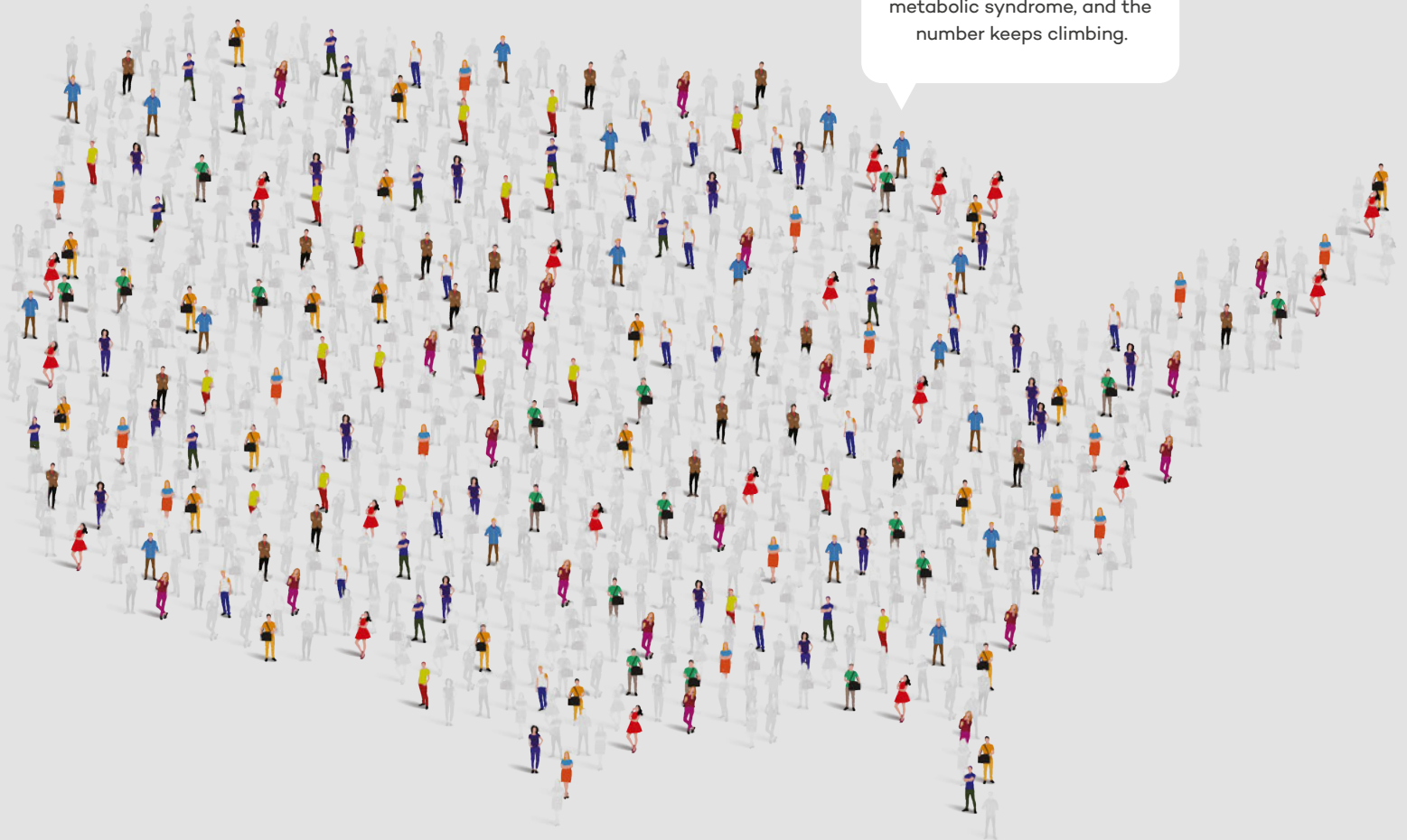
Forty-four new members were inducted into Northwestern's chapter of the Alpha Omega Alpha medical honor society during a virtual ceremony on March 17. To learn more about Feinberg's 117th class of AOA inductees, search AOA at: news.feinberg.northwestern.edu.

Feinberg investigators are finding new
ways to tackle metabolic syndrome.

MODERN MALADY

Written by Emily Ayshford · Illustration by Jelina Preethi

About **one in three** adults
in the United States has
metabolic syndrome, and the
number keeps climbing.





One of the biggest diseases of the modern era is a pernicious cluster of risk factors called metabolic syndrome that together raise the risk for heart disease, stroke, and Type 2 diabetes. About one in three adults in the United States has metabolic syndrome, and the number keeps climbing.

“Metabolic syndrome is highly over-represented in our population,” said Douglas Vaughan, MD, chair and the Irving S. Cutter Professor of Medicine. “It’s mostly related to the epidemic of obesity in our country.”

In addition, the syndrome is linked to lack of physical activity and insulin resistance — which could potentially be controlled with lifestyle changes. But other factors, particularly aging, and situations when lifestyle changes aren’t an option, remain an open challenge for physicians and investigators.

Northwestern scientists across disciplines are looking for new ways to understand, target, treat, and even prevent this syndrome, with the hopes of ultimately creating a much healthier nation. The good news is they are making progress.

“We are all interested in developing new ideas on how to treat it and prevent it,” says Vaughan. “And it’s incredibly exciting and gratifying that we are now at the point where we could potentially do that and help a large part of the population.”

PREVENTING THE DEVELOPMENT OF METABOLIC SYNDROME

To be diagnosed with metabolic syndrome, a patient must have three of five risk factors: a large waistline, a high triglyceride level, a low HDL cholesterol level, high blood pressure, and high fasting blood sugar levels.

Investigators have found a potentially wide-ranging therapeutic target that could affect all of them. Plasminogen activator inhibitor 1 (PAI-1), a protein found in the blood, has been shown to be an important

“This is the beginning of a new generation of hormonal medications that will be much more effective in treating obesity.”



ROBERT KUSHNER, MD, '80, '82 GME

driver of several components of metabolic syndrome, including obesity, high blood pressure, and insulin resistance.

In a recent study published in *Scientific Reports* and led by Vaughan, Feinberg investigators administered a new drug that blocks the activity of the PAI-1 in a mouse model. The team used RNA sequencing and gene expression analysis techniques to analyze liver mRNA in mouse models of metabolic syndrome. They found that the PAI-1 inhibitor drug regulated liver lipid metabolism by reducing the expression of PCSK9 and increasing the expression of FGF21. Notably, drugs that block the production or function of PCSK9 are effective in reducing cardiovascular disease, and there is increased interest in developing FGF21-targeting drugs to prevent and treat obesity-related metabolic complications.

“Here’s one singular factor that we could potentially target, and by doing so, prevent metabolic syndrome itself, as well as the cardiovascular morbidity and mortality that’s associated with the syndrome,” said Vaughan, who led the research.

The current findings build off previous work from the Vaughan laboratory involving a Swiss Amish community in Indiana with a mutation in the gene that codes for PAI-1. There, they have found that lower levels of the protein protected against the development of diabetes, improved insulin sensitivity, and protected against the biological manifestations of aging.

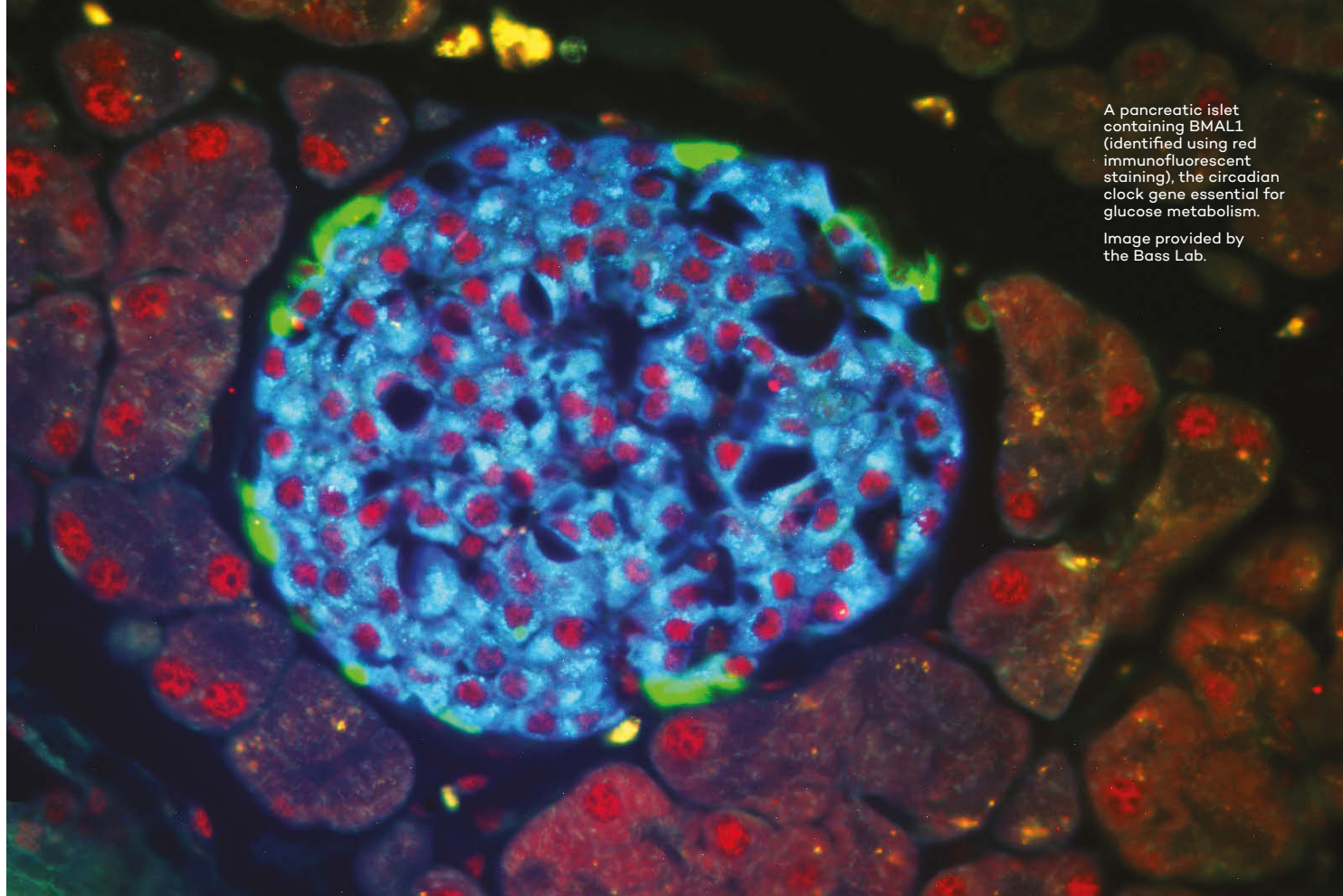
Vaughan and his collaborators are working with a biotech company in Japan, which has developed a small molecule PAI-1 blocker, and now have FDA approval to begin testing the drug in high-risk COVID-19 patients at Northwestern Medicine, with the hopes of eventually getting approval to use it to treat patients with metabolic syndrome.

A NEW APPROACH TO TREATING OBESITY

Perhaps the single biggest factor in metabolic syndrome is obesity. If a person with obesity loses weight, the positive health effects often cascade, including lower blood pressure, better blood glucose levels, and lower triglyceride levels.

But for many people, losing weight is difficult. Bariatric surgery, often the most successful intervention available, is invasive and can be prohibitively expensive. Appetite suppressants have been on the market for years, but results are mixed.

A new anti-obesity medication has been found to be almost twice as effective as current weight loss drugs, according to a new study conducted at Northwestern Medicine and published in the *New England Journal of Medicine*. The drug, semaglutide, is a diabetes drug, often marketed under the names Ozempic and Rybelsus. A glucagon-like peptide 1 analogue, the drug improves the body’s ability to »



A pancreatic islet containing BMAL1 (identified using red immunofluorescent staining), the circadian clock gene essential for glucose metabolism.

Image provided by the Bass Lab.

secrete insulin and decreases appetite, which is thought to result from direct and indirect effects on the brain.

In higher doses, semaglutide has been found to be an effective appetite suppressant. In the study of nearly 2,000 adults over 68 weeks, the investigators found that 70 percent of participants lost at least 10 percent of their baseline body weight, while one third lost at least 20 percent — a weight loss threshold achieved through bariatric surgery for many patients.

“Not only did they lose weight, they became healthier,” said Robert Kushner, MD, ’80, ’82 GME, professor of Medicine in the Division of Endocrinology and of Medical Education, who was the corresponding author on the study. “Their blood pressure dropped, their waist circumferences went down, triglycerides came down, fasting blood sugar levels dropped, and they had less inflammation. They were much healthier metabolically.”

The drug, administered through a weekly subcutaneous injection, has been submitted for approval to the FDA for use as a weight loss treatment.

70%
of participants who
used semaglutide lost
at least 10% of their
baseline body weight

33%
of participants lost
at least 20%

“This is the beginning of a new generation of hormonal medications that will be much more effective in treating obesity,” Kushner said. “Oftentimes when patients visit their primary care provider, obesity is on the backburner. Providers are not having conversations around this. But this drug is a way that they can have the conversation and bring obesity treatment to the front of the line.”

FINDING CLUES IN CIRCADIAN RHYTHMS

Another important aspect to preventing metabolic syndrome is controlling blood sugar levels. To better understand how the pancreas regulates insulin, Joseph Bass, MD, PhD, examined the gene transcription machinery that controls circadian rhythm.

Many years ago, Bass, the Charles F. Kettering Professor of Medicine in the Division of Endocrinology and director of the Center for Diabetes and Metabolism, discovered that turning off a gene crucial for clock transcription caused mice to develop diabetes due to lack of insulin production.

The COVID-19 Connection



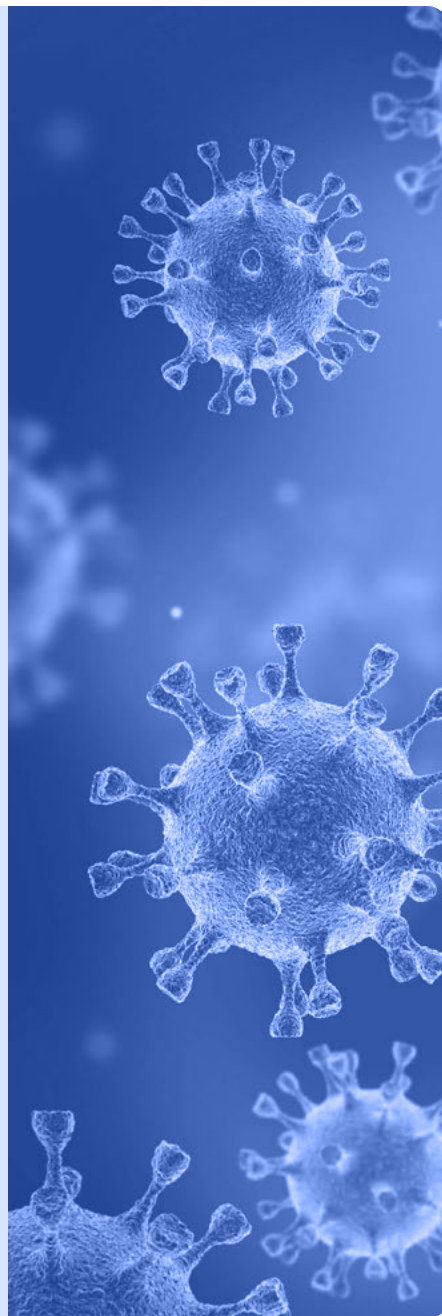
DOUGLAS VAUGHAN, MD

Multiple studies have shown that patients with metabolic syndrome have worse outcomes when diagnosed with COVID-19.

At Northwestern Medicine, investigators and physicians are studying whether drugs that treat aspects of metabolic syndromes help improve outcomes. Douglas Vaughan, MD, chair and the Irving S. Cutter Professor of Medicine, and his collaborators are testing whether a PAI-1 inhibitor helps improve outcomes of patients with COVID-19 — the only investigators in North America testing this.

Northwestern Medicine investigators also recently published research in the *Journal of Medical Virology* that indicates the drug metformin, which helps regulate blood glucose, is associated with reduced mortality from COVID-19.

Now, in a study published in *Genes and Development*, Bass and his collaborators found that mouse models with a mutated clock gene also failed to release insulin from beta cells in the pancreas due to aberrant RNA splicing, a re-shuffling of RNA that occurs in gaps between coding regions. This is the first time scientists have identified RNA regulation as a mechanism by which the internal body clock affects systems beyond the sleep-wake cycle.



Mice without the clock gene had dramatically lower levels of insulin released during the time of day when animals eat, resulting in diabetes and obesity.

“Irregular sleep, shiftwork, light exposure at night, and overconsumption of calorie dense diet are all conditions that lead to deregulation of internal clocks,” Bass says. “This work suggests that one hallmark in the metabolic syndrome involves impaired

function of the body clock and clock control of insulin production.”

UNDERSTANDING A DIABETES WONDER DRUG

Those with metabolic syndrome already have help in the form of the drug metformin. Hundreds of millions of people worldwide take the drug to help maintain healthy blood glucose levels.

But investigators have also found that the drug is also anti-cancer, anti-inflammatory, and potentially anti-aging. (The anti-aging effect will be studied in the Targeting Aging with Metformin (TAME) trial that will engage 3,000 individuals between the ages of 65 and 75, including at Northwestern Medicine.)

Just how the drug works in all these different capacities remains a mystery that Navdeep Chandel, PhD, professor of Medicine in the Division of Pulmonary and Critical Care and of Biochemistry and Molecular Genetics, hopes to crack. As an expert in mitochondria, Chandel has proposed that the drug inhibits mitochondrial complex 1, which is central to energy and metabolite production in the cell.

He and his collaborators have shown this is the case in cancer, and now they’ve developed a mouse model that expresses a yeast protein that functions like mitochondrial complex 1 but that doesn’t bind to metformin. In the coming year, they will use the model to examine whether metformin’s anti-diabetic and anti-inflammatory properties are due to inhibiting mitochondrial complex 1.

If so, it will help scientists better understand how exactly the drug can help treat or prevent different diseases.

“The medicines that have made significant difference in promoting human health in the past 50 years include statins, aspirin, and metformin — all metabolic drugs,” Chandel says. “Now we know metformin might have even more potential to help a huge part of the population, and we need to understand just how it works. Not only could it help treat metabolic syndrome — it might ultimately end up that everyone over 70 takes this drug to counteract normal aging deterioration.” ❖



Science in Practice

By Bridget M. Kuehn



A growing cadre of Northwestern Medicine scientists are ensuring that evidence-based practices are put to use properly.



It can take close to 20 years for evidence from clinical trials to make its way into practice in the U.S. But an emerging field called implementation science is aiming to change that.

“Implementation science emerged because many physicians and scientists realized that we should not be satisfied with the years it can take for evidence-based therapies to find their way into everyday practice,” says Tara Lagu, MD, MPH, who last spring was named director of the Center for Health Services and Outcomes at Northwestern’s Institute for Public Health and Medicine (IPHAM). “We want to accelerate both the dissemination and implementation of evidence.”

Lagu, who is also a professor of Hospital Medicine, is part of a growing cohort of scientists at Northwestern who are doing just that.

“Implementation science aims to systematically identify barriers and facilitators to the use of evidence-based practices in the real world, and to design and rigorously test implementation strategies that ensure every patient — no matter who they are or where they are — gets the best care possible,” she says.

“There are several research studies in motion right now at Northwestern that are designed to examine whether a new treatment approach is effective, while also studying how routinely and sustainably it can be delivered in Northwestern Medicine practice settings or Chicago communities,” adds Ron Ackermann, MD, MPH, senior associate dean for Public Health and director of IPHAM. “This is definitely a growth area for us.”

“Uniquely Positioned”

The field has taken on new urgency this year as the COVID-19 pandemic has exacerbated serious health disparities, and according to Lagu, Northwestern is uniquely positioned to be a leader. She explains that Northwestern Medicine has “a learning health system model,” which is made up of a growing cohort of multidisciplinary experts in implementation science

and the ability to use real-world data from electronic health records. The health system also has long-standing community and multi-institution partnerships. Additionally, there is a commitment to building the infrastructure necessary to support large-scale research that simultaneously evaluates both effectiveness and implementation of promising new interventions.

“Northwestern is one of the few places in the United States that has the opportunity to incorporate the principles of implementation science into health services and outcomes research, health care delivery, quality improvement, community-based participatory research,

and community-led health interventions,” she says. “That’s a big part of what drew me here.”

Currently, Lagu is the principal investigator on two R01 grants from the National Heart, Lung and Blood Institute focused on heart failure. One of those grants aims to identify implementation strategies that increase the use of cardiac rehabilitation among patients with heart failure.

She and her colleagues are working to identify unique barriers to cardiac rehabilitation (CR) among patients with heart failure, ranging from patient-level barriers, such as poor physical condition and lack of transportation, to health system barriers, such as difficulty identifying and recruiting eligible patients. The investigators are in the process of conducting interviews with hospitals and practices that »

Implementation science aims to systematically identify barriers and facilitators to the use of evidence-based practices in the real world.”



Tara Lagu, MD, MPH

have successfully increased uptake of CR among patients with heart failure. This work will identify strategies that overcome barriers to attendance. Eventually, they plan to test the strategies that seem feasible and acceptable to patients, physicians, practices, and health systems. Her work was inspired by personal experience.

“I saw first-hand that cardiac rehabilitation improved my father’s quality of life,” she says. “He suffered from heart failure and, in 2014, was so ill and deconditioned that I thought he only had months to live. Instead, he attended CR, and although he passed away in January 2021, his quality of life in his last five years was greatly improved. The exercise training provided by CR has been demonstrated, in clinical trials, to improve quality of life and reduce hospitalizations among patients with heart failure. Yet our early work suggests that less than 10 percent of eligible patients with heart failure ever attend even a single session of CR. When I saw the data, it was clear: the slow uptake of CR is a classic implementation science problem.”

Practical Solutions

Often, the challenges to implementing new therapies or interventions in practice are practical ones. New medications and therapies are far more costly than existing options, and there may be considerable costs for a practice or hospital to implement a new intervention, explains Neil Jordan, PhD, director of IPHAM’s Center for Education in Health Sciences.

For example, clinicians may need training, or modifications may need to be made to electronic medical records. Jordan specializes in analyzing both the cost-effectiveness of a new intervention and the implementation costs of putting it into practice.

“The results from those analyses are really essential to making the business case for a clinic, provider, hospital, or health system —

or whoever it is that’s going to adopt a new intervention,” he says.

Often interventions that are tested and shown to work in academic medical centers require significant adaptation to be used effectively in real-world healthcare settings that often have fewer resources for implementing new care strategies. Professionals known as “practice facilitators,” who have backgrounds in health information technology, can help provide coaching to health system leaders and clinicians on how to adapt an intervention to their setting and use their electronic health record system to improve care processes and measure patient outcomes, says Theresa Walunas, PhD, assistant professor of General Internal Medicine and Geriatrics and associate director of IPHAM’s Center for Health Information Partnerships (CHIP). They also help assess which real-world adaptations are most effective and how coaches can be the most effective.

“We are not developing new interventions,” Walunas says. “What we are doing is saying: ‘It is great that you can do this in a highly tooled academic medical center, but what really matters is how does it fare in a more real-world setting of small practices?’”

Along these lines, Walunas and investigator Abel Kho, MD, director of CHIP, collaborated to develop an implementation model comprising a bundle of implementation strategies to improve the use of evidence-based cardiovascular disease prevention in primary care clinics in Wisconsin, Illinois, and Indiana, through a program called Healthy Hearts in the Heartland. Now, Walunas is helping to lead a project that will apply that model in rural Michigan practices through a program called Healthy Hearts for Michigan.

In addition, the two are also collaborating on adapting this practice implementation model developed as part of the Healthy Hearts

Top-Tier Team

Northwestern Medicine is made up of a growing cohort of multidisciplinary experts in implementation science.



1. Ron Ackermann, MD, MPH, senior associate dean for Public Health and director of the Institute for Public Health and Medicine (IPHAM).
2. Theresa Walunas, PhD, assistant professor of General Internal Medicine and Geriatrics and associate director of IPHAM’s Center for Health Information Partnerships (CHIP).
3. Abel Kho, MD, director of CHIP.
4. C. Hendricks Brown, PhD, professor of Psychiatry and Behavioral Sciences and of Medical Social Sciences.
5. Neil Jordan, PhD, director of IPHAM’s Center for Education in Health Sciences.



Northwestern has a really critical role to play in this next phase of research that takes programs to scale and delivers them to communities. ... I'm proud to be a part of that." C. Hendricks Brown, PhD

program to an area of behavioral health, with the goal of increasing the uptake of evidence-based screening and brief interventions in primary care for unhealthy alcohol use.

"As the pandemic has gone on, people have realized alcohol use disorder is becoming more and more of a problem," Kho says. "It's very timely."

Community-Led

Northwestern's scientists are also lending their expertise to support community-led health interventions. Northwestern provides support to Pastors 4 PCOR (P4P), which was launched in 2014 by faith leaders in Chicago in partnership with the Patient-Centered Outcomes Research (PCOR) Institute. The P4P program trains faith-based community facilitators to lead research programs designed to meet needs in their communities. One identified need is for better blood-pressure control.

"We changed the paradigm by getting to the table with the researchers," says Paris Davis, MBA, PhD, co-leader of P4P and executive director of P4P and the Total Resource Community Development Organization (TRCDO) at Triedstone Church of Chicago. Davis has run TRCDO, a one-stop, comprehensive social services agency, for more than 20 years and has become intimately familiar with the community's needs and the best ways to reach subsets of people within it. Now, she's using that expertise as co-PI of one of Northwestern's newest implementation science projects, the Community Intervention to Reduce Cardiovascular Disease in Chicago (CIRCL).

Davis is working with Kho and J.D. Smith, PhD, a former associate professor of Psychiatry and Behavioral Sciences and current adjunct associate professor at Northwestern who recently joined the faculty at the University of Utah. The program will apply a blood pressure

management implementation model developed by Kaiser Permanente within multiple faith-based settings. The CIRCL team aims to improve blood pressure management for diverse community residents by evaluating implementation strategies that expand access to blood pressure monitoring at home or in faith-based settings, according to Kho.

"We are super excited about CIRCL because it is the culmination of collaborations we've built for many years," he says.

Range of Stakeholders

While there is an overlap between community-engaged research and implementation science, implementation projects have stakeholders spanning multiple areas.

"One cannot design useful implementation strategies for delivering an effective treatment or support service in a real-world setting if one does not consider and involve 'the user,' or the people delivering the intervention — and often, this is a community," Ackermann says. "However, a stakeholder in implementation science can range from an individual doctor to a practice to a policy agency."

One such stakeholder is the U.S. Department of Health and Human Services, which is partnering with the Chicago Department of Public Health and Northwestern for its Ending the HIV Epidemic initiative, aimed at reducing the number of new HIV infections in the United States by at least 90 percent by 2030.

The Chicago-based efforts are being led by C. Hendricks Brown, PhD, professor of Psychiatry and Behavioral Sciences and of Medical Social Sciences.

Brown, who is one of the leading founders of the field of implementation science, and his colleagues are using computer simulations to help the Chicago Department of Public Health find the best strategies to quickly scale up the administration of antiretroviral therapies (ART) and pre-exposure prophylaxis (PrEP) in the city. It will focus on two high-risk groups: young men who have sex with men and African American and Latino men who have sex with men.

"We know right now the levels of ART and PrEP use in the community are insufficient to end the HIV epidemic in 10 years," Brown says. "The simulations are support tools — they are not designed to tell CDPH or communities what to do — but they can inform them what programs could work under what circumstances, and what programs are not likely to work at all."

Brown notes that the overall goal of implementation science, like all of healthcare, is to improve the quality of people's lives, and that the field emphasizes the need to address a lack of health equity and systemic racism affecting communities of color.

"Northwestern has a really critical role to play in this next phase of research that takes programs to scale and delivers them to communities," he says. "I'm proud to be a part of that." ❖



By Melissa Rohman

the LONG HAUL

The Comprehensive COVID-19 Center is committed to caring for and conducting research on behalf of patients who experience long-term complications from COVID-19.

For 37-year-old Michigan native Sara Buursma, going “a million miles an hour” was the norm. A mother of three kids all under the age of 10, Buursma was healthy and had no pre-existing conditions. In addition to working full-time for a local credit union, she was an avid runner who competed in marathons. But when she was diagnosed with COVID-19 in March 2020, much of her life was put on hold. One year later, she is still not out of the woods.

“It’s been this roller coaster of different symptoms. I have never been back to a place where I feel like I’m at 100 percent or really have felt well since last March,” Buursma says.

When she was first diagnosed with COVID-19, Buursma recalls experiencing symptoms such as fever, shortness of breath, fatigue, and loss of taste and smell. Small walks made her feel exhausted, feverish, and nauseous, and she soon developed pneumonia.

She recovered from pneumonia, but by the end of summer, her other symptoms had not improved. So, Buursma’s primary care physician recommended she see a pulmonologist.

Recalling the quality of care a family member received at Northwestern Memorial Hospital for different health issues, Buursma decided to seek out care there and was paired with Northwestern Medicine pulmonologist and critical care specialist Marc Sala, MD.

“COVID has a predilection for many different organ systems, including the brain, the kidneys, the airways, and the lungs. That is why we think it has such multi-organ or multi-system effects that can really impact somebody for many months,” Sala says.

Buursma worked solely with Sala through the fall of 2020, navigating different symptoms and treatments. But by the end of December, Buursma was having what she called “COVID episodes,” wherein she was experiencing COVID-like symptoms all over again.

So in January 2021, Sala connected Buursma with the newly established Northwestern Medicine’s Comprehensive COVID-19 Center (CCC), where, to this day, she continues to receive multidisciplinary care in-person and through telehealth visits.

Comprehensive, Convenient, and Coordinated Care

The growing number of patients such as Buursma — so-called “COVID long-haulers” — spurred the creation of the CCC. Led by Charles Davidson, MD, vice chair for clinical affairs in the Department of Medicine, the center is committed to providing comprehensive, convenient and coordinated care for these patients. The center’s multidisciplinary team comprises Northwestern Medicine physicians specializing in pulmonology, neurology, cardiology, dermatology, infectious diseases, endocrinology, gastroenterology, nephrology, hematology, social work, and psychiatry.

“We needed champions in their own specialty to wake up in the morning and say ‘I really want to try to help this population,’” Davidson says.

According to Davidson, the center is currently seeing 500 patients; the average age is 49 and two-thirds are women. Fewer than 15 percent were hospitalized for their acute illness. Additionally, over two-thirds of patients

Buursma was an avid runner who competed in marathons. But when she was diagnosed with COVID-19 in March 2020, much of her life was put on hold.

had mild symptoms at the time they recovered from COVID-19 infection, but then developed long-term symptoms, with the most common being poor cognition, or “brain fog,” shortness of breath, and fatigue.

Patients of the center must have symptoms related to COVID-19 beyond 30 days from the initial onset of illness or their last COVID-19 positive test. Then, a nurse coordinator assesses the patient’s clinical status and determines which specialists they need to see. On average, a patient will see providers from two specialties, the most common being pulmonary and neurology, according to Davidson.

“All the providers are focused on one disease: COVID-19 infection and consequences. You have specialists working together in a way that is very streamlined and we’re having discussions from different points of view. That’s very valuable for the patients and that’s why I enjoy working in this clinic,” Sala says.

The CCC also houses the Neuro COVID-19 Clinic, established in May 2020 and led by Igor Koralnik, MD, the Archibald Church Professor of Neurology and chief of Neuro-infectious Disease and Global Neurology. To date, the Neuro COVID-19 Clinic has seen 400 patients in-person and through telehealth visits. Most common symptoms are brain fog, headache, numbness, tingling, loss of taste and smell, muscle pain, and dizziness.

“The disease can affect people in different ways, and we personalize treatment based on their symptoms,” says Koralnik, who led a groundbreaking study which found that more

than 85 percent of patients at the clinic who had COVID-19 but weren’t hospitalized have experienced four or more neurological manifestations. This first-of-its-kind study has received widespread media attention.

“As we continue this process, we’re going to learn a lot more about what are the patient-specific factors that will identify those at the highest risk and whether there are preventative measures that can be taken. We are still at the stage where we don’t understand the mechanisms on why people are developing these symptoms. The center has also has a consortium focused on research into the diagnosis and treatment of this population,” Davidson says.

Moving Forward

The CCC has expanded systemwide to Northwestern Medicine Lake Forest, McHenry, and Central DuPage Hospitals. The center has also expanded its services to patient populations who identify as underrepresented minorities, and is developing partnerships with federally qualified healthcare centers across Chicagoland. Additionally, Davidson says the center is refining diagnostic and treatment algorithms to enhance patient care.

Northwestern Memorial Hospital is offering monoclonal antibody treatment to patients seen at the center; recent research has shown the treatment has a significant impact on severity of illness and a reduction in hospitalization. The hospital is in the process of moving to use a combined infusion treatment of bamlanivimab and etesevimab given the rise in COVID-19 variants in

the U.S., according to Michael Ison, MD, MS, professor of Medicine in the Division of Infectious Diseases and of Surgery in the Division of Organ Transplantation.

“The center is still young, but we’ve become highly operational. It’s not a small task to coordinate this many specialties to assure that the patient experience is a positive and beneficial experience for them,” Davidson says.

“The center is still young, but we’ve become highly operational. It’s not a small task to coordinate this many specialties to assure that the patient experience is a positive and beneficial experience for them.”

CHARLES DAVIDSON, MD,
vice chair for
clinical affairs in
the Department
of Medicine



“Seeing Improvement”

Today, Buursma still struggles with fatigue, nausea, exercise intolerance, joint pain, fevers, and brain fog. In January, her team at the center discovered inflammation in her lungs, so she uses an inhaler and was prescribed various drug regimens. But compared to where she was last year, she’s seeing improvement.


“I’m doing better, but I don’t know when these episodes will reoccur, and that’s the frustrating part,” Buursma says. “But I’m really thankful my body’s been able to fight as much as it has, because if I wasn’t in as great a shape as I was, I probably would have been a lot worse off.”

For now, Buursma and her family avoid making plans and doing activities together as a family that require being active. Her goal is to run the Chicago Marathon for the very first time in 2022, and Sala is optimistic that will happen.

“I can’t try to figure out why this happened, and I can’t try to figure out when this is going to end. I have to have patience even though it makes me really mad,” she says. “I have really bad days sometimes where I’m very frustrated and I’m in tears, but I have to be realistic — these are just the cards that I’ve been dealt.” ❖



Buursma with her family.



“Northwestern is forward-looking, entrepreneurial, and very well-run, which ensures that its future is even brighter than its past.”

Trauma Trailblazer

Hasan B. Alam, MD, takes the reins as chair of surgery.

A confluence of events in Washington, D.C., early in the career of Hasan B. Alam, MD, set him on his path to becoming a trauma surgeon whose research has led to major innovations in both military and civilian care.

During Alam's residency in the 1990s, he recalls, the city was gripped by gang violence. The MedStar Washington Hospital Center, where he trained, was the largest trauma center in the city, and its team of trauma surgeons, he says, often had to make split-second decisions to save lives. This environment, albeit chaotic at times, turned out to be fertile ground for shaping his professional interests.

At that time, MedStar Trauma Center was also a training site for military teams, and Alam enjoyed working alongside Army and Navy residents and active-duty faculty, which inspired him to complete a year-long postdoctoral fellowship at the Uniformed Services University. He was on faculty there (and also a staff active trauma surgeon at the Washington Hospital Center) when a plane flew into the Pentagon on September 11, 2001. Alam was part of the team who cared for the victims.

During the decade that followed, the U.S. Department of Defense invested heavily in trauma research.

"It was being in the right place for my residency training, having the right mentors, having the connection with the Department of Defense, and then being in a position to make a contribution on September 11th that put me on my path," said Alam, who was appointed chair of

the Department of Surgery and the Loyal and Edith Davis Professor of Surgery last September.

In his new role, Alam looks forward to the challenge of taking the reins of the department in an 11-hospital system that serves the third largest city in the United States and a huge swath of Illinois. He hopes to build on his success in his previous role as the Norman W. Thompson Professor of Surgery and Section Head for general surgery (seven divisions) at the University of Michigan Medical Center.

"What I like about Northwestern is that it is forward-looking, entrepreneurial, and very well-run, which ensures that its future is even brighter than its past," he says.

BATTLEFIELD TO BEDSIDE

Alam's early career experiences informed his decision to pursue what he refers to as "high-yield research" that improves outcomes for trauma patients. His research focuses on interventions to control bleeding, sepsis, and methods of sustaining life so that patients can receive the care they need — a "bridge to definitive care," he says.

"We have gotten very good at delivering critical care to those who survive their initial injury," he explains. "But the people who continue to die are those who die before they are able to receive life-saving care. They bleed to death or die as a result of severe head injuries."

His first big contribution in this area came in the aftermath of September 11. As the Pentagon prepared to deploy troops to Afghanistan, his program

manager in the Office of Naval Research asked him to develop wound dressings that troops could apply on the battlefield to stop bleeding in their wounded colleagues. He and his colleagues quickly identified and tested a clot-promoting agent, which was developed into a battlefield dressing called QuikClot®.

"Every Marine who was deployed to Afghanistan and Iraq had those new hemostatic dressings in their first aid kit," Alam says. "It was very gratifying to see something go from lab to field deployment within a period of a few months."

Since then, QuikClot® has been widely used in civilian settings by emergency medical technicians, in wilderness settings, and at most hospitals. Newer formulations have improved upon the original to make it easier to use. Alam notes that this battlefield-to-bedside pathway for trauma care innovations is a well-trodden one.



Alam and his colleagues identified and tested a clot-promoting agent, which was developed into a battlefield dressing called QuikClot®.

"These new innovations are used in the battlefield because that's where the initial need is," he says. "That's what pushes the field forward. But as the conflict settles down, then all of those advancements are adopted and used in the civilian settings." »

Alam and his colleagues are currently developing two life-prolonging interventions for trauma patients.

“In patients who die from injuries, if you look at the autopsy data, about half of them have underlying injuries that are potentially fixable, such as injuries to large blood vessels or solid organs,” he says. “The reason we can’t fix them is it’s too late by the time they get to the hospital and the limiting factor is how long the brain and heart can tolerate the lack of blood supply and oxygen.”

One strategy is to induce hypothermia to preserve the organs in “a state of suspended animation,” he says. According to Alam, this strategy is already used for organ transplants, cardiac surgery, and neurosurgery.

“I’m going to focus on creating the right culture — a culture of excellence where people hold themselves to high standards and accountability, but also a culture of fairness and diversity where people are supportive of each other.”

But, he says, there are logistical challenges to using hypothermia on injured patients in the field.

To overcome this challenge, Alam received funding from the Defense Advanced Research Projects Agency, a Department of Defense agency responsible for the development of emerging technologies for use by the military, to



Alam with his wife, Tracy, and daughters Mayah (left) and Aliya, with their dog, Brutus.

develop a pill or injection that boosts survival in injured patients. In animal studies, Alam and his colleagues found that activating certain combinations of genes and proteins increases survival after injury. So, they looked for a drug that would turn on those genes and discovered that valproic acid, a medication that has been used to treat seizures since 1978, fits the bill.

“Given in the right dose, it can create a pro-survival phenotype,” he says.

Results from a preliminary safety study in humans, published in *Clinical Pharmacokinetics*, has already been completed and, with funding from the Department of Defense, Alam has begun working on a Phase II-III trial for bleeding patients. He is also testing the use of valproic acid in the treatment of traumatic brain injuries in animals and hopes to secure funding for a clinical trial soon.

“It very rapidly — within hours — decreases the size of the brain injury, swelling due to the injury, and protects the brain,” he says. “There is less neurocognitive damage, and the animals recover much faster and more fully.”

Alam has already secured a patent for the use of valproic acid to protect the heart from harm during periods of reduced blood flow, such as during a heart attack or during cardiac procedures to restore blood flow.

“We haven’t really tapped into applications on the civilian side because our focus was mostly battlefield trauma, causing hemorrhage and traumatic brain injury,” he says.

THE NEXT CHALLENGE

Since those early years, Alam’s career has taken him from faculty positions at Georgetown University Medical School to Harvard Medical School and to the University of Michigan Medical Center. Now, he’s looking forward to his next challenge, working in Chicago and leading a larger department that spans many disciplines.

“It’s a bigger stage, a more complex healthcare system, located in an iconic city,” he said. “It puts you on a growth trajectory where you are learning new things and growing constantly. These new challenges keep you engaged and energized.”

He hopes to further improve the department’s reputation for providing excellent clinical care and for doing innovative research. His focus will be on faculty recruitment and culture-building.

“I’m going to focus on creating the right culture — a culture of excellence where people hold themselves to high standards and accountability, but also a culture of fairness and diversity where people are supportive of each other.”

Building a patient-centric healthcare delivery model that provides the right care, close to home without compromising quality, is another priority for Alam. He says this will include optimizing systems for triaging patients and transferring patients to the right facility within Northwestern Medicine for their needs.

“If a patient enters a facility that has the Northwestern Medicine logo on it, they should rest assured that they will get the right care — no matter which door they enter,” he says. ❖



New Beginnings

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

Dear friends,

I am excited and privileged to be the incoming president of the Medical Alumni Association Board (MAAB). My years at Feinberg were some of the most impactful and meaningful of my life, and remaining connected to the medical school's alumni, current students, and faculty is very important to me.

The past year has proven challenging for those of us in healthcare. However, it is valuable to find positives from negative experiences. I want to start by expressing how thankful I am for my family — my wife, Florence, and our children, Elyssa, 20, and Alex, 15. Despite the terrible pandemic, we were able to spend more time together, and I have appreciated this good fortune tremendously.

This has been a year of mourning, learning, missing, persevering, and awakening.

We have witnessed the horrific, from the suffering and lives lost to COVID-19 to

This has been a year of mourning, learning, missing, persevering, and awakening.

the violent deaths by the hands of law enforcement. We've been forced to reckon with the disparity in health outcomes for people of color and

the disengagement forced onto millions due to lack of internet access.

We have observed the powerful voices of the Black Lives Matter movement and heard the cry for more inclusiveness and awareness in our society. And we have listened. We have also seen anti-Asian sentiment which continues to escalate and bring up past memories of overlooked suppression.

We've missed our loved ones but have also found new ways to connect.

While for some of us, it's been a time of pajamas, Zoom meetings, and takeout, for essential workers, frontline care providers, and those people who have lost their jobs (and their loved ones), it has been a completely different story. All, however, have felt the anxiety brought on by this virus.

And yet there are the positives: Teamwork and science — including breakthrough discoveries at Northwestern — have led us to multiple vaccines and a better understanding of how to treat COVID-19. Compassion, care, and resilience have won.

Finally, it feels OK to hope for a new normal.

Personally, 2020 and early 2021 signaled a change for me. I embarked upon a new career opportunity as Physician-in-Chief and Senior Vice President for City of Hope Orange County and Vice Physician-in-Chief for City of Hope National Medical Center in Los Angeles. As a family, we will be moving to Laguna Niguel and will get to experience a new setting in Southern California.

As I assume this new professional role along with the role of president of the MAAB, all of the developments of the past year have changed my perspective. I am even more determined than ever to support our medical students — the future of medicine. We were fortunate enough to establish the Dr. David J. and Deborah Y. Kim Family Scholarship in my parents' names, which supports fourth-year medical student Nicholas Sanchez, a first-generation college graduate who plans



Kim on an outing with his mother, wife, and children.


to pursue a residency in internal medicine (read more about him on page 39).

I encourage our alumni to consider offering your support for Feinberg, especially this year, in order to continue our momentum with assisting our brilliant students and faculty.

In line with supporting our community, the MAAB has also created the Inclusion and Allyship committee, which will develop initiatives to unite Feinberg alumni and current students who represent diverse experiences of ethnicity, gender, sexual orientation, religion, age, socioeconomic status, and/or physical ability. On page 30, you can read some stories of allyship and inclusion shared by some of our colleagues.

Together, let's keep looking out for one another. We have the power to improve the lives of our Feinberg community — and our larger global one. Masks up!

Seize the day like it's your last!



Advancing medicine
with a global
public-health focus

Christine Dingivan, MD, '96 GME

CLINICAL RESEARCH INNOVATOR

The devastation caused by the global pandemic led Christine Dingivan, MD, '96 GME, to decide it was the right time to make a leap in the direction of public health and to take on a new role as president and chief executive officer of Emmes, a global public health-focused clinical research organization based in Rockville, Maryland.

"I had always been drawn to public health and obviously the global impact you can have on human health," says Dingivan, who took on her new role in September. "But I was just so struck by how devastated the world was when COVID-19 first really exploded."

Since then, she's been busy at the helm of Emmes, which partnered with the National Institutes of Health on a clinical trial of Gilead's

remdesivir as a treatment for COVID-19. Emmes served as the statistical and data management center and site management center for the trial. The trial results published last fall showed that remdesivir shortened recovery time in hospitalized COVID-19 patients.

"It was one of the landmark publications of the year," Dingivan says.

DRAWN TO CLINICAL RESEARCH

Dingivan was in her surgical residency at Northwestern when she participated in some of the first clinical trials in the transplant unit for a new monoclonal antibody drug called OKT3.

"That was my first exposure to clinical research," she says. "I became very interested in

the potential positive impact that you can have in the drug development and clinical research area."

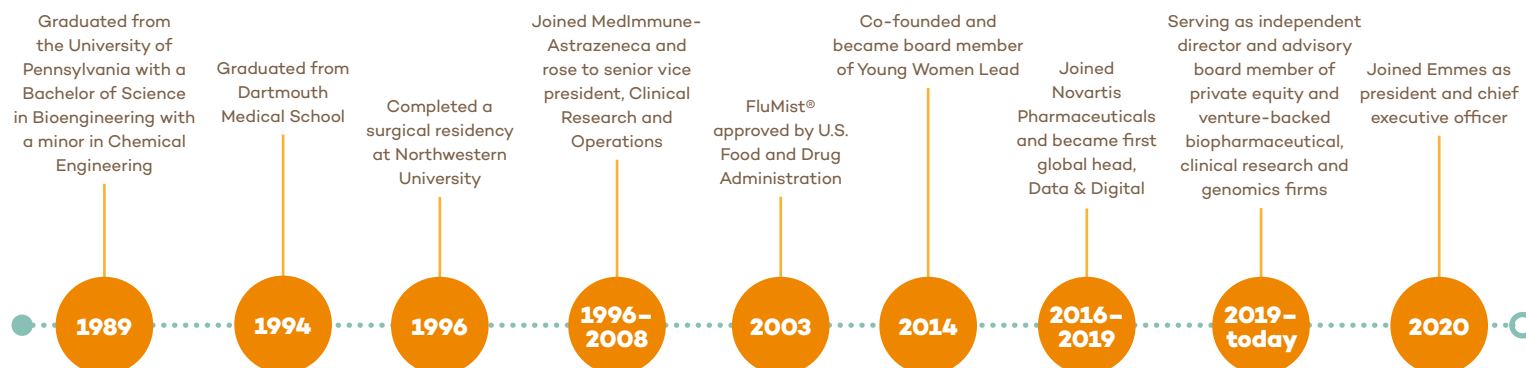
Her residency, as well as her undergraduate training in bioengineering at the University of Pennsylvania in Philadelphia and her medical education at Dartmouth Medical School in Hanover, New Hampshire, all helped equip her with the critical thinking and problem-solving skills that have helped her be successful in her field, Dingivan says. Her surgical training at Northwestern also prepared her to be decisive as an executive.

"Surgeons don't have the luxury of really thinking about problems for a long period of time or implementing a prolonged treatment program," she says. "When you're doing an operation, you have to be well-prepared and make immediate decisions."

Those skills were essential during her 12-year tenure at the biotech company MedImmune-Astrazeneca in Gaithersburg, Maryland, where she rose to the level of senior vice president and helped develop the influenza vaccine FluMist®. "Developing FluMist® was a big milestone in my career. It advanced public health, providing more options to protect children and adults from severe disease and even death by expanding vaccination options," she says.

She went on to serve as chief medical officer and global head of strategic client solutions at Pharmaceutical Product Development, a global clinical research organization based in Wilmington, North Carolina. She then moved on to Novartis Global Drug Development in Basel, Switzerland, where she became the pharmaceutical company's first global head of data and

CAREER TRAJECTORY



digital. In that role, she created a digital innovation laboratory that connected entrepreneurs with investigators from Novartis and its partners to leverage digital technologies in clinical research.

“The digital development and transformation of clinical trials is very exciting,” she says. She explains that clinical trials are increasingly using mobile technologies and wearables to collect data and Cloud-based technologies for rapid data transfers, processing, and review. Clinical trials are also leveraging data from electronic health records and using technologies like machine learning and artificial intelligence.

“Technology is not only changing the way we practice medicine, but also how we research new therapies for diseases,” Dingivan says.

At Emmes, Dingivan has overseen a diverse portfolio of research on topics ranging from COVID-19 vaccines and therapies to treatments for methamphetamine use disorder to therapies for pregnant women with epilepsy. The company’s clients include the federal government, public-private partnerships, foundations such as the Bill and Melinda Gates Foundation, global biopharmaceutical companies, start-ups, and some small biotech companies.

“There’s a great deal of diversity in the work that we do,” she says.

Dingivan also led the company’s first major acquisition, announced in December 2020. The purchase of a Czech Republic-based clinical research organization not only expands Emmes’ global presence, adding operations in 12 European countries, but also its biopharmaceutical business and clients. Founded more than

40 years ago, Emmes has over 1,000 employees across offices in the U.S., Canada, India, and now Europe.

CHARTING A PATH

In her free-time, Dingivan is an avid adventure traveler and a dedicated volunteer. She’s fulfilled a life-long dream of visiting Egypt and Jordan where she was able to learn about the region’s history as one of the earliest global trading sites and saw the pyramids lit up at night. She has also visited the Galápagos Islands in Ecuador and Machu Picchu in Peru.

“We hiked up and saw the sunrise over the whole site [at Machu Picchu],” she says. “It is one of the most magical moments that you can experience in the world.”

Dingivan’s most recent adventure prior to the pandemic lockdown was an almost three-week long cruise in Alaska with her family

“It was a wonderful, wonderful adventure,” she says. “The wildlife and scenery in Alaska is just breathtaking... It’s like no place I’ve ever been.”

I BECAME VERY INTERESTED IN THE POTENTIAL POSITIVE IMPACT THAT YOU CAN HAVE IN THE DRUG DEVELOPMENT AND CLINICAL RESEARCH AREA.



Above, Dingivan on camelback in Egypt and atop Machu Picchu in Peru.

Closer to home, she volunteers as a member of the board of directors for the Kennedy Center National Symphony Orchestra, where she merges her passion for classical music and her business experience to help expand their programs. One such program, called Sound Health, brings orchestral music to hospitals and rehabilitations centers.

“Music has been shown to have a positive therapeutic effect,” she says.

She is also hoping to help chart a course for the next generation of women leaders as a founding board member of a nonprofit organization called Young Women Lead, based in the Washington, D.C., metro area, which helps connect young women in high school and college with successful women role models and teaches them leadership skills.

“I love to see the positive impact it has on young women,” she says, “because I think that if I had that when I was younger, I probably could have done even more in my career.”

Sharing Stories

Members of the Feinberg community share their unique medical school journeys.



One of the most positive aspects of Northwestern University Feinberg

School of Medicine is that it brings together people from all walks of life for a common goal: improving people's health and quality of life. Our community has many unique stories to share, and with the establishment of the new **Inclusion and Allyship committee of the Medical Alumni Association Board**, we are excited to do so more broadly, including in the pages of *Northwestern Medicine*. We look forward to hearing your stories, too.



Please email text and photos to gina.bazer@northwestern.edu.

Our life experiences make us the people we are.

”

Sabrina R. Kendrick, MD, FACP, '86 WCAS, '95 GME



SABRINA R. KENDRICK, MD, FACP, '86 WCAS, '95 GME

I look back on my fellowship in the Division of Infectious Diseases at Feinberg with fond memories. I was the first Black fellow in the division and the environment at Northwestern was not diverse, but I was always made to feel included and welcome, from the first day to well past the last day, by all attendings and staff. It started with the chairman, Dr. John Phair and the late fellowship program director, Dr. Boris Reisberg (RIP), who fostered a nurturing, caring, and supportive environment, along with excellent teaching that permeated down to all faculty and staff. I thrived in the environment, put in a lot of hard work, and finished my training with valued experiences.

Our life experiences make us the people we are. I often think of Maya Angelou's words: "...people will forget what you said, people will forget what you did, but people will never forget how you made them feel." I feel fortunate and great for my time spent at Northwestern.

My career path has not been all smooth sailing, which is why I have a lot to offer as a member of the Inclusion and Allyship committee, hoping to make things better for students and trainees of the medical school.



JAVIER GUEVARA, '12 MD

My time at Northwestern had many challenges, but even through those difficult times, I encountered great humans here. People at the medical school have been there for me and lent me a hand when I needed it most.

This started even before I was a student. In 2006, on my way to Chicago for my interview, my suitcase did not make it. I had taken the last flight of the day and that evening, close to midnight, I had to scramble to put together an outfit for my interview the next morning. I purchased what I could at the nearest Walgreens and even had to borrow the hotel door attendant's shoes. After learning about my evening, I remember the former associate dean of admissions, Dr. Delores Brown, asking me what Northwestern could do to bring me here.

Once here, the economic recession of the early 2000s affected my parents' ability to pay for tuition. I am from Puebla, Mexico, and we had no family in the U.S. to cosign loans. Dr. John X. Thomas, who was senior associate dean for medical education at the time, met with me and my mother to discuss our available options. He advocated for me, and made me feel he cared. He told me that finances should not be — and were not going to be — the reason I would stop attending Northwestern.

Similarly, when I struggled during my clinical rotations, Dr. Julia Corcoran met and studied with me and assisted me in finding other tutors. The opportunities and help I received at this school have not only changed my life, but have impacted the future generations of my family and, for that, I will forever be thankful.

Being “a non-traditional, underrepresented minority,” I actually shared so much in common with many.

Juan G. Bautista, '11 MD



SAMANTHA SCHROTH,
current MD/
PhD student

I never expected to practice medicine, at least not human medicine. As an undergrad, I was a fully committed animal science student with my “eyes on the prize” of veterinary school. Collegiate diploma in hand, everything was set until, a week later, a freak accident resulting in a spinal cord injury changed not only my plans for the upcoming fall, but also my perspective on life. Now, almost eight years later as a paraplegic and manual wheelchair user, I carry my identity as a disabled woman with pride — though it took quite a few of those eight years to reach this point.

As a current trainee, Northwestern has continued to support and join me on this unexpected journey: Creating a space where identities can be celebrated and shared; promoting an environment that sometimes feels more familial than curricular. As I write this, I'm experiencing the unique feeling of watching my entering medical school class participate in the match and readying themselves for their future as outstanding physicians (I'll get there someday!), and family is certainly the right word.



DARREN WETHERS, '88 MD

I graduated from the medical school in 1988, as one of only three Black graduates in the class. Unlike the experience of students today, I recall having had only two Black faculty members during my four years (Drs. Tacoma McKnight and James Hill), and found my time there to be quite lonely and isolated. A vivid memory is having a classmate remark at the beginning of our second year, “Oh, you're still here?” I knew that I was receiving a solid medical

education, but had expectations of a more supportive environment.

I became a member of the Medical Alumni Association Board believing I can make a difference by representing viewpoints not often stated, experiences not shared by all, and advocating for a more just and equitable medical community. The creation of the Inclusion and Allyship committee is the first step in achieving that vision, and I look forward to working toward that aim.



JUAN G. BAUTISTA, '11 MD

Medical school was quite the experience for my then-little family. My wife, two children, and I uprooted from the agricultural city of Fresno, California, and decided to make Chicago our home. I had a very diverse background, playing college football, working in an underserved family business, and being that medical student with a family.

Upon arrival, I immediately began to learn my role as part of the Northwestern family. I found my unique background allowed fellow classmates to identify with me, and also seek comfort in talking with me. We would often host Thanksgiving dinners with students who stayed in Chicago. The loneliness that medical school can bring was often relieved when my children came to visit me in class. Healing my own insecurities came through helping other students. There were various times when Dr. John Thomas, Dr. John Franklin, and Dr. Sunny Nakae Gibson asked me to speak to a classmate or check in on them. I quickly learned that instead of being “a non-traditional, underrepresented minority, older student,” I actually shared so much in common with many.

As a physician, I am now a preceptor to medical students, pre-med students, and even high school youth interested in health careers. My goal is to change the mindset of “getting through” school to enjoying the process. I try to teach the importance of being there for each other and that helping others is the best way to help yourself. I am forever grateful to Northwestern for these lessons, and look forward to sharing what I've learned.



JAVIER SUAREZ, '19 MD

I was born in Bogotá, Colombia, but have spent most of my life in Chicago. Growing up as an immigrant meant that even with supportive, college-educated parents, I had to navigate the world of U.S. higher education on my own. For people like me, who are entering a grand and intimidating field, this means actively seeking mentors and resources.

Thankfully, I found a welcoming and inspiring support system in the Office of Diversity

and Inclusion (ODI) at Northwestern. The kind smile of Anita Munoz gave me and many others a reprieve from the arid cycle of study, eat, sleep. Beyond a mere safe space, ODI provided opportunities for us to share our voices, stories, and skills with peers via national organizations and the city via youth outreach and mentorship programs. It is no exaggeration to say ODI was a vital part of my medical education and I am a better doctor because of my experiences with them.

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.



Linda Suleiman, MD, '17 GME, assistant dean of medical education and director of Diversity and Inclusion at the McGaw Medical Center of Northwestern University, and Quentin Youmans, '15 MD, '18 GME, chief fellow in cardiology, who are married, were included in the National Minority Quality Forum's 2021 "40 Under 40 Leaders in Minority Health" list.



1950s

Lee F. Rogers, '59 MD, first published the classic radiology text *Imaging Skeletal Trauma* in 1982. Now, for the first time, the fourth edition of the book, which offers a comprehensive view of diagnostic imaging in the evaluation of skeletal trauma, has been published in Chinese. 📖 1

1960s

A. Barry Belman, '64 MD, '69 MS, '70 GME, retired about 10 years ago and began taking art classes at Montgomery College in Maryland. His sculpture, "Captive," which placed second in the Beacon's Celebration of the Arts contest, was created as part of a class assignment after receiving a scrap piece of marble from a classmate. 📖 2

Ferdinand Ofodile, '68 MD, FACS, FAAPS, clinical professor emeritus of Plastic Surgery at Columbia University, was selected by the Carnegie Foundation's Carnegie African Diaspora Fellowship Program as a 2020 Carnegie African Diaspora Fellow. The program, in its fourth year, is designed to reverse Africa's brain drain, strengthen capacity at host institutions, and develop long-term, mutually beneficial collaborations among universities in Africa, the United States, and Canada. Ofodile's project, which is on rural healthcare improvement, is based at the University of Port Harcourt in Nigeria. 📖 3

1970s

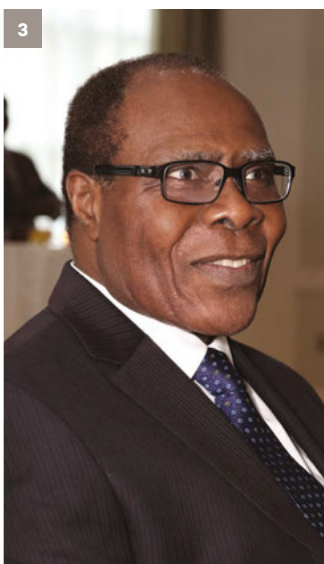
Arnold R. Eiser, '74 MD, has had five unique careers in medicine — in nephrology, bioethics, general internal medicine, medical education and neuroscience — since graduating from medical school.



As associate chief of Nephrology at Elmhurst Hospital Center and associate professor of Medicine at the Mt. Sinai School of Medicine in New York, Eiser developed a glomerulonephritis clinic, led the CAPD dialysis program, and led research on pulmonary gas exchange during hemodialysis that helped lead to changes in how dialysate is buffered.

In 1996, Dr. Eiser was invited to spend a month as a Visiting Scholar at the Hastings Center, a bioethics think tank. That led to publications on the ethics of dialysis withdrawal and appointment to multiple medical ethics committees; he continues to be active in bioethics to this day, most recently writing about informed consent process among the elderly for implantable defibrillators.

After working as a specialist for over a decade and a half, Eiser changed to leading academic general internal medicine divisions, including serving as chief of General Internal Medicine and professor of Medicine at the University of Illinois at Chicago School of



Medicine. In that role, he led many early computer applications in medicine.

As vice president of Medical Education for the Mercy Health System and associate dean for Mercy Programs, Drexel University College of Medicine, Eiser developed an innovative rotation where medical interns experienced how hospice nurses, quality improvement nurses, and other non-physician healthcare providers provide their services firsthand.

Upon retirement from full-time academic leadership, Eiser became an adjunct senior fellow at the Leonard Davis Institute at the Perelman School of Medicine and began an exploration of recent developments in the neurosciences.

Eiser is also the author of two books: In 2015, he wrote *The Ethos of Medicine in Postmodern America: Philosophical, Cultural, and Social Aspects*, an analysis of contemporary medical care, medical education, and medical professionalism, and coming out this year, *Preserving Brain Health in a Toxic Age: Insights*



from Public Health, Integrative Medicine and the History of Neuroscience.

To what does he attribute this rich and varied career? “The confidence I developed at Northwestern through rich clinical experiences, an insatiable thirst for knowledge, and a willingness to face new challenges,” he says. 📺 4

Jerry W. Swanson, '77 MD, MHPE, is professor of Neurology at the Mayo Clinic College of Medicine and Science in Rochester, Minnesota. He was the founding Mayo Clinic Enterprise chair of the Headache Division and was founding director of the Headache Medicine Fellowship at the Mayo Clinic. He currently serves as Headache Section editor and neurology editor-in-chief for the point-of-care medical resource, UpToDate. Swanson is the current chair of the United Council for Neurologic Specialties Headache Medicine exam committee. He also is co-editor for the forthcoming two volumes devoted to migraines in the *Handbook of Clinical Neurology*. 📺 5





Earn Continuing Medical Education credit by listening to the Feinberg-produced *Breakthroughs* podcast! Available wherever you listen to podcasts or by visiting feinberg.northwestern.edu and searching “Breakthroughs podcast.”

Janet Woodcock, '77 MD, has been appointed acting commissioner of the Food and Drug Administration (FDA), overseeing the full FDA portfolio and execution of the Federal Food, Drug, and Cosmetic Act and other applicable laws. Woodcock joined the FDA in 1986 and most recently served as director of the Center for Drug Evaluation and Research. Last year, Woodcock was asked to lend her expertise to “Operation Warp Speed” for advancing COVID-19 therapeutics. 📺 6

2010s

Krys Foster, '13 MD, MPH, FAAFP, is currently practicing in Philadelphia as a clinical assistant professor and associate residency program director at Thomas Jefferson University in the Department of Family and Community Medicine. Within the department, Foster also serves as chairperson for the Social Justice, Inclusion, and Health Equity Committee. Foster was first

author, in collaboration with several members of the Society of Teachers of Family Medicine Minority and Multicultural Health Collaborative, on a Reflections Piece entitled, “Dear White People,” published in the *Annals of Family Medicine* January 2021. The piece is a call for action, asking colleagues in medicine to take up the cause of anti-racism, and also resulted in an interview with the Jefferson Health Nexus. 📺 7

Quentin Youmans, '15 MD, '18 GME, was featured in the winter issue of *Diversity & Inclusion Matters*, a newsletter produced by Feinberg’s Office of Diversity & Inclusion. As founder of the Student to Resident Institutional Vehicle for Excellence program, better known as STRIVE, which connects underrepresented minority (URM) medical students at Feinberg with URM resident mentors, Youmans’ work was cited as an example of the ways in which medical schools can help combat discrimination and create safe spaces. Youmans’ recent *Feinberg Perspectives* podcast, “A Response to Two Pandemics: COVID-19 & Systemic Racism,” was also featured in the newsletter. Youmans is currently a resident physician at Northwestern in the Department of Medicine.

JANET WOODCOCK, '77 MD, HAS BEEN APPOINTED ACTING COMMISSIONER OF THE FOOD AND DRUG ADMINISTRATION (FDA), OVERSEEING THE FULL FDA PORTFOLIO AND EXECUTION OF THE FEDERAL FOOD, DRUG, AND COSMETIC ACT AND OTHER APPLICABLE LAWS.

GME

Samir Desai, MD, '99 GME, released the fourth edition of his book, titled *Clinician's Guide to Laboratory Medicine*. Featuring a unique step-by-step approach to lab test interpretation, the book has been rated as one of the "Best Medical Books of All Time" by the *Medical Media Review*. It was also named a Doody's Core Title for medical libraries by content specialists that guide libraries in the development of their essential medical reference book collections. Desai serves on the faculty of the Baylor College of Medicine. 📷 8

SAMIR DESAI'S, MD, '99 GME, BOOK, TITLED CLINICIAN'S GUIDE TO LABORATORY MEDICINE, HAS BEEN RATED AS ONE OF THE "BEST MEDICAL BOOKS OF ALL TIME" BY THE MEDICAL MEDIA REVIEW.

Babbs built up physical therapy services at the University of Chicago, where he also created opportunities within his team for a diverse group of professionals, giving them the tools, training, and mentorship they needed to succeed. Babbs' passion for mentoring and supporting others helped build many careers and has radiated outward into the profession as his trainees and employees have gone on to manage or establish their own practices. He has also been an advocate for minority physical therapists, paving the way for diverse future generations of physical therapists.

Throughout his physical therapy career, he served in many leadership positions in IPTA and APTA. Notably, he served as IPTA representative to the House of Delegates over 26 times, president of IPTA from 1982 to 1984, and trustee for IPTA scholarship funds from 1969 to 1989. In addition, he has been an APTA member since 1956 and was the president of the administration section from 1976 to 1978. He was also involved

PT

Robert Babbs, Jr., '57 CERT, received the Hall of Fame Award from the section of administration of the American Physical Therapy Association

(APTA), the Outstanding Physical Therapy Award from the Illinois Chapter of APTA (IPTA), and Alumnus of the Year Award from the Northwestern University Physical Therapy Alumni Association for his contributions to the field.



Robert Babbs, Jr., '57 CERT, shown with his peers. Babbs has served in multiple leadership roles during his long career in physical therapy.

in the Chicagoland Physical Therapy Director's Forum, and a charter member of the American Academy of Physical Therapy. 📷 9

Paul A. Kleponis '82 PT, DPT, senior physical therapist at Jackson Memorial Hospital, has been appointed to the Florida Board of Physical Therapy by Governor Ron DeSantis. Having practiced physical therapy in Florida since graduation, Kleponis shared the following message: "It is a great honor to receive this gubernatorial appointment to the board of professional practice, enabling me to give back to the Florida PT community. Life-long learning continues. Thank you, Northwestern, for setting me on the path to success in all ways." 📷 10

DDS

Allen A. Ghorashi, '93 DDS, was recognized as a fellow of the American Academy of Implant Dentistry at its annual meeting in November 2020. Ghorashi is one of only 300 dentists who hold this distinguished membership. The year prior, in 2019, Ghorashi also became a diplomat of the American Board of Oral Implantology/Implant Dentistry, cementing Ghorashi's place as one of the nation's leading experts in implant care.

📷 11



In Memoriam

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

ALUMNI

George E. Irwin, Jr., '43 MS, '44 MD
Fort Myers, Florida
JANUARY 9, 2021

Richard E. Weeks, '48 MS, '49 MD
Rochester, Minnesota
JANUARY 24, 2021

Warren T. Doerfler, '51 MD
Lancaster, California
NOVEMBER 29, 2020

Robert G. Yahr, '53 DDS, '57 MS
Janesville, Wisconsin
MARCH 2, 2021

Walter K. Janssen, '54 MD
Huntington Beach, California
JANUARY 17, 2021

William T. Matthias, '54 DDS
Denver, Colorado
DECEMBER 19, 2020

Thomas H. Brayden, '54 DDS
Lakewood, Colorado
JANUARY 20, 2021

Charles H. Miller, Jr., '55 DDS
Hilton Head, South Carolina
JANUARY 4, 2021

James H. Pearce, Jr., '55 DDS
Centennial, Colorado
JANUARY 31, 2021

George H. Yard, '56 MD
Flagstaff, Arizona
DECEMBER 24, 2020

Harold C. Hutchinson, Jr., '56 DDS
Princeton, Illinois
FEBRUARY 27, 2021

Lawrence H. Linder, '56 MD
West Brandywine, Pennsylvania
JANUARY 1, 2021

John P. Recktenwall, '58 DDS
Elizabeth, Illinois
JANUARY 3, 2021

Robert P. Gordon, '58 MD
Chicago, Illinois
JANUARY 10, 2021

Ira J. Bernstein, '60 MD
Chicago, Illinois
DECEMBER 21, 2020

Robert J. Colbern, '61 DDS
Oxnard, California
FEBRUARY 4, 2021

Bert G. Louscher, Jr., '63 DDS
Clarksville, Tennessee
JANUARY 10, 2021

Charles A. Mudd, '63 MD
Evanston, Illinois
JANUARY 1, 2021

Anthony Lynn Scott, '64 MD
Winter Park, Florida
JANUARY 10, 2021

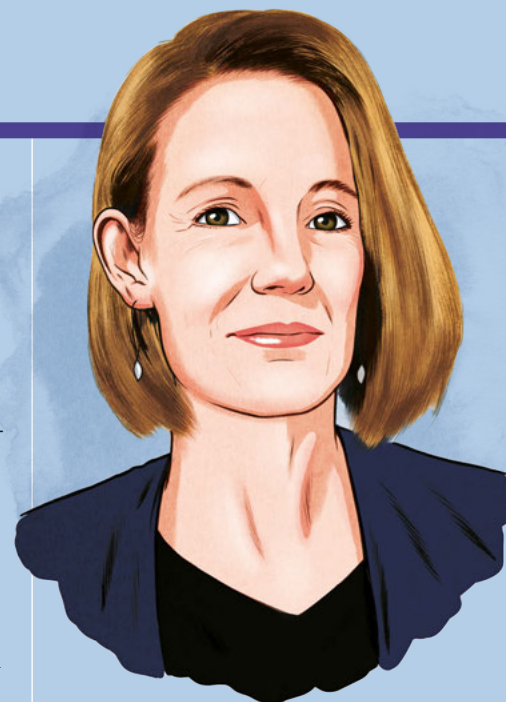
Daniel K. Christian, MD, '64 GME
Kalamazoo, Michigan
JANUARY 23, 2021

James G. Hoehn, '64 MD
Latham, New York
DECEMBER 24, 2020

In Memoriam tributes continue on page 40 »

WRITTEN BY *Whitney You, MD, '11 MPH, '09, '10 GME*

WHEN KEEPING PROMISES IS IMPOSSIBLE



I have always loved Lisa and Jonah in my own way. I bore witness to Jonah's life and then death.

It was just before dawn, the Friday before Mother's Day. A team of emergency department nurses barreled through the double doors of my labor and delivery unit with a term-pregnant woman. Her name was Lisa. The week prior, I'd promised my five-year-old son, Zachary, and my three-year-old daughter, Esmae, I would attend their school's "Muffins with Mom" Mother's Day breakfast.

Obstetrics is a conspicuous thief. It has stolen weekends, my husband's birthdays, at least two Christmas mornings, Zachary's first day of kindergarten, and my grandfather's funeral. In truth, missing those events was not a burden. I found meaning in my job. A baby delivered, a family consoled, a diagnosis made — all justified my absences.

But as Lisa was being wheeled in, I remembered the last school event I had missed, a Christmas party. Zachary has asked, "Where were you? All the mommies and daddies were there but you. Esmae and I had to sit with Jonathon's mommy."

I would be there for Muffins with Mom.

Lisa twisted her body like a fish on a line. She pulled her knees to her abdomen, and shifted her legs right and left. She asked me to save her baby. Jonah.

I positioned the ultrasound probe on her abdomen, then gazed at the black and white image on the screen. Jonah's heart contracted then fell open in a slow and labored motion. Jonah was dying.

Meanwhile, Lisa was abrupting. The bleeding was torrential.

I had planned to leave the hospital at eight o'clock that Friday morning to get to the school just as Zachary and Esmae would be choosing

chocolate chip or blueberry muffins. But now, I would be in surgery.

Once in the operating room, I made an incision in Lisa's abdomen then into her uterus. A blood clot, the size of a cantaloupe was erupted from behind Lisa's placenta. I reached down into her pelvis, wrapped my hand around the top of Jonah's head and delivered him. Sixty seconds had passed from the time of Lisa's skin incision to Jonah's delivery. Jonah did not cry or gasp. His face did not grimace, his mouth remained still, gaping, and blue. I held his flaccid body in my hands. "Oh God," I thought. "He's dead."

Meanwhile, Lisa had already bled enough to consume most of her clotting factors. I compressed her uterus in my hands slowing the bleeding while we repleted her blood and clotting factors. With my hands in Lisa's pelvis, I asked one of the nurses to contact my husband. "Tell him my kids cannot go to school today."

But no one reached my husband that morning. My kids waited in their classroom with popsicle stick picture frames, handmade cards, and a muffin they had picked for me.

After a social worker had informed Lisa of Jonah's passing, I approached Lisa's room and heard her say, "Don't let her in here. She killed my baby."

I bent over, put my hands on my knees, and worked to catch my breath. I had failed to keep my promise to my children. For what? A dead baby? A critically ill mother? Painful accusations? This was an excruciating trinity. As Lisa suffered and grieved, I dissolved into despair.

After Jonah died, I quit making promises to my children because I break them. They forgive me. But I fail to offer that grace to myself. So, I don't make promises.

Four years ago, on Mother's Day, I opened my laptop. Lisa's name was in my email inbox. With reluctance, I opened it.

I have always loved Lisa and Jonah in my own way. I bore witness to Jonah's life and then death. I knew Lisa in the midst of excruciating pain. But I believed she would never understand how her story affected me as a mother and a physician.

Yet, in her message, Lisa acknowledged my pain and thanked me for enduring it so I could continue to take care of women like her. She shared that she only had to face the death of a baby once, but knew as long as I practiced obstetrics, the tragedy would not end for me. Then, she wished me a happy Mother's Day.

Whitney You received her MFA from Vermont College of Fine Arts. Her work has appeared or is forthcoming in The Threepenny Review, Pleiades, and others. This essay was abridged from The Rumpus. A recipient of a 2020 Illinois Arts Council Agency Literary Award, You is currently working on a memoir about a physician's experience with perfectionism and death.

Celebrating Our Scholarship Donors and Their Impact

On March 11, 2021, medical school leadership, students, and alumni came together at the Commitment to Scholarships virtual event to thank the compassionate and forward-thinking donors who support scholarships at Northwestern University Feinberg School of Medicine.

“Our society right now is more dependent than ever on the future physicians who are graduating from institutions like Feinberg — and I would argue specifically from Feinberg. Your generous support is making a difference and changing the lives of these students,” said event host Marianne Green, MD, vice dean for Education and the Raymond H. Curry, MD, Professor and chair of Medical Education.

She explained that scholarships allow Northwestern to compete to recruit outstandingly talented applicants from a diverse array of backgrounds. Scholarships also enable students to pursue whatever medical specialty they feel passionate about, without having to consider their future salary and how they will pay off their debt.

“Scholarships provide our students with the opportunities to focus on the things that will make them leaders, like many of you are,” said Green to more than 200 scholarship supporters who joined the event.

The medical school hopes to provide some level of tuition support to all students who have debt, which would require an \$800 million endowment for scholarships. Today, the Feinberg scholarship endowment is approximately

\$213 million, with 55 percent of medical students receiving scholarship assistance, thanks to thousands of donors who give to this area of need.

“We have a long way to go, but through generous outright and estate gifts from alumni and friends, like you, we are forging ahead,” said Alan Krensky, MD, executive for Development at Northwestern Medicine and vice dean for Development and Alumni Relations at Feinberg. “Today we toast our wonderful donors — and our student scholars who are hardworking and committed and who make all of us so proud.”

Newly Established Scholarships*

- Anonymous Feinberg Scholarship
- Class of 1973 Scholarship
- Class of 1995 Scholarship
- Dr. David Grganto Scholarship
- Dr. Jeffrey and Meredith Conn Watters Scholarship
- Earl M. Mumford, MD Family Scholarship
- Feinberg Promise Scholarship (originally the Diversity in Medicine Scholarship)
- John R. Flanagan Charitable Foundation Scholarship
- Judith Mayzel Scholarship
- Mary Ann Frable, MD Dean's Scholarship for Women in Medicine
- Richard A. Brickley, MD Family Scholarship
- Robert Babbs Jr. PT Diversity Scholarship
- William W. Ting, MD and Flora H. Ting Scholarship

*Since April 2019



CURRENT STUDENTS AND GRADUATES SHARE HOW SCHOLARSHIPS MADE A DIFFERENCE

Attendees heard from a panel that included two current medical students and scholarship recipients; an alumna and former scholarship recipient now completing residency; and an alumnus who supports scholarships.



Nicholas Sanchez is a fourth-year medical student and the recipient of the Dr. David J. and Deborah Y. Kim Family

Scholarship. A first-generation college student, he plans to pursue a residency in internal medicine after he graduates this May. He described how medical school — though grueling at times — has confirmed his desire to become a doctor.

“During my subinternship last June, I was at the hospital 12 hours a day, 6 days a week, with my day off on a random Wednesday. Even then, this didn’t feel like work to me. The time I had with patients, thinking about the labs and how to apply them to a diagnosis, was a lot of fun. I feel extremely lucky to be going into this field, especially given the fact that no one in my family has ever been a doctor before.”



Amelia Hansen is a first-year medical student and the recipient of the Thomas Corbridge Scholarship Fund to Honor Excellence

in Teaching. She taught middle school math and science at a Chicago public school before deciding to pivot to a career in medicine and public health. During the event, Hansen explained how she and her classmates have participated in lectures and small-group learning remotely during the COVID-19

pandemic, while still getting clinical experience with patients and attending physicians in person.

“My work as a teacher showed me how important systemic issues and root causes are, so I knew when I was starting to study medicine that I wanted to explore populations and policy as well,” she said. “Because of this scholarship I’m able to do that. I enrolled in a dual-degree program and am getting a Master of Public Health. That would not be possible without this really generous scholarship gift.”



Allison Davila, '13 MD, is the former recipient of the Mary Beth Richmond, MD Scholarship. She is currently a sixth-

year resident in cardiothoracic surgery at the University of Pittsburgh. She met her husband, Armando Davila, '13 MD, a plastic surgeon, while both were medical students at Northwestern.

“I came from a fairly impoverished background, and I only applied to a few select medical schools because the cost of applying was so high. One of my key decision-making points in choosing Feinberg over the local state school was the Mary Beth Richmond Scholarship. Now, as graduates, my husband and I are starting to pay back our loans. We both have a large amount of debt, but that scholarship has impacted our monthly payments and how much we’re able to spend on other

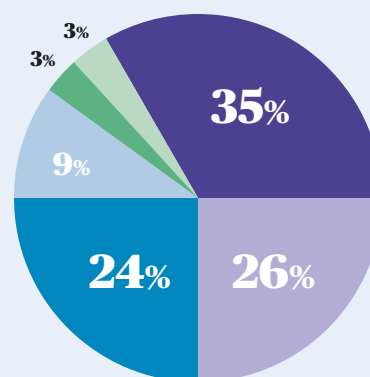
things. In so many ways, the scholarship changed my life — before, during, and after medical school. I’m incredibly grateful for that generosity.”



Gregory Stainer, '76 MD, is an ophthalmologist in San Diego. He and his wife, Ginny, made a gift in 2017 to establish the

Dr. Gregory A. and Mary V. Stainer Scholarship. During the event, he reflected on the many ways medical school has changed since he was a student and shared why it was important to him and Ginny to endow their scholarship.

“Our reason for creating the scholarship was to free the students from financial stress and anxiety. They don’t need that burden — there’s enough to do. I received an undergrad scholarship and I considered myself very blessed at that time, and I wanted to pass that on to other students. I think if we can get our students debt-free when they go out, in the long run it’s going to affect the economy because they’re going to be able to buy housing, develop their practices, and ultimately improve healthcare and see patients faster.”



*According to poll of March 11 event attendees

Donors Share: Why I Give*

- To give back as an alumnus
- To help relieve debt burden
- To invest in the future of medicine
- To create a legacy for my family and me
- To honor my doctor
- Other

ALUMNI (cont.)

D. Eugene Thompson,
'65 MD

Royal Oak, Michigan
FEBRUARY 12, 2021

George D. Wilner, '65 MD
Wall Township, New Jersey

FEBRUARY 19, 2021

Raphael E. I. Onyemelukwe,
'67 MD, '72, '73 GME

Abilene, Texas
JANUARY 26, 2021

Sheila W. Sorkin, '69 MD
Milwaukee, Wisconsin

JANUARY 13, 2021

Joan Amalia Traver, MD,
'78 GME

Sister Bay, Wisconsin
NOVEMBER 7, 2020

Bruce H. Berget, '73 MD
Cape Coral, Florida

JANUARY 25, 2021

George Schmid, '73 MD
Stone Mountain, Georgia

JANUARY 14, 2021

Fred M. S. McConnel, MD,
'74 MS, '74 GME

Atlanta, Georgia
FEBRUARY 12, 2021

John D. Newkirk, II,
'76 MD, PhD, '81 GME

Columbia, South Carolina
FEBRUARY 16, 2021

Richard J. Ohlendorf,
'76 MD

Ottawa, Illinois
FEBRUARY 9, 2021

Stephen E. Reid, Jr.,
'76 MD

Olney, Illinois
DECEMBER 30, 2020

Jay Paul Ginther,
'77 MD

Waterloo, Iowa
FEBRUARY 4, 2021

Alan M. Wagner, MD,
'78 GME

Estero, Florida
JUNE 28, 2020

Harry Davidson Kerr,
MD, '78 GME

Milwaukee, Wisconsin
DECEMBER 27, 2020

Bryan D. Counts, '80 MD
Littleton, Colorado

JANUARY 20, 2021

William James Garehime,
'80 DDS

Centennial, Colorado
SEPTEMBER 21, 2020

Sue M. Causey, '82 BSN
Louisville, Kentucky

SEPTEMBER 19, 2020

Steven Arthur Alstot,
'87 BSPT

Portland, Oregon
NOVEMBER 7, 2020

Linda F. Hayward,
'90 PhD

Gainesville, Florida
OCTOBER 10, 2020

Michael John Morkin,
'91 MD, '95 GME

Reno, Nevada
NOVEMBER 25, 2020

John Edward Sullivan,
Jr., '98 MS, '98 SPEC

Knoxville, Tennessee
NOVEMBER 24, 2020

Russell W. Walker,
'01 CERT

Buford, Georgia
DECEMBER 26, 2020



James F. Eggert, '55 MD

Concord, California

APRIL 18, 1930 – MARCH 3, 2021

An extraordinary alumnus and benefactor, and leader among his peers in the MD Class of 1955, Dr. Eggert touched the lives of many at Northwestern. We remain grateful for his support of future generations of physicians through his championship of and generosity to the Bruno Epstein Class of 1955 Scholarship Fund. His legacy as both an ophthalmologist and a philanthropist continues.

FACULTY



Fred M. Levin, '68 MD

*clinical associate professor
of Psychiatry
Chicago, Illinois
JANUARY 29, 2021*

*Michael Friedman, '67 MD, wrote
the following tribute to Levin, his
lifelong friend:*

Fred Levin and I grew up in the Rogers Park area of Chicago. I lived in an apartment with my parents, grandmother, and sister. He lived in a big, old house on Touhy, which had a secret door leading to the third floor library.

I spent a lot of time at Fred's house, and Fred spent lots of time at mine. We played chess and golf, and Fred was better than me. We attended the same grade schools and high school, all the way through our senior year. When it was time for college, Fred went away to Dartmouth and I went to Northwestern.

← Michael L. Friedman, '67 MD (left),
and Fred M. Levin '68 MD (right).

Fred was a remarkable student. For his last year of undergraduate work, he decided to go to Japan. While in Japan, he met Sachiko, who would become the love of his life. Fred and Sachiko were married and later had two boys, David and Daniel. Back in Chicago, Fred, like me, attended Northwestern's medical school, taking his residency in Psychiatry and Behavioral Sciences, and Neurology. He became a psychoanalyst. I stayed in California after the Navy and did my residency in OB/GYN at UCLA. I built a practice that continues to this day.

Every time I came back to Chicago to visit my mom and sister, I would spend time with Fred and Sachiko. Fred traveled the world, bringing back wonderful stories and hundreds of artifacts. He even built an authentic Japanese tea room within the walls of his remarkable condo. Fred also became mentor to my oldest daughter, Johanna, as she studied for her PhD in Psychology at Northwestern.

When I received an email from our mutual classmate that he had died, I cried. I am writing this for the benefit of his classmates and co-workers who may not have known this kind, funny, and wonderful man as well as I did.



Above: A kitchen delivery facilitated by Chicago Maternity Center.

Left: Dr. Beatrice Tucker (L), talking with a patient.

1884-1968

The Chicago Maternity Center

AN IMPORTANT CHAPTER IN OBSTETRICS

The Chicago Maternity Center — which operated from 1895 until 1973 on the near-west side of Chicago — was the only obstetrical home delivery program in the nation and the brainchild of Joseph DeLee, 1891 MD, chair of the Department of Obstetrics at Northwestern from 1896 until 1929.

An advocate of specialized maternity hospitals, DeLee nevertheless believed home deliveries were the best alternative for a medically underserved neighborhood where families often lacked transportation and faced racial discrimination at area hospitals. Medical students from Northwestern, University of Wisconsin, and

Chicago Medical School spent two-week rotations at the center, living at nearby Booth House between deliveries. The facility trained 13,000 physicians and 14,000 medical students, and delivered 145,000 babies.

More than 100,000 of these births were overseen by Beatrice Tucker, MD, an associate professor of Obstetrics and Gynecology at Northwestern, an early resident of DeLee's program, and director of the center from 1931 on. Largely responsible for the growth of the center, Tucker lived in its basement during the Depression and later moved to the third floor, where she lived until 1971. During its peak years from 1929 until 1941, the center facilitated an average of 360 home deliveries per month. Tucker, who was affiliated with the center until well into her 70s, remained a steadfast advocate for women's health for the rest of her career. Today, Feinberg recognizes distinguished fourth-year students with the Beatrice Tucker, MD, Award in Obstetrics and Gynecology for service and advocacy.

The Maternity Center closed in 1973 to make way for the construction of the University of Illinois Circle Campus. A new women's hospital was on the horizon for Northwestern: Prentice Women's Hospital opened in 1975, offering obstetrical care in a safe and secure hospital environment with all the care and attention to mother and child that had been a hallmark of the Maternity Center.

MORE ONLINE AT MAGAZINE.NM.ORG.

