Northwestern Mecicine

CLEARING PATHWAYS

The new Simpson Querrey Lung Institute for Translational Science ushers in a new era of lung research, education, and patient care.

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First Case of the Day

Evan Edwards, a third-year MD student, scrubbed into the operating room during his surgery clerkship. With guidance from Andrew Stein, MD, assistant professor of otolaryngology, Edwards assisted in a rigid esophagoscopy and balloon dilation of the cricopharyngeus muscle. "Basically, the muscle at the top of the patient's esophagus was too tight, causing him to have trouble swallowing—or dysphagia," Edwards explained. "Hopefully, the patient is able to swallow a little better after this!"

Photo by José Osorio

Northwestern Medicine magazine is published for alumni and friends of Northwestern University Feinberg School of Medicine, Northwestern Memorial HealthCare, and the McGaw Medical Center of Northwestern <u>University.</u>

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Spring 2023

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CLEARING PATHWAYS

Building on Northwestern Medicine's stellar track record of innovation and discovery in respiratory disease, the Simpson Querrey Lung Institute for Translational Science ushers in a new era of lung research, education, and patient care.



PORTRAIT OF A TUMOR

A new DNA methylation profiling tool that ensures brain tumors are accurately diagnosed is available for patients of Northwestern Medicine, providing both peace of mind for patients and a proper course of therapy.



BRIDGING THE GAP

Sara Becker, PhD, leads a new center in the Institute for Public Health and Medicine that puts Northwestern on the leading edge of dissemination and implementation science, with the goal of putting discoveries into practice in clinical settings.



FOCUS ON IMPACT

Farzaneh Sorond, MD, PhD, brings a uniquely winding career path and a passion for taking care of others to her new role as vice dean for faculty affairs. She plans to design programs that foster equity and entrepreneurial opportunities for faculty at all levels and across all tracks.

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ON THE COVER

The new Querrey Lung Institute for Translational Science will advance lung research, education, and patient care. Read all about it on page 16.

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LEADERSHIP

A Tireless Quest for Better



E HAVE A SAYING HERE AT NORTHWESTERN MEDICINE THAT SERVES AS OUR

true north and guides us every day: What makes us better, makes you better.

On its face, it's a message about our relentless commitment to patient care. But there is also a parallel pursuit in our quest for *Better*, a very intentional mission of improvement that weaves together medical education, research, clinical care, and community engagement.

These pillars sustain one another in a virtuous loop: Training better physicians leads to better patient care. Nurturing better investigators leads to better treatments and greater discovery. Fostering collaboration, professional growth, and technological acuity leads to a better institutional culture, where our people are always ahead of the curve.

All of this leads to better health in our communities and beyond.

This is really only possible in an academic health system like ours, where the interplay between student, resident, faculty member, and community is constant and organic; where generations of learners interact with each other and bring their knowledge to patients and families who are often desperate for answers; and where scientific discovery moves seamlessly from bedside to bench and back to bedside in a perpetual motion of betterment for all involved.

There are no happy accidents here (though serendipity certainly has its way of seeping into the lab or clinic sometimes). As a health system, we actively and intentionally pursue innovation that advances this virtuous cycle.

A prime example is the new Simpson Querrey Lung Institute for Translational Science (SQLIFTS), made possible thanks to a generous grant from Northwestern trustee Kimberly Querrey and the Louis Simpson Trust. A key focus of SQLIFTS will be a collaboration between Feinberg investigators and the Northwestern Medicine Canning Thoracic Institute, launched in the fall of 2021, which provides diagnostic and treatment services for all types of respiratory conditions. All patients at the Canning Thoracic Institute will have the opportunity to participate in studies designed to directly impact patient care and promote lung health. (Read more on page 16.)

Similarly, Feinberg's new Center for Dissemination and Implementation Science, an interdisciplinary center within the Institute for Public Health and Medicine (IPHAM), aims to close the gap between public health research and the implementation of findings into clinical settings. We know medical interventions must be timely to be successful and, with the synergistic relationship between our research and clinical enterprises, we can be catalysts for that accelerated change. (Read more on page 20.)

Over the last three years, throughout the COVID-19 pandemic, Northwestern Medicine has reimagined the way that medicine is delivered. We're pioneering work to expand successful organ transplantation, including using "Heart in a Box" technology to make heart transplantation available to more candidates and completing our first lung-liver transplant. In our Mansueto Innovation Institute, launched in 2022, we seek to rapidly find, evaluate, and activate innovative solutions to address the challenges facing our patients and care teams today - and to transform care delivery for the future. We are leveraging technology to identify critical findings in radiology reports and alert physicians to expedite next steps. We deployed Moxi, a robot that helps deliver laboratory specimens and medications, freeing up time for team members to focus on other tasks. And now, we are piloting enhanced digital capabilities, including smart TVs, voice assistants, AI, remote monitoring devices and more, to improve the care environment for our patients and staff.

We find it fitting that this issue closed just after Match Day, when our brilliant, hard-working medical students learned (along with students nationwide) where they had matched for their residency a momentous day we ourselves still remember vividly after all these years.

These newly minted physicians will set off to fulfill a magnificent aspiration aligned with that of our academic health system: be better so the world can be better. With its innumerable rewards and challenges, we can't think of a more rewarding career to embark upon.

With warm regards,

Eric G. Neilson, MD

Vice President for Medical Affairs Lewis Landsberg Dean Northwestern University Feinberg School of Medicine

Howard B. Chrisman, MD

President and Chief Executive Officer Northwestern Memorial HealthCare

PULSE

Northwestern to Co-Lead New Chan Zuckerberg Biohub Chicago

Northwestern professor Shana Kelley named president of biomedical science hub

he Chan Zuckerberg Initiative (CZI) has selected Northwestern University to co-lead its new biomedical research hub in Chicago, which will develop new technologies for studying human tissues with unprecedented resolution. The hub's ultimate goal is to unite the region's best researchers to improve understanding of inflammation, potentially leading to new treatments for the inflammatory conditions that underlie disease.

Northwestern will co-lead the Chan Zuckerberg Biohub Chicago (CZ Biohub Chicago) with the University of Chicago and the University of Illinois, Urbana-Champaign. Shana O. Kelley, PhD, professor of Biochemistry and Molecular Genetics at Feinberg and the Neena Schwartz Professor of Chemistry and Biomedical Engineering, will serve as the hub's president.

CZI selected the Chicago team from a pool of 58 teams after a yearlong, highly competitive

application process for a research initiative explicitly focused on measuring human biology.

"This announcement is a testament to the determination and vision of vice president for Research Milan Mrksich, our Office for Research, and our partner universities that dedicated countless hours to seeing this amazing opportunity come to fruition," said Michael Schill, president of Northwestern. "With Professor Shana Kelley as president, I am confident CZ Biohub Chicago will accomplish its scientific goals to gain new insights into inflammation, making inflammation-driven diseases more preventable and treatable."

"We're thrilled to be part of the Chan Zuckerberg Biohub Network, which will galvanize multidisciplinary research and drive more progress than any one of these institutions could have achieved on its own," Kelley said. "The scientific challenge we're exploring — to develop new tools to better measure tissues



"We're thrilled to be part of the Chan Zuckerberg Biohub Network, which will galvanize multidisciplinary research and drive more progress than

any one of these institutions could have achieved on its own."



Shana O. Kelley, PhD

and gain insights into inflammation —has large engineering challenges to surmount, and is wildly, but not impossibly, ambitious — and can only be solved by interdisciplinary collaboration."

The Chicago site is the first expansion of the CZ Biohub Network, which launched in 2021. The Network builds off the successful model of the CZ Biohub in San Francisco, launched in 2016. In a yet-to-be-determined location, the Chicago site will include state-ofthe-art laboratories, meeting spaces, faculty in residence, a biofoundry, and other sophisticated instrumentation.

"This institute will embark on science to embed miniaturized sensors into tissues that will allow us to understand how healthy and diseased tissues function in unprecedented detail," said CZI co-founder and co-CEO Priscilla Chan. "This might feel like science fiction today, but we think it's realistic to achieve huge progress in the next 10 years." PULSE

Match Day 2023

ears of anticipation erupted in a flurry of torn envelopes on March 17 as fourth-year Feinberg medical students found out about their residency matches at this year's Match Day celebration.

"Honestly, it's kind of surreal. It's such an incredible moment that is the culmination of what we've been working towards," said Precious Akanyirige, who matched into anesthesiology at McGaw Medical Center of Northwestern University. "Knowing that we have that next step, that we know where we're going to start our careers as physicians is so exciting. Especially to be able to find that out and have our family, friends and mentors surrounding us is just incredible."

"Being able to be involved with students from the start, from the moment they walk in the door here at Feinberg up until the point in time where they are ready to become doctors is extraordinary," said Susan Goldsmith, MD, '08 GME, associate dean for Student Affairs and associate professor of Obstetrics and Gynecology in the Division of General Obstetrics and Gynecology. "We watch them move from individuals who have some sense, perhaps, of what they want to do and the type of physician they want to be, and as they gain the knowledge, skills, behaviors and the focus of what it takes to be a physician, they learn more about themselves. They're able to make a decision that really resonates with who they are and what they can bring to the table."



This year's match class was one of the best yet, said Marianne Green, MD, the Raymond H. Curry, MD, Professor of Medical Education and vice dean for Education, who addressed students and their families before the envelope opening.

"When you think about medicine and how you advance and how you develop your career, so much is about the people," Green said, addressing the medical students. "You've gotten through a lot together and you will continue to rely on each other and reach out to each other in ways you may not expect. I hope you enjoy these last few months of being together and seeing as much of each other as possible. You may count on each other in the future."

This year's class saw 158 students match in 21 different ACGME-certified residency specialties, with 67 percent of Feinberg's matching students heading to programs affiliated with a top 25 U.S. medical school. Some of the most popular specialties students matched into included internal medicine, pediatrics, obstetrics and gynecology, and anesthesiology.

"It's a super exciting day to be around my classmates with everyone going through the same thing," said Sam Rosenberg, who matched into orthopaedic surgery at the University of Michigan. "Thinking back four years ago, when we were all meeting each other, and now seeing where everyone is splitting off and doing separate things and really becoming themselves is really cool."

Match Day marks the beginning of the end of medical school for students at Feinberg, many of whom will leave Chicago for training across the country. Other students will continue their training nearby, including Mia DiCara, who matched into pediatrics at Ann & Robert H. Lurie Children's Hospital of Chicago.

"We've done so much, we've worked so hard and it's incredible to be here at this moment and to find our passions and follow that into residency," said DiCara. "This day means so much to me. I think it really hit me last night that I've worked so hard for this, and this is finally the culmination of everything I've hoped and dreamed for myself."

Annika Divakar, who matched into general surgery at Boston Medical Center, said she went into Match Day nervous but ultimately confident, knowing that Feinberg had prepared her to get the best result possible. "Today is the best day of my life that I can say so far," Divakar said. "I'm just so excited to be a surgeon in training. This is the end of a journey but also the beginning of a journey as well." "This day means so much to me. I think it really hit me last night that I've worked so hard for this, and this is finally the culmination of everything I've hoped and dreamed for myself." MIA DICARA

<image>



PULSE

RESEARCH BRIEFS

SCIENTIFIC ADVANCES

POTENTIAL THERAPEUTIC APPROACH FOR ADVANCED PROSTATE CANCER



A new study published in *Molecular Cell* has discovered that elevated PALI1 in advanced prostate tumors mediates crosstalk between two primary epigenetic silencing mechanisms. This suggests that dual epigenetic inhibition may be an effective therapeutic strategy.

"Our discoveries of PALI1's critical role in bridging and exploiting two major epigenetic silencing machineries for gene repression and tumor promotion strongly advocate combinatorial use of their respective pharmacological inhibitors," said Jindan Yu, PhD, professor of Medicine in the Division of Hematology and Oncology and senior author of the study.

This work was supported in part by the American Cancer Society grant IRG-18-163-24, National Institutes of Health grants P20GM121327 and R03CA256230, prostate SPORE grants 5P50CA180995, R50CA211271, R01CA172384 and R01CA227918, and Department of Defense grants PC160328 and PC160856.

DISEASE DISCOVERIES

New Immune Culprit Discovered in Alzheimer's Disease



As people age, their cerebrospinal fluid (CSF) immune system becomes dysregulated, according to a new Northwestern

Medicine study published in the journal *Cell*. The study also found that in people with cognitive impairment, such as Alzheimer's disease, the CSF immune system is drastically different from healthy individuals.

The findings provide a new clue to the process of neurodegeneration, said study lead author David Gate, PhD, assistant professor in the Ken and Ruth Davee Department of Neurology.

"We now have a glimpse into the brain's immune system with healthy aging and neurodegeneration," Gate said. "This immune reservoir could potentially be used to treat inflammation of the brain or be used as a diagnostic to determine the level of brain inflammation in individuals with dementia." To analyze the CSF, Gate's team at Northwestern used single-cell RNA sequencing. They profiled 59 CSF immune systems from a spectrum of ages by taking CSF from participants' spines and isolating their immune cells.

The scientists observed genetic changes in the CSF immune cells in older healthy individuals that made the cells appear more activated and inflamed. "They appear to be a little angry," Gate said. "We think this might make these cells less functional, resulting in dysregulation of the brain's immune system."



THE STUDY ALSO FOUND THAT IN PEOPLE WITH COGNITIVE IMPAIRMENT, SUCH AS ALZHEIMER'S DISEASE, THE CSF IMMUNE SYSTEM IS DRASTICALLY DIFFERENT FROM HEALTHY INDIVIDUALS.

This work was in part supported by a National Institute on Aging (NIA) grant A R01AG078713-01, a 10x Genomics Early Career Investigator Award, a National Institute of Neurologic Disease and Stroke K99/R00 Pathway to Independence Award NS112458-01A1, NIA R01AG045034 05, the NIA funded Stanford ADRC P50AG047366, and P30AG066515, R01AG048076, all of the National Institutes of Health.

Other support was from UC San Diego Shiley-Marcos grant, a pilot project through the Northwestern University ADRC, on Irene Diamond Fund/AFAR Postdoctoral Transition Award in Aging, the Cure Alzheimer's Fund, the Alzheimer's Association NIA ROIAG04503405, the NIA funded Stanford ADRC P50AG047366 and P30AG066515, ROIAG048076.



DISEASE DISCOVERIES

Novel Therapeutic Targets Discovered for Triple-Negative Breast Cancer



Targeting cellular posttranscription mechanisms in the CD73 ectoenzyme may promote anti-tumor immunity and slow cancer progression in

triple-negative breast cancer, according to a study published in Science Advances.

The study, co-led by Bin Zhang, MD, PhD, professor of Medicine in the Division of Hematology and Oncology and of Microbiology-Immunology, suggests a new immunotherapy strategy for patients who currently lack effective treatment options.

"For triple-negative breast cancer, you want to consider targeting a major immunosuppressive mechanism, and targeting CD73 has now become an emerging option in addition to other conventional checkpoint blockades," said Zhang, who is also co-leader of the Tumor, Environment & Metastasis

"TARGETING CD73 HAS NOW BECOME AN EMERGING OPTION IN ADDITION TO OTHER CONVENTIONAL CHECKPOINT BLOCKADES."

(TEAM) Program at the Robert H. Lurie Comprehensive Cancer Center of Northwestern University.

Sigi Chen, PhD, former research assistant professor of Medicine in the Division of Hematology and Oncology, was co-lead author of the study. William Gradishar, MD, the Betsy Bramsen Professor of Breast Oncology and chief of Hematology and Oncology in the Department of Medicine, was a co-author of the study.

This work was supported by National Institutes of Health grants R01CA258857, R01CA258765, R01CA250110, R01CA202948 and the Northwestern University Friends of Prentice Award SP0052611.

DISEASE DISCOVERIES

UNDERSTANDING HOW **CHILDHOOD BRAIN TUMORS DEVELOP**



A team of scientists has identified a new cell type implicated in the development of the most common type of malignant childhood brain tumor, according to a study published in Nature.

Two proteins in particular, HNRNPH1 and SOX11, appeared to influence the production of these transitional progenitor cells and promote the expression of other cancer-causing genes, according to the study.

The discoveries will aid in understanding the origin and development of medulloblastomas, said Feng Yue, PhD, the Duane and Susan Burnham Professor of Molecular Medicine and a co-author of the study.

"Through single-cell multiomic analysis and computational approaches, this study identified the regulatory network and the key players for the most lethal subtype of the medulloblastomas," said Yue, who is also a professor of Biochemistry and Molecular Genetics and of Pathology as well as director of the Center for Cancer Genomics at the Robert H. Lurie Comprehensive Cancer Center of Northwestern University.

Additionally, the genes identified in the study could serve as future targets for treatment.

The study, which was a collaborative effort between multiple hospitals and universities was supported in part by grants from the Cincinnati Research Foundation ARC award, DancerFree Kids Foundation, Pray-Hope-Believe Foundation, TeamConnor Childhood Dancer Foundation, and the Cure Starts Now Foundation.



PULSE *Research Briefs*

CLINICAL BREAKTHROUGHS



GENDER-AFFIRMING HORMONES IMPROVE MENTAL HEALTH IN TRANSGENDER AND NONBINARY YOUTH



Transgender and nonbinary youth experienced significant improvement in appearance congruence (or the degree to

which physical characteristics align with gender) and sustained improvements in depression and anxiety over two years after starting treatment with gender-affirming hormones, according to a multicenter U.S. study funded by the National Institutes of Health (NIH), published in the *New England Journal of Medicine*.

"Our results provide robust scientific evidence that improved appearance congruence secondary to hormone treatment is strongly linked to better mental health outcomes in transgender and nonbinary youth," said lead author Diane Chen, PhD, associate professor of Psychiatry and Behavioral Sciences in the Division of Child and Adolescent Psychology, and a pediatric psychologist with the Gender and Sex Development Program at Ann & Robert H. Lurie Children's Hospital of Chicago. "This is critical, given that transgender youth experience more depression and anxiety, and are at a higher risk for suicidality than cisgender youth."

This work was supported by the Eunice Kennedy Shriver National Institute of Child Health and Human Development (R01 HD082554).

DISEASE DISCOVERIES

Investigating the Connection Between Steps and Heart Disease Risk



The recommendation to reach 10,000 steps a day has long been the gold standard for staying fit and improving heart

health, but new research suggests that it might not be the magic number after all.

In a new study published in *Circulation*, Northwestern Medicine investigators conducted a meta-analysis of eight prospective studies that previously tracked steps per day and risk of cardiovascular disease in adults. They found that older adults who took 6,000 to 9,000 steps per day had a 40 to 50 percent lower risk of developing new-onset cardiovascular disease when compared to adults over 60 who took 2,000 steps per day. The lowered risk was present regardless of the speed of the steps, meaning that older adults who can't run can still reap the benefits by simply walking more.

This is encouraging news for older adults who might not be physically able to reach 10,000 steps a day, said Mercedes Carnethon, PhD, vice chair and the Mary Harris Thompson Professor of Preventive Medicine and a co-author of the study.

"We want to set evidence-based fitness goals for people that are meaningful, but not so overwhelming that upon hearing the goal they give up completely," Carnethon said.

The study was supported by an Intergovernmental Personnel Act Agreement through the Centers for Disease Control and Prevention. Additional support was provided by the National Institutes of Health, National Heart, Lung, and Blod Institute, and Department of Health and Human Services grants HISN2682017000041, HI-KN2882017000051, HISN2682017000031, HISN2682017000041 and HI-KN2882017000051.



SCIENTIFIC ADVANCES

NOVEL MECHANISMS REGULATE INFLAMMATORY SKIN DISEASES



Investigators have identified a novel role for an intracellular trafficking pathway in regulating epidermal

developmental processes, which could serve as a future therapeutic target for inflammatory skin diseases, according to a Northwestern Medicine study published in *Developmental Cell*.

The epidermis, the skin's outermost layer, is a regenerating multi-layered tissue that relies on the proper sorting of basal cells to replenish the upper layers of the tissue for skin development and maintenance. However, the intracellular trafficking mechanisms that regulate this process have remained elusive.

"Changes in protein trafficking have been observed in a number of diseases, but the importance of specific trafficking mechanisms in the pathogenesis of epidermal diseases is not well understood," said Kathleen Green, PhD, the Joseph L. Mayberry, Sr., Professor of Pathology and Toxicology and associate director for Basic Science Research at the Robert H. Lurie Comprehensive Cancer Center of Northwestern University and co-senior author of the study.

This work was supported by the National Institute of Arthritis and Musculoskeletal and Skin Diseases grants R01 AR041836, R01 AR043380, F31 AR076188, R01 AR075087 and T32 AR060710, National Cancer Institute grants R01 CA228196 and T32 CA009560, and partial support from JL. Mayberry Endowment.



"THE IMPORTANCE OF SPECIFIC TRAFFICKING MECHANISMS IN THE PATHOGENESIS OF EPIDERMAL DISEASES IS NOT WELL UNDERSTOOD."

DISEASE DISCOVERIES

Mature 'Lab Grown' Neurons Hold Promise for Neurodegenerative Disease



Northwestern scientists have created the first highly mature neurons from human induced pluripotent stem cells (iPSCs),

according to findings published in *Cell Stem Cell*. This feat opens new opportunities for medical research and potential transplantation therapies for neurodegenerative diseases and traumatic injuries.

To create the mature neurons, the team used "dancing molecules," a breakthrough technique introduced last year by Samuel Stupp, PhD, the Board of Trustees Professor of Materials Science and Engineering, Chemistry, Medicine, and Biomedical Engineering. The team first differentiated human iPSCs into motor and cortical neurons and then placed them onto coatings of synthetic nanofibers containing the rapidly moving dancing molecules.

Not only were the enriched neurons more mature, but they also demonstrated enhanced signaling capabilities and greater branching



Fluorescent images of human neurons (stained with red, green and blue) growing on coatings with fast-moving molecules (left) or conventional laminin (right) for 72 hours. Neurons attached and spread homogenously on the highly mobile coating but remained clumped together on the laminin coating.

ability, which is required for neurons to make synaptic contact with one another.

"You need a mature neuron in order for it to be useful in a therapeutic sense," said Stupp, co-corresponding author of the study. "Otherwise, it is like asking a baby to carry out a function that requires an adult human being."

With further development, the scientists believe these mature neurons could be transplanted into patients as a promising therapy for spinal cord injuries as well as neurodegenerative diseases, including amyotrophic lateral sclerosis (ALS), Parkinson's disease, Alzheimer's disease or multiple sclerosis. Evangelos Kiskinis, PhD, assistant professor of Neurology in the Division of Neuromuscular Disease and of Neuroscience, was also co-corresponding author of the study.

The study was supported by the Center for Regenerative Nanomedicine at the Simpson Querrey Institute for BioNanotechnology, the National Institutes of Health National Institute on Neurological Disorders and Stroke, National Institute on Aging (award number ROINSI04219), National Institute of Biomedical Imaging and Bioengineers (award number SR01EB003806), National Institute of Arthritis and Musculoskelated and Skin Diseases (award number ROIARO727), the LeS Turner ALS Foundation, the New York Stem Cell Foundation, U.S. Department of Energy (award number SC0001329) and the Paralyzed Veterans of America Research Foundation (award number PV4JZRF0008).

Two New Centers Launched

CENTER FOR PSYCHIATRIC NEUROSCIENCE



einberg has established the Center for Psychiatric Neuroscience, a collaborative hub created to unite interdisciplinary scientists to understand neural mechanisms underlying mental illness, elucidate mechanisms of psychotropic drug action, and develop novel therapeutics.

Sachin Patel, MD, PhD, chair of the Department of Psychiatry and Behavioral Sciences, and the Lizzie Gilman Professor of Psychiatry and Behavioral Sciences, will serve as director of the center.

"Cultivating a Department of Psychiatry integrated with robust translational neuroscience research is extremely important for the future of our field," Patel said. "This is a unique opportunity to synergize with the existing neuroscience infrastructure including the Departments of Neuroscience, Pharmacology, Neurobiology and other areas to establish a center that's really at the intersection between mental health and neuroscience."

In addition to serving as a platform for recruiting new faculty to Feinberg, the center will be a focal point for current Northwestern faculty with an interest in utilizing neuroscience approaches to better understand pathophysiological mechanisms of mental illness.

CENTER FOR COLLABORATIVE AI IN HEALTHCARE

he Institute for Augmented Intelligence in Medicine (I.AIM) has established the Center for Collaborative AI in Healthcare, with the mission of advancing artificial intelligence (AI) science, engineering, and translation throughout healthcare specialties and creating a positive impact on precision medicine.

The new center will be led by Yuan Luo, PhD, associate professor of Preventive Medicine, of Pediatrics and at the McCormick School of Engineering, and chief AI officer at the Northwestern University Clinical and Translational Sciences (NUCATS) Institute and I.AIM.

"We aim to provide fertile ground for cross-pollinating next-generation clinicians

and scientists to bring AI in healthcare to fruition," Luo said.

The center will serve as a university-wide hub for research, strategic infrastructure, and training in collaborative AI.

"We hope to democratize access to infrastructure and training resources and engage new people previously facing AI and machine learning barriers, whether they are clinicians, hospital administrators, trainees, and basic scientists both inside and outside the medical school," Luo said.

Luo is also a member of the Robert H. Lurie Comprehensive Cancer Center of Northwestern University.



Medical School Faculty Named AAAS Fellows

The following Northwestern University professors have been selected as 2022 fellows of the American Association for the Advancement of Science (AAAS), the largest general scientific society in the world. The 2022 class of AAAS Fellows includes 508 scientists, engineers, and innovators spanning 24 scientific disciplines, recognized for their scientifically and socially distinguished achievements.



Luisa Iruela-Arispe, PhD

Luisa Iruela-Arispe, PhD, is chair of Cell and Developmental Biology and the Stephen Walter Ranson Professor of Cell Biology.

Her research focuses on signaling pathways that regulate vascular morphogenesis and vascular dysfunction in diseases. She has

published more than 200 peer-reviewed articles and is recognized as a leader in the field of vascular biology.

"Our research focus is to understand how blood vessels grow and regenerate. We hope that this fundamental information will allow us to control vascular responses in pathological conditions," Iruela-Arispe said.

Iruela-Arispe is also an enthusiastic mentor, having trained 21 PhD students and 24 postdoctoral fellows in her laboratory.



Murali Prakriya, PhD

Murali Prakriya, PhD, is the Magerstadt Professor of Pharmacology and of Medicine in the Division of Allergy and Immunology.

Research in his laboratory is focused on the molecular and cellular mechanisms of intracellular calcium (Ca2+) signaling, especially in the brain and lung tissues.

Ca2+ is a ubiquitous intracellular signaling messenger, mediating essential functions such as gene expression, neurotransmitter release and muscle contraction.

In earlier work, Prakriya and his collaborators helped identify a novel gene which encodes calcium release-activated ion channels. Now, Prakriya and his laboratory are building upon that discovery.

"We've found these channels are involved in cognition, learning, memory and drive a variety of pathologies including neuropathic pain and lung inflammation," Prakriya said.



Linda Teplin, PhD

Linda Teplin, PhD, is vice chair for research in the Department of Psychiatry and Behavioral Sciences, the Owen L. Coon Professor of Psychiatry and Behavioral Sciences, and professor of Medicine in the Division of Infectious Diseases. Teplin has conducted the first

large-scale epidemiologic studies of psychiatric disorders in jails, prisons, and juvenile detention centers, examining both women and men.

In the mid-nineties, she developed the Northwestern Juvenile Project, still the only large-scale longitudinal study of the health needs and outcomes of juvenile detainees. In this study, her team tracked and interviewed 1,829 youth who were initially arrested and detained between 1995 and 1998. The study is still ongoing.

Now, Teplin and her collaborators are conducting Next Generation, a follow-up to the Northwestern Juvenile Project. For the study, investigators will interview the children of the original participants. Once complete, it will be the first intergenerational prospective study of a correctional population.



Teri Odom, PhD

Teri Odom, PhD, is chair of the Department of Chemistry at Northwestern University Weinberg College of Arts and Sciences.

Odom's laboratory focuses on designing structured nanoscale materials with exceptional properties.

Odom and her collaborators have made precious metals more precious by

tuning the size and shape of these metals at the nanoscale, and have transformed ordinary materials into extraordinary ones by controlling their architectures over multiple length scales.

Her lab's unique materials have applications in nanomedicine, nano-lasing, photovoltaics, wetting, and imaging.

IPHAM Forum Celebrates Long History of Public Health at Northwestern

he Institute for Public Health and Medicine (IPHAM) hosted its annual Population Health Forum, which celebrated the 10-year anniversary of the institute and brought together hundreds of public health researchers, trainees, and community partners from the Chicago area for a speaker and a poster session.

"When I talk about IPHAM and when I talk about things that have happened here in the past 10 years, it's really not about a place called the Institute for Public Health and Medicine," said Ronald Ackermann, MD, MPH, senior associate dean for public health and director of IPHAM, in his opening remarks. "It's not about a person. It's not about a few people. It's really about the collective efforts of almost 500 faculty and hundreds of staff, distributed across 15 departments and six schools, as well as a tremendous number of stakeholders who engage with us daily in efforts to try to elevate the visibility and the impact of public health and public health science from a medical



Third-year MD student Evan Edwards presenting his work.

school of all places. And I think that's truly exceptional."

The keynote, titled "Healing and Justice through the Lens of Racial Trauma and Health Equity," was delivered by John A. Rich, MD, the inaugural director of RUSH BMO Institute for Health Equity. His moving presentation highlighted the challenges that young black men face and identified trauma as a contributing factor.

Among the many participants in the poster session, third-year MD student Evan Edwards

"It's not about a person. It's not about a few people. It's really about the collective efforts of almost 500 faculty and hundreds of staff, distributed across 15 departments and 6 schools, as well as a tremendous number of stakeholders." RONALD ACKERMANN, MD, MPH presented his work to promote safe gun storage practice. Along with fellow medical students, he partnered with the Chicago Police Department to obtain firearm locks and they have been distributing them to their patients who screen positive for unsafe storage practices.

"During the poster session, it was great to chat with faculty, other presenters, and visiting public health experts about the difference we were making for our primary care patients," Edwards said.

IPHAM'S IMPACT

\$213 Million in sponsored research in 2022

\$872 Million

in research funding received by IPHAM members in the last 5 years

> **16 Centers** grew from 9 centers at inception

500+ community stakeholders

Poised for Discovery

Feinberg early-career scientists are recognized for their promising work



Ann Kennedy, PhD assistant professor of Neuroscience

Award: 2023 Sloan Research Fellowship from the Alfred P. Sloan Foundation, for her creativity, innovation and research accomplishments; and the 2022 Eppendorf and *Science* Prize for Neurobiology, awarded annually to one scientist 35 years old or younger for outstanding neurobiological research based on methods of molecular and cell biology conducted in the past three years.

Research interest: How survival behaviors such as aggression are regulated by the brain and provide new insights into the mechanisms that set motivational states in mice.

"We had this question: 'What makes us behave differently when we're angry or hungry? How does the brain encode these internal motivational states?" Kennedy said. "What we found was if you look at activity of hypothalamic neurons, you can pull out this signal that gradually ramps up over the course of an aggressive counter and is correlated with animals' overall level of aggression. It's not a decision to attack, but it's like this scalable knob of how 'angry' the mouse is, that gets cranked up over the course of an interaction." Arthur Prindle, PhD assistant professor of Biochemistry and Molecular Genetics

Award: Faculty Early Career Development Program (CAREER) award from the National Science Foundation that supports early-career development of individuals who exemplify the role of teacher-scholar through outstanding research, excellent education, and the integration of education and research.

Research interest: Using synthetic biology, quantitative microscopy, and microfluidics to directly investigate the molecular mechanisms behind how cells communicate across broad spatial and temporal scales. His goal is to apply these principles to develop new synthetic biology approaches to biomedical problems through microbiome engineering.

The monetary award will fund a project that uses synthetic microbial communities to systematically construct mixed biofilms that can be quantified with single-cell resolution microfluidics. Learnings could be applied to overcoming biofilm antibiotic resistance, developing in vivo microbial diagnostics using synthetic biology, and more.

"This award will allow us to build essential knowledge for how microbial cell-to-cell interactions give rise to higher-order community behavior, which is a key roadblock in the path towards next-generation microbiome-based products and therapies," he said.

LIEBER RECEIVES PRESTIGIOUS VA AWARD

Richard Lieber, PhD, MBA, professor of Physical Medicine and Rehabilitation and of Neuroscience, has received the 2023 Paul B. Magnuson Award from the U.S. Department of Veterans Affairs (VA) for Outstanding Achievement in Rehabilitation Research and Development, the highest honor for VA rehabilitation investigators.

Lieber, who is also chief scientific officer and senior vice president of Shirley Ryan Ability Lab and a senior research career scientist at the Edward Hines, Jr., VA Hospital in Hines, Ill., was recognized for his commitment to returning functional capacity, mobility and quality of life to veterans with physical disabilities.

"What a thrill to receive an award named for the founder of the Shirley Ryan AbilityLab (formerly the Rehabilitation Institute of Chicago) and also the former chair of Orthopaedic Surgery at Northwestern. It feels like it's come full circle. Paul Magnuson was an amazing innovator, and I am proud to be associated with his name," Lieber said.



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MEDIA SPOTLIGHT

The New York Times

The Life-Changing Magic of a Urologist

Urologists often deal with health problems that arise from urinating and sex. "There's the serious illness stuff, like cancers," said Nelson Bennett Jr., MD, a professor of Urology who specializes in male sexual function. "But there's a big chunk of our practice that is basically quality of life. I tell my patients that no one dies of not having an erection, but they're still suffering." According to Bennett, here are treatment options for almost every erectile problem, including oral medications, injectable medications, surgery and cognitive behavioral therapy. Although it can be tempting to order medications such as Viagra online, a practice that he found, in a 2021 study, is dramatically increasing, he said there are several reasons to see a specialist instead. "We can actually begin to figure out why you're having the problem, as opposed to just taking medication to cover it up," he said.

The Washington Post

Can Tech Help You Reset Your Internal Clock?

Devices might be able to reset circadian clocks the right way, but scientists say users should take all promises with a grain of salt. Circadian rhythms guide the body through the 24-hour cycle. They tell us when it's time to eat and sleep, and when it's time to get up and start a new day. Ideally, humans get enough blue light from going outdoors, but on a dark day, especially when you're stuck indoors, tech could help make up for a blue light gap, says Phyllis Zee, MD, PhD, director of Northwestern University's Center for Circadian and Sleep Medicine and professor of neurology at Northwestern University Feinberg School of Medicine. She recommends circadian lighting systems, in which many smart lights are installed throughout a home.



The New York Times

How a Consistent Sleep Schedule Might Protect Your Heart

There are a few tried and true pieces of advice that sleep doctors always give for battling insomnia: Watch those alcoholic drinks at dinner, cut the afternoon coffee, stop scrolling before bed. And please, they beg: Keep your sleep schedule consistent. Flip-flopping between wake-up times wreaks havoc on our internal body clocks. Sleep experts refer to this as "social jet lag," said Sabra Abbott, MD, PhD, associate professor of Neurology in the Divisions of Sleep Medicine and Hospital Neurology. Similar to changing time zones, heading to bed at vastly different types from day to night may throw off your circadian rhythm. Light helps regulate our circadian rhythm, Abbott said, signaling to our bodies that it's time to wake up. Take even a brief walk, if the weather allows, to expose yourself to sunlight around the same time each day, she recommended.

n p r

Doctors Say Bystanders Can Do a Lot to Help Someone Who Has Stopped Breathing

Damar Hamlin's remarkable recovery may not have been possible if things had gone differently in the moments after he collapsed. Following his medical rescue, the American Heart Association says it's seen a huge surge in page views on how to deliver hands-only CPR. And doctors say people who happen to be nearby can be tremendous help to someone who has collapsed and stopped breathing. Rod Passman, MD, professor of Cardiology and of Preventive Medicine, said bystanders can absolutely make a difference. "This is a wake-up call and shows you how critical it is that people learn CPR. Intervention, even by a bystander, could save a life," says Passman. Passman said CPR is "a way of supporting the organs when your heart pump is no longer working and you're no longer breathing to take in oxygen."

FACULTY AWARDS & HONORS













Daniel Martin Watterson, PhD,

the John G. Searle Professor of Molecular Biology and Biochemistry in the Department of Pharmacology, has been named a 2022 fellow of the National Academy of Inventors.

Amy Paller, MD, chair

of the Department of Dermatology and Walter J. Hamlin Professor of Dermatology, received the inaugural Society for Pediatric Dermatology's Hall of Fame Award.

Young Yoo, PhD,

research assistant professor of Urology, was awarded the 2022 John Miller-PCF Young Investigator Award by the Prostate Cancer Foundation (PCF). PCF Young Investigator Awards are intended to identify a cohort of future research leaders who will keep the field of prostate cancer research vibrant with new ideas and offer career and project support for early-career physicians and scientists

who are committed to advancing the prostate cancer field.

Brian Mustanski,

PhD, professor of Medical Social Sciences, of Medicine in the Division of Infectious Diseases, and of Psychiatry and Behavioral Sciences, has been named director of the Third Coast Center for AIDS Research (CFAR). Mustanski has helped lead CFAR as co-director since it was established in 2015. 🖸 2

Ali Shilatifard,

PhD, chair of the Department of Biochemistry and Molecular Genetics and the Robert Francis Furchgott Professor of Biochemistry and Molecular Genetics and Pediatrics, was named a National Cancer Institute (NCI) 2022 Outstanding Investigator. NCI's Outstanding Investigator Award supports accomplished leaders in cancer research, who are providing significant contributions toward understanding

cancer and developing applications that may lead to a breakthrough in biomedical, behavioral, or clinical cancer research. (© 3

Susan Quaggin,

MD, the chief and Charles Horace Mayo Professor of Nephrology and Hypertension in the Department of Medicine, has been presented one of the American Heart Association's 2022 Distinguished Scientist awards, which honor members who have significantly advanced the understanding of cardiovascular, stroke or brain health. 🔯 4

Dimitri Krainc, MD,

PhD, chair and Aaron Montgomery Ward Professor of Neurology, has been elected to the National Academy of Medicine (NAM) for his groundbreaking discoveries in the area of neurodegenerative disorders. NAM is one of three academies that make up the National Academies of Sciences, Engineering and Medicine that serve as

adviser for the nation and the international community. 10 5

Sheehan Fisher, PhD,

associate professor of Psychiatry and Behavioral Sciences in the Division of Psychology, was named in Crain's Chicago Business's 2022 Notable Black Leaders and Executives, recognizing his research and clinical work in perinatal mental health and psychology training as well as other work in diverse communities. 🔟 6

Leah Tatebe, MD,

associate professor of Surgery in the Division of Trauma and Surgical Critical Care, has been named to the Association of Women Surgeons 2022 "40 Under 40" list.

Katherine Wisner,

MD, the Norman and Helen Asher Professor of Psychiatry and Behavioral Sciences in the Division of General Psychiatry and of Obstetrics and Gynecology as well as director of the Asher Center for the Study and Treatment of Depressive Disorders, was named to the Forbes "50 Over 50 Impact" list. © 7

Twelve faculty with appointments at Feinberg were named to the 2022 "Highly Cited Researchers" list, published by Clarivate Analytics:

David Cella, PhD,

professor of Medical Social Sciences

Navdeep S. Chandel,

PhD, David W. Cugell, MD, Professor of Medicine in the Division of Pulmonary and Critical Care

Mark Hersam, PhD,

professor of Medicine in the Division of Pulmonary and Critical Care

Shana Kelley,

PhD, professor of Biochemistry and Molecular Genetics

Donald Lloyd-

Jones, MD, ScM, chair and Eileen M. Foell Professor of Preventive Medicine

Chad Mirkin, PhD, professor of Medicine in the Division of Hematology and

Brian Mustanski, PhD.

professor of Medical Social Sciences

Amy Paller, MD,

Oncology

chair and Walter J. Hamlin Professor of Dermatology

John Rogers, PhD,

Louis Simpson and Kimberly Querrey Professor of Materials Science and Engineering, Biomedical Engineering and Neurological Surgery

Sanjiv Shah, MD, Neil

J. Stone, MD, Professor of Medicine in the Division of Cardiology

Richard Wunderink,

MD, professor of Medicine in the Division of Pulmonary and Critical Care

Clyde Yancy, MD,

MSc, chief and Magerstadt Professor of Cardiology in the Department of Medicine Building on Northwestern Medicine's stellar track record of innovation and discovery in respiratory disease, the Simpson Querrey Lung Institute for Translational Science ushers in a new era of lung research, education, and patient care.

Written by Gina Bazer



n the last few years, advancements in the study and treatment of lung disease at Northwestern Medicine have been extraordinary. With the onset of the pandemic, Feinberg scientists made discoveries at breakneck speed — from the first examination of cells in the lungs of patients with COVID-19 pneumonia, published in *Nature*, to the first-ever lung transplant performed on a patient with COVID-19, conducted at Northwestern Memorial Hospital and documented in *Science Translational Medicine*. The team's clinical findings with more than 40 of these patients has also been published in *JAMA*.

In addition to COVID-19, the Division of Pulmonary and Critical Care has been steadily chipping away at the many other obstacles that plague lung health and treatment. One such pursuit, described in *Proceedings of the National Academy of the Sciences*, identified lung epithelial cells with stem-cell-like qualities that could provide promising therapeutic pathways for pulmonary fibrosis. In another study, published in the *Journal of Clinical Investigation*, Feinberg investigators uncovered a protein that acts as a "molecular brake" that could reduce lung transplant failure, which, lamentably, happens in almost half of recipients.

Meanwhile, new studies are about to launch. Last fall, a group of Northwestern Medicine investigators received a \$14 million grant from the National Institutes of Health's National Heart, Lung, and Blood Institute to study viral pneumonia.

In short, the momentum in the division is remarkable, and the progress exemplifies the transformative power of translational science — which is made possible when patient care is seamlessly integrated with research, according to Scott Budinger, MD, chief of Pulmonary and Critical Care in the Department of Medicine.

"Every patient coming into our medical center should have an opportunity to participate in research that will advance knowledge about the disease from which they suffer," says Budinger, who is also the Ernest S. Bazley Professor of Airway Diseases.

To fully realize the immense potential of this bedside-to-bench-to-bedside approach, Feinberg has launched the new Simpson Querrey Lung Institute for Translational Science (SQLIFTS), made possible thanks to a generous grant from Northwestern trustee Kimberly Querrey and the Louis Simpson Trust.

Budinger will serve as executive director of the institute, which is made up of four programs: the SQLIFTS Translational Innovation Program, the SQLIFTS Technology Program, the SQLIFTS Discovery Program, and the SQLIFTS Health Education Program.

IMPROVING QUALITY OF LIFE

The launch of the institute happens at a critical time, as the data about lung disease is alarming. Even before the pandemic, pneumonia was the most common cause of death from an infectious disease worldwide. Briefly eclipsed by COVID-19, chronic obstructive pulmonary disease (COPD) will likely again become the third leading cause of death in the United States. And deaths from lung cancer outnumber all other forms of cancer combined. Just as concerning are the many trickle-down effects of lung disease on other organs.

"The impact of lung disease on quality of life is profound," Budinger says. "It accelerates dementia, skeletal muscle dysfunction, renal failure, and cardiovascular disease. But what's so powerful about the SQLIFTS model is that much of the work we are doing here is tissue-agnostic. The discoveries we make here, the technologies we create, will be applicable to a range of diseases."



"The Canning Institute is a hub for clinical innovation that finds its roots in laboratory and clinical science, creating the perfect synergy with SQLIFTS."

Ankit Bharat, MD Director of the SQLIFTS Translational Innovation Program



SQLIFTS director Scott Budinger, MD, with SQLIFTS program directors Alexander Misharin, MD, PhD, Karen Ridge, PhD, and Navdeep Chandel, PhD.

FOSTERING TRANSLATIONAL SCIENCE

A partnership between SQLIFTS and the Canning Thoracic Institute (CTI) at Northwestern Memorial Hospital, the SQLIFTS Translational Innovation Program will offer patients across Northwestern Medicine's 11-hospital health system the opportunity to participate in research. The program will be directed by Ankit Bharat, MD, chief of Thoracic Surgery and executive director of CTI.

During the height of the pandemic, Bharat was able to perform the first lung transplant for a patient with COVID-19 in the U.S. due to key findings about the mechanisms of the disease that were discovered in Feinberg laboratories. Since then, Northwestern Medicine has performed 45 lung transplants for patients with COVID-19. The division has also developed the innovative Ambulatory Precision LUng Sparing (A-PLUS) program, which not only allows for the diagnosis and surgical treatment of lung cancer in a one-day outpatient procedure, but also offers another opportunity for sample collection.

"The Canning Institute is a hub for clinical innovation that finds its roots in laboratory and clinical science, creating the perfect synergy with SQLIFTS," says Bharat. "This partnership will provide investigators who study diseases of the chest easy access to tissue that will allow them to develop novel therapeutics, run trials to validate biomarkers, and administer rapid diagnostic tests for personalized medicine."

LEVERAGING EMERGING TECHNOLOGIES

Cutting-edge multimodal technologies are leading to a better understanding of all types of disease at the molecular level, and the goal of the SQLIFTS Technology Program is to harness these new approaches for the study of lung disease. Furthermore, technologies validated in the lung can be shared with investigators across Northwestern to be applied to other areas of study, according to program director Alexander Misharin, MD, PhD, associate professor of Medicine in the Division of Pulmonary and Critical Care.



"With just a single section of lung tissue, scientists can now query the tissue's metabolism, unravel the transcriptome and epigenome of each individual cell, and measure the expression of hundreds of proteins in the context of both health and disease," Misharin says. "These capabilities are transformative for the field."

Misharin himself is a trailblazer in the application of genomic technologies to the study of lung disease. His laboratory published the first single cell RNA-sequencing analysis of the normal and fibrotic human lung, and he also led the Chan Zuckerberg Human Lung Cell Atlas project, which has integrated data across laboratories worldwide to create a molecular atlas of the more than 40 distinct cell populations that comprise the lung.

But the advancements made through this program will reach beyond the laboratory. "High-resolution pathology must be interpreted in the context of the patient's clinical course," says Misharin. "So, a major focus of the center is to develop tools to extract and analyze data from the electronic health record using machine learning approaches, allowing the detailed but sparse molecular pathology obtained during clinical care to be interpreted alongside clinical imaging data, clinical visits, and even wearables to ultimately create a personalized care plan for patients."

CATALYZING THERAPEUTIC DEVELOPMENT

With a solid infrastructure in place for extracting clinical and genomic data, the SQLIFTS Discovery Program, under the leadership of Navdeep Chandel, PhD, will work with investigators to develop causal models and test innovative hypotheses to identify culprits in the development of lung disease.

Chandel, who is the David W. Cugell, MD, Professor of Medicine in the Division of Pulmonary and Critical Care and of Biochemistry and Molecular Genetics, has demonstrated the critical role mitochondria play in both homeostasis and diseases, including cancer, in effect changing the scientific view of mitochondria from "powerhouses" of energy metabolism to "signaling organelles." His laboratory uses causal genetic interventions to target key pathways in metabolism to dissect mitochondria's role in cellular and animal models of disease. The Chandel laboratory has already generated murine, organoid, and cellular models of lung disease.

"The tools and conceptual frameworks we are generating will accelerate the pace of therapeutic development," Chandel says.

The program will partner with Northwestern's Innovation and New Ventures Office (INVO) and industry to bring validated targets for therapy to the clinic.

"The discoveries we make here, the technologies we create, will be applicable to a range of diseases."

TRAINING THE NEXT GENERATION

Led by Karen Ridge, PhD, the SQLIFTS Health Education Program will ensure that the crucial study of the respiratory system continues to flourish for decades to come at Northwestern. Ridge, who is the Ernest S. Bazley Professor of Pulmonary Sciences and a professor of Cell and Developmental Biology, has already made critical discoveries about the mechanisms by which the lung repairs after injury, particularly in viral pneumonia.

Ridge is relentlessly focused on education, serving as the principal investigator of the NIH T₃₂ Training Program in Lung Sciences, which supports the development of predoctoral and postdoctoral candidates. Ridge also directs the Kimberly Querrey Summer Research Program, which offers high school and college students the opportunity to participate in research, and the Cugell Fellowship for foreign trainees, supported by a gift from David Cugell, MD, the first chief of Pulmonary Medicine at Northwestern. Additionally, under Ridge's guidance, SQLIFTS will support the new Simpson Querrey Fellowship in Data Science.

"SQLIFTS is committed to growing a scientific workforce that reflects the rich diversity of the patients we serve," Ridge says. "This starts as early as high school and continues on through residency and beyond. Our structured programs will put scientists and physician scientists from all backgrounds on paths to successful careers in lung health." * WRITTEN BY EMILY AYSHFORD PHOTOGRAPHY BY GR8Y PRODUCTIONS

BRIDGING

Influential faculty and a new center put Northwestern on the leading edge of dissemination and implementation science.

or thousands of years, scurvy was the scourge of sailors. Yet, a simple cure consuming fruits containing vitamin C was known as a scurvy treatment by at least 1600. Nevertheless, the British Navy did not adopt its routine use until 1795 — a more than 100-year research-to-practice gap.

Medical history books are filled with such examples of disconnects between knowledge and practice, and examples abound today. But in the past 20 years, a healthcare discipline has emerged to bridge that gap: dissemination and implementation science. The goal is to advance equitable deployment of evidence-based practices — to lessen the distance between knowledge (what we know) and practice (what we do).

Though scientists have been conducting dissemination and implementation research at Northwestern University Feinberg School of Medicine for years, the medical school recently made a strategic investment in the field by launching the Center for Dissemination and Implementation Science (CDIS) within the Institute for Public Health and Medicine (IPHAM). The center's director is Sara Becker, PhD, the Alice Hamilton Professor of Psychiatry and Behavioral Sciences, who joined Feinberg last August.

"There has been a realization in the academic community that the traditional ways of operating weren't helping us to actually get effective treatments out into the community," Becker says. "We've invested substantially in scientific discovery, but now we need to think about how to get these discoveries out into clinical and community settings in order to equitably increase access to them. We also need to proactively infuse this way of thinking much earlier in the discovery process."

One of the main goals of the new center will be to enable communities and patients to have a say in their treatment, consistent with the vision of IPHAM, which has championed patient-centered approaches since its inception.

"The new center will not only elevate our institution but empower and support communities and stakeholders with collaboratively designed research and implementation strategies that will accelerate progress towards a shared goal of improving health and health equity," says Ronald Ackermann, MD, MPH, senior associate dean for public health and director of IPHAM. ►



"We've invested substantially in scientific discovery, but now we need to think about how to get these discoveries out into clinical and community settings in order to equitably increase access to them."

Sara Becker, PhD

TAKING LESSONS FROM INDUSTRY

Becker started her career as a strategy consultant, working with pharmaceutical and biotechnology companies that were implementing large-scale change, helping them navigate organizational and process transformations.

When she pivoted to graduate school in psychology at Duke University and learned about the different efficacies of mental health and addiction treatments, she found that all the strategies from the business world, like marketing interventions and change management, were absent from her training. The right treatments weren't getting to the right people.

At the same time, in 2011, the field of dissemination and implementation science was coalescing. Becker attended the first National Institutes of Health training institute on the topic and was hooked. "I thought, 'This is what I'm trying to do,'" she says.

At its core, the field is about identifying effective health services and then systematically reducing barriers and applying novel strategies to get those services to patients. How that happens depends on what those barriers are. It might involve getting leadership buy-in, or it might involve training for clinicians. It could also involve changing incentive structures or conducting an audit of clinical behavior.

"Context is queen," Becker says. "Implementation needs to be optimized for each unique setting and patient population. But while the solutions may be unique, the methods used to generate those solutions are transferrable across settings and populations." When Becker joined Feinberg from Brown University, she brought with her a deep portfolio of implementation research designed to improve the care of people who struggle with substance use and co-occurring disorders. Several of her projects focus on contingency management, which gives patients motivational incentives for achieving treatment goals.

GROWING A NATIONAL REPUTATION

Feinberg has long been home to one the founders of the field of implementation science: C. Hendricks Brown, PhD, professor of Psychiatry and Behavioral Sciences in the Division of General Psychiatry and of Medical Social Sciences. Along with Becker and colleagues at Stanford and Yale, Brown is principal investigator of components of two



"We are beginning a second chapter in developing and moving implementation science to practice."

C. Hendricks Brown, PhD

"It's one of the most effective treatments for substance use but is one of the least available treatments in the community," she says. After years of study, Becker is now advising the state of California on its implementation of contingency management as a Medicaid reimbursable service. Her work has gotten national press, and her implementation strategy is informing the approach used across 180 opioid treatment programs.

Becker also co-directs a regional training center in New England supported by the Substance Abuse and Mental Health Services Administration, which provides implementation support to over 2,300 front-line behavioral health practitioners per year.



large center grants from the National Institute on Drug Abuse that address the overdose crisis through the integration of implementation science methods into research projects across the translational continuum.

"We are beginning a second chapter in developing and moving implementation science to practice," Brown says. "I am invigorated by the mission and the resources that will be available and am delighted that my colleagues and I have this opportunity to work with Sara, as well as the team of experts in implementation science."

Last September, yet another luminary in the field joined Feinberg: Rinad Beidas, PhD, the Ralph Seal Paffenbarger Professor and chair of Medical Social Sciences. Her research is disease-agnostic and includes implementation work across a wide array of fields, including mental health, cancer, HIV, and cardiovascular disease.

Beidas' interest in making it easier for clinicians and organizations to deliver evidence-based practices (EBPs) grew after partnering with the City of Philadelphia over the course of a decade on implementing EBPs within its behavioral health system, which opened her eyes to some of the challenges of the field.

"I had a lightbulb moment when I realized that often our implementation approaches make it harder for clinicians working within their organizational constraints," she says.



"I was drawn to behavioral economics, which focuses on designing approaches to behavior change based on how people behave and make decisions — not how we wish they'll behave or make decisions."

Her work now focuses on the intersection of implementation science and behavioral economics and strives to use strategies that make change easier for clinicians (for example, by adjusting the electronic health record choice architecture) and/or reducing workloads to make it possible for behavior change. She believes this approach is particularly important, given the wellness challenges currently facing the healthcare workforce.

Both Becker and Beidas were drawn to Feinberg because of its visionary leadership, collaborative and collegial environment, and the bold commitment and investment in implementation science. Both leaders also highlight the importance of equity in the field, ensuring that implementation efforts do not create new inequities or reify existing ones.

BUILDING A PIPELINE FOR THE FUTURE

Under Becker's leadership, CDIS is already working to recruit the next generation of scientists to help lead the burgeoning field into the future. This past November, a multidisciplinary gathering of faculty from across the medical school came together to discuss the new center's launch and how dissemination and implementation science can enhance all areas of public health practice and research.

"There's so much enthusiasm for this work, and I'm excited to help grow the pipeline of implementation scientists here at Feinberg," Becker says. *



"The new center will not only elevate our campus but empower and support communities and stakeholders with collaboratively designed research and implementation strategies that will accelerate progress towards a shared goal of improving health and health equity."

Ronald Ackermann, MD, MPH

DISSEMINATION AND Implementation science At Feinberg

Feinberg has a wide range of long-standing implementation science research conducted by faculty, including:



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

Mustanski has done exten-

sive work developing and testing multilevel strategies to implement HIV prevention programs. He directs the Implementation Science Coordination Initiative, which helps teams funded by the Ending the HIV Epidemic initiative to infuse implementation science methods into their work.



Lisa Hirschhorn, MD, MPH, professor of Medical Social Sciences and of Psychiatry

Sciences and of Psychiatry and Behavioral Sciences

Hirschhorn's implementation research focuses on interventions around the world, from understanding the quality of care for women with HIV in the U.S. to reducing neonatal mortality in Rwanda to improving maternal care in India.



Darius Tandon, PhD, associate professor of Medical Social Sciences

Tandon's research focuses on perinatal mental health,

early childhood development, and adolescent mental health. His team's Mothers and Babies stress management and postpartum depression preventive intervention is being implemented by home visiting programs and other early childhood providers across the U.S.



Tara Lagu, MD, MPH, professor of Medicine in the Division of Hospital Medicine and of Medical Social Sciences

Lagu uses innovative methods

to improve quality of care, access to care, and coordination of care for vulnerable patients, including those with heart failure and patients with disabilities.

To learn more about the more than 100 faculty members and affiliates of the Center for Dissemination and Implementation Science, go to www.feinberg.northwestern.edu/sites/cdis

DORTRAIT OF A TUNNER

A new DNA methylation profiling tool that ensures brain tumors are accurately diagnosed is available for patients of Northwestern Medicine.

BY EMILY AYSHFORD • PHOTOGRAPHY BY LAURA BROWN

hen Bonnie Fiorito started having bad headaches in October 2021, she investigated possible culprits. Her first stop was a visit with an optometrist, who told her she needed glasses, badly. And when she had an awful headache again after wearing glasses, she thought her brain might just be adjusting to finally seeing clearly.

As a healthy 31-year-old who enjoyed running, she'd never had any major health problems, so she dealt with the headaches and continued working as a nanny. She even got engaged on December 18. But after a series of massive headaches over Christmas that same year, she finally went to the emergency room, where a CT scan and MRI showed a mass in her brain, with fluid build-up that was likely causing the headaches. A biopsy a few days later gave her a diagnosis of pilocytic astrocytoma, a slowgrowing, low-grade brain tumor.

"The last thing any of us expected was a brain tumor," she says. "I've never even known anyone who has had a brain tumor."

She focused on the positive side of the news — the brain tumor was low-grade — and scheduled a surgery for February to have it removed. But when the tumor grew between





the initial biopsy and the tumor resection, her care team turned to a new tool available at Northwestern Medicine hospitals to ensure the initial diagnosis was correct: genomic DNA methylation profiling.

A PATTERN THAT REVEALS AN EXACT DIAGNOSIS

For decades, brain tumors have been diagnosed by what pathologists see under a microscope. But recent advances in technology have expanded this toolkit to include DNA methylation profiling.

Methylation is a chemical modification of DNA. Millions of spots on the genome can be chemically modified; in fact, this is part of the process that allows undifferentiated cells to become lung cells or brain cells, for example. The process is binary — each spot on the genome is either methylated or not. Taken alone, the data at any given spot doesn't mean much. But if you're able to see the methylation pattern of hundreds of thousands of spots, that creates a pattern that is unique to, for example, certain types of tumors. That means each kind of tumor has its own methylation fingerprint.

"It's like looking at a pointillist painting," says Craig Horbinski, MD, PhD, director of Neuropathology in the Department of Pathology and director of the Pathology Core of the Robert H. Lurie Comprehensive Cancer Center of Northwestern University. "It's only when you step away from the painting that you see the pattern, and that's what methylation profiling is. It's an impressionist painting of a tumor."

The technology has only been around since 2017, and this sort of profiling is currently only offered at a few sites around the world. The pathology teams at Northwestern Medicine wanted to bring this service to Illinois. >

"

It's like looking at a pointillist painting. It's only when you step away from the painting that you see the pattern, and that's what methylation profiling is. It's an impressionist painting of a tumor."

Craig Horbinski, MD, PhD



44 It's a beautiful application of using artificial intelligence for medicine."



Lucas Santana dos Santos, PhD To do so, they started with a library of more than 3,900 brain tumor samples from Germany. Lucas Santana dos Santos, PhD, assistant professor of Pathology and the department's director of bioinformatics, developed an algorithm that used machine learning to classify tumors according to their methyla-1,000+ tion profile. He trained the algorithm with the initial dataset (which was no easy Number of tumor samples feat, considering each tumor the team has profiled has more than 800,000 pieces of genomic data).

"It's a beautiful application of using artificial intelligence for

medicine," says Santana dos Santos, who works under the direction of Lawrence Jennings, MD, PhD, director and associate professor of genomic pathology in the Department of Pathology. When the algorithm was fully trained in fall 2021, the pathology team began profiling central nervous system tumors from biopsies and resections at the Northwestern Medicine Lou and Jean Malnati Brain Tumor Institute of the Robert H. Lurie Comprehensive Cancer Center of Northwestern

University. When they compare the tumor profile against those found with the machine learning algorithm, they find an exact match for that tumor type.

Since then, the team has profiled more than 1,000 tumor samples — from both Northwestern Medicine and its affiliated hospitals, and from outside

consults that come in from across the country. Some samples are common types of tumors that clinicians see dozens of times per year. Others are rare. Each one will ultimately help build the library and make the tool even more powerful. An accurate diagnosis can both give patients peace of mind and also help with treatment. By understanding the exact type of tumor they are dealing with, clinicians can suggest the best course of therapy.

Horbinski estimates methylation profiling confirmed the suspected diagnosis around 80 percent of the time and refined the diagnosis around 15 percent of the time. In 5 percent of the cases, it completely changed the diagnosis.

"As pathologists, we can be faced with uncertainty," he says. "Is this a primary tumor, or did it spread from somewhere else? Some tumors look worse than they actually are. Pathologists can look at the same sample and diagnose it different ways. Methylation profiling is extremely accurate. And now when it does change the initial diagnosis, often we see that the tumor is not as bad as we thought it was, and patients can survive a lot longer than we initially thought."

A REASON FOR HOPE

When methylation profiling confirmed that Fiorito's tumor was pilocytic astrocytoma a grade 1 tumor with a good prognosis — she was relieved but knew she face a long road ahead. After the surgery to remove the tumor, which was located on her pineal gland, she underwent speech and physical therapy at the Shirley Ryan AbilityLab. As a result of the surgery, she suffered from nystagmus (an involuntary, repetitive movement of the eyes), and she had to relearn to walk — a humbling experience for someone used to racing in triathlons and half-marathons.

"I couldn't walk by myself, and my eyes were very sensitive and blurry, so they told me I needed to walk with a walker, and I told them no, I wasn't going to do that," she laughs. Because the tumor couldn't be completely removed, she also underwent proton radiation, which sapped her energy and caused some of her hair to fall out.

Still, she did eventually begin to run again and even ran a 5K this past fall. Amidst everything, she also got married in September.

"It was a miracle," she says. "Before the surgery, I was just praying not to die, and somehow through all of that we planned a wedding. It was pretty amazing."

She has MRIs every three months to

monitor the tumor, which remains stable, and is open about sharing the story of her journey. "When people hear they have a brain tumor, it can be scary. I still have a lot of anxiety about it. But maybe somebody will read my story, and it will give them hope that it will get better for them," she says.

THE GOLD STANDARD FOR YEARS TO COME

The pathology team plans to continue to re-train their algorithm with information from the latest samples and is expanding the technology to include sarcomas. Horbinski predicts this could eventually be used for many different types of cancers.

"Methylation is going to be the gold standard for the coming years," he says. "We hope to continue to build our libraries and make this technology even better, and outside hospitals should consider sending their pathology material to us to validate the diagnosis. We want to ensure that everyone has access to this powerful and important layer of objectivity." \diamond



Left: Different kinds of brain and spinal cord tumors show unique patterns of DNA methylation in their genomes. In this two-dimensional depiction of multidimensional methylation data, each colored cluster represents a different kind of tumor. The pineal tumor clustered within "pilocytic astrocytoma," indicated by the red X.



Right: Under the microscope, the pineal tumor was composed of cells with very few mitoses, suggesting a relatively lowergrade tumor. Structures called Rosenthal fibers were present (arrowhead), which also suggested a lower-grade tumor.

Written by Gina Bazer Photography by Gr8y Productions

FOCUS ON IMPACT

As vice dean for faculty affairs, Farzaneh Sorond brings a uniquely winding career path and a passion for taking care of others.



"If we want to facilitate career development in academic medicine, we need to think outside the box and create more innovative opportunities for the next generation to not be so dogmatic in the way careers are built."

Farzaneh Sorond, MD, PhD

rom the time she was in fifth grade, Farzaneh Sorond, MD, PhD, knew she wanted to be the most impactful type of doctor she could be. In her young mind, that meant becoming a surgeon. Becoming a neurologist was the last thing on her mind.

"My father was a neurologist, and I wanted to take a different path," she says.

But life has a way of setting up roadblocks, and for Sorond this was certainly the case. Her career plans were thwarted by everything from political turmoil in her home country of Iran to financial constraints when she returned to the U.S.

Determined to overcome those very roadblocks, Sorond embarked on a journey that set her on the path she was meant to be on: that of a physician-scientist. Spending her summers working in various research labs helped nurture her combined passion for both clinical care and scientific research. It also became clear that nowhere was the need for scientific discovery greater than in the neurosciences.

She came to realize something that her younger self was too naïve to understand there is more than one way to be impactful in medicine. Today, she couldn't be happier with her decision to pursue her clinical training in vascular neurology and neurocritical care.

In her long career as a clinician, scientist, and administrator, Sorond, who is the Dean Richard H. Young and Ellen Stearns Young Professor and chief of Stroke and Vascular Neurolgy, has made tremendous impact. Now, she will bring her varied professional and life experiences to her new role of vice dean for faculty affairs, advocating for faculty at all levels. Additionally, she will direct the new Simpson Querrey Center for Neurovascular Sciences.

"There is nowhere else in the world where I can imagine having the opportunity to do what I do," she says. "The openness, thoughtfulness, and willingness to care at Feinberg is unlike any other place."

THE REWARDS OF PERSEVERANCE

Sorond was born in Iran and came to the U.S. at the age of 8 with her family for her father's career, which found her moving from Cleveland, Ohio, to Ann Arbor and Royal Oak, Michigan, where she stayed until 8th grade. The constant change instilled in her a sense of resilience and grit.

"My brother and I didn't speak English," she remembers. "Our first summer in America, we spent with nuns at the Catholic hospital where my father was an intern. They couldn't pronounce our names, so my brother became Bobby, and I became Fran."

In 1978, the family moved back to Iran. The Shah of Iran was building a vast academic healthcare system, and her father was recruited as the chair of Neurology. Sorond and her siblings enrolled at the Tehran Community School. What began as a relatively smooth transition soon turned turbulent. The Iranian Revolution of February 1979 resulted in a complete upheaval of the education system. By the time Sorond graduated from an international school cobbled together by the expat community, the country was at war with Iraq, and the Iranian government shut down all universities and closed its borders.

"So, I spent two years just puttering around Iran, trying to learn what I could," Sorond says. Eventually, the borders re-opened, and Sorond made her way to India, where she could apply for a U.S. visa, and by 1984, she was finally back on track. Even though the financial constraints of getting money to the U.S. from Iran posed significant challenges during her undergraduate years, she managed to graduate summa cum laude from University of Houston with a dual degree in biochemistry and biophysics, and in the fall of 1989, she started in the Medical Scientist Training Program (MSTP) at Baylor College of Medicine.

ADAPTING DREAMS TO REALITY

With an undergraduate degree in biophysics, Sorond found herself drawn to cardiovascular physiology and studied voltage-gated potassium channels for her thesis. Her thesis advisor, who was a cardiologist, had naturally veered her toward a career in cardiac electrophysiology. But there was another twist in her path. Sorond signed up for a sub-internship in cardiology. At the end of the rotation, the attending's feedback came as a surprise. ►



"He told me, 'I'm sure you'd be a great cardiologist, but if you really want to be a physician-scientist and continue as a researcher, you should go talk to my wife,'" Sorond recalls. He introduced Sorond to his wife, a prominent pediatric neurologist at Baylor, who was profoundly convincing. "We're just starting to learn about the brain," the neurologist had said. "How could you not want to be a part of this?"

More time passed; more mentoring meetings and soul-searching followed. Sorond had also enjoyed her neurology rotation especially because her father was visiting the U.S. during that same period, and they would often discuss cases in the evenings — so neurology was no longer out.

The decision was made. After completing the MSTP at Baylor, Sorond went on to Harvard Medical School for her neurology residency, followed by a fellowship in the emerging fields of vascular neurology and neurocritical care. It turned out that an interest in physiology, the vascular system, and neurology were not mutually exclusive.

"Drawing from cardiology, I saw many similarities in neurovascular disorders. There are acute ischemic strokes that are very similar to heart attacks, but there is also this slower process of ischemic injury that leads to global brain failure, analogous to what happens in heart failure," she says. "This slow accumulation of vascular injury in our brains, which happens more in people who have vascular risk factors like hypertension, smoking, and obesity, results in neurovascular degeneration across the lifespan."

Sorond, who joined the faculty of Harvard Medical School in 2001, became fascinated with mechanisms that linked this gradual neurovascular degenerative process to cognitive impairment and dementia. But it wasn't exactly a burgeoning area of neurological study at the time. The focus in the early 2000s had been on Alzheimer's disease and the amyloid connection, not vascular brain injury. Nevertheless, Sorond was still able to gain funding for her research and study this subacute neurovascular process

in her lab, while providing care for acute neurovascular patients in the Neuro ICU — the best of both worlds, just as she wanted.

Then, in 2012, the tide shifted.

"All of a sudden, the first of the anti-amyloid drugs coming out were failing," Sorond says. "The community was starting to step back and say, 'Amyloid may not be the whole story. There's clearly a vascular component to this.' A huge influx of NIH funding was earmarked to study vascular contributions to cognitive impairment and dementia. It's still one of the biggest areas of federal support today."

Sorond went on to publish her work in a range of high-impact journals, such as *Stroke, Circulation, Alzheimer's & Dementia*, and *PNAS*. Busy with her research, clinical work, and growing family (in 2003, Sorond and her husband Soad Kousheshi, an engineer, had their son Shahab, who is now a sophomore at Northwestern), the physician-scientist was content. Yet, she knew there was another way that she could make an impact, and it was outside the lab and doctor's office.

PUTTING PEOPLE FIRST

With her career in full swing, Sorond started thinking about the art of mentoring.

"It came from some of the challenges that I experienced across my career development journey," she explains. "It's not that people weren't there to help me. But I felt like the approaches to mentoring were limited to what was 'traditional' and 'how I did it.' If we want to facilitate career development in academic medicine, we need to think outside the box and create more innovative opportunities for the next generation — to not be so dogmatic in the way careers are built." Around this time, a fellow resident at Harvard, Dimitri Krainc, MD, PhD, the Aaron Montgomery Ward Professor of Neurology, who had become the chair of the Ken and Ruth Davee Department of Neurology at Feinberg in 2013, began a conversation with Sorond about the opportunities in his new academic home. He encouraged Sorond to join, highlighting the areas that interested her the most: growing a vascular neurology research program and promoting mentoring and faculty development in the department. The dialogue continued until 2015, when Sorond felt she and her family were ready.

"I thought, let's give it a chance," she says. "I wasn't going to change my research; I wasn't going be a different clinician. For me, it was the possibility of impacting faculty that was the draw."

Sorond started at Northwestern as professor and vice chair for faculty development in Neurology, then became the associate dean for faculty development for the medical school in 2019, working closely with then-vice dean for faculty affairs, William Lowe, Jr., MD, the Thomas D. Spies Professor of Genetic Metabolism and professor of Medicine in the Division of Endocrinology. When Lowe stepped down last September, Sorond succeeded him.

Sorond has frequently said that her priority is to "implement programs and policies that foster equity and entrepreneurial opportunities for faculty at all levels and across all tracks with the goal of elevating scientific discoveries and healthcare delivery."

Ultimately, it comes down to caring about people.

"No school or hospital can survive without physicians. No scientific program can survive without scientists. If they are not thriving, the academic health system cannot do well. As leaders, we should embody that understanding in everything we do, every day," she says. "We have to stop constantly looking for new ways to make traditional perspectives and situations work and really step back to understand the challenges and motivations of today's clinicians and scientists, so that we can better help them be successful. I don't know if faculty feel that they're valued in that way. I hope they do. But my goal is to make sure they know they are." �

Alumni President's Message

ALUMNI



Let's Make Happiness Go Viral!

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

am glad we have made it this far together. It's been a struggle for the past several years — a pandemic. As I pondered what my final message would be, I could not ignore the events over the past several years. Especially in healthcare, these have been utterly challenging times, as we have all witnessed firsthand the casualties on both sides. Moving forward, let's focus on the positives. Let's start talking about a different type of viral energy — one that can create happiness and joy for others.

How can we spread a happiness virus? There are so many ways: from simply smiling, to complimenting a stranger, to posting a positive comment online to counteract the vitriol we so often see. There is also doing the dirty work for someone — like taking out the garbage — or sending someone a good, old-fashioned handwritten note. Another way to spread joy is to volunteer your time or, if you have the means, make a donation to a non-profit organization. The latter truly embodies the Medical Alumni Association (MAA)'s mission to support the Northwestern University Feinberg School of Medicine.

Finally, I leave you with a quote from a great provider of joy — Charles M. Schulz:

"Why can't we get all the people together in the world that we really like and then just stay together? I guess that wouldn't work. Someone would leave. Someone always leaves. Then we would have to say good-bye. I hate good-byes. I know what I need. I need more hellos."

I have felt humbled and privileged to be able to serve as your president. The MAA is stronger than ever thanks to all of you.

Always remember to be safe, take care of each other, and give someone a hug today my favorite way to spread happiness! "Moving forward, let's focus on the positives. Let's start talking about a different type of viral energy – one that can create happiness and joy for others."



Kim with his family, showing the power of a smile.



Left: The smiles were certainly contagious at this year's Night on Call, the annual medical school formal, on January 17 downtown at The Drake. Center: Second-year medical student Samuel Reyes with MAA Board member and past president James "Jimmy" Hill '71, '74 MD, '79 GME ('12 P) at the Northwestern vs. Miami of Ohio football game on September 24, 2022. Right: Saadia S. Sherwani, MD, MS, '00 GMER, senior vice president of Operations and chief medical officer for Northwestern Memorial Hospital with MAA Board member Kavitha Gandhi '94, '98 MD, '99 GME at the Women Physicians Networking Event held in partnership with Northwestern Medicine at the Museum of Contemporary Art on June 15, 2022.

Christopher Kang, '96 MD, '00 GME, takes the helm at the American College of Emergency Physicians

STEADY HAND

hristopher Kang, '96 MD, 'oo GME, still vividly remembers being rushed in an ambulance to the emergency department for surgery after breaking his arm in elementary school. It could have been a traumatic experience, but the dedicated and caring people who helped him that day instead made a lasting impression.

"It had a profound effect on me," he said. "I wanted to be a physician for those who are vulnerable and in need and have nowhere to turn."

As the 2022-2023 president of the American College of Emergency Physicians (ACEP) and a 20-year veteran of emergency medicine, Kang wants to give back to his colleagues in their time of need. In recent years, he noted, the pandemic, more frequent natural disasters, mass shootings, and poor healthcare access in the United States have stretched his colleagues to the limit.

"The organization needs to evolve to serve their needs better as times have grown more challenging," Kang said. "I want members to feel they can speak up and advocate for their patients and our profession."

ON A MISSION

Kang grew up in a military family. His grandfather served in the Army during World War II in the Pacific, and his father served in the Air Force during the later decades of the Cold War. His father's service took Kang and his family to multiple continents. "It was a wonderful experience as I learned about, experienced, and grew to appreciate different cultures," he said.

Kang later received an Army scholarship for medical school. He said he enjoyed each rotation as he worked his way through his medical training at Feinberg School of Medicine. But he felt the greatest connection with the people in the emergency department.

"I love the people who work in the emergency department," Kang said. "They have a common goal of caring for others, regardless of where they are from, who they are, or their ability to pay. There is a real sense of camaraderie and teamwork." After his residency at Northwestern, Kang carried on his family's military tradition when he was called to active duty to train at the U.S. Army School of Army Aviation Medicine, Ft. Rucker, Alabama. He then deployed to Seoul in the Republic of Korea from 2000-2001 to treat patients in the emergency department and the field. He later served as a flight surgeon and emergency physician at Soto Cano Air Base in Honduras in 2002 and from 2003 to 2004 in the U.S. Army's First Stryker Brigade in Samarra and Tal'Afar, Iraq, as part of Operation Iraqi Freedom.

"Although there were challenging times, it was a rewarding experience to serve my

country with amazingly dedicated young men and women," he said.

Kang has worked as an attending physician at Madigan Army Medical Center in Tacoma, Washington, since 2001. He said he loves the center's mission to serve members, veterans, and their families as well as working with clinicians-in-training as a resident advisor. He also appreciates the diverse patient population and being able to provide reassurance to service members that their loved ones will be well cared for while they are away.

"Working with the military family enhances the experience," Kang said. He also works as an emergency physician at Providence St. Peter Hospital in Olympia, Washington.

Kang said his Northwestern education, particularly the opportunity to work in diverse clinical settings, has prepared him to practice in a wide range of settings.

"I have great pride in Northwestern and continue to maintain ties there," he said.

LEADING THROUGH CRISIS

In October, Kang became the first Asian-American president of ACEP after serving in several professional organization leadership roles at the state, regional, and national levels. His previous roles included being chair of ACEP's Disaster Preparedness and Response Committee from 2013 to 2015. In that role, he worked with cities and emergency departments across the country to help better prepare for disasters and to help emergency departments recover after them. That experience may prove crucial in helping address the numerous challenges currently facing the field.

66 -

We need to acknowledge that we as healthcare providers have been shouldering a huge burden over the last several years in addition to the usual occupational stresses. We need to be able to say we need help. The COVID-19 pandemic created enormous stress for emergency departments already struggling to meet the needs of patients who lacked access to timely, high-quality care. More frequent natural disasters and mass shootings have added to the strain. Shortages of supplies and staff during the pandemic and growing violence against emergency department clinicians have also increased stress and burnout.

"When we no longer feel safe and no longer feel respected, it erodes the belief that each of our members has in themselves and their mission to serve each patient and their communities," Kang said.

One of Kang's priorities as president will be improving mental health care for patients and emergency department clinicians. He applauded President Biden's and the media's recent efforts to highlight the importance of mental health and reduce the stigma. Now, he wants to help build out the systems necessary to provide services for those seeking help.

"How can we triage these patients, evaluate them, and get them the resources they need, whether it is inpatient or outpatient, and help them recover?" he said.

Kang also wants to reduce the stigma and barriers preventing physicians from seeking mental health care. He said enactment of the Dr. Lorna Breen Health Care Provider Protection Act was an essential first step. The law's namesake Lorna Breen died by suicide in April 2020 after weeks of working in Manhattan emergency departments overwhelmed with gravely ill patients with COVID-19 and becoming infected herself. Breen, like many clinicians, was afraid that seeking help would harm her career. Kang said he would like ACEP to continue working with hospitals, healthcare systems, and state and federal licensing bodies to change policies discouraging physicians from seeking help.

"We need to acknowledge that we as healthcare providers have been shouldering a huge burden over the last several years in addition to the usual occupational stresses," he said. "We need to be able to say we need help." *

CAREER HIGHLIGHTS

1989-1996

Earned a Bachelor of Arts and a Doctor of Medicine Degree from Northwestern's Honors Program in Medical Education.

1996-2000

Completed an emergency medicine residency at Northwestern.

- 2000-2004

Deployed to Republic of Korea, Honduras, and Iraq as a flight surgeon or emergency physician for the U.S. Army.

2000-2010

Received several awards from the Department of the Army, including the Civilian Achievement Award and the Meritorious Service Medal.

2001-PRESENT

Works as attending emergency physician and resident advisor at Madigan Army Medical Center in Tacoma, Washington.

2006-PRESENT

Works as attending emergency physician at Providence St. Peter Hospital in Olympia, Washington.

2007-PRESENT

Works as attending emergency physician at Providence St. Peter Hospital in Olympia, Washington.

- 2010-2015

Served on the Disaster Preparedness Committee of ACEP, including two years as chair.

- 2013-2014

Led the Washington Chapter of ACEP as president.

2013-PRESENT

Serves on the Northwest Regional Healthcare Response Network's Disaster Clinical Advisory Committee.

- 2015-PRESENT

Served on the ACEP Board of Directors, including as secretary, chair, and president-elect.

2022-2023

President, ACEP.

Disclaimer: The views expressed are those of the author/speaker and do not reflect the official policy of Madigan Army Medical Center, Defense Health Agency, Department of the Army, the Department of Defense or the U.S. Government.

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.

1960s

Roger Sheldon, '68 MD, and Carol Sheldon, MD, both received the 2022 Distinguished Alumni Award from Illinois Wesleyan University. Roger Sheldon established one of the nation's first neonatal nurse practitioner programs at St. Joseph Hospital in Denver. Carol Sheldon was the first woman to chair the Radiology Department at the University of Oklahoma. © 1

1980s

Vincent Scott, '82 MD, recently joined the Summerville Medical Center in Summerville, South Carolina, as part of its hospital medical staff and the Summerville Pelvic Health Specialists. Scott brings more than 25 years of experience providing medical and surgical care for women to his new role, where he will offer pelvic health services. 2



Stathi Bournias, Thomas E. Bournias, '92 MD, and Themi Bournias, '23 WCAS, at one of the Feinberg events during the Northwestern v. Nebraska game in Dublin.

Boris D. Lushniak, '83 MD, MPH, was

reappointed in July 2022 to serve another five years as dean and professor at the School of Public Health at the University of Maryland in College Park, Maryland. Also in 2022, he was appointed by the Secretary of the U.S. Department of Health and Human Services to serve on the Board of Directors of the National Fitness Foundation. He remains on the faculty of the University of Maryland School of Medicine in Baltimore as professor of Epidemiology and Public Health and professor of Medicine in the Occupational and Environmental Medicine Division. He was elected to the Board of Directors of the Association of Schools and Programs in Public Health, the Board of Regents of the American College of Preventive Medicine, and as co-chair of the National Council on Skin Cancer Prevention. As a Ukrainian-American, he is involved in supporting humanitarian efforts in Ukraine as a board member of the Ukrainian Catholic University Foundation. He and his wife (Patricia Cusumano, MD) are proud of their daughters, who are now medical students (Washington University and University of California, San Diego). He remains dismayed that Northwestern was not their first choice! **10** 3

Ellis Arjmand, '84, '86 MD, '96 PhD, recently joined the Ronald McDonald House Charities of South Louisiana's Board of Directors. Arjmand is the surgeon-in-chief of Children's Hospital New Orleans and is nationally known for his expertise in healthcare quality improvement and health economics. ¹⁰ 4

Karl J. Sandin, '86 MD, MPH, received the 2022 American Medical Rehabilitation Providers Association (AMRPA) National Leadership Excellence Award. It recognizes his work in physician relations, prior authorization, governance, and quality for AMRPA, the nation's premier organization advocating for patients in medical rehabilitation and the inpatient rehabilitation hospitals and units that serve them. He practices in-patient neurological and trauma rehabilitation, provides medical direction and consultation, and serves as assistant professor of Surgery (Trauma Surgery) at Creighton University School of Medicine.

Sandra Sanguino, '89, '93 *MD*, '96 *GME*, *MPH*, was named a 2022-23 Academic Leadership

Program Fellow by Northwestern University's Office of the Provost. Sanguino is the senior associate dean for medical education at Feinberg and an attending physician at Ann & Robert H. Lurie Children's Hospital of Chicago. © 5

2000s

Eric Tham, 'o1 *MD*, was recently appointed the new senior vice president and chief research operations officer at Seattle Children's Hospital. In his new role, Tham will focus on research administration, operations, and finance, as well as continue broader leadership in research. Tham has served as interim senior vice president of Seattle Children's Research Institute since 2021. © 6

SANDRA SANGUINO '89. '93 MD, '96 GME, MPH, **WAS NAMED A 2022-23 ACADEMIC LEADERSHIP PROGRAM FELLOW BY NORTHWESTERN UNIVERSITY'S OFFICE OF THE PROVOST.** SANGUINO IS THE SENIOR **ASSOCIATE DEAN FOR** MEDICAL EDUCATION AT FEINBERG AND AN **ATTENDING PHYSICIAN AT ANN & ROBERT H. LURIE CHILDREN'S HOSPITAL** OF CHICAGO.



ALUMNI Progress Notes



Maura George, 'o6 *MD*, *FACP*, an associate professor of Medicine at Emory University School of Medicine, received the 2022 Arnold P. Gold Foundation Humanism in Medicine Award. This award honors a medical school faculty physician who exemplifies the qualities of a caring and compassionate mentor in the teaching and advising of medical students.

Kenneth Poole Jr., '07 MD, MBA, was named UnitedHealth Group's chief medical officer for provider and clinician experience. In his role, Poole will focus on enhancing clinician career experience and fostering an environment that builds clinician connectedness. Previously, Poole was at the Mayo Clinic. © 7

Pamela C. Luk, 'o8 MD, was recently installed as a member-at-large of the American Orthopaedic Foot & Ankle Society. After completing a residency in Orthopaedic Surgery at University of Southern California and Los Angeles County Hospital, she pursued a fellowship in foot and ankle surgery at Washington University in St. Louis, Missouri. She practices in the Los Angeles area.

2010s

Sujata Saha, '12, '16 MD, recently joined the University of Arizona College of Medicine – Tucson's Department of Surgery as clinical assistant professor in the Division of Surgical Oncology. Saha will also serve as the assistant clerkship director for general surgery. 10 8

GME

Henry Wolstat, MD, '63 GME, recently had his first poetry collection, "Driftwood," published by Kelsay Books. His poems have previously been published on the websites Baseball Bard, Haikuniverse, and more. **©** 9

Gene Saltzberg, MD, FAAEM, '74 GME,

has been promoted to associate professor in the Department of Clinical Sciences (Emergency Medicine) at the Chicago Medical School (CMS). In addition to teaching clinical classes at CMS, Saltzberg is the volunteer medical advisor to Lambs's Farm in Libertyville. Despite being closer to 80 than 70, he has no plans of decreasing his involvement in medical education or volunteerism. 10

Joel I. Shalowitz, MD, '80 GME, '82 MBA,

publishes "Healthcare Insights," a weekday blog of healthcare highlights. The free blog, intended to be "the nexus where medicine and business converge," provides insights on key healthcare news that may impact industry trends, as well as the state of the U.S. healthcare system. Shalowitz is an adjunct professor of Preventive Medicine at Feinberg. 10 11

Mark C. Delano, MD, '90 GME, was appointed chair of the Department of Radiology at Michigan State University College of Human Medicine, where he has been since 1996. His current interests include advanced MR techniques, imaging biomarkers, and pathways to reduce the cost of care and improve outcomes. © 12

June M. McKoy, MD, MPH, JD, '01 GME,

'o5 *LLM*, **'10** *MBA*, was appointed to the American Board of Internal Medicine's Geriatric Medicine Board. McKoy is professor of Medicine in the division of Geriatrics, of Medical Education, and of Preventive Medicine at Feinberg. She also holds a joint appointment in the Robert H. Lurie Comprehensive Cancer Center of Northwestern, where she serves as assistant director for Diversity, Equity, and Inclusion. **13**

Alison Cowan, MD, '14 GME, was

appointed to Mirvie's leadership team as head of medical affairs. Cowan brings more than a decade of experience as an OB/GYN to Mirvie to lead the continued development of its proprietary Mirvie RNA platform, which predicts preeclampsia and preterm birth before they occur. © 14

Jillian Bybee, MD, '16 GME, '17 GME,

is this year's ambassador for Harvard Medical School women's leadership course. Bybee is a specialist in Pediatric Critical Care Medicine at Spectrum Health. Bybee is an alumna of the Pediatric ICU fellowship at Northwestern. © 15

DPT

Joseph P. Farrell, '76 PT, DPT,

co-authored "The Blind Men, the Elephant, and the Continuing Education Course: Why Higher Standards Are Needed in Physical Therapist Professional Development," published in the Journal of Orthopaedic & Sports Physical Therapy. The article offers insights on how to improve the current system of continuing competence in physical therapy. A coterminous faculty member at Feinberg, Farrell is also a past Distinguished Alumni Award recipient in the Department of Physical Therapy and Human Movement Sciences. 10 16

Inclusion and Allyship: Sharing Stories

Working in healthcare is the most rewarding career anyone could have. We spend our days, nights, weekends, and holidays in service to those in need of medical care. This is a privilege. And with every privilege comes responsibility.

At first, I became an ally because I fundamentally believe that it is our obligation to take care of everyone, regardless of race, ethnicity, socioeconomic status, sexual orientation, or gender identity. At its core, healthcare is an academic pursuit, and the research is loud and clear: We do not do a great job executing our obligation. Access, treatment options, and clinical outcomes are just a few examples where the facts tell us we have work to do. At the organization level, the evidence is also clear:



Christopher Rehm, '98 MD

Companies with more inclusive leadership and team make-ups deliver greater results. As my career evolved and I continued to learn, I realized that being an ally is so much more than working on systems and processes to try and close the gaps that exist in the care we provide. Being an ally is more than supporting a diversity, equity, and inclusion initiative. For me personally, being an ally is sometimes silently being a friend, colleague, and supporter, one-on-one. Being an ally is actively pushing for, promoting, and protecting a culture where everyone has a voice, everyone is supported, and everyone has the opportunity to reach their potential based on their individual effort and drive. Being an ally is working every day to be part of a society and culture where, one day, we won't need allies.

Joining the Medical Alumni Association Board and being on the Inclusion and Allyship Committee has been an amazing opportunity to have an impact beyond my immediate work and personal community. The Inclusion and Allyship Committee has brought together a diverse group of individuals who care about the Feinberg School of Medicine greatly, and we are excited about our ability to influence and impact the experiences of current and future students for years to come. Frankly, I am an ally because you either stand up for what is right or you do not — and sitting on the sideline isn't an option.

— Christopher Rehm, '98 MD

senior vice president and chief medical officer at LifePoint Health



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



PAUL HILDRETH, '81 DPT, MPH, RECEIVED THE AMERICAN PHYSICAL THERAPY ASSOCIATION LOUISIANA'S HALL OF FAME AWARD AT ITS 2022 FALL MEETING.

Paul Hildreth, '81 DPT, MPH, received the American Physical Therapy Association Louisiana's Hall of Fame Award at its 2022 fall meeting. He is pictured (left) with the person who nominated him. Hildreth is a member of the Northwestern University Physical Therapy Alumni Association Board. © 17

DDS

David H. Hartzell, '90 DDS, and Sheherazad A. Hartzell, '91 DDS, both United States Navy Dental Corps Captains, just celebrated their retirement from the Navy after 30 years. A retirement ceremony was held in their honor on August 5. David Hartzell also served as chair of the Navy Comprehensive Dentistry Program. 10 18

MS

Kelle J. Steenblock, 'o1 MS, was named the inaugural director of the newly created Genomics Institute at Sarah Lawrence College in New York. With more than two decades of experience promoting equitable access to quality healthcare and genetic services, Steenblock will lay the groundwork for the institute as well as develop strategies for the successful launch of its programs and partnerships. ¹⁰ 19

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. All dates are in 2022 unless specified below.

ALUMNI

Dudley J. Fournier, '45 BA, '46 BS, '48 MD September 18 SAN FRANCISCO, CA

Helen F. Berquist, '51 BA, '55 MD August 13 GOLDEN VALLEY, MN

Donald S. Freiburger, '53 MD May 23 TUSTIN, CA

Harry H. Hatasaka, '54 DDS June 12 PALO ALTO, CA

Herbert J. Robinson, '54 MD September 28 YUBA CITY, CA

David C. Eberhardt, '55 MD July 23 ISLAMORADA, FL

William W. Ferguson, '55 DDS June 6 LONGMONT, CO

Marshall F. Weiss, '57 MD September 10 NEW YORK, NY

Edwin G. Wiens, '58 MD July 15 FRESNO, CA Robert R. Somerville, '59 MD, '64 GME, '67 GME October 6 SAN BENITO, TX

Marvin J. Katz, '60 DDS July 23 WILMETTE, IL

Gene A. Schripsema, '60 DDS July 19 ALBUQUERQUE, NM

Gerald Kent Shortz, '62 MD October 11 DELRAY BEACH, FL

Robert J. Luber, '65 MD November 12 INVERNESS, ILLINOIS

Michael S. Tajima, '66 DDS October 11 MANOA, HI

Harold K. Huffaker, '68 MD May 14 NEWCASTLE, WA BELLEVUE, WA

George D. Case, '69 MD September 8 SAN ANTONIO, TX

Thomas C. Wolgamot, '69 DDS October 7 GREAT FALLS, MT Alfredo A. Gonzalez, '73 MD, '76 GME August 1 WILMETTE, IL

Dexter B. Brown, '73 MS October 9 RICHLAND, WA

Frank R. Hetrick, '73 MD August 1 NAPA, CA

Norman K. Rounds, '73 DDS October 6 RIVERTON, UT

Kenneth R. Burnett, '86 DDS October 10 SEATTLE, WA

Michael James Thomas, '90 DDS July 14 LOS ANGELES, CA

Benjamin Hall Alexander, '92 MD July 4 SLEEPY HOLLOW, NY

Jacqueline Marie Ostrowski, '08 DPT July 5 FLAT ROCK, MI

ALUMNI

Ripecky Family Scholarship to Support Students Pursuing Psychiatry, Primary Care, and Beyond

s a young child, Andrew Ripecky '72, '76 MD, watched his family physician father care for patients on Chicago's South Side and southern suburbs. A career in medicine became Ripecky's calling and Northwestern his first choice for medical school. Ripecky has been practicing psychiatry and serving as a clinical faculty member for the past 43 years — first at Rush University and now at Loyola University's Stritch School of Medicine through an affiliation with Hines VA Medical Center in Maywood. The October 2022 issue of *Chicago* magazine featured Ripecky in its "Top Brain Doctors" list.

Thankful for his Northwestern education, he and his wife, Ruta Panchuk Ripecky '75, '77 MMUS, made a generous philanthropic pledge this fall to establish the Ripecky Family Scholarship Fund at the Feinberg School of Medicine. When fully funded in 2027, the scholarship will be awarded to fourth-year Feinberg students matching into a residency program in (order of preference): psychiatry; primary care/family medicine/internal medicine; or pediatrics.

"Giving to scholarships is a wonderful way to honor the efforts of the faculty who contributed to our successes."

ANDREW RIPECKY '72, '76 MD



We recently chatted with Ripecky about giving back to his alma mater through scholarship funding.

Why is supporting scholarships, in particular, important to you and your family?

I feel profound gratitude for the excellent medical school education I received at Northwestern. The world-class faculty included many volunteer clinical staff who gave much time and energy to their teaching. Now, these many years later, I'm trying to do my part, both in my teaching role and in making this gift. Giving to scholarships is a wonderful way to honor the efforts of the faculty who contributed to our successes.

What was a key takeaway from your time at Northwestern?

I was one of seven transfer students from a school in Mexico where I completed my first two years of medical education. Dr. [James] Eckenhoff, the dean of Northwestern's medical school at the time, invited us to a welcome lunch just for us. This gracious token of acceptance made a really positive impression on me and demonstrated that we were all equally important members of the medical student body.

Why did you choose fourth-year students for your support?

By this point in their medical education, these students have chosen their career path. Our hope is to relieve the burden of any medical school debt they may have accrued. With the scholarship support, they can focus on their training and not have to take moonlighting jobs to stay financially afloat.

Does your scholarship's support for specific areas of training and practice hold special meaning for you?

Careers in psychiatry, family medicine, and pediatrics are less well-compensated than procedure-oriented specialties. Some students decide not to pursue them for financial reasons, leading to a physician shortage in these areas of medicine. Also, I am a psychiatrist. My father was a family physician. So, our preferences checked off those boxes!

What can you say to inspire your fellow alumni and friends to consider supporting students in this way?

I was lucky. Medical education in my day was less expensive, and my parents were generous in supporting me. Many students today don't have that kind of support, making scholarship funding from me and fellow alumni all the more important.

ALUMNI *Perspective*

TEEN HEALTH ADVOCATE

During the course of her career, Laura Offutt, '94 MD, has worked in academia, clinical research, drug development, and medical consulting. In the last decade, however, she has shifted her focus to teen health advocacy and is the founder of the annual International Adolescent Health Week (IAHW). Each year, the organization tasks 30 young people from around the world with implementing an event or action in their region. The IAHW Youth Ambassador Program has been recognized by UNESCO as an example of "meaningful youth engagement to prioritize and enhance the role of youth in decision-making processes."

When did your career as a physician turn into a career in teen health advocacy?

I first learned about global health and population health while working in the pharmaceutical industry. Also, during this time, my children entered middle and high school, and I saw up close how easily teen health misinformation spread amongst them and their peers. I decided to exit my pharmaceutical consulting work and create a digital platform for teens called *Real Talk with Dr. Offutt.* Teens were invited to share anonymous questions to which I would respond in weekly blog posts and then share across social media platforms.

What was the presence of physicians in this forum at that time?

A decade ago, there were very few teen-focused health websites, especially with a personal physician feel. At that time, physicians were just starting to become active on social media, and since I was no longer in direct patient care, I had a fair amount of liberty with how I was able to learn about and explore these online spaces while trying to reach young people with health information where they spend much of their time. As part of this effort, I worked with teen advisors on a regular basis. It was with one of these teen advisor groups that I shared the idea of creating a Teen Health Week.

What are teens most worried about as far as their health is concerned?

Mental health and stress, which they attribute to overwhelming school pressure and lack of real down time, the negative effects and pressure from social media, as well as despair about what the world will look like for them when they are adults. Many teens are also worried about sexual and reproductive health. Although it is well-documented that comprehensive sexual health education does not increase sexual behaviors, there is a trend towards less comprehensive and accurate reproductive health education. This void is often filled with the internet, which is rife with misinformation.

How do teen health issues vary by region in the U.S. or in teens from different nations? One thing that has struck me time and again in this work is the similarity of issues all over

the world. After

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One thing that has struck me time and again in this work is the similarity of issues all over the world. After all, adolescence is a phase of life we all go through, no matter where we live.

countries. Child marriage, which spiked in many poorer countries due to financial strains from the pandemic, remains legal in 43 states in the U.S. Access to healthcare, healthy food, and safe living spaces affect teens in every



state and all over the world. Health education is insufficient everywhere, and difficulty accessing inclusive reproductive healthcare is universal. There are, of course, issues that unevenly affect teens between countries. The ongoing and worsening epidemic of gun violence in the U.S. is one example.

What can physicians learn from what you've learned about teens?

Teens deserve to be heard. Parents and teens look to us as physicians for guidance and leadership about health-related issues and answers to health questions. For us to succeed in meeting their needs, we need to listen, really listen, to young people.

IAHW 2023 took place March 19–26, with programming and resources online at https://internationaladolescenthealthweek.org

WARD ROUNDS



Dear Mr. Harrig Thanks for your high estan

Wheeping cargle prevention was what I worked on hardet

Left: Sauer with research collaborator Eva Markley (1953).

Above: Handwritten note from Louis Sauer.

1931

Savior of Children

INVENTOR OF THE WHOOPING COUGH VACCINE, LOUIS WENDLIN SAUER, MD, PHD efore widespread pertussis vaccination, almost every child contracted the disease, and almost 10,000 deaths were reported annually in the United

States. That number plummeted after Louis Wendlin Sauer, MD, PhD — who served as an associate professor of pediatrics at Northwestern from 1941 to 1959 developed a vaccine to prevent the contagious respiratory infection.

Sauer worked at the Whooping Cough Hospital in Vienna and the Pasteur Institute in Brussels with the scientist who had discovered the whooping cough bacillus in 1906. In 1925, Sauer returned to the North Shore of Chicago — where he would go on to own a pediatrics practice — with a cache of the bacilli and began the research that led to development of the vaccine in 1931. He also developed the DPT vaccine for diphtheria, pertussis, and tetanus.

Sauer never asked to be paid for his invention, saying, "One doesn't do that sort of thing for money."



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