

Putting Patients First in a Pandemic

When Northwestern Memorial Hospital expanded its intensive care unit (ICU) bed capacity to accommodate the influx of patients with COVID-19, the COVID-19 ICUs were staffed with nurses from across five different specialty ICUs. Among these nurses was Emily Balmes, CCRN, who has been with Northwestern Medicine since 2017, and this year won a DAISY Award for her commitment to going above and beyond for a patient. Using iPads to connect patients in isolation with their families was just one way Balmes has put her patients first during this pandemic.

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

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OUR COMMITMENT TO SOCIAL JUSTICE

Shortly after this issue closed, our Northwestern Medicine community was deeply saddened to learn of the tragic killing of George Floyd and several others from racism and police brutality. We condemn this terrible loss of life and stand in solidarity with the genuine concerns of our Black community on campus. Our next issue will reflect responses and actions taken by Feinberg faculty and leadership together as we further advance social justice in our environment.

Spring/Summer 2020

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MOBILIZED IN A PANDEMIC

When COVID-19 swept in, Northwestern clinicians, investigators, students, and community members stepped up to deliver exceptional science and care.



NEW FRONTIER

Feinberg's New Institute for Augmented Intelligence in Medicine is a thoughtful and powerful force for improving medicine.



ALL IN

As director of the Center for Food Allergy & Asthma Research, Ruchi Gupta, MD, MPH, leads with a personal touch.



PROGRESS NOTES

In addition to alumni news and accomplishments, in this issue, we highlight alumni experiences with COVID-19.

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ON THE COVER: A 3-D rendering of the novel coronavirus. (Wildpixel/Getty Images)

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LEADERSHIP

United in a Global Pandemic



N RECENT MONTHS, WE HAVE EXPERIENCED AN UNPRECEDENTED

time in the history of Northwestern Medicine. The emergence of COVID-19 has required the collective response of our dedicated physicians, nurses, and support personnel, along with our scientists, trainees, and students. Together, we share incredible pride in the collective efforts of so many.

The pandemic has demanded the best of our academic medical community: The stories emerging from hospitals and those of our patients have lifted our spirits and reinforced why we chose the paths of medicine and life sciences.

In this issue, you can read about Northwestern Medicine's response in our special COVID-19 section, "Mobilized in a Pandemic" (starting on page 13), which shares stories from front-line clinical units, transformed laboratories, and virtual classrooms — stories of resilience and collaboration under remarkable circumstances.

As a result of this extraordinary commitment, already at the time of this writing, thousands of patients have been discharged from our hospitals to complete their COVID-19 recovery at home. Promising drug targets have been identified. Critical clinical trials have been rapidly launched.

This past March, not long before the Illinois stay-at-home order was issued, Feinberg was recognized by U.S. News & World Report as one of the best research-oriented medical schools in the country, rising one spot to 18th in the nation. Later that month, we matched our most diverse class of residents ever to train at the McGaw Medical Center of Northwestern University. Then, at the end

We choose to recommit ourselves to our mission to treat and cure diseases and to improve human health, while serving our communities.

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of May, we graduated 147 of the healthcare leaders of tomorrow via virtual ceremony, in the midst of this global pandemic.

Now, as Illinois begins to open back up, we are implementing reactivation plans. With progress, there is also a renewed sense of hope.

Following Gov. J.B. Pritzker's revised stay-at-home order in May, we began scheduling patients in need of care unrelated to COVID-19 whose procedures or surgeries had been postponed. We instituted extensive safety measures to protect everyone, from the use of face masks and symptom screening, to more frequent cleaning and facility modifications to support physical distancing guidelines.

Our determination to respond to this challenge with courage, compassion, equity, and the highest standards of character reflects the cardinal truth that the practice of medicine and the pursuit of scientific discovery do not stop in times of crisis. Rather, they are the unifying forces that will help our society move forward. In these unique circumstances, we choose to recommit ourselves to our mission to treat and cure diseases and to improve human health, while serving our communities.

We have no doubt that, one day very soon, we will be able to look back with pride at how the efforts of the entire Northwestern Medicine community contributed to the successful global response to this pandemic. Until then, we celebrate each positive step forward and all of the heroes behind that effort.

With warm regards,

Eric G. Neilson, MD

Vice President for Medical Affairs Lewis Landsberg Dean

Dean M. Harrison

President and CEO Northwestern Memorial HealthCare

Feinberg Among the Best

orthwestern University Feinberg School of Medicine rose one spot to rank 18th among research-oriented medical schools in the nation, according to the latest U.S. News & World Report rankings. This is the 13th year in a row Feinberg has placed in the top 20 of research-oriented medical schools, and several departments ranked highly among the specialty-specific rankings.

"The medical school continues its steady progress through the highest ranks of worldclass academic medical centers," said Eric G. Neilson, MD, vice president for Medical Affairs and Lewis Landsberg Dean.

Seven of Feinberg's specialty programs were recognized among the best in the nation an all-time high for nationally-ranked specialties. Physical therapy was ranked 4th in the nation, obstetrics and gynecology was ranked 9th, internal medicine rose two spots to be ranked 15th, pediatrics was ranked 16th, radiology and psychiatry were both ranked 17th, and surgery was ranked 24th.



PULSE *On Campus*

More details from Graduation 2020 at magazine.nm.org





Left: The Physician Assistant Program's graduation was conducted over Zoom. Above: Eric G. Neilson, MD, vice president for Medical Affairs and Lewis Landsberg Dean (left) and Max Kelsten, '20 MD (right) addressed the graduates.

Meet the Class of 2020

his year, Feinberg's 161st commencement ceremony was held virtually on May 18 to accommodate public health measures combating the spread of the COVID-19 pandemic. The ceremony was introduced by Eric G. Neilson, MD, vice president for Medical Affairs and Lewis Landsberg Dean. "I cannot think of a better time to embrace passion and emotionally prepare yourselves for the difficult medical work that lies ahead," Neilson said. "For all of you, it will require something we don't talk about enough: The need for resilience during times of great uncertainty and the ability to unselfishly serve those with greater privations." Neilson then introduced Morton Schapiro,

of Northwestern

-rthwestern University

Left, top to bottom: Kreena Patel, '20 MD, Patricia Obiageliaku Ekwueme, '20 MD, '20 MPH, Michael Mongelli, '20 MD University, who spoke about students' academic and personal growth.

"In your lives of service, you will blend the greatest scientific advances with the timeless art of human care. While your learning will of course continue over your lifetime, today is about recognizing the achievements that have brought you to this point in your careers," Schapiro said.

Dean Neilson then delivered the commencement address and Marianne Green, MD, senior associate dean for Medical Education, presented the members of the MD class of 2020. Each of the newly minted physicians' names and pictures were featured on the screen as their names were called.

After the degrees were conferred, Max Kelsten, '20 MD, addressed his classmates on the importance of community and manifesting compassion when practicing the art of medicine.

"In times of uncertainty, values fortify. Medical professionals are being referred to as heroes and looked to for strength. We can lead by demonstrating the spirit of medicine that has guided physicians' moral conscience for centuries: compassion," Kelsten said.

After the commencement ceremony concluded, Neilson virtually led the graduates in reciting the Declaration of Geneva, the modern version of the Hippocratic oath the same one they took as first-year medical students at Founders' Day.

Virtual graduation ceremonies were also held for the 34 graduates of Northwestern's Physician Assistant Program and the 91 graduates of the Physical Therapy Program.

Celebrating Feinberg's 2020 Residency Match

n Friday, March 20, medical students eagerly awaited a life-changing moment from their homes, while looking at screens. At exactly 11 a.m., they ripped their cell phones from envelopes a nod to the ritual of previous years — and logged on to a portal where they learned their match.

"I would have loved celebrating with all of our classmates, but we've been able to stay close with each other despite being physically separated," said Stewart Pine, who matched into Emergency Medicine at Cook County Hospital. On Match Day, an annual tradition held on the third Friday of March, all fourth-year students across the country learn at the same time where they will train as residents for the next three to seven years.

As the matches were revealed, students joined a video chat hosted by the Augusta Webster, MD, Office of Medical Education (AWOME), where they were congratulated by Diane B. Wayne, '91 MD, vice dean of Education and Sandra Sanguino, '93 MD, MPH, associate dean of Student Affairs.

"We are so extraordinarily proud of all of your accomplishments, both at Feinberg and

for what is to come," said Wayne, who is chair and Dr. John Sherman Appleman Professor of Medical Education, and a professor of Medicine in the Division of General Medicine and Geriatrics.

Eseohi Ehimiaghe, a fourth-year medical student, was video chatting with her family and hundreds of other fourth-year students as she learned her match: Obstetrics and Gynecology at Northwestern's McGaw Medical Center.

"I'm really excited: the faculty, residents and staff at Prentice have been so caring and set a great example for being a physician," Ehimiaghe said. "I'm proud to say I trained at Feinberg, and I can't wait to stay."



PULSE On Campus

New Space, Enhanced Discovery

orthwestern Medicine has opened a new 10,000 square foot Clinical Research Hub to enhance investigative scope while improving participant experiences.

Located on the 15th floor of Northwestern Memorial Hospital's Galter Pavilion, the expansion of the outpatient location of the Northwestern University Clinical and Translational Sciences (NUCATS) Institute's Clinical Research Unit (CRU) includes 20 exam rooms, procedure rooms, an echocardiography and ultrasound room, additional core lab space, and a staff training room.

"The CRU serves as a nexus for innovative research and epitomizes the robust collaboration that is Northwestern Medicine," said Richard D'Aquila, MD, the Howard Taylor Ricketts, MD, Professor of Medicine, who was recently named director of NUCATS and senior associate dean for clinical and translational research.

The research hub has already contributed substantially to growth in the research enterprise over the last decade, according to Donald Lloyd-Jones, MD, the chair and Eileen M. Foell Professor of Preventive Medicine, who was director of NUCATS for eight years, until D'Aquila's appointment in June. "In the past six years alone, we have seen more than a 300 percent increase in the number of studies supported by the CRU," he said.

The increased capacity will enhance the work of such investigators as Mary McDermott, MD, the Jeremiah Stamler Professor of Medicine in the Division of General Internal Medicine and Geriatrics, whose team is studying lower extremity functional impairment in people with lower extremity peripheral artery disease. In the last year, this team has conducted nearly 1,500 baseline or follow-up visits at Northwestern, including 436 six-minute walk tests. The tests have been used in studies to show the effectiveness of exercise to improve the patients' ability to walk, and thus their quality of life.

The CRU also has dedicated space for other General Internal Medicine and Geriatrics research studies, the nationwide All of Us Research Program, the Bluhm Cardiovascular Institute Clinical Trials Unit, and Division of Infectious Diseases research study teams.



(From left) Donald Lloyd-Jones, MD; Philip Greenland, MD; Eric Neilson, MD; Kristin Ramsey; Mary McDermott, MD; and Richard D'Aquila, MD, cut a ceremonial ribbon to officially open the Northwestern Medicine Clinical Research Hub on the 15th floor of Northwestern Memorial Hospital's Galter Pavilion.



RELAUNCHED CENTER FOR EPIDEMIOLOGY AND POPULATION HEALTH

mproving population health takes a high degree of interdisciplinary teamwork, which is exactly the strength of Northwestern's Center for Epidemiology and Population Health, recently relaunched with Norrina Allen, PhD, '11 GME, associate professor of Preventive Medicine in the Division of Epidemiology at the helm. Part of Northwestern's Institute for Public Health and Medicine (IPHAM), the center will gather and optimize a diverse pool of population health data in order to translate clinical questions into high-impact research.

"One of the most important roles the center can have is to connect investigators across Northwestern, bringing to bear diverse expertise to improve the health of our population," said Allen, who is also an associate professor of Pediatrics.

On Campus



Top Honors for Clinical Research

For more details, read an expanded version of "Top Honors for Clinical Research" at magazine.nm.org.

orthwestern University scientists received top honors from the Clinical Research Forum, an organization dedicated to supporting the clinical translational research enterprise, as part of its 2020 Top Ten Clinical Research Achievement Awards program, taking home the association's highest honor and capturing more finalist nominations than any other institution.

"The remarkable success of these brilliant and dedicated investigators shows the strength and breadth of Northwestern's clinical research program," said Eric G. Neilson, MD, vice president for medical affairs and Lewis Landsberg Dean.

JOHN ROGERS, PhD

John Rogers, PhD, was awarded the prestigious Herbert Pardes Clinical Research Excellence Award for his design of skinlike devices for wireless monitoring of vital signs in neonatal intensive care (published in *Science*). Rogers is the Louis Simpson and Kimberly Querrey Professor of Materials Science and Engineering, Biomedical Engineering and Neurological Surgery.



RICHARD BURT, MD

Richard Burt, MD, received the Distinguished Clinical Research Award for the success of a process called hematopoietic stem cell transplantation, which temporarily shuts down and reboots patients' immune systems with the application of a patient's own stem cells (published in *JAMA*). Burt is chief of Immunotherapy and Autoimmune Diseases in the Department of Medicine.



Daniela Matei, MD, was named to the list of top 20 finalists for her study finding that radiation combined with chemotherapy did not increase recurrence-free survival in women with stage III/IVA endometrial cancer, normally the standard of care in these cases (published in *The New England Journal of Medicine*). Matei is the Diana, Princess of Wales Professor of Cancer Research and a professor of Medicine in the Division of Hematology and Oncology.



NORRINA ALLEN, PhD

Norrina Allen, PhD, was named to the list of top 20 finalists for her study finding that adults who ate more eggs and dietary cholesterol had a significantly higher risk of cardiovascular disease and death from any cause (published in *JAMA*). Allen is associate professor of Preventive Medicine in the Division of Epidemiology.

Speaking Out on Disparities in NIH Funding

espite recent National Institutes of Health (NIH) findings showing that health disparities research and underrepresented minority scientists lack significant federal funding, the scientific community "has not embraced the message," according to a recent editorial published by three Northwestern investigators in the Journal of the American Medical Association. Here, the three authors share their motivations for writing the piece.



I was not that surprised by the results because as a health disparities investigator, I have experienced 'topic bias' in the grant review process. I was much more disturbed by the finding that white scientists were almost two times more likely to have their health disparities research funded than black scientists. To me, this finding suggests that NIH policies, culture, and priorities are disadvantaging black scientists who already face systematic barriers and racism in our society. As a scientist, it's my responsibility to shine light on the inequity and bias that exist within the scientific community, even if it is uncomfortable."

Senior author **NAMRATHA KANDULA, MD, MPH**, co-director of the Center for Community Health in the Institute for Public Health and Medicine (IPHAM) and associate professor of Medicine in the Division of General Internal Medicine and Geriatrics and of Preventive Medicine



Health disparities should not just be left to underrepresented scientists to solve. Innovative solutions can come from anyone. However, it happens that underrepresented minority scientists are more likely to propose research on these topics. That may be because of personal experience observing these disparities, personal experiences that bring forth unique solutions, or even unique access to populations experiencing disparities."

Lead author **MERCEDES CARNETHON, PhD**, the Mary Harris Thompson Professor of Preventive Medicine in the Division of Epidemiology and of Medicine in the Division of Pulmonary and Critical Care



Find "Disparities Research, Disparities Researchers, and Health Equity" at JAMANetwork.com.

I think increasing the representation of health disparities scientists on grant review panels, coupled with more explicitly dedicating funds within each institute to support this area of research, would go a long way toward improving funding gaps. This could help change attitudes toward health disparities research during the peer review process. It would also allow NIH to fund promising studies designed to address health disparities that may fall short of the standard institute funding lines."

Co-author **KIARRI KERSHAW, PhD, MPH**, associate professor of Preventive Medicine in the Division of Epidemiology

On Campus

MEDIA SPOTLIGHT

THE WALL STREET JOURNAL.

Health Day USNews

Patients Often Get Antibiotics Without a Doctor Visit, Study Finds

Nearly half of antibiotic prescriptions for Medicaid patients appear to be inappropriate, new research suggests. That kind of overprescribing raises risks for everyone, experts say, as bacteria gain more chances to mutate around the life-saving drugs.

For the study, researchers analyzed 298 million antibiotic prescriptions filled by 53 million Medicaid patients between 2004 and 2013. They found that 45% were ordered without any clear rationale.

"Indiscriminate use of antibiotics is increasing the prevalence of antibiotic-resistant bacteria and rendering them ineffective," said senior author of the study Jeffrey Linder, MD, MPH, FACP, chief of general internal medicine and geriatrics and Michael A. Gertz Professor of Medicine.

The New York Times

High Blood Pressure May Be Bad for Your Brain

A study published in *Circulation* concludes that cumulative effect of high blood pressure from young adulthood to middle age is associated with poorer mental function at age 50. The lead author, Simin Mahinrad, a postdoctoral fellow in the ABC Lab in the Ken & Ruth Davee Department of Neurology, said it is important to know not only how high blood pressure is, but also for how long it has been high. "Identifying people at risk at earlier stages is important," she said. "Old age may be too late."



The Washington Post

Doctors Keep Discovering New Ways the Coronavirus Attacks the Body

Damage to organs — including the kidneys, heart and brain — has prompted reassessment of COVID-19 and how to treat it.

Initially, kidney specialists attributed widespread kidney disease to the damage caused by ventilators and certain medications given to intensive-care patients, said Daniel Batlle, the Earle, del Greco, Levin Professor of Nephrology/Hypertension in the Department of Medicine. Then they noticed damage to the waste-filtering kidney cells of patients even before they needed intensive care. And studies out of Wuhan found the pathogen in the kidneys themselves, leading to speculation the virus is harming the organ.

"This is beyond the regular bread-andbutter acute kidney injury that we normally see," said Batlle.

The New Hork Times CN USNEWS OR REUTERS

Meat Increases Heart Risks: Latest Study Concludes

A large study in *JAMA Internal Medicine* highlighted the potential harms of a meat-heavy diet. The researchers analyzed data on a diverse group of thousands of people who were followed for an average of three decades. They found that people who had the highest intakes of red meat, processed meat, and poultry had a small but increased risk of developing cardiovascular disease. People who regularly ate fish, however, did not see an increased cardiovascular risk.

"It's a small difference, but it's worth trying to reduce red meat and processed meat like

pepperoni, bologna, and deli meats," said senior study author Norrina Allen, PhD, associate professor of Preventive Medicine in the Division of Epidemiology. "Red meat consumption also is consistently linked to other health problems like cancer."

Study co-author Linda Van Horn, PhD, RD, chief of nutrition in the Department of Preventative Medicine and professor of Nutrition in the Department of Preventive Medicine, said the new study relied on some of the highest quality data available.

PULSE

RESEARCH BRIEFS

DISEASE DISCOVERIES

NEW MIGRATION OF BRAIN TUMOR DISCOVERED





Treatments for glioblastoma, a deadly brain tumor, are often promising in early stages but lose effectiveness over time. According

to a new study published in the journal *Neuro-Oncology*, that may be because current treatments are targeting the wrong place.

The study, led by Craig Horbinski, MD, PhD, professor of Pathology, found that glioblastoma commonly migrates within the brain, specifically from the upper part of the brain down to the brainstem. This migration occurs as the disease progresses and may explain why treatments sometimes stall out.

"Many clinical trials focus therapy at the original tumor site," said Horbinski, who is also a professor of Neurological Surgery and director of the Mouse Histology and Phenotyping Laboratory at the Robert H. Lurie Comprehensive Cancer Center of Northwestern University. "But, as we found, that may not be what's ultimately killing these patients."

Horbinski collected and analyzed glioblastoma tissue after end-stage therapy to better understand how the tumors are adapting and resisting radiation therapy, and, with Michael Drumm, a fourth-year student in the Medical Scientist Training Program, found 68 percent of cases had brainstem invasion. Further, longer survival times correlated with a higher extent of brainstem invasion.

"We should talk about expanding the radiation fields that seem to arrest tumor development so they cover the brainstem," Horbinski said. "There's a number of things that that can be altered relatively quickly to at least see if that helps extend survival."

This work was supported by National Institutes of Health grant R01NS102669 and by the Northwestern SPORE in Brain Cancer P50CA221747.

CLINICAL BREAKTHROUGHS

First Trial Shows Benefit for Genomically Targeted Prostate Cancer Treatment



For the first time, advanced prostate cancer has been treated based on the genomic makeup of the cancer, delaying

progression for patients with metastatic castration-resistant prostate cancer, a deadly and treatment-resistant form of the disease.

Published in the New England Journal of Medicine, the clinical trial represents a breakthrough in treating this notoriously deadly cancer, and for precision medicine more broadly, according to Maha Hussain, MBChB, the Genevieve E. Teuton Professor of Medicine in the Division of Hematology and Oncology and senior author of the study. "We have indeed entered a new era of personalized and precision medicine for metastatic castrationresistant prostate cancer and I am confident more will be coming," said Hussain, who is also deputy director of the Robert H. Lurie Comprehensive Cancer Center of Northwestern University.

This study was sponsored by AstraZeneca and is part of an alliance between AstraZeneca and Merck Sharp & Dohme, a subsidiary of Merck.

> Right: PC-3 human prostate cancer cells, stained with Coomassie blue, under differential interference contrast microscope.





DISEASE DISCOVERIES

Uncovering the Cellular Mechanisms Behind Genetic Mutations in ALS



Findings of a study published in *Neuron* shed light on the mechanisms and consequences of a defect in a

gene known as C9orf72 that may aid the development of therapeutic interventions for patients with amyotrophic lateral sclerosis (ALS).

"Our study shows interesting ways of how a neuron tries to defend itself from cellular stress inferred by the C9orf72 mutation. We found that motor neurons form nuclear invaginations that accumulate the necessary machinery required to adjust the level of protein and RNA metabolism," said Juan Alberto Ortega, PhD, a postdoctoral fellow in the Kiskinis laboratory at the Les Turner ALS Center and co-first author of the study.

Previous work has found that this genetic mutation impairs the exchange of molecules between the nucleus and the cytosol, a process known as nucleocytoplasmic trafficking in which proteins and ribonucleic acid (RNA) move across the nuclear envelope of a cell. "What we wanted to identify, however, was what are the proteins that are redistributed as a result of this trafficking defect," said Evangelos Kiskinis, PhD, assistant professor in the Ken & Ruth Davee Department of Neurology and senior author of the study (pictured at left).

Scientists found that there is an imbalance of the nuclear and cytoplasmic proteome in the ALS cells, and this imbalance targets proteins involved in RNA and protein metabolism.

"OUR STUDY SHOWS INTERESTING WAYS OF HOW A NEURON TRIES TO DE-FEND ITSELF FROM CELLULAR STRESS INFERRED BY THE C9ORF72 MUTATION."

Additionally — and unexpectedly — the team also found that the eRF1 protein, which is normally found in the cytosol of a cell, accumulates within nuclear invaginations in neurons and plays a major role in the pathophysiology of the disease.

This work was supported by the National Institutes of Health National Institute on Neurological Disorders (NINDS) and Stroke and National Institute on Aging grant RQINSI04219, NIH and NINDS grants RZINSI11248 and RZINSI07761

DISEASE DISCOVERIES

'SOFT' SYMPTOMS DETECTED BEFORE PARKINSON'S DISEASE



People who carry genetic mutations associated with an increased risk for Parkinson's disease (PD) may exhibit minor symptoms long before the

disease progresses to affect daily life, according to a study published in *Lancet Neurology* by Tanya Simuni, MD, chief of Movement Disorders in the Ken & Ruth Davee Department of Neurology and lead author of the study.

"When someone comes into the clinic with the earliest physical motor signs of the disease, there already is about a 50 percent loss of relevant brain cells," Simuni said.

To investigate the pre-motor phase, Simuni and other scientists in the Parkinson's Progression Markers Initiative (PPMI) examined about 300 participants with inherited genetic mutations that predispose them to PD, comparing them to normal healthy controls.

The scientists found that a subset of participants with PD-associated mutations exhibited a series of "soft" clinical features, including increased scores on tests measuring muscle stiffness or slowness of movement.

Participants also underwent dopamine transporter scans to measure the level of brain dopamine, a neurotransmitter that drives PD's motor symptoms. Unexpectedly, levels of dopamine were higher, not lower, in carriers of genetic mutations.

"That indicates that potentially the brain of at-risk individuals tries to compensate prior to development of the disease, providing a window of opportunity," Simuni said.

Sorting people with PD-associated genes into stratified risk categories could help scientists identify early warning signs that could aid in developing both a diagnosis and treatment, according to Simuni.

This study was supported by the Michael J. Fox Foundation for Parkinson's Research.

PULSE **On Campus**

FACULTY AWARDS & HONORS













Three faculty were honored during the 16th annual Lewis Landsberg Research Day on April 2.

• Sarki Abdulkadir, MD, PhD, vice chair for Research in the Department of

Urology, the John T. Grayhack, MD, Professor of Urological Research, and professor of Urology and Pathology, received the Tripartite Legacy Faculty Award for Translational Science and Education. 🔯 1

• Karl Bilimoria.

MD, MS, vice chair for Quality in the Department of Surgery, the John Benjamin Murphy Professor of Surgery, and associate professor of Surgery in the Division of Surgical Oncology, and of Medical Social Sciences, and Melissa Simon, MD, MPH, vice chair for Clinical Research in the Department of Obstetrics and Gynecology, director of the Center for Health Equity

Transformation at the Institute for Public Health and Medicine (IPHAM), the George H. Gardner, MD, Professor of Clinical Gynecology, and professor of Medical Social Sciences, are recipients of the 2020 Mentor of the Year Award. 🙆 2. 3

Cynthia Rigsby, MD,

professor of Pediatric Radiology and Pediatrics, has been named the new head of the Department of Medical Imaging at Ann & Robert H. Lurie Children's Hospital. 🔯 4

Al Benson, MD, pro-

fessor of Medicine in the Division of Hematology and Oncology, and director of Cooperative Groups at the Robert H. Lurie Comprehensive Cancer Center of Northwestern University, was honored as "Physician of the Year" by CancerCare, a national nonprofit organization providing

free support services to anyone affected by cancer. 🔯 5

Eight Feinberg School of Medicine faculty members have been ranked among the most-cited researchers according to an annual list released by the Web of Science Group within Clarivate Analytics, a global data firm. The list includes:

• Robert Bonow.

MD, vice chair for Development and Innovation in the Department of Medicine and the Max and Lilly Goldberg Distinguished Professor of Cardiology.

• David Cella,

PhD, chair of the Department of Medical Social Sciences and director of the Center for Patient-Centered Outcomes at the Institute for Public Health and Medicine (IPHAM) and the Ralph Seal Paffenbarger Professor.

 Navdeep Chandel, PhD, the David W. Cugell, MD, Professor and professor of Medicine in the Division of Pulmonary and Critical Care, and of Biochemistry and Molecular Genetics.

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

• John Rogers, PhD, professor of Neurological Surgery.

• Jeffrey Sosman, MD, Professor of Medicine in the Division of Hematology and Oncology. 🙆 6

• Clyde Yancy, MD, vice dean for Diversity and Inclusion, chief of Cardiology in the Department of Medicine, and Magerstadt Professor.

Donald Lloyd-Jones,

MD, ScM, chair of the Department of Preventive Medicine, and the Eileen M. Foell Professor. LLoyd-Jones was also recently named the American Heart Association's national. president-elect, effective July 1. 107

James A. Hill, '70 MD, '79 GME, professor of Orthopaedic Surgery, is the recipient of the 2020 Diversity Award presented by the American Academy of Orthopaedic Surgeons. The Diversity Award recognizes members of the academy who have distinguished themselves through their outstanding commitment to making orthopeadics more representative of, and accessible to, diverse patient populations.

Murad Alam, MD, '06 MS, '15 MBA, vice

chair of Dermatology and professor of Dermatology, Otolaryngology -Head and Neck Surgery, and Surgery in the Division of Organ Transplantation, will enter a fouryear term on the American Academy of Dermatology (AAD) Board of Directors. He currently serves

the AAD as an associate editor for Journal of the American Academy of Dermatology.

Phyllis Zee, MD, PhD,

'87 GME, chief of Sleep Medicine and the Benjamin and Virginia T. Boshes Professor of Neurology, is the recipient of the Sleep Research Society's 2020 Distinguished Scientist Award, in recognition of her sustained contributions to sleep and circadian rhythm research

Samuel Stupp,

'77 PhD, the Board of Trustees Professor of Materials Science and Engineering, Chemistry, Medicine and Biomedical Engineering, was honored by two major organizations: He was elected to the National Academy of Sciences and was also awarded the 2020 Nanoscience Prize from the International Society for Nanoscale Science, Computation and Engineering.

Nobilized in a Pandemic

Northwestern Medicine responds to the biggest health crisis of our time.

it became clear that COVID-19 was developing into a deadly global pandemic, Northwestern Medicine sprang into action. Faculty and staff activated dozens of new projects related to COVID-19, some from their labs on the Chicago campus as essential workers, others from their home offices. Hospital leaders, physicians, nurses, and staff all put in heroic efforts as the system mobilized to save lives. And medical education quickly adapted to the changing landscape. In a time of crisis, Northwestern Medicine's commitment to human health and the advancement of science has been more evident than ever. On the following pages, we share the stories behind this systemwide mobilization. »

A microscopic view of the novel coronavirus.

At right: A transmission electron microscope image of an isolate from the first U.S. case of COVID-19. Courtesy of the Centers for Disease Control and Prevention.

Science at Work

Investigators tackle the pandemic from all sides.

The COVID-19 response at Feinberg was fast and multifaceted. As of press time, more than 230 projects were in motion, from interventional studies and data analytics to discovery, diagnostics, and specimen testing.

"We aimed to maximize our research impact and minimize intrusions on critical healthcare pathways," says Rex Chisholm, PhD, the Adam and Richard T. Lind Professor of Medical Genetics and vice dean for scientific affairs and graduate education.

A beautiful target

Some of the most critical work — identifying potential drug targets — started in mid-January, when Karla Satchell, PhD, professor of Microbiology-Immunology and director of

the Center for Structural Genomics of Infectious Diseases (CSGID), began leading a multi-institution, international effort to investigate the structure of the novel coronavirus. By rebooting previous research related to SARS, the center

was quickly able to begin investigating the protein structures of the virus with the goal of finding new drug targets for COVID-19.

Scientists mapped the atomic structure of two critical proteins in a complex, nsp10/nsp16. These proteins modify the genetic material



Above: The structure of nsp16 (pink) bound to nsp10 (aquamarine). Nsp16 catalyzes the methyltransferase reaction; nsp10 is a co-activator. Image courtesy of Nicole Inniss, PhD. of the virus to make it look more like the host (human) cell RNA. This allows the virus to hide from the cells, giving it time to multiply. If a drug can be developed to inhibit nsp10/nsp16, the immune system should be able to detect the virus and eradicate it faster.

"This is a really beautiful target, because it's a protein absolutely essential for the virus to replicate," says Satchell.

The structure of nsp10/nsp16 was released to the scientific community March 18 on the RCSB Protein Data Bank. This was the fourth protein structure of a potential drug target of SARS-CoV-2 determined by the CSGID team of scientists. The center is racing to release more structures for drug development.

"We need multiple drugs to treat this virus, because this disease is likely to be with us for a long time," says Satchell. "It's not good enough for us to develop a single drug. If COVID-19 develops a resistance to one drug, then we need others."

"It's been amazing to see the sharing of resources. It used to be that if you had a new drug target, the first thing you did is kept it quiet," she added. "Now people are making a lot of information public, and that is a great



Straight Talk

Infectious disease expert Robert Murphy, MD, sets a tone of urgency.

From the emergence of the novel coronavirus as a deadly threat in Wuhan, China, Robert Murphy, MD, executive director of the Institute for Global Health and director of the Center for Global Communicable Diseases, warned of its spread. On March 24, he outlined the best way forward:

- Keep schools and universities closed.
- 2 Ramp up testing and test healthcare workers.
- Increase production of hospital supplies and capacity, using the Defense Production Act if necessary.
- Invest in massive vaccine and antiviral drug development initiatives.
- Support the unemployed with funding and health insurance.
- Vigilantly enforce public health policies such as social distancing.

Reflecting on these guidelines in late June, Murphy said, "I'm really stunned at my statements from March because at the time, I was heavily criticized for being an alarmist. But I stood firm, and looking back, I stand by each and every one of those points." Visit magazine. nm.org/scienceatwork, where Murphy grades, on a scale from A to D-, the global response to the actions he proposed.



blueprint for the community to follow, not only for this but for the future."

A testing lab in 10 days

As soon as the U.S. Food and Drug Administration allowed certain laboratories to develop diagnostic tests for coronavirus, Northwestern Medicine and Feinberg began working together

"Research staff worked seamlessly with the Northwestern Medicine clinical lab."

Elizabeth McNally, MD, PhD

to increase the healthcare system's testing capacity from about 90 per day to more than 360 per day — and in the process, greatly reducing test result turnaround times.

Staff from NUSeq Core Facility in the Center for Genetic Medicine picked up patient samples from the hospital and brought them to NUSeq for testing, using the facility's real-time quantitative polymerase chain reaction machines. The data was then sent back to the health system for analysis and reporting. Six Feinberg research staff members began working in shifts around the clock to more than quadruple Northwestern Memorial Hospital's testing capacity.

"These steps all came together over about 10 days, including two weekends — a remarkable feat!" says Xinkun Wang, PhD, director of NUSeq and research associate professor of Biochemistry and Molecular Genetics. Wang led this effort, along with Elizabeth McNally, MD, PhD, the Elizabeth J. Ward Professor of Genetic Medicine, professor of Medicine in the Division of Cardiology, and director of CGM.

"Our research staff routinely performs the exact same steps as those used in the COVID-19 virus tests, and our research labs have the necessary machines for this type of analysis," says McNally. "It really became a question of how quickly we could get the proper certifications and training in place. Luckily, we have fantastic research staff who worked seamlessly with the Northwestern Medicine clinical lab to make this all happen. It took a lot of lifting, but it got done and we are now helping reduce the backlog and hopefully will be able to ramp up capacity even more than projected."

In addition to joining forces with Feinberg's NUSeq Core Facility, Northwestern Medicine is testing in-house for COVID-19 in three other platforms. »

Public Health Interventions

In response to the pandemic, the open, crowdsourced Chicago COVID-19 Resource Repository was created by Feinberg faculty and staff in the Center for Community Health's Alliance for Research in Chicagoland Communities (ARCC) program, which has presence in the Institute for Public Health and Medicine (IPHAM) and the Northwestern University Clinical and Translational Sciences Institute (NUCATS).

The repository offers lists of resources for physical and mental health, housing, food, financial and legal ser-

vices, substance use disorder services, internet access, childcare, education, volunteer opportunities, donations, and more. IPHAM also coordinated the Chicago COVID-19 Coalition, which



involves faculty, staff, and trainees across multiple Chicago-area academic centers, state and city health departments, numerous regional health systems, and other stakeholders.

"The COVID-19 epidemic has ignited a vigorous groundswell of selfless collaboration," says Ron Ackermann, MD, MPH, director of IPHAM and senior associate dean for public health.



A Wearable Device for Tracking Symptoms

John Rogers, PhD, the Louis Simpson and Kimberly Querrey Professor of Materials Science and Engineering, Biomedical Engineering, and Neurological Surgery, collaborated with the Shirley Ryan AbilityLab to develop a novel wearable device and create a set of data algorithms specifically tailored to catch early signs and symptoms associated with COVID-19 and to monitor patients as the illness progresses. Capable of being worn 24/7, the postage-stamp-size device produces continuous streams of data and uses artificial intelligence to uncover subtle, but potentially life-saving, insights. In the coming weeks, the Northwestern and AbilityLab teams will continue collecting patient data to strengthen their algorithms - through deployments both in the clinic and at home.

An antibody test requiring a single drop of blood

As antibody testing ramps up across the country, Northwestern investigators have developed a new method for testing for SARS-CoV-2 (the virus that causes COVID-19) antibodies. The method requires only a single drop of blood collected from a simple finger prick.

A team of Northwestern scientists, including McNally and biological anthropologist Thomas McDade, PhD, together with Feinberg pharmacologist Alexis Demonbreun, PhD, and investigators Richard D'Aquila, MD, associate vice president of research and the Howard Taylor Ricketts, MD, Professor of Medicine in the Division of Infectious Diseases, and Brian Mustanski, PhD, professor of Medical Social Sciences, Psychiatry, and Behavioral Sciences reported this new test in a paper on MedRxiv, the preprint server for health sciences.

Antibody tests are useful for determining prior exposure to a virus, like the one that causes COVID-19. But current approaches to antibody testing have significant limitations: Point-of-care tests using finger stick blood are qualitative and often inaccurate, while more precise lab-based tests require venous blood. The Northwestern team has developed an approach that combines the convenience of finger stick blood sampling in the home with

Northwestern investigators have developed a new method for testing for SARS-CoV-2 antibodies that only requires a single drop of blood collected from a simple finger prick.

the analytical rigor that can be applied in the lab. According to McNally, "Widespread serological testing is essential for figuring out how the virus is spreading in the community, but it is very hard to screen large numbers of people when the tests require people to come to a healthcare provider."

"A pandemic – especially one caused by a mysterious or newly discovered infectious agent – engenders a stark reminder that supporting fundamental research has been a prudent investment of public funds."

Ali Shilatifard, PhD

The critical importance of basic science

From the earliest weeks of the COVID-19 pandemic, scientists across Northwestern mobilized to understand the virus and find



Called to Duty

Nicholas Soulakis, PhD, assistant professor of Preventive Medicine in the Divisions of Health and Biomedical Informatics and Epidemiology, is taking a leave of absence from the medical school to work as an epidemiologist in the Illinois Department of Public Health's Office of Policy, Planning, and Statistics. Soulakis, who specializes in epidemiological surveillance, will help the IDPH understand the number of Illinoisans infected with COVID-19 and predict how long the outbreak will last.

"To be called on to serve in a time of crisis — you train your whole career for that moment," says Soulakis, who is also a professor of Medical Social Sciences.

a treatment for it. Using next-generation sequencing technology that was unfathomable just 15 years ago, scientists quickly developed a picture of the virus' genetic structure, providing a framework for developing vaccines, therapies, and tests.

This is a reminder of the importance of basic molecular science, something summarized profoundly by Ali Shilatifard, PhD, the Robert Francis Furchgott Professor and chair of Biochemistry and Molecular Genetics, director of the Simpson Querrey Center for Epigenetics, and professor of Pediatrics, in a recent editorial in *Science Advances*, where he also serves as editor.

"A pandemic — especially one caused by a mysterious or newly discovered infectious agent — engenders a stark reminder that supporting fundamental research has been a prudent investment of public funds," he wrote.

Now more than ever, the health of our society depends on the understanding of the molecular basis of human disease. *

COVID-19 and African Americans



In April, **Clyde Yancy, MD, MSc**, vice dean for Diversity and Inclusion and chief of Cardiology in the Department of Medicine, published an editorial in *JAMA* shedding light on the glaring disparities in COVID-19 fatality rates. "Persons who are African American or Black are contracting SARS-CoV-2 at higher rates and are more likely to die. Why is this uniquely important to me? I am an academic cardiologist; I study healthcare disparities; and I am a Black man," he writes.

Yancy, who is the Magerstadt Professor and professor of Medicine in the Division of Cardiology and of Medical Social Sciences, cited data from multiple cities in the U.S., including Chicago, where more than 50 percent of COVID-19 cases and nearly 70 percent of COVID-19 deaths involve Black individuals, although they make up only 30 percent of the population.

70% of COVID-19 deaths in Chicago involve Black individuals based on data from cities across the U.S.

He also writes that data have not fully been adjusted for comorbidities. "But concerns go beyond these comorbidities," he points out. "Where and how Black individuals live matters." Social distancing is not an option for people living in dense, poor communities and who can't do their work from home.

"This is a moment of ethical reckoning," he goes on. "The scourge of COVID-19 will end, but healthcare disparities will persist."

Feinberg faculty have published a range of editorials about the complex issues associated with the pandemic. To read more, go to news.feinberg.northwestern.edu/pick/covid-19

Meeting the Moment

Northwestern Medicine builds an immediate response.



From the beginning of the pandemic, Northwestern Medicine deployed a number of tactics to help ensure the highest level of safety is in place for physicians, staff, patients, and visitors — as well as the community. Infectious disease specialist Gary A. Noskin, MD, senior vice president for quality, led Northwestern Medicine's COVID-19 response efforts. Here he answers some questions about this process.

What was Northwestern Medicine's initial response to COVID-19?

We immediately put multiple work streams in place to develop and implement plans to address patient surge, ventilator management, building a labor pool, medication supply, and more. It was critical that we secured and conserved personal protective equipment (PPE) to adequately equip our staff to help ensure their safety.

When you look at what we were able to put in place in such a short period of time, it is a significant accomplishment made possible by some of the best and most talented healthcare professionals in the country. We quickly responded and expanded our work, especially in the area of innovation. We leveraged new digital



tools. Our health system conducts about 1,000 Microsoft Teams meetings a day. We have an incredible healthcare system, and it is healthy. I have every bit of confidence that on the back end of this pandemic, we are going to come out even better and stronger.

How did telehealth play a role in the initial response to COVID-19?

Since the start of the pandemic, we have conducted tens of thousands of telehealth visits. Telehealth has allowed us to continue to offer patient care while patients stay safe at home because they can connect with their providers via a secure virtual network.

What research is being conducted?

Several research efforts began quickly to provide novel therapies to patients with COVID-19 and

to better understand the pathophysiology of the disease. By April, two studies had enrolled patients at Northwestern Memorial Hospital to examine the use of sarilumab and remdesivir as possible treatment options.

What is your outlook for the future?

As we move forward in the coming months, continued collaboration will be vital. We intend to closely monitor and weigh resource availability with the goal of increasing the number of staffed ORs to accommodate all emergency procedures while meeting demand for elective surgeries. As resources allow, we continue to expand access to procedures that are less time-sensitive. Just as it has always been, the safety of our employees, physicians, and patients is our top priority. *****

Early Accomplishments

From the earliest days of the pandemic, Northwestern Medicine's response was robust and rapid.

- Inpatient units were quickly converted into intensive care and COVID-19 units.
- 2 A COVID-19 Patient Monitoring Program was launched to support patients who do not need to be hospitalized.
- 3 Employees and physicians created a robust labor pool to support care of patients with confirmed or suspected COVID-19.

- PPE was secured and conserved so that care teams would have the equipment necessary to keep them safe.
- 6 Patients were quickly enrolled in clinical trials.
- 6 An employee portal was launched on NM Interactive, and a physician portal was built on Physician Forum. The NMI site received tens of thousands of pageviews a day from health system employees.
- A COVID-19 hotline was launched, as well as COVID-19 email accounts to address employees' and physicians' concerns.
- Technology was widely rolled out to support telehealth efforts.

Ready for Reactivation

As of May 11, per Gov. J.B. Pritzker's revised stay-at-home order, Northwestern Medicine started to schedule surgeries, visits, and procedures for those who needed advanced treatments unrelated to COVID-19 in a timely manner. Safety remains a top priority, and several measures were put in place for the health and well-being of patients, physicians, staff, and the community:

Visitation. Visiting is restricted in all inpatient and outpatient facilities; new policies are updated regularly.

Screening. Everyone entering Northwestern Medicine buildings is screened for fever and asked whether they have experienced COVID-19 symptoms. Those exhibiting symptoms are triaged for care or asked to return home.

Comprehensive cleaning. Environmental Services teams continue to perform rigorous cleaning of facilities and have increased the frequency of cleaning and disinfecting high-touch areas.

Universal masking. Everyone is required to wear a mask in hospitals and ambulatory facilities. Masks are provided for those who do not have one.

Physical distancing. Except for those involved in direct patient care, everyone must maintain at least a six-foot distance from others. Seating arrangements have been modified in waiting rooms, food courts, and other common areas to reinforce this practice. Elevator occupancy has also been limited.

Updates on the system's COVID-19
response and safety measures can
be reviewed at nm.org/covid-19.

Care Without Compromise

Adapting to new realities while going the extra mile

Despite the challenging landscape, a spirit of camaraderie and determination has allowed Northwestern Medicine staff and physicians to overcome many of the unique obstacles presented by the COVID-19 pandemic. Various initiatives and programs were designed in mere days to provide the best possible patient care, whatever the circumstances.

Monitoring COVID-19 patients at home

Northwestern Medicine created the COVID-19 Patient Monitoring Program, which brought together more than 500 individuals, including Northwestern University Feinberg students and Northwestern Medicine staff from a variety of specialties. The program was designed to monitor and support patients who are not hospitalized but who tested positive, have pending results, or are presumed to have COVID-19.

"We identified there was a gap for the patients who were getting this diagnosis and going home," explains Gayle Kricke, PhD, MSW, director of operations for primary care and an assistant professor of Internal Medicine and Geriatrics, who was among those to help develop the program with Jeffrey Linder, MD, MPH, chief of General Internal Medicine and Geriatrics in the Department of Medicine. "This presented a unique opportunity to both monitor and advise them."

Since more than 80 percent of patients with COVID-19 do not require hospitalization, the program offered an efficient process to monitor patients at home and, if necessary, triage them to the appropriate level of care. It was developed and launched in just four days, a feat made possible by teamwork. "The speed and skill with which leadership, project management, medical students, nurses, advanced practice providers, attending physicians, and information systems staff came together were nothing short of remarkable," says Linder.

Each day, patients are asked to report their symptoms through NM MyChart. Those who do not respond or who report severe symptoms receive a phone call from a clinician.

"We're trying to help patients stay at home and be well through their illness, but we're also keeping an eye out for severe symptoms and

Telehealth allows Northwestern Medicine patients to stay safe at home because they can connect with their providers via a secure virtual network.



patients who need the Emergency Department or hospital-level care," says Linder.

"We're helping people remain safe in their home, knowing that someone is checking up on them," says Kricke. "If they meet certain criteria, we will triage them and do a warm handoff so the ED is aware they are coming."

This level of care has been made possible by seamless teamwork, and patients benefit. "I just feel so much better when you call," reported one patient. "Not physically, but emotionally. It's so nice to get reassurance and to know someone is keeping an eye on me."



Deploying Surge Staffing

Karl Bilimoria, MD, vice president for quality at Northwestern Memorial HealthCare, and a group of project managers from the Northwestern Medicine Project Management Office coordinated with each hospital's surge staffing teams to engage physicians in a tiered structure that would meet demand when more patients seek care for COVID-19. Systemwide surveys were rolled out to invite physicians to participate in the COVID-19 surge staffing. "It was amazing to see how many individuals

came forth to help in any way they could," says Bilimoria, who is the John Benjamin Murphy Professor of Surgery and associate professor of Surgery in the Division of Surgical Oncology and of Medical Social Sciences. "More than 1,700 physicians, advanced practice providers, and trainees responded. This kind of collaboration and support is what makes our health system stronger."





Emergency Medicine at Its Best

Focus on COVID-19

Matthew Kippenhan, MD, medical director of the Emergency Department at Northwestern Memorial Hospital and assistant professor of Emergency Medicine, rose to the challenge of helping his team navigate the pandemic. From putting extra staff in place and making updates in Epic to implementing the rapidly changing PPE and clinical guidelines, Kippenhan says the staff have been very flexible through it all, and he is grateful for the support from everyone at Northwestern Medicine.

From Cardiac Medicine Unit to Cardiac ICU in a day

Beginning in mid-March, Jaime Hosler, BSN, CCRN, patient care manager for the Coronary Care Unit at Northwestern Memorial Hospital, was part of the team that made plans for how to best care for patients with COVID-19 while also caring for patients who do not have COVID-19 but who require intensive care.

A plan came together to expand COVID-19 care capabilities by converting the Northwestern Memorial Hospital ninth-floor Galter unit to a COVID-19 unit. That meant staff would have to move the 14-bed Coronary Care Unit from Galter to the eighth floor of the Feinberg Pavilion.

Over just eight hours on a Saturday, Hosler and her team transformed a regular Cardiac Medicine Unit in the Feinberg building into a fully operational Cardiac ICU, with all the necessary monitors, supplies, medications, and equipment. Patients were transferred into the unit the same day.

"All of this work occurred on the same Saturday the patients were moved to the new Cardiac ICU — an incredible amount of work completed within hours," says Hosler.

To outfit the new COVID-19 ICU, the following work was completed in one day:

GE Healthcare helped get ICU monitoring equipment up and running; staff members from the Pharmacy department restocked its shelves and reprogrammed their medication management system; supply carts were built and stocked with ICU equipment and COVID-19 PPE; cameras were installed in patient rooms to allow remote monitoring of patients and limit the number of times nurses had to don PPE to enter the rooms; and the Infection Prevention and Engineering departments created negative airflow for the new rooms.

"The response to this crisis was strategic and comprehensive," says Hosler. "This work was a true display of teamwork and excellence."

Bringing kidney dialysis home

After surviving three heart transplants, multiple near-fatal infections, and a failed kidney transplant — along with being wheelchair bound due to spending nearly a year in and out of ICU — Lydia Sotomayor, 33, suddenly found herself also having to confront COVID-19.

"I came home in November 2019 after being in the hospital for almost a year, but I was still going to a center for hemodialysis three days a week," she says. "When the pandemic struck, I was scared. I didn't want to do that anymore." »



"I've been absolutely astonished by how much people have really advocated for us," he says. "Northwestern Medicine Incident Command has been vital to allowing rapid escalation of issues and adjusting hospital capacity. In addition, our physicians, residents, advanced practice providers, nurses, technicians, and Registration and Security team members have been selfless with their time and skills. Despite the rest of the world being on hold, these team members arrive each day ready to tackle any emergency."

Kippenhan says the outpouring of gratitude from patients has been touching. "I had more patients say thank you in the past few weeks than ever in my career," he says.

Care Without Compromise

Diseases of the kidney don't pause for COVID-19. Dialysis patients still need treatment, but hemodialysis centers can have dozens of stations, relatively close together a risky scenario in a deadly pandemic.

Northwestern Medicine has responded by coordinating home dialysis for its most vulnerable patients. Sotomayor, whose kidney and last heart transplants were both conducted at Northwestern Memorial Hospital in 2018, is one of them. (She had her first heart transplant at the age of 15 at Ann & Robert H. Lurie Children's Hospital of Chicago, then Children's Memorial Hospital.)

"Within a week of Lydia's decision to switch to home peritoneal dialysis (PD), our surgeons placed a peritoneal dialysis catheter. Then, she and her mother were trained by our dedicated home dialysis team for almost four weeks," says her nephrologist, Vikram Aggarwal, MD, assistant professor of Medicine in the Division of Nephrology and Hypertension.

During that time, Sotomayor came to the clinic five days a week for four to five hours each day to train with Leslie Jansto, RN. Normally, patients transitioning from hemodialysis to PD travel to two different places (a center for hemodialysis and the clinic for PD training), but to expedite Sotomayor's training while keeping her socially distanced, Northwestern Medicine's home dialysis clinic did both therapies onsite, on a more efficient schedule.

The team — which included Lydia, her mom, social workers, nurses, and a dietitian — Aggarwal says, "worked as a family" to get Sotomayor set up to do PD at home.

"I am so grateful," says Sotomayor, who is now doing just PD at night while she sleeps, no longer risking her health to get to a dialysis center — and enjoying having her days freed up.

Doing everything to save lives

One of COVID-19's deadliest manifestations is in the lungs, and Northwestern Medicine has met extreme situations with extraordinary measures.

In June, for the first time in the nation, surgeons at Northwestern Memorial Hospital performed a double-lung transplant on a patient whose lungs were irreversibly damaged by COVID-19. The patient, a Hispanic woman in her 20s, had spent six weeks in the COVID ICU



Kidney patient Lydia Sotomayor (seated) and her mother with Vikram Aggarwal, MD, and Leslie Jansto, RN

on a ventilator and extracorporeal membrane oxygenation (ECMO) machine, a life support system that does the work of the heart and lungs; thanks to ECMO, she could get adequate time to clear the virus from her body, allowing the possibility of transplantation.

"A lung transplant was her only chance for survival," says Ankit Bharat, MD, chief of thoracic surgery and surgical director of the Northwestern Medicine Lung Transplant Program.

In March, Bharat had been part of yet another emergency effort to save a COVID-19 patient — this time, at Northwestern Medicine McHenry Hospital. Normally, the patient would have been transferred to Northwestern Memorial, but her unstable condition made this impossible. Bharat and thoracic surgeon Rafael Garza Castillon Jr., MD, climbed into an ambulance with the Critical Care team and an ECMO machine and went to the patient, some 53 miles away.

"Without ECMO, she wouldn't have survived," says Bharat.

Bharat adds that in times like these, collaboration is vital.

"Our nurses, respiratory therapists and other providers performing COVID-19 testing on thousands of patients, transportation staff, as well as doctors on the front lines are all putting their lives on the line to help take care of these patients," he says. *

Ankit Bharat, MD, and his team performed the 10-hour surgery on a patient whose lungs had been irreversibly damaged by COVID-19.





The lung damage was among the worst Bharat has seen.

Heart-Warming Community Support



Individuals, businesses, and children from local communities and around the world have sent generous donations, cards, and artwork to support Northwestern Medicine physicians and staff during the COVID-19 pandemic.

Medical Education Adapts

Transitioning to a virtual medical curriculum

Within days of Gov. J.B. Pritzker declaring a stay-at-home order for the state of Illinois, the medical school took immediate action by transforming nearly all of its curriculum to be delivered online.

Efforts included online modules for first-year students, virtual clerkships and electives for third- and fourth-year students, and 23 Problem-Based Learning small groups continuing remotely, with faculty joining students to work through patient cases, share digital content, and co-create digital concept maps.

Students also continued to engage in telehealth visits with patients through the Education-Centered Medical Home program. In addition, students volunteered to work remotely with Northwestern Memorial Hospital inpatient teams to help compile discharge summaries for patients.

Boot camps for clinical skills training for graduating fourth-year students were also adapted to an online format. The obstetrics and gynecology boot camp, for example, went virtual — students were mailed suture knot tying kits (to practice suturing and knottying under the virtual supervision of faculty and residents), small aspirators and a papaya (to learn how to do endometrial biopsies), and water balloons and amnihooks (to practice artificial rupture of membranes).



Fourth-year students perform simulated endometrial biopsies on a papaya (top left); David Salzman, '05 MD, MEd, '09 GME, leads a virtual patient simulation (top right); and scenes from a virtual obstetrics and gynecology boot camp.

New course offerings

New virtual courses were also created in response to the medical school's transition to online learning, including a two-week virtual pathology COVID-19 elective.

"Typically, we have one or two students doing an in-person pathology rotation at a time, but as the number of available clinical

"This elective was well-planned and demonstrated how effective learning with modern technological capabilities can be done correctly."

Sherry Lee, third-year medical student

rotations was reduced due to COVID-19, we had significantly more students interested in participating in the pathology elective," says Kristy Wolniak, assistant professor of Pathology and Medical Education.

Online content for the course, including PowerPoint presentations and lectures with audio recordings, video demonstrations, and validated case material were made available online. Faculty members, fellows, and residents also led and moderated live virtual check-ins and lectures at the end of each class to discuss covered specific pathology topics and show virtual reviews of microscopic slides, multidisciplinary tumor boards, and livestreams of intraoperative frozen section consultations.

"Overall, this elective was well planned and demonstrated how effective learning with modern technological capabilities can be done correctly," says Sherry Lee, a thirdyear medical student who was enrolled in the elective. *

New Frontier

Feinberg's new Institute for Augmented Intelligence in Medicine is a thoughtful and powerful force for improving medicine.

WRITTEN BY ERIN SPAIN

ith the opening of the new Institute for Augmented Intelligence in Medicine (I.AIM), Feinberg has the opportunity to not only create and implement new AI tools that enhance healthcare, but also to set ethical standards for how these tools are developed and used in the medical profession.

"We can't afford to 'move fast and break things,' because if we break things, people might die," says institute director Abel Kho, MD. "We have to be very thoughtful, from the bottom data layer all the way up to the application layer, to be sure we are doing everything in an ethical, responsible way."

This sense of responsibility starts with the institute's name. The choice of the word "augmented" in lieu of

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We have to be very thoughtful to be sure we are doing everything in an ethical, responsible way."

ABEL KHO, MD, MS,

Director, Institute for Augmented Intelligence in Medicine

"artificial" is deliberate, according to Kho, who is also an associate professor of Medicine in the Division of General Internal Medicine and Geriatrics.

"There are not many things in life that have a positive spin when you say 'artificial," he says. "Augmented' emphasizes the human touch in medicine and how it can be enhanced or augmented with technology — not replaced. AI is a tool, like a stethoscope or scalpel. And it's most powerful when guided by the hands of clinicians."

As the director of the Center for Health Information Partnerships in the Institute for Public Health and Medicine (IPHAM), Kho is well-versed in bringing people, communities, and data together to drive measurable and sustained improvement in health. He also has an active primary care practice, which helps inform the clinical relevance of his research.

At I.AIM, he will lead a team exploring the application of computational methods — such as machine learning, artificial intelligence, pattern recognition, genetic analysis, and deep phenotyping of health data — to build useful, responsible tools that put people first.

CREATING AI INFRASTRUCTURE ACROSS THE HEALTHCARE SYSTEM

The creation of the institute was in large part prompted by the fact that Northwestern Medicine has already become a breeding ground for AI-powered research.

Mozziyar Etemadi, MD, PhD, research assistant professor of Anesthesiology and of Biomedical Engineering at the McCormick School of Engineering, was the co-author of two AI studies in collaboration with Google: one, published in *Nature Medicine*, showed that an AI tool was able to detect malignant lung nodules better than radiologists; the other, published in *Nature*, showed that another AI tool predicted breast cancer in mammograms more accurately than radiologists. These discoveries were widely reported by national media outlets.

Jeffrey Goldstein, PhD, assistant professor of Pathology, was part of a

Seven Guiding Principles

Kho has created guiding principles for the institute modeled on the Hippocratic Oath.

1	VALUE PRIVACY
2	ACT WITH HUMILITY
З	ENDEAVOR ETHICALLY
4	MOVE DELIBERATELY; DON'T BREAK THINGS PATIENTS OR CLINICIANS DEPEND ON
5	RESPECT PATIENTS AND CLINICIANS
6	AUGMENT THE PHYSICIAN'S TOOLS; MAINTAIN CENTRALITY OF PEOPLE IN THE PRACTICE OF MEDICINE
7	BENEFICENCE (DO WHAT'S RIGHT)

team of scientists who created patent-pending technology that uses AI to analyze placenta images after delivery, providing critical information, such as whether the fetus received enough oxygen in the womb or if there is a risk of infection or bleeding for the mother. Currently in the U.S., only 20 percent of placentas are assessed by pathology exams after delivery, in part because the cost, time, and expertise required are prohibitive; AI could help make it possible, improving health outcomes for mother and child. » AI is also being explored at Northwestern Medicine Bluhm Cardiovascular Institute's Center for Artificial Intelligence in Cardiovascular Disease. Clinicians are testing smart stethoscopes created by Berkeley, California-based Eko Devices, Inc. This technology uses recordings of tens of thousands of heartbeats to detect murmurs. "We also use AI to guide the acquisition and interpretation of echocardiography," says James Thomas, MD, professor of Medicine in the Division of Cardiology. "After leading the clinical trial that resulted in FDA approval, we have now deployed this application into the COVID-19 units where front-line providers can image the hearts of COVID-19 patients."

Such projects demonstrate the innovation and energy surrounding AI that already exist across the healthcare system — I.AIM seeks, on the other hand, to provide infrastructure.

"What we're seeing with AI in healthcare and in research is that it's been set up in these little bespoke sort of shops," says Kho. "It's a cottage industry, oftentimes lacking the scalable infrastructure that you would need — data infrastructure and administrative infrastructure — to support a larger volume of data research or research on larger data volumes."

"Our initial, out-of-the-gate approach is going to be an inventory," Kho continues. "Our job in many ways is to coordinate and coalesce existing talent and resources, and infuse a little bit of help where we can so that investigators and clinicians have the capacity to do the kind of work they want to do."

To achieve these goals, Kho has assembled a cross-disciplinary team, including Etemadi, who will become chief data engineer. Yuan Luo, PhD, an associate professor of Preventive Medicine at Feinberg and at the McCormick School of Engineering,

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It is imperative that we consider the ethical challenges introduced by AI using a collaborative multidisciplinary approach."

KELLY MICHELSON, MD, MPH, Director, Center for Bioethics and Medical Humanities



will serve as chief AI officer. Firas Wehbe, MD, PhD, Feinberg's chief research informatics officer and associate professor of Preventive Medicine and of Pathology, will be chief informatics officer. Kelly Michelson, MD, MPH, director of IPHAM's Center for Bioethics and Medical Humanities and the Julia and David Uihlein Professor of

Six Specialized Centers

CENTER FOR COMPUTATIONAL IMAGING AND SIGNAL ANALYTICS IN MEDICINE

This center focuses on applications that generate images and sensor data. Sensors in mobile devices can help scientists understand behavior, mental health, and environmental factors, allowing development of interventions that will improve patient well-being. "Al applied to radiology and pathology imaging can aid in diagnosis and treatment of cancers, and pulmonary, and cardiovascular diseases," says center director and associate professor of Pathology, Lee Cooper, PhD. This center will partner with Northwestern Medicine Bluhm Cardiovascular Institute's Center for Artificial Intelligence in Cardiovascular Disease

CENTER FOR DEEP PHENOTYPING AND PRECISION THERAPEUTICS

The Center for Deep Phenotyping and Precision Therapeutics is focused on creating phenotyping platforms to study human diseases, applying machine learning to the classification of diseases, and advancing precision therapeutics. "A barrier to improving health is the imprecise classification of heterogeneous diseases and clinical syndromes," says center director Sanjiv Shah, MD, the Neil J. Stone, MD, Professor of Cardiology. "With deep phenotyping of patient-level data and machine learning analytics, we can now more accurately classify human diseases with the goal of creating precision therapeutics."

I.AIM is pursuing research, training and outreach goals, calling on the knowledge of multiple disciplines to achieve them.

CENTER FOR ADVANCED MOLECULAR ANALYSIS

This center will develop novel technologies and computational tools to perform genome-wide analysis of patient genomes. Scientists will profile and integrate personal multiomics data (such as genomics, transcriptomics, and epigenomics) to study human disease at singlecell resolution. "By combining modern genomic approach and advanced machine learning techniques, our aim is to identify disease-specific biomarkers and use them to predict disease risk and clinical outcomes," says Feng Yue, PhD, center director and associate professor of Biochemistry and Molecular Genetics.

Bioethics and Medical Humanities, will be chief ethics officer.

The new institute will also bring together other faculty, students, and trainees, as well as engender collaborations with other Northwestern schools.

"It's not a 'build it, and they will come' model," say Kho. "It is a community-building model, which in my experience is the only sustainable path forward." ●

- 1 Mozziyar Etemadi, MD, PhD, published a study in Nature showing that an Al tool predicted breast cancer in mammograms more accurately than radiologists. In this image, a yellow box indicates where Al found cancer hiding.
- 2 Using a digital pathology platform, associate professor of Pathology, Lee Cooper, PhD, and his team have conducted several international studies to generate annotation data for training and validating machine learning algorithms.
- 3 Cooper's team is also using annotation databases to develop machine learning tools for hematopathology applications like cell counts and immunohistochemical scoring. These results are from a preliminary study looking at diagnostic differential cell counts in bone marrow aspirate smears.



CENTER FOR BIOMEDICAL INFORMATICS AND DATA SCIENCE

"Biomedical informatics has been described as 'data science meets the human condition," says Justin Starren, MD, PhD, chief of Health and Biomedical Informatics in the Department of Preventive Medicine and center director. "As AI and data science revolutionize our understanding of disease, we need to transform those discoveries into tools for the everyday challenges of patients and clinicians." At the center, scientists work with clinician partners to bring AI discoveries into routine care and to educate the next generation of biomedical informatics and data science investigators.

CENTER FOR MEDICAL EDUCATION IN DATA SCIENCE AND DIGITAL HEALTH

"Data science and AI bring tools to clinical care that enable more effective care for our patients. Thus, along with anatomy, physiology, and the other longstanding topics in medical school curricula, data science and digital health are now essential ingredients in our students' education," says David Liebovitz, MD, associate professor of General Internal Medicine and Geriatrics, and center co-director with Marianne Green, MD, senior associate dean for Medical Education. Green summarizes. "This center will integrate machine learning, patient-generated data, and more - along with their ethical implications - into medical education."

CENTER FOR BIOETHICS AND MEDICAL HUMANITIES

"Bioethics and medical humanities fill a vital need by encouraging people to consider values and morals alongside the miracles and advances of medicine," says center director and I.AIM chief ethics officer Kelly Michelson, MD, MPH. This center examines how ethics inform professionalism and practice of medicine, clinical care, and biomedical research, and supports both IPHAM and I.AIM. As director of the Center for Food Allergy & Asthma Research, Ruchi Gupta, MD, MPH, leads with a personal touch.





A small comic strip displayed in the office of Ruchi Gupta, MD, MPH, serves as a sort of mission statement. The first frame shows an adult telling a child, "When I was your age, there were no food allergies." The next one shows that same child now grown up, telling a younger kid, "When I was your age, there were food allergies."

Arriving at that "someday" when food allergies are a distant memory is the ultimate destination for Gupta, a professor of Pediatrics and of Medicine in the Division of Allergy and Immunology, and a Northwestern Medicine pediatrician, who also happens to be the mother of a teenage daughter with peanut and tree nut allergies.

A prominent national expert on allergy prevalence, treatment, and advocacy, Gupta was named last year to be the founding director of the new Center for Food Allergy & Asthma Research (CFAAR) at Northwestern's Institute for Public Health and Medicine (IPHAM). The center was created to become a hub for investigators across Northwestern and Ann & Robert H. Lurie Children's Hospital, who are continually making new epidemiological, clinical, and basic-science discoveries about asthma and allergies. The new center will also serve as a resource for patients seeking support and treatment.

A CAREER IGNITED BY QUESTIONS

Growing up in Louisville, Kentucky, Gupta was always interested in science, but figuring out her specialty took years of exploration. When she started medical school, a fascination with the eye led her to believe she would become an ophthalmologist. Her interests later gravitated toward women's health, but, ultimately, she chose pediatrics because "there was something about watching the development of a child over



upta became a pediatrician because she as attracted to the idea of being able to guid hildren through both wellness and disease.

time — and guiding their disease management — that I wanted to be a part of."

The answer of what to specialize in presented itself when, as a resident at Seattle Children's Hospital, Gupta noticed how many of her Somali patients were ending up in the hospital with asthma attacks compared to her white patients. A barrage of questions ("Is there something we're doing wrong as clinicians? Is it an access to care or medication issue? Is there something unique by race or ethnicity in how asthma presents and should be treated?") flooded Gupta's mind, foreshadowing the trajectory of her career.

After her residency, Gupta accepted a health-services research fellowship at Harvard Medical School. In 2004, armed with the skill set to conduct large-scale population studies, Gupta joined Northwestern's faculty, which soon found her mapping asthma in Chicago.

"We found rates that varied between 1 percent and 44 percent, depending on the neighborhood people lived in," recalls Gupta. The study, published in the *Journal of Allergy and Clinical Immunology*, was picked up by an NPR reporter, who asked Gupta to accompany her to the Englewood neighborhood to meet some of the people behind the data. »

*Food allergies are so
complex, and we don't
have an exact answer
for why prevalence has
increased, but we have
a lot of hypotheses ...
lt's hygiene, it's microbiome, it's C-sections,
it's antibiotics, it's how
we eat."

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Gupta, MD

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an 1 million Gupta is advocating and adults in for the FDA to add are affected sesame to the list of me allergies. the top eight allergens labeled on products.

In 2019, Illinois enacted a law requiring in-state food manufacturers to label any products they make that contain sesame.

"That opened my eyes to that fact that I need to do more in the communities I studied, and not just crunch numbers," says Gupta. "Now, we work with people — especially high school students — in all communities of Chicago to help us understand the health issues that impact them and develop solutions together."

WHEN THE PROFESSIONAL BECOMES PERSONAL

While Gupta's early research was in asthma, her focus took a turn when, 16 years ago, she met a family with two young children struggling with food allergies. As she dove into this largely uncharted area, Gupta didn't realize her work would so profoundly overlap with her life.

"Three years into it, my son, who loves peanut butter and jelly sandwiches, touched my then-1-year-old daughter's face and she broke out in hives," Gupta recalls.

This changed everything for Gupta, whose daughter, Riya, is now 13 and son, Rohan, is 17. Both kids are heavily involved with health advocacy, education, and service, as is her husband Tarun Jain, MD, who is a Northwestern Medicine physician and an associate professor in the Division of Reproductive Endocrinology and Infertility.

"When you go through it yourself, you see firsthand how it affects your patients' lives," she says. "We are asking the same questions and living through the daily challenges. Reading labels and asking, 'Can she eat this?' Wondering if a reaction warrants a trip to the emergency room. This adds so much to my research."

Over the past decade, Gupta and her team have brought an unprecedented understanding of the prevalence of food allergy in the United States. Their data, collected from more than 40,000 adults and 40,000 children, has demonstrated just how widespread food allergies are — and the findings are driving life-saving policy.

In 2011, a study authored by Gupta published in *Pediatrics* found that 8 percent of children in the U.S. have at least one food allergy, and 40 percent of those kids had already experienced a life-threatening allergic reaction. This knowledge helped Chicago Public Schools ramp up their health safety precautions, including stocking every nurse's office with epinephrine. In 2019, Gupta's team published more data about childhood allergies in *Pediatrics* and a study showing that about 1 in 10 adults have food allergies (with many developing them in adulthood) in *JAMA Network Open*.

Gupta and her team also recently published a study in *JAMA Network Open* finding that allergies to sesame affect more than 1 million children and adults in the U.S. Now, along with her colleagues at the Center, Gupta



Gupta and her team have contributed significantly to academic research surrounding the economic cost of food allergy and asthma, as well as how to improve management, address disparities in care, and implement school interventions and policies surrounding these conditions.

8% of children in the U.S. have at least one food allergy.

40% of those children have experienced a lifethreatening allergic reaction.

is advocating the Food and Drug Administration (FDA) to add sesame to the list of the top eight allergens (peanuts, tree nuts, milk, egg, shellfish, finfish, soy, wheat) labeled on products. Gupta won at least part of her battle in Illinois, which in 2019 enacted a law requiring Illinois food manufacturers to label any products they make that contain sesame. The center is also pushing for better precautionary (or "may contain") allergen labeling, which many food manufacturers offer voluntarily, but in a highly inconsistent manner, leaving consumers to make their own decisions about the safety of the product.

COMMITTED TO IMPROVING OUTCOMES

One the questions Gupta gets asked most often is why the prevalence of allergies has increased.

"The answer is so complex and we don't really have a complete answer, but we have a lot of hypotheses," she says. "It's hygiene, it's microbiome, it's C-sections, it's antibiotics, it's how we eat."

One theory that has taken hold, according to Gupta, is that, "if the food protein is first introduced as an infant through broken skin, then it skews your immune system to go down the path of allergy, and if you introduce the food first through your mouth — through the gut — it goes the normal route." This theory was tested through the Learning Early About Peanut Allergy (LEAP) study published in the *New England Journal of Medicine* in 2015. This study found an 80 percent reduction in peanut allergy in high risk infants fed peanut products between 4 and 11 months of age.

In 2017, this data prompted new clinical guidelines — which Dr. Gupta helped develop — from the National Institutes of Allergy and Infectious Diseases recommending that physicians assess their patients' risk, and if it is low or moderate, encourage caregivers to introduce peanut products to their children around six months to help prevent them from developing peanut allergy.

"But implementation is challenging," says Gupta. "Well-visits are jam-packed. Parents have lots of questions and it's hard to fit every instruction in. Plus, there is fear on the part of both parents and physicians — what if they go home and do this, and the child has a reaction?"

After finding that only 30 percent of U.S. doctors are fully implementing the food allergy guidelines, Gupta received a grant from the National Institutes of Health (NIH) to investigate why and test how electronic clinical supports could improve pediatricians' adherence and decrease peanut allergy incidence. In the process, she intends to study a subset of the infants through a range of other lenses, from their genetics to their microbiome.

"We're hoping to contribute even more data to those common hypotheses," says Gupta.

CFAAR has also received grants from NIH to study racial and ethnic disparities among children with food allergies and works to improve resources and access for underserved communities. Additionally, in partnership with a large advocacy organization, Food Allergy Research & Education (FARE), and its over 30 clinical academic sites, center investigators are creating a nationwide database that captures information about the thousands of allergy sufferers across the U.S. This repository will also track the effects of new treatments, such as Palforzia, an immunitybuilding, peanut-powder product designed to help reduce reactions, tested at Lurie Children's and recently approved by the FDA.

This growing body of collaborative research inspires Gupta every day. And, as is her nature, she is always asking more questions and pushing for more answers.

It all comes back to the future depicted in that comic strip.

"As a center, we're asking, 'Can we eliminate the burden of allergies for the next generation?" says Gupta. "It's a long shot, but it's what keeps us going."



In the Community

Community engagement is one of CFAAR's core missions. This past year, the center co-hosted, with Northwestern University. a series of "health leader" workshops for 100 Chicago public high school students with the goal of empowering the students to become health advocates through educating their own peers and community members about health issues - ranging from food allergies to gender identity to violence — that matter to them. The students created vision boards and produced public service announcements on their chosen topics. The center also hosts, with the Ann & Robert H. Lurie Children's Hospital, the biennial Food Allergy Conference for Education and Science (FACES), which brings together foodallergy families, clinicians, and scientists from throughout the Midwest region for two days of learning.









FAAR assembled 100 CPS high school students with a passion to become change-makers in eir communities. Through a series of four half-day workshops, students researched health pics that impact teens in Chicago, created educational public service announcements and dividual projects, and used them to improve awareness in their communities and generate ter support in their schools.

ALUMNI 🔷 Alumni President's Message



Moving Forward

A letter from Rishi Reddy, 'oo MD (HPME)

ello, Feinberg alumni!

My plan for this column was to share memorable moments from our 2cth reunion. But then, as you all know, everything changed. There was no reunion. COVID-19 swept in. Many Feinberg alumni found themselves in the trenches, fighting this pandemic up close; others were more removed, but still felt more

profoundly than ever the oath we had taken to care for others. I want to take a moment to thank our alumni, along with all physicians, nurses, staff, and scientists everywhere, who were and continue to be on the front lines of fighting this virus.

But, I also want to acknowledge that, despite it all, the medical field moves forward. I would like to congratulate the Class of 2020, who are embarking on the next phase of their careers. If the past few months have taught us anything, it's that your career may take you in unexpected directions, and you must always be ready to adapt.

As my class celebrates our 20th year reunion, I've had the chance to reflect on where we were 20 years ago, both

during our preclinical classes as well as in clinical medicine. There have been dramatic changes to the curriculum, how we treat certain diseases, and the way students go through life in Streeterville.

During our M1 year, many of us lived in the dorms at 875 North Lakeshore Drive, along with the physical therapy and dental students. Since then, the dental school has closed and 875 was sold.

The Lakeside VA Medical Center was still in place — a hospital where many of us spent a core clinical clerkship. I spent my Neurology, Internal Medicine, and Radiology rotations in its hallowed halls. It was torn down in 2009.



Step 1 was still a two-day, written test in the spring of 1998, before becoming a one-day, online test the next year. Taking that test as a class was a unique, high-stress experience that we shared. When we finished our core M3 year, we started our M4 year in what was then the "new" Northwestern Memorial Hospital.

It is also interesting how clinical medicine has changed in the past 20 years. Cancer

treatments for a variety of stage 4 cancers now offer some hope with the advent of immunotherapies among other treatments. The microbiome's connection to diseases ranging from cancer to inflammatory problems has been recognized. Nanotechnology has become a critical part of diagnostic and therapeutic paradigms.

> I'm curious to see what changes the Class of 2020 after witnessing SARS, MERS, COVID-19, and more — will reflect upon in 2040 at their 20th reunions. Where will they rotate for their clinical rotations? Will Streeter's Tavern and Timothy O'Toole's Pub still exist? What will be the supply chain for PPE?

Despite the unprecedented hardships to the health system and medical school over the past few months, I think we can still take a moment to reflect on the long term. I hope that the next 20 years are as exciting for Feinberg and for the field of medicine as the last

20 have been. I hope that the Class of 2020 will stay engaged with Feinberg, the Alumni Association, and the current student body. I know that the current Alumni Association will continue to mentor our newest members for years to come.

Thank you for staying engaged, and GO CATS!

Alumni Weekend from Afar

Alumni Weekend 2020 was canceled, but the Feinberg community still found ways to celebrate.



2019 DISTINGUISHED ALUMNI AWARD

One of the highlights of Alumni Weekend is celebrating the achievements of one special alumnus. This year's Distinguished Medical Alumnus Award recipient was John Lumpkin, '73 BMS, '74 MD, MPH, president of the Blue Cross and Blue Shield of North Carolina Foundation and vice president, Drivers of Health, for Blue Cross and Blue Shield of North Carolina. He shared a few thoughts about his career in emergency medicine and public health.

ON CHOOSING EMERGENCY MEDICINE:

"After each clinical rotation, I came back to emergency medicine as the specialty that would enable me to continue to learn in a broad range of clinical fields. And then there was the challenge of being able to make a difference in people's lives when they were experiencing life-threatening illness or injury."

ON WHAT HE LEARNED ABOUT U.S. HEALTHCARE IN THE EMERGENCY DEPARTMENT:

"I saw the possibilities of world-class medical science and the tragedy that many people did not have access to it due to lack of insurance. No physician sits in the emergency department at 4 a.m. saying, 'I want to see another person with a cold.' But the compassionate ones recognize that it is system failures, not individual failure, that results in that non-urgent visit."

ON PURSUING PUBLIC HEALTH:

"Our emergency department team could treat acute asthma exacerbations, myocardial infarctions, gunshot wounds, and diabetic ketoacidosis, but we could do nothing for causes that led people to come in. I felt a calling to go from treating casualties one at a time to improving the health of communities — interventions that would obviate the need for an emergency department visit."

ON COPING WITH THE STRESS OF COVID-19:

"As emergency physicians, we learn early that we cannot save everyone. To survive in this COVID-19 world, it is important to step back from time to time to celebrate the good you are doing before going back into the fray."

50 YEARS AGO...

We asked the class of 1970 for their fondest memories, and they answered:



"During a rotation at the Chicago Maternity Center, I was driven to the apartment of the expectant mother accompanied by a maternity nurse in

a pickup truck driven by a rather large man. There was no phone in the apartment for emergency backup, but, in the end, we were fortunate to deliver undiagnosed (but healthy) twins and had a healthy (but surprised) mother." –ROBERT FROST, '70 MD



"I remember getting lost on a cold winter night at 2 a.m. in the underground maze of the mechanical room basement at Coale County Happing while running

at Cook County Hospital while rushing to deliver a blood specimen to the lab."

-MICHAEL ZEIDE, '70 MD



"One night, our medical team was asked to pick up a young, Black woman with acute pelvic inflammatory disease from surgery service. She was my patient for

the rest of the night and I went by her bedside every half hour. By morning, she was beginning to improve. Two weeks later, she found me on the ward to thank me for keeping her alive." – JEFF MCLAUGHLIN, 70 MD



THANKING SCHOLARSHIP SUPPORTERS

very April, Feinberg School of Medicine holds a Commitment to Scholarships luncheon to celebrate student scholars and give them the opportunity to meet and express their gratitude to the generous alumni, faculty, and friends who support their scholarships. Though the celebration was canceled this year because of the worldwide COVID-19 outbreak, medical students and leaders still sent their heartfelt appreciation to these donors. ALUMNI **Profile**

Committed to making higher education attainable for every student in Maryland

EMPOWERING OTHERS

JAY PERMAN, '72 MD , has devoted his career to serving and empowering others, whether it be through practicing medicine or taking on various administrative and leadership roles.

In November 2019, Perman was named chancellor of the University System of Maryland (USM), becoming the fifth chancellor of the university system, which is comprised of 12 higher education institutions across the state.

A Chicago native, Perman was the only child born to Ukrainian immigrant parents who fled the country in the 1930s because of religious persecution. They settled in Chicago and opened a hand laundromat on the city's West Side. When Perman was 14 years old, his father passed away from esophageal cancer, prompting his mother to take a second job as a seamstress to make ends meet.

At an early age, Perman knew he wanted to become a physician — and attend Northwestern.

"My parents didn't have an automobile, but my uncle did. I remember when I was 15 or 16 years old, he would drive me up to the Northwestern campus in Evanston. I fell in love with it and said I wanted to go to school here," Perman said.

Perman received his bachelor's degree in psychology from Northwestern in 1968, made possible with the help of various scholarships, work study, and a modest loan. The same year, he was accepted to Northwestern's Feinberg School of Medicine, but paying for medical school seemed like an impossible feat, Perman recalled.

"There was no way my mother and I could've afforded it. Then one day, about three weeks before I was supposed to show up at medical school, I get this letter in the mail from Northwestern and it said, 'Congratulations, you are the Ploner Scholar. Your medical education is paid for.' I went to medical school for nothing — not a penny out of my pocket, out of my mother's pocket, and I graduated with no debt."

Perman received a Doctor of Medicine degree with distinction from Feinberg in 1972. He then completed his residency in pediatrics at Children's Memorial Hospital in 1975 and a fellowship in pediatric gastroenterology at Harvard Medical School and at the Children's Hospital Medical Center in Boston in 1977.

To this day, Perman credits his extensive career in medicine and higher education to the moment he opened his scholarship letter. Now in his role as chancellor of the USM, he vows to return the favor and make higher education more affordable and attainable for all students in Maryland.

"When people ask me why I decided to become a leader of a higher education system, that's the story. I'm sitting here in this amazing role because somebody made it possible for me, so now I've got to do the same thing for everybody that's coming behind me."

EQUAL ACCESS TO HIGHER EDUCATION

In 1984, Perman joined the pediatric faculty at the Johns Hopkins School of Medicine and led an effort to build up the school's gastroenterology program. It was also during this time when Perman realized his passion for helping others succeed, ultimately propelling him to take on a series of administrative responsibilities over the course of his career.

"As corny as this sounds, my day was made when somebody who I was responsible for was successful," Perman said. "My pleasure came

Through the Years

1972 Received Doctor of Medicine degree with distinction from Northwestern University

1975 Completed residency at Ann & Robert H. Lurie Children's Hospital, which was then called Children's Memorial Hospital

1977 Completed fellowship in pediatric gastroenterology at Harvard Medical School and at the Children's Hospital Medical Center

1977-1984

Assistant professor and associate professor of pediatrics at the University of California, San Francisco

- **1984-1996** Professor of pediatrics and head of several divisions at the Johns Hopkins University School of Medicine

1996-1999 Jessie Ball duPont Professor and Chair in the Department of Pediatrics at Virginia Commonwealth University's Medical College of Virginia

1999-2004 Chaired the Department of Pediatrics at the University of Maryland, Baltimore's (UMB) School of Medicine

2004-2010 Dean and vice president for clinical affairs at the University of Kentucky College of Medicine

2010 Returned to UMB as president

2019 Named chancellor of the University System of Maryland (USM)



from making sure I had done everything I could to make a platform for that person to succeed."

Since then, Perman has held various administrative positions at medical schools across the country, including the Jessie Ball duPont Professor and Chair in the Department of Pediatrics at Virginia Commonwealth University's Medical College of Virginia, dean and vice president for clinical affairs at the University of Kentucky College of Medicine, chair of the Department of Pediatrics at the University of Maryland, Baltimore (UMB), and, most recently, president of UMB.

Now as chancellor of the USM, Perman is determined to ensure education systems in Maryland adequately prepare K-12 students for higher education, to create more resources and opportunities for the "nontraditional" college student, and to bring more diversity and inclusion to the healthcare and research fields.

In an effort to bring in more students of diverse backgrounds to the fields, Perman helped establish the UMB CURE Scholars Program. Launched in October 2015, CURE is an afterschool program that prepares sixth- to 12th-grade students in Baltimore for research

"I'm sitting here in this amazing role because somebody made it possible for me, so now I've got to do the same thing for everybody that's coming behind me."

and healthcare careers at UMB and other institutions across the region. CURE utilizes a pipeline approach, providing career navigation, workforce training, and mentorship to students who identify as underrepresented minorities.

"Pipeline programs around the country that try to find promising African American or Latino students usually focus on finding promising students at the end of high school or early in college — which is fine, but it's too late for most," Perman said. "I know these students are not going to all be physicians, but we may get some, and even for those who go into other careers, they will have gained valuable life skills."

COMMUNITY ENGAGEMENT

During his 10 years serving as president of UMB, Perman saw his charge as helping not only the campus community, but also the city of Baltimore, which is more than 60 percent African American and has a poverty rate of more than 20 percent.

"I spent so much time refocusing UMB on community engagement because it's the right thing to do," Perman said. "On the other hand, if you don't commit to being a good neighbor, you do it at your own peril because fewer people will care about the university."

As chancellor, Perman intends to continually motivate the USM's 12 institutions — all of which differ in terms of student populations and geographic area — to be intensely engaged in their surrounding communities.

"All of these institutions have made significant progress in this regard, but there's more we can do," Perman said.

Today, Perman also continues to practice pediatric gastroenterology, a field in which he was one of the first to receive accreditation from the American Board of Pediatrics. He insists on continuing to see patients and does so every Tuesday afternoon at the University of Maryland Medical Center with UMB students from various disciplines. To UMB students, the clinic is known as the "President's Clinic," a name students gave the clinic when Perman was president of the university. He has no intention of stopping his practice anytime soon.

"I do it because I can teach these students to work with each other," Perman said. "I don't care whether they learn any pediatric gastroenterology. What I care about is that they learn how to appreciate each other, because patients with chronic diseases or socially disadvantaged people require a team to address their problems, and I want to make sure the students understand that."

Despite the many demands on his time as a university president and now chancellor, he feels well-equipped to continue running the clinic and credits this to the medical education and training he received at Feinberg.

"So many years later, I still have confidence to stand in front of today's medical students and residents and be part of their training," Perman said. "It's because of the incredibly strong foundation I have from Northwestern University."

ALUMNI

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.

1940s

Daniel Marshall, '47 MD, was the 2018 recipient of the American College of Physicians' Henry Gift Award. The award recognizes a Connecticut-based internist distinguished for a "lifetime of service to the care of patients and active participation in the local medical community." Marshall retired in October 2018 after being in practice for six decades.

1960s

James F. Bellenger, '60 MD, is pictured with Martha Catherine Hotchkiss, not a Northwestern alumna, with whom he went to





Alumni from the MD Class of 1982, (pictured left to right): Rich Davis, Jeff Lifson, John Murphy, Jim Cooke and Bob McKlveen, along with their spouses, enjoyed a week of sailing the U.S. Virgin Islands, Culebra and Vieques. The five friends are a subgroup of a dozen classmates who have gathered for mini-reunions over 30 times since graduation. As McKlveen shared, "The bonds made at [Northwestern] last a lifetime."

a school dance in the 1940s in Birmingham, Alabama. In September 2018, she reached out to him and they discovered that they lived just an hour apart in Tennessee. They have since met up and reconnected. They are now back in each other's lives after all these years, with their story featured in the local paper. 10 1

Charles Maseredjian, '66 DDS,

class reunion chairman, is calling all Northwestern University Dental School (NUDS) Class of 1966 alumni



to save the date: June 25 – 26, 2021. The NUDS Class of '66 will be celebrating their 55-year reunion in Chicago. More information to come. Contact Maseredjian at 818-841-4695 (office) or 818-822-3172 (cell).

1970s

Edward Forkos, '70 *MD*, of Las Vegas, Nevada, who specialized in internal medicine shared: "My principal preoccupation my whole life has been mountaineering. I've been fortunate to have enjoyed a parallel life in this world and am still going strong with rock-climbing, canyoneering, and general and exploratory mountaineering. I do a lot of teaching, including technical skills, high-altitude and wilderness medicine, and proper land stewardship, and try to inspire the next generations. My wife is my constant companion in these endeavors. I also enjoy puttering around in the kitchen; listening to a wide range of music, especially classical and jazz; and watching weird and provocative movies. I can't complain." 😰 2

Elenuté Nicola, '70 MD, of Iowa City, Iowa, specialized in psychiatry. Nicola still works part-time with R3 continuum and distress management at various organizations, and enjoys playing racquetball and studying French. **10** 3

Karsten Konerding, '70 MD, of Henrico, Virginia, wrote, "As a radiologist, I was present during the early days of CT, MRI, ultrasound, and mammography, and participated in the transformation of radiology from a casual, laid-back consultative specialty to a dynamic 24/7/365 practice, providing real-time patient care in the acute setting." His favorite memory from medical school was, "Courting and marrying Hazle, my 'trophy bride' of 51 years." **10** 4

Lawrence Rathbun '70 MD, shared his many accomplishments, including serving as: cocreator of the Cardiac Anesthesia program at the NRMC San Diego; chairman of anesthesia at the Naval Hospital in Charleston, South Carolina; chairman of Anesthesia of Providence Hospital and Springhill Hospital in Mobile, Alabama; and surgeon in the 4th Marine Division. He lives in Richmond, Texas.

Michael Supancich, '70 MD, lives in Carlsbad, California, with his wife, Cheryl. He practiced ophthalmology. He shared, "I really enjoyed my practice years in Monterey County, California. The proximity to Laguna Seca Raceway provided a nice respite from my practice. [Now] I live near the beach and enjoy the walks along the beach, along with landscape photography." Supancich has served as board chair of the Spondylitis Association of America, along with leading the local spondyloarthritis support group, for 16 years. 10 5

Andrew Lewicky, '70 *MD*, of Winnetka, Illinois, whose specialty was ophthalmology, wrote: "Over the years, I have lectured at meetings and

MARGIE GEITTMANN SHARED SOME OF HER HUSBAND'S MANY ACHIEVEMENTS AND GENEROUS ACTS, FROM HELPING RAISE \$33,000 TO HELP PAY THE MEDICAL BILLS OF A NURSE HIT BY A DRUNK DRIVER, TO STARTING A FOUNDATION TO HELP UNDERINSURED WOMEN.

courses, and was an invited surgeon in Europe, Asia, and the Middle East. The most memorable of these activities was being invited to teach and operate onboard Orbis, the flying eye hospital, on its inaugural mission to Moscow and Leningrad, when both cities were still part of the USSR. My second mission with Orbis was to Kathmandu in Nepal. Finally, I developed in 1980, and patented in 1982, the Lewicky Anterior Chamber Maintainer, a surgical instrument that is still in use today throughout the world in eye surgery. 6 *Elliot G. Levy, '71 MD*, has co-written the book *Investing 101 for Doctors, How to Invest Wisely and Still Sleep Well at Night* (dollarsfordrs.com), which he describes as "a guide for investing directed specifically towards doctors." Levy became interested in investing toward the middle of his career in endocrinology, realizing that "in order to be successful, I had to understand the business side of medicine." His first book, *Private Practice, What You Don't Learn as a Resident*, was published by the Endocrine Society.

Eli Michaels, '70 MD, who lives in Illinois and practiced urology, shared, "My family is my darling wife Rebecca, an educator who specialized in learning disabilities. 'It's a Wonderful Life' we have created together. We have honored our parents, delighted in the achievements of our nieces and nephews, and thoroughly spoiled our dear Wheaten Terrier, Lucy, age 14."

Peter B. Geittmann, '77 MD, '81 GME, has, over the course of 35 years, delivered more than 5,000 babies at Northwest Community Healthcare (NCH) in the suburbs of Chicago. While working at NCH in the operating room, he met his future wife, Margie Geittmann, an OR nurse, and married in 1985. They have three girls, eight grandchildren, and one great-grandchild. His wife shared some of his many achievements and generous acts, from helping raise \$33,000 to help pay the medical



ALUMNI

Progress Notes



bills of an OR nurse hit head-on by a drunk driver, to raising funds that enabled NCH to buy iPads and three hydraulic cribs, and finally, starting a foundation to help underinsured women. Mrs. Geittmann wrote, "The inspiration for the foundation came when Dr. Geittmann evaluated an uninsured 39-year-old Hispanic woman in the ER for a possible ectopic pregnancy. She was a mother of four, and after a diagnosis of ovarian cancer, he told the daughter that her mother would have to undergo extensive surgery and chemotherapy. The daughter meekly asked, 'Is chemotherapy expensive?' The Dr. Peter Geittmann Foundation raised \$200.000 dollars for NCH." 07

Alan L. Sisson, '77 MD, has become medical director for the pharmacy division of Blue Cross Blue Shield of Illinois, Texas, and Montana. Sisson also sings with the international award-winning a cappella chorus, New Tradition Chorus, headquartered in Northbrook, Illinois, and is the vice president of marketing and public relations for the chorus.

1980s

Paul M. Palevsky, '81 MD, has been named president-elect of the National Kidney Foundation. Palevsky is a member of the National Kidney Foundation's Scientific Advisory Board, professor of Medicine and Clinical and Translational Science in the Renal-Electrolyte Division at the University of Pittsburgh School of Medicine, and chief of the Renal Section at the VA Pittsburgh Healthcare System. 🔯 8

David Berman, MD, '83 GME, writes, "Selected again by Boston magazine as one of 'Boston's Best Urologists,' I am enjoying my 37th year at Merrimack Urology Associates, a six-person general urology practice based in Lowell, Massachusetts. But my heart is often in Seattle where my son and his family live; my two granddaughters, ages four and two, are fantastic creatures."

CHARLES LEVY WAS THE WINNER OF THE PAUL B. MAGNUSON **AWARD IN 2015.** THE HIGHEST **HONOR GIVEN TO** A RESEARCHER IN **REHABILITATION FOR CLINICAL. RESEARCH.** AND HUMANITARIAN **EXCELLENCE IN** THE FIELD.

Sigurd B. Gundersen, III, '83 MD, is retiring after more than 35 years of clinical service and 20 years of administrative service. As medical chief of the Gundersen Medical Foundation and chair of the Foundation Board since 2014, Gundersen also served on the Gundersen Health System Board of Governors and the

Executive, Peer Review, and Compliance Committees. 🙋 9

James A. Avery, '84 MD, is corporate medical officer at Diversicare Health Service. Avery also recently published his second book, Marijuana: An Honest Look at the World's Most Misunderstood Weed. 10

Scott Zeller, '86 MD, was awarded the 2019 Ritz E. Heerman Memorial Award from the California Hospital Association in recognition of his design and development of customized programs and delivery models to aid hospitals and health systems in transforming treatment protocols and raising the standard of care for behavioral health patients. Named 2015 'USA Doctor of the Year' by the National Council for Behavioral Health, Zeller also recently published a new textbook, Emergency Psychiatry: Principles and Practice. 11

Bertrand C. Liang, '88 MD, was appointed chief medical officer of Kitov Pharma Ltd., a clinical-stage company advancing therapies to overcome tumor immune evasion and drug resistance. In December 2019, Liang also was named a fellow of the American Academy of Neurology. 12

1990s

Joanne C. Smith, MD, '92 GME, was one of six recipients of the 2020 Order of Lincoln, Illinois' highest honor, awarded for professional achievement and public service. Smith has



served as president and chief executive officer of the Shirley Ryan AbilityLab since 2006 and also is on faculty at Feinberg. © 21

Paul W. Florsheim, '93 PhD, has co-authored Lost and Found:Young Fathers in the Age of Unwed Parenthood, chronicling the lives of several men as they transition to parenthood, weaving social history, developmental psychology, and public health into their stories. Florsheim discussed his book at Bookends and Beginnings in Evanston on March 12. **10** 13

Charles Levy, '93 MD, will retire as the chief of Rehab Medicine at North Florida-South Georgia Veterans Affairs Medical Center in Gainesville, Florida, one of the largest VA Medical Centers. He was the winner of the prestigious Paul B. Magnuson Award in 2015, the highest honor given to a VA researcher in rehabilitation who exemplifies the qualities of its namesake: for clinical, research and humanitarian excellence in the field.

G. Adam Flowers, '94 MD, has authored the book *My Apology*, which delves into the topic of divorce from a biblical examination of the subject. The book is available on most book order platforms in both print and electronic formats.

Thaddeus S. Stappenbeck, '94 PhD, '95 MD,

has been named chair of the Department of Inflammation and Immunity at the Cleveland Clinic Lerner Research Institute. A pathologist and leader in the study of epithelial stem cells in inflammatory bowel disease and colorectal cancer, Stappenbeck will lead a team of over

Alumni Fighting COVID-19

Sherene Farkhran, '03 MD, MPH, '06, '09 GME,

who is a physician in Pulmonary and Critical Care Medicine at John H. Stroger, Jr. Hospital in Chicago, was lauded for her efforts in the fight against COVID-19 by Barack Obama on his Instagram. Sharing her story with his millions of followers, Obama quoted Farkhran, who said, "Although I have been working with critically ill patients for many years, this experience has been very emotional. What gives me the most hope is how people have come together to support in whatever way they can — from bringing food to making PPE for our staff."



Karen Kaul '84 MD, PhD, chair of pathology and laboratory medicine at NorthShore University



HealthSystem in Evanston, Illinois, started conducting COVID-19 testing in her Iab March 12 — the first Iab in Illinois to offer testing outside of the Illinois Department of Public Health — offering results to patients within 24 hours. Within a week, they were testing 100 patients a day, and, as of press time, they were testing about 1,000 patients daily.

Kaul's department is also helping evaluate antibody testing.

"There are still so many questions that we need to answer," Kaul said.

Geraldine Menard, '97 MD, '00 GME, is chief of general internal medicine at Tulane Medical Center in New Orleans. Her father, William Frable, '59 MD, '60, '64 GME, submitted this photo of her. Menard was featured in *The New York Times* in an April 5 article about the understated U.S. death toll from COVID-19.





Laura Bontempo, '94 MD, '98 GME,

an emergency medicine physician in New Haven, Connecticut was quoted in Reuters for a special feature

called, "A Day Fighting the Coronavirus." She said: "I'm used to treating sick patients. I treat sick patients all the time. It's very different knowing that the patient you are treating is actually a risk to you as well. That's the main difference here. No one who works in hospitals is afraid of treating sick people. Just want to keep staff safe and the patients safe at the same time."

Visit the online edition of the article at: reut.rs/2SAvKOM

ALUMNI

끶 Alumni Respond



REACHING OUT TO THE GRIEVING

As I write this, thousands of people have died from COVID-19 in the United States. Since we are social distancing, families who have lost someone special will

not get to have a visitation, funeral, or shiva. This must make the pain even more intense.

I can understand how they feel. We got the phone call on the morning of December 18, 2009. Our youngest son, Alex, did not show up for work (at my office). A neighbor went to check on him and found him dead. He was 21. An autopsy later determined that the H1N1 flu he'd had in October had settled into his heart. Like many young people during the 1918 flu epidemic, it affected his heart seven weeks later, causing fibrillation and death. Shortly before he died, he got an MCAT score of 99.3%. He would have been a fabulous doctor. He wanted to be an internist.

I can't remember who told me about the Compassionate Friends (compassionatefriends.org), but it literally saved my life. This support group is for bereaved parents, grandparents, and siblings over 18. There are over 600 chapters in the U.S. and many overseas. I have run the Cincinnati East Chapter for more than five years now.

Hopefully, you will not need us. But if a friend, neighbor or patient does, our motto is, "We need not walk alone."



Lindsay Wilson Bibler, '80 MD Ibibler@me.com

 Visit the Compassionate
 Friends support group at compassionatefriends.org 50 principal investigators studying the origins and manifestations of a range of infectious, autoimmune, and inflammatory diseases. **14**

Rawle A. Seupaul, '97 MD, was recently named chief clinical officer of the University of Arkansas for Medical Sciences (UAMS) Medical Center. Seupaul will continue to serve as chairman of the Department of Emergency Medicine in the UAMS College of Medicine. **© 15**

Kavitha Gandhi, '98 MD, '99 GME, Women in Medicine subcommittee co-chair of the Medical Alumni Association Board, presented to the Lake Forest High School Women in STEM Club, on the demands, requirements, and rewards that pave the road to becoming a physician. 10 16

2000s

Shamila G. Rawal, 'o2 MD, recently announced the opening of her new practice,

The Rawal Institute for Hair Restoration and Aesthetic Medicine, in Madison, Wisconsin. Rawal's practice specializes in the surgical and non-surgical treatment of alopecia, rejuvenation of the face and neck, and bioidentical hormone therapy. © 17

Saravanan Krishnamoorthy, '03 MD,

recently joined Elegran, an independently owned, technology-driven real estate brokerage company specializing in residential sales and leasing in New York City, and was featured in *Yahoo Finance*. **©** 18

Carina Yang, '03 MD, '08, '09 GME, was

promoted to associate professor of Radiology at the University of Chicago in July 2019 after having joined as faculty member in 2013. Yang helped found the annual Radiology Expo. Last year, in its fourth year, the expo hosted just under 100 medical student attendees from 19 medical schools, including volunteer radiologists and trainees from across Chicagoland. She also leads the Radiology





Simulation program and has expanded the international radiology conference held annually in Chicago, the Scientific Assembly and annual meeting of the Radiological Society of North America. Named the 2019 Anne G. Osborn American Society of Neuroradiology International Outreach Professor, for her passion for international teaching, Yang has taught in Newfoundland, Gwalior and Delhi in India, Hong Kong, and most recently Ethiopia. **(2)** 19

Murad Alam, MD, 'o6 MS, '15 MBA, was appointed to the board of directors of the American Academy of Dermatology. Alam is professor, vice chair, and chief of Cutaneous and Aesthetic Surgery in the department of Dermatology at Feinberg.

2010s

Cory Lee Simpson, '10 PhD, '12 MD, recently received the national "Patient Care Hero" honor from the American Academy of Dermatology for his exceptional work providing free dermatologic care to uninsured patients in Philadelphia. The award recognizes those who "transform patients' lives by utilizing their expertise and collaborating with other physicians to treat serious skin disease." © 20

PT

Karin Schumacher, '73 BAPT, PT, MPH, received the Dr. Ronnie Leavitt Award for Leadership in the Promotion of Social Responsibility in Physical Therapy from the Health Policy and Administration (HPA) Section of the American Physical Therapy Association (APTA) at its annual meeting in February 2020. She founded the Cross-Cultural and International Interest PT Group in 1985, now called the Global Health Special Interest Group, to develop resources, promote intercultural rehabilitation practice in lesser developed countries around the world and minority U.S. communities, and to encourage cultural competency teaching in professional schools of physical therapy. She is semi-retired and lives in Denver, Colorado. CORY LEE SIMPSON, '10 PHD, '12 MD, RECENTLY RECEIVED THE NATIONAL "PATIENT CARE HERO" HONOR FROM THE AMERICAN ACADEMY OF DERMATOLOGY.

MS

Austin Bland, '19 MS, a graduate of the Feinberg Genetic Counseling program writes: "I now work as a public health genetic counselor with the Western States Regional Genetics Network. Of our projects with a national scope, we have developed videos to teach both providers and patients about telehealth and best practices. These videos are specifically targeted toward those who are new or inexperienced with telehealth, and would like to practice social distancing while still receiving medical care." io 22

Gift Supports ALS Research and Care

he Les Turner ALS Foundation announced a \$1 million gift from Joan and Paul Rubschlager at its Hope Through Caring Gala. This generous philanthropy comes on top of a \$2 million donation from the couple to the Les Turner ALS Center at Northwestern Medicine, shortly after its establishment in 2014. In honor of the new gift, Center Director Robert Kalb, MD, was named the Joan and Paul Rubschlager Professor. The center's team conducts leading-edge ALS research while providing life-enhancing treatment to people living with the disease.



PHOTOGRAPHY COURTESY OF Les Turner ALS Foundation

ENDOWED PROFESSORS ANNUAL LUNCHEON

ndowed professors on Feinberg's faculty gathered for a luncheon that thanked and honored them for their contributions to healthcare, medical education, and scientific discovery.

A named and endowed professorship represents the highest honor a university can bestow upon its faculty. These titles recognize the most distinguished and productive physicians and scientists and help Feinberg continue to recruit and retain leaders in medicine. The medical school is proud to have 190 endowed professorship positions for our most accomplished faculty.

→ Since 2012, the annual endowed professors luncheon has taken place at a different Chicago landmark — this year at The Library, a former Chicago law library — as a visible reminder of Northwestern's connection to the city.



↑ Left to right: Kelly Michelson, MD, MPH, '04 GME, the Julia and David Uihlein Professor of Bioethics and Medical Humanities; Michael Wolf, PhD, '02 MPH, the James R. Webster, Jr., Professor of Medicine; Eric Hungness, MD, the S. David Stulberg, MD, Professor of Advanced Surgical Education; Jeffrey Linder, '97 MD, MPH, the Michael A. Gertz Professor of Medicine; and Mercedes Carnethon, PhD, the Mary Harris Thompson Professor of Preventive Medicine.

♥ While the luncheon is an occasion for faculty to catch up and share ideas, it is also an opportunity for them to engage with the city's broader intellectual community and hear from a professional outside of healthcare. This year's presenter was entrepreneur Dag Kittlaus, co-founder and CEO of Siri, the virtual assistant acquired by Apple in 2010.





Honoring a Leader in Physiology

Former chair shares bequest establishing new fellowship

his past spring, students and experts in physiology came together for a seminar and reception honoring James C. Houk, PhD, former chair of the Department of Physiology.

"Our department as it exists today would not be what it is without Jim," said D. James Surmeier, PhD, current chair and the Nathan Smith Davis Professor of Physiology. "We were able to expand, recruit world renowned faculty, and push the department into the top 10 nationally because of the foundation that Jim built. I came here in 1998 because he had established a scientific program and environment that I wanted to emulate and learn from. So many of us here today are indebted to him and all that he has taught us."

Since joining Northwestern more than 40 years ago, James C. Houk, PhD, has had an enormous impact on the medical school's Department of Physiology and the field of neuroscience as a whole through his leadership, mentorship, and research.



Left to right: D. James Surmeier, PhD, current chair and the Nathan Smith Davis Professor of Physiology; speaker Peter Strick, PhD, the Thomas Detre Professor and chair of Neurobiology at the University of Pittsburgh; Houk; speaker T. Richard Nichols, PhD, chair of Applied Physiology and professor of Biological Sciences at the Georgia Institute of Technology; the event's organizing committee leader Lee Miller, '90 PhD, professor of Physiology at Northwestern; and speaker Andrew Pruszynski, PhD, the Canada Research Chair in Sensorimotor Neuroscience at Western University in London, Ontario.

An accomplished leader, educator, and scientist, Houk is also a generous donor to the medical school. He and his wife, Ninette, made a bequest this year to establish the Dr. James Houk Graduate Fellowship in Physiology. Their gift will provide funding to outstanding graduate students studying neurophysiology so they can pursue research at Northwestern and train to become part of the next generation of leaders in the field.

"I don't know how to thank everyone who participated in this Houk Lecture in Motor Control. None of my achievements throughout my career would have been possible without help from my colleagues, students, and family," Houk shared. "Ninette and I are very pleased to give back to Northwestern and the Department of Physiology by supporting fellows who will continue to innovate and expand our understanding of the nervous system."

Houk joined Northwestern in 1978 as chair of Physiology, a role he held for 23 years. During his career, he answered fundamental questions about how the human body works and mentored countless trainees, many of whom attended the symposium. After stepping down as chair of Physiology in 2001, Houk stayed on at the medical school to continue his research, which in recent decades focused on synthesizing insights on the interplay of the basal ganglia, motor cortex, and cerebellum into a theory of voluntary motor control and motor learning. His work has had extensions into Parkinson's disease and the etiology of schizophrenia, as well as cognitive neuroscience and thinking.

"Jim has had a huge impact on a broad swath of neuroscience, covering the entire range of the nervous system from the spinal cord up to the brain," said Surmeier. At the event, Surmeier shared a 1976 paper on muscle stretch reflexes published by Houk that has more than 1,000 citations, including in recent scientific publications. "So many of the ideas that Jim introduced are as germane to the scientific discussions that we're having today as they were when they were originally published."

James C. Houk, PhD, passed away on June 11, 2020. Our deepest condolences to his wife, Ninette, and family.

ALUMNI

In Memoriam

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

ALUMNI

Avis J. Triplett, '46 BSDH Camden, Delaware DECEMBER 16, 2019

Claude L. Nabers, DDS, '49 MS San Antonio, Texas MARCH 17, 2020

Lindsay M. Baskett, '49 MD Livingston, Montana JANUARY 19, 2020

Julius E. Lueders, '50 DDS Cape Girardeau, Missouri DECEMBER 23, 2019

Helen A. Pieper, '51 BSDH Davenport, Iowa JANUARY 20, 2020

Clare H. Grosenbaugh, '53 MD Grand Rapids, Michigan DECEMBER 13, 2019

William L. Winters, Jr., '53 MD Houston, Texas MARCH 13, 2020

Hal B. Richerson, '54 MD lowa City, lowa MARCH 13, 2020

C. John Samios, '55 MD Monte Sereno, California FEBRUARY 5, 2020

Dorothy Cowan Bricher, '55 BSDH Naples, Florida JANUARY 29, 2020 **George T. Edwards, '55 MD** Fort Lauderdale, Florida JANUARY 28, 2020

Robert L. Bunn, '55 DDS Fort Smith, Florida JANUARY 23, 2020

Suzanne Lockard, '55 BSN Oklahoma City, Oklahoma MARCH 19, 2020

Barbara Erkert Cooperrider, '56 CERT Waterford, Michigan MARCH 31, 2020

David W. Oberlin, '56 MD San Diego, California DECEMBER 19, 2019

James G. Allison, '56 MD Livingston, Montana JANUARY 16, 2020

Richard W. Leigh, '56 MD Rome, Georgia FEBRUARY 26, 2020

Elliott Rosenberg, '57 MD New Jersey DECEMBER 27, 2019

James Honig, '58 MD Merritt Island, Florida DECEMBER 3, 2019

Joel Jay West, '58 MS, '59 MD Los Angeles, California DECEMBER 20, 2019

Ramon J. Jauregui, '58 DDS Dietrich, Idaho JANUARY 9, 2020

Barbara Sharer, '59 BSDH Lake Geneva, Wisconsin DECEMBER 24, 2019

Mary Ann Smith Frable, '59 MD, '64 GME Richmond, Virginia JANUARY 11, 2020

Shirley H. Weller, '59 BSN Evanston, Illinois NOVEMBER 22, 2019 Donald L. Pedersen, '60 MD, '63 GME Helena, Montana FEBRUARY 24, 2020

Paul Infeld, '60 DDS Warrenton, Virginia JANUARY 19, 2020

Mary Collier Hackett Rushmore, '61 BSN Gainesville, Florida NOVEMBER 28, 2019

Nancy A. Dester, '61 BSN Sycamore, Illinois JANUARY 17, 2020

Whitney W. Addington, '61 MD, '63 GME Chicago, Illinois FEBRUARY 10, 2020

Willis W. Wick, '61 DDS Fort Myers, Florida JANUARY 23, 2020

Carol A. Smith, '62 BSN Crete, Illinois MARCH 15, 2020

Eugenia T. Poulos, '62 MD Carbondale, Illinois MARCH 27, 2020

Robert H. Hamor, '63 MD, '64 GME Hudson, Ohio JANUARY 9, 2020

Allen L. Litvak, '65 MS Pensacola, Florida JANUARY 30, 2020

Mary Ann Malloy, '67 MD Oak Brook, Illinois FEBRUARY 4, 2020

Darrell E. Wolfley, '69 MD Shoal Creek, Alabama JANUARY 6, 2020

Barbara Ann Bedell, '78 BSDH San Francisco, California FEBRUARY 20, 2020 Daniel B. Johnson, '79 MD, '84 GME Bettendorf, Iowa JANUARY 19, 2020

D. Gregg Baker, '85 MS, MD, '88 GME Idaho Falls, Idaho MARCH 10, 2020

Steven D. Socrates, III, '86 DDS Dryden, Michigan MARCH 12, 2020

Sherri Riepma, '87 DDS Midland, Michigan MARCH 13, 2020

Karen Suchyta, '88 DDS Salt Lake City, Utah FEBRUARY 14, 2020

Diane Susan "Dee" Ney Wills, '93 MS Goochland, Virginia JANUARY 28, 2020

Matina Helen Bouboulis Walter, '93 MPT Elizabeth, New Jersey DECEMBER 30, 2019

FACULTY

Calvin Robert Brown, Jr., MD, '82 GME professor of Rheumatology Chicago, Illinois DECEMBER 1, 2019

Janardan Reddy, MD former chair and professor emeritus of Pathology Hilo, Hawaii MARCH 13, 2020

Albert J. Miller, '46 MD professor emeritus of Cardiology Wilmette, Illinois APRIL 21, 2020

Perspective

ALUMNI

PRIMARY CARE IN A PANDEMIC

As I write this in early April 2020, there have been more than 4,500 confirmed cases of COVID-19 in Los Angeles County — with the number rising significantly each day. Many of the positive patients are cared for by hospitals and clinics in the Los Angeles County Department of Health Services, where I work as Associate Chief Medical Officer.

Across our system, we are attending to the emergent needs of county residents,

P I HAVE ALREAD FOUND that it is my long-standing relationship with patients that has been one of my most important assets in providing care during this time." answering hundreds of calls a day from concerned patients, and collaborating with public and private partners across a county of more than 10 million people.

Along with the efforts in hospitals and emergency departments, primary care providers play a critical role in the wellness of their communities and especially in the care of at-risk populations during such pandemics. This pandemic underscores more than ever the evolving role primary care plays in the medical field.

A large percentage of patients in most primary care practices have chronic health conditions, such as diabetes, hypertension, heart failure, and asthma. A significant number of these patients are also elderly. Along with sound medical decision-making, great care for patients involves clear communication, trust, and reliable follow-up.

I have already found that it is my long-standing relationship with patients that has been one of my most important assets in providing care during this time. Because I know my patients so well, I have been able to convert their in-person visits to phone visits with ease. My patients trust me, and I can provide medical recommendations, along with reassurance that I remain available to care for them as needed.

The majority of patients who become ill with the coronavirus will not need hospitalization. It has been and will be primary care doctors and their teams who care for them through their illness and during the downstream issues in the months to come.

Many primary care practices, including the one I work in, are characterized by a sense of accountability for the health outcomes of the entire population for which they care. In normal times, such an approach ensures patients are receiving things like cancer screening and chronic disease management with awareness of the impact of behavioral health needs and social determinants of health.

Because primary care practices are, by nature, proactive and aware of the impact of communitywide events and disruptions on their patients, they are ideally suited to engage their entire population of patients during times of crisis. That is what we have been doing in Los Angeles. Using tools like population health databases and disease registries, we are devising approaches that ensure patients do not fall through the cracks and allow us to stay connected, even when it is not recommended for them to come to our facilities in person.

We have been reaching out to such patients, especially the frail or chronically ill, to ensure they are doing okay and have their medications. We have been mailing patients their medication refills if they were not already enrolled in our "medications by mail" program, and if they were not already using our online patient portal, we have been enrolling them so that they can communicate with their provider, even sending pictures if needed.

The national headlines have been about the urgent need for ventilators, personal

protective equipment and hospital beds. That is appropriate, as those are the most visible and pressing shortages in the presence of a massive surge in patients. However, what I am experiencing as this crisis evolves is an intensifying need for primary care. In conjunction with the immediate action provided for the most severely ill in our hospitals and emergency rooms, primary care providers will continue to be counted on to provide the ongoing care for patients during - and after — the height of this pandemic.



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