

Winter 2016-17 Volume 04, Number 01

Northwestern Medicine

A publication for the alumni and friends of Northwestern University Feinberg School of Medicine,
Northwestern Memorial HealthCare and the McGaw Medical Center of Northwestern University

Magazine

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Celebrating
30 Years of
ALS Care

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MEDICAL STUDENTS MELISSA MONTOYA, PETER ZHAN AND OTHER MEMBERS OF FEINBERG'S A CAPELLA GROUP, DOCAPELLA, SING DURING THE 38TH ANNUAL PERFORMANCE OF IN VIVO. THE VARIETY SHOW ON DECEMBER 2 ALSO FEATURED SHORT FILMS, DANCE ROUTINES AND, OF COURSE, SKITS POKING FUN AT THE MEDICAL SCHOOL EXPERIENCE. "THERE'S NOTHING QUITE LIKE THE FEELING OF BRINGING HUNDREDS OF FAMILIAR FACES TO LAUGHTER," SAID SECOND-YEAR MEDICAL STUDENT NOAH WEINGARTEN, THE SHOW'S DIRECTOR. READ MORE ABOUT IN VIVO ONLINE AT MAGAZINE.NM.ORG.

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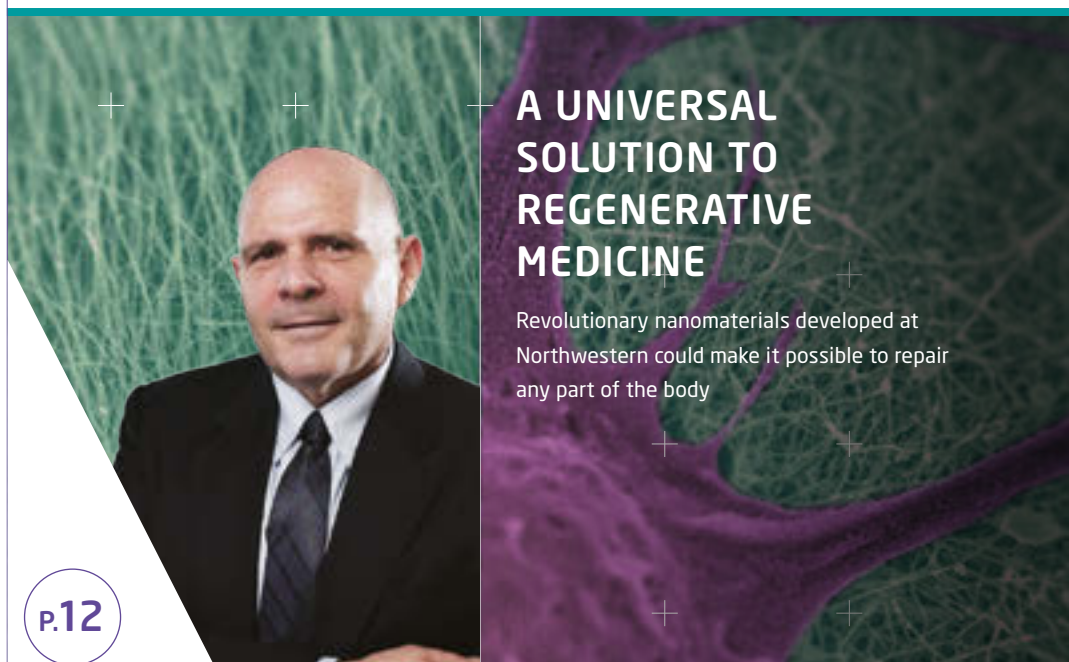
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CELEBRATING 30 YEARS OF ALS CARE

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COVER ART: An embryonic neural cell sits on a bed of nanofibers specifically designed to mimic spinal cord tissue and encourage nerve growth. Image courtesy of Mark McClendon and Zaido Pinto, PhD.

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Northwestern Medicine Leadership: A Successful Year for the Health System



Best is an endpoint. Better is a quest. Better is believing that, as great as today is, tomorrow is even more promising. The theme of Northwestern Medicine's Better marketing campaign is the essence of Northwestern Medicine's patients first culture.

The care we provide to patients was again ranked among the highest in the nation by *U.S. News & World Report*. Four of our hospitals and 13 clinical care specialties were recognized by *U.S. News*, an achievement that further distinguishes Northwestern Medicine as Chicago's premier academic

“ Together, our achievements in fiscal year 2016 have resulted in better care for our patients, an improved working environment for our physicians, nurses and staff, and the fiscal resources to invest in our future. ”

health system and underscores our commitment to providing world-class healthcare to our patients.

Together as Northwestern Medicine, we have advanced clinical collaboration for patients like Karen Ambler. Diagnosed with leukemia last year, Karen benefited from work completed by a group of physicians, pharmacists, pathologists and members of our strategy and operations teams to develop the optimal approach to leukemia treatment. Karen's physician at Northwestern Medicine Delnor Hospital worked with colleagues downtown to coordinate every aspect of her care, which ultimately rendered her cancer-free.

In addition to oncology, similar collaboration is occurring in neurosciences and cardiovascular care. These integrated clinical services will change the way we work together for the benefit of our patients.

At the same time, we are expanding access to Northwestern Medicine so patients like Karen can receive world-class care close to home. Last year, we welcomed KishHealth and Marianjoy to our growing integrated academic health system, and we look forward to Centegra Health joining us this year.

Progress also continues on several multi-year investments, including construction of the new Northwestern Medicine

Lake Forest Hospital and Kishwaukee Wellness Center as well as implementation of a unified electronic health record across the health system.

Together, our achievements in fiscal year 2016 have resulted in better care for our patients, an improved working environment for our physicians, nurses and staff, and the fiscal resources to invest in our future.

I look forward to another successful year, and am grateful to our physicians, nurses, faculty, staff, students and trainees who make it all possible.

Best,

Dean M. Harrison
President and CEO
Northwestern Memorial HealthCare

Read about the medical school's outstanding achievements in 2016 on p.15.

Faculty Support Northwestern's Future

WRITTEN BY: Andrea Arntsen-Harris

Last November, nearly 60 members of the Feinberg faculty were recognized for their benevolence to the medical school and their membership in the Nathan Smith Davis Society, which honors individuals who support the medical school through generous philanthropy and volunteerism.

"The Nathan Smith Davis Society has a powerful influence, reminding us what we do here at Northwestern," said Eric G. Neilson, MD, vice president for Medical Affairs and Lewis Landsberg Dean. "We are cultivating a culture of connectivity and giving back. Participation should be a part of who we all are at Northwestern."

The reception also celebrated progress made so far in the medical school's Faculty Giving Campaign. Faculty members play an essential role within We Will. The Campaign for Northwestern Medicine, providing both professional and philanthropic dedication to the success of Northwestern. To date, nearly 600 faculty have participated in the campaign, making more than \$2 million in total contributions to support the medical school.

During the event, 11 faculty members were lauded for joining more than 100 current and emeriti faculty in the Lifetime Giving Society of the Nathan Smith Davis Society. These individuals have given a cumulative total of at least \$35,000 to the medical school in their lifetimes. In recognition of this steadfast generosity, these members have nameplates displayed on desks in the Hughes Auditorium in the Robert H. Lurie Medical Research Building.

A CULTURE OF PROFESSIONALISM AND PHILANTHROPY

Neil Stone, '68 MD, '74, '75 GME, the Robert Bonow, MD, Professor of Medicine at Feinberg, is an advocate for the Faculty Campaign. Stone attended Northwestern as an undergraduate and medical student as a part of the second group of students in the Honors Program in Medical Education. After training at Brigham and Women's Hospital and the National Institutes of Health, he returned to Northwestern to be chief medical resident and a cardiology fellow. He then joined the faculty and has been an active member for more than 40 years.

"I support the medical school and the faculty campaign because Northwestern matters to me," he said. "Northwestern Medicine is a group I love being a part of. We share enthusiasm and professionalism, as well as an aspiration to make Northwestern even better than it is now."



NEIL STONE, '68 MD, '74, '75 GME, AND BOYD METZGER, MD, WERE AMONG FACULTY RECOGNIZED FOR THEIR GENEROSITY TO THE MEDICAL SCHOOL DURING A RECENT RECEPTION.

Neilson and Stone asked all faculty at the reception for ideas and advice on how to increase participation in the Faculty Campaign and, importantly, to engage faculty in the life of the school more overall.

Peter McMenamin, '87 PT, assistant professor of Physical Therapy and Human Movement Sciences, shared his thoughts: "We need to create a culture of 'giving back' early in one's career, no matter the size of the gift. Once established, that habit will grow together with advancing career success."

"Our faculty members are the heart of our medical school and are a tremendous asset to our students, trainees, their colleagues and patients," Neilson said. "I know that we will fulfill the aspirations of this campaign with our faculty's full support and participation. I am so grateful to the faculty members who have joined us thus far in this effort or are considering it." **M**

Medical Improv Course Boosts Communication and Teamwork Skills

WRITTEN BY: Sarah Plumridge

Learn more about the improv course and watch a video on nm.magazine.org.



While acting out a two-person scene during a course in medical improvisational theater, second-year medical student Owaiz Ansari deliberately waited several seconds before responding to his classmate.

"We had to process what they were saying before responding to them. The scene became very in-depth and emotional when people had time to think about what they were going to say," Ansari said.

Ansari said he chose to take the seminar to improve his communication skills. As part of Feinberg's curriculum, medical students are required to take a five-week seminar in medical humanities through the Center for Bioethics and Medical Humanities.

"This type of activity will help me not just in patient interactions, but also when I start working with attendings. I'll be able to digest what I'm hearing better and take a second to think about it. And, hopefully, be able to create a clear mindset and have a goal in mind when I respond," Ansari said.

Katie Watson, JD, associate professor of Medical Education, directs the course. "I'm hoping students will identify, reinforce and retain the communication strengths they bring, and also identify communication challenges they may have, and start improving them," she said.

Watson first noticed overlaps between the skills required of improvisers and of physicians while completing her fellowship at

Northwestern in bioethics and performing improv on the weekends. She tested the idea of an improv theater seminar for medical students and started the course in 2002 after receiving positive feedback.

"I see the students becoming more confident, more relaxed and more quickly accessing all the information and skills they possess."

While the seminar is focused on doctor-patient communication skills, there are no specifically medical scenarios or prompts. Watson creates or modifies theatrical improv exercises that correlate with general skill sets medical students will need to use in their profession.

"I think of it as cross-training. Why does the runner do sit-ups? It doesn't look like it makes sense, but you're building a muscle in a different way," Watson said.

During each two-hour session, students perform a few exercises around a theme, then after completing the exercises, they debrief and discuss how they can apply what they learned in medicine. In an article recently published in *Annals of Internal Medicine*, Watson discusses the educational benefits of the medical improv course, which including adaptability, spontaneity, deep listening, building trust and teamwork.

"When reflecting on an activity, we would say this is a situation that would make sense if you were with a patient and have to think on the spot, or when you are explaining a diagnosis — it was nice to see those parallels," Ansari said.

As the course progresses, Watson said, "I see the students becoming more confident, more relaxed and more quickly accessing all the information and skills they possess."

By focusing the course on recognizing their own strengths and weaknesses, Watson can encourage students to think how they can develop their own professional identities as physicians.

"To take on the intellectual and emotional challenge of providing healthcare, physicians need all of their personal and emotional resources to meet the needs of their patients," Watson said. **M**

MEDICAL STUDENTS CULTIVATE SKILLS LIKE ADAPTABILITY, SPONTANEITY, DEEP LISTENING, BUILDING TRUST AND TEAMWORK WHILE PERFORMING IMPROV EXERCISES.



First PhD Program in U.S. Trains Scientists to See, Fix Kinks in Healthcare System

WRITTEN BY: Marla Paul

Learn more about the new PhD program on nm.magazine.org.



Why do physicians accidentally jab themselves in the hand with an EpiPen (epinephrine injection) when they are trying to give another person an injection while holding their breath? How does directing a “Martian” to make a peanut butter and jelly sandwich improve healthcare communications?

The answers are part of the curriculum for the first PhD in healthcare quality and patient safety program in the country — at Northwestern Medicine — which aims to prevent the annual 440,000 deaths from medical errors in the United States.

“You can’t stress enough how crazy it is that the third-leading cause of death is medical errors,” said Donna Woods, PhD, director of the graduate programs in healthcare quality and patient safety. “How will this ever get fixed if we don’t train a work force to do it? We need an army of experts who need to know how to address this. The medical field does not have the skills to do it.”

Senior and mid-career clinicians (physicians, nurses, pharmacists) and healthcare professionals are trained by engineers, cognitive psychologists and risk assessment and change management specialists, who bring a critical fresh eye to the medical world. The “outsiders” teach students how to spot the vulnerable kinks in the system and figure out how to fix them. The students learn to do research, so they can design fixes based on scientific evidence.

To build a national healthcare safety army, Northwestern has provided a template from its master’s level healthcare quality and patient safety program — also the first in the country — to other medical schools to launch their own master’s programs.

As part of their curriculum, the PhD students learn about physical and cognitive ergonomics, which is the study of predictable errors your mind can make and how to consider these in healthcare design to make the delivery of healthcare more reliable.

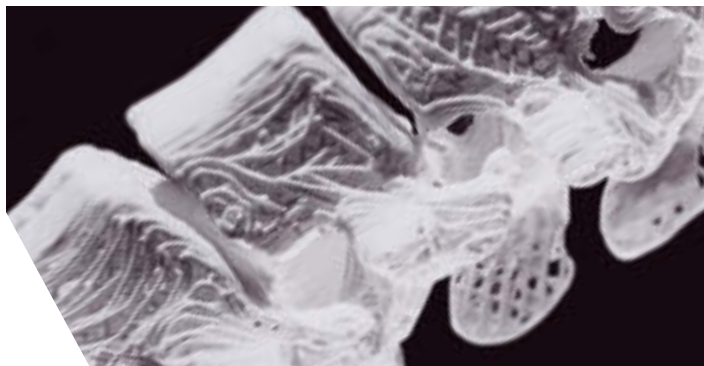
In one class session for PhD and graduate students, a faculty member who is a physician and an engineer brought EpiPen trainers to class. He asked students — most of whom had medical degrees — to hold their breath (to create a sense of urgency) while reading the directions and give another person the injection. In the scenario, the person was having a life-threatening anaphylactic reaction. Every time this session is held, at least one student accidentally sticks himself or herself in the hand with the injector, wasting the life-saving medicine. Students had to figure out why the device’s design led to that problem.

The lesson learned: It’s hard to make your eyes focus when you are in a crisis situation. The faculty member who taught the EpiPen class subsequently worked with the manufacturer to develop a new design in which the injector gives spoken instructions.

In another class, students are instructed to write a protocol for a “Martian,” who has no earthly cultural knowledge, to make a peanut butter and jelly sandwich. When the instructor attempts to literally follow students’ directions, sandwich-making chaos ensues. The exercise illustrates that when a person writes a protocol for a healthcare procedure, they make a lot of cultural assumptions that not everyone shares or understands across medical departments, services and professions. That can lead to errors. **M**

Research Briefs

More details on these studies are online at magazine.nm.org.



Promising Biomaterial to Build Better Bones with 3-D Printing

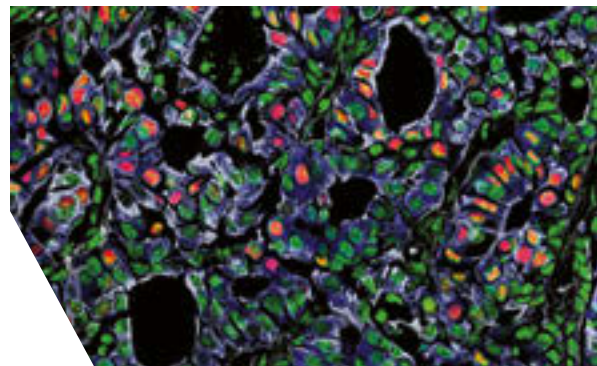
A Northwestern research team developed a 3-D printable ink that produces a synthetic bone implant able to rapidly induce bone regeneration and growth. The findings were published in *Science Translational Medicine*.

The hyperelastic “bone” material, the shape of which can be easily customized, could be especially useful to treat bone defects in children. Bone implantation surgery is particularly painful and complicated for children. Often, missing bone is replaced by bone harvested from elsewhere in the body, which can lead to complications and pain. Metallic implants are not a permanent fix for growing children.

“Adults have more options when it comes to implants,” said Ramille Shah, PhD, assistant professor of Surgery in the Division of Organ Transplantation, who led the research. “Pediatric patients do not. If you give them a permanent implant, you have to do more surgeries in the future as they grow. They might face years of difficulty.”

Shah’s 3-D printed biomaterial is a mix of hydroxyapatite (a calcium mineral found naturally in human bone) and a biocompatible, biodegradable polymer that is used in many medical applications, including sutures. Shah’s hyperelastic “bone” material shows great promise in in vivo animal models; this success lies in the printed structure’s unique properties. The material is majority hydroxyapatite, yet it is hyperelastic, robust and porous at the nano, micro and macro levels.

“Porosity is huge when it comes to tissue regeneration, because you want cells and blood vessels to infiltrate the scaffold,” Shah said. “Our 3-D structure has different levels of porosity that is advantageous for its physical and biological properties.” **M**



Pinpointing the Origins of Prostate Cancer

Scientists identified a protein that acts as a marker for a population of cells in the prostate with both regenerative and cancer-initiating potential. The study was published in *Nature Communications*.

“We identified the cell of origin for prostate cancer, which is very important in determining if it is an aggressive cancer or not and maybe even the treatment response,” said senior author Sarki Abdulkadir, MD, PhD, the John T. Grayhack, MD, Professor of Urological Research.

The scientists used lineage-tracing techniques in mouse models with normal prostates to show how this protein, Bmi1, identifies a population of cells resistant to castration that mimics hormonal therapy used in patients with prostate cancer.

Since prostate tumors require hormones such as testosterone to survive, when hormone therapy starves the cancer cells of testosterone, the cancer cells shrink. But, castration-resistant cells can cause the disease to relapse.

“There is a lot of interest in trying to understand why or how a cancer becomes castration resistant, or when a cancer doesn’t respond to this treatment anymore. That is what kills most of the patients,” Abdulkadir said.

The findings suggest that some cells in the prostate are prewired to be castration resistant, so if they turn into cancer cells, they will already be resistant to the treatment. **M**

The research was supported by National Cancer Institute grants R01CA167966 and R01CA123484, a Zell Family Scholar Professor award and the Grayhack Chair in Urological Research.

Muscles Have Circadian Clocks That Control Exercise Response

Scientists have discovered circadian clocks in muscle tissue that control the muscle's metabolic response and energy efficiency depending on the time of day.

The finding in mice, published in *Cell Metabolism*, sheds light on the time-of-day differences in muscle's ability to adapt to exercise and use oxygen for energy. Muscle cells are more efficient during an organism's normal waking hours, the study found.

All cells in the body, including those in muscle, contain a clock that regulates how cells adapt to changes in the environment and activity across the 24-hour day.

"Oxygen and the internal clock are doing a dance together inside muscle cells to produce energy, and the time of day determines how well that dance is synchronized," said senior author Joseph Bass, MD, PhD, chief and Charles F. Kettering Professor of Endocrinology. "The capacity for a cell to perform its most important functions, to contract, will vary according to the time of day."

More research is needed before the finding can be translated into workout advice. [M](#)



The study was supported by National Institutes of Health grants R01DK090625, R01DK100814 and K01DK105137-02 from the National Institute of Diabetes and Digestive and Kidney Diseases and grant P01AG011412 from the National Institute on Aging. Lynn Sage Cancer Research Foundation and others also supported the study.

Scientists Develop Soft, Microfluidic 'Lab on the Skin' for Sweat Analysis

A Northwestern research team has developed a first-of-its-kind soft, flexible microfluidic device that easily adheres to the skin and measures the wearer's sweat to show how his or her body is responding to exercise.

A little larger than a quarter and about the same thickness, the simple, low-cost device, described in the journal *Science Translational Medicine*, analyzes key biomarkers to help a person decide quickly if any adjustments, such as drinking more water or replenishing electrolytes, need to be made or if something is medically awry.



Designed for one-time use of a few hours, the device, placed directly on the skin of the forearm or back, even detects the presence of a biomarker for cystic fibrosis. In the future, it may be more broadly used for disease diagnosis.

"The intimate skin interface created by this wearable, skin-like microfluidic system enables new measurement capabilities not possible with the kinds of absorbent pads and sponges currently used in sweat collection," said John A. Rogers, PhD, professor of Neurological Surgery, who led the multi-institution research team that created the 'lab on the skin.'

"Sweat is a rich, chemical broth containing a number of important chemical compounds with physiological health information. By expanding our previously developed 'epidermal' electronics platform to include a complex network of microfluidic channels and storage reservoirs, we now can perform biochemical analysis of this important biofluid," he said. [M](#)

L'Oréal, the Frederick Seitz Materials Research Laboratory at the University of Illinois at Urbana-Champaign, the National Research Foundation of Korea and the National Institutes of Health (grant R01EB019337) supported the research.

Media Spotlight

1 SURGEONS START PROGRAM TO TRAIN BYSTANDERS TO TREAT SHOOTING VICTIMS

ABC NEWS

A new program called the Chicago South Side Trauma First Responders Course will train anyone to give lifesaving treatment to trauma victims. [Mamta Swaroop, MD, '10 GME](#), assistant professor of Surgery in Trauma and Critical Care, joined forces with advocate group Cure Violence in the hopes that simple steps taken immediately after a shooting or other violent event can save lives before an ambulance even arrives. "We asked people about what their experiences were with violence and with trauma," Swaroop said. Many said they had lived through violent events in which they had no knowledge of how to respond to traumatic injuries. "[They] feel helpless in that situation."

2 HOW DONALD TRUMP AFFECTS THERAPY PATIENTS

TIME

Clinical psychologist [Inger Burnett-Zeigler, '09 PhD](#), assistant professor of Psychiatry and Behavioral Sciences, described how many of her patients came to therapy with anxiety, fear and worry after the presidential election. "It's obvious to me that this highly contested election is already having real mental health consequences. Several people who had not demonstrated overt distress prior to election night began wrestling with the question: What does this mean for me? They wondered aloud about changes in government funding priorities that might affect their job security and ability to get healthcare," she wrote.

3 BEN STILLER REVEALS HE HAD PROSTATE CANCER AT AGE 48

TODAY

Actor Ben Stiller shared his experience being diagnosed with prostate cancer in June 2014 after taking a prostate-specific antigen (PSA) test. Edward Schaeffer, MD, chair of Urology, performed a robotic assisted laparoscopic radical prostatectomy to remove Stiller's cancer. "The PSA test is a powerful tool that has to be used and interpreted in the right way," Schaeffer said. "Whether or not to get the test should be a shared decision-making process with a man and his doctor."

4 OBESITY AND DIABETES BY MIDDLE AGE TIED TO HEART FAILURE LATER ON

REUTERS

People who reach middle age without developing high blood pressure, diabetes or obesity may have a lower risk of heart



ACTOR BEN STILLER WITH HIS SURGEON EDWARD SCHAEFFER, MD, CHAIR OF UROLOGY, ON SET AT THE TODAY SHOW IN OCTOBER.

failure later in life, a recent study suggests. "The benefits of preventing the onset of the risk factors themselves often far exceed the benefits experienced through treatment of the risk factors after they've developed," said [John Wilkins, MD, '12 GME](#), assistant professor of Medicine in the Division of Cardiology, who led the research.

5 DOCTOR USES MAGIC TO HEAL, TEACH AND ENTERTAIN

WTTW CHICAGO TONIGHT

By trade, [Ricardo Rosenkranz, MD, '93, '96 MD](#), clinical assistant professor of Pediatrics in Community Based Primary Care, is a neonatologist, specializing in the care of premature babies. But his other great passion is magic. "Almost every magical effect is about transformation. And so much of medicine is about transformation," he explained in an interview about the one-man stage show he performed this winter, "The Rosenkranz Mysteries," which looked at the connection between magic and medicine.

6 AS HOUSE CALLS MAKE A COMEBACK, DOCTORS NEED TO LEARN NEW SKILLS

STAT

Katherine O'Brien, MD, geriatric medicine fellow, and June McKoy, MD, '01 GME, associate professor of Medicine and Preventive Medicine, suggest that house calls can be an effective way to provide medical care to geriatric patients. "If the house call is to truly make a comeback – and it should for both patient convenience and cost – training programs and the organizations that oversee them must revolutionize their curricula to help young physicians develop the skills necessary for home care medicine," they wrote.

7 THE WAY YOU BREATHE MAY HELP YOUR BRAIN WORK BETTER

WGN TV

Inhaling activates a critical area in the brain, according to new research. "We found that the act of breathing in increases activity in parts of the brain that are important for smell, emotion and memory. This could in part be due to the fact that when you breathe through your nose, you activate smell neurons, which activate the parts of the brain that are important for sense of smell," said lead author Christina Zelano, PhD, assistant professor of Neurology during a broadcast interview.

8 A HEARING TEST MAY BE ABLE TO IDENTIFY A CONCUSSION

WASHINGTON POST

By measuring the brain's electrical reactions to speech sounds, researchers were able to identify children who had suffered a recent concussion with 90 percent accuracy and those who hadn't with 95 percent accuracy. "[Auditory processing] is the

most precise, most complicated computational work the brain has to do. So it's not surprising that auditory processing can be used as a measure of brain health," said Nina Kraus, '80 PhD, professor of Otolaryngology - Head and Neck Surgery, who led the research.

9 CAN PSYCHIATRIC DRUGS BLUNT THE MOTHER-BABY BOND?

THE NEW YORK TIMES

"Mothers who have depression and other mental health symptoms tend to have less positive facial expressions, less verbalizations, and even engage in certain types of behaviors that don't always focus on the safety of the child in the same way," said Sheehan Fisher, PhD, '12 GME, professor of Psychiatry and Behavioral Sciences, in a Q&A. "What our focus is on is how do we best treat the mother so that her symptoms don't get in the way of her being able to bond with the child and the impact that can have on the infant long-term."

10 WHEN 'SUPERAGERS' GET ALZHEIMER'S, THEY DON'T EXHIBIT ANY SYMPTOMS

HUFFINGTON POST

The Fall 2016 issue of *Northwestern Medicine Magazine* featured a group of seniors in their 80s, 90s and beyond who have remarkable memory power. Now research shows that these "SuperAgers" can have numerous amyloid plaques in their brains – a hallmark of Alzheimer's disease – yet their memory is unaffected. "It appears that some elderly individuals are immune to the effects of Alzheimer's pathology," said neurologist Changiz Geula, PhD, research professor in the Cognitive Neurology and Alzheimer's Disease Center, who conducted the new research. [M](#)



Faculty Awards and Honors

More Awards and Honors are online at magazine.nm.org. 



LAST FALL, DEAN NEILSON WAS INDUCTED INTO THE AMERICAN ACADEMY OF ARTS AND SCIENCES, ONE OF THE NATION'S OLDEST AND MOST PRESTIGIOUS HONORARY SOCIETIES.

Eric G. Neilson, MD, vice president for Medical Affairs and Lewis Landsberg Dean, was inducted into the American Academy of Arts and Sciences at a ceremony last fall. He was recognized for his research, which seeks to understand the immunologic and fibrogenic mechanisms of interstitial renal diseases.

Clyde Yancy, MD, MSc, vice dean for Diversity and Inclusion, Magerstadt Professor and chief of Cardiology, has been elected to the National Academy of Medicine (NAM). Election to NAM is based on professional achievement and a commitment to service. Yancy has published nearly 400 scientific papers covering hypertension, heart failure, cardiomyopathy, preventive cardiology, and ethnic and racial disparities in cardiovascular disease.

David Cella, PhD, chair of Medical Social Sciences and Ralph Seal Paffenbarger

Professor, has received the Gustav O. Lienhard Award from the NAM for his work to measure and apply patient-reported outcomes in healthcare. The Lienhard Award recognizes outstanding national achievement in improving personal healthcare in the United States. Cella is an international expert in the measurement and application of patient-reported outcomes in healthcare settings.

Philip Greenland, MD, the Harry W. Dingman Professor of Cardiology, received the David E. Rogers Award from the Association of American Medical Colleges and the James D. Bruce Memorial Award from the American College of



Physicians. The Rogers Award is given annually to a medical school faculty member who has made major contributions in improving the health of the American people. The Bruce Award recognizes distinguished contributions in preventive medicine. Greenland is a leader in the field of preventive cardiology, with a focus in cardiovascular risk factors, cardiovascular imaging and women's cardiology.

Dimitri Krainc, MD, PhD, Aaron Montgomery Ward Professor and chair of Neurology, and director of the Center for Rare Neurological Diseases, has received the Javits Neuroscience Investigator Award from the National Institute of Neurological Disorders and Stroke. The Javits Award is presented to investigators who have made exceptional achievements in the field of neurological science and are expected to continue to produce cutting-edge research in the coming years.

Jules Dewald, PhD, director of the Neuroimaging and Motor Control Laboratory and chair of Physical Therapy and Human Movement Sciences, received the 2016 Excellence in Research Award from the Academy of Neurologic Physical Therapy-American Physical Therapy Association. This award honors continued excellence in research related to neurologic physical therapy science, theory, practice or education.

Roopal Kundu, '01 MD, '02 GME, associate professor of Dermatology and associate dean for Admissions, was formally invested as the Jacob R. Suker, MD, Professor of Medical Education. She founded the Northwestern Center for Ethnic Skin, which has provided focused clinical and surgical care, patient education and clinical trials research since 2005.

Charles Hogue Jr., MD, chair of Anesthesiology, was invested as the James E.

Eckenhoff Professor of Anesthesiology. Hogue's research focuses on methods to reduce the risk of neurological injury from cardiac surgery, with a particular emphasis on brain and kidney injury.

Daniela Matei, MD, professor of Obstetrics and Gynecology in Gynecologic Oncology and professor of Medicine in Hematology/Oncology, was invested as the Diana, Princess of Wales Professor of Cancer Research. She has contributed significantly to improving the treatment of ovarian cancer by conducting high-caliber clinical and basic science research.



ANNE LURIE WITH DANIELA MATEI, MD

Robert Kushner, MD, '82 GME, professor of Medicine in Endocrinology, Metabolism and Molecular Medicine, received the Obesity Society's 2016 Clinician-of-the-Year Award.

Bruce Henschen, '12 MD, '12 MPH, '15 GME, assistant professor of Medicine in General Internal Medicine and Geriatrics, received the Thomas Hale Ham Award for New Investigators from the Association of American Medical Colleges. The award recognizes Henschen's research on the educational and clinical



impact of the Education-Centered Medical Home, a longitudinal clerkship at Feinberg.

Riad Salem, MD, professor of Radiology, received the Society of Interventional Radiology Foundation Leader in Innovation Award. Salem is a pioneer in the specialty of interventional oncology.

George Chiampas, DO, assistant professor of Emergency Medicine and Orthopaedic Surgery, has been named Hellene of the Year 2016 by the Hellenic Bar Association.

Frank Castillo, MD, clinical assistant professor of Family and Community Medicine, was named one of the "101 Most Influential Latino Leaders of 2016" by *Latino Leaders Magazine*.

Aruna Ganju, MD, '01 GME, associate professor of Neurological Surgery, was named a "Female Spine Surgeon Leader to Know" by *Becker's Spine Review*. Ganju is a neurosurgeon specializing in spinal column and spinal cord disease treatments. Her research investigates surgical outcomes of patients with conditions spanning post-traumatic syringomyelia to lumbar spondylolisthesis.

Juan Carlos Caicedo, MD, '06 GME, and **Elisa Gordon, PhD, MPH**, both associate professors of Surgery in Organ Transplantation, received the 31st Annual Gift of Life Award by the National Kidney Foundation for Informate.org. Their contributions to this website, which educates thousands of people in the Latino community on the benefits and risks of living donation, was recognized at the Gift of Life Gala.

Heron Rodriguez, MD, '02 GME, associate professor of Surgery in Vascular Surgery, was named to the *Negocios Now* "Who's Who in Hispanic Chicago." Rodriguez serves as the program director for Northwestern

University's Vascular Surgery Integrated Residency Program, associate program director for the Vascular Surgery Fellowship Program and co-director of the limb preservation program at Northwestern's Vein Clinic. Rodriguez's clinical interests include arterial and venous surgery and percutaneous interventions.

Rowland (Bing) Chang, MD, MPH, professor of Preventive Medicine in Epidemiology, assumed the role of board chair for the Arthritis Foundation. The first



active physician to serve as the board chair in decades, Chang brings to the role his medical and research expertise combined with a commitment to finding a cure for arthritis. He is a rheumatologist, epidemiologist and health services researcher with more than 34 years of practice and research experience and 30 years of involvement with the Arthritis Foundation.

Elizabeth McNally, MD, PhD, director of the Center for Genetic Medicine and Elizabeth J. Ward Professor of Genetic Medicine, and **Sadiya Khan, '09 MD, '14 MSc, '11, '12 GME**, instructor of Medicine in Cardiology, were honored for their accomplishments in cardiovascular disease research at the American Heart Association Scientific Sessions 2016. McNally received the 2016 American Heart Association Basic Research Prize for her study of novel genetic mechanisms responsible for inherited human disorders including heart failure, cardiomyopathy, muscular dystrophy, arrhythmias and aortic aneurysms. Khan was honored with the Samuel A. Levine Young Clinical Investigator Award for her innovative research studying the regulation of a gene linked to cardiovascular disease and aging. **M**

The image is a composite of two microscopic views of a neural cell. The left side shows the cell at day 0, appearing as a small, isolated purple mass. The right side shows the cell at day 5, where it has grown significantly, with its purple body and long, thin processes extending and weaving through a dense, green, fibrous network. The entire image is overlaid with a grid of small white plus signs. The title text is positioned on the left side, overlapping the day 0 image.

A Universal Solution for Regenerative Medicine

An embryonic neural cell derived from a mouse spinal cord and cultured on a synthetic nanofiber gel is pictured on day 0 (left) and day 5 (right). By mimicking the environment of spinal cord tissue, the nanofibers (about 10nm in diameter) encouraged the neuron to re-establish a network with other cells. The material could be used to repair spinal cord injuries. Images courtesy of Mark McClendon and Zaida Pinto, PhD.

Revolutionary nanomaterials developed at Northwestern could make it possible to repair any part of the body

WRITTEN BY: Sarah Plumridge

When he came to Northwestern in 2008, Wellington Hsu, MD, was searching for a strategy to heal bone using materials science.

He turned to Samuel Stupp, PhD, director of Northwestern's Louis A. Simpson and Kimberly K. Querrey Institute for BioNanotechnology (SQI). Stupp's laboratory had engineered molecules able to self-assemble into nanofibers thousands of times thinner than a human hair that can mimic cell structures and biological signaling. The technology can be used to regenerate tissues and organs spanning from bone and cartilage to muscle and brain tissues. Hsu hoped it could rebuild bone in spine therapy.

"We learned we could help each other out: apply his technology to my clinical patients," says Hsu, the Clifford C. Raisbeck, MD, Professor of Orthopaedic Surgery. "You can have the best technology in the world, but if you don't know how to apply it or how to promote it, it can all be for naught."

Spinal fusion is a surgery that "welds" vertebrae together in the spine so they heal into a single bone. The procedure is designed to imitate the normal healing process of broken bones and is used to eliminate pain caused by fractured bones, deformities or arthritis. During a spinal fusion procedure, a surgeon takes small pieces of bone or synthetic bone graft substitute and places them between the vertebrae to help them fuse.

While advances in technology and bone grafting substitutes have improved this process, better spine fusion rates with minimal side effects are still needed. With this in mind, Hsu and his wife Erin Hsu, PhD, research assistant professor of Orthopaedic Surgery

— both resident faculty in the SQI — sought to apply Stupp's novel nanofibers to spinal fusion animal models.

Working together, the Stupp-Hsu team developed a new version of the nanofiber material that they believe will be a better bone graft substitute. Made from collagen and self-assembling nanofibers, their "nanoslurry" is a malleable paste that binds to the native growth factors in a patient's own body, enhancing natural healing ability.

In challenging healing environments, this "slurry" can also deliver BMP-2, a growth factor protein critical in the regeneration of bone. The BMP-2 protein is then released over time to induce bone growth, so lower amounts of the protein are required for successful fusion, which could minimize side effects. In either iteration, this paste will allow surgeons to adapt the material to fill any size bone defect.

"We have these synthetic nanogels that we know can promote bone formation, but to work in the operating room, they have to be readily accessible and implant easily," Erin Hsu says. "This slurry will allow the nanofiber gels to be used in a more universal fashion."

Wellington Hsu adds, "Different applications for spine surgeries necessitate different characteristics of a product. Our collaborations can optimize the ability to define those characteristics, whether we want our product to be more soupy, or more like a toothpaste or more like a crouton."

NEXT-GENERATION MATERIALS

Stupp's research is based on supramolecular chemistry, which explores how molecules interact with each other and how they self-assemble and function. The underlying science behind the field was recognized in 1987 when Donald J. Cram, Jean-Marie Lehn and Charles J. Pedersen received the Nobel Prize in Chemistry.

Samuel Stupp, PhD, director, Louis A. Simpson and Kimberly K. Querrey Institute for BioNanotechnology



Stupp spearheaded the study of “supramolecular biomaterials,” self-assembling materials that can be designed to interact specifically with cells. “What makes this field exciting is getting to use cutting-edge science — it’s new for everybody — and having an impact on life span and quality of life for people,” says Stupp, who is also a professor at Feinberg, the Weinberg College of Arts and Sciences, and the McCormick School of Engineering.

Stupp’s work focuses on developing materials that mimic the nanoscale architecture of extracellular matrices surrounding mammalian cells. These materials have the ability to display biological signals that can interact with receptors and cause cells to migrate, proliferate or differentiate.

The nanofibers that Stupp has engineered resemble collagen or fibronectin fibers, both structures of the extracellular matrix. They can be built from a combination of amino acids, nucleic acids, lipids and sugars, which allows them to degrade into nutrients for cells. The scientists believe they can incorporate any biological signal in these nanofibers to achieve a specific regenerative medicine target.



Erin Hsu, PhD



Wellington Hsu, MD

of nanofiber that combines two kinds of polymers, those formed with covalent bonds and others formed with non-covalent bonds. The strongly bonded covalent polymer acts as a skeleton for structure and the weakly bonded non-covalent polymer forms a compartment that is soft like a gel. This soft component can be altered, removed or regenerated by adding small molecules, allowing the hybrid polymer to have different features.

“These new unprecedented materials could be used as therapeutic agents to deliver drugs to cells over long periods of time or to affect cell behavior,” he says.

Stupp’s group has also used super resolution microscopy to illustrate that nanofibers are capable of rearranging their structures dynamically and can adapt to the receptor patterns on cells. This work was recently published in *Nature Communications*.

“This particular finding implies that highly bioactive nanoscale filaments will be possible in the future to address the most difficult regenerative targets,” Stupp says.

In future work, Stupp’s group plans to develop new materials capable of displaying signals that can be turned on and off by adding certain molecules to cell cultures.

“This means that stem cells could be manipulated with one signal to promote their proliferation, and then that signal could be turned off when the cells are ready to differentiate and a new signal could be introduced for differentiation,” Stupp says.

He also plans to collaborate with Northwestern newcomer John Rogers, PhD, a materials scientist who arrived from the University of Illinois at Urbana-Champaign last September. A pioneer in the field of bio-integrated electronic devices, Rogers will lead the new Center for Bio-Integrated Electronics within the Simpson Querrey Institute for BioNanotechnology.

Stupp’s lab, with a focus on self-assembled structures, complements Rogers’ research on electronic materials that integrate with the surfaces of the body.

“We sensed an area of opportunity for collaboration,” Rogers says. “With our vision to bring our two areas of expertise together, we realized we could do even more significant things in medicine.” **IM**



CROSS-DISCIPLINARY TEAM SCIENCE

The ability to fine-tune the nanofibers to any target has allowed Stupp to establish collaborations across the medical school, including with John Kessler, MD, Ken and Ruth Davee Professor of Stem Cell Biology, to regenerate the nervous system in the spinal cord, and with Susan Quaggin, MD, chief of Nephrology, and Guillermo Oliver, PhD, Thomas D. Spies Professor of Lymphatic Metabolism, to target vascular regeneration.

“One of the projects is the great possibility of using supramolecular materials to target plaque in arteries to reverse plaque formation,” Stupp says. He’s collaborating with **Shad Thaxton, ’04 MD, ’07 PhD**, associate professor of Urology, and **Melina Kibbe, MD, ’03 GME**, adjunct professor of Surgery, on that work.

In work published in *Nature Materials*, his lab showed how the length of nanofibers is critical to the survival and proliferation of mammalian cells.

“The group demonstrated that cells could actually distinguish between different lengths of nanofibers even though the nanofibers were identical in their other properties,” Stupp says.

Furthermore, in a paper published in *Science*, Stupp’s lab developed a new type

A paste made of collagen and nanofibers can enhance the growth factors in bone to promote spine fusion.

The medical school's
2016 achievements

A YEAR OF IMPACT

"It's clear the Feinberg community has much to be proud of when we reflect on all we accomplished in 2016," says Eric G. Neilson, MD, vice president for medical affairs and Lewis Landsberg Dean. "From our students to our faculty, our scientists to our staff, we all exemplified our school's mission: to impact the practice of medicine through discovery and education."

Check out some of the highlights from an outstanding year.



1

ACADEMIC NEWS

MEDICAL STUDENTS SET BAR FOR EXCELLENCE

In May, Feinberg's Class of 2016 – the first to complete the medical school's revised curriculum – graduated with distinction. In August, an exceptional Class of 2020 arrived on campus. Selected from a pool of 7,608 applicants, the 163 students represent many backgrounds: Collectively, they had 77 different undergraduate majors, speak 29 languages and come from 32 states and 6 foreign countries.

STUDENT WELLNESS INITIATIVE THRIVES

Recognizing that wellness and self care are essential to academic success and a rewarding career, Feinberg continued to support the well-being of its students by providing resources ranging from yoga in the library to mental health services. In December, medical students took this idea to heart by taking a break from the stresses of school for the 38th annual performance of In Vivo, Feinberg's sketch comedy and variety show. "One of the things I love about Feinberg is that it fosters an environment where a group like In Vivo exists," said first-year medical student Max Kelsten.

SECOND-YEAR MEDICAL STUDENTS SHOWCASE SCIENTIFIC RESEARCH PROJECTS

In December, medical students presented research projects on topics spanning from neurogenesis and cancer to big data and global health. Part of the curriculum's Area of Scholarly Concentration, the four-year longitudinal research project gives students a chance to perform a hypothesis-driven investigation under the tutelage of a faculty mentor. "Doing research is invaluable in medical school. Everything in medicine is based on science and really the best way to understand how to read a paper and interpret findings is by doing it," said second-year medical student Alison Szabo.

In 2016, 62 percent of Feinberg's graduating class matched into top 25 programs for residency.

FIRST-YEAR MEDICAL STUDENTS SAVE A LIFE

During a break between classes at Lake Shore Park, five first-year medical students saved a man's life – and performed CPR for the first time. "There was a split second of fear, because we're first-year medical students, and we'd only practiced on mannequins, but we realized if we didn't do anything then he would die," said Jessica Quaggin-Smith. The group attributed their actions in the park to a basic life support course they took during the first week of medical school at Northwestern Simulation.

FEINBERG OFFERS NEW DEGREE PROGRAMS

In 2016, Northwestern University established a master of science in reproductive science and medicine. The 18-month, full-time degree program provides training in reproductive science focusing on mammalian reproductive biology and medicine with an emphasis on applications to human health. Northwestern also officially launched a PhD program in health care quality and patient safety – the first of its kind in the country – and graduated its first student in the fall (read more about it on pg 5).

PROGRAMING HIGHLIGHTS FEIN- BERG'S COMMITMENT TO DIVERSITY

In November, former U.S. Surgeon General Antonia Novello, MD, the first Hispanic and the first woman appointed to the position, visited Feinberg to discuss health disparities in the United States. "We have to be a

voice for the underserved," she told students. Throughout the year, the Feinberg community came together for additional diversity-focused events, including a presentation on the public health aspects of the pipeline construction protests in Standing Rock, North Dakota.

2

RESEARCH BREAKTHROUGHS

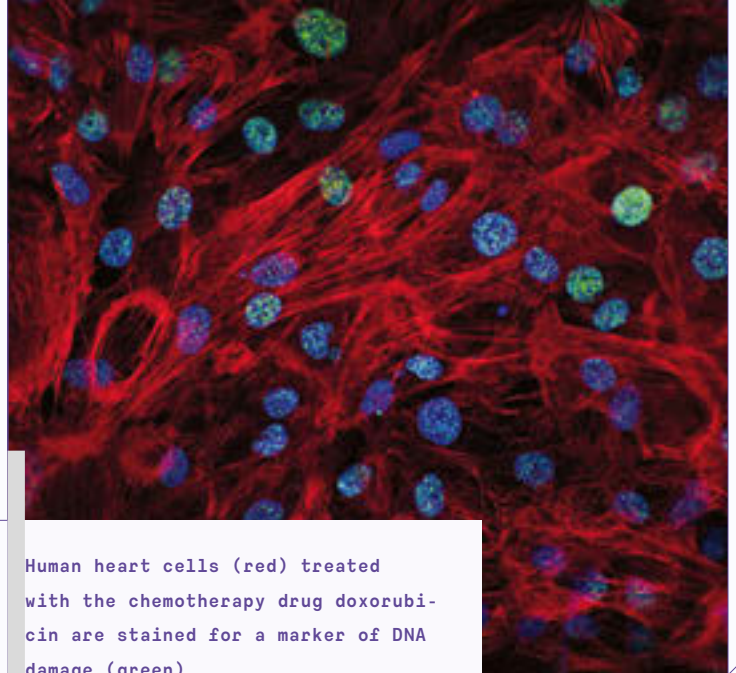


HIV IS STILL GROWING, EVEN WHEN UNDETECTABLE IN THE BLOOD

A study published in *Nature* challenged previous beliefs about dormant HIV by finding that HIV is still replicating in lymphoid tissue, even when it is undetectable in the blood of patients on antiretroviral drugs. The findings provide a critical new perspective on how HIV persists in the body despite potent antiretroviral therapy. "We now have a path to a cure," said corresponding author [Steven Wolinsky, MD, '82 GME](#). "The challenge is to deliver drugs at clinically effective concentrations to where the virus continues to replicate within the patient."

NANOSCIENTISTS DEVELOP THE 'ULTIMATE DISCOVERY TOOL'

A Northwestern research team developed a tool to rapidly test millions and perhaps billions of different nanoparticles at a time to zero in on the best particle for a specific application, from pharmaceuticals to electronic devices. "As scientists, we've only just begun to investigate what materials can be made on the nanoscale," said Chad Mirkin, PhD, professor of Medicine in the Division of Hematology/Oncology and founding director of Northwestern's International Institute for Nanotechnology, who led the study, which was published in *Science*.



Human heart cells (red) treated with the chemotherapy drug doxorubicin are stained for a marker of DNA damage (green).

TRAILBLAZING CANCER DISCOVERIES

Important findings at Northwestern in the field of cancer spanned basic science, translational and clinical research published in 2016. A study in *Nature Communications* showed how a signaling pathway and genetic material work together to regulate two subtypes of brain tumors called glioblastomas. Another study, published in *Nature Medicine*, demonstrated that reprogrammed stem cells can be used to identify patients with cancer who are likely to experience a dangerous side effect of a common chemotherapy drug. And the results of a phase III clinical trial published in *Lancet Oncology* suggested that a combination of the drugs palbociclib and fulvestrant provides an effective and well-tolerated therapy for patients with recurrent metastatic breast cancer who are resistant to endocrine therapy.

NEW TARGETS TO TREAT DEPRESSION REVEALED

Two studies published in *Molecular Psychiatry* demonstrated how new pathways in the brain can be manipulated to alleviate depression. The first showed that decreasing a set of proteins called HCN channels reduced depression-like behavior in mice. The second study indicated that blocking a pathway in the hippocampus involving a protein called BMP also has an antidepressant effect. Both findings could inform fresh therapies for millions of patients who do not respond to existing treatments for depression.

NEW DIABETES SCREENING RECOMMENDATION MISSES MORE THAN HALF OF HIGH-RISK PATIENTS

The latest government guidelines doctors follow to determine if patients should be screened for diabetes missed 55 percent of high-risk individuals with prediabetes or diabetes, according to a Northwestern Medicine study published in *PLOS Medicine*. The widely accepted 2015 screening guidelines from the United States Preventive Service Task Force recommend patients be screened for diabetes if they are between 40 and 70 years old and are

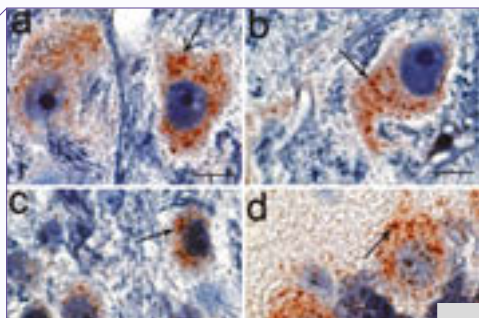
overweight or obese. But the study found many patients outside those age and weight ranges develop diabetes, especially racial and ethnic minorities.

NEW DRUGS CLEAR CHRONIC SKIN DISEASES IN CLINICAL TRIALS

About 80 percent of patients with moderate to severe psoriasis saw their disease completely or almost completely cleared with a new drug called ixekizumab, according to three large, long-term clinical trials led by Kenneth Gordon, MD, professor of Dermatology. Likewise, nearly 40 percent of patients with atopic dermatitis saw improvement with dupilumab in two clinical trials led by Jonathan Silverberg, MD, PhD, MPH, assistant professor of Dermatology. The results of these studies were compiled in papers published in the *New England Journal of Medicine*.

THIRD GENE SHOWN TO CAUSE PARKINSON'S DISEASE

Northwestern Medicine scientists discovered a new cause of Parkinson's disease — mutations in a gene called *TMEM230*. This appears to be only the third gene definitively linked to confirmed cases of the disease. In a study published in *Nature Genetics*, the scientists provided evidence of the mutations in patients with Parkinson's disease from both North America and Asia. They also demonstrated that the gene is responsible for producing a protein involved in packaging the neurotransmitter dopamine in neurons. Loss of dopamine-producing neurons is a defining characteristic of Parkinson's disease.



The Parkinson's disease gene *TMEM230* encodes a protein that extends across the membrane of synaptic vesicles (arrows).

3

RANKINGS AND HONORS

MEDICAL SCHOOL RISES IN RANKINGS

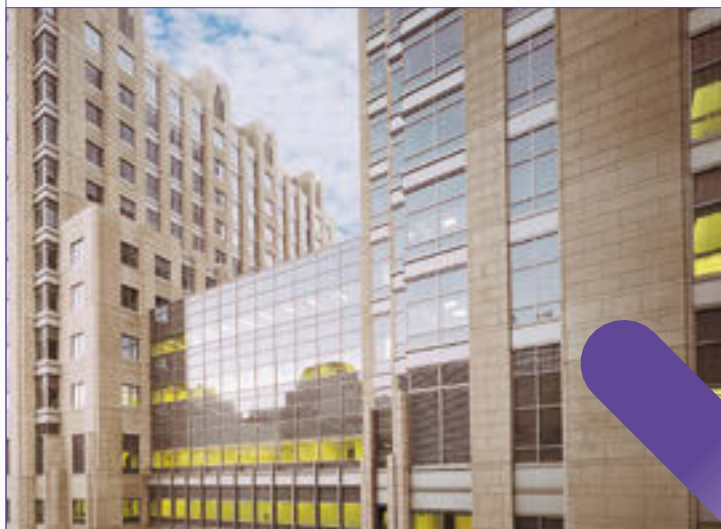
Feinberg rose two spots to rank 17th among the best research-oriented medical schools in the country, according to the latest *U.S. News & World Report* rankings. This is the ninth year in a row Feinberg has placed as a top 20 research-oriented medical school. This year's ranking represents an all-time high.

NORTHWESTERN HOSPITALS AMONG THE BEST IN LATEST U.S. NEWS RANKINGS

Four Northwestern Medicine hospitals were recognized by *U.S. News & World Report* in its 2016-17 ranking of America's Best Hospitals, with Northwestern Memorial Hospital ranked 8th in the nation. The Rehabilitation Institute of Chicago was again recognized as the national leader in physical medicine and rehabilitation, topping the *U.S. News* list for the 26th consecutive year, while Ann & Robert H. Lurie Children's Hospital of Chicago was ranked the 6th best children's hospital in the country.

NIH FUNDING RANKINGS INCREASE

The medical school ranked 18th among U.S. medical schools in total National Institutes of Health funding, an increase over previous years, according to an analysis from the Blue Ridge Institute



for Medical Research. Nine departments at Feinberg ranked among the top ten in their specialty and six more ranked among the top 20. In addition, Northwestern University ranked 10th among world-wide institutions with the most highly cited researchers, according to analysis by Thomson Reuters.

4

LEADERSHIP APPOINTMENTS



Ronald Ackermann,
MD, MPH

NEW LEADER OF PUBLIC HEALTH NAMED

Ronald Ackermann, MD, MPH, was named senior associate dean for public health and director of the Institute for Public Health and Medicine (IPHAM), succeeding IPHAM's inaugural leader, Rowland Chang, MD, MPH. Ackermann has already played a central role within IPHAM as director of the institute's Center for Community Health.

FOUR LEADERS APPOINTED TO GUIDE ADMISSIONS AND MEDICAL EDUCATION PROGRAMS

Roopal Kundu, '01 MD, '02 GME, was named associate dean for Admissions. Formerly program director of the dermatology residency program, she will help promote the medical school's curriculum and clinical experiences to attract students of the highest caliber. Meanwhile, Marianne Green, MD, was named senior associate dean for Medical Education, to continue fostering innovation in the undergraduate medical education program. Aarati Didwania, MD, '04 MSCI, associate professor of Medicine, was chosen to succeed Green as director of the Honors Program in Medical Education. In addition, Robert Branigan, '92 MD, '93 '94 '98 GME, professor of Urology, was appointed assistant director of Student Affairs. He will address the unique issues medical students face, help

with career planning and collaborate with education leadership to implement effective wellness program.

THREE NEW CHIEFS FOR DEPARTMENT OF MEDICINE

In April, Scott Budinger, MD, was appointed chief of the Division of Pulmonary and Critical Care Medicine, after serving on the medical school's faculty for 16 years. In November, Babafemi Taiwo, MBBS, '06 GME, was named chief of Infectious Diseases. Also director of African Research in the Center for Global Health, Taiwo started at Northwestern in 2005 as a fellow. In the same month it was announced that Jeffrey Linder, '97 MD, MPH, will join Northwestern as chief of General Internal Medicine and Geriatrics, following 14 years on the faculty at Harvard Medical School.

HOGUE NAMED CHAIR OF ANESTHESIOLOGY

Charles Hogue, Jr., MD, a renowned specialist in cardiovascular and thoracic anesthesiology, was named chair of the Departments of Anesthesiology at Northwestern University Feinberg School of Medicine and Northwestern Memorial Healthcare. He previously served as chief of Adult Anesthesia at The Johns Hopkins University School of Medicine.

Charles Hogue, Jr., MD



Babafemi Taiwo,
MBBS, '06 GME

NOTABLE ANNOUNCEMENTS



WOMEN'S HEALTH RESEARCH INSTITUTE CELEBRATES NEW POLICIES ON GENDER IN RESEARCH

In January, the National Institutes of Health and Food and Drug Administration made effective a policy to include women in basic science and clinical research studies. "We wanted to make this point – that women's health is not just about pregnancy and having a child," said Teresa Woodruff, PhD, director of the Women's Health Research Institute. "In the WHRI, we've embraced this broad perspective of assuring women that when we say women's health we mean all of women's health." The new policy instructs scientists to account for the possible role of sex as a biological variable in animal and clinical studies and to factor sex into research designs, analyses and reporting.

NEW NORTHWESTERN INSTITUTE COMMITTS TO IMPROVING LGBT HEALTH

Northwestern University has launched the Institute for Sexual and Gender Minority Health and Wellbeing, the first research institute in the United States established university-wide that is focused exclusively

on LGBT health. "We now have an extraordinary window of opportunity to conduct innovative research on the most important health concerns and needs of LGBT populations, to train scientists and clinicians in the best practices to meet those needs and to profoundly lower barriers to healthcare and eliminate inequities in health outcomes," said director Brian Mustanski, PhD.

NEMMERS PRIZE IN MEDICAL SCIENCE ANNOUNCED

Huda Zoghbi, MD, a Howard Hughes Medical Institute investigator and professor at Baylor College of Medicine known for her groundbreaking research on Rett syndrome and other neurological disorders, was the inaugural recipient of the Mechthild Esser Nemmers Prize in Medical Science at Northwestern University. The prize is awarded to a physician-scientist whose body of research exhibits outstanding achievement in their discipline as demonstrated by works of lasting significance. Zoghbi delivered her keynote lecture at Northwestern in September.

DATA SCIENCE TRANSFORMING BIOMEDICAL RESEARCH AT FEINBERG

New data science initiatives propelled Feinberg to the future of medicine, enabling important discoveries in rare and common diseases that are beginning to translate into new treatments and individualized patient care at an accelerated pace. To support the burgeoning data science field, Feinberg is recruiting faculty, creating a major new center, training graduate students and connecting scientists to each other's data.



NORTHWESTERN TO PARTICIPATE IN WHITE HOUSE-LED PRECISION MEDICINE STUDY

Northwestern University was awarded more than \$50 million for a five-year precision medicine grant as part of a landmark longitudinal research effort that aims to engage 1 million or more U.S. participants to improve disease prevention and treatment measures based on individual differences in lifestyle, environment and genetics. "The big excitement here is the opportunity to improve the way we predict, prevent and eventually treat disease," said Philip Greenland, MD, the Harry W. Dingman Professor of Cardiology and a principal investigator of the new award. "Just the scope of it – 1 million people – is beyond anything that anybody in the U.S. has ever done. This could be a game changer." **NM**

With evidence-based smartphone apps, mental healthcare is always within reach

WRITTEN BY: Anna Williams

MENTAL HEALTHCARE ON HAND



12

Number of apps in the
IntelliCare suite

30K+

Number of downloads
since launch



Close to seven percent of Americans suffer from major depression, and 18 percent have an anxiety disorder. Many more experience subclinical symptoms of depression and anxiety throughout their lives. Despite this considerable healthcare burden, mental health issues remain largely undertreated.

At Northwestern Medicine's Center for Behavioral Intervention Technologies (CBITs), investigators are striving to close this treatment gap by harnessing technology already in our pockets. The center, established at Feinberg in 2011 with a National Institutes

of Health (NIH) grant, is dedicated to developing web and mobile technologies that help people make positive behavior changes for their health.

David Mohr, PhD, director of CBITs and a professor of Preventive Medicine in the Division of Behavioral Medicine, is leading one of the center's key efforts: bringing mental health treatment straight to people's smartphones. "Most people aren't treated for depression — the average time from first onset of the disorder to first treatment is eight years," Mohr says. "The hope is that by using technologies, we can find ways to deliver treatments that are both cost-effective and easily accessible."

With more than 70 percent of Americans now carrying a smartphone, the device is a promising tool in the push to increase access to care. But there are challenges: While clinical trials have suggested that web and mobile technology can help people

manage mental health issues in principle, it has often failed in practice.

Many of the apps currently available are poorly designed — cumbersome to use or dense with didactic material — and thus quickly abandoned by users.

"Generally people download a health app, they use it for a few days or a week, and then they get tired of it," says Mohr, also a professor of Medical Social Sciences and of Psychiatry and Behavioral Sciences. "But that doesn't work for behavior change, which requires consistent effort over many weeks and months."

So in the spring of 2015, CBITs released a mental health program designed with engagement in mind: IntelliCare, a hub of 12 interactive smartphone apps that combat depression and anxiety with evidence-based strategies. The design better mirrors the way people use smartphones in their everyday lives.

"We realized that people tend to engage with most apps for a few seconds to get just one thing done," Mohr says, like finding a destination on Google Maps or ordering dinner on GrubHub. Incorporating all of the strategies shown to effectively treat depression into one app would likely overwhelm and turn off users.

With that in mind, the team at CBITs decided to develop a suite of apps, with each individual app focusing on a single strategy that requires just a few minutes of time. One day users might find comfort in "Daily Feats," a checklist that recognizes positive daily accomplishments. The next day, they might benefit from "Thought Challenger," which borrows a strategy from cognitive behavioral therapy to help users identify a biased negative thought pattern and develop a more balanced perspective.

Eventually, IntelliCare will incorporate analytics that can make personalized recommendations for which app might be most appropriate for a user in the moment — "a Netflix for mental health apps," Mohr explains.

ADDING A HUMAN TOUCH

While the sense of novelty that comes with receiving new recommendations is intended to keep users engaged, the team at CBITs also perceived that it might not be enough. "We can't expect that a piece of technology alone is going to solve our behavioral health problems. As someone once told me, we've had scales for 100 years and people are still overweight," Mohr says. "There needs to be some human engagement."

To test this enhancement, the team conducted a trial, recently published in the *Journal of Medical Internet Research*, that paired IntelliCare with a dedicated coaching program. Trained coaches helped participants identify their goals over an initial phone call, and provided ongoing support via text message to check in, encourage use of the mobile tools and answer questions. Coaches also had access to a dashboard providing data on which IntelliCare apps their clients were using and when.

Kathryn Noth Tomasino, PhD, a clinical psychologist at CBITs, helped develop this aspect of the IntelliCare intervention. "We think coaching is a critical part of the experience," Tomasino says. "We're not trying to replace what people already do in therapy. Rather, we're helping people build those skills into the context of their everyday lives, so they can practice them regularly and in the moment."

The results of the trial were encouraging. Study participants improved to a degree similar to that expected from psychotherapy

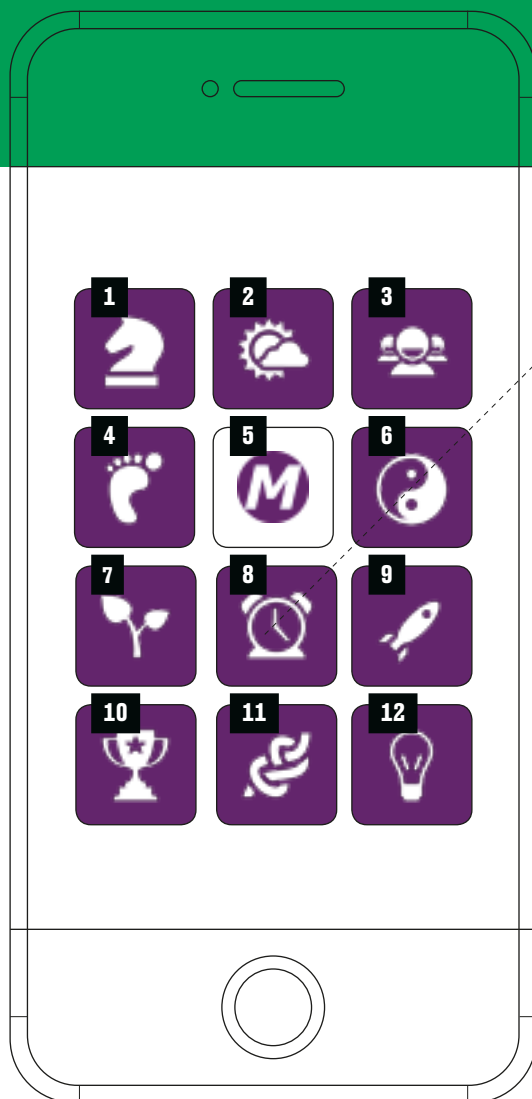
"WE'RE NOT TRYING TO REPLACE WHAT PEOPLE ALREADY DO IN THERAPY. RATHER, WE'RE HELPING PEOPLE BUILD THOSE SKILLS INTO THE CONTEXT OF THEIR EVERYDAY LIVES."

Kathryn Noth Tomasino, PhD



THE INTELLICARE SUITE

1. Thought Challenger
2. iCope
3. Social Force
4. MoveMe
5. My Mantra
6. Purple Chill
7. Day to Day
8. Slumber Time
9. Boost Me
10. Daily Feats
11. Worry Knot
12. Aspire



Learn more about the IntelliCare suite of apps
at intellicare.cbits.northwestern.edu

or antidepressants, Mohr says. The data also showed that participants stayed engaged: Use of IntelliCare apps remained strong and consistent for eight weeks – relatively rare for an app intervention.

The team is now conducting a controlled trial to confirm the results of this initial study and to investigate the impact of different levels of coaching.

Meanwhile, the IntelliCare suite, which is publicly available on Google Play, has been downloaded more than 30,000 times since its launch. While CBITs doesn't collect data on the general population, they suspect the apps are reaching both people who use IntelliCare with therapy or medication,

as well as those who simply don't have access to traditional mental healthcare.

THE FUTURE OF MOBILE MENTAL HEALTH

IntelliCare is just one tool on CBITs' growing roster of innovations. The center has collaborated on more than 60 projects and 35 NIH grants at Northwestern and beyond.

One major focus is investigating the value of smartphone sensors in predicting depression. For example, Purple Robot, a sensor app developed at CBITs, can collect GPS data on how much time someone spends at home and the variability of places they visit, factors correlated with depression.

"Right now when somebody is depressed – when they're having a mental health problem that saps their motivation and leaves them feeling hopeless – the care system requires that they have the energy and impetus to go seek help," Mohr says. "Ultimately, it'd be great if we could detect depression reliably enough that we could monitor people at risk and send some indication to providers who could then reach out."

Down the line, sensors might even be able to address mental health problems automatically. "If we can detect behaviors related to depression, it allows us to then develop applications that become responsive – like a therapist in your pocket," Mohr explains. "It could say, 'It's a sunny Saturday afternoon, and you've been sitting at home alone all day. Why don't you go for a walk?'"

CBITs is also producing interventions as varied as MedLink, a tech-based approach to improving medication adherence, to a smartphone mental health program designed for homeless youth, led by Stephen Schueller, PhD, assistant professor of Preventive Medicine in the Division of Behavioral Medicine.

Tomasino recently conducted a controlled trial that found a web-based program for adults 65 and older – a high-risk group that's often isolated – reduced depression over eight weeks.

"Technology can be very valuable in our public health efforts to reduce depression," Tomasino says. "It can fit into the fabric of people's lives in a way that therapy aims to, but doesn't really have the reach to do so effectively. Our hope is that now, when someone is having that sudden overwhelming feeling of sadness or not feeling motivated, they have a tool that's right at hand." **IM**

Bioethics center director applies clinical experience to research, education

WRITTEN BY: Bridget Kuehn

KELLY
MICHELSON,
MD, MPH,
'04 GME





Bringing Ethics to the Bench and Bedside

The chance to make an immediate impact on the lives of children with complicated medical problems drew **Kelly Michelson, MD, MPH, '04 GME**, to the pediatric intensive care unit. But it was the skill and compassion her mentors showed when talking with families in the midst of very challenging and often tragic circumstances that inspired Michelson most.

"I was impressed by the impact physicians can have as they guide families through their worst tragedy or an incredibly uplifting outcome," she says.

This interest in helping families through difficult circumstances led Michelson to study how physicians talk with families of critically ill children about end-of-life care during her fellowship at Children's Memorial Hospital, now the Ann & Robert H. Lurie Children's Hospital of Chicago, from 2001 to 2004. Today an attending physician at the same hospital, and an associate professor of Pediatrics in the Division of Critical Care at Feinberg, Michelson continues that line of research with support from the Patient-Centered Outcomes Research Institute and American Cancer Society.

Michelson explains that there are many bioethical questions that arise at the bedside for physicians, parents and patients. For example, how far should clinicians go with technology, now capable of taking over many bodily functions, to keep a patient alive when survival is unlikely? And how much of a say should parents, patients and physicians have in the decisions made along the way?

As director of Northwestern's new Center for Bioethics and Medical Humanities, Michelson hopes to bring together clinicians, residents, fellows and the community to tackle these and other ethical challenges in medicine. Her appointment has generated a lot of excitement, says Z. Leah Harris, MD, head of Pediatric Critical Care Medicine at Feinberg and Lurie Children's.

"There is a need to have a Center for Bioethics and Medical Humanities leader who is a triple threat — ethicist, clinician and investigator," Harris says.

BUILDING COMMUNITY

The new center will build on the work of Northwestern's former Medical Humanities and Bioethics program, which played an important role in the education of medical students at Feinberg for more than 25 years.

Notably, Michelson wants to expand the center's reach beyond medical students to include residents and fellows. Already, **Angira Patel, MD, MPH, '10, '11 GME**, assistant professor of Pediatrics and Medical Education, has begun developing the center's ethics certification program for residents and fellows.

"There has been greater recognition of the role ethics can play in the clinical arena," explains Joel Frader, MD, head of the Division of Palliative Care at

Lurie Children's and a mentor of Michelson's. "There is wider understanding that this needs to be a greater part of clinical education and training."

The center will also be a resource for scientists at Northwestern. For instance, Michelson is working with Northwestern's Tamara Isakova, MD, MMSc, director of the Center for Translational Metabolism and Health, on a grant application to the National Institutes of Health (NIH) for a project that would provide resources to safely and ethically translate discoveries to patients with kidney disease. Michelson says discussing ethical implications helps investigators refine their research questions and address potential ethical concerns related to the conduct of their work as well as the innovations that result from their findings.

"There's a lot of interplay between research and ethics that I'm hoping to support," she says.

To broaden the center's reach, Michelson would like to regularly connect the clinical bioethics teams at Northwestern Memorial Hospital, the Rehabilitation Institute of Chicago and Lurie Children's Hospital to share experiences and support one another.

Bringing ethics into day-to-day practice at the hospitals is essential, Harris says. She says clinicians increasingly must grapple with ethics in their clinical decision-making as medicine advances.

"Sometimes it is no longer a question of can we intervene, but should we," Harris says. "The new imperative will be for clinicians not only to be clinically excellent, but also ethical and humane."

The public also has a stake in the bioethical questions facing clinicians and investigators, Michelson notes.

"I'm hoping the center will extend beyond Northwestern and engage the community in these conversations and decisions about how we deliver and advance healthcare," Michelson says. "These affect everyone."

A TENACIOUS LEADER

Carrying out this ambitious agenda will require securing sufficient resources for bioethical research and programs across departments that may be siloed, says Frader. But Michelson's research background and tenacity will be assets as she faces these challenges.

When Michelson began her research, hospitals and clinicians weren't focused on patient-centered outcomes like they are today, explains Harris. Michelson really had to chart her own course guided by her values and commitment to understanding families and patients.

"She'll be able to bring that same moral courage and fortitude to teaching a whole community how to apply ethics to what we do day in and day out," Harris says.

Her skill bringing together clinical staff during end-of-life care discussions will also be an asset in her new role.

"The new imperative will be for clinicians not only to be clinically excellent, but also ethical and humane."

During his 15-year collaboration with Michelson, which began during her fellowship, Frader has seen her repeatedly win over skeptics with her hard work. For example, she won a very coveted early career development grant from the NIH, beating out many applicants with more traditional biomedical research backgrounds. Michelson has embraced qualitative research, a departure from the more quantitative epidemiological research she learned while earning her masters in public health at the University of North Carolina-Chapel Hill in 1996 and her medical degree at Duke University in 1997.

"She is the consummate listener," Harris says. "She recognizes we are not all going to agree. She makes people feel comfortable disagreeing and voicing opinions."

Frader agreed that Michelson's skill as a communicator and problem-solver will be critical.

"Kelly is persistent and creative, and she wants to be able to bring the voices of patients and families to the table when making choices about the care of sick children," Frader says. "I think she can bring that sense of how to invite and include many different people and solve problems collaboratively to the center."

Northwestern's Lois Insolia ALS Clinic
is a model for multidisciplinary care

WRITTEN BY: Andrea Arntsen-Harris

Celebrating 30 Years of ALS Care

When it opened in July 1986, the Lois Insolia ALS Clinic at Northwestern Medicine was one of the first multidisciplinary ALS clinics in the country – the very first in the Chicago area – dedicated to the total care and support of people with ALS, their families and their caregivers.

Scott Heller, MD, '84 GME, was recruited to serve as the first director of the Lois Insolia ALS Clinic. At that time, it was a three-person operation – one clinician, one nurse coordinator and one clinician-scientist.



Photos courtesy of the
Les Turner ALS Foundation



Matt Toole, a patient diagnosed with ALS in 2013, is interviewed with his family at the 2016 ALS Walk for Life. The event supported patient service programs through the Les Turner ALS Research and Patient Center at Northwestern Medicine.

"In 1986, it was a novel idea to create a multidisciplinary clinic like this," says Heller, currently a neurologist at Northwestern Memorial Hospital and a clinical associate professor of Neurology at Feinberg. "Now, what was once novel has become the standard, state-of-the-art way to provide this type of care. We set the paradigm nationally and internationally."

The clinic, now directed by Robert Sufit, MD, has grown immensely in its three decades. During a visit, patients meet with members of a large, experienced multidisciplinary team that includes five neurologists, two pulmonologists and experts that provide genetic counseling, occupational therapy, speech therapy, respiratory therapy, dietetic counseling and coordinate clinical trials.

Clinic physicians and staff take the time to carefully explain the disease and current research to patients and their families. The team also works with patients and families to address symptoms such as difficulty with speech and swallowing, weight loss, problems with sleeping, breathing and excess salivation, and difficulties with activities of daily life, mobility or pain.

UNITING ALS RESEARCH, CLINICAL CARE AND EDUCATION

In 2014, the Lois Insolita ALS Clinic became part of the newly formed Les Turner ALS Research and Patient Center at

Northwestern Medicine. The center, created through a \$10 million commitment from the Les Turner ALS Foundation, unites ALS research, clinical and education activities under one umbrella. This model supports collaboration between the clinic and scientists at Northwestern, including those working in Feinberg's three ALS labs. All of these efforts are within the Institute for Translational Neuroscience at Northwestern Medicine.

Another unique aspect of the clinic is its relationship with the Les Turner ALS Foundation, which offers a continuum of care to ALS patients and their families. Clinicians and members of the foundation's Home and Community Team, a group of experienced registered





Greg and Rosemary Insolita and their family are longtime supporters of the Les Turner ALS Foundation

“The staff at the clinic is compassionate, professional and invaluable to us as we travel this unpredictable journey of living with ALS.”

Matt Toole, patient at the Lois Insolita ALS Clinic

nurses and social workers, work together to ensure that patient needs are met from both a clinical and home support perspective.

“Going forward, we seek to continue maximizing our efforts in research, clinical trials and patient care, and services through the Les Turner ALS Research and Patient Center at Northwestern Medicine,” says Heller, who is a longtime Les Turner ALS Foundation board member, vice president of medical services and chair of its patient services committee. “The wide reach of our programs and the continued impact on our patients, their families and the entire ALS community are most important.”

Elmhurst resident Matt Toole was diagnosed with ALS in 2013, and today receives care from the team at the Lois Insolita ALS Clinic. “The staff at the clinic is compassionate, professional and invaluable to us as we travel this unpredictable journey of living with ALS,” he says. “The team approach at the multidisciplinary clinic enables us to meet with dedicated specialists to support our healthcare needs in a comprehensive and efficient way.”

Mindy Williams, who was diagnosed with ALS in September 1992, meets with John-Michael Li, MD, ‘11 GME, a neurologist at the Lois Insolita ALS Clinic.

Matt’s wife, Karen, adds, “The communication between the team at the clinic and our home and community services team from the Les Turner ALS Foundation has been instrumental in getting things done. This seamless, transparent communication team has given us the peace of mind to know that no matter what is going on everybody is on the same page and up to speed on the situation.”

NORTHWESTERN PARTNERS: THE LES TURNER ALS FOUNDATION AND THE INSOLITA FAMILY

Shortly after losing his wife, Lois, to ALS, James Insolita and his family attended a Les Turner ALS Foundation support group. Insolita was moved with a deep sense of empathy for other families living with ALS. As a result, he partnered with the Les Turner ALS Foundation in 1986 to establish the Lois Insolita ALS Clinic.

Since Insolita’s passing, his son Greg and his sister Gia have continued his tradition of support through the James V. Insolita Family Foundation. Additionally, Greg and his wife, Rosemary, have been longtime active supporters of the Les Turner ALS Foundation. Since 1986, the Insolita family has contributed more than \$1.25 million to continue the legacy of Lois and to provide the highest level of care for people with ALS.

“My father felt strongly that a multidisciplinary patient clinic for those living with ALS was critical in the Chicagoland area,” says Greg Insolita. “It is an honor to have helped establish and provide that resource for over 30 years through the Les Turner ALS Foundation while carrying on the memory of my mother. Our family looks forward to continuing this partnership for years to come.”

“After 30 milestone years, we are humbled and honored that the Lois Insolita ALS Clinic not only provides the pinnacle of care to those with ALS, but remains the only fully multidisciplinary ALS clinic in the Chicagoland area,” says Andrea Pauls Backman, executive director of the Les Turner ALS Foundation. **IM**

'MCATS': Medical Alumni Association Board Progress Notes



MEMBERS OF THE MEDICAL ALUMNI ASSOCIATION BOARD JOIN MEDICAL STUDENTS AT A NORTHWESTERN UNIVERSITY FOOTBALL GAME.

Dear Fellow Alumni:

I agreed to serve as president of our Medical Alumni Association Board (MAAB) because the medical school and MAAB leadership shared a vision for what our alumni association could become: a proactive organization that engages alumni in a way that's both enjoyable for alumni and beneficial to our school. As I look back on my term as MAAB president — and welcome [Jim Kelly, '73 MD](#), who will succeed me this spring — I'd like to reflect on the progress we've made over the past two years.

- » **MISSION:** In its mission statement, the MAAB declares its purpose "... to foster, among its members, a spirit of loyalty, professional interaction, mentoring and philanthropy, with a particular emphasis on scholarship support, so as to help attract top talent and ensure the continued growth and success of the medical school as a leader in education, patient care and research."
- » **CONTINUITY:** The MAAB has developed a pipeline of leaders and new members, including new student members, to provide our association with institutional memory and position us to explore new approaches to engage alumni. In addition to our standing Engagement, Mentoring and Philanthropy Committees, we have created a Strategic Initiatives Committee specifically charged with piloting new approaches.
- » **ALIGNMENT:** We alumni represent a volunteer army with day jobs. To be maximally effective, our activities need to closely

align with the priorities of the medical school, alumni and our full-time staff support. To ensure continuity, the MAAB president and president-elect meet at least annually with our dean. We work closely with a highly effective Alumni Affairs staff, including Babette Nyka, Dan Schwarzlose and Jillian Kurtz-Brubaker. Close communication and coordination of our mentoring program with [Diane Wayne, '91 MD](#), vice dean of Education, helps ensure that our mentoring activities complement those of the full-time faculty. The MAAB Philanthropy Committee works closely with Larry Kuhn, assistant dean for Development.

- » **TALENT:** The Engagement Committee has undertaken a strategic analysis of the MAAB to recruit talented and energetic alumni who will enhance diversity in geography and professional background and effectively complement the extremely talented faculty and student body with whom we work.
- » **STUDENTS:** The MAAB has increased student representation and given its student members important roles in mentoring and engagement. It has made scholarships a top priority, with the goal of reducing indebtedness, which averaged approximately \$175,000 among our 2016 graduates. There has been 100 percent participation among MAAB members in annual giving, with most at the Nathan Smith Davis level. In collaboration with Development, we plan to expand our activities to all alumni.

We also look continuously for ways to support our students. Last fall we launched the HOST (Help Our Students Travel) program, through which alumni provide lodging to fourth-year students interviewing for post-graduate training. The HOST program is completing its pilot year, and we plan to make it available to all fourth-year students next fall.

Finally, we've made it a point to engage our students so that we all have fun. For instance, the student-MAAB contingent has joined MAAB members at recent Northwestern football games.

It's been a privilege and a pleasure to serve as your president. To those who don't get to Chicago often, or have lost touch and are interested in finding out more about what your alumni organization does or how you can get involved, please contact us. We'd love to hear from you.

Sincerely,

[Bruce Scharschmidt, '70 MD \(HPME\)](#)

Medical Alumni Association Board President

Alumni Physicians Connect With Students for Informal Career Talks Over Dinner

WRITTEN BY: Anna Williams

Paul Bonucci, '96 MD, is the medical director for the emergency department of the Illinois Valley Community Hospital in Peru, Illinois, serving a small rural area 100 miles west of the Chicago city limits. Javier Guevara Jr., '12 MD, on the other hand, practices family medicine at a busy community health center in Chicago's Logan Square neighborhood, providing care to the area's underserved, often Spanish-speaking, population.

Despite the contrast in their specialties, clinical environments and even their generations, Bonucci and Guevara found plenty of common ground when they teamed up to host an Alumni Physicians of Feinberg gathering, organized by the medical student societies.

The program, now in its third year, brings in Feinberg alumni from a range of backgrounds and concentrations to discuss their careers, share personal stories and answer questions from current medical students. The informal dinners provide attendees with real-world perspective on life in various specialties and give students an intimate look at the diverse career paths open to them after graduation.

Bonucci and Guevara fielded questions from 15 students, covering topics ranging from finding ways to carve out time for research to working at a healthcare organization with shared values.

Guevara said his specialty inherently lends itself to forging relationships. "I'm caring for entire families — the true definition of family medicine — and I love that," he said. "I'm from Mexico, and to be able to speak the language of the patients in my community and connect with people on that level is really important to me. I feel so rewarded, and there's not one day that's boring."

Both physicians devoted a significant portion of the event to stressing the importance of work-life balance alongside active clinical schedules.

"You are going to have lots of demands, lots of opportunities to use your knowledge and training. So you do need to decide what's important to you and draw some boundaries," Bonucci said. "We as physicians have great opportunities to be lifetime learners. But we have to make sure that as we grow professionally, we also have those other parts of our lives, like family and hobbies, that keep us balanced."

Second-year medical student Emily Li said she found such advice invaluable. "It's really helpful to hear about the world outside of academic medicine," she said. "To have the physicians discuss their lifestyles — that isn't something we often talk about in school."



PAUL BONUCCI, '96 MD, AND JAVIER GUEVARA JR., '12 MD, DISCUSSED THEIR CAREERS AND FIELDED QUESTIONS FROM STUDENTS DURING AN ALUMNI PHYSICIANS OF FEINBERG EVENT.

Sean Posada, another second-year medical student agreed. "For a lot of students, this is really critical information as we plan our futures, clerkships and look forward to applying for residency," he said.

Do you want to participate in the Alumni Physicians of Feinberg program? Contact Dan Schwarzlose at 312-503-4519 or daniel.schwarzlose@northwestern.edu.

Progress Notes

More details from our alumni online at magazine.nm.org.



'50s

William L. Winters, Jr., '53 MD, writes: "I have been a cardiologist since 1958. I left the practice of medicine at the end of October, after 58 years. Along the way, I served as president of the American College of Cardiology, the Texas Affiliate of the American Heart Association and the Houston Methodist Hospital Medical Staff. I have received many awards, and been named a Houston icon and legend, but none are more important than my family, who has played an integral part of my career, including my wife of 63 years, three sons and five grandchildren — now all grown.

I am in awe of the accomplishments of Northwestern graduates, which I attribute, in part, to the superb education provided to its students. I do not attend reunions as often as I would like, although my spirit is always there. And I did make it to our 60th reunion in 2013. Thanks to you all."

Howard Kurland, '59 MD, of Kenilworth, Ill., received the American Psychiatric Association's 50-year Distinguished Life Fellow Medallion last year. In his practice, Kurland uses laser biostimulation to relieve neurologic pain problems and transcranial direct current stimulation for the treatment of severe depressive disorders.

William O. Rossing, '59 MD, enlisted in the U.S. Army Medical Corps after medical school and completed an internship and three years of residency in internal medicine. Then, he did three years of "pay-back time" serving as a member of the medical staff at the U.S. Army Hospital in Nuremberg, Germany. Afterward, Rossing

returned to live in Sioux Falls, S.D., where he practiced general internal medicine for 30 years. Rossing writes, "I retired from medical practice in 2007 and have engaged in local community and church activities. My wife, Ihlene, and I purchased a tract of land in northwestern Montana 40 years ago, and we spend about three months there each year. Our four children and their children visit us regularly there. Greetings to all!"

'60s

Steven Roberts, '61 MD, spent a couple of years in the U.S. Navy after finishing residency training in New York, and then he settled in East Texas to practice urology and raise a family of three children, all of whom practice medicine in Texas. He writes, "We retired several years ago and now spend most of our leisure time being spoiled aboard Regent Seven Seas cruise ships. I have fond memories of my time in medical school. My best to all."



James J. Conway, '63 MD, '64 GME, of Glenview, Ill., past president of the Society of Nuclear Medicine and Molecular Imaging bestowed its inaugural fellowships on all of its past presidents. Conway retired in December from his position as professor emeritus of Radiology at Northwestern.



Patrick D. Sullivan, '65 MD, '70 GME, says, "Hello to all my classmates of 1965. I am winding down my practice in sports medicine orthopedics. I am still healthy. I went so far as chief of staff at Winter Haven Hospital. I started arthroscopy in 1977, when I was the only one in Polk County to enter that specialty. I have one wife, two kids and two grandkids. I hope to show up soon to a reunion and surprise some."

Robert S. Young, '66 MD, an orthopedic physician, was entered into the Central High School Hall of Honor in Pueblo, Colo.

'70s

Bruce F. Scharschmidt, '70 MD, most recently senior vice president and chief medical and development officer at Hyperion Therapeutics, joined the newly formed scientific advisory board at Poseida Therapeutics, Inc.

James (Jim) E Bourdeau, '73 PhD, '74 MD, of Satellite Beach, Fla., writes, "I am

'80s

Mark Bibler, '80 MD, and Lindsay Wilson Bibler, '80 MD, both retired after 36 years. Mark was on the faculty of the University of Cincinnati (UC) Division of General Internal Medicine and maintained a private practice at UC. He performed medical expert work in his spare time. Lindsay was in private practice in general ophthalmology and is happy to be out of dark rooms. They will spend the summers near Traverse City, Mich., and the ski seasons in Taos, N.M. They ask that classmates in the areas look them up.

Mark V. Danielson, '81 MD, will be joining DuPage Medical Group's medical staff as a result of it acquiring Surgical Consultants of Joliet, LTD.

Carey Z. August, '82 MD, of Advocate Health, received the College of American Pathologists (CAP) Outstanding Communicator Award for her public outreach and advancement in the field of pathology. She currently serves as director of Anatomic Pathology, associate chair for the Department of Pathology and is a member of Obstetrics and Gynecology at Advocate Illinois Masonic Medical Center in Chicago.

Outside the laboratory, August has served on several CAP committees while also completing CAP spokesperson training. Her work advances pathology by highlighting its importance throughout the healthcare industry, and informs everyday patients about their diagnoses and the professionals who work to ensure accuracy and quality in the laboratory.

Nolan Karp, '83 MD, director of Plastic Surgery Service at Tisch Hospital, was promoted to professor of Plastic Surgery at NYU School of Medicine.

Boris D. Lushniak, '83 MD, professor and chair of Preventive Medicine and Biostatistics, and professor of Dermatology at the F. Edward



JOHN C. LIESKE, MD, FAR RIGHT, AND JAMES (JIM) E BOURDEAU, '73 PHD, '74 MD, SECOND FROM RIGHT, IN PHILADELPHIA WHILE SERVING ON THE NEPHROLOGY BOARD EXAM COMMITTEE OF THE AMERICAN BOARD OF INTERNAL MEDICINE.

approaching full retirement after a fulfilling career that has spanned academic, clinical and administrative medicine. In September, I served on the Nephrology Board Exam Committee of the American Board of Internal Medicine in Philadelphia with John C. Lieske, MD, who received his BS from Northwestern University (McCormick) in 1986. John and I share our enthusiasm for the Northwestern's Wildcats' football team and get together for games in Evanston. We both are proud of our Northwestern roots!

William E. Kobler, '74 MD, of Rockford, Ill., was re-elected to the 21-member board of trustees of the American Medical Association. Kobler, a family physician, was first elected in June 2012 and has been an AMA delegate since 2000. He is married with two sons and five grandchildren.

Karen R. Schoene, '75 MD, a solo practicing ophthalmologist, joined the practice of Atwal Eye Care.

Philip M. Weinerman, '77 MD, and Julia D. Weinerman, '77 MD, of Columbus, Ohio, will celebrate their 40th wedding anniversary on May 29 – they married two weeks before graduation. They write, "35 years of medical practice, 5 children and 13 grandchildren later, we have good memories from 40 years ago." Both continue to practice part-time, Philip in radiology and Julie in physical medicine and rehabilitation. They have three more grandchildren due this May to July.

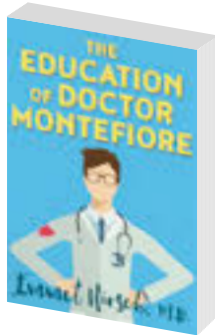


Hébert School of Medicine at the Uniformed Services University of the Health Sciences, has been appointed dean of the School of Public Health at the University of Maryland.

Robert L. Grzonka, '85 MD, '85 GME, urologist from Geisinger Health System Urology, has joined the medical staff at the Haven Urological Professionals practice at Lock Haven Hospital.

Tapan K. Daftari, '88 MD, of Atlanta, was named in *Atlanta* magazine's list of "Top Doctors" for 2016.

Emmet Hirsch, '88 MD, '92 GME, vice chair of Obstetrics and Gynecology at North-Shore University HealthSystem and clinical professor at the University of Chicago Pritzker School of Medicine, is an alumnus of HPME and a former resident in obstetrics and gynecology. His novel, "The Education of Doctor Montefiore" was recently published and can be purchased online. The story follows Robert Montefiore, who graduates from medical school and plunges into the sink-or-swim world of a residency in obstetrics and gynecology.



Mantu Gupta, '89 MD, was promoted to chairman of Urology at Mt. Sinai Roosevelt and Mt. Sinai St. Luke's in New York City, leaving his cherished position of 18 years as professor and director of the Kidney Stone Center at Columbia-Presbyterian. He now heads the busiest kidney stone center in midtown Manhattan, which he founded two years ago. He is a Castle Connolly Top Doctor and an international authority on kidney stone disease and



management. He has pioneered breakthrough techniques in minimally invasive endourology.

Lopa (Shah) Gupta, '89 MD, Mantu's wife of 25 years, is a Castle Connolly Top Doctor as well and has a boutique practice on Manhattan's Park Avenue, with satellite offices in Westchester and Miami. After a residency in ophthalmology at Stanford and a fellowship in ophthalmics, Lopa decided to focus on cosmetic surgery. For the past 20 years, she has been fine-tuning the art of laser blepharoplasty and non-surgical facial rejuvenation with injectables, lasers and avant-garde treatments.



Mantu and Lopa have three children, ages 22 (at Harvard), 20 (at Columbia) and 14 (in high school). The Guptas founded the non-profit foundation, SaDiKa, to help those less fortunate around the world by offering free medical/surgical care.

'90s

Jay Schwartz, '90 MD, gathered with fellow Class of 1990 physicians. He writes, "Drs. Ryan Hagino, Eric Isaacs, Al Koike, Greg Masters, Tom Parker, Tom Rehring, Jay Schwartz and Deep Singh convened in Seattle in September for their biennial get together.

Politics filled the air and the lone true Republican, Dr. Schwartz, held his own in each and every debate. Pictured here is the group prior to being thrown out of a winery for refusing the Merlot." In photo, from left to right, class of 1990 alumni Jay Schwartz, Al Koike, Deep Singh, Tom Rehring, Greg Masters, Ryan Hagino and Tom Parker.

David L. Levine, '91 MD, vice president of advanced analytics and informatics and medical director at Vizient, was promoted to senior vice president.

Y. Ralph Chu, '92 MD, '93 GME, founder and medical director of Chu Vision Institute and Chu Surgery Center, received a 2016 Alumni Achievement Award presented by the District 128 Foundation for Learning.

Michael H. Goldstein, '93 MD, MBA, chief medical officer and vice president of clinical research at Eleven Biotherapeutics, has been appointed chief medical officer at Applied Genetic Technologies Corporation.

Julie Levitt, '94 MD, '98 GME, celebrated 18 years in obstetrics and gynecology private practice with The Women's Group of Northwestern this summer. She shared: "I have enjoyed training and running my 17th marathon since I was an undergraduate at Northwestern. I am so proud to be a part of the undergraduate and graduate student experience working with medical students and residents throughout my vibrant career.





I have had the privilege of showing my daughters what discipline and fitness can mean to your health and future in the setting of this beautiful city."

With **Elena and Perry Kamel, both MD, '88 GME**, Levitt has raised funds to benefit children's running programs and breast cancer research.

Laurence D. Lo, '94 MD, a trauma medical director for Sparks Health Systems and surgeon with Surgeon Associates of Fort Smith, has joined Baptist Health Surgical and Specialty Clinic-Conway as a general surgeon.

Rebecca Bollinger Parker, '95 MD, senior vice president of practice and payment integration for Envision Healthcare, emergency physician for Vista Health and president of Team Parker LLC, was elected president of the American College of Emergency Physicians. Parker plans to fight the insurance industry for fair payment and fair coverage for our patients and to make diversity and inclusion a cornerstone of her plans.



Parker has received many awards for her leadership roles, including the AMA's Foundation Leadership Award and the AMA's Women's Physician Congress Mentor Award. She also received the Bill B. Smiley Meritorious Service Award, the Illinois Chapter of ACEP's highest honor.

Samer A. Kanaan, '97 MD, '00, '04 GME, thoracic surgeon, will be honorably mentioned in "The Leading Physicians of the World."

Rolando Toyos, MD, '98 GME, just released his latest book, "Dry Eye Disease Treatment in the Year 2020." It is available on Amazon.com and is receiving good reviews.

'00s

Mukul Balaji Patil, '07 MD, and Pallavi of Pittsburgh, became the proud parents of Vyan Balaji, on Dec. 5, 2015.

Geetha Mary Nampiamparmpil, '08 MD, assistant professor of Psychiatry at Emory University School of Medicine, joined the Miami Cancer Institute as a psychosomatic psychiatrist.

Usha Periyannayagam, '09 MD, '09 MPH, '13 GME, director of research at Global Emergency Care (GEC), was named one of the top 10 social impact professionals under 35 by LinkedIn, as part of #LinkedInNext Wave. LinkedIn calls honorees the "10 stars changing our world." Periyannayagam is a practicing board-certified emergency medicine physician in Napa County and an affiliate faculty member of the Harvard Humanitarian Initiative. She is being honored for her work educating health professionals around the world in disaster and emergency medical care and for finding solutions to the challenges of providing emergency care in resource-limited settings.

Periyannayagam has worked in more than ten countries in emergency departments, rural primary health clinics and refugee camps. She is pioneering the use

of bioinformatics and big data in addressing challenges in providing healthcare globally. In her role as director at GEC, she is using analytics to improve the effectiveness of emergency care in rural Uganda. She leads a team of on-ground research personnel and manages a database of 50,000 rural East African patients, a first in this area of the world.

'10s

Chazz Dabbs, '10 MD, of Dublin, Ohio, graduated from the surgical residency program at Wright State University in Dayton. In August, he joined Central Ohio Surgical Associates at Mount Carmel Hospitals in Columbus as a general surgeon.

Tyler Gene Wells, '15 MS, Hangar Clinic resident, competed in a utility terrain vehicle event in the Power Triumph Games which aired on Nov. 7. Wells served in the Air Force, and lost his left leg below the knee as a result of a traumatic motorcycle accident.

GME



Jadwiga Roguska-Kyts, MD, '60, '63 GME, was honored with a named scholarship by her mentee **Ann M. Barber, '81 MD**. "Dr. Roguska's commitment to excellence, her compassion for her patients, and her devoted medical work at Northwestern have helped many medical students—including myself—to accomplish more than we ever imagined. In my gratitude to her, I created this scholarship to extend her legacy for future generations," Barber said.

Donald C. Sullivan, MD, '64, '65 GME, of Tampa, Fla., spent two years at Clark Air Base in the Philippines after his orthopedic surgery training at Northwestern, taking care of casualties from Vietnam. He later practiced in St. Petersburg, Fla., and spent time in Dhaka, Bangladesh, teaching orthopedic surgery. In 1992, he was elected to the Florida Senate, spending ten years specializing in education issues. He also served one year in the House of Representatives.

In 2002, he joined St. Petersburg College as vice president for community relations and supervised the initiation of several new educational programs for the college. He later served as instructor at State College of Florida. Retired now, he currently serves on

the board of trustees at Moffitt Cancer Center, plays golf, travels with his wife, enjoys his grandchildren and manages a tree farm in Southwestern Georgia.

Howard Cotler, MD, '84 GME, '88 GME, of Houston has been an orthopedic surgeon for 30 years, specializing in spinal care. He wrote two patient-centric books, "Accelerated Recovery: How to Recover Your Body After Injury or Surgery" and "The Empty Chair: A Movement to Limit the Wheelchair and Lead a Healthy Life." Cotler recognized Feinberg professor, **Michael Schafer, MD, '72 GME**, in the first book and professor emeritus, **Paul R. Meyer Jr., '92 MBA**, in the second.

Jeffrey Sherman, MD, '84, '85 GME, chief medical officer and executive vice president of research and development at Horizon Pharma, has been appointed to Strongbridge Biopharma's board of directors.



Elena Kamel, MD, '88 GME, and **Perry Kamel, MD, '88 GME**, celebrated the graduation of their twins: Jonathan from the Weinberg College of Arts and Science at Northwestern University, and Leslie from Brandeis University, this past June. They recently attended parents' weekend at Northwestern with their son, Aaron, who is in the class of 2019. Go Wildcats!

Kamel also attended the annual Northern American Menopause society meeting in Orlando during Hurricane Mathew. She has maintained her national certification as a menopause expert for over 15 years. In addition, she spoke at the Northwestern "Updates in Clinical and Surgical Gynecology" conference in October. Elena and The Women's Group of Northwestern actively support the I Grow Chicago community house in Englewood. They helped sponsor the Thanksgiving festivities for over 200 people in the community.

Emily J. Erbelding, MD, '93 GME, deputy director of the Division of AIDS at the National Institute of Allergy and Infectious Diseases, was named director of the Division of Microbiology and Infectious Diseases there.

Lyle L. Berkowitz, MD, '95 GME, internal medicine physician, director of innovation for Northwestern Medicine and a clinical associate professor of Medicine at Feinberg, has been appointed a non-executive director of Oneview's International Advisory Board and a special advisor on innovation.

DONALD C. SULLIVAN, MD, '64, '65 GME, BEING SWORN INTO THE HOUSE OF REPRESENTATIVES (HIS GRANDSON IS HOLDING THE BIBLE).



David M. Engman, MD, PhD, '95 GME, was named Medallion Chair of Molecular Medicine at Cedars-Sinai Medical Center, where he is professor and chair of Pathology and Laboratory Medicine. Engman was a professor of Pathology and Microbiology-Immunology at Feinberg from 1990-2016.

Carolyn I. Jacob, MD, '96 GME, is a board-certified, Harvard-trained cosmetic and laser surgeon. She directs a cutting-edge medical facility in River North, accommodating patients from general dermatology to cosmetic, injectable, laser resurfacing, body shaping, Mohs and plastic surgery. In 2016, Jacob received a Lifetime Sustaining Stegman Member Award from the American Society for Dermatologic Surgery. Jacob also sees



patients in her private practice and is a clinical instructor of Dermatology at Northwestern. She was honored by Feinberg as Contributory Service Faculty Teacher of the Year in 2015.

At the University of Texas Southwestern Medical Center, **Kim Do Barker, MD, '11 GME**, was appointed program director of the Physical Medicine and Rehabilitation residency, and **Blake Barker, MD, '10 GME**, was appointed associate dean for Student Affairs. They have an adorable Northwestern baby, Benji.

Alanna Higgins Joyce, MD, '03, '12 GME, and Timothy Connors Joyce of Chicago, are the proud parents of Thomas Connors, born March 2, 2016; and Charles Dyar.

Tracy L. Donahue, MD, '14 GME, attending physician at Northwestern Medical Group, will join the Madison Medical Affiliates team.

BLAKE BARKER, MD, '10 GME, AND KIM DO BARKER, MD, '11 GME, WITH THEIR SON BENJI.



PT

Eric Hughes, '06 DPT, became a board certified sports specialist this year. He is currently in private practice outpatient orthopedics as the owner and president of Excel PT, LLC, at Lakeshore Integrative Healthcare in Lincoln Park.

Konrad Koczwar, '16 DPT, writes, "Chitown Trainer, Inc., the business I started during my second year in graduate school, has grown from five personal trainers to over 24. We also have a registered dietitian, massage therapists, yoga/Pilates instructors and we do meal delivery! We travel to clients near the downtown area to homes, corporate gyms and hotels to help them adopt a healthier lifestyle. I will be adding on a physical therapy component by opening a physical therapy clinic in Lincoln Park, under a new company called CounterForce Physical Therapy.

DDS

Craig Burtenshaw, '76 DDS, of Idaho Falls, and **Dean Stewart, '79 DDS**, of Brea, Calif., opened a dental clinic in Quezon City, Philippines, in July to serve the humanitarian needs of Church of Jesus Christ of Latter-day Saints missionaries. The clinic serves missionaries from 32 Asian and Pacific countries. Burtenshaw and Stewart both obtained their dental licenses in the Philippines after retiring from their dental practices in Idaho and California.

Diane "Betsy" Ulrich, '95 DDS, '97 MS, '97 CERT, of Atlanta, Ill., is an orthodontist and the owner of Sugar Creek Orthodontics, located in Normal and Lincoln, Ill. She also serves as president of the Illinois Society of Orthodontists for 2016-17.



Breaking Down Barriers in Vascular Surgery

Melina Kibbe, MD, '03 GME, is no stranger to breaking glass ceilings. As a leader and a surgeon-scientist, she continues to prove that gender barriers are no match for her tenacity and passion.

Written By Amber Bemis

After a nearly 13-year career at Northwestern, that passion and tenacity led her to the University of North Carolina School of Medicine (UNC) and Health Care System for a new role as the Zack D. Owens Distinguished professor and chair of the Department of Surgery. Kibbe is one of only sixteen women in the nation to hold that position.

"My life changed overnight when I assumed the role of chair of surgery. I went from being a practicing vascular surgeon, running my funded research lab and helping to promote research in my department, to running an entire department of surgery," Kibbe says.

In her new position, Kibbe is leading a department of surgery that includes 9 divisions with 282 members, including 69 faculty members, 42 advanced practice providers, 83 residents and fellows, and 88 staff. Her focus for the department is supporting the school's three missions: providing high quality clinical care, educating the next generation of surgeons and surgeon-scientists, and being at the forefront of innovation and discovery research for surgical disease.

Until she accepted the position at UNC, Kibbe had spent her entire faculty career at Northwestern. After completing a one-year fellowship in the Department of Surgery in 2003, she decided to stay on as a faculty member specifically so she could be mentored by **Bill Pearce, MD, '82 GME**, the Violet R. and Charles A. Baldwin Professor of Vascular Surgery. Kibbe went on to hold numerous positions in the department, as well as several appointments at Northwestern Memorial Hospital, the Jesse Brown VA Medical Center and Northwestern University. She remains an adjunct professor in the Department of Surgery at Northwestern.

"It was incredibly hard to leave a place that I really do love, especially with the great leadership team at Northwestern, my colleagues and my mentors," Kibbe says. "At Northwestern, I was helping fellow scientists at the department level and forming collaborations across the university, and I knew this was something I wanted to do more of. It gives me tremendous

satisfaction to help others figure out how to pursue their ideas and see them come to fruition."

Kibbe attributes much of her success to her dedicated mentors. "I have been blessed throughout my career with mentors who have been heavily invested in my own career development and success. They have really shaped how I mentor others," Kibbe says. "My time at Northwestern prepared me incredibly well for my next leadership challenge."

Kibbe has mentored more than 89 medical students, PhD students and residents, and has received 18 teaching awards, including the Gender Equity Award from the American Medical Women's Association student chapter at Northwestern and the George H. Joost Outstanding Teaching Award.

Melina Kibbe, MD, '03 GME, with her mentee Karen Ho, MD, assistant professor of Surgery in the Division of Vascular Surgery at Northwestern.



"It gives me tremendous satisfaction to help others figure out how to pursue their ideas and see them come to fruition."

As chair of Surgery at UNC, she will mentor on a much larger scale. She plans to use many of the best practices she learned

at Northwestern. One of those is remaining in contact with every single one of the trainees who worked in her lab, from undergraduate students to medical students, PhDs to postdocs.

Her advice to young scientists interested in pursuing medicine or research as a career: "Follow your passion. If you are passionate about what you are working on, then you are going to have tremendous career satisfaction, and when that happens you do amazing things."

In the lab, Kibbe's research focuses on developing novel therapies for patients with vascular disease while simultaneously studying the mechanism of how these therapies impact the vascular wall. She is currently the principal investigator on three National Institutes of Health (NIH) R01 awards, a VA Merit award and a Department of Defense award.

She continues to serve as a consultant on several NIH awards with Northwestern faculty, including Mary McDermott, MD, to evaluate novel therapies for patients with peripheral arterial disease. Together with Teresa Woodruff, PhD, Kibbe is also a nationally recognized advocate for sex inclusion in biomedical research. In 2016, their efforts led to new policies to include women in basic science and clinical research studies from the NIH and Food and Drug Administration.

Kibbe's bibliography includes more than 230 peer-reviewed manuscripts, review articles and book chapters. She has received numerous awards, including, in 2010, the Presidential Early Career Award for Scientists and Engineers, the highest honor given by the U.S. government to outstanding scientists in the early stages of their independent research careers. Most recently, she was elected into the National Academy of Medicine.

"I am so proud of the research we are conducting, and I am very proud of the trainees who have come through the lab and are now in their own faculty positions," Kibbe says. "Every single one of my trainees has gone on to an academic setting, which makes me extremely proud." **M**

In Memoriam

Davis W. Baldwin, '53 MD, of Palo Alto, Calif., died Nov. 22.

George R. Beauchamp, '68 MD, of Dallas, died April 21.

William T. Beavers, '48 DDS, of Jackson, Miss., died June 13.

Richard L. Bettenhausen, '66 MD, '67 GME, of Fort Lauderdale, Fla., died Dec. 21.

Robert H. Becker, '83 CERT, of Racine, Wis., died April 24.

John H. Boyles, Jr., '60 MD, '67 GME, of Dayton, Ohio, died Dec. 4.

Marion H. Brooks, '61 MD, of Northbrook, Ill., died May 15.

Jesse W. Castleberry, '51 MD, of Eustis, Fla., died Nov. 19.

Thomas J. Dillon, '43 MD, of Parker, Colo., died June 20.

William M. Fry, '52 DDS, of Billings, Mont., died April 18.

Bernard C. Gerber, '53 MD, '56 GME, of Aberdeen S.D., died Dec. 4.

John B. Griffin, '50 MD, of Sacramento, Calif., died Dec. 10, 2016.

Jeffrey Lerner, '86

DDS, '88 MS, of Norcross, Ga., died May 23.

Stuart W. Leafstedt, '63 MD, of San Antonio, died Dec. 7.

Michael E. Lomont, MD, '91 GME, of Fort Wayne, Ind., died Nov. 27.

Gabriel A. Lorenzo, MD, '66 GME, of Glenview, Ill., died April 25.

Harold L. Martin, '55 DDS, of Flora, Ill., died May 21.

Bernard L. Portnoy, '53 MD, of New Bedford, Mass., died Dec. 9, 2015.

Brooks Ranney, '41 MD, '48 MS, of Yankton, S.D., died Dec. 22.

Douglas J. Sanders, '48 DDS, of Pikesville, Md., died April 20.

John P. Sanders, '60 DDS, of Orem, Utah, died June 14.

Conway S. Snyder, '52 DDS, of Salt Lake City, died June 1.

Charles L. Swanson, '49 MD, of Fort Pierre, S.D., died Nov. 30.

Stanley B. Vander Aarde, '57 MD, '70 GME, of Orange City, Iowa, died Nov. 19.

Brodie M. Williams, '47 DDS, of Virginia Beach, Va., died April 30.

Stuart R. Winston, MD, '70 GME, of Surprise, Ariz., died Nov. 13.

FACULTY

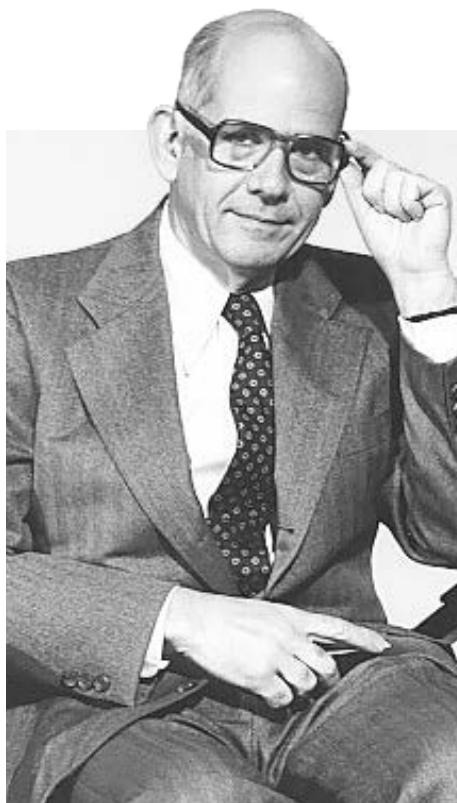
David W. Cugell, MD, emeritus professor of Medicine in Pulmonary and Critical Care, of Evanston, Ill., died Dec. 5.

A. Todd Davis, MD, emeritus professor of Pediatrics, of Chicago, died Oct. 31.

Donald I. Funk, MD, emeritus associate professor of Anesthesiology, of Boynton Beach, Fla., died Aug. 10.

B. Herold Griffith, MD, emeritus professor of Surgery, of Evanston, Ill., died Oct. 30.

Danielle Maatouk, PhD, assistant professor of Obstetrics and Gynecology, of Chicago, died Nov. 13.



DAVID CUGELL, MD, SERVED ON THE MEDICAL SCHOOL'S FACULTY FOR 58 YEARS, THE LONGEST OF ANY FACULTY MEMBER.

Upcoming Events

APR

APRIL 6, 2017

13th Annual Lewis Landsberg Research Day
Robert H. Lurie Medical Research Center
303 E. Superior St., Chicago
Details at 312-503-1499 or feinberg.northwestern.edu/research

APRIL 28-29, 2017

Alumni Weekend 2017
Across Chicago campus
Details at 312-503-8012 or feinberg.northwestern.edu/alumni

APR

MAY 5, 2017

Art in Motion
Robert H. Lurie Medical Research Center
303 E. Superior St., Chicago
Details at 312-238-7693 or donate.ric.org/artinmotion

MAY 11, 2017

23rd Annual Alzheimer Day
Northwestern Memorial Hospital
Feinberg Pavilion, Third Floor Conference Center
251 E. Huron St., Chicago
Details at 312-908-9023 or brain.northwestern.edu



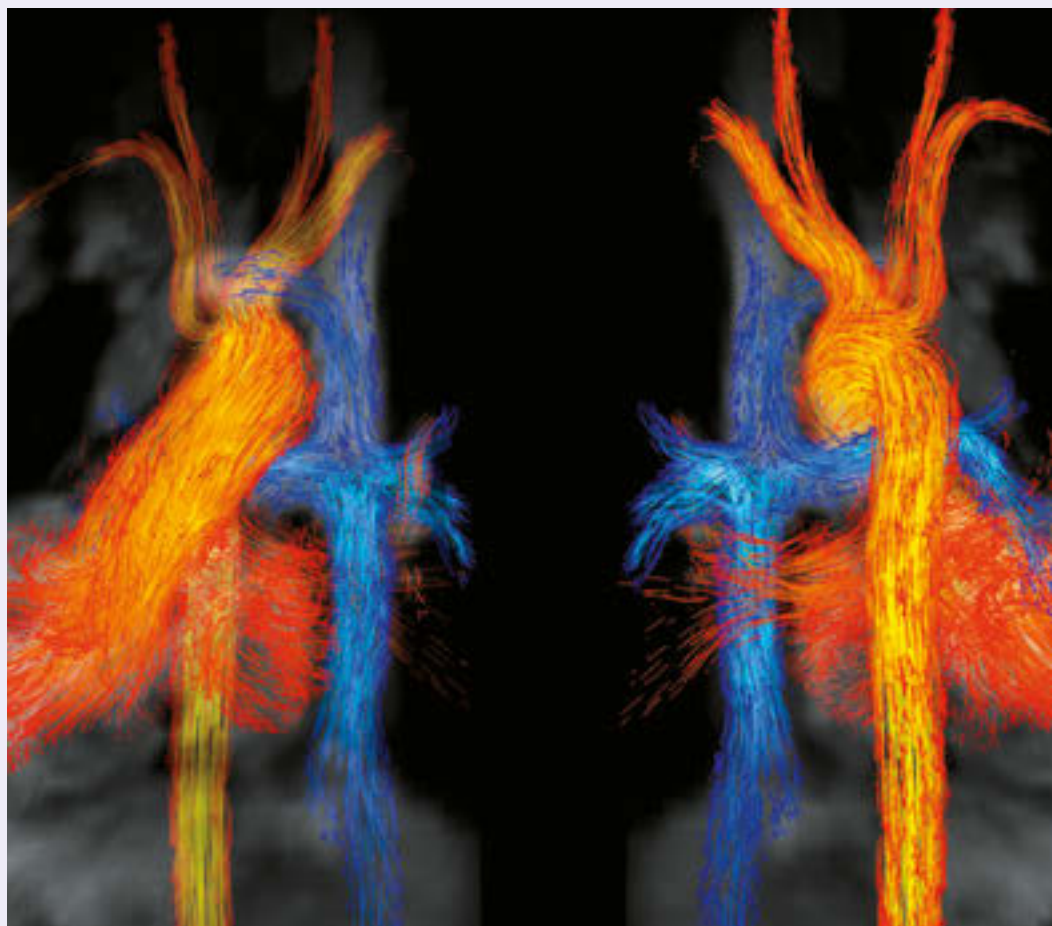
MORE EVENTS AT
MAGAZINE.NM.ORG

Scientific Images Bring Research to Life

This pair of images shows a human heart from the front (left) and back (right) using 4D flow MRI, a special imaging technique that captures the heart's blood flow at a single moment in time.

The blood colored red is full of oxygen, flowing out to the rest of the body, while the blood colored blue is returning to be re-oxygenated by the lungs. With this technique, scientists can measure the speed and patterns of this flow: yellow and orange streaks move faster than dark red; pale blue moves faster than dark blue. They are examining this particular heart to monitor the heart health of a patient after surgery.

Kelly Jarvis, a graduate student in the lab of Michael Markl, PhD, professor of Radiology, won first place in Northwestern's Science in Society annual scientific images contest for this illustration of the heart. (See another winner on this magazine's cover.)



Abbott Hall: Student Dormitory, Military Training Facility, Social Center

When it opened in 1940, Northwestern's 20-story Abbott Hall, located on the corner of Lake Shore Drive and Superior Street, was believed to be the tallest structure in the world used exclusively as a college dormitory. The building went on to house not only Northwestern students, but also more than 20,000 midshipmen during World War II, including future president John F. Kennedy. Read more about Abbott Hall's storied past in the magazine's history blog at magazine.nm.org.



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A photograph of the Chicago skyline at night, with several skyscrapers illuminated against a dark sky. The image is used as a background for the Alumni Weekend 2017 announcement.

ALUMNI WEEKEND 2017

Not just for reunion classes...

APRIL 28 & 29

- Earn up to 5.25 CME Credits at our Alumni Weekend Forums
- Join us at our inaugural Women in Medicine Tea at the Drake Hotel
- Enjoy a delicious buffet from Gibson's Steakhouse at the Celebrate in Chicago All Alumni Reception & Dinner
- Participate in our Young Alumni Social

For more information, please visit our website at feinberg.northwestern.edu/alumni-weekend or give us a call at **312-503-8012**.