Fall 2015 Volume 02, Number 04

Northwestern Medicine Magazine

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

P.18

Patient-Centered Innovation

New neurosurgery chair advances biological therapies to battle brain cancer

P.14

Northwestern researchers fight HIV/AIDS

P.22

1 Donor, 7 Organs, 5 Recipients, 34 hours

P.26

Accelerating prostate cancer research

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FEINBERG'S ACADEMIC YEAR BEGINS WITH OUR NEWEST STUDENTS AND THEIR ENTRY INTO THE MEDICAL PROFESSION. AT FOUNDERS' DAY, FIRST-YEAR MEDICAL STUDENT SUPRIYA IMMANENI (RIGHT) SHOWS OFF HER NEW WHITE COAT, WHILE SECOND-YEAR STUDENT LISA AKINTILO CELEBRATES WITH HER.

Northwestern Medicine

FALL 2015 **Magazine**

VOLUME 02, NUMBER 04

MAGAZINE.NM.ORG

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COVER ART: A scanning electron micrograph of a dividing brain cell. The potential to "do something amazing" for patients fuels Dr. Maciej Lesniak's passion for neurosurgical oncology research.

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PATIENT-CENTERED INNOVATION

New neurosurgery chair combats brain cancer with multifaceted biological approach

P.18

FROM BEGINNING TO HOPEFUL END

Northwestern researchers use every means possible to fight HIV/AIDS

P.14

PRICELESS GIFTS

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P.22

ACCELERATING PROSTATE CANCER RESEARCH

Lurie Cancer Center receives $11 million National Cancer Institute grant

P.26

MAGAZINE.NM.ORG: *Additional Content Online* *Image Slideshow* *Video*

Northwestern Medicine Leadership

This fall we received a four-year, $27.2 million Clinical and Translational Science Award (CTSA) from the National Institutes of Health (NIH), renewing the Northwestern University Clinical and Translational Sciences (NUCATS) Institute. The grant recognizes NUCATS' stellar work, and will allow us to continue accelerating translational research across six Northwestern University schools, with three clinical partners, including Northwestern Memorial HealthCare, Ann & Robert H. Lurie Children's Hospital of Chicago and the Rehabilitation Institute of Chicago. Since 2007, NUCATS has served more than 3,000 investigators and assisted in the publication of nearly 1,000 scientific papers.

NUCATS supports translational research from inception to dissemination. For example, NUCATS research studio consultations identify resources to support new grant applications; the Multidisciplinary Mentored Career Development (KL2) program ensures protected time for faculty mentored research and training; and Galter Health Sciences Library helps disseminate and assess the impact of findings.

Feinberg supports the NUCATS infrastructure made available to our investigators, but this new funding will enable further innovation, breaking down barriers in the translational research pipeline and helping transform discoveries into real-world treatments. We're accelerating our ability to advance discovery and put that knowledge into the hands of physicians.

One of the main goals of our CTSA, aligned with the NIH's focus on speeding up the clinical trial process, is to integrate research into clinical care systems, with the goal that every clinical encounter becomes an opportunity for research and learning to improve human health.

While that may sound ambitious, it is within our grasp: With the CTSA's support, we also have access to an extremely mature data platform, the Northwestern Medicine Enterprise Data Warehouse (NMEDW), which contains information on 4.9 million patients, collected in partnership with our main clinical partner, Northwestern Memorial HealthCare. "Every clinical encounter becomes an opportunity for research" means that we are working to gather patient information and make sure it is accurately entered it into electronic health records (EHR), leading to more accurate reports about diseases with less effort. These improvements will allow us to be predictive and preventive, selecting treatments providing the best possible outcomes.

We know that the NMEDW can be leveraged in this way because Sanjiv Shah, '00 MD, a cardiologist and scientist at Feinberg, has already demonstrated it. With NUCATS's help (as was highlighted in the Summer 2015 issue of *Northwestern Medicine Magazine*), Dr. Shah obtained information about hard-to-find patients with specific types of heart failure for his research. Using nearly eight years of NMEDW data, he uncovered three distinct types of patients with the condition, each requiring different protocols. Before this discovery, these patients were all treated with the same approach and by different specialists. Today, they are referred to his clinic. That kind of precision medicine is possible when you develop a data platform enabling continuous learning.

Emilie Powell, MD, '09 GME, an emergency physician and Feinberg assistant professor, also united clinical and data-mining expertise to investigate emergency department sepsis. Utilizing the NMEDW, she identified 376 patients with sepsis, and developed a detailed simulation that she tested in real emergency departments. Her findings are already being used to help train Northwestern Medicine emergency medicine residents. This research shows how innovative use of informatics can create a linkage between our clinical, research and teaching activities, advancing scientific discovery while training the next generation of clinical leaders.

Bing Ho, MD, MPH, a transplant nephrologist at the Kovler Organ Transplantation Center at Northwestern Memorial Hospital and a Feinberg assistant professor, enlisted NMEDW to develop a dashboard to quickly analyze kidney transplant data. This dashboard has already led to improvement in patient and allograft survival. This innovation shows how aligning Feinberg's leading-edge research with world-class clinical resources results in the rapid development of techniques improving the lives of patients.

Accelerating clinical research doesn't stop once new knowledge is uncovered: Our Galter Health Sciences Library, part of our CTSA, can assess and disseminate findings so other scientists can use our discoveries to benefit patients. Galter's Metrics and Impact Core assesses research impact, and optimizes visibility and research dissemination. Although EHRs have not always been designed with research in mind, a team of informatics experts is available to support clinical research data collection, including through EHR-based informatics consultations.

Our scientists and physician-scientists are at the forefront of their fields; leveraging the resources of NUCATS and the CSTA means that we are better equipped than ever before to generate groundbreaking discoveries that drive medicine. It is an exciting time for clinical medicine and research at Northwestern Medicine.

With warm regards,

Eric G. Neilson, MD
Vice President for Medical Affairs and Lewis Landsberg Dean, Northwestern University Feinberg School of Medicine

Campus News

WE WILL.

THE CAMPAIGN FOR NORTHWESTERN MEDICINE

$1.16 BILLION RAISED

/

$1.75 BILLION GOAL

=

66%

OF THE WAY THERE
THANKS TO MORE THAN
30,000 DONORS

FUNDS RAISED AS OF
OCTOBER 31, 2015

NOTEWORTHY GIFTS

Sunshine Charitable Foundation Supports Food Allergy Studies

The Sunshine Charitable Foundation recently pledged to create the Bunning Chair for Food Allergy Research within the Department of Medicine's Division of Allergy/Immunology at Feinberg. This gift will help to create new opportunities for faculty members to advance knowledge of the entire scope of food allergy research across the country.

A Transformative Gift for Skin Research Center

PATRICIA AND VINCE FOGLIA

The Foglia Family Foundation recently made a transformational commitment to support the Skin Research Center within the Department of Dermatology at Feinberg. This crucial philanthropy will help to accelerate research and advance patient care in dermatology by ensuring that faculty within the Center have the resources to continue developing groundbreaking approaches to treating skin disorders.

"You cannot duplicate Dr. Amy Paller's understanding, passion and belief," says Vince Foglia, when asked about his support of the Department of Dermatology at Northwestern. "She fuels my interest and involvement." Amy S. Paller, MD, '83 GME, is the Walter J. Hamlin Professor of Dermatology and chair of the Department of Dermatology at Northwestern.

SECOND-YEAR MEDICAL STUDENTS AND MENTORS PRESENT CLASS OF 2019 MEMBERS WITH THEIR NEW WHITE COATS.

ENTERING CLASS MEMBERS CELEBRATE FOUNDERS' DAY, THE TRADITIONAL START OF THE ACADEMIC YEAR.

DONNING THEIR WHITE COATS, FIRST-YEAR STUDENTS ALSO RECITED THE DECLARATION OF GENEVA DURING THE SPECIAL DAY.

Founders' Day Marks Beginning of Academic Year

WRITTEN BY: Sarah Plumridge

As the keynote speaker at Feinberg's 157th Founders' Day, Clyde Yancy, MD, Magerstadt Professor and chief of Cardiology in the Department of Medicine, shared with the Class of 2019 the lessons he has learned throughout his career.

"Today you are medical students, my students, but soon you will be physicians, my peers," said Dr. Yancy, also the vice dean of Diversity and Inclusion at Feinberg. "I have shared with you today that at the core of many of us is a desire for competence, civility and compassion in ourselves and in our colleagues. Remember, there is no substitute for competence; that civility costs nothing and buys everything; manage your biases… be caring, be compassionate."

Founders' Day, held this year on August 14, is an annual celebration honoring Feinberg's founders and welcoming the entering class of first-year medical students to the medical profession.

At the beginning of the ceremony, Eric G. Neilson, MD, vice president for Medical Affairs and Lewis Landsberg Dean, welcomed guests.

"The founders conceived and introduced a new model of education with standards that have attracted students for over 156 years, who have become outstanding physicians, scientists and leaders," Dr. Neilson said.

He asked students to consider what they might do to improve the profession and human health beyond the individual patient.

"This is an important question deserving your attention over the next few years," explained Dr. Neilson. "Rest assured that within the broad opportunities at Feinberg, you'll find a problem to solve. Feinberg, as it always has, will prepare you well for whatever path you choose to follow."

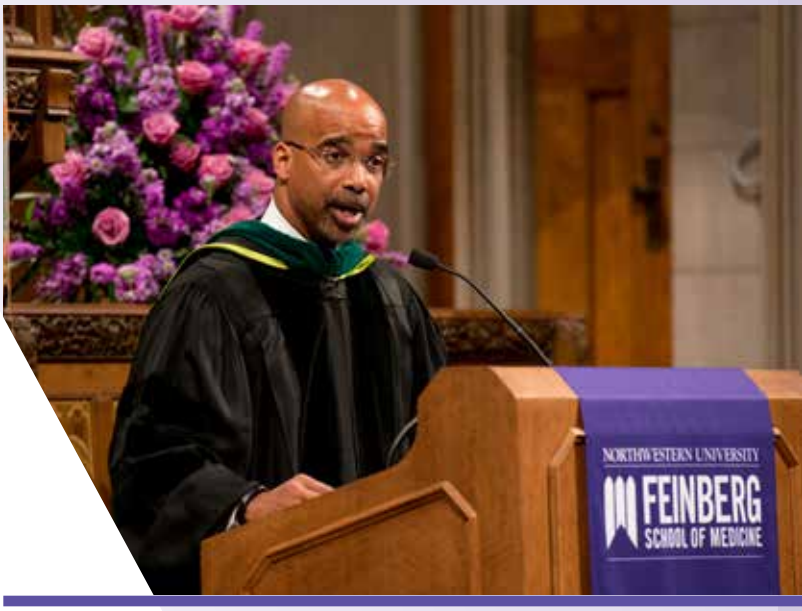
Second-year medical students and mentors presented each member of the Class of 2019 with his or her white coat.

"It's great to get our white coats and have a physical symbol of the first step in our journey to become physicians," said Javier Suarez, a first-year medical student. "I am looking forward to starting the year and learning new things in science, as well as treating patients in the future."

Kaitlyn Sacotte, another first-year medical student, said she enjoyed being presented her white coat by second-year student Taylor Sutcliffe.

"It was great to have someone there to welcome you and usher you into the profession," Sacotte said. "I'm looking forward to not only learning about medicine, but also getting to know my classmates."

Brianna Knoll, president of the Medical School Student Senate and a third-year medical student, presented the Student Senate Service Awards to second-year students, in recognition of their community service and leadership at the local, national and international levels. Selected by their peers, award recipients were: John Campo, Srivarshini Cherukupalli, Anthony Garcia, Noelle Martinez and Andy Nian.



KEYNOTE SPEAKER CLYDE YANCY, MD, STRESSED THE IMPORTANCE OF COMPETENCE, CIVILITY AND COMPASSION IN MEDICINE.

Before attending the Nathan Smith Davis Founders' Day reception, sponsored by the Medical Alumni Association, students recited the Declaration of Geneva, the modern-day equivalent of the Hippocratic Oath.

"The ceremony really made me feel initiated into a profession," said Jessica Quaggin-Smith, a first-year medical student. "As we put on our white coats together, I felt like I was a part of a community."

Faculty Awards and Honors

Kathleen Green, PhD, Joseph L. Mayberry, Sr., Professor of Pathology and Toxicology, professor of Dermatology, associate director of Basic Sciences for the Robert H. Lurie Comprehensive Cancer Center of Northwestern University, and co-director of the Tissue Engineering Core of the Northwestern University Skin Disease Research Center, has been awarded the 2014-15 Albert M. Kligman/Phillip Frost Leadership Lecture Award from the Society for Investigative Dermatology (SID). The award acknowledges significant contributions to the understanding of the structure and function of skin.

She also recently received a Humboldt Research Award from the Alexander von Humboldt Foundation in Germany, which is conferred in recognition of lifetime achievements in research. The award winner is invited to carry out research projects of his or her own choice in cooperation with specialist colleagues in Germany.

TWO AWARDS RECOGNIZE THE RESEARCH CONTRIBUTIONS OF KATHLEEN GREEN, PHD.

Peter Kahrilas, MD, '84 GME, Gilbert H. Marquardt Professor of Medicine in the Division of Gastroenterology and Hepatology, and Mary McGrae McDermott, MD, '92 GME, Jeremiah Stamler Professor of Preventive Medicine, and of Medicine in the Division of General Internal Medicine and Geriatrics, were elected to the Association of American Physicians (AAP).

Peng Ji, MD, PhD, '13 GME, assistant professor of Pathology, was recently honored with one of the American Society of Clinical Investigation's (ASCI) 2015 Young Physician-Scientist Awards. He is one of only 40 investigators nationwide to receive the honor this year.

Dr. Ji has made significant contributions in the fields of pathology and hematology. He and his colleagues discovered several genetic mutations associated with the development of myelodysplastic syndromes (MDS), a group of diseases that affect bone marrow and lead to ineffective production of stem cells that become blood cells. His lab discovered that the disease was associated with the loss of parts of chromosome 5, which in turn led to abnormal overexpression of the CD14 gene and contributed to the development of MDS.

Ritu Nayar, MD, professor of Pathology, has been elected a trustee for the American Board of Pathology (ABP) beginning in 2016. The mission of the ABP is to promote the health of the public and advance the practice and science of pathology by establishing voluntary certification standards and assessing physician qualifications.

Paula Stern, PhD, professor of Pharmacology, has been chosen to receive the 2015 Louis V. Avioli Foundation Award from the American Society for Bone and Mineral Research (ASBMR) for her contributions to basic science bone research. She is the first woman to receive the award.

During her nearly five decades at Feinberg, Stern and her team have made significant discoveries in the mechanisms of bone formation and resorption, focusing on osteoporosis, cancer metastases and most recently, sex-specific differences in bone health.

Darius Tandon, PhD, associate professor of Medical Social Sciences and associate director of the Center for Community Health, has been selected to join the 2015 class of Aspen Institute Ascend Fellows. The Ascend Fellowship invests in diverse leaders from a range of sectors who have breakthrough ideas to build economic security, educational success, and health and well being for low-income families in the U.S. These leaders will fuel their work with a two-generation approach that invests in children and their parents.

Sameer Ansari, MD, PhD, associate professor of Radiology, Neurological Surgery and Neurology, has been elected to serve on the 2015 Board of

Directors for the Society of NeuroInterventional Surgery (SNIS).

The following faculty members received third place for the 2015 Duncan Neuhauser Curricular Innovation Award in Healthcare Improvement for their submission: "The Education-Centered Medical Home: A Novel Longitudinal Clerkship Model Focused on Quality Improvement."

- Jennifer Bierman, MD, assistant professor of Medicine in the Division of General Internal Medicine and Geriatrics, and of Medical Education
- Bruce Henschen, MD/MPH, instructor of Medicine in the Division of General Internal Medicine and Geriatrics
- Elizabeth Ryan, EdD, associate professor of Family and Community Medicine
- John Thomas, PhD, senior associate dean for Medical Education, professor of Physiology and Medical Education
- Diane Wayne, MD, vice dean for Education, chair of the Department of Medical Education and the Dr. John Sherman Appleman Professor of Medical Education
- Donna Woods, PhD, research associate professor of Pediatrics

John Flaherty, MD, professor of Medicine in the Division of Infectious Diseases, was chosen to deliver the keynote address at The Imagine Ball, the 27th annual fundraising event of Design Industries Foundation Fighting AIDS/Chicago (DIFFA/Chicago).

George Gerhardt Hefner, MD, health system clinician of Anesthesiology, and chief of Lake Forest Anesthesiology, was elected president of the Illinois Society of Anesthesiologists.

Peter Kopp, MD, associate professor of Medicine in the Division of Endocrinology, received the ATA Distinguished Service Award from the American Thyroid Association.

Elizabeth McNally, MD, PhD, director of the Center for Genetic Medicine, testified before the U.S. House of Representatives Subcommittee on Research and Technology about the science and ethics of genetically engineered human DNA.

Nathaniel Soper, MD, professor of Surgery in the Division of Gastrointestinal and Endocrine Surgery and chair of the Department of Surgery, was named as the 2015 Master Educator of the Year by the Society for Surgery of the Alimentary Tract (SSAT).

Michael Abecassis, MD, MBA, chief and professor of the Division of Organ Transplantation in the Department of Surgery, professor of Microbiology-Immunology and director of the Comprehensive Transplant Center, received an $11.8 million NIH P01 award from the National Institute of Allergy and Infectious Diseases for his project entitled "Integrating Mechanistic Insights from Diverse Models to Prevent CMV Reactivation following Transplantation."

Alisha Thomas, '05 MD, instructor of Clinical Family and Community Medicine, received the Exemplary Teaching Award for volunteer faculty from the American Association of Family Physicians (AAFP).

Jeffrey Goldberger, MD, professor of Medicine in the Division of Cardiology, has accepted a leadership role at the University of Miami Miller School of Medicine, where he will be chief of cardiology.

Rosalind Ramsey-Goldman, MD, professor of Medicine in the Division of Rheumatology, and her partners have recently been awarded an Office of Minority Health grant for "Addressing Lupus Health Disparities Adapting Culturally Competent Community-Based Education Models through Local and National Collaborative Partnerships."

FAME Expands Educational and Training Offerings

WRITTEN BY: Sarah Plumridge

THE FEINBERG ACADEMY OF MEDICAL EDUCATORS PLAYS AN ESSENTIAL ROLE AT NORTHWESTERN UNIVERSITY FEINBERG SCHOOL OF MEDICINE BY RECOGNIZING AND SUPPORTING OUTSTANDING EDUCATIONAL CONTRIBUTIONS.

This summer, chief medical residents participated in the first Chief Resident Retreat, hosted by the Feinberg Academy of Medical Educators (FAME) and the McGaw Medical Center of Northwestern University, learning about topics including conflict resolution, leadership, negotiation and work-life balance. FAME, established in 2009, plays a critical role at Northwestern Medicine in the recognition and support of outstanding medical educators.

Since being appointed as director of FAME in 2014, Michael Gisondi, MD, associate professor of Emergency Medicine, has grown the academy's membership to more than 80 members and developed new programming, with an emphasis on further supporting graduate medical education activities.

"We had never done a chief medical retreat before, and it was a good opportunity for FAME members to gather around certain topics that were familiar and give them an opportunity to teach residents," says Dr. Gisondi. "We train people to be great teachers."

Other new programing this year includes the Today's Innovations in Medical Education (TIME) lecture series, a monthly series that highlights advances in technology, new teaching and emerging best practices in health professions education.

The inaugural TIME lecture featured Seth Trueger, MD, MPH, assistant professor at the University of Chicago Pritzker School of Medicine. He touted the advantages of using Twitter as a platform for dialogue among physicians and identified opportunities to incorporate social media in teaching activities. He also demonstrated how to use the platform.

Other TIME presentations have taught attendees how to use a smartphone app that was developed by faculty in the Department of Surgery to document learner competency, and how to increase learner engagement by incorporating the flipped classroom, where the typical lecture and homework elements of a course are reversed.

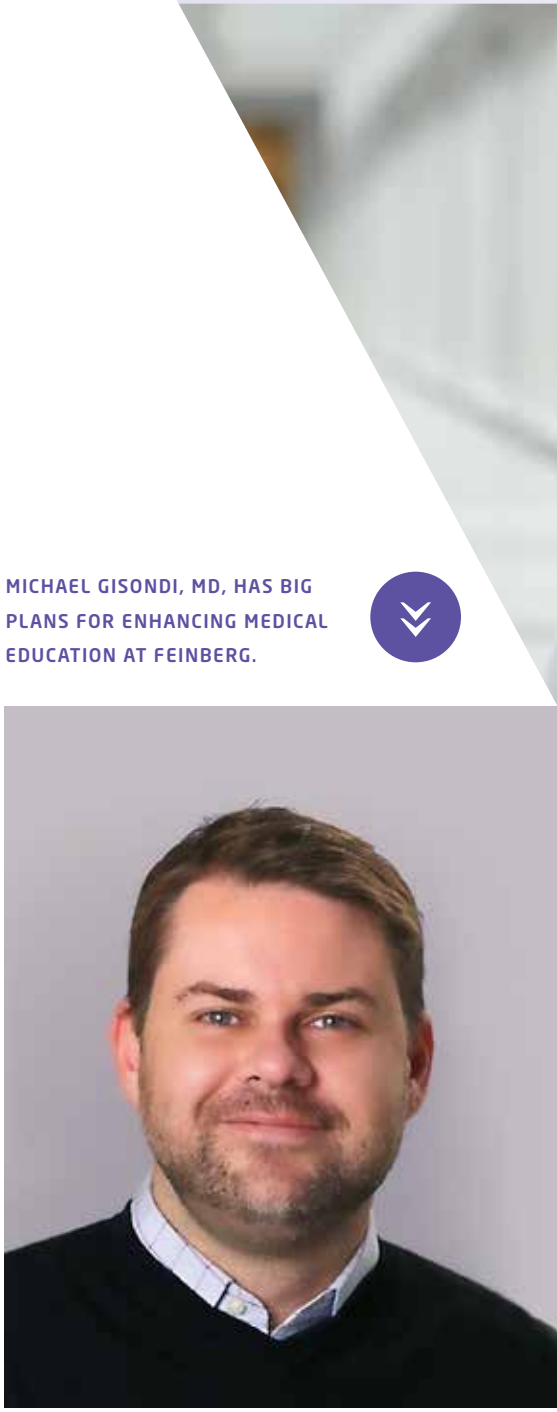
In the future, Dr. Gisondi says he also hopes to develop a certificate program in medical education.

Each year FAME hosts Medical Education Day, an annual celebration of teaching and medical education scholarship, featuring workshops, presentations and awards. Highlights of this year's event, held on September 25, included ultra-short didactic lectures and moderated research presentations, along with workshops on designing and writing curriculum, developing objective structured clinical examination cases and creating interactive educational sessions.

"We had a number of wonderful presenters in the program," says Dr. Gisondi.

FAME created a new set of teaching awards this year to "honor the folks on the ground, who are doing the hard work and teaching in the threads, the elements and the phases," according to Dr. Gisondi. Threads, elements and phases are three of the components of Feinberg's medical education curriculum.

The event recognized 69 faculty promotions, 16 teaching awards, five presentation winners and 24 new inductees to the academy.



MICHAEL GISONDI, MD, HAS BIG PLANS FOR ENHANCING MEDICAL EDUCATION AT FEINBERG.

First Physician Director Heads CME at Feinberg

WRITTEN BY: Sarah Plumridge

NEW CME DIRECTOR CLARA SCHROEDL'S FIRST ORDER OF BUSINESS WILL BE TO OVERSEE THE OFFICE'S REACCREDITATION.

As the first medical director of Feinberg's Office of Continuing Medical Education (CME), Clara Schroedl, '06 MD, '09 GME, instructor of Medicine in the Division of Pulmonary and Critical Care, will oversee plans to expand and improve current education offerings through innovation and technology. Also on her agenda will be the office's upcoming reaccreditation.

"It's an exciting time for us," says Dr. Schroedl. "CME has never had a medical director before, so I hope to provide some new insight and ideas for innovation, in addition to continuing to do what we already do and deliver."

Feinberg's CME program offers and provides credit for live events such as conferences and regularly scheduled series, including grand rounds and journal clubs. In 2014, the office accredited 1,897 live courses, 97 series, 11 live Internet courses and 41 enduring materials. It also served nearly 40,000 physicians, from Northwestern and far beyond.

The medical school has "Accreditation with Commendation" status by the Accreditation Council for Continuing Medical Education (ACCME) through March 31, 2017. To again achieve this highest level of ACCME accreditation, Feinberg must demonstrate the values and attributes necessary to make the greatest impact on health care, patient outcomes and physician practice.

"As we look ahead to our reaccreditation, we will be highlighting our efforts to integrate CME into professional practice, identify and overcome barriers to high quality education, build bridges with our community and integrate our efforts into the institutional framework of quality improvement," she says.

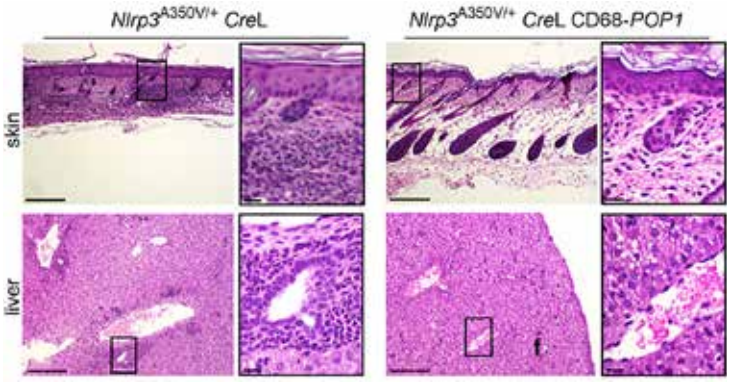
Representatives from multiple subspecialties at the medical school, the Ann & Robert H. Lurie Children's Hospital of Chicago and the Rehabilitation Institute of Chicago participate on the CME review committee. Reviewing applications for CME activities, the committee ensures they are of the highest quality and free from commercial bias. Additionally, the group looks for activities that incorporate active learning, such as hands-on demonstrations or simulation and small group breakout sessions.

As physician certification maintenance evolves, the office plans to integrate the American Board of Internal Medicine's Maintenance of Certification (MOC) program and accredited CME. "As the Northwestern community grows, we hope to engage our affiliates and be the best resource possible for our health care provider's continuing professional development," says Dr. Schroedl. "Northwestern providers are located all over the Chicagoland area. We want to grow our program to meet the needs of all of these learners."

Dr. Schroedl plans to develop more online content and bring more innovative teaching techniques to CME, including simulation modules, audience response systems and small-group learning.

"You can always sit down in a classroom and listen to a lecture, but there are other exciting, more innovative ways to provide education and we can study those interventions to see if they are making a difference in patient outcomes and physician performance," she says. "Using simulation can improve the cognitive, technical and professional skills of our healthcare providers."

Research Briefs



Protein Found to Control Inflammatory Response

A new Northwestern Medicine study shows that a protein called POP1 prevents severe inflammation and, potentially, diseases caused by excessive inflammatory responses. The paper, published in *Immunity*, describes how POP1 blocks a pro-inflammatory mediator called IL-1b.

"Inflammation is controlled by a complex network of regulators that is still poorly understood," says senior author Christian Stehlik, PhD, John P. Gallagher Research Professor of Rheumatology. "Here, we describe a novel inhibitor of the inflammatory response."

Stehlik worked with co-senior author Andrea Dorfleutner, PhD, research assistant professor of Medicine in the Division of Rheumatology and a team headed by postdoctoral fellow Lucia de Almeida, PhD. They found that mice expressing POP1 were protected from systemic inflammation. Those mice also recovered more quickly than controls from inflammatory diseases, including peritonitis, sepsis and cryopyrinopathy.

Interestingly, the scientists also discovered that human patients with cryopyrinopathy and sepsis have less POP1 in their immune cells than others.

The scientists believe that treatments based on POP1 could improve many inflammatory diseases.

This research was supported by National Institutes of Health grants GM071723, HL097183, AI092490, AI082406, AI099009, AI120625, AR064349, AR057532, AR066739, AR050250, AR054796, AI092490, HL108795, AR061593 and AI52430; Cancer Center Support Grant CA060553; Skin Disease Research Center grant AR057216; American Heart Association grant 13GRNT17110117; an ATS/Scleroderma Foundation; and British Heart Foundation grant RG/10/15/28578.

Data Mining DNA for Polycystic Ovary Syndrome Genes

Polycystic ovary syndrome (PCOS) has been passed down in many families for generations — causing reproductive and metabolic health problems for millions of women. Yet, its cause remains unknown. PCOS affects seven to 10 percent of reproductive-age women worldwide with symptoms such as increased male-pattern hair growth, weight gain, irregular periods and infertility.

A new Northwestern Medicine genome-wide association study of PCOS — the first of its kind to focus on women of European ancestry — has provided important new insights. Using the DNA of thousands of women and genotyping nearly 700,000 genetic markers from each individual, an international team led by Northwestern Medicine investigators has identified two new genetic susceptibility regions that appear to be unique to European women, as well as one region also present in Chinese women.

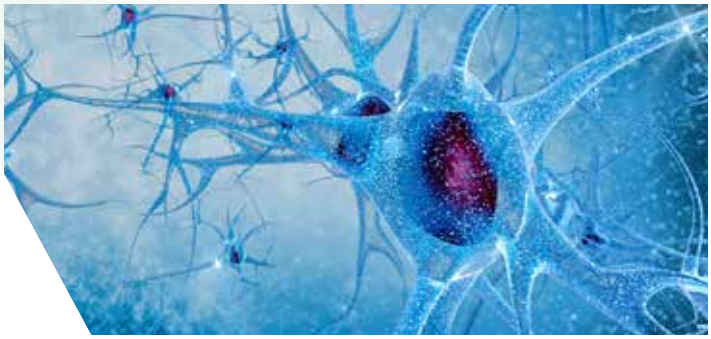
Most importantly, one of these new regions contains the gene for the pituitary hormone gonadotropin, FSH (follicle stimulating hormone), providing evidence that disruption in this ovarian function-regulating pathway plays an essential role in the development of PCOS.

The study was published in *Nature Communications*.

"Identifying the genes associated with PCOS gives us clues about the biological pathways that cause the disorder," says senior author Andrea Dunaif, MD, Charles F. Kettering Professor of Endocrinology and Metabolism.

As a result of previous research from Dr. Dunaif's lab, PCOS also is associated with insulin resistance and is now recognized as a leading risk factor for type-2 diabetes in young women.

This study was supported in part by the National Institutes of Health grants R01 HD057223, P50 HD044405, U54 HD34449, R01 HD057450, R01 HD056510, R01 HL075079, P50, HD057796, R01 HD065029, R01 HD29364, K24 HD01346, R01 DK071895 and R01 DK65598.



Unexpected Link to ALS and Dementia

Mitochondria work like a power plant inside cells to regulate energy supply. When mitochondrial health is destroyed a lot can go wrong, especially when the attacker is associated with fatal diseases such as amyotrophic lateral sclerosis (ALS).

In a new study, Northwestern Medicine scientists showed direct mitochondrial destruction by a protein from the FUS gene, one of the genes associated with ALS, as well as frontotemporal lobar degeneration (FTLD) and other neurodegenerative diseases. This damage seems to occur early on in disease progression, making mitochondrial health an emerging area of interest for scientists developing early diagnostic tools and therapies.

The discovery was published in *PLOS Genetics* in September.

"FUS mitochondrial localization is toxic to neurons, contributing to neurodegeneration," says Jane Wu, MD, PhD, Dr. Charles L. Mix Research Professor of Neurology and Psychiatry and Behavioral Sciences. "We are actively working on developing new diagnostic tools based on mitochondrial damage for neurological diseases. We hope that earlier diagnosis before the disease progresses to an irreversible stage is critical for successful treatment."

Early diagnosis will allow scientists to develop therapeutic approaches that enhance patients' quality of life and possibly reduce fatalities.

This was an interdisciplinary collaboration among scientists from Feinberg and the Chinese Academy of Sciences and Nanjing University. The Chinese team was funded by Ministry of Science and Technology - China 973 Projects (2010CB529603 & 2013CB917803, 2010CB529603) and NSFC grant (91132710). The Feinberg team was supported by the ALS Therapy Alliance and National Institutes of Health grants NIA P30 AG13854, R56NS074763, U54 CA151880 and RO1AG033004.

Implant Detects Spreading Cancer Cells Early

Northwestern Medicine scientists have helped develop an implantable device that detects early breast cancer metastatic cells, a method that may enable physicians to identify cancer spreading in patients while treatments are still viable.

In a study published in *Nature Communications*, the scientists demonstrated that small, spongy scaffolds implanted into breast cancer mouse models could recruit and capture cancer cells released from primary tumor sites early in the metastatic process, before the cells impact additional organs.

"We set out to create a sort of decoy — a device that's more attractive to cancer cells than other parts of the patient's body," says senior author Lonnie Shea, PhD, adjunct professor of Fertility Preservation in the Department of Obstetrics and Gynecology.

The scientists envision that the scaffold could be implanted just beneath the skin of patients who have a high risk of cancer recurrence. Physicians could then monitor it for an early indication that malignant cells are circulating in the bloodstream. In the study, cancer cells spread to the lungs 88 percent slower in mice with the implants.

The scientists designed the scaffold to take advantage of the immune system, which has been shown to mediate metastasis in several cancers. The immune system perceives that the scaffold is a foreign object in the body and sends immune cells to ward it off. Doing so lures cancer cells to the scaffold, too.

This work was supported by National Institutes of Health grant R01CA173745 and the Northwestern H Foundation Cancer Research Award.

Northwestern researchers use every means possible to fight HIV/AIDS

WRITTEN BY: Cheryl SooHoo

FROM BEGINNING TO HOPEFUL END

1.2

MILLION
AMERICANS LIVE WITH HIV/AIDS

40

THOUSAND
NEW HIV INFECTIONS EVERY YEAR

In June 1981 the Centers for Disease Control (CDC) and Prevention published a report about a mysterious illness affecting young homosexual men in Los Angeles. The cause of the unfamiliar disease, eventually dubbed AIDS, would come to light in 1984 with the discovery of the human immunodeficiency virus (HIV). Over a relatively short period of time, extraordinary advances in antiretroviral therapy (ART) transformed HIV/AIDS from a universally fatal disease into a chronic condition. Now some 1.2 million Americans are living with the virus, according to the latest statistics from the CDC.

At the dawn of the HIV epidemic, Northwestern University researchers were at the forefront of understanding the virus, developing therapies to combat AIDS and preventing new infections. Before HIV was even discovered, Northwestern became one of the founding sites in 1983 for the landmark Multicenter AIDS Cohort Study (MACS) — the first and longest running study of the natural history of AIDS. In 2008 the journal *Science* listed Northwestern among the top 10 institutions making the biggest impact on fighting the disease. Today the battle still rages on, with multidisciplinary experts on both campuses working to prevent and perhaps, even cure HIV, which infects some 40,000 new individuals each year and leads to the premature aging of those with long-term exposure to the virus and ART.

The depth and breadth of HIV/AIDS research at Northwestern Medicine continues to expand and evolve. Our basic, clinical and translational scientists routinely publish in the field's top peer-reviewed journals and successfully compete for highly coveted National Institutes of Health (NIH) grants. Here's just a sampling of how Northwestern investigators are working to defeat this still deadly and widespread global disease.

A UNITED FRONT

With the largest HIV-infected population in the world, South Africa maintains a solid lead, but Chicago is unfortunately catching up in the ratings game — of recently diagnosed HIV infections, that is.

In the United States, young men who have sex with men (YMSM) have the highest rate of new cases reported each year. In Chicago, HIV infection in this demographic group (ages 16-29) is rising at a disturbing five percent annually, with most cases occurring in black gay men. Feinberg School of Medicine investigators hope to reverse this trend with the support of a recent $6.25 million NIH grant awarded to Northwestern Medicine and other Chicago-area academic, municipal and community partners in August. The federal funding will support the creation of the Third Coast Center for AIDS Research (CFAR) to quell the HIV epidemic among young men in the Windy City.

Richard D'Aquila, MD, CFAR director, head of the Northwestern HIV Translational Research Center and Howard Taylor Ricketts Professor of Medicine, has worked on a number of groundbreaking projects during his long career. This May, he and Harry Taylor, PhD, research assistant professor of Medicine in the Division of Infectious Diseases, detailed in *PLOS Pathogens* an exciting discovery: how to take advantage of HIV's sugar fix as the virus can't live without it. In laboratory *in vitro* studies, researchers found a small molecule that blocks the virus' access to sugar and other nutrients in HIV-invaded

5%

ANNUAL
INCREASE OF YMSM HIV INFECTIONS

immune cells. This sugar-free diet prevented the virus from replicating itself in human cells, without harming the cells *in vitro*.

Another significant research effort in the D'Aquila lab focuses on novel drug therapies to boost a defensive immune system protein called APOBEC3G (or A3 for short) to achieve sustained remission after ART stops or, optimistically speaking, a cure. He and his colleagues discovered that more ample stores of cellular A3 appear to enable one percent of HIV-infected individuals to control the virus naturally and without antiviral drugs. First published in 2013 in *PLOS ONE*, this finding has important implications for shortening ART, which, along with continuing chronic inflammation caused by the virus, may contribute to the premature onset of health problems such as heart disease and stroke in this patient population.

Cross-campus collaborations have proven fruitful. Chisu Song, PhD, research assistant professor of Medicine in the Division of Infectious Diseases, partnered with investigator Gary Schiltz, PhD, at the Center for Molecular Innovation and Drug Discovery on the Evanston campus and D'Aquila to discover small molecules that increase cell A3 *in vitro*. The hope is that this will keep A3 from being depleted after HIV infection, and enable more of those infected to control HIV off of antiretroviral therapy. Planning to launch testing of promising A3 boosters discovered at NU in mice and then monkey models in 2016, Dr. D'Aquila sees the new CFAR as a valuable asset in accelerating research toward helping the other 99 percent of those with HIV control their disease off drug therapy. "The center will reach out to a segment of the population now contracting the virus," says the professor of Medicine in the Division of Infectious Diseases. "This effort will provide us with the very individuals who we think would benefit most from new strategies for cure or sustained remission: the young people who are now becoming infected."

RICHARD D'AQUILA, MD

ROMANCE GONE VIRAL

What does love have to do with HIV? Perhaps a great deal, according to Brian Mustanski, PhD, director of a recently launched Northwestern University-wide Institute for Sexual and Gender Minority Health and Wellbeing.

BRIAN MUSTANSKI, PHD

"It was often assumed that casual hookups put young gay men at the highest risk of HIV infection," says the co-director of CFAR and associate professor of Medical Social Sciences, who studies mental and behavioral factors as they relate to HIV/AIDS in young gay and bisexual men. "Our research revealed that HIV transmission appears more likely to occur among individuals involved in serious romantic relationships. It's hard to have love without trust, and it's hard to self-protect when you have that trust. Understanding this tension allows us to develop and put into place interventions that address the compatibility of romance and HIV prevention."

A translational behavioral scientist, Mustanski conducts research projects focused on HIV and LGBT health. The data he collects ultimately leads to novel HIV prevention tactics such as text messaging and social media to reach a younger generation of people at risk. He serves as the principal investigator of RADAR, a study aimed at identifying and understanding the connections among sexually transmitted diseases like HIV, alcohol and drug use and romantic or sexual patterns over time in YMSM. Supported by an $8.7 million five-year grant from the National Institute on Drug Abuse awarded in 2014, this major research endeavor employs a multilevel approach, from looking at the micro level of genetics of the virus to the macro level of sexual and social networks.

"Not only are we creating one of the largest longitudinal studies of young gay and bisexual men and their romantic partners," says Mustanski, "but we are also creating new ways to integrate across different social science and biomedical pieces involved in driving new HIV infections."

PREVENTIVE MEASURES

Tried and true methods to prevent the sexual transmission of HIV exist to keep the virus at bay. Condoms, abstinence or popping an oral antiviral pill once a day work well — when used. The problem? Not enough of those at most risk for contracting the virus take the necessary precautions to safeguard themselves and others.

Building another defense against HIV infection, Northwestern Medicine scientists have recently embarked on an extensive multidisciplinary endeavor to develop an innovative implantable drug system. They hope to design a subcutaneous implant that will automatically deliver a controlled dose of antiretroviral medication such as cabotegravir and last for up to a year. Supported by a recently awarded $17.5 million National Institute of Allergy and Infectious Diseases (NIAID) grant, biomedical engineer Patrick Kiser, PhD, and immunologist Thomas Hope, PhD, are co-PIs of the Sustained Long-Acting Protection Against HIV (SLAP HIV) program aimed at protecting individuals who need it most.

"The virus frequently targets the dispossessed, the uninformed or those who think they are invincible," says Kiser, associate professor of Obstetrics and Gynecology and Biomedical Engineering at the McCormick School of Engineering. "We need more tools to decrease transmission rates. HIV is an insidious virus. You can't take your eye off of it for a moment."

A viable vaccine for HIV has remained elusive since its discovery more than three

decades ago. The virus' uncanny ability to thwart the immune system has stymied scientists the world over. Hope, professor of Cell and Molecular Biology, Obstetrics and Gynecology and Biomedical Engineering, has focused his work on mucus and its potential role in fighting invading pathogens such as HIV. Found in many areas of the human body, mucus contains antibodies produced by our immune system to create a protective barrier. The Hope laboratory has studied how HIV moves in this environment, searching for molecules that might offer the best defense against the virus. The investigators recently discovered tight binding sites in antibodies residing in mucin, the protein that makes up mucus, which tether pathogens and then allow the mucus to expel them. This finding has the potential to advance progress toward a vaccine. Says Hope, "By understanding how some antibodies interact with certain mucin, we might be able to identify approaches that will move us closer to developing an effective vaccination against HIV."

THOMAS HOPE, PHD

GENOMICS OF HIV

HIV thoroughly takes advantage of its infected host. It targets the very immune response that would normally kill it to replicate or lie dormant for years. Taking advantage of human proteins, HIV invades immune cells and convinces the host DNA to help it copy itself over and over again. But not every host or person is a willing participant based on their unique genetic makeup.

"In our lab, we seek host cell genetic variants that protect some people from HIV infection or disease progression," says **Steven Wolinsky, MD, '82 GME,** chief of Infectious Diseases and Samuel J. Sackett Professor of Medicine. "Natural variations in the expression levels of human proteins typically borrowed by the virus can hinder HIV replication and significantly impact how the immune system fights off the virus."

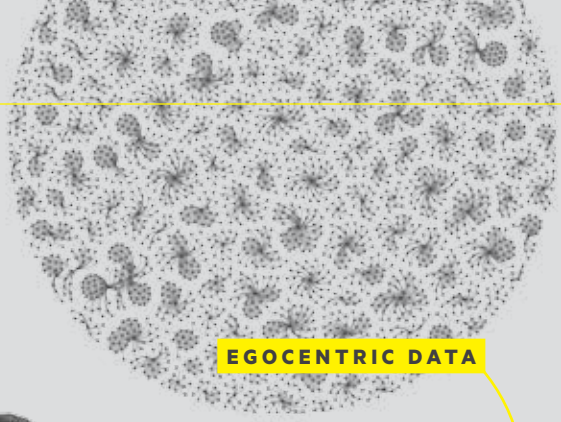
STEVEN WOLINSKY, MD

The Wolinsky laboratory studies the extent of human genetic variations that influence HIV/AIDS susceptibility by analyzing the genomes of hundreds of HIV-infected patients. Better understanding how our DNA contributes to the evolution of the virus and development of AIDS and other diseases could lead to potential drug targets and improvements in patient care.

A renowned HIV researcher and principal investigator of the prestigious Multicenter AIDS Cohort Study since 2000, Wolinsky has witnessed the great strides made in fighting the disease, but more still needs to be accomplished.

"Although advancements have made it possible for people with HIV to live much longer lives, they are aging faster and developing health problems more often seen in uninfected people 10 or 20 years their senior," he says. "Through MACS and the efforts of investigators at Northwestern and around the world, we hope to better manage the care and treatment of people living with HIV/AIDS and move closer to a functional cure." NM

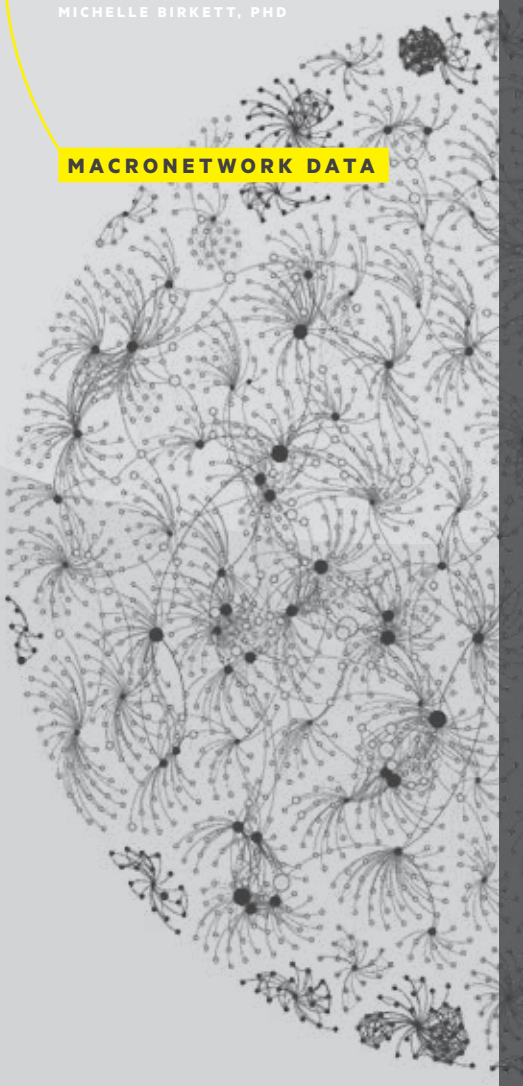
PATRICK KISER, PHD



EGOCENTRIC DATA

VISUALIZING THE SOCIAL NETWORKS OF YMSM IN CHICAGO PROVIDES IMPORTANT CLUES TO UNDERSTANDING PATTERNS OF HIV TRANSMISSION AND DEVELOPING PREVENTION TACTICS.

IMAGES COURTESY OF MICHELLE BIRKETT, PHD



MACRONETWORK DATA

New neurosurgery chair combats brain cancer with multifaceted biological approach

WRITTEN BY: Carolyn Schierhorn
PHOTOGRAPHY BY: Andrew Campbell

Patient-Centered Innovation

As a boy in the small mountain city of Zakopane, Poland, Maciej S. Lesniak, MD, MHCM, never imagined he would become a physician because he saw that his mother, an obstetrician and gynecologist, was often rushing off at all hours to deliver babies. With a zeal for languages and culture, stoked by his family's eventual moves to Munich, Germany, and then to Chicago when he was a teenager, he thought he'd pursue a career in international law. But as an undergraduate at Harvard University, he came to realize that legal "paperwork" appealed to him much less than the science and human interaction of medicine.

Today, as a world-renowned neurosurgeon and brain cancer researcher, Dr. Lesniak embraces the long hours of his profession because he loves what he does.

"I can't imagine doing anything else in life," says the new chair of the Department of Neurological Surgery at the Feinberg School of Medicine, who investigates biological approaches to attacking malignant brain tumors and works to translate that research into clinical therapies for his patients.

Lesniak developed his passion for neurosurgical oncology while a student at the Johns Hopkins University School of Medicine. Nudged by his mentor, Catherine D. DeAngelis, MD, MPH, the fourth-year student served a month-long neurosurgical rotation under two Hopkins professors involved in cutting-edge research: then-neurosurgery chair Donlin M. Long, MD, PhD, and current chair Henry Brem, MD.

"I fell in love with the profession, mostly because of the people; I was fascinated by what they did," says Dr. Lesniak, noting that Dr. Brem had been leading clinical trials on the breakthrough drug Gliadel, approved by the U.S. Food and Drug Administration in 1996 for treating patients with recurring gliomas. "I thought, 'Here is a field where you can focus on a certain disease, you can actually do research, and you can run clinical trials and do something amazing.'"

He stayed at Hopkins to complete in 2002 both a six-year neurosurgery residency and a two-year fellowship in neurosurgical oncology and immunology. Since then, Lesniak has become a leading researcher of glioblastoma multiforme, the most aggressive primary brain cancer. Acclaimed also for his surgical skills and patient care, he has received multiple

accolades, including repeated listings in Castle Connolly's "America's Top Doctors," and this year, the National Institutes of Health "Outstanding Investigator Award."

Currently the principal investigator or co-investigator of eight NIH-funded studies, totaling more than $25 million in grant support, Lesniak comes to Northwestern after 12 years at the University of Chicago, where he was a tenured professor of neurosurgery and neurology and the director of the Neuro-Oncology Research Laboratories.

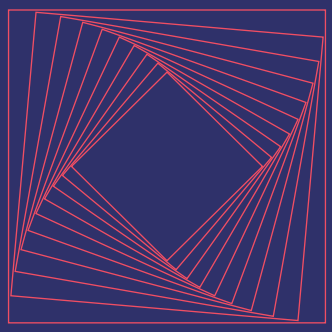
With more than 175 peer-reviewed journal articles and book chapters, he collaborates with and mentors other oncological researchers in the fight against primary and metastatic brain cancer.

"I am absolutely thrilled to be here," says Lesniak, Michael J. Marchese Professor at Feinberg. "I think Northwestern is the vision of the future of medicine in this country. The amount of effort that is being dedicated to invest in people and the delivery of care and the science is unprecedented. This is one of the reasons I wanted to be a part of it."

BENCH TO BEDSIDE

Lesniak describes his research as broad because it encompasses four domains: stem cell biology, nanotechnology, gene therapy and immunotherapy. "In my opinion, those are four major areas where a lot of the biologically-based discoveries will be made," he says. "This doesn't negate the importance of chemotherapy or radiation therapy. But my interest has been in these biologically-driven agents and developing them with the FDA for use in clinical trials."

Fascinated by immunotherapy since his residency at Hopkins, Dr. Lesniak has been investigating what makes brain tumors immunosuppressant and why the immune system is weak in the context of brain cancer. Several years ago, he and his colleagues, as well as other research teams around the country, identified that the over-accumulation of tumor-infiltrating regulatory T cells (Tregs), especially thymus-derived natural Tregs, plays a key role in immunotherapeutic failure in patients who have glioblastoma multiforme.



By the Numbers

12

Years of experience at the University of Chicago as a tenured professor of neurosurgery and neurology and the director of the Neuro-Oncology Research Laboratories

8

Number of current NIH-funded studies in which Lesniak is the principal or co-investigator

175

Peer-reviewed articles and book chapters

A postdoctoral fellow mentored by Dr. Lesniak at the University of Chicago, Derek A. Wainwright, PhD, who is now an assistant professor, conducted research indicating that a tryptophan-catabolizing enzyme overexpressed in glioblastoma multiforme influences Tregs levels in malignant tumors.

"Once we identified this pathway and published our findings, we then worked with a pharmaceutical company that has an agent that inhibits this pathway to start a Phase I clinical trial," Dr. Lesniak explains.

In the realm of stem cell biology, he points to work he has done over the past five years in conjunction with Karen Aboody, MD, who co-leads the developmental cancer therapeutics program at City of Hope in California. In this venture sponsored by the National Institute of Neurological Disorders and Stroke, Drs. Lesniak and Aboody have been developing a neural stem cell-based therapy for delivering an oncolytic virus to brain tumors.

"Karen and I have championed this to the FDA at numerous levels," says Dr. Lesniak, noting that he is about to finalize the investigational new drug (IND) application. "I think we're going to have a trial in a year or two."

The nanotechnology segment of his research remains in earlier stages. Initially working with scientists at Argonne National Laboratory, Lesniak and his team developed a way to target malignant cells using inorganic titanium dioxide nanoparticles, a photoreactive material that can bond with biomolecules. Linked to an antibody, these nanoparticles bind specifically to cancer cells and will interfere with their mitochondria, potentially destroying them when exposed to focused visible light.

"We're working on this line of research now with a group from the University of Cambridge — in terms of both optimizing the nanoparticles and building a machine that can actually deliver the magnetic field," Dr. Lesniak says.

In addition to research and other facets of his career — teaching, writing and now, increasingly, administration — Lesniak maintains a robust neurosurgical practice. Approximately 70 percent of his practice

involves intracranial surgery to remove both benign and malignant tumors, including skull-based and pituitary tumors. He has performed many awake craniotomies when tumors reside close to critical functional locations in the brain.

COMPASSIONATE, PERSONALIZED CARE

With a warm and personable demeanor, Dr. Lesniak consistently earns high marks on physician-rating websites for his bedside manner and willingness to spend time with patients, as well as his diagnostic and surgical skills, promptness and follow-up care.

"When people call with a diagnosis of a brain tumor, it is one of the scariest moments in their lives... My philosophy has always been that we are here to make this experience as easy as possible on them," he says. Unless in the operating room all day or away from Chicago, "I see people on their schedule, not mine."

Another key aspect of his care approach is that he educates patients about their condition and provides options. "Many patients I see with malignant brain cancer," notes Dr. Lesniak, "come to me simply because they've not been given any hope or options."

For patients diagnosed with malignant brain cancer, the standard of care is tumor resection, followed by chemotherapy with temozolomide and radiation therapy. "If you look at the two-year survival of patients who are on these therapies, it's about 25 percent," says Dr. Lesniak. "But without them, the survival rate drops to single digits." He hopes the biological therapies he is working to develop will significantly improve the prognosis for such patients.

"I think Northwestern is the vision of the future of medicine in this country."

Whatever the diagnosis, prognosis or intervention, Dr. Lesniak remains deeply connected to his patients throughout the course of their treatment and beyond. "I'm very involved in the lives of my patients throughout the entire process," he says. "It's not about what I do in the OR; it's about what I do outside of the OR. I want to be a resource to everyone involved in coordinating a patient's care."

At the University of Chicago, after clearing multiple hurdles, Dr. Lesniak even started an innovative, new pet therapy program: oncology patients could bring their own dogs to the hospital.

"I've had many patients who've been more concerned about being in a hospital for too long because they didn't know what was happening to their dog or cat," he explains. "That was quite striking. If we are really taking care of people and their needs, and their needs include maintaining bonds, why should pets be treated differently? We need to recognize that they are an important part of providing care."

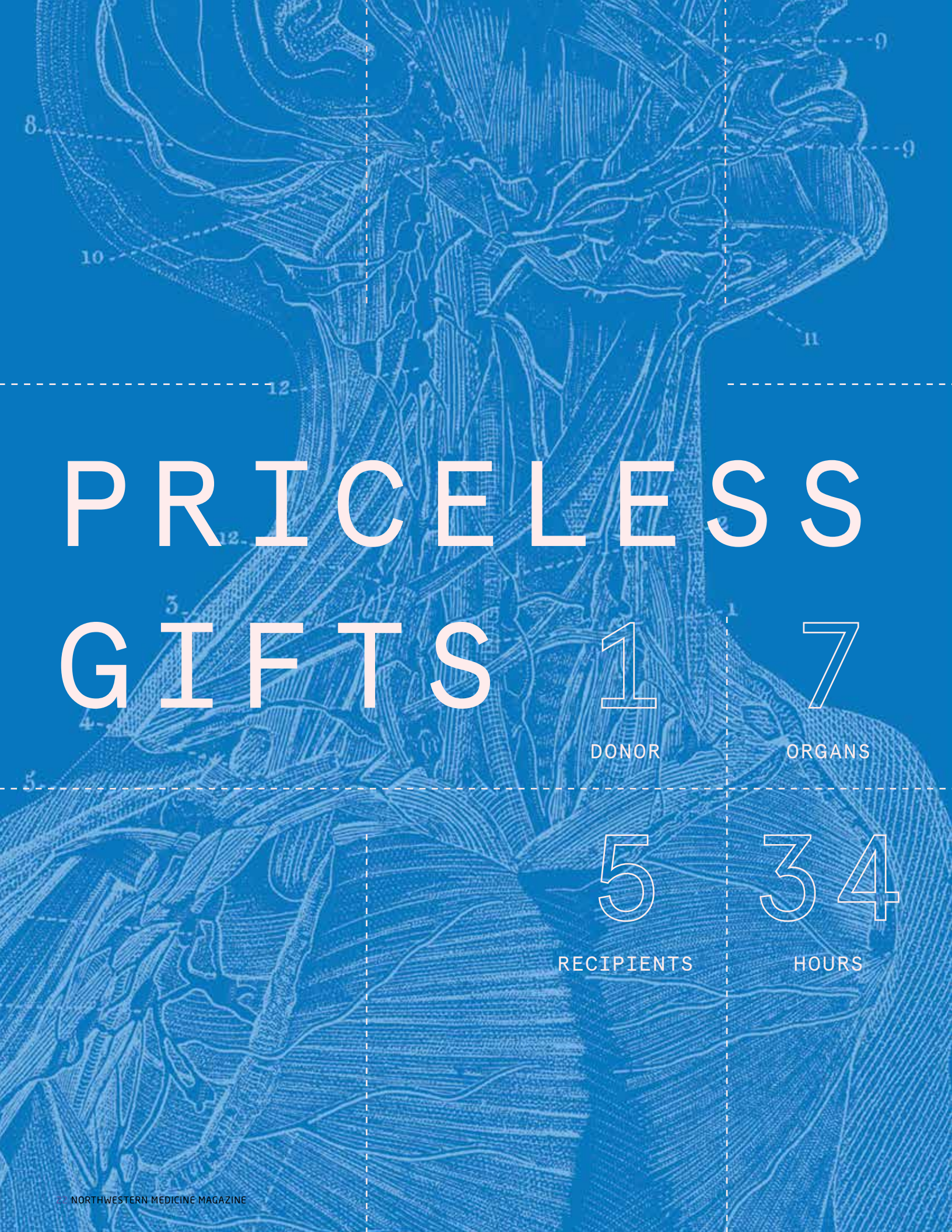
A lifelong dog lover himself, Lesniak lives with a Portuguese water dog named Milo. His four-legged friend accompanied him to campus at the University of Chicago, initially to participate in a colleague's research project on canine interaction and patient stress levels.

PROMOTING POSITIVE MORALE

As head of neurosurgery at Northwestern, Dr. Lesniak, who is 45 and radiates youthful energy, says his priority is to create a positive work atmosphere that focuses on patients and their needs.

"We spend most of our day at work — 10, 12 and sometimes 16 hours," he observes. "By the time you get home, you may have only a couple of hours to spend with your loved ones before going to sleep.

"So it is very important for us to have a healthy working environment — collegial, enthusiastic, supportive, productive — which translates into happy people at home, who come back to work and actually want to be here. When we do that, we take that positive attitude to our patients." NM



PRICELESS GIFTS

1 DONOR

7 ORGANS

5 RECIPIENTS

34 HOURS

1 Donor, 7 Organs, 5 Recipients, 34 hours

WRITTEN BY: Martha O'Connell

It's a huge adrenaline rush when an organ transplant is imminent—starting when that first call comes and a highly orchestrated process begins. But few hospitals can do everything right seven times—all at the same time.

Northwestern Memorial Hospital (NMH) answered this call last summer when Gift of Hope, the organ procurement organization for Illinois and northwest Indiana, notified them that seven organs from one donor were available if recipients matched. NMH and Ann & Robert H. Lurie Children's Hospital of Chicago had five very sick people who desperately needed them. Without hesitation, 120 clinicians and staff quickly responded to make sure every one of these transplants happened.

"Let's do it!" exclaimed Juan Caicedo, MD, associate professor of Surgery, when he learned two kidneys and a pancreas were available. Ability to accelerate on a dime characterizes all the transplant teams, but their ability to conquer logistical and treatment challenges was also the reason why the lives of these five recipients changed dramatically over two days.

To respect patient privacy, many names, dates and other identifying details are omitted from this story. It is important to note that everyone involved honors the donor and family who gave a heart, lungs, liver, kidneys and pancreas so that others might live.

Gift of Hope made its first call to the liver team at 6:53 a.m., followed up with calls to the other transplant teams. Those notifications set many moving parts of the process in motion and raised questions requiring immediate answers. Can the organ be brought to the recipient's hospital fast enough? Is the patient ready for transplant right now? Can the patient get to the hospital in time?

When organs become available, many hospitals are notified but ultimately decline or are not selected for various reasons. The United Network for Organ Sharing (UNOS) authorizes a hospital as the primary acceptor of an organ when that facility has an available patient who is ranked at the top of the priority list, and the capability to perform transplants under tight constraints. Undaunted by the mass mobilization effort ahead, Northwestern accepted all the organs.

"Logistical details can make or break a transplant. All the health providers here had a tremendous commitment to make sure logistics did not prevent us from offering healthy organs to our patients," says Malcolm DeCamp Jr., MD, chief of the Division of

JUAN CAICEDO

Associate Professor of Surgery, Division of Organ Transplantation

MALCOLM DECAMP

Chief of the Division of Thoracic Surgery + Fowler McCormick Professor of Surgery

PAM LEHNER

Blood Bank Resource Coordinator

CHRIS MALAISRIE

Associate Professor of Surgery, Division of Cardiac Surgery

ANTON SKARO

Associate Professor of Surgery, Division of Organ Transplantation

Thoracic Surgery and Fowler McCormick Professor of Surgery, who performed the bilateral lung transplant.

SHIFT TO HIGH GEAR

Three procurement teams were the first to hit the ground running to the local hospital where Gift of Hope staffs were caring for the donor. Teams of fellows, surgeons and nurses assessed the organs' functions and appearances to judge if they were viable for transplant. Then, they procured and specially packed the organs in coolers and started the tense trip back to downtown Chicago.

Meanwhile, clinicians left their homes and assembled at NMH into five operating room teams, five anesthesia teams, three perfusion teams, three ICU teams, along with staff from three labs, pharmacy, housekeeping, pathology, radiology, social services, patient transfer and the blood bank. They waited, fixated on the moment when the organs would reach the ORs.

Surgeons for each procedure served as point persons during the entire process for each organ, but absolute trust between team members kept events moving along smoothly. Numerous phone calls between all the teams at different locations monitored progress and enabled decisions about when to set the next step in motion, including when to put patients to sleep so anesthesia time was minimized.

First stop for all transplant organs was NMH's blood bank, where identifiers were electronically and manually cross checked to ensure blood type and immune compatibilities. Blood supply was also issued for each procedure, and the organs were sent to the ORs.

"We keep our eyes on things very stringently, and this case got tricky because we got all the organs within about 45 minutes, which is a lot in a short time. We had one UNOS number for the same donor, and we had to make sure the right organ got to the right patient," explains Pam Lehner, MT (ASCP) SBB, Blood Bank resource coordinator.

After the organs were released to the ORs, surgical teams inspected them again and began "benching" the organs. A process lasting up to several hours, benching means organs are prepared by trimming or extending vasculature to fit into the recipient's anatomy.

For each team, the real euphoria began at milestones during each procedure when the kidney started to make urine, the heart beat, the smooth red liver produced bile and the lungs took a breath.

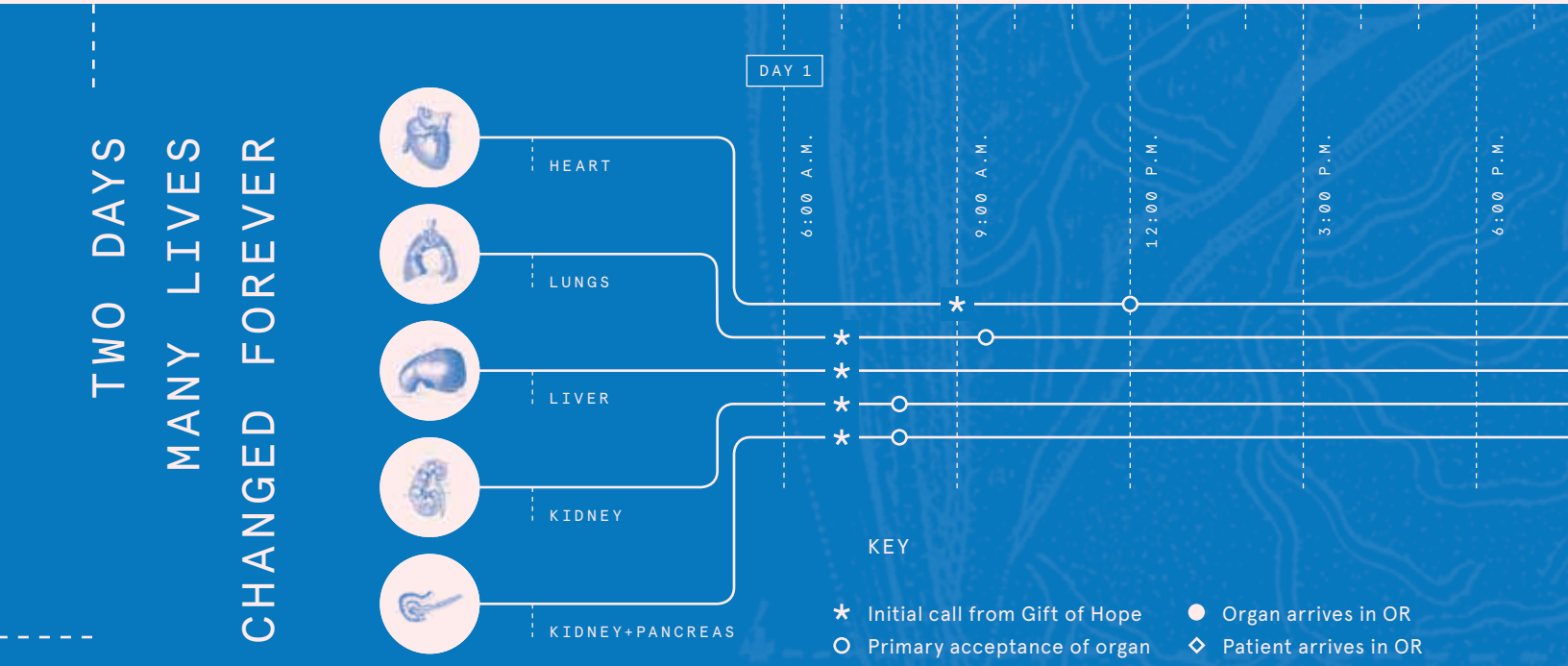
"You start with this limp, white lung. Then when you start to pass blood through it, it pinks up right away and it is one of the most beautiful things in medicine," Dr. DeCamp says.

In multi-organ transplant, the heart is always harvested first, and the team with Chris Malaisrie, MD, associate professor of Surgery in the Division of Cardiac Surgery, was the first to save a life. "It was 3 in the morning, but we were all standing there feeling really ecstatic when the heart rate monitor sounded a regular rhythm. We've done this so many times, and every time is so exhilarating."

SUCCESSIVE SUCCESS

Leveraging close proximity and expertise, pediatric patients at Lurie Children's Hospital and adults at NMH benefit from the Northwestern University Affiliated Transplant Centers (NUATC) program. The program enables Northwestern physicians to provide transplant care for pediatric patients, life-long follow-up and cooperative research between the institutions.

Unlike the heart and lungs, abdominal organs have a longer "shelf life" with preservation before transplant. To take advantage of both available kidneys, Dr. Caicedo did back-to-back procedures. He transplanted one kidney in a patient at Lurie Children's Hospital, crossed the second-floor bridge linking to NMH and immediately prepped to transplant the pancreas and second kidney.



Kim Ostrander, an RN on the abdominal transplant team, was one of several nurses who circulated between NMH's OR and families in the waiting room to update them every two hours.

"It was a great feeling to help a patient who was dying from organ failure. I feel like this every time I help with a transplant," Ostrander says.

When all the transplants were completed, nearly everyone had been working for 20-plus hours straight. Tired, yet elated that five patients had a new lease on life, the teams called it a day. For the morning shift just arriving, the day was beginning and the ORs were ready.

> "It was a great feeling to help a patient who was dying from organ failure. I feel like this every time I help with a transplant."
>
> KIM OSTRANDER, RN

PRODUCTIVE NIGHTS

Most transplants take place at night into early morning during unpredictable times. Transplant experts accept this lifestyle because this mission is so important to them and they want to perform innovative treatments.

"Other medical professionals may not exactly envy our schedules, but there is nothing cooler in medicine than unclamping an organ, restoring blood flow and watching it come back to life knowing what this means for your patient," says Anton Skaro, MD, PhD, associate professor of Surgery, who gave software developer Willy Jin a new liver.

Jin, 42, remembers when transplant coordinator Aly Yoder, RN, called him the night of his wedding anniversary to tell him a healthy liver was available. "Then it all came together at once, so quickly. I was very emotional at the time. I know that there were a lot of people involved, even if I did not meet all of them."

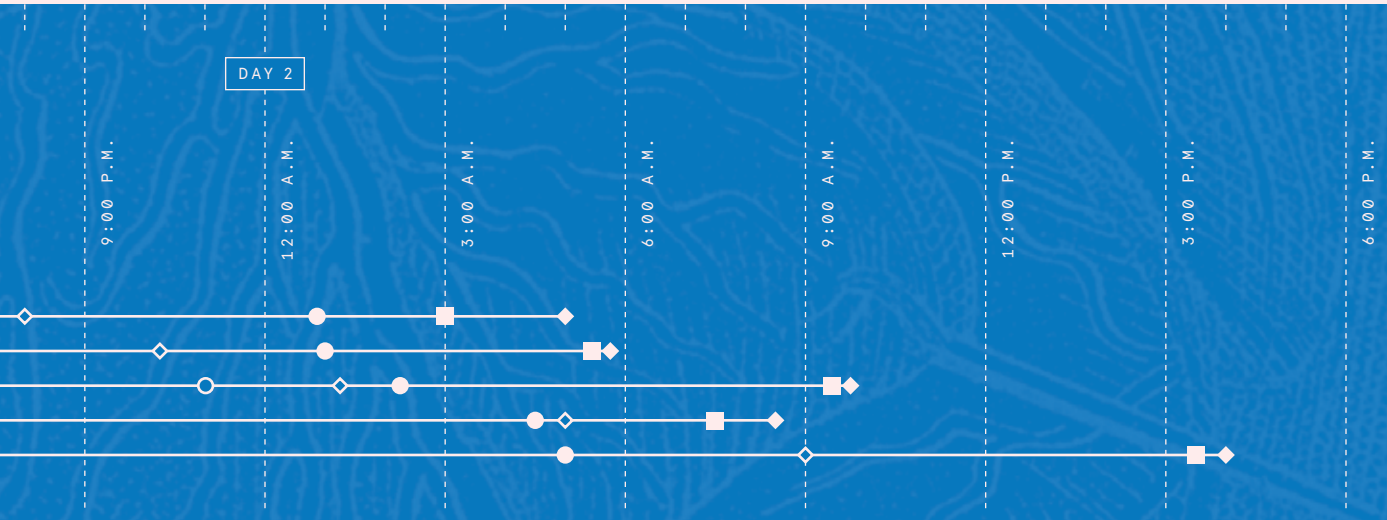
Well into post-op, Jin feels his energy coming back and he is healing very well. "Everybody says, 'I hope you are feeling better,' and that is very encouraging." Immediately after the procedure, he met another organ recipient recovering post-op, and they remain in touch.

By UNOS standards, pulling off five simultaneous transplants is extraordinary. Last year, there were only 11 times when seven organs from the same donor were transplanted at one medical center.

Northwestern enhanced its capability to save lives when it started its Lung Transplantation Program on Independence Day 2014. Adding this program meant that multiple organs from the same donor would likely become available. Northwestern prepared by creating additional transplant teams.

Performing seven organ transplants on five people simultaneously is an example of why Northwestern ranks among the nation's top transplant programs, as measured by volumes and patient outcomes. In 2014, NUATC led the country in the number of living donor liver transplants. The same year, NUATC teams performed the most pancreas and living donor kidney transplants in Illinois. One-year patient and graft (organ) survival rates compare very favorably with national statistics.

"I think it says a lot about all of us that we do this on a regular basis," says Dr. Skaro, "and we love it."



ACCELERATING PROSTATE CANCER RESEARCH

WILLIAM CATALONA, MD

In the United States, about 17 percent of men will develop prostate cancer, and three percent of all men will die from it. To help answer the most pressing questions about a disease that affects so many, Northwestern Medicine scientists have received a five-year, $11 million grant from the National Institutes of Health National Cancer Institute (NCI) to lead a Specialized Program of Research Excellence (SPORE) in prostate cancer.

The SPORE comes with demanding requirements, notably completing four studies that span the full translational research spectrum during the funding period.

"The whole philosophy of a SPORE grant is that you have to take basic science from the research bench and move it to the patient's bedside in five years," says William Catalona,

Lurie Cancer Center Receives $11 Million National Cancer Institute Grant

WRITTEN BY: Nora Dunne

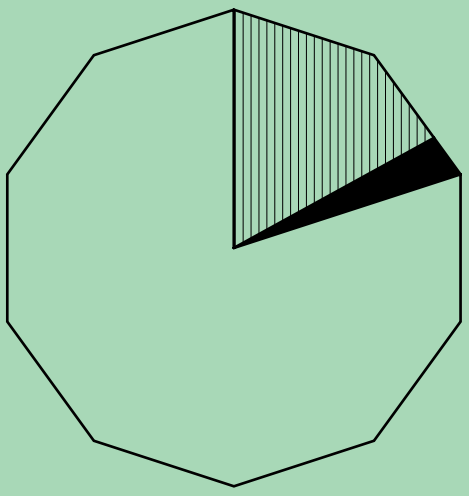


FIG. 1

17% OF ALL MEN WILL DEVELOP PROSTATE CANCER

3% OF ALL MEN WILL DIE FROM PROSTATE CANCER

MD, principal investigator of the program. "Many projects could never qualify because you won't see results in such an accelerated timeline. We're driven to apply this research to help patients as soon as we can."

The NCI supports SPOREs devoted to 18 different organs and systems across the body, from the brain to the lungs, breast, kidneys, skin and so on. The program is highly competitive: Northwestern has one of only eight prostate SPOREs in the country, and the only SPORE of any kind in Illinois.

Northwestern's program was first funded in 2001 and renewed in 2009. The brand-new grant represents an updated research agenda, with new collaborative projects that will be carried out by scientists and clinicians at the Robert H. Lurie Comprehensive Cancer Center of Northwestern University, the University of Chicago and NorthShore University HealthSystem.

IDENTIFYING HIGH-RISK DISEASE

The team's research focuses on two urgent issues in prostate cancer today. The first is differentiating between patients who have aggressive disease that requires immediate treatment and those who have milder disease that can be monitored with active surveillance, an approach involving regular tests to see if the cancer is growing to a point where it should be treated.

"A big controversy in the field is that there might be over-diagnosis and over-treatment of some patients who really don't need to be treated," says Dr. Catalona, who is also a professor of Urology at Feinberg. "But the problem with putting patients who appear to have low-risk prostate cancer on active surveillance is that up to 40 percent of them actually have areas of cancer that are much more aggressive than you think."

Previous studies show that patients whose aggressive prostate cancer is treated too late — usually with surgery or radiation therapy — are cured in just half of all cases, highlighting the need for a better way of identifying them in the first place.

In one of the SPORE projects, Dr. Catalona and collaborators from the University of California, San Francisco and NorthShore will study patients' germline genetic variants for differences in their inherited DNA. Using patient blood or saliva

samples, the scientists hope to determine the genetic factors correlated with failed active surveillance. Ideally, the project will help clinicians decide which patients need therapy right away.

"Knowing which variants can predict who is going to fail and who is going to succeed in active surveillance will also give us clues about the cell signaling pathways that are associated with the aggressive cancer," he says. "These pathways could be targets for new therapies."

DEVELOPING BETTER THERAPIES

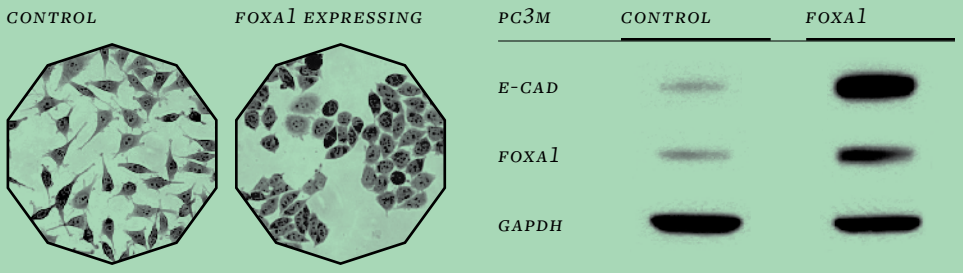
The second urgent need is better treatment options for patients whose prostate cancer persists against all available therapies. When active surveillance, surgery and radiation don't work, clinicians treat advanced-stage prostate cancer with hormonal therapy. This strategy isn't curative; it just slows the disease for a while. Cancer that has become resistant to hormonal therapy is called castrate-resistant prostate cancer — it's this disease that kills three percent of U.S. men.

"When hormonal drugs stop working, the only thing we have left is chemotherapy, which can prolong life just three or four months," explains Dr. Catalona. "Castrate-resistant prostate cancer is the second leading cancer killer after lung cancer. It's a major health problem. Our SPORE's other three projects are all focused on developing ways to reverse this using precision medicine approaches."

One project, led by Jindan Yu, MD, PhD, associate professor of Hematology/Oncology in the Department of Medicine, aims to block prostate cancer progression by restoring the function of a protein called FOXA1, which is decreased in castration-resistant prostate cancer. The gene that encodes this protein is mutated in up to 10 percent of patients with the cancer.

"We pinpointed two essential signaling pathways that are downstream of FOXA1, which may be targeted through a combination of therapeutic approaches," says Dr. Yu. "Our study will evaluate the efficacy of this drug combination in metastatic prostate cancer, with the ultimate goal to provide targeted therapy to patients with FOXA1 dysfunction."

FIG. 2



RESTORING THE PROTEIN FOXA1 MAY HELP TO STOP LIFE-THREATENING TUMOR METASTASIS IN ADVANCED PROSTATE CANCER.

> *"PROSTATE CANCER IS THE SECOND LEADING CANCER KILLER AFTER LUNG CANCER."*
>
> *— WILLIAM CATALONA, MD*

Sarki Abdulkadir, MD, PhD, John T. Grayhack, MD, Professor of Urological Research, leads the next project. He previously found that the development of some aggressive prostate cancers involves alterations in specific genes. With investigators at the University of Southern California, he identified that a protein called the EHPB4 receptor is important for this cancer cell growth and survival.

"We are using a novel inhibitor of EHPB4 as a drug to investigate treatment of therapy-resistant prostate cancer in animal models and in an early-stage clinical trial in humans," says Dr. Abdulkadir.

The final project, led by Suzanne Conzen, MD, and Russell Szmulewitz, MD, both from the University of Chicago's Comprehensive Cancer Center, will focus on the function of the body's stress hormone receptor, the glucocorticoid receptor. Past research has shown that prostate cancers express receptors that respond to androgens — male sex hormones such as testosterone — and stress hormones such as cortisol.

"We will examine whether targeting the pro-tumor effects of these two receptors simultaneously can improve tumor shrinkage compared to current treatment that primarily targets the androgen receptor," explains Dr. Conzen. "Collaboration between the University of Chicago and Northwestern will increase the breadth of expertise at the individual institutions so that we can make meaningful progress in advanced prostate cancer biology and treatment."

RESEARCH ACCOMPLISHMENTS

Under previous SPORE grant cycles, Northwestern investigators already took strides to improve the current state of prostate cancer.

"We built a repository of specimens containing thousands of tissue, blood and DNA samples from patients to share with researchers," says **Robin Leikin, '83 PhD,** scientific administrator of the grant. "We also developed a more accurate blood test to identify prostate cancer and educated more than 4,000 men about cancer risk at screening events."

In the next phase of research—and beyond—the team hopes to accomplish much more. Their model for prostate cancer could even extend to other diseases in the future.

"The prostate SPORE grant is an honor and a reflection of the strength of our programs in the Lurie Cancer Center," says Leonidas Platanias, MD, PhD, director of the center. "We are now working to develop other SPORE applications in brain tumors, leukemia and breast cancer." NM

Alumni President's Message

Dear Fellow Alumni:

"What do we do now?" Robert Redford's line in the last scene of his 1972 satirical comedy, "The Candidate," when he wins the U.S. presidential election is apt now not only because it's election season, but also because it's a key question for our Medical Alumni Association Board of Directors (MAAB) and all of us alumni. And the opportunities are exciting.

Dean Eric Neilson and his senior staff want more active involvement by alumni, and the MAAB is positioning itself to do just that. Dr. Jim Kelly, Board president-elect and chair of our Engagement Committee, is recruiting 40 additional alums to help achieve key objectives, including more representation from younger alumni and better geographic alignment with where our alums reside. In August, Jim Kelly, Rishi Reddy (chair, Mentoring), Jeff Sherman (chair, Strategic Initiatives), David Winchester (immediate past president) and I met with Dr. Alan Krensky (vice dean for Development and Alumni Relations), Larry Kuhn (assistant dean for Development) and ML Farrell (director, Alumni Relations) in Chicago to discuss the future trajectory of the Board and its central purpose: What does the medical school mean to alumni and what is our mission as MAAB members?

"Alumni pride," "increasing national and international recognition," "rapid upward trajectory," "better than when we attended," "top tier," "track record of successful alums" and "strong alumni support of students and scholarships" were central themes we discussed, which have also been evident in your survey responses. We alums take pride in the Feinberg School of Medicine's growth and accomplishments, and out of this discussion emerged the following mission statement:

"Northwestern University Feinberg School of Medicine has emerged nationally and internationally as a top-tier medical school with a strong upward trajectory. The purpose of its Medical Alumni Association Board of Directors is to foster among its members a spirit of loyalty, professional interaction, mentoring and philanthropy, including scholarship support, so as to help attract top talent and ensure the continued growth and success of the School as a leader in education, patient care and research."

Strong alumni pride and Feinberg's increasing leadership role of excellence in medical education and research are key ingredients for expanding alumni engagement. So now what do we do?

Engagement comes in "many flavors," including mentoring and fundraising. Global Health is a perfect example of what can be accomplished when alums align with strong Feinberg programs so as to spawn a whole greater than the sum of its parts. As alumni, we have a great deal to offer in addition to money; but our financial contributions are also critical. Indeed, it is the generosity of alums and other donors that has fueled the recruitment of top talent and the ascent of emerging top-tier schools such as the Feinberg School of Medicine.

In the adjacent box is a list of MAAB members. To contact them or the Alumni Relations group to find out how you can get involved, please send an email to medalum@northwestern.edu.

Sincerely,

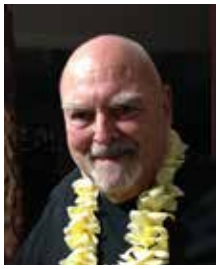
Bruce Scharschmidt, '70 MD (HPME)
Medical Alumni Association Board President

MAAB MEMBERS

Bhatnagar, Roshni	M2 ('18 MD)
Bonucci, Paul	'96 MD
Bournias, Thomas	'92 GME
Carr, F. Douglas	'78 MD
Culver, Austin	M4 ('16 MD)
Devine, Christopher	'92 MD
Devlin, Paul	'15 MD
Ghoshal, Nupur	'02 PhD, '03 MD
Gilligan, William	'62 MD
Gohari, Sharon	'04 MD
Harris, Elizabeth Spinuzza	'86 MD
Hightower, Carla	'87 MD, '91 GME
Hill, James "Jimmy"	'74 MD
Humes, Kerry	'90 MD
Huurman, Walter	'62 MD
Kelly, James P.	'73 MD, '07 MBA
Knoll, Brianna (Student Senate President)	M3 (MD'17)
Lawrence, Jeffry	MD'79
Lee, Gregory	'98, '02 MD
McVary, Kevin	'83 MD, '89 GME
Merkitch, Kenneth	'84 MD
Nanninga, John	'63 MD
Opel, Elise	'99 MD
Osterberg, Charles	'09 MD
Pitts, Thomas	'76 MD
Reddy, Rishindra	'00 MD
Rusk, Gray	'69 MD
Scharschmidt, Bruce	'70 MD
Schuele, Howard	'64 MD
Shaum, Melani	'80 MD
Sherman, Jeffrey	'84 GME
Sullivan, Timothy Jr.	'64 MD
Typlin, Bonnie	'74 MD
Venkatesh, Arjun	'08 MD/MBA
Winchester, David P.	'63 MD
Yang, George	'89 MD
Zucker, Mark	'81 MD (JD)

Progress Notes

'60s



Stuart L. Rusnak, '64 MD, retired from active practice in Dec. 2009. He was an allergist/clinical immunologist at Kapiolani Medical Center for Women and Children in Honolulu. He was also a clinical professor of pediatrics at the University of Hawaii and is still the medical director of a company on the mainland.

Alan T. Marty, '66 MD, and his wife, who is French, live part time in Paris but moved back to Chicago in November. He has retired from his practice of cardiac and vascular surgery. He has published approximately 600 articles in medical journals, along with having been on the editorial boards of *Chest* and *Critical Care Medicine* for several decades. Dr. Marty writes that he looks forward to attending Grand Rounds at Northwestern.

Robert Montgomery Craig, '67 MD, '72, '75 GME, writes: "Since I retired from medicine on Jan. 12, 2012, Joanne and I have moved to Lake Geneva, Wis. We are snowbirds for four months yearly in Naples, Fla. I spend my time reading, writing, playing tennis, playing bridge, visiting our three children and five grandchildren, and traveling. I published my first book, *The Good Life and other Philosophical Essays on Human Nature* (Tate Publishing, Sept. 2014). Two additional essays are in press 'Diet, Nutrition, and Obesity, and Governmental Involvement,' (*J. Clin Gastroent*), and 'Bias, Prejudice, and Racism,' (Chicago Literary Society). I have submitted other single essays, which will be incorporated in my second book. I have had limited success in publishing my poetry, but I have not given up. I continue to review manuscripts for journals but no longer continue medical practice. Joanne and I remain in good health."

'70s

Scott Aksman, '71 MD, writes: "I retired from a clinical ophthalmology practice a year and a half ago. I have been using my time to travel and reconnect with friends. I married Donna while in medical school, and we are approaching 48 years together. Here's a photo of (from left) Donna, me, classmate Steve Greenberg and his wife, Rea, taken at Acadia National Park in August."

Steve Greenberg, '71 MD, writes: "I had retired for a year but came out of retirement this past July due to a combination of my missing the clinical work and the dire lack of psychiatrists practicing in western Massachusetts. I now work three days a week at a mental health clinic and schedule three to four months of vacation during the year. My wife, Rea, is a psychiatric social worker with an outpatient practice. Our daughter Alissa has a PhD in developmental psychology and is clinical director of an autism clinic in Oakland, Calif.

"I also entered the realm of professional photography and have had two shows of my Maine images, taken over the past 10 years around our second home in Downeast Maine."

James E. Bourdeau, '73 MD, '74 GME, retired from Nephrology Specialists of Oklahoma and as medical director of the Kidney Transplant Program at Saint Francis Hospital in Tulsa, Okla., on May 1. He is now practicing as a *locum tenens* nephrologist and serving on the nephrology test writing committee for the American Board of Internal Medicine. His wife, Teri, has recently been named a member of the executive management team of PracticeWise, and they have relocated to Satellite Beach, Fla.

Bohdan Wasiljew, '76 MD, '81 GME, is a surgeon, recently retired from direct patient care. In September, he started teaching medical students part time at the Feinberg School of Medicine.

Mark Nolan Hill, '77 MD, former chairman, commissioner, and citizen advisor of the Natural Resources Commission for over 30 years, was chosen to address the Great Lakes and St. Lawrence Cities Initiative (GLSLCI) Annual Meeting on behalf of the city of Highland Park, Ill., on June 19, in Sarnia-Lambton, Ontario. The GLSLCI recognized Highland Park's 2013 Water Conservation and Efficiency Initiative; Highland Park also received the Wege Small Cities Sustainability Best Practices Award. This was the first time Highland Park was ever invited to formally address the GLSLCI and the first time any Illinois city has ever received this award.

The GLSLCI is a U.S./Canadian coalition of 114 mayors, founded by former Mayor Richard M. Daley in 2003, which works with federal, state and provincial governments to advance the protection and restoration of the Great Lakes and St. Lawrence River Basin.

The Wege Award recognizes and rewards cities in the U.S. and Canada (less than 100,000 population) with practices that protect and improve economic vitality, social equity, and environmental stewardship for the world's largest source of surface freshwater. The prestigious award is accompanied with a generous monetary stipend. (*More information online.)*

Moses Rodriguez, '77 MD, writes: "After 34 years of practice, I am retiring from the clinical care of multiple sclerosis patients at the Mayo Clinic. This will allow me to concentrate on my research efforts as emeritus professor of neurosciences and immunology at the Mayo Medical School. I remain very active in music, playing my trombone in various ensembles around Rochester, Minn. This includes Trombones Anonymous, a group I helped organize almost 30 years ago, which includes 10 to 12 trombonists for whom I write and arrange most of the music."

'80s

Alicia (Brooks) Christy, '81 MD, a reproductive endocrinologist in the Contraception Discovery and Development Branch at the National Institutes of Health and medical officer for the Contraceptive Trial Network, recently became co-editor of a new journal, *Contraception and Reproductive Medicine*. A launch is planned in January. Dr. Christy writes: "We welcome submissions in the subject area."

Bert Liang, '88 MD, PhD, MBA, CEO of Pfenex Inc., was recently elected as the chairman of the board of directors of the Biosimilars Council, a division of the Generics Pharmaceutical Association representing the biosimilars industry. In addition, Pfenex Inc. was recently awarded a contract from the Department of Health and Human Services of up to $143.5 million for the clinical development of the next generation anthrax vaccine.

'90s

Sonja Boone, '90 MD, a faculty member in the Department of Medicine, has been chosen as chief medical officer for Alegis Care, a subsidiary of Cigna HealthSpring, specializing in the care of homebound, chronically ill patients. Over the past 21 years, she has worked as a physician for the Rush Center for Women's Medicine, as medical director for the Women's Center at Edward Hospital in Naperville, as Northwestern Memorial Hospital's (NMH) Director of Diversity & Medical Director of Physician Recruitment, and as director of Physician Health and Healthcare Disparities at the American Medical Association in Chicago. Most recently, she was senior director of community-based practices for the University of Illinois Hospital and Health Sciences System, charged with enhancing community engagement, managing the strategic growth of 13 Federally Qualified Health Centers (FQHC) and participating in research to eliminate healthcare disparities. In addition to these duties, she also served as interim chief operating officer. *(More information online.)*

Ernani Sadural, '92 MD, of Teaneck, N.J., an obstetrician and gynecologist, was appointed director of global health at Barnabas Health. Sadural will

MOSES RODRIGUEZ (LEFT) FOUNDED TROMBONES ANONYMOUS, A GROUP FOR LOVERS OF TROMBONE LIKE HIMSELF.

coordinate the system's widespread national and international humanitarian outreach and help to assess future initiatives. He maintains a private practice at Regional Women's Health Group.

Erik K. Alexander, '97 MD, was appointed chief of the Thyroid Section, Brigham and Women's Hospital, Harvard Medical School, in Boston.

Anita Bhandiwad, '98 MD, and husband Karthik Ramaswamy, MD, celebrated the birth of daughter Ellora in May. Dr. Bhandiwad is assistant professor of medicine-cardiology at Washington University School of Medicine in St. Louis.

Christopher Rehm, '98 MD, vice president of medical informatics at LifePoint Health, was promoted to chief medical informatics officer.

'00s

Marc Levsky, '00 MD, was selected vice chair of the board of directors of The Mutual Risk Retention Group, Inc., a medical malpractice insurer rated "A" by A.M. Best. He practices emergency medicine in the San Francisco Bay Area.

Ashvin Sangoram, PhD, '02 MD, completed a pediatric residency at Massachusetts General Hospital in 2005. It was in Boston that he met his wife, Cynthia. They later moved to Palo Alto to begin their careers (she as a pediatric nephrologist and Ashvin as a fellow in neonatology, both at Lucile Packard Children's Hospital at Stanford). He stayed on as an instructor in the School of Medicine for one more year, completing research in developmental neurobiology and practicing neonatology at El Camino Hospital in Mountain View.

Dr. Sangoram writes, "Completing fellowship training during a time of limited NIH funding forced me to rethink how to use my neuroscience PhD. Realizing it would be more fun to use my expertise in a way that didn't involve constantly seeking outside funding, I approached the Stanford men's golf coach Conrad Ray with an idea for bringing applied neuroscience to the training of his high-performance athletes. For two years I served as a volunteer assistant coach, bringing my data-driven approach to the team's practice habits. Working with such phenoms as Patrick Rodgers and Cameron Wilson, I gained an appreciation for the immense skill of these athletes."

His clinical interests led Dr. Sangoram to join The Permanente Medical Group, where he practices neonatology in a level three NICU in the new Kaiser San Leandro Hospital. He and his wife recently celebrated 10 years of marriage and have two children, Naya (8) and Nikash (4). *(More information online.)*

Jordan Dubow, '03 MD, '07 GME, vice president of medical affairs at Cynapsus Therapeutics, was appointed chief medical officer and vice president of clinical and medical affairs at Marathon Pharmaceuticals, LLC.

Saravanan Krishnamoorthy, '03 MD, and fellow alum Shaunak Rana, '04 MD, created a startup, Radiant Systems, to automate healthcare provider credentialing. Dr. Krishnamoorthy writes, "Partner with us as a beta site to develop the product in an agile manner! Please contact us at vankmd@gmail.com or 917-832-1775."

Seth B. Krantz, '06 MD, '13 GME, completed a thoracic surgery fellowship at Washington University School of Medicine in St. Louis in June 2015. He moved back to Wilmette with his wife, Stephanie Linn, a tax consultant at Deloitte, and their son. Dr. Krantz joined the Division of Thoracic Surgery, Department of Surgery, at NorthShore University HealthSystem as an attending thoracic surgeon in August. He focuses on benign and malignant disease of the lung, esophagus, mediastinum, trachea and chest wall.

Samara Taher, '06 MD, married Ajay David in August. She works as a family physician and recently became a master's degree candidate of Bioethics and Health Policy at Loyola University Neiswanger Institute for Bioethics.

Bonnie Hoel Stabrawa, '08 MD, and her husband Timothy, of Lombard, Ill., are the proud parents of Audrey Elyse, born Jan. 19, and Kyle.

E. Charles Osterberg, '09 MD, recently completed his urology residency in New York City at New York Presbyterian Hospital - Weill Cornell Medical College. In July, Dr. Osterberg started a Genitourinary Trauma and Reconstruction Fellowship at the University of

California at San Francisco. He recently won the Annual Chief Resident Debate at the American Urological Association's national meeting. He also serves on the Alumni Board and enjoys reconnecting with young alumni.

'10s

Erika Reid, '11 MD, '11 MA, finished her residency at the University of Pennsylvania and is a dermatologist at Dermatology Specialists, in Minnesota.

GME

Franklin B. Saksena, MD, '65, '67, '68 GME, recently had two cardiology books published: *Patient Studies in Valvular, Congenital and Rarer Forms of Cardiovascular Disease: An Integrative Approach*, (Wiley, May 2015)—a study of 65 patients with an additional 24 on the web site; and *The Art and Science of Cardiac Physical Examination - With Heart Sounds, Jugular and Precordial Pulsations on CD - Includes 12-Lead ECG interpretation*, Ranganathan N., Sivaciyan V., Saksena F. (Jaypee Brothers Medical Publishers, 2nd edition, August 2015).

Michael Roy Treister, '68 MD, '71 GME, FAAOS, FACS, FICS, completed his orthopaedic surgery residency and hand surgery fellowship in December 1971. After 40 years, he sold his private practice in Chicago and retired on June 30, 2014. Dr. Treister writes, "I now have a small business office trying to wrap up past due collections and doing some part-time medical-legal workers' compensation and personal injury review work. My wife, Dana, and I have been traveling more than in the past and spending more time at our vacation home in the Indiana Dunes. Shortly after my retirement, I joined the Ridgeville Concert Band of Evanston and have been busy playing the flute, with frequent rehearsals and performances. I have also had time to do a number of solo concerts — mostly flute music from the Baroque period — that I have been studying for the past several years. I play golf and tennis, enjoy my children and grandchildren, and so on. I remain a trustee of the Chicago Medical Society and am active in medical politics at the local and state levels."

Denise DeFrias, MD, '76 GME, retired in June from Northwestern Memorial Hospital (NMH) and Northwestern University after 41 years of distinguished service in the departments of Pathology and Obstetrics and Gynecology.

She joined the Department of Pathology in 1974 as a senior resident. She stayed for an additional year as a fellow before joining the faculty as an assistant professor in pathology and then in obstetrics and gynecology in 1976. Dr. DeFrias rose through the ranks to tenured full professor by 1994. While highly accomplished in all areas of anatomic pathology, her passion was in the area of cytopathology. She established the Division of Cytopathology at NMH when it was still a relatively new subspecialty. Through her leadership and outstanding diagnostic abilities, she quickly established its utility and importance in patient management. *(More information online.)*

Jerome Kolavo, MD, '89 GME, of Warrenville, Ill., an orthopaedic surgeon, "returned home" with the merger of Cadence Health and Northwestern Memorial HealthCare in 2014.

Guiseppe Del Priore, MD, '91 GME, national director of gynecologic oncology and Southeastern regional director at Cancer Treatment Centers of America, was appointed to the medical advisory board at Tyme, Inc.

Robert O. Wright, MD, '92 GME, vice chair of the Department of Preventive Medicine and director of the Division of Environmental Health at Mount Sinai Hospital in New York, was promoted to chair of the Department of Preventive Medicine at the Icahn School of Medicine.

David Mathison, MD, '06 GME, assistant professor of pediatrics and emergency medicine at George Washington University School of Medicine and Health Sciences and faculty member in the emergency department at Children's National, was appointed Mid-Atlantic regional medical director at PM Pediatrics.

Brooke Vanderby, MD, '13, '14 GME, a board-certified anesthesiologist and pain management specialist, joined the physician team at the Illinois Bone & Joint Institute.

Brian Weatherford, MD, '13 GME, an orthopaedic surgeon, joined the Illinois Bone & Joint Institute.

Brian Clay, MD, '14 GME, a physiatrist and interventional pain management specialist, joined the physician team at the Illinois Bone & Joint Institute.

DDS

Jay Aldous, '59 DDS, '61 MA/MS, of Salt Lake City, retired as professor emeritus after 49 years at the University of Utah School of Medicine, where he directed the dental residency program.

Charles J. Maseredjian Jr., '66 DDS, of Burbank, Calif., is coordinating the 50-year reunion celebration for the Northwestern University Dental School Class of 1966, which will be held April 22-24, 2016, in Chicago. For more information, e-mail cgoldcrown@sbcglobal.net.

Robert S. Dolgow, '74 DDS, of Boca Raton, Fla., welcomed a granddaughter, Orli Tova Belleli, in March.

CERT

Scott Jameson, '05 CERT (PROS), director at West Texas Rehabilitation Center, was promoted to chief operating officer.

Progress Notes Awards and Honors

'50s

Kenrad E. Nelson, '58 MD, is professor of epidemiology, international health and medicine at Johns Hopkins Medical Institutions in Baltimore, a position he has held since 1986. His research is focused on HIV/AIDS among high-risk populations in the U.S., and he also has worked on research projects in HIV, Hepatitis C, B and E, STDs, tropical medicine, leprosy, nosocomial infections, infections in drug users, tuberculosis and other infectious diseases in Thailand, China, Taiwan, Bangladesh and the Republic of Georgia.

In 2006, Dr. Nelson was elected president of the American Epidemiological Society. That year, the American Association for the Advancement of Science also elected him a fellow in the Section on Medical Sciences, an honor bestowed upon AAAS members by their peers. Dr. Nelson was recognized for his unique contributions to the understanding of the epidemiology of virus-induced disease, particularly hepatitis and AIDS in Thailand.

In addition, he received a Recognition Medal from the U.S. Civilian Research and Development Foundation for his collaboration with scientists from the Republic of Georgia. The foundation, a nonprofit organization authorized by the U.S. Congress and established by the National Science Foundation, promotes international scientific and technical collaboration, primarily between the United States and Eurasia (former Soviet Union countries), through grants, technical resources and training. *(More information online.)*

'70s

Jason Chao, '79 MD, MS, was part of MedU's Family Medicine Computer-Assisted Simulations for Educating Students (fmCASES) team that received the prestigious Society of Teachers of Family Medicine (STFM) Innovative Program Award at the spring conference in Orlando, Fla. The award honors excellence in original programming that benefits family medicine residents, students or faculty. (Dr. Chao is pictured second from right.)

'80s

Wendy Eberhardt, '81 MD, received the 2014 Sidney R. Garfield Exceptional Contribution Award for research, teaching and leadership from Kaiser Permanente. The award is named for Sidney R. Garfield, MD, the physician founder of Kaiser Permanente. The Exceptional Contribution Award recognizes The Permanente Medical Group (TPMG) physicians who exemplify Dr. Garfield's innovative nature. These physicians developed systems and programs that have a significant impact on patients, colleagues and the broader community.

Andrew Lazar, '82 MD, '87 GME, addressed members of the Congressional Skin Cancer Caucus at the U.S. Capitol in June about skin cancer prevention, early detection and treatment on behalf of the American Academy of Dermatology. He then led a three-hour skin cancer screening for congressional members and their staff.

Stephen Kates, '84 MD, '86 GME, has been selected to serve as chair of the Department of Orthopaedic Surgery at Virginia Commonwealth University, following a national search. He began his tenure in November.

Earlier this year, Dr. Kates and his research partners won the 2015 Clinical Orthopaedics and Related Research/ Orthopaedic Research Society Richard Brand Award for the most outstanding clinical orthopaedic research paper, "A multiplex assay of host immunity against *Staph aureus* for Osteomyelitis patients." In addition, he serves as the national leader of the NSQIP/AAOS/OTA national-focused registry on hip fractures and is an internationally recognized thought leader in geriatric fracture care. Dr. Kates developed the Geriatric Fracture Center Model of Care, which has been emulated by many hospitals in the U.S., UK, Europe, Latin America and Asia. *(More information online.)*

Michael Kuettel, '86 MD, PhD, MBA, chair of radiation medicine at Roswell Park Cancer Institute, was elected Health Policy Council vice chair for the American Society for Radiation Oncology.

'00s

Neysa McDonald, '04 MD, '04 MPH, was selected for *Connecticut Magazine*'s "Top Docs 2015 Guide" for pediatrics.

GME

Amit T. Darnule, MD, '08 GME, a spine pain anesthesiologist with Spine Team Texas, was named to MSP Communications' 2015 list of Rising Stars™ Super Doctors.

PHYSICIAN BURNOUT

One Doctor's Journey to Recovery

Tom Murphy, '00 MD

Time was baffling. It seemed like just yesterday, I sat in a posh auditorium in Chicago as an enthusiastic young adult during my first day of medical school orientation at Northwestern in 1995. Eighteen years later I was a 43-year-old burned-out physician, practicing in Boise, Idaho, doing Google searches on the most effective way to end my life. During my time of maximum burnout, I observed that I was becoming the type of physician that I never wanted to be: impatient and sarcastic, occasionally dismissive of my patients. I made caustic jokes about some patients in the lunchroom. I was not happy.

As I learned about the problem of physician burnout, I came to recognize I was not alone. While researching the topic for a book, I realized physician burnout is not some psychological abnormality to be embarrassed to speak about in public — quite the contrary. For example, survey results in the past five years show 87 percent of American physicians experience burnout symptoms. On the extreme spectrum, according to the American Foundation for Suicide Prevention, female physicians have a successful suicide rate of 250 to 400 percent higher than their counterparts in the general population.

Something very alarming is going on in the American health-care system today. Increasing time constraints, burgeoning bureaucracy, increased patient expectations, and technological advances have made the challenging, stressful profession of medicine even more so. In fact, given the current demands, I have realized burnout is an almost inevitable response. Something needs to be done about it.

Burnout impacts not only physicians and their family but also their patients. Patients suffer because a disabled doctor can't deliver the best care. Sure he can go through the motions, can prescribe the appropriate meds, but that's all he does. And patients intuitively sense his lack of commitment. A magical placebo effect occurs between an engaged doctor and a sick patient. "Hands on" was how the profession referred to this phenomenon. The physical touch of a committed physician was thought to promote healing, to give the patient confidence in his care. Maybe this practice strikes us as a little hokey today, but the general principle still holds true.

Patients need to believe in their doctor. An empathetic touch can make all the difference and also be the key to medical success. Danielle Ofri exemplifies this point in her book, *What Doctor's Feel*, when she notes that the rate of severe diabetic complications in patients of doctors who rate high on a standard empathy scale is a remarkable 40 percent better than those cared for by physicians with low empathy scores. Ofri observes that this difference is comparable "to the benefits seen with the most intensive medical therapy." The tragedy of burnout is that it effaces genuine empathy, spirituality and commitment. Nietze put it best: "Physician, heal thyself: then wilt thou also heal thy patient."

At some point in almost every physician's career, there has been a powerful desire to help others. When suffering burnout, many of us become so disillusioned by our failure to achieve these aspirations that our passion is replaced by a strong contempt for the profession we chose and once loved. My goal is to reignite that flame for others, as I have been able to do for myself, and give physicians a chance to rediscover a sense of joy, pleasure and fulfillment from this noble profession.

Dr. Tom Murphy recently published a book: *Physician Burnout: A Guide to Recognition and Recovery*. His website is also dedicated to the issue: tommurphymd.com.

Alumnus Develops Innovative Procedure for Congenital Heart Disease

By Sarah Plumridge

In medical school, Alexander Javois, '88 MD, loved reading EKGs. This attraction led him to a career in pediatric cardiology and to become an expert on the use of catheterization techniques to treat congenital heart diseases.

Currently a pediatric interventional cardiologist at Advocate Children's Hospital at Christ Medical Center in Oak Lawn, Ill., Dr. Javois remembers spending his spare time on Saturday mornings at Feinberg reading EKGs, which he then would hand off to cardiologists to mark up and show him his mistakes.

"I found it fascinating to be able to look at 10 seconds of heart rhythms and have the EKG tell so much about the health of a patient," he explains.

Later, during his pediatric rotation, Dr. Javois decided to pursue a career in pediatric cardiology.

"I was fascinated by the uniqueness of different types of birth defects of the heart that are seen in pediatric patients, rather than treating adult heart disease," he says.

Dr. Javois also found the idea of watching children grow up to fulfill a life after treatment rewarding, and over the course of his

career, he felt he could continually offer more options to children to make a healthier heart, many of them non-surgical.

When not in class or on rotations, Javois also enjoyed participating in intramural sports with the dentistry students and has fond memories of living in the on-campus dorms.

"I remember going to the end of my hallway in Abbott Hall and studying there with a $10 million view of Lake Michigan," he says.

After graduating with his medical degree from the Feinberg School of Medicine, Dr. Javois completed his residency in pediatrics at St. Louis Children's Hospital, which is affiliated with Washington University, and his fellowship in pediatric cardiology at Advocate Christ Hospital and Medical Center in Illinois.

CATHETERS INSTEAD OF SURGERY

As a pediatric interventional cardiologist, he treats birth defects of the heart by using catheters to insert an implant to prop open or seal vessels, which often eliminates the need for surgery.

In 2003, an Illinois couple came to Dr. Javois when they learned their son, Ian, had one of the most life-threatening heart birth defects, hypoplastic left heart syndrome (HLHS) with intact atrial septum. In HLHS, the left side of the heart is underdeveloped and can't effectively pump blood through the body, leaving the right side of the heart to do all of the work.

> "I found it fascinating to be able to look at 10 seconds of heart rhythms and have the EKG tell me so much about the health of a patient."

While babies are still in their mother's womb, they normally have an opening between the left and right sides of the heart that closes a few days after birth. Having HLHS with intact atrial septum meant that immediately after Ian was born, he would have no way of getting oxygen-rich blood to the rest of his body.

After reviewing the scientific literature on this defect, Dr. Javois began to develop a plan.

"People had addressed this issue without a lot of luck," he explains. "The usual treatment is to transfer babies with this defect to the NICU after being born and stabilize them before treating them. There is no way to stabilize a child who is dying, who can't get oxygenated blood to the body."

Dr. Javois thought, "Why not have Ian's mother deliver the baby in the catheter lab?" That approach would allow him to perform an atrial septostomy on Ian right away. In atrial septostomy a small hole is created between the upper two chambers of the heart.

To prepare for the procedure, Javois did extensive planning and enlisted the help of 38 people who would be in the room during the surgery, including anesthesiologists, nurses and technicians.

"We were all nervous up to the last moment, but we rehearsed so much that when the day came everything fell into place naturally," recalls Dr. Javois. "The nature of dealing with children with birth defects and critically ill children prepared us over the years to handle crises, and the team approached this case beautifully."

He attributes the success of Ian's outcome to being prepared, having great teamwork and the quick turnaround enabled by back-to-back procedures in the catheter lab.

"Ian looks like any other 12-year-old, and he is active in school and gym class. I have four daughters, and Ian is like the son I never had," says the physician who still sees the pre-teen for periodic check-ups.

Since then, Dr. Javois has performed the procedure 12 times and has continued to refine the process to make it more efficient. He and his team wrote a case study that was published in *Catheterization and Cardiovascular Interventions*, which led Dr. Javois to act as a consultant to other physicians from around the world to help them apply his approach to their own patients.

"It is very rewarding to know that other people have adopted it," he admits. "It is a lot of fun to hear their stories and their approach. That's the academic nature of our practice, to share ideas in literature and in life."

PHYSICAL THERAPY GLOBAL AMBASSADOR

BY BOB KRONEMYER

Since joining Health Volunteers Overseas (HVO) in 2006, Antoinette (Toni) Sander, PT, DPT, '87 MS, CLT-LANA, has literally traveled the world educating local therapists in best practices for physical therapy, then has worked side by side with those clinicians in a patient setting to reinforce the lecture material.

"The mission of HVO is to change global health through education," says Sander, whose three professional passions are physical therapy (PT), education and travel.

Her first jaunt was to Lima, Peru, where for two weeks she taught a course she developed on lumbar spine, hip and sacroiliac dysfunction. The intrepid traveler returned to Lima in 2007 for one week to present a series of lectures on rehabilitation for post-arthroscopic knee and shoulder surgery.

Most of Sander's excursions abroad have lasted two or three weeks, including trips to India, Haiti and Myanmar (formerly Burma). In late 2013 and early 2014, however, she spent six months in Rwanda, where she developed a 60-hour course in lumbar and cervical spine rehabilitation.

"It was gratifying to observe how the therapists changed from a generic diagnosis and treatment to assessing the patient from a functional perspective and then designing a treatment to fit a particular patient."

Sander visited Haiti twice, in 2011 and 2012, where she helped train rehabilitation technicians. "These were small groups of high school graduates who desired work in rehabilitation and ended up working at community hospitals and clinics," she says.

People seek PT for pain and movement difficulties that can be orthopaedically- or neurologically-based. For instance, because Rwanda is heavily agricultural, "we saw a lot of people with back pain and neck pain from working in the fields, as well as from riding motorcycles and walking and carrying heavy

BEING A HEALTH VOLUNTEER HAS TAKEN TONI SANDER AND HUSBAND BERNIE AROUND THE WORLD. HERE THEY ARE IN AKAGERA NATIONAL PARK IN RWANDA.

items," Sander recalls. Rwanda and other resource-poor countries, "also have many developmental disabilities in children that need care."

In addition, trauma is prevalent in most of these countries, due to motorcycle accidents or post-earthquake (Haiti) or post-genocide (Rwanda). "Although the genocide in Rwanda occurred 20 years ago, people there still have problems that keep them from moving," she explains. "Amputees are a very big population, not just in Rwanda but around the world."

Throughout all her travels with HVO, Sander has been well received by the local clinicians. "They are very appreciative, and in some cases question why I, as a volunteer, would come so far to teach them," she says. Likewise, local patients consider a foreign visitor "as a sort of a clinical expert, so patients are highly respectful and truly feel special if they are evaluated and treated by you."

Often, Sander does not speak the language of her foreign patients; hence, a translator is required. It is more probable that a foreign clinician will speak English.

Sander, an associate professor emerita in the Department of Physical Therapy and Human Movement Sciences at Feinberg, first became interested in PT in the early 1960s, while a junior at a small Catholic high school in Oklahoma.

"My mother introduced me to a woman physician who actually mentioned physical therapy," recalls Sander. "I had not really heard of physical therapy but began to explore the field over the next year, including visiting some local PT departments. Ultimately, I pursued a BS degree in physical therapy from St. Louis University."

Prior to 1984, the year Sander enrolled in the master's program in orthopaedic physical therapy at Northwestern, she worked mostly as a staff physical therapist at clinics in Missouri, New Jersey and the Chicago area. "Northwestern upgraded my skills and clinical thinking, plus bolstered my confidence in patient care," explains Sander, who returned to campus in 1994 as a contract lecturer in PT. She became a full-time assistant professor at Northwestern in 2001, followed by an associate professor in 2009.

Meanwhile, Sander received an online doctorate in physical therapy from Arizona School of Health Sciences in 2005.

She retired from Northwestern in 2011 but continued to teach a course in lymphedema and wound management that she helped develop until 2013. She continues to work with faculty in research and manuscript writing, primarily in the global health arena.

Over the decades, "technology has certainly changed," she says. "The faculty did not communicate by email at the beginning. But now our students have iPads and we have eliminated paper handouts." Pupils and faculty now have the Internet as a valuable resource. "All these technologic advances produce strong and committed therapists to serve their community."

Sander's PT clinical practice, which spanned three decades, focused on orthopaedic, oncology and lymphedema (limb swelling) management. Among her distinctions are a 2009 Oncology Section Student Research Award for exercise behaviors in breast cancer survivors, sponsored by the American Physical Therapy Association (APTA); and this past April, the Donna Frownfelter Community Achievement Award, from the Northwestern Alumni Association, for overseas and community service.

"TO DO OVERSEAS TRAVEL, YOU NEED A SPIRIT OF ADVENTURE AND A STRONG SENSE OF FLEXIBILITY AND ADAPTATION TO WHATEVER YOU FIND"

"To do overseas travel, you need a spirit of adventure and a strong sense of flexibility and adaptation to whatever you find," says Sander, who plans to continue traveling with HVO. "The rewards are that you are immersed in another culture. You can make lifelong friends. Also, you find that medical care, even in resource-limited countries, can be delivered with compassion and effectiveness."

Sander has been married to husband Bernie for 47 years. The couple has four children and nine grandchildren. "My family is also a big part of my life," she says.

In Memoriam

Donald Dean Barnes, '76 PT, of Clear Lake, Iowa, died Aug. 21, 2015.

Robert M. Barnett, '50 MD, of Plymouth, Minn., died Aug. 19, 2015.

Roy T. Bergman, '64 MD, '71, '71 GME, of Lansing, Mich., died Dec. 30, 2014.

Donald V. Bishop, '54 MD, of Carmichael, Calif., died Oct. 13, 2014.

Andrew F. Bott, '46 DDS, of Peoria, Ill., died Feb. 10, 2015.

Richard I. Breuer, '01 MPH, of Chicago, died May 24, 2015.

Dick A. J. Brown, '58 MD, of Needham, Mass., died May 19, 2015.

William E. Cherry, '59 DDS, of Sterling, Ill., died Feb. 23, 2013.

Jerry B. Christensen, '59 DDS, of Sun City, Ariz., died Jan. 26, 2015.

David E. Craddock, '88 DDS, of Kewanee, Ill., died May 25, 2013.

David G. Dodwell, MD, '88 GME, of Springfield, Ill., died June 7, 2015.

Russell R. Dohner, '53 MD, of Rushville, Ill., died Aug. 7, 2015.

Carlos A. Flores, '78 MD, of Tucson, Ariz., died Dec. 19, 2014.

Charles E. Foster, '52 DDS, of Salt Lake City, died Jan. 25, 2015.

Robert M. Gluckman, '45 MD, of Glenview, Ill., died Jan. 17, 2015.

Martyn A. Goldman, '53 MS, '54 MD, '58, '60 GME, of Louisville, Ky., died June 18, 2015.

Orville C. Green, III, '54 MD, (professor emeritus of pediatrics) of Evanston, Ill., died May 18, 2015.

Robert L. Gunderson, '44 MD, of Sugarloaf, Pa., died Feb. 28, 2015.

W. James Guthrie, '54 MD, of Douglassville, Pa., died June 22, 2015.

James Jesse Hansen, '67 MD, of Broadview Heights, Ohio, died June 3, 2015.

Roland V. Houck, '42 DDS, of Homosassa, Fla., died June 4, 2013.

L. Wayne Johnson, '48 MD, '52 GME, of St. Petersburg, Fla., died Aug. 19, 2015.

H. Royden Jones Jr., '62 MD, of Wellesley, Mass., died June 4, 2013.

Dieter Koch-Weser, '51 MS, of North Andover, Mass., died July 19, 2015.

Gene C. Laker, '58 MD, of Fort Wayne, Ind., died July 3, 2015.

Craig W. Larimer, '43 MD, of Colorado Springs, Colo., died May 20, 2015.

Donald C. Lemon, '37 DDS, of Longboat Key, Fla., died Jan. 2, 2015.

Robert E. Mead, '54 DDS, of Ridgefield, Conn., died March 14, 2015.

Albert Medwid, MD, '54 GME, of Santa Barbara, Calif., died May 22, 2015.

Markine Ostling, '48 CERT, of Vero Beach, Fla., died May 31, 2015.

Duane B. Reaney, '48 MD, of Yankton, S.D., died Dec. 22, 2013.

F. Blaine Rhobotham, '44 DDS, of Carlsbad, Calif., died Dec. 13, 2014.

Ernest T. Sarver Jr., '63 DDS, of Caldwell, Idaho, died Feb. 25, 2015.

Jack E. Slichenmyer, '56 MD, of Zionsville, Ind., died June 6, 2015.

Barbara J. Sullivan, '75 CERT, of Dahinda, Ill., died June 1, 2015.

H. Wayne Todd, '60 DDS, of Lake Mary, Fla., died Jan. 26, 2015.

Tat-Kin Tsang, '78 MD, '81 GME, of Skokie, Ill., died Aug. 8, 2015.

Don C. Turnbull, '53 MD, of Birmingham, Ala., died June 21, 2015.

Dale W. Vanden Brink, '53 MD, of Rancho Palos Verde, Calif., died July 26, 2015.

Charles E. Virgin, MD, '69, '70 GME, of Key Biscayne, Fla., died May 25, 2015.

Malcolm Winter Jr., '53 MD, of Miles City, Mont., died March 19, 2015.

Thomas Q. Winter, '67 MD, '68 GME, of Santa Rosa, Calif., died July 5, 2015.

Fredrick Wood Jr., '51 MD, of Kenosha, Wis., died May 4, 2015.

Guy A. Woods Jr., '45 DDS, of Portland, Ore., died Jan. 27, 2015.

Upcoming Events

JAN

JANUARY 11, 2016
Center for Behavioral Intervention Technologies (CBITs) Seminar: Madhu C. Reddy, PhD
Arthur Rubloff Building, 10th Floor,
Lake Shore Conference Room,
420 E. Superior Street, Chicago.
For more information, call 312-503-3128.

JANUARY 22, 2016
Resident Optics — Low Vision Optics & Magnification
645 N. Michigan Avenue, Ste. 440, Chicago.
For more information, call 312-908-8152.

FEB

FEBRUARY 12, 2016
Pediatric Pearls: Hematology
Double Tree by Hilton,
1909 Spring Road, Oak Brook.
For more information, call 312-227-7411.
5.50 *AMA PRA Category 1 Credits™* are being offered.

FEBRURY 13, 2016
3rd Annual Intramural Global Health Case Competition
Northwestern University, Harris Hall,
1881 Sheridan Road, Evanston.
For more information, call 847-467-5344.

FEBRUARY 17, 2016
Stem Cells and Ischemic Tissue Repair
Robert H. Lurie Medical Research Center,
Baldwin Auditorium,
303 E. Superior Street, Chicago.
For more information, call 312-503-2296.

FEBRUARY 23, 2016
Infectious Diseases Lecture: Prosthetic Joint Infections: Stephen M. Grohmann, MD
645 N. Michigan Avenue, Ste. 900, Chicago.
For more information, call 312-695-5090.

MORE EVENTS AT
MAGAZINE.NM.ORG

Galter Library Undergoes Makeover

The medical school will begin renovations next spring to physically transform the spaces of the Galter Health Sciences Library to meet the needs of the 21st century.

"Our library is integral to the dissemination of research and the comprehension of impact," said Donald M. Lloyd-Jones, MD, ScM, senior associate dean for clinical and translational research and chair of the Department of Preventive Medicine, who spoke at an October 14 presentation of the library's plans for the future.

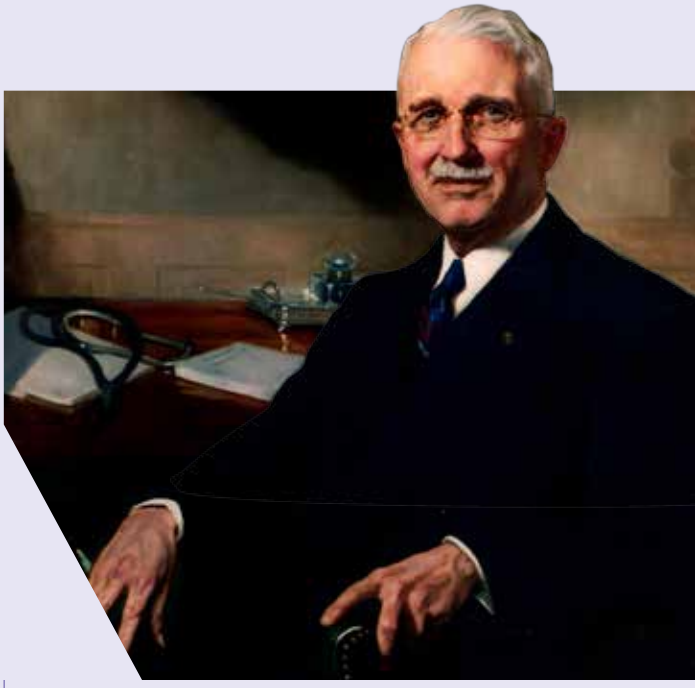
Architectural plans call for problem-based and team-based learning rooms, as well as 24-hour study spaces for students. Furniture selection will be based on feedback gleaned from a student survey and could include standing desks and semi-enclosed study pods. The historical reading room and Dollie's Corner, a welcoming space for reading or studying, will not be altered during the renovation.

Today with data being collected in every way possible, biomedical data and information has become critical to advancing research and education. Over the past year and a half, the Galter Library has adapted to the needs of its users by organizing its core service areas to focus on: digital systems and collections services; research and information services; and user services.

Feinberg Boosts NU Research Funding to Historic High

Northwestern's sponsored research awards grew to $620 million in fiscal year 2015 — the largest amount in the University's history. This record-breaking feat represents a 4 percent increase over last year's $593.9 million. Most rewarding for the medical school is that more than $400 million of that funding came from sponsored awards invested in principal investigators at Feinberg. Northwestern received a record of nearly $300 million from the National Institutes of Health.

"The scientists on our medical school faculty are at the forefront of their respective fields, and continued recognition of their groundbreaking work by a wide variety of funding agencies is another sign of our growing reputation as a preeminent university for innovative research and discovery," says Eric G. Neilson, MD, vice president for medical affairs and Lewis Landsberg Dean at Feinberg. "I have no doubt that as we expand our research enterprise and recruit talented leaders to our faculty funding will continue to increase."



Advancing Cardiac Care at the Turn of the Century

The first electrocardiograph in Chicago made it into the hands of Newell Clark Gilbert, a 1907 medical school alumnus. With it, he single-handedly built the first clinical department in the city at St. Luke's Hospital in the early part of the 20th century and introduced heart patients to their first EKG tests. The prominent cardiologist joined forces with like-minded physicians to discuss the creation of a heart association in Chicago. The early precursor of the Chicago Heart Association, the Association for the Prevention and Relief of Heart Disease was launched in May 1922. Active in professional societies and editor-in-chief of the *Archives of Internal Medicine*, Dr. Gilbert always remained loyal to the purple and white as a leader, teacher and mentor. Read more about this notable alumnus in the magazine's history blog at **magazine.nm.org**.

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