

Duke Med

ALUMNI NEWS

Spring 2018



MEDx: the intersection of medicine and engineering

DPT Program Celebrates 75th // DMAA Awards

MESSAGE FROM THE DEAN

DEAR FRIENDS,

The past year serving as your dean has been one of the most exciting and invigorating challenges of my life. Each day, I am reminded of the talent and passion of our faculty, the dedication of our staff, the energy of our students, and the commitment of our alumni and friends. As you experienced first-hand, Duke is a very special place.

I began my tenure as dean with two guiding principles: “One Duke” and “Service to Faculty.” Those guideposts have remained constant, and I can see how the School of Medicine community is embracing them.

“One Duke” leverages all the extraordinary aspects of Duke University and Duke Health to make an impact — the whole

clearly exceeding the sum of its parts.

And when we support and facilitate our faculty, they can excel and accomplish so much. Knowing this, we are focused on identifying the resources, mentors, and support they need to care for our patients, make discoveries, and educate our students.

Both of these guiding principles are at work in the new Translating Duke Health Initiative that was launched last fall by the School of Medicine, Duke Health, and other campus units. This new initiative was created to harness the expertise and knowledge found across Duke to address society’s most significant scientific and health care challenges. Faculty from multiple departments, centers, and institutes with different backgrounds and complementary areas of expertise come together to focus on shared goals:

- Preserving and restoring cardiovascular health
- Enhancing brain resilience and repair



- Ending disease where it begins
- Controlling the immune system
- Combating solid tumor brain metastases

Look for updates on progress as Translating Duke Health advances biomedical science in the weeks, months, and years to come.

In this issue of *DukeMed Alumni News*, you’ll read about MEDx, an initiative launched in 2015 to spur collaborative projects between the School of Medicine and Pratt School of Engineering. In a short period of time, the impact of MEDx has been inspiring: new research projects, new educational programs, and numerous funding opportunities for faculty.

You will also read about the 75th Anniversary of our Doctor of Physical Therapy Program (DPT). This program and all of our educational programs are points of pride for Duke. Housed within the School’s Department of Orthopaedic Surgery, DPT is ranked No. 10 in the country by *U.S. News & World Report*, and our DPT students boast a 100 percent pass rate on the national licensing examination for physical therapists.

Also in this issue you’ll find profiles of some of our brightest lights: the winners of the 2018 Medical Alumni Association alumni and faculty awards.

The future holds exciting opportunities, and the School of Medicine is well-positioned to continue to fulfill our mission of achieving excellence in delivering care to our patients, pursuing new research discoveries that have impact, and providing a world-class education to our students. As we move forward, I want to thank all of our alumni and friends for their support in the past and ask for your continued support as we pursue new and ambitious goals.

Sincerely,

**Mary E. Klotman, T’76, MD’80,
HS’80-’85**

Dean, Duke University School of Medicine,
Vice Chancellor for Health Affairs

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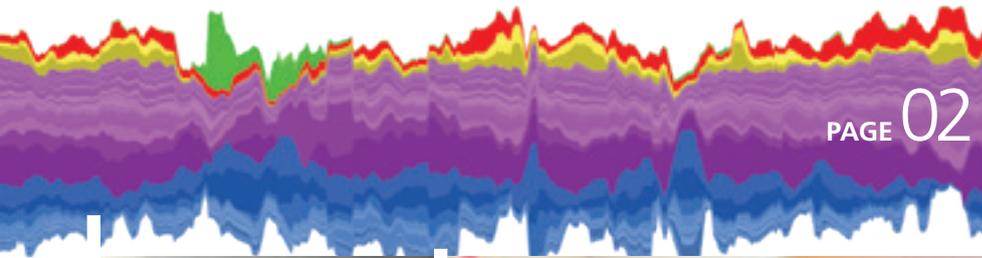
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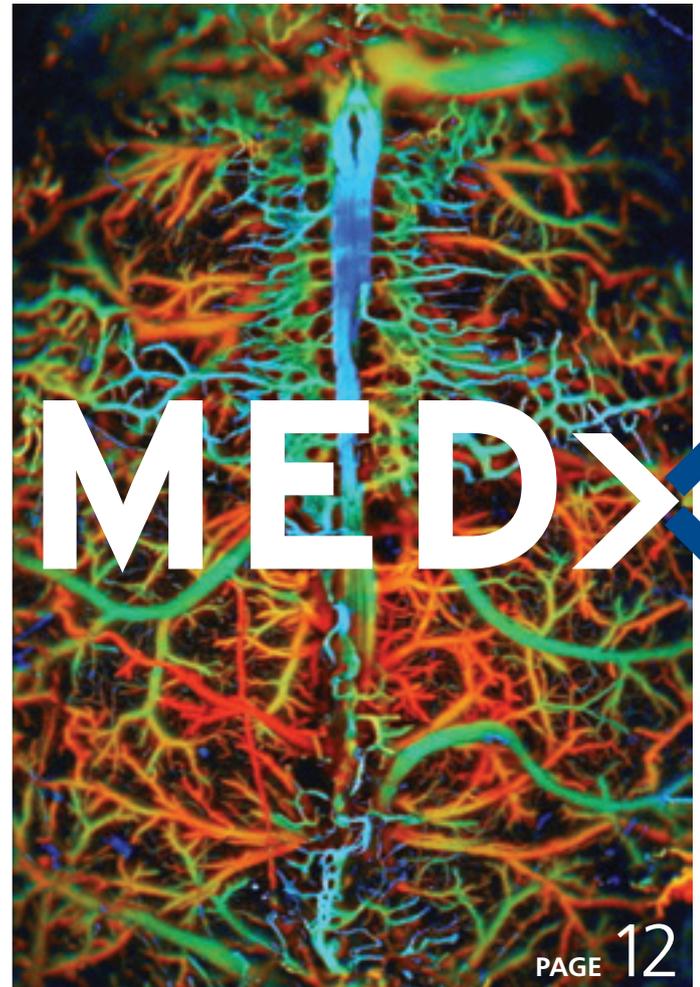
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Learn more about the new building today.duke.edu/2017/12/trustees-approve-new-nursing-building-graduate-degree-programs



Leaders turn over the first shovelful of dirt at the ceremonial groundbreaking for the new building on March 27.

NEW BUILDING WILL HOUSE DPT, ORTHOPAEDIC SURGERY, NURSING

Construction has begun on a new building that will house the School of Medicine’s Doctor of Physical Therapy program, the Department of Orthopaedic Surgery, and the School of Nursing.

Groundbreaking for the 102,000-square-foot facility was held in March, and the project is scheduled for completion in the fall of 2019. It will connect to the School of Nursing’s Christine Siegler Pearson Building on Trent Drive.

The five-story building will replace the one-story, 14,000-square-foot Elizabeth C. Clipp Research Building.

In addition to serving as the new home for Duke’s Doctor of Physical Therapy program, the new building will also house administration and Graduate Medical Education offices for the Department of Orthopaedic Surgery.

The School of Nursing will occupy 50 percent of the new building, which will be home to the school’s PhD program, Center for Nursing Research, Office of Diversity and Inclusion, simulation suite, and more.

 The Physical Therapy program is celebrating its 75th anniversary, see the story on Page 22.



JARED LAZARUS

DUKE LAUNCHES MICROBIOME CENTER

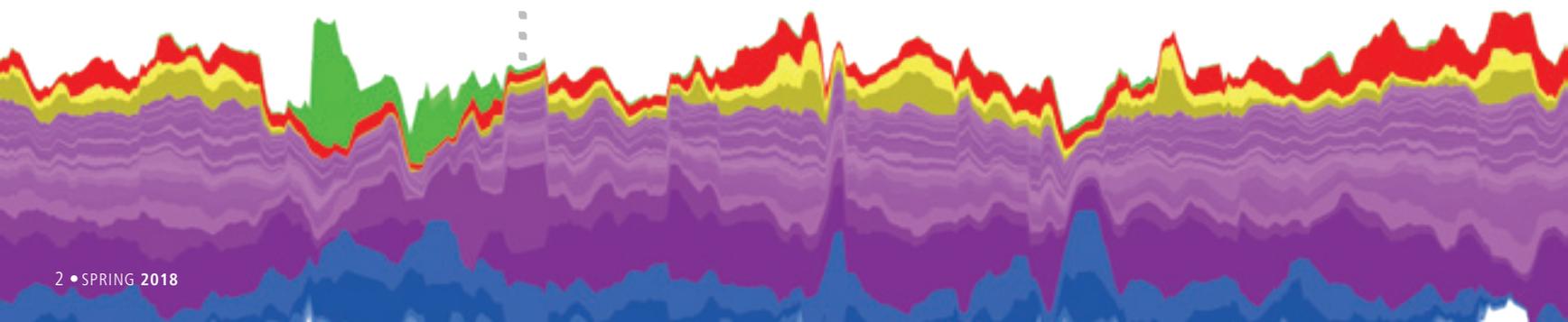
Microbial science at Duke is taking a major step forward with the launch of the Duke Microbiome Center (DMC), which is intended to address growing scientific interest in the roles microbial communities play in human health, the environment and biotechnology.

The new center expands on the mission of the five-year-old Duke Center for Genomics of Microbial Systems by going beyond genomic analysis of microorganisms. John Rawls, PhD,

director of the new center and an associate professor of molecular genetics and microbiology, said the center is a response to the growing scientific attention being paid to the microbial world and the growth of microbiome science at Duke.

Associate directors of the new center will be Lawrence David, PhD; Claudia Gunsch, PhD; and **Anthony Sung, MD, HS’11-’14.**

BELOW, an image from Lawrence David’s lab shows populations of different gut microbes changing over time.



SOM RESEARCHERS AMONG MOST-CITED

Duke researchers constitute 1 percent of the top 1 percent of most-cited scientists in the 2017 listing from *Clarivate Analytics*, and most of the Duke scientists listed are affiliated with the School of Medicine.

Thirty-four Duke scientists appear on a list of 3,400 science and social sciences researchers whose publications are most frequently cited in other published papers. The list compiles the top 1 percent of most-cited scientists for the years 2005 to 2015.

Of the 35 Duke names on the list, 21 are affiliated with the School of Medicine (one, Barton Haynes, MD, appears twice, because he is listed in two different categories, immunology and microbiology).

Within the School of Medicine, clinical medicine and psychiatry/psychology boast eight highly cited researchers apiece. Four are in microbiology and one each in immunology and pharmacology/toxicology.

Another 13 researchers on the list are affiliated with Duke-NUS, the medical school in Singapore.

You can see the entire list of Duke researchers at researchblog.duke.edu/2017/11/28/dukes-researchers-are-1-percent-of-the-top-1-percent

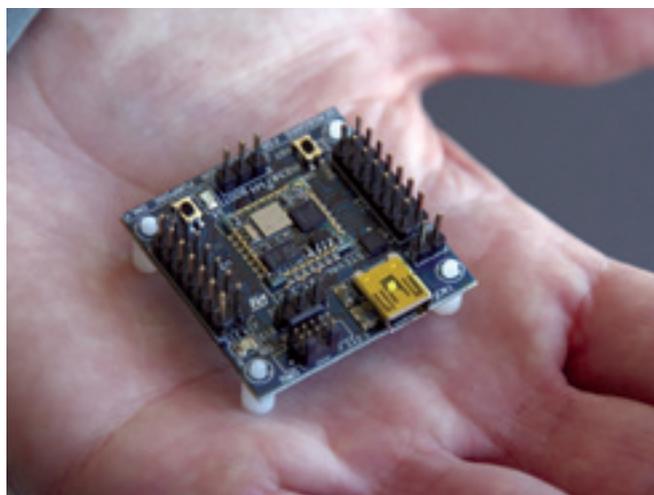
SAN FRANCISCO



TURNING DATA INTO ACTION TO IMPROVE HEALTH

On February 20, about 150 Duke alumni attended a talk in San Francisco hosted by A. Eugene Washington, MD, chancellor for health affairs and president and CEO of the Duke University Health System; Mary E. Klotman, MD, dean and vice chancellor for health affairs; and Robert M. Califf, MD, vice chancellor for health data science and senior advisor at Verily Life Sciences.

The Duke Health leaders discussed **Leveraging the Promise of Big Data: Turning Data into Action to Improve Health**. Alumni from all schools across Duke enjoyed the opportunity to hear about the tremendous potential of big data to improve health and were encouraged to reach out to the Duke leaders to share their expertise and ideas.



\$10 CHIP CAN TURN 2-D ULTRASOUND INTO 3-D

Technology that keeps track of how your smartphone is oriented can now give \$50,000 ultrasound machines many of the 3-D imaging abilities of their \$250,000 counterparts—for the cost of a \$10 microchip.

The creators believe some of the most promising uses could be when CT scans or MRIs are not available, in rural or developing areas, or when these tests are too risky.

The key to the technology is a fingernail-sized microchip that mounts onto a traditional ultrasound probe. The

chip registers the probe's orientation, then uses software to seamlessly stitch hundreds of individual slices of the anatomy together in three dimensions. The result is an instant 3-D model similar in quality to a CT scan or MRI, said **Joshua Broder, T'95, MD**, an emergency physician and associate professor of surgery at Duke, one of the creators of the technology.

Broder developed the prototype device with collaborators at Duke's Pratt School of Engineering, including then-undergraduate Matt Morgan and biomedical engineering instructors and professors Carl Herickhoff and Jeremy Dahl, who have since taken positions at Stanford, where they continue to develop the device.

Learning From the Masters

Marilyn Pike, T'73, PhD'79, MD'85, hit the jackpot when she opted to work as a research technician after earning her undergraduate degree at Duke. She wound up in the lab of Ralph Snyderman, MD, who would become chief of rheumatology and immunology and ultimately chancellor for health affairs at Duke, and she collaborated with Robert Lefkowitz, MD, who would win Duke's first Nobel Prize.

Those influential mentors, and others, helped steer her toward two more degrees from Duke and a successful career in rheumatology, primarily at Harvard's Massachusetts General Hospital. Two years ago, she returned to the South and now lives in the Triangle, working as a consultant on clinical drug trials.

"I owe a lot to Duke," she says. "It opened so many doors for me. I wouldn't be here today if not for Duke." She gives generously to the Davison Club, in large measure because she wants to help deserving students go to a great medical school without amassing an untenable burden of debt.

Gifts to the Davison Club provide critical unrestricted support for medical education at Duke through scholarships, curriculum enhancements, new technologies, and innovative research. To learn more about supporting the Davison Club, please contact

Jason Bouck, director of Davison Club and Special Gifts, at **919-385-3162** or **jason.bouck@duke.edu**. Make your gifts online at **gifts.duke.edu/daa**.

DUKE RANKED AMONG NATION'S TOP 10 MEDICAL SCHOOLS

Duke University School of Medicine is once again ranked among the top 10 medical schools in the nation. The rankings were published by *U.S. News & World Report* in March.

Duke ranked 10th among 124 U.S. medical schools included in the magazine's 2019 ranking, and was also ranked among the best in the country in seven medical specialties:

- Anesthesiology – Fifth
- Internal Medicine – Fifth
- Surgery – Fifth
- Radiology – Sixth
- Psychiatry – Eighth
- OB-GYN – Ninth
- Pediatrics – 15th

Duke's School of Medicine, es-

tablished in 1930, is the youngest of the nation's top-rated medical schools. The School of Medicine includes more than 2,200 academic and clinical faculty members in 23 departments, drawing nearly \$740 million in sponsored research expenditures annually.

"We are pleased to again be ranked among the top schools and medical specialties in the country," said Mary E. Klotman, MD, dean of Duke University School of Medicine dean and vice chancellor for health affairs at Duke University. "This is a testament to our outstanding faculty, staff, and students who work tirelessly to provide the best education for our students, deliver the most advanced care to our patients, and make seminal discoveries that evolve our knowledge of the body and ways to improve health in our community and globally."

HEALTH DATA SCIENCES NAMES LEADERSHIP TEAM

Health Data Sciences Center has assembled a clinical faculty leadership team and was renamed Duke Forge.

Led by **Robert M. Califf, T'73, MD'78, HS'78, '80-'83**, vice chancellor for health data science at Duke Health and senior advisor at Verily Life Sciences, the center has recruited a leadership team made up of Department of

Statistical Science Professor Amy H. Herring, ScD; **Erich Huang, MD'03, PhD'02**, assistant dean for biomedical informatics and assistant professor in the Department of Biostatistics and Bioinformatics; and Victoria Christian as chief operating officer.

Duke Forge seeks to advance and create inter-campus collaborations focused on data science research and innovation in health and biomedical sciences and amplify Duke's role in building a nationally regarded network for clinical evidence generation.

NEW CENTER TO ADDRESS HEALTH CARE DISPARITIES

A new center at Duke, funded by the National Institute of Minority Health and Health Disparities (NIMHD), is taking a unique approach to try to eliminate disparities in health care and health outcomes, particularly for people of color.

With an award of more than \$7.2 million from NIMHD—part of the National Institutes of Health—the new Duke Center for REsearch to

AdvanCe Healthcare Equity (REACH Equity) will address racial and ethnic disparities in health by developing and testing interventions to improve the experience of patients when they interact with health care providers and the health system.

Disparities in health care and health outcomes are well documented, particularly for people of color. Social determinants such as poverty, education, access to health care, and community resources widen the disparities gap. Racial and ethnic differences also are apparent in access to treatment, patient-provider interactions, and

other areas.

REACH Equity extends this descriptive work with a focus on change.

"What is most exciting about REACH Equity is its goal to move from describing disparities in health between whites and minority patients to developing actionable ways for health care providers and health systems to improve patient care and reduce these disparities," said Kimberly Johnson, MD, associate professor of medicine and the project's principal investigator.



JARED LAZARIUS

Nicole Calakos's research may inform new treatments for addiction and compulsive behavior.

ONE POWERFUL CELL MAY CONTROL HABITUAL BEHAVIORS

Duke neuroscientists have pinpointed a single type of neuron deep within the brain that serves as a "master controller" of habitual behaviors.

The team led by Nicole Calakos, MD, PhD, an associate professor of neurology and neurobiology, found that habit formation boosts the activity of this influential cell, and that shutting it down with a drug is enough to break habits in sugar-seeking mice.

The results, published in *eLife*, may point toward new treatments for addiction or compulsive behavior in humans.

The team examined how a type of rare cell called the fast-spiking interneuron (FSI) interacts with two sets of neural pathways associated with habitual behaviors: a "go" pathway, which incites an action, and a "stop" pathway, which inhibits action. Both the go and stop pathways are stronger in habit-driven mice.

Justin O'Hare, a graduate student in Calakos's lab, found that forming a habit in mice appeared to make the FSIs more excitable. When he gave the mice a drug that decreases the firing of FSIs, the stop and go pathways reverted to their "pre-habit" brain activity patterns, and the habit behavior disappeared.

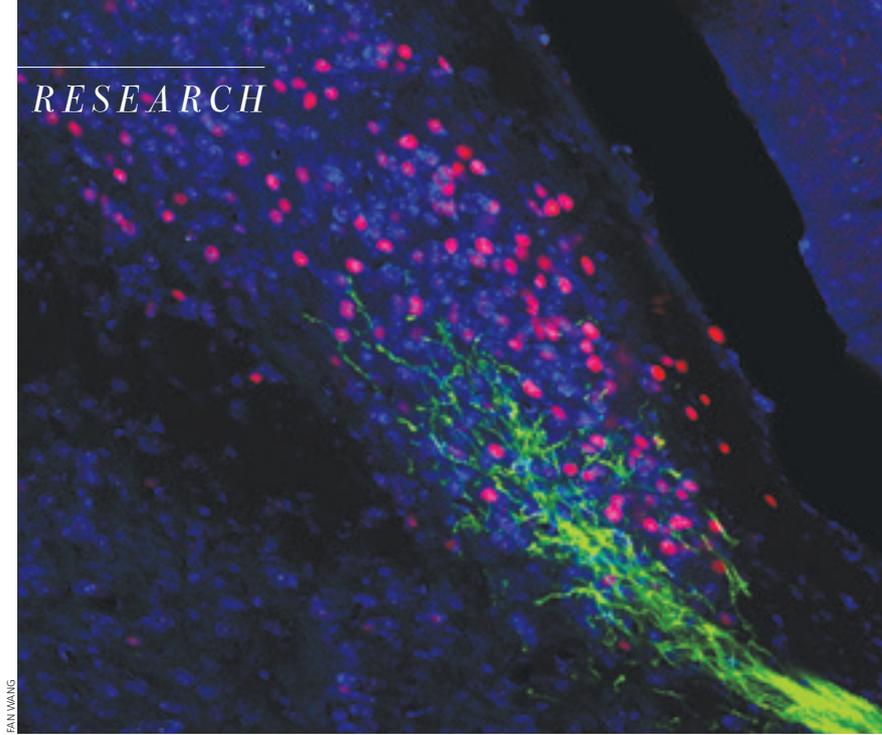
A young girl with long dark hair and glasses is smiling as she looks through a white and blue microscope. She is wearing a pink shirt. The background shows a laboratory setting with various equipment and another person in the distance.

UGH, THAT'S JUST GROSS

Nina MacLeod, 10, gets grossed out when viewing fruit fly larvae through a microscope while Sweta Kafle looks on during Duke's FEMMES (Females Excelling More in Math, Engineering, and Science) Capstone event. The event was a free, annual one-day outreach program introducing girls from Durham (4th through 6th grade) to math, science and engineering. Each faculty or student volunteer directs a hands-on activity that shows something interesting and fun about their area of expertise.

PHOTO BY JARED LAZARUS





Sensory neurons from the head and face (green) are wired directly into the brain's primary emotional signaling hubs, called the parabrachial nucleus (PBL). Pain in the head and face stimulate PBL neurons (pink).

WHY HEAD AND FACE PAIN FEELS WORSE

People consistently rate pain of the head, face, eyeballs, ears, and teeth as more disruptive, and more emotionally draining, than pain elsewhere in the body.

Duke scientists have discovered how the brain's wiring makes us suffer more from head and face pain. The answer may lie not just in what is reported to us by our senses, but in how that sensation makes us feel emotionally.

A team led by Fan Wang, PhD, a professor of neurobiology and cell biology, found that sensory neurons that serve the head and face are wired directly into one of the brain's principal emotional signaling hubs. Sensory neurons elsewhere in the body are only indirectly connected to this hub. The results appeared in *Nature Neuroscience*.

The study may pave the way toward more effective treatments for pain mediated by the craniofacial nerve, such as chronic headaches and neuropathic face pain.

OBESITY MAY EXACERBATE ASTHMA IN PRESCHOOLERS

Asthma affects almost 1 in 10 children in the U.S. and is a leading cause of emergency room visits and hospitalizations in preschoolers. According to new research from Duke, symptoms may be worse for children ages 2 to 5 who are overweight.

In a study published in the *Journal of Allergy and Clinical Immunology*, preschoolers with a body mass index (BMI) beyond the 84th percentile who weren't using an inhaler had 70 percent more days with asthma symptoms per year than untreated peers of a

healthy weight.

Compared to healthy-weight peers, asthma sufferers who were untreated and overweight suffered 37 more symptom-days per year. Researchers also found untreated children who were overweight had more asthma attacks than untreated peers of a healthy weight.

There is good news: obesity doesn't seem to lessen the effectiveness of corticosteroid inhalers, the standard treatment to ease asthma symptoms such as shortness of breath, coughing and chest pain, said Jason Lang, MD, a pediatric lung specialist and director of the Duke Children's Pulmonary Function Laboratory, who led the study.

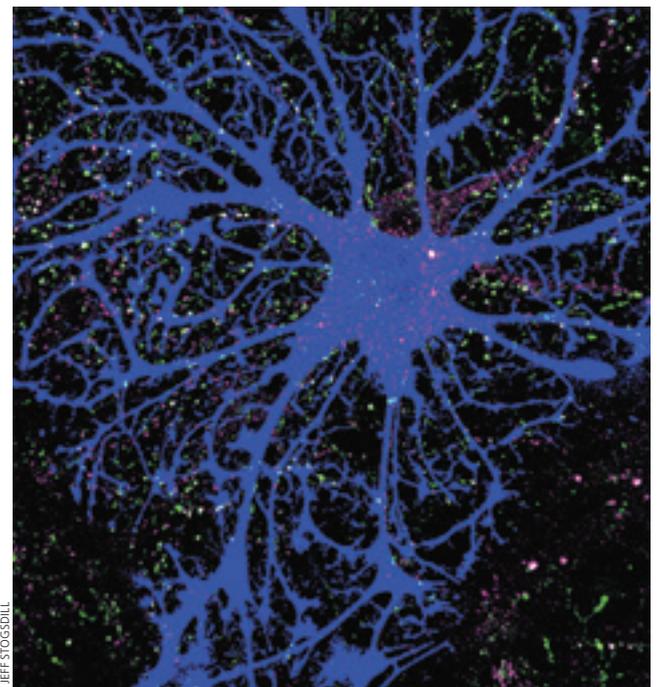
STAR-SHAPED BRAIN CELLS MAY PLAY A ROLE IN DISEASE

Star-like cells called astrocytes fill in the gaps between neural nets in the brain, each wrapping itself around thousands of neuronal connections called synapses. This arrangement gives each individual astrocyte an intricate, sponge-like structure.

Duke researchers have found that the unique architecture of astrocytes is extremely important for regulating the development and function of synapses. Astrocyte dysfunction may underlie neuronal problems observed in devastating diseases like autism, schizo-

phrenia, and epilepsy.

Cagla Eroglu, PhD, an associate professor of cell biology and neurobiology, led the team that identified a family of three proteins that control the structure of each astrocyte as it grows and encases neuronal structures such as synapses. In research published in *Nature*, switching off one of these proteins not only limited the complexity of the astrocytes, but also altered the nature of the synapses between neurons they touched, shifting the delicate balance between excitatory and inhibitory neural connections. That balance is fundamentally important for brain function, and the interaction between astrocytes and synapses may be linked to diseases in previously unsuspected ways.



An astrocyte (blue) grown in a dish with neurons forms an intricate, star-shaped structure.

ALZHEIMER'S DRUG MAY REVERSE ALCOHOL-RELATED BRAIN DAMAGE

A drug used to slow cognitive decline in Alzheimer's disease could offer clues to how drugs might one day be able to reverse brain changes that affect learning and memory in teens and young adults who binge drink.

In a study led by Duke Health and published in the journal *Alcoholism: Clinical and Experimental Research*, scientists demonstrated in rats that a short duration of the drug donepezil can reverse both structural and genetic damage that bouts of alcohol use causes in neurons, or nerve cells, in the young brain.

Because researchers can't ethically expose youth to alcohol to study its effects, researchers exposed rats to the equivalent of drinking to a blood-alcohol level of .08 (the legal limit for driving while impaired) three or four nights a week.

When researchers examined neurons in the brains of adult rats that had been exposed to alcohol when they were adolescents, they found far fewer dendritic spines. What looked like a dense forest of dendritic spines in healthy rats had been reduced to sparse, stubby structures in those previously exposed to alcohol.

But a short course of treatment with donepezil appeared to reverse these changes, restoring the density of dendritic spines.



SHAWN ROCCO

Joanne Kurtzberg, left, works with a patient receiving an infusion of cells from umbilical cord blood.

STEM CELLS IMPROVE MOTOR SKILLS IN SOME CHILDREN WITH CEREBRAL PALSY

An infusion of cells from a child's own umbilical cord blood appears to improve brain connectivity and motor function in children with spastic cerebral palsy, according to a randomized clinical trial conducted at Duke.

The placebo-controlled, phase II trial included 63 children with varied types and severities of spastic cerebral palsy. Children who received one intravenous dose of at least 25 million stem cells per kilogram of their body weight saw improvements in

motor function a year later. The improvements were greater than those typically observed for children of similar age and condition, and exceeded the gains made by children who received a lower dose of cells or a placebo. The study was published in *Stem Cells Translational Medicine*.

Senior author Joanne Kurtzberg, MD, director of Duke's Pediatric Blood and Marrow Transplant Program and the Robertson Clinical and Translational Therapy Program, said she was encouraged by the results. Kurtzberg and her team are planning additional studies testing the benefits of multiple doses of cells, as well as the use of donor cells for patients whose own cord blood was not banked. The research was supported by the Robertson Foundation and The Marcus Foundation.

SLOW AND STEADY WINS THE RACE FOR DENGUE

A new study by Duke researchers reveals how the dengue virus manages to reproduce itself in an infected person without triggering the body's normal defenses.

The study, led Christopher V. Nicchitta, PhD, professor of cell biology, reports that dengue



pulls off this hoax by co-opting a specialized structure within host cells for its own purposes. Unlike other viruses that flagrantly disrupt the functions of the host in favor of their own needs, dengue takes over an accordion-shaped structure inside the cell called

the endoplasmic reticulum so slowly and inefficiently that it doesn't trigger any of the sensors the host cell uses to detect invaders.

The study, which appeared January 10 in the

Journal of Virology, could point to new strategies to thwart the mosquito-transmitted virus.

According to the World Health Organization, approximately half of the world's population is at risk of dengue and each year about 96 million people are sickened by it. No specific treatment for dengue fever currently exists. Decades of vaccine research have been met with disappointment.

Nicchitta is currently trying to pinpoint which features of dengue underlie the slow and steady approach.



Even Sporadic Exercise May Reduce Mortality

Virtually any moderate-to-vigorous exercise—even when done in short bursts throughout the day—could work to reduce Americans' risk of disease and death, according to research appearing in the *Journal of the American Heart Association*.

"For about 30 years, guidelines have suggested that moderate-to-vigorous activity could provide health benefits, but only if you sustained the activity for 10 minutes or more," says study author **William E. Kraus, MD'83, HS'83-'88**, distinguished professor of medicine at Duke University School of Medicine. "That flies in the face of public health recommendations, like taking the stairs instead of the elevator, and parking farther from your destination. Those don't take 10 minutes, so why were they recommended?"

Kraus's study found that even brief trips up and down stairs would count toward accumulated exercise minutes and reducing health risks so long as the intensity reaches a moderate or vigorous level. Moderate exertion was defined as brisk walking at a pace that makes it hard to carry a conversation. Boosting that pace to a jog would be vigorous exercise for most people, he said.

The study findings are good news for most Americans, Kraus said, because they typically get their moderate or vigorous exercise in short bouts, and accumulating.

Translating Duke Health Gains Momentum

Translating Duke Health, the multi-year, multidisciplinary research program launched last fall by the School of Medicine and Duke University Health System in collaboration with other campus entities, has received dozens of proposals from School of Medicine faculty in response to its initial requests for research studies at Duke aimed at making progress toward solving some of the biggest challenges in human health.

Translating Duke Health is designed to capitalize on Duke's strengths in research, clinical care, and population health to address major health challenges. The program initially focuses on five subject areas in which Duke has the capability to make significant progress.

Each subject area aims to synergize a broad, diverse range of expertise and resources from throughout Duke to accelerate discovery and its translation to prevention and treatment.

All five subject areas issued their initial request for proposals (RFP) with deadlines in late 2017 or early 2018. Researchers from diverse disciplines responded with a wide range of proposed projects.

The five subject areas are:

Preserving and restoring cardiovascular health. Translating Duke Health will focus on understanding the molecular machinery driving robustness, resilience, and rejuvenation of heart tissue. The goal is to generate knowledge and convert that knowledge into tools and strategies to help people prevent heart disease, resist disease

in its early stages, and recover from cardiovascular disease.

Enhancing brain resilience and repair in brain disorders. Translating Duke Health seeks to harness the brain's own resilience and repair abilities in order to prevent and repair the damage of brain disease. Researchers will seek to understand the basic biology of the brain, create new ways to detect brain disease earlier, and develop new approaches to forestall underlying disease prior to the onset of symptoms and to repair brain circuits once symptoms appear.

Ending disease where it begins. Many childhood and adult diseases have their origins in prenatal or early post-natal life. Translating Duke Health will seek to identify early life risk factors in four key drivers of health—genes and biology, physical environment, health and behavior needs, and social and economic factors—and ultimately develop novel diagnostic, preventive, and therapeutic approaches to improve health.

Controlling the immune system. Translating Duke Health seeks to unlock the secrets of immune function and develop the ability to control the immune system as a therapeutic strategy.

Researchers will seek to develop techniques to bring the immune response to bear effectively against a specific organism or tumor, and to forestall a damaging immune response in the case of transplantation or autoimmunity.

Combating solid tumor brain metastases. Brain metastases arising from solid tumors elsewhere in the body are one of the most devastating consequences of late-stage cancer. Translating Duke Health will seek to develop novel approaches to prevention, early diagnosis, and treatment of brain metastasis through the creation of a comprehensive approach to research, care, and clinical trials.

Translating Duke Health

News and information about Translating Duke Health can be found at medschool.duke.edu/research/translating-duke-health

Estate Gift Extends Rauch Scholarships in Perpetuity

Robert Gramer, MD'19, has dedicated himself to serving others. As a fourth-year School of Medicine student, he has mapped human cognition in neurosurgery patients. He has helped create a better system to care for patients with serious head trauma in Uganda, and this year he is working as a research fellow in Toronto on deep brain stimulation to treat psychiatric disorders such as anorexia nervosa. Ultimately, Gramer plans to practice neurosurgery and conduct research that will extend his healing reach far beyond the patients he directly treats.

Gramer's scholarship, clinical care, research, and service are possible due to the Rauch Family Merit Scholarship program. The Rauch Scholarship, which **Dudley A. Rauch, T'63**, established in 2013 as a 50th reunion gift, was the first all-inclusive scholarship at Duke University School of Medicine. The scholarship, which is awarded to one incoming medical student per year, provides full tuition, books, and ancillaries, plus a cash living allowance, for all four years of medical school.

In June 2017, Rauch ensured that this opportunity will be available for incoming medical students for decades to come. He expanded his 2013 original gift by establishing an \$8 million estate gift to fund the program in perpetuity. His giving to support School of Medicine students through the scholarship program now totals more than \$10 million.

"Dudley Rauch's remarkable generosity gives deserving medical students at Duke the opportunity to pursue their passion and further their careers without the pressure of student debt facing them when they graduate," says Mary E. Klotman, MD, dean of Duke University School of Medicine and vice chancellor for health affairs at Duke University. "His bequest ensures that this opportunity will continue to be available for generations of incoming students. He embodies

the Duke spirit, and we are extremely grateful for his support for the university and the School of Medicine."

Five Rauch Scholars have thus far been named: in addition to Gramer, they are **Collin Kent, T'11, MD'17**; **Julia Salinaro, MD'19**; **Sam Hofacker, T'15, MD'20**; and **Meghan Price, T'16, MD'21**. All five embody the values that Rauch intended to encourage



Dudley A. Rauch

in establishing the scholarship.

Rauch earned his undergraduate degree in mathematics at Duke in 1963 and followed that with an MBA at Harvard Business School. His father, Henry E. Rauch, was chairman of Burlington Industries and served on the Duke University Board of Trustees from 1964 to 1974. Dudley Rauch has served on the Duke alumni admissions advisory committee and, in addition to the Rauch Scholarships, has given philanthropically to support Trinity College and several research areas in medicine, including rheumatology, cancer, and arthritis.

"It's wonderful to be able to give money away and know that it will have a positive impact," says Rauch. "My hope is that other alumni will reflect upon what a Duke education and the Duke imprimatur on their degrees has meant to their success, and will consider giving back as well."

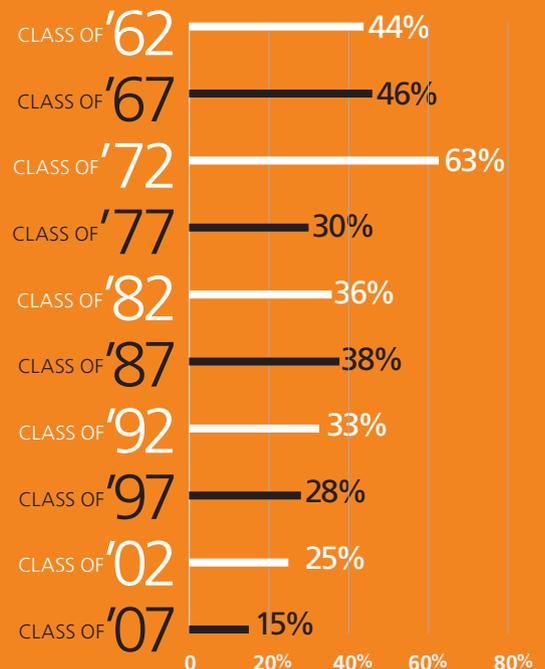


Reunion Giving Reaches New Heights

Duke University School of Medicine 2017 Reunion Giving totaled more than \$4 million, which is a 53 percent increase over the total raised from the same classes at their last reunion. Participation grew as well, with 36 percent of reunion alumni making a gift. The reuniting classes

showed great spirit, especially the classes of 1972, 1967, and 1962, who exceeded 40 percent participation—outstanding by any measure! Also impressive were the 30th and 35th reunion classes, with participation rates above 35 percent.

REUNION GIVING PARTICIPATION BY CLASS



A According to Google Maps, the walking distance between Duke University School of Medicine and the Pratt School of Engineering is 0.8 miles, or about 1,800 steps. You can cover it in less than 10 minutes.

Thanks to an innovative initiative now entering its third year, in terms of collaboration, joint research, and shared goals, the proximity between the two schools is even closer than that. The result is a fast-growing synergy between medicine and engineering that is producing dramatic new advances on a wide range of fronts.

Aristotle's aphorism "The whole is greater than the sum of its parts" describes the impetus behind MEDx—an initiative launched in 2015 by then-School of Medicine Dean Nancy Andrews and then-Pratt School of Engineering Dean Tom Katsouleas, with support by Provost Sally Kornbluth, to further increase collaboration between the schools of medicine and engineering.

They understood that the School of Medicine and the School of Engineering could innovate more nimbly, translate discoveries into clinical practice more quickly, and have a much greater positive impact on patient care if they worked together.

"Duke has a number of existing strengths, and MEDx was created to build upon those strengths by creating an ecosystem that would support engineering and medicine activity at all levels across the university," says Geoffrey S. Ginsburg, MD, PhD, professor of medicine, biomedical engineering, pathology, and nursing.

Ginsburg co-leads the initiative along with Ken Gall, PhD, chair of mechanical engineering and materials science and professor of biomedical engineering, and executive director Donna Crenshaw, PhD, MHA.

MATCHMAKING OPPORTUNITY

MEDx builds on a long-established culture of collaboration at Duke that has resulted in an impressive track record of biomedical innovation, including new technologies for ultrasound, the cochlear implant, artificial vasculature, and bio-absorbable stents. The program is built on four "pillars" of activity — creating communities, energizing education,

initiative as a zipper: the twin disciplines of engineering and medicine uniting at multiple points, starting at the undergraduate level and running all the way up through joint faculty hires and distinguished lecturers, and ultimately out into the world of clinical application and commercialization.

"What's been surprising is just how many new opportunities we're finding through MEDx, how many people there are who didn't know they should be working with each other," says Ginsburg. "We have developed insights into which connections could be very productive. We're an effective matchmaking opportunity."

That opportunity to bridge the disciplines attracts attention.

"When interviewing around the country, I couldn't find any other place like Duke, where collaboration is so seamless. The doctors here love new technology, and you have talented students and engineers who want to make a real difference in the world."

Junjie Yao

inspiring and enabling innovative science, and embracing entrepreneurship—and directs the expertise of both schools in those areas.

"Rather than starting at the department level, this is a school-to-school collaboration," says Gall. "We have more than 2,200 faculty in the School of Medicine and more than 110 faculty in the School of Engineering. With the breadth and size of the medical school and the various fields of engineering, there is enormous potential."

Ginsburg envisions the

"I came here enthusiastically for the marriage of engineering and medicine," says Junjie Yao, PhD, assistant professor of biomedical engineering, who joined Duke in 2016. "When interviewing around the country, I couldn't find any other place like Duke, where collaboration is so seamless. The doctors here love new

MEDx

Spurs Discovery at the Intersection of MEDICINE + ENGINEERING

By
**MARA
CATHERINE
SHURGOT**

Photographs by
BRUCE DEBOER

BRIDGING
THE
GAP

technology, and you have talented students and engineers who want to make a real difference in the world.”

CREATING COMMUNITIES

One of the first steps in bringing the two fields together is creating opportunities for busy people to meet, learn, and brainstorm.

“There are natural areas where engineers have interacted with clinicians and physicians and basic scientists,” says George Truskey, MD, PhD, R. Eugene and Susie E. Goodson Professor of Biomedical Engineering and senior associate dean of Pratt School of Engineering. “But MEDx has opened up opportunities beyond the traditional areas.”

For example, in the School of Medicine, an active group of more than 140 medical students initiated and formed the Medicine Engineering Interest Group [MEIG] to facilitate such interaction. With additional support from MEDx, they have created a lunchtime seminar series for engineering faculty to share information with medical students about topics such as 3D printing, devices, implants, software, and applications. This is a chance for medical students to learn about engineering research happening at Duke in advance of choosing how they want to spend their third year. In some cases, the exposure to these ideas changes a student’s trajectory.

Other MEDx-sponsored events include MEDx Café—informal coffee shop office



Geoffrey S. Ginsburg

ENERGIZING EDUCATION

A second focus is re-imagining education. At the undergraduate level, engineering students now travel to the medical center to shadow surgeons. Surgeons, in turn, explain their “pain points” or bottlenecks. The engineering students then return to the classroom to brainstorm possible solutions to the real-world problems.

Undergraduate senior design courses are another avenue of collaboration. “We’ve connected students and faculty from the School of Medicine to the biomedical engineering and mechanical engineering and materials science design courses,” says Gall. “Individuals can pitch their project to the students in a reverse ‘Shark Tank’ scenario. If the students like the project, they can take it on. We’d like to extend this to other design courses, too. We want to give people multiple paths to connect with the right resource.”

One path is the InnovateMD Fellowship, a competitive one-year program for clinical trainees who are interested in medical device development. Co-founded in 2016 by **David Ranney, MD, HS’13-President**, and Gall, the program

pairs a trainee with engineering students to design a solution for an identified clinical need. The program involves project-based coursework and includes access to mentors, industry experts, and networking. Upon completion, trainees have a prototype or design they can continue developing. InnovateMD also provides educational resources, events, and seminars to faculty, residents, and fellows who wish to tackle a project or challenge in their specialty with an entrepreneurial perspective.

For other students, the right path might

GEORGE CHENG + KEN GALL: 3D printing airway personalized stents

The airway stent— shown here on a 3D printer—uses medical-grade silicone to perfectly fit the interior contours of a patient’s trachea.



involve pursuing an additional degree.

Joshua D’Arcy, MD’19, is the first recipient of the Barr-Spach Medicine and Engineering Scholarship. He is spending his third year of medical school pursuing a master’s degree in biomedical engineering.

“Medicine is very present-oriented: physicians try to solve the problem that is directly in front of them,” says D’Arcy. “Engineering is very future-oriented: what can be improved? The two are wonderfully complementary. I wanted to have a future-oriented mindset while practicing medicine.”

INSPIRING AND ENABLING INNOVATIVE SCIENCE

Innovation lies at the heart of MEDx and is being nurtured through competitively funded interschool colloquia and interdisciplinary seed grants.

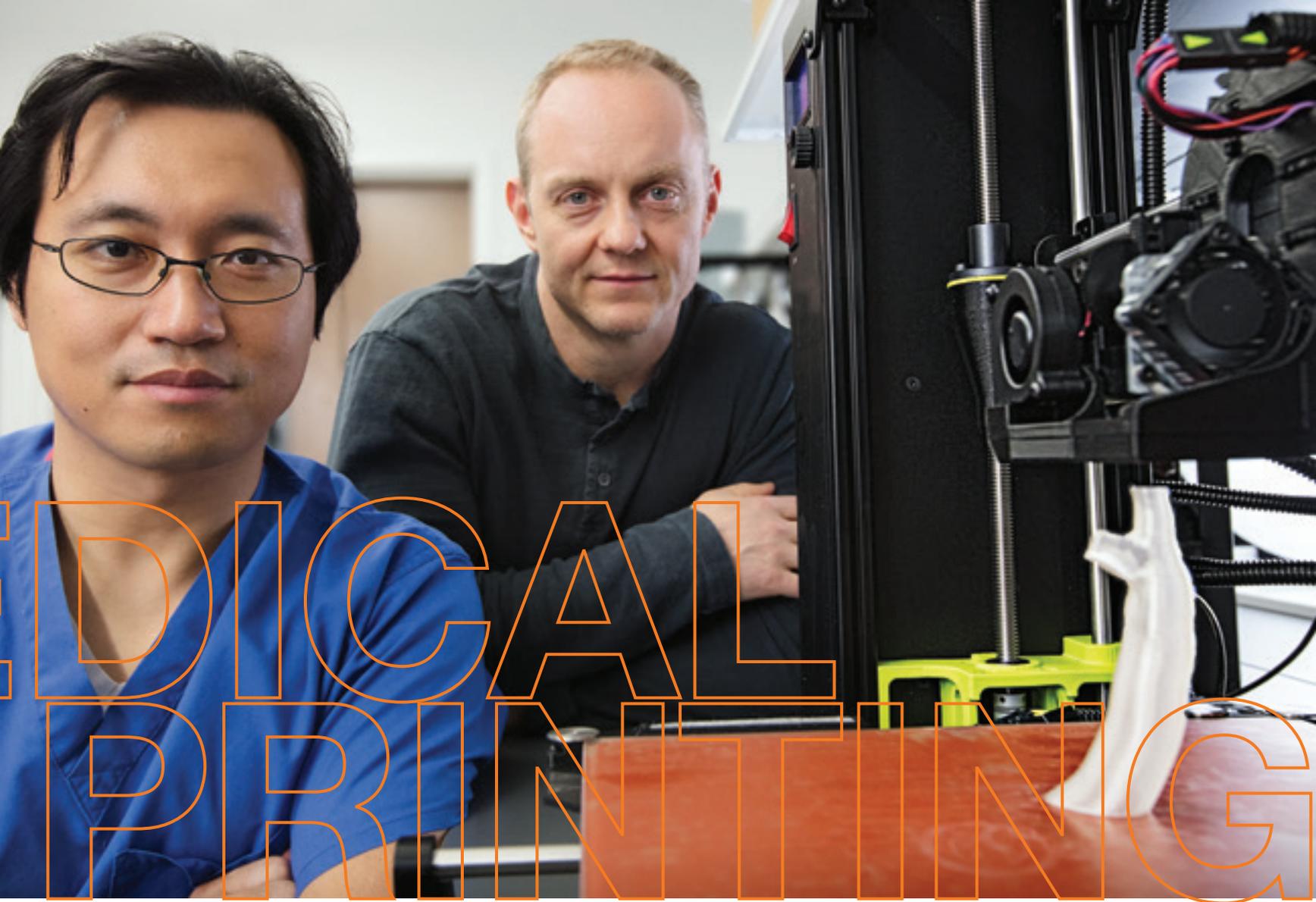
MEDx also provides biomedical research seed funding. Recent award winners read like a roll-call of science fiction plot lines:

GET INVOLVED

Do you have an idea for a MEDx project? Is there a challenge you see in your own clinical setting? Would you like to become involved with a MEDx team as a mentor? Contact Geoffrey.ginsburg@duke.edu.

hours where people can meet and bat around ideas. Targeted research collaboration dinners, seminars, and speaker series designed to attract attendees from both engineering and medicine also bring people with collaboration potential together.

“It’s easy to imagine, but it can be hard to do,” says Liping Feng, MD, assistant professor of obstetrics and gynecology. “Generally, clinical scientists care about improving medicine and basic scientists care about developing technology. MEDx has been able to bridge the two sides, and everyone hopes this leads to better patient care in the future.”



tissue engineering, the brain-machine interface, artificial intelligence and machine learning, robotics, microfluidics, body-on-a-chip, and miniaturized diagnostics.

“We are trying to do something that is totally different than what currently exists. It is entirely outside of the box and in some ways moving in a different direction than our field, but I think taking those risks is really important, both in the context of science and engineering,” says **Kafui Dzirasa, MD’09, PhD’07, HS’10-’16**, associate professor of psychiatry and behavioral sciences.

Dzirasa and Nenad Bursac, PhD, professor of biomedical engineering, are co-principal investigators of an ambitious 2017 MEDx biomedical research grant involving six different labs. The project is exactly the type of collaboration MEDx embraces: innovative, audacious, and interdisciplinary—research that more traditional funders might shy away from. Ideally, with early success, these projects will grab the attention of much larger funders such as the National Institutes of Health.

“There’s definitely a palpable hunger among the faculty and students to do this cross-cutting work,” says Ginsburg. “Innovation is proportional to diver-

“With the breadth and size of the medical school and the various fields of engineering, there is enormous potential.”

Ken Gall



sity in terms of bringing different ways of thinking to a problem. Diversity of thought and diversity of backgrounds leads to much more accelerated innovation. People are less afraid to step out of their own disciplines to seek others’ viewpoints. MEDx has contributed to this culture of innovation at Duke.”

And the inspiration stemming from these collaborations is far-reaching.

“We are a group of creative engineers working in the lab,” says Yao. “We encourage each other by imagining about how our work might be useful in the future. But after we started our project, the distance between technology and human health care decreased: not just physically, but mentally. It dramatically motivated the team, including me, to say, ‘Here is a big problem in the real world, and many people are suffering, and we could potentially help.’ It is very exciting for all of us.”

ENHANCING ENTREPRENEURSHIP

Beyond promoting collaboration and research, MEDx is also working to support entrepreneurship. Students not only design prototypes, but can also meet with potential investors or others who may want to support continued

research and development.

“As projects move up this ladder, MEDx wants to help find a pathway to the clinic and commercialization,” says Ginsburg.

With the Duke Innovation and Entrepreneurship Initiative, the Duke Office of Licensing and Ventures, and MedBlue—a medical school incubator that provides funding—MEDx works with numerous programs to help students and faculty understand commercialization and launch companies. MEDx co-sponsors workshops on topics such as the legal landscape of entrepreneurship; how to file intellectual property, patents, and licenses; and how to secure follow-on funding. In sum: how to be serious, strategic, and smart about starting a company.

To date, three start-up companies have been formed, or are in the process of being formed, based on work directly supported by MEDx.

BLUE SKIES AHEAD

As MEDx continues to grow, the focus will be on finding new areas of collaboration and sustainability. Mary E. Klotman, MD, dean of the School of Medicine and vice chancellor for health affairs at Duke University, appointed Ginsburg and Kathryn Nightingale, PhD, James L. and Elizabeth M. Vincent Professor of Biomedical Engineering, to co-chair a joint medicine and engineering task force. Their charge was to investigate what opportunities and strategic gaps might still exist between the two schools, and then to explore what programs and resources may need to be amplified to address those gaps.

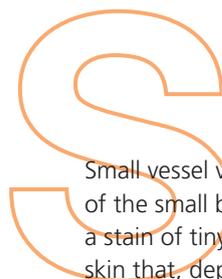
“I’m totally excited about the science and the translational and commercialization opportunities,” says Ginsburg. “It’s about creating a model that allows us to do even more things—a model that allows people to escape current boundaries that exist because of resource constraints.”

Several paths lead toward sustainability: one approach is through public and private philanthropy and another is through industry partnerships.

“If you look at the Big 5—Facebook, Amazon, Apple, Google, and Microsoft—they’re all doing something in the health care space,” says Ginsburg. “MEDx is in a really good position to seek out strategic partnerships with those who are aligned with the work we’re doing here. Those partnerships could also lead to our expansion into new areas and provide internship opportunities for students to work in new and different types of research environments.”

There is also tremendous interest in finding the \$100 million idea.

“There are a lot of blue-sky opportunities,” says Ginsburg. “In physics, we talk about potential energy. There is a lot of potential energy at Duke. You need just a small catalyst, and the fire will grow from there.” ■



Small vessel vasculitis—inflammation of the small blood vessels—appears as a stain of tiny, red dots covering the skin that, depending on the severity, can evolve into painful pustules or ulcers. In some patients, it may even reflect inflammation in internal organs.

Diagnosis usually requires a skin biopsy, which involves cutting a small piece of skin. This can usually be done as an easy bedside procedure, although certain sites, such as areas around the nails and the tips of the fingers and toes, or certain patients may be more prone to poor wound healing and complications from the procedure.

Adela Rambí G. Cardones, MD, HS’06-’09, associate professor of dermatology, wanted to create a device that could capture an image of at least a centimeter of skin area through a quick, non-invasive process. She wanted to detect the speed, color, and amount of blood flowing through the small blood vessels in order to make a fast, painless, accurate diagnosis.

Junjie Yao, PhD, assistant professor of biomedical engineering, develops photoacoustic imaging: the conversion of light beamed through tissue into ultrasound waves that are then analyzed to create high-resolution images. Photoacoustic imaging can reveal a tissue’s anatomical, functional, and metabolic properties, with specificity at the molecular and neuronal level.

Cardones and Yao teamed up to create a handheld device that could

JUNJIE YAO + ADELA RAMBI G. CARDONES: Adapting Technology to Image Blood Vessels in Skin Disease



Adela Rambí G. Cardones

provide high-resolution imaging of the tiny blood vessels in the skin to diagnose vasculitis. One of the key design inspirations came from, of all places, the supermarket.

“We were inspired by the handheld devices that scan bar codes in grocery stores,” says Yao. “The devices use a polygon mirror and a laser diode to quickly ‘read’ the product information, and we adapted this concept to build a prototype handheld photoacoustic device to ‘read’ the skin. We printed a 3D polygon mirror, added a laser and an ultrasound transducer, and then put everything in a waterproof frame to detect the emitting ultrasound signals.”

The lightweight, handheld prototype is about the size of a flashlight. With their photoacoustic imaging device, Cardones and Yao can provide functional sampling of the skin—a photoacoustic biopsy—that clearly identifies the organization and oxygenation of tiny blood vessels in the tissue.

With functional imaging of up to 13 mm across and 5 mm in depth, there are numerous other potential applications of their device, such as the study of skin tumors, brain disorders, and eye diseases.

Cardones and Yao hope to win IRB approval and begin clinical testing of their device. Beyond that, they see potential for commercialization and will be working with MEDx and the FDA to navigate the process of safety testing and bringing the device to market.

AVOID EYE OR SKIN
SURE TO DIRECT OR
ATTERED RADIATION
IV LASER PRODUCT



IMAGING BLOOD VESSELS

The United States has one of the highest rates of preterm birth—up to 10 percent of all pregnancies—in the world. And many pregnancy complications, such as pre-eclampsia, which contributes to preterm birth, are associated with abnormal placenta development.

“One of the reasons we don’t understand pregnancy well is that we don’t understand the human placenta, which is extremely complex,” says Liping Feng, MD, assistant professor of obstetrics and gynecology, who studies pregnancy complications and improving pregnancy outcomes. “The placenta is one of the most under-studied organs because we lack a model for research.”

Nutrients, oxygen, immunoglobulins, and waste all pass through the placenta.

Researchers have been stymied by the absence of an effective placental research model. Attempts to develop an in vitro model of the placenta that mimics its unique cellular properties have been unsuccessful, and ethical considerations prevent researchers from using the placenta in vivo. And because it’s a dynamic organ, developing throughout gestation, placentas collected after birth can’t be used to model placental dynamics.

To address this challenge, Feng aimed to create a novel placenta model that would enable researchers to better understand the organ, the cellular interface, and the transport of nutrients and foreign components from the mother to the fetus. Sallie Permar, MD, PhD, professor of pediatrics, was also interested in the idea for her research in the transfer of both protective maternal antibodies and harmful pathogens to the fetus.

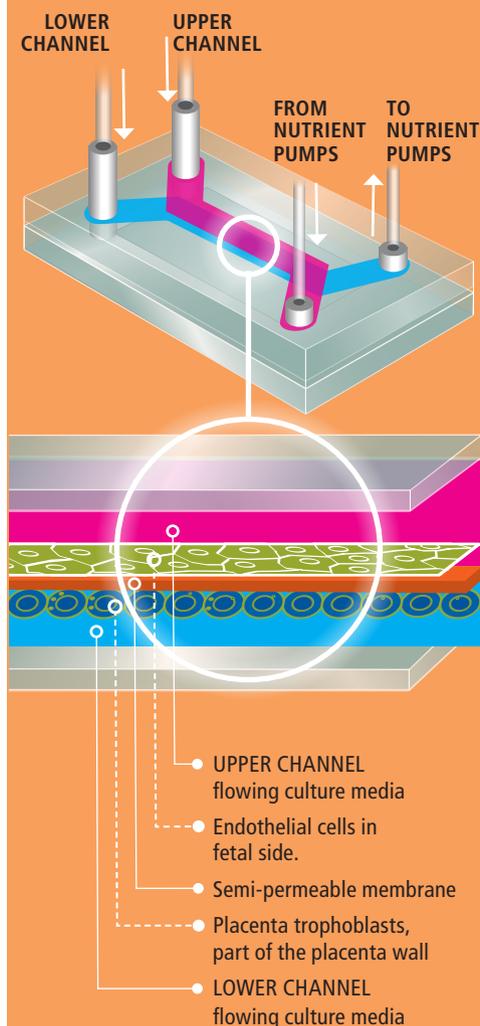
Permar’s team researches maternal and infant immune systems and strategies to prevent the transmission of viral and environmental pathogens between mother and child.

Feng approached George Truskey, MD, PhD, the R. Eugene and Susie E. Goodson Professor of Biomedical Engineering, because of his expertise in microfluidics—the manipulation of small amounts of fluid—and his pioneering research in engineering

PLACENTA

PLACENTA ON A CHIP DEVICE

- First, the placenta cells and blood are placed in the chip using the upper and lower channels.
- The chip is placed in an incubator at 98.6°F (37° C).
- Nutrients are pumped into the chip to allow the cells to thrive.
- Measurements can be made within a week.



“The placenta is one of the most under-studied organs because we lack a model for research.”

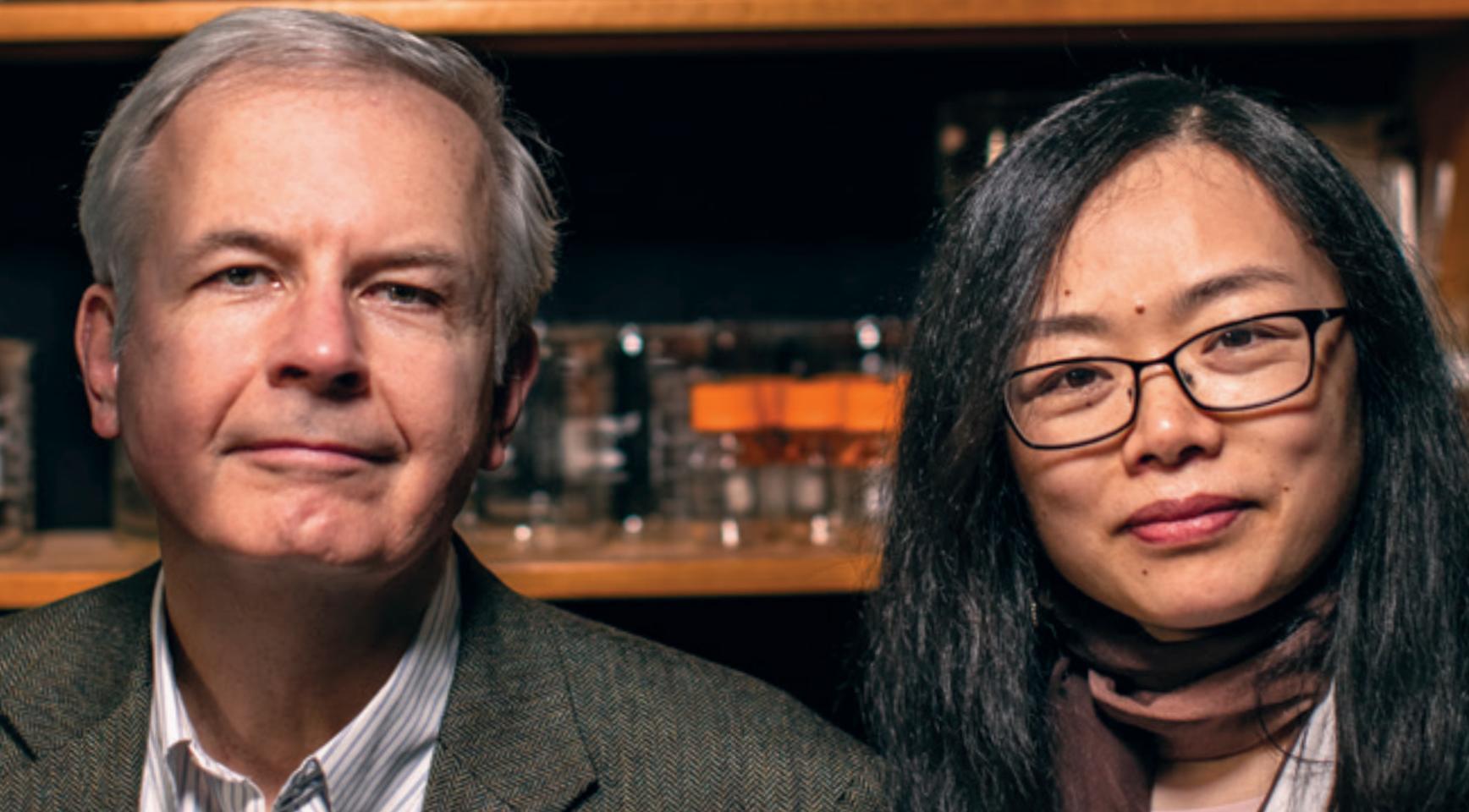
Liping Feng

model tissues and blood vessels.

Truskey’s lab has developed a polycarbonate membrane that is seeded with placental cells drawn from patients who have had a C-section and given consent for a research donation of the placenta. A channel above and below the membrane allows the researchers to draw fluid across at a very low rate, mimicking blood flow through an active placenta. Ultimately, they wish to dissect the route that molecules and virus particles take as they travel between mother and fetus.

A placenta model would serve multiple purposes. Researchers could study both normal function and disease states; better understand the mechanism of viral transmission such as Zika, cytomegalovirus (CMV), and HIV; study immune regulation and nutrient transfer; and explore environmental toxicology. “A system such as this ‘microfluidic placenta on a chip’ is critical for researchers to understand how to optimally protect and nurture a developing fetus, and design strategies to avoid some of the perils of pregnancy, including congenital infections, adverse exposures, and preterm birth” says Permar.

SENTA MODEL



Like a team in a science fiction movie, the six-lab squad funded by a 2017 MEDx biomedical research grant is striking in its combination of diverse skills and duties.

The project is led by **Kafui Dzirasa, MD'09, PhD'07, HS'10-'16**, associate professor of psychiatry and behavioral sciences and assistant professor in neurobiology and neurosurgery; and **Nenad Bursac, PhD**, professor of biomedical engineering and associate professor in medicine. Their team includes: **Marc Caron, PhD**, James B. Duke Professor of Cell Biology and professor in neurobiology and medicine; **Fan Wang, PhD**, professor of neurobiology; **Christopher Kontos, MD, HS'93-'97**, professor of medicine and associate professor of pharmacology and cancer biology—all at Duke University School of Medicine—and **Jennie Leach, PhD**, associate professor of chemical, biochemical, and environmental engineering at the University of Maryland Baltimore County, along with a cadre of committed graduate students, postdocs, and technicians.

Dzirasa's background in engineering informs his approach to the study of neuropsychiatric illness and disease. In the summer of 2016, he and members of his lab were discussing the challenge of precisely monitoring brain activity.

"We do not have the technology to monitor individual neurons interacting with each other on a large scale in real-time," says Dzirasa. "All of our existing tools have limitations. We wanted to fundamentally change the paradigm of how information is taken out of—and put back into—the brain."

Their question was: what is the best type of sensor to more accurately assess brain activity? Their answer: the brain. Their quest: build a biological brain that can monitor, activate, and potentially repair or enhance cell function in various parts of the brain.

"What we imagine is a framework made of biological material that's powered by blood, nutrients, and oxygen, and this framework will connect to the brain and to the outside world," Dzirasa says. "It will be like a brain connection patch."

Bursac's experience using proteins to transfer electricity from one cell to another will inform the creation of the base, or "substrate" of the brain. "How cells electrically

BUILD

"All of our existing tools have limitations. We wanted to fundamentally change the paradigm..."

Kafui Dzirasa

communicate within this system will be very important," says Bursac.

Wang has experience in calcium imaging, which allows visualization of a large number of cells simultaneously, and Caron's experience altering genes informs the understanding of neuronal communication. Kontos studies how blood vessels create new extensions, and his job is to explore how to vascularize the brain sensor to keep it alive. Last but not least, Leach was brought in for her expertise in building biomaterial frameworks that can keep cells that sense electricity alive.

Elizabeth Ransey, PhD, a postdoc with a background in biochemistry, coordinates the teams' efforts.

Dzirasa imagines their project primarily in the context of understanding and treating disease and injury. Patients with psychiatric disorders and neurological illnesses such as depression and Alzheimer's would be ideal candidates.

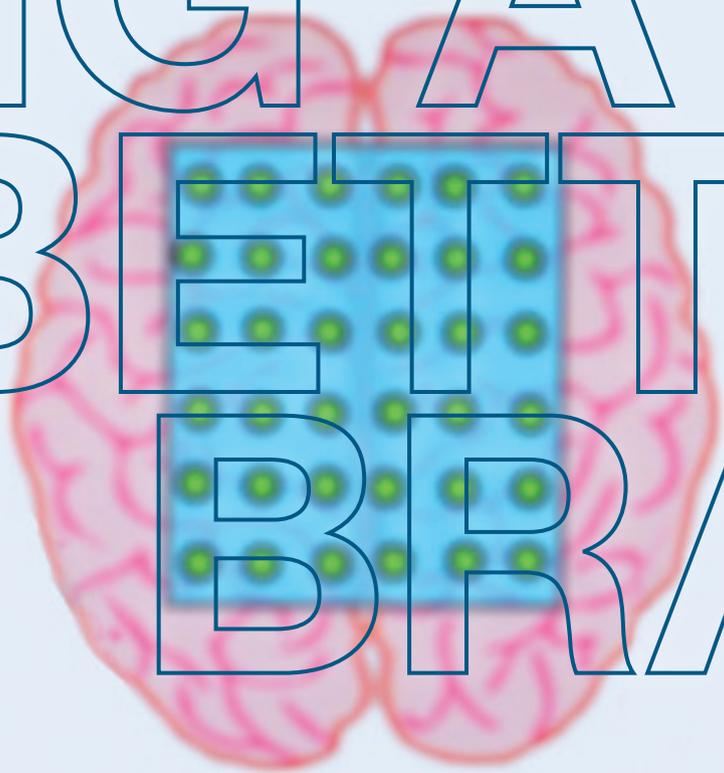
But another possibility involves the question of how human brains interface with computers.

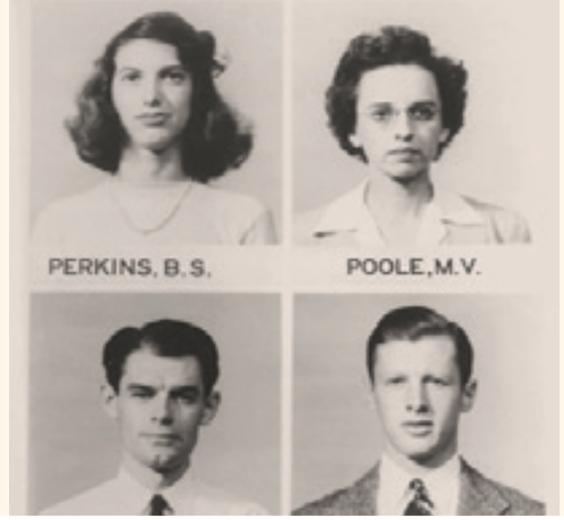
"As it stands now, our brains interact with computers all the time, but we're limited by pressing the buttons on our cell phone or typing on a keyboard," Dzirasa says. "What if we could speed up the information transfer so that information can go directly into the brain, bypassing the eyes and ears? That's a little bit more on the sci-fi side, but that future is not far off."

The hope is to have a fully functioning prototype within the next two to three years. What will it look like?

"We haven't figured that part out yet," Dzirasa admits. "We're bringing in the designers next. Nobody wants two heads."

ADDING A BETTER BRAIN







Duke's Doctor of Physical Therapy Program Celebrates Its Past and Looks Toward Its Future

BY DAVE HART

AS MICHEL LANDRY, BSCPT, PHD, chief of the Duke Doctor of Physical Therapy (DPT) Division, prepared for the ceremonial groundbreaking for the new building that will house the DPT program, he could hardly wait.

"When they give me that shovel, I'm not stopping," said Landry, who has overseen the division since 2011. "I'm going to keep digging. We are so ready for this move."

DPT, a division within the Department of Orthopaedic Surgery, will occupy the first two floors of the new building, adjacent to the School of Nursing on Trent Drive. The remaining three floors will house various administrative offices and programs within the School of Nursing, Department of Orthopaedic Surgery, and other units.

DPT's move into a permanent standalone home has been a long time coming: the program this year celebrates its 75th anniversary at Duke. It spent most of that time deep in Duke South, and for most of the past decade it has been housed in off-campus space at Erwin Square. The prospect of moving to a prominent location in the heart of the medical center and clinics, into space specifically designed for its purposes,

represents the DPT program's turning its face toward the future even as it celebrates its accomplished past.

During its three quarters of a century, the program has evolved from a tiny certificate course whose total enrollment you could count on one hand into a leading doctoral program with a fleet of premier faculty, more than 200 students, innovative learning practices, thriving research projects, active clinical opportunities, and a global reach.

It's been a remarkable journey, and the DPT program is celebrating its 75th birthday this year with a series of events that will culminate in a gala at the Washington Duke Inn on September 15, 2018.

"That will be the crescendo," says Landry. "We're aiming to bring many alumni back; we're even trying to track down the very first graduating class or their families. We'll have free continuing education offerings, and other events where alumni can meet with colleagues, faculty and current students, and even explore the city of Durham. The gala event will feature some of our truly amazing alumni who will talk about how Duke set their careers apart."

At the same time, the DPT program is energetically

 Details of the new building that will be the future home of the DPT division are on Page 2.

remaking itself for the next phase of its journey. With a new state-of-the-art home under construction, with innovative improvements to its curriculum and teaching models in the works, with more research opportunities and global health avenues available to its students than ever before, the DPT program is alive with energy and enthusiasm.

"I think you're picking up on an excitement that is shared by all of us," says Chad E. Cook, PhD, PT, FAAOMPT, program director for DPT. "There are a lot of really wonderful things happening right now that correspond with our 75th anniversary. Within the past couple of years, we have put our foot on the gas and decided to do some amazing things. There's never been a better time to be at Duke."

HUMBLE BEGINNINGS

Physical therapy as a distinct field emerged out of two global events that left hundreds of thousands of people injured or physically impaired in the first decades of the 20th century: a wave of polio epidemics that left many people living with paralysis, and the First World War, which resulted in a great number of soldiers and civilians wounded. Two decades later, the field expanded dramatically to meet the needs of wounded soldiers returning from World War II.

Midway through that conflict, in 1943, Lenox Baker, MD, who was then the chair of orthopaedics, recruited a physical therapist named Helen Kaiser to Duke from Mt. Sinai Hospital in Cleveland to establish an eight-month physical therapy certificate program in the School of Medicine. The inaugural class numbered four: two men and two women.

From those humble beginnings, the program grew over the years in size, stature, and influence. Duke responded in 1970 by elevating physical therapy education from a certificate program to a Master of Science degree, and in 1998 by making it a Doctor of Physical Therapy degree program.

During these first 75 years, Duke has been among the nation's premier physical therapy education programs, training expert practitioners and leaders in the field, providing first-class

"Duke set a high bar. It was instilled in us to do more and be more: Don't just be a great clinician, be a great clinician-plus. Be a leader, be a difference-maker. We were encouraged to be change agents."

Rebecca Craik



Students Meagan Patti, William Jackson, and Matthew Shiver listen during a class in the DPT program.

clinical care, and advancing knowledge through cutting-edge research.

"The program was exceptional, and the people were spectacular," says **Rebecca Craik, MPT'72**, dean of the Arcadia University College of Health Sciences in Pennsylvania. "Duke set a high bar. It was instilled in us to do more and be more: Don't just be a great clinician, be a great clinician-plus. Be a leader, be a difference-maker. We were encouraged to be change agents. The people who taught me inspired me, and I am so grateful that I went to Duke."

Duke DPT boasts an advanced curriculum that gives its students direct, hands-on clinical experience. The program is among the very top institutions in research funding and publications, and it offers students a wide range of mentored and culturally appropriate global health experiences.

"A lot of schools use tuition dollars from physical therapy students to subsidize programs outside of the physical therapy program," says Cook. "Here, because Duke is Duke, those dollars are invested back into this program, to provide resources and improve the educational experience for our students. That's one of the biggest things that sets Duke apart."

That investment pays off. The Duke DPT program's average graduation rate over the past five years is above 99 percent, and every single one of Duke's DPT graduates in recent years has passed the national licensing examination. The employment rate for recent Duke DPT grads: 100 percent.

CLIMBING AND STRIVING

Landry came on as division chief seven years ago and has dedicated himself to recruiting top faculty, launching new initiatives, and building the Duke DPT program for the future. Cook, a former faculty member who had gone on to chair a physical therapy program at another university, returned to Duke in 2014 and assumed directorship in 2016.

Several significant new faculty hires have been made, and the DPT program is clearly ascendant. When the most recent *U.S. & World News Report* rankings were released in 2016, Duke's physical therapy program was back in



the top 10 for the first time in a number of years.

"You can debate how truly accurate any rankings are, but there's no denying that they are important," says Landry. "We've worked very hard to create a new environment. We've brought in some great people. We shifted into the Department of Orthopaedic Surgery, which is where the program began all those years ago, so that's a nice bookend to our story. We've had a meteoric rise in research funding, and we're certainly in the top five programs in research publications. And all of this hard work makes a difference: In just six years we've climbed from

26th to No. 10 in the rankings. Entering the top 10 in rankings is pretty good, but not good enough. Our motto now is 'Strive for Five.'"

FULLFILLING DREAMS

That effort incorporates a host of forward-looking improvements. Duke DPT is building on its already advanced curriculum—which features team-based learning, flipped classrooms, and other innovative teaching models—by planning and implementing new offerings that, by 2021, will include a "hybrid" education option, allowing students to complete the bulk of their education remotely online and come to

campus for intensive hands-on clinic and laboratory training.

And even before that, Duke DPT is redesigning its curriculum to offer every student the opportunity to craft their own educational track to align with their interests and professional aspirations.

"We are way ahead of the curve in offering personalized education," Cook says. "The American Physical Therapy Association recently released a statement envisioning this as the model for the future—but they projected it being probably decades away for most programs. We've been able to tackle it within a couple of years. To our knowledge, we're

Students Janna La Barrie and Cody Davis practice on Christine Dang while Medical Instructor Marcus Roll, PT, DPT, gives instruction. On the right-hand table, Hannah Rose Tucker practices on Lisley DaSilva.

the first DPT program to offer that.”

All of this is in keeping with Duke DPT’s aspirations to do more than simply graduate well-educated and highly skilled physical therapists.

“We’re looking at the best way to give each student the educational experience that will allow them to follow the path they dream of,” says Landry. “What usually happens is a student will begin a PT program and say, ‘I want to be a pediatric physical therapist,’ and the school says, ‘Well, that’s fine, but this is our curriculum, so this is what you’re going to do.’ There is often little acknowledgment of past experiences or individual interests, and so what we’re doing instead is saying, ‘OK, what does this particular student need as a baseline to be a good clinician, and how can we facilitate entry into their areas of specific interest or specialization like pediatrics, orthopaedics, or neurology? What does the evidence tell us a modern adult learner needs to know to be a successful pediatric physical therapist?’ And then we hope to be working with that student to tailor their courses, research, and clinical experience accordingly in a new more responsive curriculum. Yes, we graduate clinicians of the future. But what we’re really doing is fulfilling dreams.”

“There are so many things happening in rehabilitation, in research, in clinical care, in education. It’s one of those moments in time when everything comes together in a great convergence.”

Michel Landry

A NEW HOME

Perhaps nothing represents the DPT program’s own dreams as much as its soon-to-be new home. When the 102,000-square-foot facility opens in late summer of 2019, the physical therapy program, along with orthopaedics and the School of Nursing, will move into the heart of the medical campus.

That proximity symbolizes physical therapy’s integral role in health care and health care education, but its importance is more than merely symbolic. The building will facilitate precisely the sort of close collaboration and interaction that are the essence of inter-professional education, an approach that Duke has embraced to encourage health care students and practitioners to work together and learn from each other.

“I was, of all things, sitting at the finish line during the Singapore Formula One Grand Prix this past year, and I watched the pit crews: the race car comes in, and the team leaps into action,” Landry says. “Everybody has a specific job, they are experts at that specific task, they are fully aware of what the others are about to do, and they all work together. It’s amazing to watch: in seconds, the pit crew has the old tires off and new ones on, and the car is gone, back



DUKE MEDICAL CENTER ARCHIVES

A 1947 physical therapy class.

into action. And as I watched, I thought about the writings of Atul Gawande, and said to myself 'That is what health care delivery into the future should work like...' That's the ideal: a seamlessly coordinated team of highly trained people. And that's what being on campus is going to make much more possible for our students. You'll have doctors, nurses, PT students, physician's assistants, everybody training and working together. Just being in the same environment matters: you can learn a lot by just rubbing elbows at the proverbial water cooler."

The new building will be equipped with state-of-the-art technology and will accommodate new curriculum models, advanced skills training, and collaborative education. The Duke Health Center for Interprofessional Education and Care will be situated in the same building.

"This new building is tremendously important to the continued growth of our nationally recognized Doctor of Physical Therapy program, which has been located off-campus for many years," says Mary E. Klotman, MD, dean of the Duke University School of Medicine and vice chancellor of health affairs. "In creating a campus presence, the physical therapy students will strengthen important connections to clinical services and campus life. The ability to co-locate with the School of Nursing also allows us to focus on a new office of Interprofessional Education which will teach students the value of patient-centered care across multiple medical disciplines."

TURNING THE PAGE

In the end, of course, at the March 27 groundbreaking, Landry did—reluctantly—relinquish the shovel. But he's holding on with both hands to the vision of the Duke DPT program that he, Cook, the faculty, students, and alumni are creating together.

"This is one of the most exciting times at Duke University in physical therapy in the entire 75-year history of the program," Landry says. "There are so many things happening in rehabilitation, in research, in clinical care, in education. It's one of those moments in time when everything comes together in a great convergence."

That convergence, he says, is the first step toward the next 75 years of physical therapy education at Duke.

"The 75th anniversary is the end of the beginning," Landry says. "This year we're turning the page on the end of the first chapter, and we're opening the next one. I can't wait to see how it turns out." ■



1943

1930 Duke Hospital opens in Durham
1943 Helen Kaiser establishes the Duke Physical Therapy Program

1944 Duke's first class of four PT students graduates, earning a Certificate of Completion from the School of Medicine

1953

1952 Duke PT staff member Miriam Jacobs assists Jonas Salk in the development of the polio vaccine



1963



1970 Duke PT program shifts from a Certificate to a Master of Physical Therapy degree

1973



1983



1993



1998 Duke begins offering a Doctor of Physical Therapy (DPT) degree

2003



2007 Duke DPT program moves from Duke Clinic to its present dedicated space

2013

2018



2019 Duke DPT program is scheduled to move into a new 102,000-square-foot facility

Finding a Path Together



“Duke helped make us who we are,” Ernest says. “We felt it was important to give back to institutions that have been most important to us.”

Ernest Borden, MD’66, had only been at Duke University School of Medicine for a week when he went on a blind date with a School of Nursing senior. They clicked, and after his internship in the Department of Medicine, he and **Louise Borden, BSN’63**, were married in Duke Chapel.

Duke set the Bordens on their professional paths as well as their personal ones. Ernest built a successful career as a translational cancer research investigator and prominent leader at institutions including the University of Wisconsin Carbone Cancer Center and the Taussig Cancer Center of the Cleveland Clinic/Case Western University School of Medicine. Louise

became a nursing supervisor specializing in rehabilitation at university hospitals of Duke, Jefferson in Philadelphia, and Emory in Atlanta.

The Bordens have expressed their appreciation for Duke’s role by giving generously to programs that reflect their interests. They support programs at the School of Medicine and School of Nursing that emphasize interdisciplinary collaboration, including pilot research grants in the Molecular Physiology Institute; clinical research experiences for PhD students in the Duke Scholars in Molecular Medicine program; and a scholarship endowment at the School of Nursing.

To learn more about how you can direct your giving to support Duke Health programs most important to you, please contact **Jason Bouck**, director of Davison Club and Special Gifts, at **919-385-3162** or jason.bouck@duke.edu.

“Jason was particularly helpful in guiding us toward programs which fitted our interests,” says Louise.

Or make gifts online at gifts.duke.edu/daa.



James Mold is a revered family physician, geriatrician, researcher, and leader who has helped to reshape our thinking about health and health care.

After spending six months in Ghana, West Africa, Jim returned to North Carolina to practice in Hillsborough and teach Duke medical students and residents. After six years in private practice, he was recruited to the University of Oklahoma Health Sciences Center (OUHSC), where he spent most of three decades.

The field of practice-based research owes much to Mold, recipient of the field's first Pioneer Award. Over a period of 20 years, clinician members of the Oklahoma Physicians Resource/Research Network (OKPRN), in collaboration with Mold's research team, completed more than 75 major projects resulting in more than 100 publications. Now an independent non-profit organization, OKPRN continues to support high-impact studies that transform primary care.

Early OKPRN studies focused on clinical care challenges such as treatment of spider bites, poison ivy, and night sweats, and administrative issues including management of abnormal laboratory results, reduction of no-shows, and management of prescription refill requests. A longitudinal study of geriatric patients resulted in new information about the frequency, predictors, and consequences of peripheral neuropathy and a series of foundational analyses of a commonly used cognitive test panel.

James W. Mold, MD'74, MPH



Distinguished Alumnus Award

In 2000, the network began to study how to improve the delivery of preventive services, a field now called "implementation science." Mold is widely credited with creating the professional role of practice facilitators to help practices improve, and for advocating for a primary care extension service modeled on agricultural extension—an idea authorized in the Patient Protection and Affordable Care Act. Many states are in the process of developing extension systems to support quality improvement in primary care. For these contributions he was elected to the National Academy of Sciences' Institute of Medicine in 2008.

Perhaps his most important contribution, a reconceptualization of health and health care around patient-relevant goals rather than clinician-directed strategies, is only beginning to be recognized. Since retirement

EDUCATION:

University of Michigan; Duke University School of Medicine; University of Oklahoma Health Sciences Center

TRAINING:

University of Rochester/Highland Hospital; University of North Carolina

CURRENT TITLES:

George Lynn Cross Professor Emeritus, Department of Family and Preventive Medicine, University of Oklahoma Health Sciences Center; consultant to the University of Oklahoma Health Sciences Center

he has written and published a book on the subject called *Achieving Your Personal Health Goals: A Patient's Guide* and established a website at goldirectedhealthcare.org, which includes case examples, a teaching video, and a list of relevant publications.

Throughout his career, Mold has contributed to undergraduate and graduate medical education. He has inspired many young family physicians to get involved in research while continuing to provide outstanding care to patients. In 2014, the year he retired, the OUHSC established the James W. Mold Oklahoma Primary Healthcare Improvement Cooperative within its Center for Clinical and Translational Research, and he was named Family Physician of the Year by his clinician peers.

Jeb Hallett has enjoyed a long and distinguished career at top medical centers around the country, where he has performed leading-edge vascular surgery, advanced research, built world-class vascular programs, and helped shape medical education for young physicians following in his footsteps.

The Duke University School of Medicine graduate's brilliant career really took off while he was at the Mayo Clinic, where he founded and directed the Vascular Center, led education programs for the Department of Surgery, and served as associate dean for faculty affairs at the medical school, among other leadership roles. While at Mayo, he became internationally recognized for his clinical acumen and contributions to the performance of complex surgical procedures.

Recruited from Minnesota to Maine, Hallett started the Vascular Care of Maine Center at Eastern Maine Healthcare before settling in Charleston, South Carolina, where he served for over a decade as chief innovation officer at Roper St. Francis Healthcare and medical director of the Heart and Vascular Center that he pioneered there. He also helped develop Medical University of South Carolina (MUSC) Cardiovascular Telehealth, a program that provides health care screening and follow-up to rural patients who have barriers to traveling to the hospital.

Hallett's research interests have covered a broad swath, and have led to new standards of care in vascular surgery. His epidemiologic research at Mayo



KATE THORNTON

John (Jeb) Hallett, MD'73

Distinguished Alumnus Award

demonstrated that commonly performed surgery for small aortic aneurysms was unnecessary, and he established new metrics for when surgery is indicated, saving countless patients from unnecessary procedures. More recently, he performed one of the first successful procedures using autologous stem cells to save lower limbs with vascular ischemia.

Known for his innovation, integrity, and perseverance in dealing with some of the most important issues and controversies facing the field of vascular surgery, Hallett is also considered an innovator in the business of medicine. He has established successful, patient-centric models for the practice of vascular surgery, a topic he has written, spoken, and consulted on broadly. He was the driving force behind the creation of the multi-institutional Carolinas Vascular Quality Initiative to improve care throughout the region, and



EDUCATION:

U.S. Air Force Academy; Duke University School of Medicine

TRAINING:

U.S. Air Force Medical Center, Lackland Air Force Base, Texas; Harvard Medical School; Massachusetts General Hospital

CURRENT TITLES:

Clinical Professor of Surgery, Medical University of South Carolina, and a senior consultant in cardiovascular telehealth

helped develop health-related outreach for African American families and a medical discovery class for children from underserved communities.

A gifted educator who has built strong training programs for medical students, residents, and fellows, Hallett models his commitment to "put the patient first." He wrote two innovative textbooks on vascular care and surgery and, under his leadership, Mayo was one of the first academic medical centers to create a leadership program to encourage more women to go into vascular surgery.

In recent years, Hallett has made seminal contributions in the areas of patient safety and quality outcomes. He has combined his passion for medicine and his love of art, organizing a museum-based program on the healing aspects of art and encouraging local artists to donate their work to the hospital to enrich the lives of patients.

A renowned authority in the fields of molecular pharmacology and cancer biology, Patrick Casey has made many contributions to Duke over nearly three decades here. But some of his greatest contributions have taken place half a world away from Durham, at Duke's campus in Singapore, where he has helped build a novel program that is changing the face of global medical education and research.

After completing his post-doctoral fellowship, Casey joined Duke University Medical Center—stateside—in 1990. He established and served as inaugural director of the Center for Chemical Biology, which he

forged into a major organization of Duke scientists dedicated to studying the fundamental basis of disease. He also helped create and direct the University Program in Molecular Cancer Biology, a graduate and postdoctoral training program for future leaders in the field.

A prolific and highly influential researcher, Casey is widely recognized for his seminal contributions to the field of regulatory biology. Awards and honors abound, including most recently his election as a fellow of the American Association for the Advancement of Science. He has received more than 25 years of continuous funding from major agencies in the U.S. and Singapore, served on numerous editorial boards, and holds nine patents for technologies launched in his laboratory.

In 2005, while at the peak of his research productivity,

Distinguished Faculty Award

Patrick Casey, PhD



EDUCATION:

Augustana College;
Brandeis University

TRAINING:

Brandeis University;
University of Texas
Southwestern
Medical Center

CURRENT TITLES:

James B. Duke
Professor of
Pharmacology and
Cancer Biology;
senior vice-dean of
research, Duke-
National University
of Singapore Medical
School

Casey was asked to spearhead the creation of Duke-National University of Singapore Medical School (Duke-NUS). As “employee number one” at Duke-NUS, the vice-dean of research relocated overseas and immediately distinguished himself as an exceptional medical scholar, researcher, educator, and academic leader. He developed signature research programs in cancer and stem cell biology, cardiovascular and metabolic disorders, neuroscience and behavioral disorders, emerging infectious diseases, and health systems research; recruited and mentored top-flight investigators and scholars; launched a unique PhD program in integrated biology and medicine; and fostered a collaborative and nurturing environment for science to thrive. He played a key role in establishing SingHealth Duke-NUS Academic Medical Centre, an incubator for translational medical discoveries, and helped establish Duke-NUS as a global leader in medical research and education in a relatively short span of time. As a conduit between the two Duke campuses, he facilitated many valuable partnerships in research and education.

In addition to his contributions to research and administration, Casey has mentored legions of medical and PhD students and post-doctoral fellows on both continents. Many of his former trainees are now leaders themselves in academia and in the pharmaceutical and biotechnology industries.

Over a Duke career spanning more than a half-century, electrical engineer and computational specialist Frank Starmer made pivotal contributions to an era of tremendous innovation at the interface of medicine, engineering, and computational sciences.

Even as a Duke undergraduate, Starmer was already applying his engineering studies to medicine. Later, that early work would evolve into major biomedical advances, including a partnership with the Duke Cardiac Catheterization Lab and thoracic surgeons to develop the electrical threshold of ventricular fibrillation as the basis for the national code for grounding in hospital critical care areas. Together with **Joseph Greenfield, MD, HS'57-'59**, and **Andy Wallace, MD'59, HS'59-'64**, he secured a National Institutes of Health grant to enable Duke University School of Medicine to buy its first digital computer for a study on myocardial infarction.

One of Starmer's most visible contributions at Duke was creating a system to capture data from patients undergoing coronary angiography, with the goal of using this information to improve the care of future patients. So was born the Duke Databank for Cardiovascular Disease, the forerunner of the Duke Clinical Research Institute. DCRI is now the world's largest database on the outcomes of cardiovascular care and orchestrates dozens of major clinical trials each year. While putting together the computational infrastructure for the databank, Starmer was asked to help start Duke's Computer Science Department—another of his many contributions to the growth of Duke University

C. Frank Starmer, BSEE'63, MSEE'65, PhD

PRESTON WACK

Distinguished Faculty Award

and its emergence as a top-tier research university.

In 2006, after eight years in Charleston, South Carolina, Starmer was enticed back to Duke—this time to undertake the herculean task of developing the IT infrastructure for the nascent Duke-National University of Singapore Medical School (Duke-NUS). As associate dean for learning technologies, he was instrumental in getting the school off the ground and spearheaded the implementation of a robust IT infrastructure necessary for the school's then-revolutionary decision to deliver the curriculum exclusively through team-based learning (TBL). Duke-NUS was the first medical school in the world to use TBL for 100 percent of its preclinical coursework; many other schools are following suit. He also created an anytime/anywhere learning environment for first-year students by packaging lectures on USB drives; leveraged smartphones and Bluetooth-enabled



EDUCATION:
Duke University;
Rice University;
University of North Carolina

CURRENT TITLES:
Professor emeritus
of computer science,
Duke University

medical devices to build a real-time feedback loop between patients and care providers; and engineered a smartphone app for medication compliance and status monitoring.

Starmer regularly collaborated with colleagues throughout the world, with special emphasis on his beloved Greece and India. In Singapore, he mentored and trained medical students, especially those with an engineering bent. He even helped local Singaporean educators implement TBL in their classrooms. Starmer credits mentors Greenfield and Wallace, along with Eugene Stead, MD; **Gus Grant, MD, PhD, HS'79-'80**; **James Wyngaarden, MD, PhD, G'06**; and **Ranga Krishnan, MD, HS'81-'84**, for much of his success. He has paid that inspiration forward as a mentor himself; brilliant, imaginative, and hard-working, Starmer is known for his ability to foster an environment that kindles the joy of learning, whether in the classroom, clinic, or computer lab, and for motivating his team of IT and education specialists to push beyond perceived limits.



EDUCATION:
Pacific Lutheran University;
University of Washington School of
Medicine; University of Washington;
University of Southern California

TRAINING:
University of Washington; Harvard
Medical School; Atkinson Morley's
Hospital, St. George's Medical
School, London

CURRENT TITLES:
Distinguished professor of
neurosurgery, neurobiology, and
global health, School of Medicine,
Duke University; vice chair of
education and program director,
Neurosurgery Residency; founder
and chief, Division of Global
Neurosurgery and Neurology;
program and training director, Duke
Neurosurgery; surgical director, Duke
Epilepsy Center; co-director Ugandan
Neurosurgery Training Program

Where in the world is Michael Haglund? Tracking down the busy Duke neurosurgeon isn't easy, as Haglund regularly leads teams of medical professionals to countries including Ecuador, Uganda, Rwanda, and Kenya to perform complex neurosurgical procedures and establish surgical facilities in-country.

After his first trip to Uganda in 2006, Haglund founded the Duke Global Health PLUS (Placement of Life-Saving Useable Surplus) program. Thus far, the program has provided more than 92 tons of medical equipment and supplies worth \$13 million to Uganda and more than \$1 million of equipment to Rwanda. He started and co-directs Uganda's first Neurosurgery Training Program—one of sub-Saharan Africa's only neurosurgery residency programs—at Mulago National Referral and Teaching Hospital, which has doubled the number of neurosurgeons in Uganda from five to ten, with a goal of 50 by 2030. In addition, Haglund created a course to train Uganda's general surgeons in basic lifesaving neurosurgery procedures and has organized surgical camps led by Duke Health professionals to perform surgeries and train Ugandan neurosurgeons, anesthesiologists, and nursing staff on how to use the surplus equipment, increase their clinical efficiency, and perform more complex surgeries. He has secured grants to conduct research to build surgical and care capacity and, ultimately, a countrywide neurosurgery network.

Haglund also serves as volunteer coordinator for the Foundation for International Education

for Neurological Surgery, assigning teams of medical personnel to work in underserved communities around the world. Many of these providers use Haglund's strategic and effective efforts in Uganda as a model to have a similar humanitarian impact in other regions.

Renowned worldwide for his expertise in treating epilepsy and cervical spine disease, Haglund is the surgical director for the Duke Epilepsy Center. He is also heavily involved in education and is a role model for both students and colleagues on the power of giving back. He has mentored Duke undergraduates, medical and graduate students, neurosurgery residents, and postdoctoral fellows, and led a group of Durham students from underrepresented

Humanitarian Award

Michael M. Haglund, MD, PhD

BEN MCKEOWN



minority backgrounds through a yearlong leadership course that culminated in a life-changing trip to Uganda. His passion and persistence even led the Duke Department of Neurosurgery to start the Division of Global Neurosurgery and Neurology—the first global neurosurgery division in the country—which sends multidisciplinary teams of providers to perform complex brain and spinal surgeries, and offers fellowships for Duke and UNC medical students to participate.

Haglund has received numerous accolades for his humanitarian work and efforts in global health education, including the Leonard Palumbo Duke University Teaching and Mentoring Award, the American Association of Neurological Surgeons Humanitarian Award, and the University of Washington Alumni Humanitarian Award.



Thomas A. Owens



Lesley H. Curtis



Christopher Plowe

OWENS NAMED PRESIDENT OF DUKE UNIVERSITY HOSPITAL

Thomas A. Owens, MD, HS'95-'99, took office as the new president of Duke University Hospital on January 1 of this year. Owens succeeds Kevin Sowers, who was named president of the Johns Hopkins Health System and executive vice president of Johns Hopkins Medicine.

Owens retains his title of senior vice president for Duke University Health System (DUHS). As the health system's chief medical officer, Owens led work across DUHS to redesign, realign, and in some cases reinvent the ways care is delivered in many areas of clinical practice; oversaw the expansion and enhancement of DUHS's primary care network; and helped shape an institutional approach to population health. He also served as the clinical leader responsible for the planning, preparation, and implementation of the health system's electronic medical record system, one of the most fundamental transformations across DUHS since its inception in 1998.

Owens has held a number of positions of increased responsibility throughout his career at Duke, including chief medical officer for Duke University Hospital and chief of the DUHS Hospital Medicine program prior to being named chief medical officer for the health system in 2012. He was named senior vice president in June of 2017.

DAA HONORS THREE SOM ALUMNI

Three School of Medicine alumni were honored with 2017 Duke Alumni Association Awards. The awards honor outstanding achievement and commitment to Duke and its alumni around the world.

The DAA presented **Juan Batlle, T'78, MD'79, HS'79-'80**, with a Beyond Duke Service and Leadership Award, awarded to alumni who have distinguished themselves through service to their community, their country, or society at large. Batlle received the award for service to a local community. In 1985, Batlle opened Elias Santana Hospital for the poor in Santo Domingo, which revolutionized eye care for his entire home country of the Dominican Republic. Elias Santana Hospital and its 28 faculty members, trained and mentored by Batlle, provide critical eye care that never before had been available.

David Feldman, T'80, MD'84, was presented with a Charles A.

Dukes Award for Outstanding Volunteer Service. Feldman has served Duke for more than three decades in capacities including the presidency of the Medical Alumni Council; the Alumni Admissions Advisory Committee; the Trent Semans Center for Health Education Steering Committee; and the DukeNY regional board.

Nicholas J. Leonardy, T'81, MD'85, was honored with a Forever Duke Award. The honor recognizes alumni for excellent recent volunteer service to Duke, to the DAA, and to other alumni groups.

CURTIS NAMED CHAIR OF POPULATION HEALTH SCIENCES

In November, Lesley H. Curtis, PhD, was named chair of the Department of Population Health Sciences. Curtis had served as interim chair of the department since July 2017, when the Duke University Board of Trustees approved creation of the department. From

2016-2017, she was director of the Center for Population Health Sciences, which served as a launching pad for the new department.

The Department of Population Health Sciences engages faculty members from a variety of disciplines including epidemiology, health services research and policy, health economics, health measurement and behavior, and implementation science, which share an interest in answering complex questions about the drivers of health in populations.

In addition to her role as chair, Curtis is director of the Center for Pragmatic Health Systems Research in the Duke Clinical Research Institute. She also leads the Distributed Research Network Operations Center for Patient-Centered Outcomes Research Institute's National Clinical Research Network, is co-PI of the NIH Health Care Systems Collaboratory, and co-leads the Data Core for the Food and Drug Administration's Sentinel Initiative.

PLOWE IS NEW DIRECTOR OF DGHI

On January 1, Christopher Plowe, MD, MPH, began his tenure as director of the Duke Global Health Institute (DGHI) and professor of medicine and global health.

Plowe, who was the founding director of the Institute for Global Health at the University of Maryland's School of Medicine, succeeds Michael Merson, MD, who stepped down last year after leading the institute since it was launched in 2006. Randall Kramer, PhD, DGHI's deputy director and

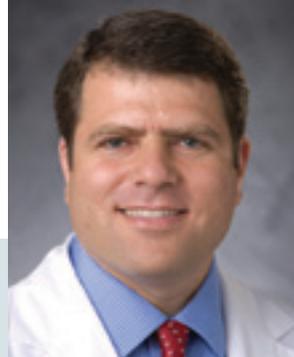
Awardees Juan Batlle and Nicholas J. Leonardy with Duke University Alumni Board of Directors member Mark W. Scroggs, MD'84, HS'84-'88, '91-'94



MEGAN MENDENHALL



John H. Sampson



David G. Kirsch



Sherilynn Black

the Juli Plant Grainger Professor of Global Environmental Health, served as interim director.

Plowe was the Frank M. Calia, MD, Professor of Medicine at the University of Maryland's School of Medicine, where he had been a member of the faculty since 1995.

FACULTY, STUDENTS ELECTED TO AOA

Two School of Medicine faculty and nine SOM students were elected to the Alpha Omega Alpha (AOA) Medical Honor Society last fall.

Elected to the Duke University School of Medicine chapter of the Alpha Omega Alpha Medical Honor Society were:

FACULTY

- **Michael Cohen-Wolkowicz, MD, PhD, HS'09**, Professor of Pediatrics
- **S. Yousuf Zafar, MD, HS'05-'08, MHS'09**, Associate Professor of Medicine

MEDICAL STUDENTS

- Julia Marie Farquhar
- Jeffery Tin Wai Kwock
- Amudan Srinivasan
- Howard Jinsoo Lee Jr.
- Malhar Piyush Patel
- Daniel Steven Harrison
- Monisha Sachdev
- Neel Som Nath
- Allison Kathryn Kratka

Criteria for election to the AOA include scholastic achievement, leadership capabilities, ethical standards, fairness in dealing with colleagues, demonstrated professionalism, achievement and/or

potential for achievement in medicine, and a record of service to the school and community at large. Membership in AOA is a distinction that accompanies a physician throughout his or her career.

SAMPSON ELECTED TO NATIONAL ACADEMY OF MEDICINE

John H. Sampson, MD, PhD'96, HS'91-'97, has been named to the prestigious National Academy of Medicine. Sampson is the Robert H. and Gloria Wilkins Distinguished Professor of Neurosurgery, chair of the Duke Department of Neurosurgery, and co-leader of the Duke Cancer Institute Neuro-Oncology Program.

Sampson is a recognized leader in the surgical resection and experimental treatment of complex brain tumors. His clinical practice is focused on treating patients with both benign and malignant brain tumors, while his research laboratory is actively investigating immunotherapy and new modalities of precision drug delivery to brain tumor tissue while avoiding healthy tissue.

Sampson's research led to the development of a vaccine against a common mutation in brain tumors that was given Breakthrough Therapy Designation by the Food and Drug Administration after it was shown to extend survival in patients with glioblastoma multiforme, the most lethal form of brain cancer. He has authored more than 240 peer-reviewed publications in this

field and has been continuously funded by the National Institutes of Health since 2000.

Election to the National Academy of Medicine is considered one of the highest honors in the fields of health and medicine and recognizes people who have demonstrated outstanding professional achievement and commitment to service.

KIRSCH NAMED AAAS FELLOW

David G. Kirsch, T'93, MD, PhD, the Barbara Levine University Professor in the Department of Radiation Oncology, is among three Duke University faculty recently named Fellows of the American Association for the Advancement of Science (AAAS).

Kirsch also is vice chair for basic and translational research in the Department of Radiation Oncology and a professor in the Department of Pharmacology and Cancer Biology. He studies cancer biology, using mouse models to study radiation oncology and sarcomagenesis. Last year the Radiation Research Society honored him with the J.W. Osborne Award, presented to a society member who has contributed significantly to the understanding of normal tissue radiation responses.

Kirsch joins fellow Duke faculty members Ana P. Barros, PhD, the James L. Meriam Professor of Civil and Environmental Engineering; and Thomas Mitchell-Olds, PhD, the Newman Ivey White Professor of Biology, in being named Fellows of the AAAS.

BLACK APPOINTED VICE PROVOST FOR FACULTY DEVELOPMENT

Sherilynn Black, PhD'08, was named the newly created associate vice provost for faculty development.

Black is responsible for faculty development and success, including mentoring, support for pre-tenure and mid-career faculty, career pathways and professional development for non-tenure system faculty, and resources and programs for developing an inclusive climate within our academic units.

Black is an assistant professor of the practice of medical education. Prior to taking on her new position, she was director of the Office of Biomedical Graduate Diversity since its establishment in 2010. In that role, she worked with units within the School of Medicine to identify highly promising and talented scientists, created administrative systems and programs to support faculty, put in place effective mentoring programs, and built partnerships with the Graduate School, Arts and Sciences, the Pratt School of Engineering, the School of Nursing, and other units on campus.

A young woman comes to a clinic in San Antonio, Texas, after her boyfriend goes to prison. She wants to begin a new life outside of the gang world they were part of. Before he went to prison, her boyfriend left reminders to ensure she would not forget him: his name tattooed on her breasts. She asks the doctor to help her start a new phase in life by removing the tattoos, but she can't afford laser removal.

Tolbert Wilkinson, MD'62, HS'64, a plastic surgeon, treated that young woman and thousands like her—people from all walks of life looking to erase their past and begin anew.

In 1997, the tiny police department in Bandera, Texas, asked him to help with the X-Tattoo Program, a tattoo-removal program designed to help former gang members leave their old lives behind and become productive members of society.

Wilkinson, who was assigned to develop an inexpensive tattoo-removal system by a national plastic surgery organization, agreed. He donated his time and expertise, and with other volunteers treated up to 80 people per morning. When demand outgrew clinic space, Wilkinson began treating people at his ranch in Bandera. "Initially, we treated people who wanted to get out of gang life and have a better chance," says Wilkinson. "Others did not have a chance to find a job with visible tattoos on their faces, necks, and arms. It was gratifying to see workers, housewives, and others who could not afford the cost of laser removal get on with their lives."

AFFORDABLE CARE

Wilkinson developed a simple tattoo removal system that made treating a high volume of patients possible. The TOBIL (Tattoo Obliteration by Intense Light) system uses a small portable device that creates an intense beam of white light that shatters all tattoo colors. This technique, he says, is effective, faster, and inexpensive



ALEXANDER ALTMAN

OBLITERATING THE PAST

"I had an 80-year-old cowboy who asked to remove a tattoo from his body before he died, and an elderly couple who asked to remove a woman's name from the husband's arm that he tattooed before he married his wife 40 years ago."

Tolbert Wilkinson

compared to laser treatment. "Laser treatment can take 10 or more treatments to remove one tattoo, and it costs thousands of dollars," he says. "With our system, it takes two to three visits to get rid of the tattoo at less than a tenth of the cost of laser." Wilkinson says the TOBIL system is affordable for nonprofit and rehabilitation groups.

Over time, the X-Tattoo program expanded beyond its original population and Texas. Young people came to him who had been turned away from the military because they had visible tattoos. "It made me feel good to see them coming back to visit in their Marine uniforms," he says. Others were people who, for various reasons, came to regret their tattoos. "I had an 80-year-old cowboy who asked to remove a tattoo from his body before he died, and an elderly couple who asked to remove a woman's name from the husband's arm that he tattooed before he married his wife 40 years ago," he says.

Wilkinson volunteered for the program for over two decades.

He provided training for similar initiatives in 23 states in the U.S. and eight countries in Central and South America.

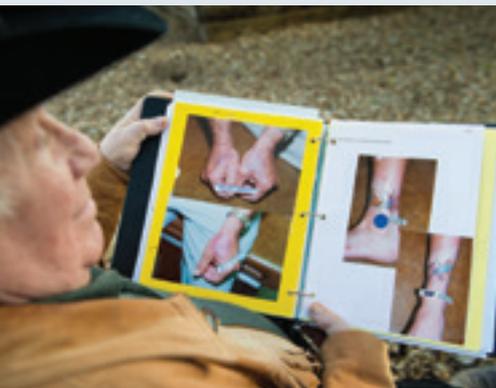
FAMILY TRADITION

As a child, Wilkinson dreamed of teaching literature, but growing up in a family of physicians steered him toward medicine. His father was a family practitioner in Wake Forest and served on Duke University Medical Center's Advisory Board, and his two uncles were physicians. So were his two older brothers—**Charles, MD'56, HS'58**, and **Harold, MD'59, PhD'62, HS'62**,—and he followed them into Duke University School of Medicine.

Alongside his successful medical career, Wilkinson fostered a professional-level career playing polo for 25 years. He coached and competed in pentathlon and polo tournaments and became friends and playing partners with the actor Tommy Lee Jones, a longtime championship polo player.

In 1981, Wilkinson and his wife,

Suzanne, served as delegation chiefs of the International Women and Junior Men's Pentathlon in London and he was the vice president of the U.S. Olympic Modern Pentathlon teams. Wilkinson was also named royal physician for Princess Anne of the British Royal Family. Wilkinson, in cowboy hat, was in charge of Princess Anne's health while she attended shooting matches in Dartford, outside of London, and later was invited to the Queen's Royal Box. "There must always be an attending physician whenever members of the royal family are present," says Wilkinson.



“Initially, we treated people who wanted to get out of gang life and have a better chance.”

Tolbert Wilkinson

In 2014, after he had both knees replaced, Wilkinson retired to his ranch. He hopes that civic organizations will take the reins and sponsor affordable tattoo-removal programs in their communities. "You don't have to be a doctor for that, and you can do it anywhere, not only in clinics," he says. "We can train them and help them start up a program."

— By Aliza Inbari

1950s

Roman Patrick, T'54, MD'57, HS'58, '62, retired from his role as medical director at SmithKline Clinical Laboratories (now Quest Diagnostics) in 1999 and began pursuing his intense interest in music. He studied music theory and composition at two colleges and piano performance with a noted piano performer for 12 years. He now performs at charitable events. He and his wife, **Evelyn, BSN'56**, have two sons and a daughter (deceased). They have one grandson.

James Pitzer Gills Jr., MD'59, retired from practicing ophthalmology in 2016. During his career, he founded St. Luke's Cataract and Laser Institute, one of the largest freestanding ambulatory eye care centers in the United States. At the time of his retirement, James had performed the most cataract and lens implant surgeries in the world. In 2005, he was honored with the Duke Medical Alumni Association's Humanitarian Award, and in 2007 he was elected to the Johns Hopkins Society of Scholars and received Johns Hopkins' Distinguished Medical Alumnus Award. He is also an author, entrepreneur, philanthropist, and an accomplished ultra-distance athlete. He and his wife, Margaret, have been married for 55 years and have two children and six grandchildren. Their son, **Pit Gills, MD'97**, a cataract surgeon, now leads St. Luke's as president and chief executive officer.

1960s

Elaine Eyster Dye, WC'56, MD'60, has been named a recipient of the Penn State Honorary Alumni Award. The award recognizes outstanding individuals who, though not graduates of Penn State, greatly enhance the university through their commitment and service. She will be inducted during a ceremony on June 1. She lives in Hershey, Pennsylvania.

William Baxley, T'55, MD'62, HS'63, retired in 1997 from his role as professor of medicine at the University of Alabama and has written a soon-to-be-published

memoir, *Life and Death in the Hospital*, a copy of which he would like to offer gratis to any interested classmates. He and his wife, Patricia Boswell, live in Birmingham, Alabama, and have three sons and seven grandchildren.

Donald Frank, MD'62, retired from neurosurgery in 2012 and is now taking annual trips to teach at the neurosurgical residency at the Antonio Lenin Fonseca Hospital in Managua, Nicaragua—the only neurosurgical residency program in Nicaragua. He and his wife, Cynthia, have three children and four grandchildren. The couple lives in New York City.

Joel Gilbert, MD'62, is retired and living in Basalt, Colorado. His wife, Charlene Anita Barnes Gilbert, died on February 25, 2017.

Henry Magendantz, MD'62, provides gynecological care at the Free Clinic in Providence, Rhode Island. He lives in Pawtucket, Rhode Island.

Leslie C. Norins, MD'62, PhD, has founded a company called Alzheimer's Germ Quest, Inc., and sponsored a \$1 million Alzheimer's Germ Quest challenge award to encourage research into microbial infection as a possible cause of Alzheimer's disease. A veteran medical publisher and former researcher in infectious diseases and immunology, he is a fellow emeritus of the Infectious Diseases Society of America. He lives in Naples, Florida.

Stephen Boone, T'60, MD'63, PhD'64, retired from his career in neurosurgery in 2007. He is a retired brigadier general with the United States Army Reserve. He served in Vietnam and later as the neurosurgery consultant for the Department of Defense surgical team covering Skylab III and Skylab IV in 1973, as well as the first joint U.S.-Soviet space flight, Apollo-Soyuz, in 1975. He is the recipient of numerous awards, including the Legion of Merit, the Bronze Star with "V" Device and Oak Leaf Cluster for heroism in combat in Vietnam, and the Order of the Long Leaf Pine, one of North Carolina's highest honors bestowed by the governor. He lives in Raleigh, North Carolina.

Sykes DeHart, MD'67, HS'67-'69, '72-'75, retired in 2008 and is finding it "more fun than I could imagine." He spends time sailing and woodworking, including building furniture, turning various objects on the lathe (he made 35 pepper mills for Christmas presents one year), and restoring old wooden boats. He and his wife, Fran, have been married for 52 years and have three children and five grandchildren. The couple lives in Greenville, South Carolina.

W. Edwin (Ed) Dodson, T'63, MD'67, is professor emeritus of neurology and pediatrics at Washington University School of Medicine in St. Louis. He retired in 2013 after serving as associate vice chancellor, associate dean for admissions and for continuing medical education, and chairing the Committee for Admissions for the School of Medicine for 23 years. In 2015, he received the Second Century Award, Washington University School of Medicine's highest honor. He and his wife, Karen, have six children and 12 grandchildren. In retirement he reads, fly fishes, travels, and continues to teach in child neurology residents' clinic and interview resident applicants. The couple lives in St. Louis.

Rufus Head, MD'67, retired from a career in diagnostic radiology in 2007. He is still an avid skier at age 77. He and his wife, Susan, have two children and three grandchildren and live in North Bridgton, Maine.

Janice J. Johnston, MD'67, retired in 2011 and is now an advanced Certified Master Gardener after completing an intensive master gardening course in Connecticut. She and her husband, Richard, live and garden in Simsbury, Connecticut, and have one son, who is married.

Michael Stuart Levine, MD'67, has retired after a career in pediatric medicine. After two years in the U.S. Air Force, he worked with children with disabilities in Milwaukee for seven years and then moved to Hartford, Connecticut, where he went into general pediatric practice until retirement. Michael and his wife, Carolyn, a retired oncology nurse, have three children and five grandchildren,

CLASS NOTES

who range in age from 20 months to 17 years. The couple has lived in West Hartford for 37 years.

Allston Julius Stubbs III, T'63, MD'67, is a clinical professor of urology at Wake Forest University and practices as a staff urologist at the W.G. (Bill) Hefner VA Medical Center. He serves on several boards, including Winston Salem State University, the Woodrow Wilson Presidential Library, and the North Carolina Museum of History. He and his wife, Jean, who remains active in community affairs, have three grown children and nine grandchildren. The couple lives in Salisbury, North Carolina.

1970s

Ronald V. Maier, MD'73, was elected president of the American College of Surgeons (ACS) at the organization's annual conference last October. He is the Jane and Donald D. Trunkey Endowed Chair in Trauma Surgery, vice-chairman of the Department of Surgery, and professor of surgery at the University of Washington School of Medicine in Seattle. In addition to numerous leadership positions in the ACS, he has held leadership roles in many other professional organizations, including serving as president of the American Surgical Association, Society of University Surgeons, and others; and as past-director and past-chair of the American Board of Surgery.

Phyllis C. Leppert, MD'74, HS'74-'76, PhD, retired in 2013 and is professor emerita of obstetrics & gynecology at Duke University. She and her colleagues conducted extensive research on uterine fibroids and the development of a patented drug approach to their treatment. She is now president of the Champion Fund, a fund for fundamental science in reproduction that co-sponsored a meeting with the National Institute of Environmental Health Sciences on "Advances in Andrology" in 2017, and will co-sponsor a Gordon Research Conference on Mammalian Reproduction in Italy in July, 2018. She also serves on the board of directors for Frontier Nursing University in Hyden, Kentucky, and on the advisory board for Utah Physicians for a Healthy Environment.

She moved to Salt Lake City, Utah, to be near her brother, Mark, who is distinguished professor emeritus at the University of Utah, and his family.

Stephen Cochi, MD'77, HS'77, enjoys a 35-year career with the Centers for Disease Control (CDC) in Atlanta, Georgia. As the senior advisor for the Global Immunization Division of the CDC, he spends much of his time working with the World Health Organization and the United Nations Children's Fund (UNICEF) to eradicate polio, measles, and rubella. He and his wife, Jane, a research nurse at Emory University, have two grown children.

Joseph Eiden, T'71, PhD'75, MD'77, retired in August, 2017. He and his wife, Holly, live in Lewes, Delaware.

1980s

Doug Anthony, PhD'83, MD'84, HS'87, is chief of pathology at Lifespan Health Care affiliated with Brown University. With the advances in precision medicine, his work is morphing into translational medicine and lab testing. He notes that "empty nesting is really about helping with new nests. This is a great time in life helping our children start their homes and careers." He and his wife, Helen, live in Providence, Rhode Island.



Richard Brown, T'81, MD'85, recently completed a novel, *Scalpel's Cut*, which is a medical thriller. All proceeds from sales will go to Doctors Without Borders, an international medical humanitarian organization that treats people in need throughout the world. The book is available at scalpelscut.com. He is a practicing orthopaedic hand surgeon in La Jolla and Mammoth Lakes, California.

Marc Gorelick, MD'87, MSc, has left Children's Hospital of Wisconsin,

where he had practiced for 17 years, to accept a new position as president and chief operating officer of Children's Minnesota, a 420-bed, two hospital, free-standing children's health system. He has also left clinical practice but continues to "dabble" in academics. He and his wife, Lynn Broaddus, PhD'89, president of Broadview Collaborative, a water policy and sustainability consulting firm, live in Minneapolis, Minnesota, and have two sons who are both University of Wisconsin alumni.

Stuart Marcus, MD'87, MBA, is doing influential organizational work addressing the topic of physician burnout as chief clinical officer of Amita Health, in Chicago, Illinois. He accepted that position in August 2016 after finishing his MBA at the University of Massachusetts. He and his wife, Hilary, recently celebrated their 26th wedding anniversary and have two children, both in college. The couple lives in Chicago.

Lisa Rider, T'83, MD'87, is the deputy chief of the environmental autoimmunity group at the National Institute of Environmental Health Sciences, National Institutes of Health. She was recently recognized with the 2017 Lifetime Achievement in Research Award from the Cure JM Foundation and the 2016 PhRMA Research & Hope Award for Government Research for her work in autoimmune diseases. She and her husband, Simon, live in Bethesda, Maryland.

Brenda Powell, MD'88, HS'88-'91, is now the co-medical director for the Edwards Center for Integrative and Lifestyle Medicine at the Cleveland Clinic in Cleveland, Ohio. Board-certified in integrative medicine, she is a regular trip physician for National Geographic/Lindblad expedition cruises. She divides her time between Cleveland and Seattle.

1990s

Sharon Marie Castellino, MD'92, HS'95, '97, MSc, is now associate professor in the Department of Pediatrics at Emory University School of Medicine and director of the Leukemia and Lym-

CONTINUED ON PAGE 41

USING ARTIFICIAL INTELLIGENCE TO IMPROVE EYE HEALTH

When Stephen G. Odaibo, MD'10, HS'10-'11, says he's passionate about learning, you can be confident he is serious. His resumé certainly supports his life's love of learning. He completed a master's degree in mathematics at the age of 21 before starting at Duke University School of Medicine, and while at Duke he won the Barrie Hurwitz Award for Excellence in Clinical Neurology and obtained a second master's degree, this one in computer science. Since graduating from medical school, he has authored two textbooks on abstract mathematics and is working on a third book.

And today, after practicing as a retina specialist for three years, he's using his lifetime of learning on a new project. Odaibo has created a patent-pending artificial intelligence (AI) system designed to speed the diagnosis and treatment of retinal diseases, and he has started a company—RETINA-AI—that is using AI to improve health care. His brother, David, is a co-founder of the company.

"I'm building a company, and I'm very serious about it, and I'm fully committed," says Odaibo. "My vision is a profitable company that is committed to delivering excellent AI-enhanced health care, while also advancing our understanding of disease. I envision building something similar to the iconic 'Bell Labs,' but for digital health. We plan to prolifically output three 'P's: products, patents, and papers."

The prototype of Odaibo's AI system analyzes retinal scans and can differentiate with up to 90 percent accuracy between the two forms—commonly called wet and dry—of age-related macular degeneration (AMD) and consequently determine which patients

need treatment with intraocular injections. Odaibo's automated diagnosis system is deployed in the Cloud and therefore can be accessed by care providers from anywhere in the world. He believes it will increase access and decrease cost of care, while improving patient outcomes.

BUILDING A SKILL SET

Odaibo says that though building the AI system is not easy, the process has left him with a new set of skills for which he is grateful. "I have had to become what we in the AI industry call a 'full-stack engineer': someone who is able to train machine-learning AI-models, build front-end mobile applications, deploy and manage the AI system in the Cloud, and implement appropriate networking communication between the parts of the system." In addition to this, Odaibo says, "being a retina specialist, I have led the data-labeling effort. Overall, the process is exhilarating and gratifying."

While Odaibo says he cherishes the opportunity to have acquired new skills, he is planning to build a talented team over the next couple of years. And he looks forward to delegating several of the responsibilities he currently carries.

The useful and actionable representation of disease is a deep scientific question that Odaibo is tackling with a computational approach. He says that while two distinct forms or stages of a disease may seem identical to the expert human eye, "a computer that's able to do billions and billions of computations can determine there's actually something different about these two, and they should be treated differently."

Both investors and health care institutions have expressed interest in the company and research program.

COMING TO DUKE

Odaibo, now a U.S. citizen, was born in Nigeria, where his father is a U.S./U.K-trained gastroenterology surgeon. Odaibo came to the U.S. for school in 1997. He received his undergraduate and master's degrees in mathematics from University of Alabama at Birmingham (UAB). He arrived at Duke in 2002. From 2004 to 2006 he studied g-protein-coupled receptors with Robert



"I'm building a company, and I'm very serious about it, and I'm fully committed."

Stephen G. Odaibo

J. Lefkowitz, the 2012 Nobel Laureate in Chemistry. Following graduation from the School of Medicine in 2010, he joined the house staff at Duke University Hospital for his internship in internal medicine. He then completed an ophthalmology residency at Howard University and a medical retina fellowship at the University of Michigan-Ann Arbor.

While at Duke, Odaibo met his wife, Lisa, who subsequently attended medical school at the University of North Carolina at Chapel Hill. Odaibo continues his work on RETINA-AI in Houston, Texas, where he lives with Lisa and their two young children.

Odaibo says he is the only ophthalmologist in the world with graduate degrees in mathematics and computer science. In 2017 the UAB College of Arts & Sciences awarded him its highest honor, the Distinguished Alumni Achievement Award. He dedicated the award to his parents, Marie Boyowa Odaibo and Professor Stephen K. Odaibo.

"This award comes at an exciting time in my career, as I pivot toward a full-time role in our company, building artificial intelligence systems to improve health care," says Odaibo.

— *By David Pickel*

FOR ONE ALUMNA, FINANCIAL TOXICITY IS MORE THAN JUST ACADEMIC

In 2005, **Fumiko Chino, MD'14**, thought she had her future planned out. She was engaged to be married and was working in her dream job as an art director for a video animation company in Houston, Texas. "I got paid to watch cartoons for a living," she says. "It was fun."

The fun faded when her fiancée, Andrew Ladd, a doctoral student in robotics at Rice University, fell seriously ill. Ladd turned out to have neuroendocrine carcinoma, a rare cancer of the endocrine (hormonal) system cells. His cancer was very aggressive, and he began undergoing treatment to try to slow the disease's progress. It quickly became clear that the couple faced another hurdle: his student health insurance, with a \$500,000 lifetime limit, was not going to

come close to covering his medical bills.

"We were in our twenties, and it had never occurred to us that it might not be good insurance," says Chino. "Anyone with cancer is going to exceed this amount within less than one year."

DARK CLOUDS

Ladd soon maximized his pharmacy benefits, and he and Chino had to start paying out of pocket—thousands of dollars per month—for prescription drugs that he needed daily. Chino cashed out her retirement fund. Their parents helped as much as they were able.

"We borrowed money, and we were able to pay for the medications by hook or by crook," Chino says.

In spite of the struggles and an uncertain future, they got married as planned, and then moved in with Chino's parents in Indiana. "We bankrupted ourselves and relied heavily on our families," says Chino.

Despite their efforts, it was impossible to keep up. Hundreds of thousands of dollars in bills accumulated. Debt collectors began to call. "It was like a dark cloud hanging over us," says Chino. "The overwhelming debt was a perfect storm of stress in our lives. I got threatening phone calls."

In the end, the treatments those bills reflected weren't able to turn back his cancer. On March 4, 2007, Ladd died.

A NEW CHAPTER

Her husband's death redirected Chino's life. Leaving video production behind and instead setting her sights on working for positive changes in health care, she enrolled at Duke University School of Medicine.

Chino initially intended to study geriatrics. Then she heard **S. Yousuf Zafar, MD, HS'05-'08, MHS'09**, an associate professor of medicine and a medical oncologist at Duke Cancer Institute, give a talk about financial toxicity—the effects of health care costs on cancer patients' quality of life and care. She and Ladd had lived the very scenario Zafar described.

"It was a light bulb moment for me," she says. "I knew that I'll be passionate about cancer care and that I can actually make a change."

She joined Zafar in researching the causes and effects of financial toxicity. Last summer,

"The overwhelming debt was a perfect storm of stress in our lives. I got threatening phone calls."

Fumiko Chino



Chino and Zafar published a study in *JAMA Oncology* indicating that more than a third of insured cancer patients pay more out-of-pocket than they expected, despite having health coverage. Costs such as copayments and deductibles can lead to financial distress among patients, even those with insurance, of all income levels. On average, Chino and Zafar found, cancer patients spend 11 percent of their income on out-of-pocket health care costs, and some spend as much as one-third of their total household income.

That often forces difficult decisions, sometimes with serious medical consequences. Chino has seen patients who abandon or skip medications and treatments because they cannot afford them. "I had a patient who told me, 'I'm not willing to bankrupt my family for this,'" she says.

FINDING SOLUTIONS

Chino says one part of the solution is to make conversations about costs a routine part of patient care. She talks with her own patients about the costs of treatment, and if she knows that they cannot afford a particular medication, she might be able to prescribe a cheaper one that won't compromise their treatment.

Chino's journey has attracted attention; National Public Radio did a feature about her last summer. She hopes her story can bring more awareness to an issue facing so many patients, and maybe help lead to some positive changes. And that's why she went into medicine in the first place.

"If you don't think about the whole picture for cancer patients, you are missing out on the best way of treating them," she says. "We have all these great technologies and medicines like immunotherapy, radiation, and other techniques to target tumors, but all of that could fall apart if patients can't afford the gas to come to their treatment."

— *By Aliza Inbari*

CONTINUED FROM PAGE 38

phoma Program at Children's Healthcare of Atlanta. By coincidence, she has joined her brother, **Robert Craig Castellino, E'91, MD'99**, who also trained in Henry Friedman's lab at Duke, in the same division at Emory. She and her husband, Renato Santos, live in Decatur, Georgia, and have two daughters.

Mary E. Klingensmith, MD'92, is serving as chair of the board of directors of the American Board of Surgery for 2017-2018. She is the Mary Culver Distinguished Professor of Surgery and the vice chair for education in the Department of Surgery at Washington University in St. Louis, Missouri. She has two children, one in middle school and one in high school.

Tanya Wahl, MD'97, is a specialist in medical oncology and hematology at the Swedish Cancer Institute in Issaquah, Washington. She started rowing competitively in 2011 and in 2013 rowed in the Head of the Charles regatta in Boston, winning a silver medal in the Women's Master Fours race in a field of more than 40 boats. She and her husband, Gordy, have been married for 25 years. They have three sons (one deceased) and live in Issaquah, Washington.

2000s

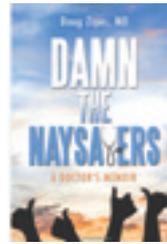
Christopher Young, MD'07, is board certified in obstetrics and gynecology and maternal-fetal medicine, and is practicing with Maryland Perinatal Associates. He has two young children and lives in Washington, D.C.

HOUSE STAFF NOTES

1950s

Armen C. Haig, MD, HS'57, continues to work half-time at New York-Presbyterian/Lawrence Hospital, where he is past director of orthopaedic surgery. He assists his son, **Scott Haig, MD**, also an orthopaedic surgeon, with joint replacements and shoulder arthroscopy. He lives in Greenwich, Connecticut.

1960s



Douglas P. Zipes, MD, HS'64-'66, '66-'68, recently published his memoir, *Damn the Naysayers*, which includes many stories of his days at Duke. He is a distinguished professor specializing in cardiac electrophysiology at Indiana University School of Medicine. In April he received the latest in a long series of honors, the Gold Medal from the German Cardiac Society. He has three children and five grandchildren and lives in Carmel, Indiana.

William S. Elias, MD, HS'66-'69, '71-'73, is retired as a neurologist and now interprets sleep studies at the Carilion Sleep Center in Roanoke, Virginia, and teaches neurology exams part-time at Virginia Tech Carilion School of Medicine. He practiced neurology for 30 years at the Roanoke Neurological Center with two other Duke alumni: **J. Gordon Burch, MD, HS'72**; and **Michael Sisk, MD, HS'69-'70, '74-'75**. He and his wife, Adele, have four children—one of whom, **Jeffrey Elias, MD**, is a professor of neurosurgery at the University of Virginia Medical Center—and five grandchildren. They live in Roanoke.

David L. Brewer, MD, HS'67-'70, '70-'72, retired as chief of cardiology and professor of medicine at Oklahoma State Medical Center in Tulsa and says that after 40 years in practice he was able to return to academic medicine and teach, which he found very fulfilling. At Duke, he was chief resident in medicine in 1969-70. Afterward, he performed some of the first angioplasties and was the first physician to use thrombolytics in Oklahoma. He lives

WHAT'S NEW?

We, and your DukeMed classmates, would love to hear what you've been up to. Please submit your latest news, activities, accomplishments, and other highlights for Class Notes via the link at medalumni.duke.edu or directly by email to dukemed@mc.duke.edu. We look forward to hearing from you!

in Estes Park, Colorado, and has six children and 11 grandchildren.

Sam R. Giamber, MD, HS'69-'70, is board chairman of St. Luke's University Health Network in Bethlehem, Pennsylvania. He lives in Coopersburg, Pennsylvania.

Gerald Atwood, MD, HS'69-'71, is retired after a career as a pediatric cardiologist. He served as professor and chairman of the Department of Pediatrics at the University of North Dakota School of Medicine and Health Sciences, as chairman of pediatrics at the Fargo Clinic in Fargo, North Dakota, and as medical director at McLeod Children's Hospital in Florence, South Carolina. He and his wife, Susan, live in Mill Spring, North Carolina, and have four children and seven grandchildren.

1970s

M. Bruce Shields, MD, HS'71-'74, is retired after serving on the ophthalmology faculty at Duke and Yale, where he was professor and chair, but he continues to run a free eye clinic he established in Burlington, North Carolina. He also works with Duke residents at a glaucoma clinic. At his 50th medical school class reunion at the University of Oklahoma in 2016, he was honored as the Physician of the Year in Academic Medicine. His late wife, Sharon, who ran

the Nearly New Shop in Durham in the 1970s, died in 2015. Since then he has, he says, "been blessed to meet a wonderful woman, Nan Perkins, and we plan to marry in June 2018." He lives in Burlington.

Robert Alexander Wilson, MD, HS'74-'77, practices plastic surgery, head surgery, and ENT in his own practice in Greenville, South Carolina. He is past chairman of the board at Greenville Technical College, the second-largest college in South Carolina; board member of Bob Jones University; and chairman of the Sargent Foundation. He has deep Duke roots: his father completed general surgery training at Duke in 1945; his mother earned her degree as a registered nurse at Duke in 1941; an uncle attended the Divinity School; and a cousin graduated in the 1960s. He and his wife, Teresa, have two sons: Robert, a second-year medical student, and Jay, who is applying to medical school next year.

1980s

Rocco Monto, MD, HS'88, '92, published his debut nonfiction book, *The Fountain: A Doctor's Prescription to Make 60 the New 30*, with Rodale Books in March of this year. The book, with a forward by Bill Maher of HBO's *Real Time*, is available at amazon.com and at bookstores. Monto is an orthopaedic surgeon, sports medicine specialist, and expert on health, aging, diet, nutrition, and fitness. He lives in Nantucket, Massachusetts.

Richard B. Frost, MD'73, recently published a new novel, *Final Season*. It tells the story of a man who suffers recurrence of the malignant lymphoma for which he has already endured radiation and chemotherapy. He decides not to go through the grueling treatment process again, opting instead to take whatever time he has left and follow his baseball team, the Baltimore Orioles, through its 1993 season. The book is available in Plattsburgh, New York, bookstores and in print and e-book form on amazon.com. He lives in Plattsburgh.

Paul S. Auerbach, T'73, MD'77, a professor of emergency medicine at Stanford University and co-founder of the Wilderness Medical Society, has co-authored another book, *Enviromedics—The Impact of Climate Change on Human Health*. The premise of the book is that climate change, and in particular global warming, will have disturbing impacts upon human health. The book is written to appeal to both lay readers and health professionals interested in addressing the issue. It is published by Rowman & Littlefield. Auerbach also is author of *Wilderness Medicine*, a book of more than 2,000 pages that is in its seventh edition. He lives in Los Altos, California.

Norman H. Bell, MD'55, of Charleston, South Carolina, died December 6, 2017. He was 86. Born in Gainesville, Georgia, he earned his undergraduate degree at Emory University. He had a distinguished career in endocrinology, focusing on bone and mineral metabolism, and made great strides in the fundamental understanding of Vitamin D deficiencies and the prevention of osteoporosis. He received awards including the William S. Middleton Award, the most distinguished award presented by the Department of Veterans Affairs for excellence in biomedical research; and the Frederic C. Bartter Award from the American Society for Bone and Mineral Research for excellence in clinical investigation. He began his research career at the National Institutes of Health and had faculty appointments at Northwestern University Medical School in Chicago, Indiana School of Medicine in Indianapolis, and at the Medical University of South Carolina in Charleston from 1979 until his retirement in 2007.

James L. Borland Jr., MD, HS'63, of Jacksonville, Florida, died January 30, 2018. He was born in Durham, North Carolina. He earned his undergraduate degree at the University of Florida. He received his medical degree and completed his internship at The Johns Hopkins University School of Medicine, and completed residencies at Johns Hopkins and Vanderbilt. After completing a fellowship in gastroenterology at Duke, he became a lieutenant commander in the U.S. Navy. He was an active member and leader with many medical organizations, including the American College of Physicians, American Gastroenterological Association, American Medical Association, American College of Gastroenterology, Florida Society of Internal Medicine, and Florida Medical Association. He earned numerous honors, including Governor of the Year by the American College of Physicians, Distinguished Clinician Award by the American Gastroenterological Society, Alfred Stengal Memorial Award by the American College of Physicians, and Exemplary Service Award by the Department of Veterans Affairs.

William C. "Bill" Butterfield, MD, HS'61, '66, of Portland, Oregon, died October 8, 2017. He was 84. Born and raised in Northampton, Massachusetts, he graduated from Yale University. He completed his residency at Duke University School of Medicine and spent one year completing a fellowship at the Royal College of Surgeons in London. He served two years as a U.S. Army surgeon in Vietnam. He was interested in giving back, and in 1980 he volunteered as a surgeon at a clinic in Nicaragua. In 1984, he was hired as a surgeon for Kaiser Permanente, where he worked until his retirement in 1997. Despite a demanding career, Bill found time to pursue interests including painting, woodworking, sailing, and deep-sea fishing. After retiring, he rekindled a childhood interest in magic and became an accomplished amateur magician. He was an avid reader of politics, art, and history.

James Edwin "Ed" Clement, MD'54, of Greenville, North Carolina, died October 26, 2017. He was a Phi Beta Kappa graduate of the University of North Carolina and graduated from Duke University School of Medicine as a member of the Alpha Omega Alpha Medical Honor Society. He served as a captain and flight surgeon in the U.S. Air Force and completed his obstetrics/gynecology residency at Crawford W. Long Hospital in Atlanta. He and **Bob Deyton, T'51, MD'55**, started Greenville OB/GYN, now a part of Physicians East. He was clinical professor and chairman of the OB/GYN Department at the East Carolina University School of Medicine, chief of staff at Pitt County Memorial Hospital, president of the Pitt County Medical Society and the North Carolina OB/GYN Society, and chairman of the Coastal Plains OB/GYN Society. He gave back to his community by serving in many organizations in Greenville and across the Southeast.

Raymond Farmer, MD'62, of Gainesville, Georgia, died February 11, 2018. He was 83. He was born in Columbia, South Carolina, and earned his undergraduate degree at the University of South Carolina. He joined the U.S. Navy before attending Duke University School of Medicine and returned to the Navy in 1961, serving as a physician at Naval Air Station Jacksonville, aboard the *USS Observation Island*, at Bethesda Naval Hospital, and at Camp Lejeune, ultimately earning the rank of lieutenant commander. In 1970, he left full-time Navy service and went into private obstetrics and gynecology practice in Anderson, South Carolina. Known for his skill as a surgeon, he served the medical needs of countless women and brought thousands of children into the world. He served as a medical missionary to Ghana, and assisted in the distribution of medical textbooks and shared his expertise with doctors in Russia.

Alexander Owusu Firempong, MD, HS'15, of San Francisco, died February 14, 2018. He was born in Los Angeles and earned his undergraduate degree in biology and a master's degree in molecular and cell biology from Brandeis University. He earned his medical degree from UCLA and completed his surgical residency at Duke. He worked as an intern for the Office of the Surgeon General of the United States and served as a medical volunteer in Kumasi, Ghana. He was a hand and microsurgery fellow at the Buncke Clinic in San Francisco. An avid adventurer, he enjoyed wrestling, rock climbing, and skydiving.

James L. Green Jr., MD'64, of Lexington, South Carolina, died October 23, 2017. He was 80. He completed his residency at Baylor College of Medicine. He served in the U.S. Army for 34 years and retired from the Army Reserve as colonel in the Medical Corps. He was former commander of the 3270th U.S. Army Hospital at Fort Jackson and earned the Meritorious Service Medal and membership in the Order of Military Medical Merit. In addition to private practice, he served as a staff physician at the VA Medical Center in Salisbury, North Carolina; medical officer at NASA's Manned

Spacecraft Center in Houston, Texas; chief of rehabilitation service at the VA Medical Center in Columbia, South Carolina; and director of physical medicine services at Richland Memorial Hospital. He was deputy to the undersecretary at the Department of Veteran Affairs and was awarded the Department of Veteran Affairs Meritorious Award and Medal.

Willis Holland Hodges Jr., MD'45, of Columbus, Ohio, died November 23, 2017. He was 96. He was born in Columbus and received a bachelor's degree from Ohio State University before earning his medical degree at Duke. He had additional training at Cincinnati General Hospital and then served as a medical officer in the U.S. Army from 1946-48. He was a member of the American Medical Association, the Ohio State Medical Association, the Columbus Academy of Medicine, and a charter member of the American Academy of Family Practice. He was a dedicated family physician, practicing in Columbus for almost 50 years and retiring in 1997 at the age of 75. After retiring, he worked several years as a volunteer driver for the Red Cross.

George C. Hopkins, MD, HS'60, of St. Augustine, Florida, died February 12, 2018. He was 97. Born in St. Augustine, he earned his medical degree at Temple University School of Medicine and served as a captain in the U.S. Army Medical Corps stationed in Okinawa during World War II. After completing his pediatric residency at Duke, he established his practice in St. Augustine, and for 23 years he was the only pediatrician in the region. He established Flagler Hospital's first newborn nursery and served as medical director for St. Johns and Flagler counties. An active member and leader of numerous local and national medical organizations, he was the pediatric consultant for the state of Florida and the physician for the Florida State School for the Deaf and Blind. He also served as a director at Security First Federal Savings & Loan Association and board member for many charitable and civic organizations.

David S. Hubbell, T'43, MD'46, HS'47, of St. Petersburg, Florida, died January 11, 2018. He was 95. At Duke, he played in the "Secret Game," a basketball game between his medical school team and the North Carolina College for Negroes (now North Carolina Central University). He served in the U.S. Army Medical Corps and completed an advanced surgical residency at Yale University Medical Center. He served in organizations including state and regional units of the American Heart Association, the American Cancer Society, the Florida Society of Cardiothoracic Surgeons, and the American College of Surgeons. He was chief of the surgical staff at Bayfront Medical Center and vice-chief of the medical staff of St. Anthony's Hospital. At the University of South Florida College of Medicine, he was chief of the cardiothoracic surgical section and was a professor in the departments of surgery and anatomy.

A. Everette James Jr., MD'63, of Chapel Hill, North Carolina, died March 14, 2017. He was 78. He was born in Oxford, North Carolina, and earned his undergraduate degree at the University of North Carolina. He did his post-doctoral work at Johns Hopkins School of Public Health, Harvard Medical School, and the Royal Society of Medicine in England. He volunteered as a physician in Vietnam and received the Army Commendation Medal as a captain in the U.S. Army Medical Corps. He was a Harvard Teaching Fellow, director of Radiological Research Laboratories at Johns Hopkins School of Medicine, and chair and professor of radiological sciences at Vanderbilt University School of Medicine. He founded the Vanderbilt Center for Medical Imaging Research. An active member and leader in countless academic, professional, and cultural organizations, he co-founded the *International Journal of Art in Medicine*. The Duke Medical Alumni Association honored him with the Distinguished Alumnus Award in 1991 and the Humanitarian Award in 2001. A lifelong scholar, collector, and advocate for the arts, he received the Order of the Long Leaf Pine award, the state of North Carolina's highest civilian honor. He served as a member of the Duke University Medical Alumni Association, the James B. Duke Society, and the Davison Club.

J. Kempton "Kemp" Jones, T'43, MD'46, HS'50, of Chapel Hill, North Carolina, died August 8, 2017. He was 95. He was born in Salisbury, North Carolina, and was a Phi Beta Kappa as an undergraduate at Duke. He entered the U.S. Navy and returned to Duke for medical school. He was one of the first physicians certified by the American Board of Family Medicine and saw patients as a family practice physician in Chapel Hill for five decades before his retirement in 1997. He was an active member of University Methodist Church and served as national president of the Methodist Youth Fellowship. He was a member of the Duke and UNC School of Medicine admissions committees for 25 years and was an associate professor at the UNC School of Medicine. He belonged to many organizations and was president of the Chapel Hill School Board from 1958-1965.

Richard I. Katz, T60, MD'65, HS'67, of Wynnewood, Pennsylvania, died August 23, 2017. He was 78. Born in Baltimore, he was an impassioned tennis player who captained the Duke tennis team. After his education and training at Duke, he joined the Public Health Service as a research associate at the National Institute of Mental Health and then completed a neurology residency at the University of Pennsylvania. He joined the academic practice at Albert Einstein Medical Center and in 1979 went into private neurology practice, forming Katz-Bennett Neurology Associates, later Katz-Bennett-Levin Neurology Associates. He held faculty appointments at numerous local institutions and was a clinical professor in neurology at the University of Pennsylvania. He was a member of organizations

including the College of Physicians and Surgeons and the Epilepsy Foundation of Eastern Pennsylvania and served as president, secretary, and counselor of the Philadelphia Neurologic Society.

John O. McGuire, MD'71, of Asheville, North Carolina, died October 12, 2017. He completed his training at the University of Washington in Seattle, Washington, and spent two years as a major in the U.S. Air Force. He was a fellow in the American College of Surgeons, a board member of the Buncombe County Medical Society, chief of surgery at Mission and St. Joseph's Hospitals, board chairman of Buncombe County Heart Association, member of the North Carolina Surgical Society, and chief of the General Surgery Section at Mission and St. Joseph Hospitals. He established an advanced laparoscopic training suite at Mission Hospital and was a founding board member of the Asheville Surgery Center.

William New Jr., MD'72, of San Francisco, died December 21, 2017. He was 75. He earned his bachelor's degree and two master's degrees from Stanford University and a PhD in physiology from UCLA. He was an electrical engineer at Hewlett-Packard and Ampex and an anesthesiologist and intensive care physician on the Stanford University School of Medicine faculty. He co-founded two medical device companies, Nellcor Inc., and Natus Medical, and developed the pulse oximeter, a medical device that is used in operating rooms around the world. He continued his research in bioengineering at Simon Fraser University in Vancouver, Canada, and at the Oregon Graduate Institute at Oregon Health & Science University. He held 15 patents. He was a fellow of the American Institute for Medical and Biological Engineering and a member of the National Academy of Engineering.

Boris L. O'Mansky, MD'57, of Pikesville, Maryland, died September 14, 2017. He was 84. He was born in Greensboro, North Carolina, and attended Duke as an undergraduate before entering the School of Medicine. He completed an internship at Bronx Municipal Hospital Center and his residency in pediatrics at Sinai Hospital in Baltimore. He was chief resident in pediatrics at Sinai and served as a captain the U.S. Air Force. He established a private pediatric practice in Baltimore. He was a diplomate of the American Board of Pediatrics and a fellow of the American Academy of Pediatrics. He was a member of the Medical and Chirurgical Faculty of Maryland and the Baltimore City Medical Society. He was a longtime active member of Baltimore Hebrew Congregation, where he served in numerous roles, including president. He also held numerous positions with the Union of American Hebrew Congregations.

David D. Porter, MD, HS'62, of Los Angeles, died April 16, 2017. He was 81. He was born in Columbus, Ohio, and earned his undergraduate and medical degrees at the University of Pittsburgh. He trained at Duke in anatomic pathology and

Save the Date

for Medical Alumni Weekend! November 8-11, 2018



Thursday

Medical Alumni Association Awards Dinner

Friday

Golden Blue Devils and Class of 1968 Luncheon

5th Annual Women in Medicine Luncheon

CME Sessions

Welcome Reception

Saturday

Breakfast with the Dean

UNC vs. Duke Football game

Class Gatherings



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QUESTIONS?

Brenda Rimmer
919-385-3177

REGISTRATION

Registration opens in August, so keep an eye out for detailed event and registration materials in your mailbox this summer and online at medalumni.duke.edu!



OBITUARIES

furthered his research career at the Scripps Research Institute in La Jolla, California, and the Wistar Institute in Philadelphia. He was a professor of pathology at the UCLA School of Medicine from 1969 to his retirement in 1998. He trained many medical and graduate pathology students in the art of autopsy. He served for a time as deputy coroner for Los Angeles County. He enjoyed fishing, birding, and classical music.

George H. Porter III, T'54, MD'58, HS'59, of New Orleans, died November 17, 2017. He was 84. He was a magna cum laude graduate of Duke, where he also earned his medical degree with honors. He was the longest-serving president of the Ochsner Medical Foundation. He served as chairman of the Bureau of Governmental Research, on the boards of the American Cancer and Leukemia Societies, and was a founding member and chairman of the Louisiana Cancer and Lung Trust Fund Board. He was instrumental in establishing the Alton Ochsner Award Relating Smoking and Health, and served on the Board of Trustees of the NO/AIDS Task Force. He served the community in roles including vice chairman of the Chamber of Commerce and on the boards of the Business Task Force for Education, Metropolitan Crime Commission, WWNO Public Radio, the Gallier House, and the Junior League of New Orleans.

Douglas F. Smiley, T'54, MD'58, of Pasadena, California, died October 5, 2017. He was 85. He earned both his undergraduate and graduate degrees at Duke and then joined his father's medical practice and began a long career as a surgeon specializing in colon/rectal medicine. His practice was associated with The Good Samaritan Hospital in Los Angeles, where he was chief of surgery for many years. He was also involved with the County USC Hospital as a resident, resident supervisor, and volunteer staff member. He retired in 2007. He was a member of the Annandale Golf Club in Pasadena for many years. At Duke, he met and married the late **Frances Raines, WC'55**, the mother of his three children.

Alan D. Whanger, T'52, MD'56, HS'70, of Durham, North Carolina, died October 21, 2017. He was born in Detroit. He did an internship and residency in general surgery in Ohio and earned a diploma in tropical medicine and hygiene in London, subsequently serving as a medical missionary with the United Methodist Church at the rural hospital in what is now Zimbabwe. Upon his return, he completed a residency in psychiatry and a fellowship in geropsychiatry at Duke and then joined the Duke faculty as a professor of psychiatry until his retirement in 1993. In retirement, he conducted many years of research on the Shroud of Turin, applying his expertise in photography and image analysis and acquiring new knowledge in diverse areas including Byzantine iconography, Middle Eastern botany, and Jewish burial customs. He was an avid photographer, a lover of books, and an aficionado of the music of Bach.

John William Worthington, MD'50, of Minnesota, died January 24, 2018. He was 91. He attended Franklin and Marshall College, Duke University School of Medicine, and the University of Minnesota, receiving bachelor's, medical, and master's degrees. He served as a medical officer in the U.S. Navy.

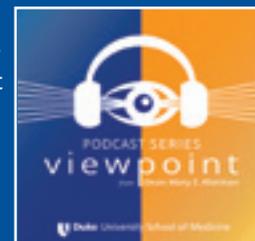
FACULTY

Walter Lawrence "Bill" Floyd Sr., MD, professor emeritus, of Gainesville, Georgia, died September 27, 2017. He was born in Asheville, North Carolina, and served in the U.S. Navy in 1944-1946. He received his undergraduate degree from Auburn University and his medical degree from Johns Hopkins University. After an internship in medicine at Johns Hopkins and a residency at Yale University, he came to Duke, where he completed his residency and then served a fellowship. In his 40-year tenure at Duke, he was well known as a skilled physician in clinical cardiology with a reputation for providing compassionate care. He also loved to teach, and he earned the Duke Medical House Staff Award for Excellence in Teaching and the Distinguished Teaching Award from the Duke Medical Alumni Association. In 1993, the Walter L. Floyd MD Endowed Fellowship in Cardiology was established to support clinical fellowships in cardiology.

CALENDAR

TUNE IN TO DEAN KLOTMAN'S PODCASTS

Dean Mary E. Klotman, MD, shares her perspective on important topics related to medical education, science and discovery, and patient care in her Viewpoint podcast series. Every month, she discusses timely issues including diversity in academic medicine, the importance of data science, and the Translating Duke Health initiative. Tune in to her latest podcast and catch up on previous episodes at



medschool.duke.edu/viewpoint

Episode 6: Why is It Important to Explore the Early-life Origins of Health and Disease?

Episode 5: Translating Duke Health Initiative

Episode 4: "One Duke" . . . What Does That Really Mean?

Episode 3: What Did It Take to Change HIV From a Fatal Diagnosis to an Often-Manageable Chronic Disease?

Episode 2: What is Data Science and Why is It Important?

Episode 1: Why is Diversity Important in Academic Medicine?

DATES OF INTEREST

May 11 School of Medicine Hippocratic Oath and Diploma Ceremony, 7:00 PM, Duke Chapel

May 13 Graduation Ceremonies

May 17 Clinical Research Day, 3:00-5:00 PM poster competition; 5:00-7:00 PM keynote and faculty speakers, Great Hall, Trent Semans Center for Health Education

May 22 Translating Duke Health: Cardiovascular Workshop on Inflammation, 5:00 PM, Duke North, Room 202

June 4-6 Department of Population Sciences Summer Institute. Learn three key research methods from leading experts; Washington Duke Inn populationhealth.duke.edu/summer-institute

June 5 An Evening with Valerie Ashby, PhD, dean of Trinity College of Arts & Sciences, **Mary E. Klotman, MD**, dean of the School of Medicine and vice chancellor for health affairs at Duke University, and **Carmichael Roberts, T'90, PhD'95**, Board of Trustees; 7:00-9:00 PM, 111 Huntington Avenue, Boston

June 12 Emeriti Dinner

Sept. 12 Basic Science Day and Lefkowitz Lecture

Sept. 15 Duke Physical Therapy 75th anniversary, Washington Duke Inn

Nov. 8-11 Medical Alumni Weekend

For more details and other events please visit:

medschool.duke.edu/about-us/calendar
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MATCH DAY 2018



Student Brad Ackerson carries his eighteen-month-old son, Clayton to the table to get his match envelope.

On March 16, medical students at Duke opened their envelopes and learned where they will begin their residency programs. A total of **102** students participated in Match Day at Duke this year and are headed to some of the nation's most prestigious programs.



Tyler Hobbs, Bo Sun, Colin Martz, and Kevin Lin get hugs while celebrating their matches.

WHERE STUDENTS MATCHED:

- 30** are staying at Duke for residency
- 7** are going to Harvard
- 3** are going to UC San Francisco and 13 more to other UC schools
- 6** are going to Stanford
- 3** are going to University of Washington (Seattle)
- 2** are going to Johns Hopkins
- 2** are going to Yale

MOST FREQUENT LOCATIONS BY STATE:

- 32** North Carolina
- 22** California
- 8** Massachusetts
- 5** Texas
- 4** New York

STUDENTS MATCHED IN THE FOLLOWING SPECIALTIES:

- 5** Anesthesiology
- 5** Dermatology
- 3** Emergency Medicine
- 4** Family Medicine
- 25** Internal Medicine
- 7** Medicine-Pediatrics

- 1** Medicine Psychiatry
- 2** Neurology
- 2** Neurosurgery
- 4** Obstetrics & Gynecology
- 0** Ophthalmology
- 6** Orthopaedics
- 1** Otolaryngology
- 1** Pathology
- 7** Pediatrics
- 1** Physical Medicine/ Rehabilitation
- 1** Plastic Surgery
- 4** Psychiatry
- 3** Radiation Oncology
- 6** Radiology
- 2** Radiology, Interventional
- 9** Surgery-General
- 2** Urology
- 1** Vascular Surgery