

PULSE

FALL 24

FEATURED STORY

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Dunleavy Fund helps future scientists leverage AI for better health care

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LEVERAGING THE POWER OF CLINICAL AI

HMS will use Dunleavy Foundation funding to train the next generation of researchers, scientists, policymakers, and innovators in using AI to improve health outcomes

➔ As artificial intelligence (AI) continues to advance rapidly across many domains, Harvard Medical School is poised to lead a revolutionary shift in health care, thanks to a \$6 million commitment from the Dunleavy Foundation.

The foundation's generosity establishes the Dunleavy Fund for Clinical AI, which will be used to strengthen the School's efforts to equip future scientists with the knowledge and skills to harness the capabilities of AI in the service of improved health care and medical science.

"To remain at the forefront of medical education, HMS must anticipate the physician of the future, practicing in an environment rich with cognitive support resources powered by artificial intelligence

tools," says HMS Dean George Q. Daley, AB '82, MD '91, PhD. He adds: "The time to invest in building a pipeline of AI experts for health care is now, and I want HMS leading the way. The Dunleavy Foundation's support is essential here."

The Dunleavy Fund will provide educational opportunities for PhD and master's level graduate students, undergraduates, and postdocs through internships, fellowships, events, programs, and research dissemination. One of the key initiatives backed by the fund is the Artificial Intelligence in Medicine (AIM) PhD program, which welcomed its inaugural class in 2024.

"The AIM PhD program is focused on recruiting young students right out of college who have strong training in quantitative disciplines like computer science, engineering, or mathematics and who have a demonstrated interest in biology, medicine, and contributing to effective improvements in clinical care," says Isaac Kohane, MD, PhD, the Marion V. Nelson Professor and chair of the Department of Biomedical Informatics in the Blavatnik Institute at HMS.

Kohane notes that the recent surge of artificial intelligence applications in medicine has not been coupled with a workforce that understands how to develop AI models that are safe, effective, and work well both for patients and clinicians in their daily workflow. Thus, he's enthusiastic about the new program's potential to fill this void.

"We will not only provide advanced courses in machine learning and other relevant fields for developing AI, but also offer in-depth analyses of the challenges facing medicine," Kohane says. "Students will gain substantial knowledge of biology and biomedical topics needed to effectively address those medical challenges."

The program will expose students to important AI applications in health care, such as accelerating diagnoses, particularly those of rare diseases; selecting therapies that are individualized for each patient's disease; and predicting and preventing diseases to reduce costs.

Keith Dunleavy, MD '95, founder and CEO of health care technology company Inovalon, and his wife, Katherine Dunleavy, MD '95, a physician specializing in internal medicine, say their fortunate exposure to visionaries in AI and medical domains has been an invaluable learning experience. They have been repeatedly reminded, they say, of the challenges experienced by those who are extremely technologically gifted, sophisticated, and resourced, but nevertheless lack an understanding of how health care is delivered, how new diagnostics or treatments are discovered, or how the vast health care system is administrated.

"THE TIME TO INVEST IN BUILDING A PIPELINE OF AI EXPERTS FOR HEALTH CARE IS NOW, AND I WANT HMS LEADING THE WAY."

GEORGE Q. DALEY

"With this in mind, we are hopeful that by supporting training that brings these fields together, we can help in some small way to bring the power of AI to the great needs of medicine and health care," says Keith Dunleavy, who is also a member of the HMS Board of Fellows.



KEITH AND KATHERINE DUNLEAVY



Another initiative supported by the Dunleavy Fund is a hackathon that will enable undergraduate students to pursue projects in the field of AI in medicine. The students will receive access to clinical data, allowing them to explore current topics of interest and develop creative solutions.

Katherine Dunleavy, who is also a member of the HMS Advisory Council on Education, says the couple hope that by emphasizing education and training in AI that is specifically geared toward its application in medicine and health care, the fund will facilitate the growth of a particular type of professional.

“We hope this approach brings an important element of being mission-driven with respect to the cornerstones of medicine and health care: those based on caring, empathy, and positive impact for society,” she says.

DUNLEAVY FUND FOR CLINICAL AI

The Dunleavy Foundation’s **\$6 million commitment** comprises a \$1 million grant and a \$5 million endowed gift. **Areas of support include:**

- 01 AIM PhD fellows.** The HMS Department of Biomedical Informatics (DBMI) created the Artificial Intelligence in Medicine (AIM) PhD program to train exceptional computational students to harness large-scale biomedical data and advanced AI methods to develop new clinical research tools.
- 02 Internships.** DBMI seeks to support undergraduate and master’s students in research internships, providing the opportunity to work directly on AI in medicine methodology and applications, with the ultimate goal of being mentored toward publication.
- 03 Pipeline programs.** DBMI will pursue exciting programs that will engage young scientists in the field of AI in medicine, including a hackathon that will provide undergraduate students with access to clinical data, allowing them to explore current topics of interest and develop creative solutions.

BEQUEST SUPPORTS NEW FELLOWSHIP IN PSYCHIATRY



➔ Sheila Hafter Gray, MD '58, was many things: a psychiatrist and professor at the University of Maryland Hospital, a consultant to the Walter Reed Army Hospital in Washington, D.C., and a teaching analyst at the Washington Psychoanalytic Institute. She was warm, esteemed, a Volkswagen Bug enthusiast, and “simply terrific,” says friend and Class Agent Howard Corwin, AB '54, MD '58.

Gray's estate recently gifted a \$550,000 bequest to Harvard Medical School that will support an endowed fellowship in psychiatry. Gray and her husband initially made gifts to establish a fellowship fund decades ago.

“That was her—she wanted to give,” Corwin says. “Every time I was with her at a Reunion, she gave generously because she believed in the mission. HMS will surely benefit from all that she has done and given over the years.”

Maurizio Fava, MD, the Slater Family Professor of Psychiatry and head of the Department of Psychiatry at Massachusetts General Hospital (MGH), as well as chair of the Executive Committee of the Department of Psychiatry at HMS, lauds Gray's generosity. “This particular bequest is an example of how to have an impact on the education of Harvard Medical School learners,” says Fava.

According to the Centers for Disease Control and Prevention, more than 1 adult out of 5 lives with a mental illness in the U.S., underscoring the importance of Gray's gift. “This fellowship comes at an ideal time, when there is renewed interest in using psychoanalytic concepts to help relieve some of the worst suffering that people bring to psychiatrists,” says Robert J. Waldinger, AB '73, MD '78, a part-time professor of psychiatry at MGH.

Grace Chang, MD, MPH, a professor of psychiatry at the Veterans Affairs Boston Healthcare System and former chair of the Executive Committee of the Department of Psychiatry at HMS, adds: “The Sheila Hafter Gray Fund to support the training of psychoanalysis is timely and much needed. All resources and therapeutic approaches should be deployed to respond to the public mental health crisis. This gift will encourage a new generation of psychiatrists to add psychoanalytic tools to their clinical armamentarium.”

“THE SHEILA HAFTER GRAY FUND TO SUPPORT THE TRAINING OF PSYCHOANALYSIS IS TIMELY AND MUCH NEEDED. ALL RESOURCES AND THERAPEUTIC APPROACHES SHOULD BE DEPLOYED TO RESPOND TO THE PUBLIC MENTAL HEALTH CRISIS.”

GRACE CHANG

DALEY DELIVERS 2024 STATE OF THE SCHOOL SPEECH

➔ Harvard Medical School has become a powerful magnet of innovation and opportunity that brings people together to solve society's most pressing health-related challenges through fundamental and clinical discovery, academic rigor, and a culture of excellence, said HMS Dean George Q. Daley, AB '82, MD '91, PhD, in his annual State of the School Address on Sept. 17.

Daley highlighted examples of this shared creative force from the past year and provided an overview of the School's financial, professional, and social health for hundreds of community members gathered in the Joseph B. Martin Conference Center and watching online.

He acknowledged that, also like a magnet, opinions within a vibrant community can become polarizing, as Harvard most notably experienced with the latest Israel-Hamas war. He cited new and evolving opportunities for constructive dialogue at both the University and School levels.

“We must be able to speak freely and disagree safely,” Daley said. “We must find ways to turn the diversity of our convictions into growth and advance mutual understanding.”

In line with the theme of community, the speech was followed by a School-wide celebration on the HMS Quad (pictured).



READ MORE AND WATCH THE 2024 STATE OF THE SCHOOL ADDRESS AT [TINYURL.COM/2024-STATE-OF-SCHOOL](https://tinyurl.com/2024-state-of-school).

EXPANDING ACCESS TO AN HMS EDUCATION

➔ Since becoming dean of Harvard Medical School in 2017, George Q. Daley, AB '82, MD '91, PhD, has continually emphasized the critical role of financial aid. He considers it essential for the School's ability to sustain a diverse student body and has vigorously pursued philanthropic contributions to strengthen financial aid programs.

"These contributions enable us to recruit the most outstanding students without regard for their ability to pay," Daley says.

The importance of financial aid is highlighted by the fact that 71% of HMS students receive some form of scholarship assistance, with the average annual award totaling nearly \$60,000.

"EVERYONE HAS THE POTENTIAL, BUT ONLY SOME ARE GIVEN THE OPPORTUNITY."

KARI NADEAU

Fortunately, generous donors are aligned with Daley's philosophy. "I appreciate Dean Daley's endorsement of financial aid," says Stephen Sherwin, MD '74, "and his emphasis on the need for a collective effort to make a significant impact."

Sherwin established the Samuel B. Sherwin Memorial Endowed Scholarship Fund at HMS in honor of his father, an aeronautical engineer who valued education immensely. He has continued to make contributions to this fund with the goal of supporting a full scholarship for a medical student.

"I was largely dependent on financial aid," says Sherwin. "I never forgot the benefit I received and the flexibility to define my path according to my interests, rather than making decisions based on income."

Kari Nadeau, MD '95, PhD '95, and her husband, Paul Jackson, MD '96, PhD '96, share Sherwin's experience. "We both owe our education and careers to scholarships and financial aid," says Nadeau. The couple recently made a substantial donation to support the REACH Scholarship Program, which makes it more feasible for applicants from disadvantaged backgrounds to accept their offers of admission to HMS.

"Everyone has the potential, but only some are given the opportunity," Nadeau says. "We have seen how incredible the REACH-supported students are, and we are in awe of the program. We want to provide more opportunities for students to join and excel at HMS."

Anthony "Tim" H. Russell, MD '74, says the knowledge he gained from his diverse group of classmates, many of whom were financial



aid recipients, was as vital to his education and maturation as a physician as any of the lectures he attended.

"My continued support of financial aid at HMS arises from a simple aspiration: I hope to help bring the extraordinary HMS experience to a diverse pool of talented young people who are poised to take full advantage of its bountiful opportunities," says Russell, a loyal supporter of his class's scholarship fund. He made a notable gift in June to mark his 50th Reunion.

Tech entrepreneur Peter Holden and his business partner Tony Hughes made their first gifts to HMS in 2023 through the Hughes Holden Foundation. They established two scholarship funds for MD students, expressing their hope that preference would be given to those from marginalized backgrounds with an academic interest in mental health or psychiatry.

"The first cohort of scholarships in 2023 was a resounding success," says Holden. This prompted the foundation to give generously again this year, enhancing the same two funds. "We saw firsthand not just the caliber of students selected by Harvard, but also their deep commitment toward behavioral health issues and their genuine desire to give back to their communities."

71% of HMS students receive some form of scholarship assistance, with the average annual award totaling nearly \$60,000.

PROTECTING, SUPPORTING PHYSICIAN-SCIENTISTS

➔ After finishing his second year at Harvard Medical School in 1967, Robert Bast paused his coursework for two years to pursue anatomic pathology and immunological research at Massachusetts General Hospital. “Those were the most educational two years of my career, answering fundamental questions and absorbing clinical medicine, preparing to be a physician-scientist,” says Bast, who returned to HMS and earned his medical degree magna cum laude in 1971.

More than 50 years later, Bast, having served as vice president for translational research for more than two decades at The University of Texas MD Anderson Cancer Center, points to the urgent need to develop and retain more doctors who both practice medicine and perform translational research.

“Physician-scientists are absolutely essential,” Bast says. “They serve as catalysts to accelerate progress in advancing both patient care and biomedical discovery.” And he would know, having been nationally recognized for his patient care as a medical oncologist while also making landmark discoveries leading to monitoring and earlier detection of ovarian cancer. Bast also coordinates MD Anderson’s physician-scientist training

MD-PhD students can train in essentially any department and specialization that Boston has to offer, from the basic and engineering sciences to the broad spectrum of social sciences spanning history of science, epidemiology, economics, medical anthropology, health policy, and more.

program, where 38 of the 44 graduates (86%) have earned their first individual investigator grant to launch their careers.

In hopes of ensuring a critical mass of individuals who are poised to bridge the divide between medical practice and the basic and social sciences, Bast and his wife, Blanche, recently made a significant gift to HMS to create the Robert C. (MD ’71), and Blanche S. Bast MD-PhD Scholarship Fund. This endowed fund will support HMS students enrolled in the Harvard/MIT MD-PhD Program, which trains the next generation of physician-scientist leaders.

“Both Dean Daley and I prioritize strengthening and expanding our MD-PhD Program, and this gift from the Basts represents a crucial contribution toward achieving this goal,” says HMS Dean for Medical Education Bernard S. Chang, AB ’93, MD, MMSc ’05. George Q. Daley is an alumnus of the program, having received his PhD from the Massachusetts Institute of Technology (MIT) in 1989 and his MD from HMS in 1991.

The MD-PhD Program not only imparts upon students a comprehensive, innovative medical education but also provides them with an abundance of research training opportunities across the campuses of Harvard University, MIT, the Whitehead Institute, the Broad Institute, and 15 Harvard-affiliated hospitals. Program alumni have helped propel forward critical solutions that define biomedicine’s future—new diagnostics, therapeutics, devices, and economic and health policies.

“We really hope this support will prepare students to do exceptional work and allow them the freedom to develop careers in translational research,” says Robert Bast.

MD-PhD program Director Loren Walensky, MD, PhD, an HMS professor of pediatrics at Dana-Farber Cancer Institute, expressed how grateful he is for the Basts’ generosity. “Their commitment to advancing the integration of clinical care and biomedical research embodies the very spirit of our program,” he says. “This gift will help empower the next generation of physician-scientists to make groundbreaking contributions to medicine and improve health outcomes worldwide.”

“THIS GIFT WILL HELP EMPOWER THE NEXT GENERATION OF PHYSICIAN-SCIENTISTS TO MAKE GROUNDBREAKING CONTRIBUTIONS TO MEDICINE AND IMPROVE HEALTH OUTCOMES WORLDWIDE.”

LOREN WALENSKY



FACES OF HMS



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01 Thousands of graduates—including those from HMS—gathered with family, classmates, and faculty on May 23 in Harvard Yard to mark the University’s 373rd Commencement.

02 When the May 23 Class Day celebration on the HMS Quad was briefly delayed due to thunderstorms, the latest graduates from HMS and the Harvard School of Dental Medicine found creative ways to pass the time.

03 On May 23, 147 graduates received their doctoral degrees at HMS’s Division of Medical Sciences (DMS) Hooding Ceremony. This annual event celebrates students who earned PhDs in one of nine HMS-based programs, six of which are co-administered by DMS. The doctoral degrees are officially awarded by Harvard University’s Kenneth C. Griffin Graduate School of Arts and Sciences.

04 At the HMS master’s graduation ceremony May 22, Parker Villabroza proposed to Paloma de Carvalho Costa, MMSc ’24 (medical education), a neonatologist from Canada.

05 Margaret Livingstone, PhD ’81, the Takeda Professor of Neurobiology in the Blavatnik Institute at HMS, and three other researchers will share the \$1 million 2024 António Champalimaud Vision Award for their groundbreaking work in visual neuroscience. Their research has significantly advanced understanding of how the brain processes faces, shapes, and colors, laying the groundwork for treating visual issues and improving comprehension of cognitive decline, according to the Champalimaud Foundation.

06 Two hundred new medical and dental students—including Remi Welbel, HMS MD Class of 2028—began their training with a ceremony held under a tent on the HMS Quad on Aug. 5, when they received the white coats that symbolize their entry into the profession.

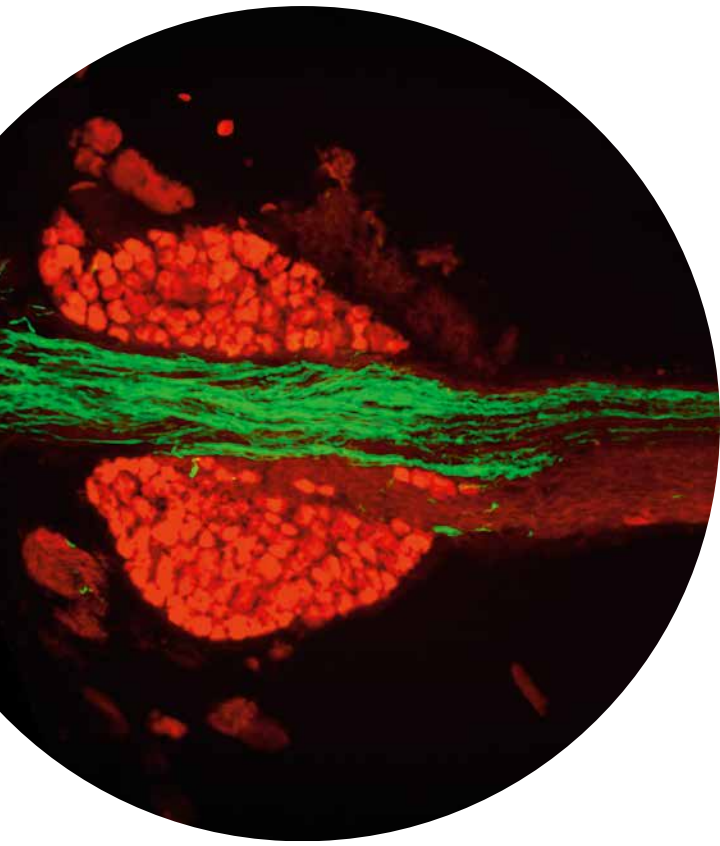
07 The Harvard Committee on University Resources (COUR) Annual Symposium celebrates the research, teaching, and learning that take place across Harvard and the contributions of COUR members in supporting those pursuits. The 2024 symposium, held in April, included guided tours of HMS led by School leadership. During a stop at the Clinical Skills Center, Oluwamayowa Oke, HMS MD Class of 2027 (right), and Emily Schwartz, MSc ’19 (bioethics), HMS MD Class of 2025, offered reflections and perspectives about their experiences as MD students.

08 The HMS Department of Biomedical Informatics hosted its 10th annual precision medicine conference Oct. 1, spotlighting the role of generative artificial intelligence in precision medical education. The opening panel explored how large language models are poised to reshape preclinical education. It featured insights from Susan Farrell, MD, EdM ’08 (left), associate dean for assessment and evaluation in the Program in Medical Education at HMS; Maha Farhat, MD, SM ’15, the Gilbert S. Omenn, MD ’65, PhD Associate Professor of Biomedical Informatics; and HMS Dean for Medical Education Bernard S. Chang, AB ’93, MD, MMSc ’05.

09 Rudy, a golden retriever who is part of the Countway Cuddles pet therapy program, was a popular guest at a Sept. 24 reception in the Tosteson Medical Education Center honoring the residents, fellows, and program directors at all HMS-affiliated hospitals.

STRIVING TO ELUCIDATE BRAIN-BODY NETWORKS

→ The mechanisms by which the body interprets environmental factors, reports them to the brain, and is in turn directed by the brain to respond to them are little understood. The lab of HMS cell biology professor Stephen Liberles, AB '94, AM '96, PhD '00, supported by a \$1.65 million grant from the Bill & Melinda Gates Foundation, is working to understand these brain-body networks.



“Scientists are beginning to see the brain as the principal conductor of a symphony of body biology, from monitoring the function of every internal organ and system to modulating nutrition, metabolism, physiology, and immunity,” Liberles says.

He and his team hypothesize that sensing pathways in the gut-brain axis act as relays, signaling for neural circuits to in turn release hormones and other chemical signals. Revealing these pathways and understanding how they work will provide insight into the mechanisms that control cell behavior and respond to environmental conditions.

A deeper molecular understanding of the brain-body axis could be revolutionary. By fully characterizing the neural circuits involved, scientists may be able to develop a new class of therapies. These therapies would target sensory receptors to drive the brain toward healthy physiological states.

The first aim of Liberles' project is to experiment with neural control of unconscious body processes. He and his team will activate different cell types in the gut-brain axis and use fiber photometry to assess the brain's response. If they identify specific connections, they will be able to determine what

VAGAL MOTOR NEURONS (GREEN) PASS THROUGH THE GANGLION OF VAGAL SENSORY NEURONS (RED).

IMAGE: LIBERLES LAB

different arms of the gut-brain axis sense physiologically and how perturbing those particular sensory pathways impacts bodily functions.

“SCIENTISTS ARE BEGINNING TO SEE THE BRAIN AS THE PRINCIPAL CONDUCTOR OF A SYMPHONY OF BODY BIOLOGY.”

STEPHEN LIBERLES

The project's second aim involves studying how the brain signals back to the body through the autonomic nervous system to control body development and gastrointestinal physiology. In a recent collaboration with Bradford Lowell, MD, PhD, an HMS professor of medicine at Beth Israel Deaconess Medical Center, the Liberles Lab, which is housed in the Blavatnik Institute at HMS, identified particular neurons it wishes to investigate. The team will manipulate these neurons in mouse models and observe how stimulating, silencing, or eliminating them affects physiology and behavior.

“The neural basis of many physiological phenomena remains mysterious,” explains Liberles. “Defining the key neurons involved will help us to understand the signaling mechanisms, develop intervention strategies, and evaluate the likely consequences if we were to block adverse responses associated with particular stimuli.”

HMS SCIENTIST AWARDED NOBEL PRIZE

→ Gary Ruvkun, PhD '82, a professor of genetics at Harvard Medical School and an investigator at Massachusetts General Hospital, won the 2024 Nobel Prize in Physiology or Medicine for the discovery of microRNAs, a class of tiny RNA molecules that regulate the activities of genes in plants and animals, including humans.

Ruvkun shares the prize with his collaborator Victor Ambros, PhD, of the University of Massachusetts Chan Medical School. Ruvkun and Ambros discovered the first microRNAs in animals and demonstrated how microRNAs can turn off genes whose activities are crucial for development.

The two researchers' discoveries revealed an entirely novel mechanism of gene regulation. Indeed, microRNAs are proving to be fundamentally important for how organisms develop and function, the Nobel committee said in its citation.

As potent regulators of gene activity and of the expression of proteins made by these genes, microRNAs have profound implications for disease and health, and Ruvkun's and Ambros' discoveries have sparked a revolution in RNA medicine.

The scientists' work revealed that microRNAs are pivotal regulators of normal development and physiology of animals and plants as well as key players in an array of human diseases, including coronary heart disease, neurodegenerative conditions, and many forms of cancer.

“Ruvkun's and Ambros' research elegantly combines evolutionary biology and genetics and reveals a completely novel dimension of gene regulation. This curiosity-driven research is a powerful example of how fundamental discovery can provide insights that illuminate causes of disease and consequently can benefit humanity,” said HMS Dean George Q. Daley, AB '82, MD '91, PhD.



GARY RUVKUN WITH DAUGHTER VICTORIA RUVKUN (LEFT) AND WIFE NATASHA STALLER ON THE MORNING OF THE NOBEL PRIZE ANNOUNCEMENT AT THEIR HOME IN NEWTON, MASSACHUSETTS.

EXPLORING HOW FEVER IMPACTS AUTISM SYMPTOMS



➔ As the prevalence of autism spectrum disorder (ASD) in children continues to rise—the Centers for Disease Control and Prevention estimates that 1 child out of 36 is autistic—a beacon of hope emerges from an unexpected source: the common fever.

Anecdotal and scientific reports suggest that some children with autism show improvement in several areas of behavioral abnormalities associated with ASD when they experience fever. An innovative project funded by The Marcus Foundation is set to explore this intriguing phenomenon.

“We hypothesize that fever-associated inflammation is the underlying driver for improving autism-associated symptoms,” says Jun Huh, PhD, an associate professor of immunology in the Blavatnik Institute at Harvard Medical School. “Thus, we aim to identify immunological correlates that commonly exist in fever responders,” says Huh, who is collaborating with Massachusetts Institute of Technology (MIT) neuroscientist Gloria Choi, PhD.

“SUCCESSFUL COMPLETION OF THIS WORK WILL LIKELY LEAD TO THE DEVELOPMENT OF DIAGNOSTIC AND THERAPEUTIC MEASURES.”

JUN HUH

Huh and Choi will use both preclinical autism models and human samples collected from fever responders as well as non-fever responders. The preclinical work will generate testable hypotheses, while human clinical samples will be used for large-scale proteomics and immunological analyses. This pioneering bench-to-bedside research links specific immune system hormones known as cytokines, which are normally involved in inflammation, to how the brain of a child with autism processes signaling information in order to learn from the world around them.

Children born in 2016 were 1.6 times as likely to receive an ASD diagnosis or ASD special education classification by 4 years of age compared to children born in 2012, according to the Autism and Developmental Disabilities Monitoring Network, suggesting progress in early ASD identification.

“Successful completion of this work will likely lead to the development of diagnostic and therapeutic measures,” says Huh. “These advancements have the potential to significantly impact the unmet social and economic needs associated with autism.”

The Marcus Foundation has been a long-standing supporter of studies related to autism, in addition to its significant philanthropic contributions to other medical domains and to non-medical areas such as veteran support. Through its Medical Research Award Program, the foundation is providing a total of nearly \$2.2 million in grants to HMS and MIT for this project.

“I have long been interested in novel approaches to treating and lessening autism symptoms, and doctors Choi and Huh have homed in on a bold theory,” says Bernie Marcus, founder and chair of The Marcus Foundation. “It is my hope that this Marcus Foundation Medical Research Award helps their theory come to fruition and ultimately helps improve the lives of children with autism and their families.”

GOALS OF THE AUTISM RESEARCH PROJECT

01

Identify the immunological mechanisms that mitigate autism-like phenotypes using preclinical mouse models of autism. This will involve studying the role of various immune responses and their impact on behaviors associated with autism, with a focus on the role of inflammation and cytokines in promoting social interaction.

02

Establish a biobank that consists of samples from children with ASD, specifically those who demonstrate symptom improvement during fever episodes (known as fever responders). This biobank will serve as a valuable resource for studying the unique immunological correlates of this subgroup and could potentially aid in the development of personalized treatment strategies.

03

Identify soluble and cellular factors associated with fever responses in children with ASD, focusing on the therapeutic potential of targeting interleukin-17 receptor pathways. This will involve conducting comprehensive proteome analyses and studying the immune landscape of these children, which could provide insights into novel therapeutic targets for ASD.

WITH FUJIFILM BACKING, THERAPEUTICS GRADUATE PROGRAM ACHIEVES OUTSTANDING RESULTS

→ In the realm of therapeutic science, Harvard Medical School's Therapeutics Graduate Program (TGP) is a paragon of innovation and progress. An important contributor to its success is the generous support from the Fujifilm Fellowship Fund. Since 2019, Fujifilm has committed \$5 million to the fund, playing a pivotal role in the TGP's growth and impact.

The Fujifilm Fellowship awards up to two years of research funding to promising PhD students across 14 programs spanning HMS, the Harvard Kenneth C. Griffin Graduate School of Arts and Sciences, and the Harvard T. H. Chan School of Public Health. In addition to their PhD programs, Fujifilm Fellows are enrolled in the TGP, which provides the scientific, laboratory, computational, and professional skills needed to excel in academic and biopharmaceutical careers related to therapeutic science, while also offering an engaged community to support the fellows' development. The TGP emphasizes research in labs across Harvard and its affiliate institutions and hospitals, as well as in real-world internships.

"The remarkable growth of the TGP over the past 13 years—from fewer than 10 students per annual

Since 2019, 41 students have received Fujifilm Fellowships. They have performed their dissertation research in labs at HMS, the Harvard T.H. Chan School of Public Health, the Harvard Kenneth C. Griffin Graduate School of Arts and Sciences, Dana-Farber Cancer Institute, Brigham and Women's Hospital, Boston Children's Hospital, the Broad Institute of MIT and Harvard, and the Wyss Institute.

cohort to more than 20 today—speaks to several important considerations regarding unmet medical needs, scientific discovery, and Harvard Medical School," says David Golan, AB '75, MD, PhD, dean for research initiatives and global programs at HMS and director of the TGP.

Golan notes that despite advancements in therapeutics, many major diseases remain inadequately treated, compelling students to join the TGP with the aim of addressing these unmet needs and making a significant impact. He emphasizes that students also understand the critical importance

THERAPEUTICS GRADUATE PROGRAM STUDENTS ENJOY A SOCIAL OUTING IN APRIL.



TWO RESEARCHERS RECOGNIZED AS COLLETTE PROFESSORS



➔ A June 25 celebration at Harvard Medical School honored Jennifer R. Brown, MD '98, PhD '98, MMSc '05 (bottom), and Robert J. Soiffer, MD (top), both of Dana-Farber Cancer Institute, as the inaugural incumbents of the Worthington and Margaret Collette Professorships of Medicine in the Field of Hematologic Oncology.

Following the retirement of William W. Mayo-Smith, MD, a professor of radiology at Brigham and Women's Hospital, these professorships will be renamed. One will be called the Margaret Collette Mayo-Smith Professorship, and the other, the Worthington Mayo-Smith Professorship, in memory of Margaret Collette Mayo-Smith and Worthington Mayo-Smith.

"Margaret, a gifted artist and passionate conservationist, and Worthington, a successful investor and dedicated community member,

lived lives of service and generosity," HMS Dean George Q. Daley, AB '82, MD '91, PhD, said during the celebration. "Their legacy, embodied in these professorships, will continue to benefit the medical community and the countless patients whose lives will be touched by the research and care they support."

The professorships were established in recognition of the care Margaret received at Dana-Farber over 20 years ago. William W. Mayo-Smith, the donors' son, attended and spoke at the celebration.

Over the past two decades, Brown has established herself as a true pioneer and leader in the field of chronic lymphocytic leukemia through her groundbreaking work. Soiffer, meanwhile, has been at the forefront of advancing stem cell transplantation for over 35 years through his innovative clinical research and compassionate patient care.

of new knowledge generation in biomedicine, which serves as the foundation for developing therapeutics that enhance patients' lives. They come to HMS to participate in this work because of the School's world-leading faculty devoted to scientific discovery.

Golan also points out the relationship between the TGP's expansion and the growth of the HMS Therapeutics Initiative, a sweeping School-wide endeavor launched five years ago to advance fundamental scientific research, help translate discoveries into medicines, and craft new educational paradigms for therapeutics education.

"HMS is now one of the foremost places in the world for a graduate student to train in the science of drug discovery and development, and the growth of the TGP reflects the increased interest of the graduate student applicant pool in this exciting domain," he says.

TGP students are working in many fields, including oncology, infectious diseases, organ disease, neuropathology, and therapeutic modalities (e.g., protein therapies, gene therapies, stem cell therapies, and RNA therapies). Golan says it's routine for TGP students from different programs to collaborate both in the classroom and in the lab, as they recognize that the most difficult problems in biomedicine and therapeutics will not be solved without broad and multidisciplinary approaches.

"At Fujifilm, we are supporting the development and manufacturing of advanced therapies aimed at making the world a healthier place," says Toshihisa Iida, Director, Corporate Vice President, General Manager of the Life Science Strategy Headquarters of FUJIFILM Corporation, Japan. "Deep Fujifilm partnerships, like that with Harvard Medical School's Therapeutics Graduate Program, are essential in our mission to provide fundamentally enabling technology development through to commercial supply of life-impacting

medicines for patients around the globe. Fujifilm is proud to support Harvard Medical School as it helps to shape our world's future scientists."

Ajinkya Patil, PhD '23 (virology), a former Fujifilm Fellow who is now a senior scientist at Pfizer, credits the TGP's training for preparing him for his current role. He highlights the drug discovery-oriented curriculum of the TGP and the valuable insight into the life sciences industry he gained through speaker panel sessions and interactions with fellow graduate students and TGP alumni.

"These interactions honed my skills, helping me better position myself when applying for full-time positions after academia," Patil says.

Harvard University President Alan Garber, AB '77, AM '77, PhD '82, MD, praised the program. "The TGP both encourages connection and enables collaboration—two hallmarks of any successful effort to speed progress. With the generous

support of Fujifilm, our Fellows continue to pursue excellence across the University, making contributions to a variety of fields that have the potential to improve the lives of countless individuals today and tomorrow."



A vast majority of Therapeutics Graduate Program (TGP) students cite the program's internship requirement—every TGP student is required to do a two- to four-month internship outside their PhD dissertation lab—as a highlight of their graduate career. Some students use the internship to explore a therapeutics-related sector or learn a specific skill in an industrial setting. Many use it as a next step to a career advancement at the end of their dissertation research.

TWIN GIFTS PROPEL HEALTH EQUITY RESEARCH

➔ In an inspiring show of solidarity and foresight, the Lynch Foundation and Mary Lynch Witkowski, AB '96, MBA '01, MD '16, have each committed \$1.5 million to advance health equity through the support of postdoctoral fellows at Harvard Medical School. The gifts honor the late Paul Farmer, MD '88, PhD '90, a trailblazer in global health.

"Paul was a dear friend of the Lynch family since 1990," says Peter Lynch, president and co-founder of the Lynch Foundation and a member of the HMS Board of Fellows and HMS Discovery Council. "He was such a visionary and a successful leader." The foundation's gift targets health equity on an international scale, focusing on regions outside the U.S. The gift from Witkowski addresses health equity within the U.S.

Lynch highlights Farmer's dedication to training and inspiring the next generation of global health leaders. "These Global Health Equity Fellowships will carry forward his legacy by creating a new pipeline of leaders capable of addressing the complex health challenges facing underserved communities worldwide," he says.

PAUL FARMER EXAMINES AN X-RAY WITH THE MEDICAL TEAM AT BAYALPATA HOSPITAL IN ACHHAM, NEPAL, IN 2012. IMAGE: REBECCA E. ROLLINS/PARTNERS IN HEALTH



Through research, education, and capacity-building, the Department of Global Health and Social Medicine, housed in the Blavatnik Institute at HMS, uses diverse disciplines to understand how social determinants shape health outcomes. Its goal is to develop equitable, sustainable interventions that address the root causes of illness and disparities.

Witkowski, who serves on both the HMS Board of Fellows and the HMS Advisory Council on Education, says the health care delivery system in America is structurally inadequate for everyone and even worse for those who need it most. "Supporting health care delivery research is critical to complementing the value from basic research and clinical practice and ultimately driving change," she says.

The experiences of her father's close friend George Vanderheiden, who died in 2022, spotlighted the need to support domestic efforts, she says. "He was a person who felt he had the benefits of financial access to health care and a strong support system his whole life, and yet he struggled with navigating the health care system."

"SUCCESS FOR THIS NEW PROGRAM WILL BE SEEN WHEN JUNIOR SCHOLARS BRING NEW IDEAS AND THEIR SCHOLARSHIP IS ENRICHED BY THE MENTORSHIP AND COLLEGIAL NETWORK THEY GAIN HERE."

MERCEDES BECERRA

Mercedes Becerra, AB '91, SM '93, SD '99—herself a former postdoc under Paul Farmer—is poised to oversee the fellowship program. "Being a postdoctoral trainee with Dr. Farmer was an incredible privilege because I got to see how research intersects with many dimensions of health equity work," says Becerra, the Jeffrey Cheah Professor of Global Health at HMS. "Success for this new program will be seen when junior scholars bring new ideas and their scholarship is enriched by the mentorship and collegial network they gain here."

Becerra's own journey exemplifies the potential of postdoctoral research. Under Farmer's guidance, she conducted critical epidemiological research that validated the treatment of multidrug-resistant tuberculosis, making a significant global impact.

Vikram Patel, MBBS, MSc, PhD, the Paul Farmer Professor and Chair of Global Health and Social Medicine at HMS, underscores the importance of these fellowships. "They will bring early career scholars with original and innovative ideas into our community and amplify scholarship in health equity in the U.S. and globally," he says.

The potential synergies between the global and domestic focus of these gifts are immense. "As Paul Farmer would say, there are tremendous disparities in care across the globe, and while the issues and people are diverse, the delivery problems carry across geographies," notes Witkowski. "Having both U.S. and global funding will provide postdocs with peers doing similar research who can share powerful lessons on how to evaluate and understand the problems, how to measure them, and how to try to implement improvements."

KARCHMER HONORED WITH DISTINGUISHED SERVICE AWARD

➔ A.W. Karchmer, MD '64, a longtime professor of medicine at HMS who has forged a renowned career as an infectious disease clinician, accepted the 2024 Distinguished Service Award for Harvard Medical School Alumni on June 7 during the Harvard Medical Alumni Association Annual Business Meeting.

The award recognizes MD alumni who have demonstrated loyalty, service, and commitment to HMS through volunteering, community building, acting as an ambassador for the School, or otherwise supporting the School and its mission.

“My mother used to tell me, ‘You’ll catch more flies with sugar than with salt,’” says Karchmer, who has embraced this ethos, approaching his life from a foundation of kindness and infusing it into all his activities, including his enduring volunteer work at HMS.

The chair of alumni relations since 2009, he helps to nurture lasting relationships among the alumni community and to strengthen connections between alumni and the School. He previously served as a member of the Alumni Council (2004–2007), including a stint as council president, and has helped to lead

the fundraising efforts of his class as a Class Agent—a role he’s held since he was a fourth-year medical student. He also has collaborated with his classmates on Reunion Committees.

Still, when Karchmer found out that the Alumni Council had chosen him to receive the award, he said he was very surprised and certainly humbled.

“I’m well aware of how many people, in my opinion, have contributed far more than I have and have really done outstanding things to support the School,” he says. “Nevertheless, receiving this award is a great honor, and I greatly appreciate it.”

While his modesty masks his impact on HMS, those who know him well aren’t fooled.

“He’s an exemplar of the HMS volunteer,” says HMS Dean George Q. Daley, AB '82, MD '91, PhD. “And beyond his incredible support of the Medical School spanning many, many years, A.W. has been very much a wise counselor to me. His equanimity and generosity of spirit are unmatched.”



GEORGE Q. DALEY (LEFT) PRESENTS THE AWARD TO A.W. KARCHMER.

▶ **TO NOMINATE A DESERVING ALUM FOR THE 2025 AWARD, GO TO [ALUMNI.HMS.HARVARD.EDU/NOMINATION](https://alumni.hms.harvard.edu/nomination).**

ALUMNI COUNCIL WELCOMES 7 NEW MEMBERS



LEARN MORE ABOUT THE NEW ALUMNI COUNCIL MEMBERS AT [ALUMNI.HMS.HARVARD.EDU/ELECTION](https://alumni.hms.harvard.edu/election).

THE HARVARD MEDICAL ALUMNI ASSOCIATION (HMAA) RATIFIED THE HMAA CONSTITUTION DURING ITS ANNUAL MEETING JUNE 7, REFLECTING THE VOTE IN FAVOR OF MOVING FROM A CONTESTED ELECTION OF OFFICERS AND COUNCILORS TO AN ELECTION BY ACCLAMATION FOR NEW REPRESENTATIVES JOINING THE ALUMNI COUNCIL ON JULY 1, 2025.

➔ During the 2024 election, Harvard Medical School MD graduates selected seven new Alumni Council members. This included four candidates from two pentad races that ended in ties. Representing the Second Pentad (classes of 2014–2018) are Amir H. Ameri, MD '19 (Class of 2018), a medical director within clinical development at GlaxoSmithKline, and Ben Robbins, MBA '15, MD '16 (Class of 2014), a general partner at GV (formerly known as Google Ventures). Representing the Fifth Pentad (1999–2003) is Charmaine Smith Wright, AB '99, MD '03, the director of ChristianaCare’s Center for Special Health Care Needs. Representing the Ninth Pentad (1979–1983) are Scott T. Aaronson, MD '81, chief science officer at Sheppard Pratt Health System’s Institute for Advanced Diagnostics and Therapeutics and an adjunct professor at the University of Maryland School of Medicine, and Ann E. Taylor,

MD '83, co-chair of the National Academies of Science, Engineering, and Medicine Forum on Drug Discovery, Development, and Translation.

Joanna “Mimi” Choi, MD '09, MPH, a pediatrician at Asian Health Services and visiting lecturer at UC Berkeley School of Public Health, will serve as the council’s vice president-elect. Marc S. Sabatine, AB '90, MD '95 (Class of 1994), MPH '02, chair of the Thrombolysis in Myocardial Infarction Study Group and the Lewis Dexter, MD Distinguished Chair in Cardiovascular Medicine at Brigham and Women’s Hospital, will represent all classes as a councilor-at-large.

The Alumni Council promotes and supports activities that connect alumni to each other, the School, and current students. Additionally, its members serve in a consultative and advisory role for HMS leaders.



SCOTT T. AARONSON



AMIR H. AMERI



JOANNA “MIMI” CHOI



BEN ROBBINS



MARC S. SABATINE



ANN E. TAYLOR



CHARMAINE SMITH WRIGHT

GRATEFUL GRADS GIVE BACK

In fiscal year 2024, gifts of all levels from MD alumni totaled \$13.2 million in support for Harvard Medical School



MARC SABATINE

Chair dedications

Naming a chair in the Joseph B. Martin Conference Center Amphitheater at Harvard Medical School is a uniquely tangible and impactful way to give, creating a special significance for both the donor and the honoree. This method of giving, which requires a \$10,000 outright gift or multiyear pledge, has been wholeheartedly embraced by the Class of 1994.

In commemoration of their 30th Reunion in 2024, class members dedicated eight chairs, bringing their overall total to 18, second only to the Class of 1986. These chairs have been named in honor of mentors and other influential figures as well as deceased classmates.

“Our class remains deeply appreciative of our time at HMS,” says Class Agent Marc Sabatine, AB '90, MD '95 (Class of 1994), MPH '02, who served as 30th Reunion Committee co-chair and is a member of the Dean's Council, HMS's leadership annual giving society. “That gratitude extends not only to our many teachers but also to our wonderful classmates.”

The class's fundraising strategy focused on chair naming and multiyear pledges, which provide sustained support that the School can rely on and enable some donors to make larger commitments, all while counting toward Reunion class giving totals. Stella Kim, MD '96 (Class of 1994), Reunion Committee co-chair and a member of the Dean's Council and the Federman Loyalty Circle, which honors alumni who have made consecutive annual gifts of any size for five years or more, and fundraising subcommittee vice chairs Aaron Caughey, MD '95 (Class of 1994), MPP '95 (Dean's Council, Federman Loyalty Circle); Matthew Davis, MD '94 (Dean's Council, Federman Loyalty Circle); and John Maa, MD '94 (Dean's Council, Federman Loyalty Circle), worked together with Sabatine to craft the successful strategy. Maa, in particular, propelled the chair-naming effort.

Each chair gift will support financial aid for HMS students, while other gifts made by 1994 alums will support areas including building revitalization and physician-scientist training.

Legacy giving

Peter Newburger, MD '74, and Jane Newburger, MD '74, MPH '80, expressed deep appreciation for HMS in explaining why they each made the School a beneficiary of their individual retirement accounts (IRAs).

“We were motivated to make our gifts to HMS in gratitude both for the outstanding medical education and the tremendous personal inspiration and support we received from faculty,” says Peter Newburger. They both served on their 50th Reunion Committee and are members of the Dean's Council and the Ezekiel Hersey Council, HMS's legacy giving society.

More than half of the Class of 1974 made gifts for their 50th Reunion, primarily to support the Class of 1974 Memorial Scholarship Fund. John Cramer, AB '70, MD '74 (Dean's Council, Ezekiel Hersey Council, Federman Loyalty Circle), who led the fundraising strategy for the class's Reunion, explains why the scholarship fund was a popular choice: “Any solution to this country's broken health care system must include training more primary care physicians.

Because such a career choice may be negatively influenced by large educational indebtedness, robust financial aid for such students is desirable.”

Beneficiary designations and bequest intentions proved to be a popular way to give because HMS includes these gifts in Reunion totals starting at an alum's 50th Reunion year.

“By designating HMS as a beneficiary of our IRAs, we were able to give a much larger gift than we could have donated outright as cash or securities,” says Peter Newburger, who, along with his wife, received scholarship support as an HMS student and is supporting the class scholarship fund.

Loyal support

Barbara Wismer, MD '86, made her first gift to HMS only months after graduating and has been a steadfast supporter for the past 40 years. She says that her consistent contributions, though small, are a show of thanks to Harvard.

“I had a great experience at HMS,” says Wismer, a member of the Federman Loyalty Circle. “I received a first-class education and was surrounded by interesting and stimulating classmates. I want to help provide the same experience to current and future students.”

Most recently, she has designated her gifts to the Diversity and Community Fund, guided by the belief that diverse learning environments are crucial to creating a world where everyone is valued and included.

“As I've deepened my understanding of white privilege, I've become increasingly aware of how hard it is for some people, especially people of color and people without means, to participate in an elite learning environment like HMS,” she says. “I want to help address that disparity with my gifts.”

Early impact

Despite being only four years removed from HMS, Alexander Ordoobadi, MD '20, has shown his commitment to giving back. He made his first gift shortly after graduating, a testament to his belief in the power of collective giving. Like many alumni donors who share their philanthropic motivations, he expressed how grateful he is for the medical education he received.

“The exceptional quality of teaching at HMS surpassed anything I had experienced before and sparked my own interest in medical education,” he says. “I also was impressed by the quality of advising and mentorship I received.”

Ordoobadi says he chose to support the HMS Unrestricted Fund because he trusts the School to deploy his dollars where they are most needed.

He has also agreed to serve on his 5th Reunion Committee and says he's excited to celebrate with his classmates during next year's festivities. “We became close because we were always learning from each other, both during the preclinical curriculum and on the wards. My HMS classmates are now some of my closest friends.”



STELLA KIM



AARON CAUGHEY



MATTHEW DAVIS



JOHN MAA



JANE AND PETER NEWBURGER



JOHN CRAMER



BARBARA WISMER



ALEXANDER ORDOOBADI



VIEW THE FISCAL YEAR 2024 MD HONOR ROLL OF DONORS AT ALUMNI.HMS.HARVARD.EDU/HONOR-ROLL.

EMPOWERING WOMEN IN MEDICINE

➔ In the 1950s, only about 5% of all physicians in the United States were women. Estherina Shems-Schotland was among them.

Defying her very strict father, who told her repeatedly that it was not fit for a woman to pursue an education, much less a medical degree, Shems-Schotland grew up to be an independent, no-nonsense, pragmatic woman committed to becoming a doctor.

“She was tough, rebellious, and crusty,” says her nephew Ron Shems, “but once you broke through her hard exterior shell, she was very sweet and had a great sense of humor.”

Shems-Schotland chose to follow in her family’s footsteps—her father, uncle, and all of her male cousins were doctors. After earning a Bachelor of Science from Lynchburg College and her MD from the Woman’s Medical College of Pennsylvania, she would make her mark on the world of child psychiatry, culminating in 45 years of service.

Sadly, Shems-Schotland died in 2022. A recent bequest of nearly \$1.4 million from her estate creates an endowed scholarship fund at Harvard Medical School in honor of her late husband, Donald Lewis Schotland, AB ’52, MD ’57.

While Shems-Schotland’s passion was psychiatry, her husband’s was neurology. After graduating from HMS, Schotland did his residency and a fellowship at Columbia University. He then worked at the University of Pennsylvania for about 40 years, retiring as a professor of neurology. He remained connected to HMS through annual donations and frequent visits, especially to attend Reunion.

In 2017, for the first time, the number of women entering U.S. medical schools outnumbered men, and the trend has continued, according to the Association of American Medical Colleges.

ESTHERINA SHEMS-SCHOTLAND
AND DONALD LEWIS SCHOTLAND



“GENEROUS DONATIONS LIKE THIS BEQUEST HELP BREAK DOWN BARRIERS, PROMOTE EQUALITY, AND EMPOWER THE NEXT GENERATION OF MEDICAL LEADERS TO INNOVATE AND TRANSFORM HEALTH CARE FOR EVERYONE.”

LAURENCE G. RAHME

The couple took pride in bettering the lives of patients and felt immense satisfaction helping others. In drafting their wills, they expressed their wish that their legacies would enable aspiring medical students to fulfill their calling of serving others. Shems-Schotland was particularly interested in supporting women.

The Donald Lewis Schotland, M.D., Class of 1956 Endowed Scholarship Fund will provide financial assistance to an HMS MD student member of the Joint Committee on the Status of Women (JCSW), an organization founded in 1973 that is committed to the advancement of women in the medical profession. Any faculty member, postdoc, staff member, or student at or affiliated with HMS or the Harvard School of Dental Medicine is welcome to join.

Laurence G. Rahme, MSc, PhD, an HMS professor of surgery at Massachusetts General Hospital and faculty co-chair of the JCSW, says, “Generous donations like this bequest help break down barriers, promote equality, and empower the next generation of medical leaders to innovate and transform health care for everyone.”

FACES OF REUNION

Harvard Medical School alumni from classes ending in 4 or 9 reconnected, reminisced, and reestablished meaningful bonds during Reunion 2024 activities.

One hundred forty-four Reunion Committee volunteers played a vital role in generating enthusiasm, increasing attendance—more than 650 alumni and guests attended—and raising funds during their milestone years. They organized 16 celebratory class events, which complemented the core programming held from Thursday, June 6, to Saturday, June 8. Thanks to their efforts to encourage participation in Reunion Reports, 891 submissions were received for the historical class books.



Visit alumni.hms.harvard.edu/2024-recap to download event photos and watch the Alumni Day Symposium and a highlight video.



04



01

01 HMS Dean for Medical Education Bernard S. Chang, AB '93, MD, MMSc '05, kicked off Reunion festivities at Thursday's Welcome to Reunion Toast and Reception.



02

02 Edward M. Hundert, MD '84, paired up with Yoseph Boku AB '21, HMS MD Class of 2025, to lead one of several campus tours. Students led groups of alumni for a look inside the Countway Library, the Tosteson Medical Education Center, and the Blavatnik Harvard Life Lab Longwood. Other stops included Gordon Hall and Vanderbilt Hall.

05 Joseph McQuaid, MD '09, MPH '17, MBA, associate chief medical officer at UMass Memorial Medical Center, enjoyed lawn games with his children at Saturday's Party on the Quad, which also featured food trucks, photo booths, and a DJ.



03

03 Members of the Class of 1964 gathered for a photo to commemorate their 60th Reunion before enjoying a class dinner in the Pechet Room at the New Research Building.

06 A highlight of Reunion is the event held at the Four Seasons Hotel Boston, where members of the classes of 1964–2004 and their guests gathered for a reception and class dinners. Cindy Schoenfeld, AB '77, MBA '81, shares a laugh with W. M. Hensley, MD '79, a classmate of Mark Schoenfeld, MD '79, Cindy's husband.

04 Andrea Wershof Schwartz, MD, MPH, an HMS associate professor of medicine at the Veterans Affairs Boston Healthcare System and Brigham and Women's Hospital, led an interactive, case-based, academic experience that explored aging and end-of-life care during Thursday's Back to Class session. Schwartz is also the chair of the Curricular Society themes and co-director of the Aging and End of Life Care Theme.

07 Friday's Alumni Day Symposium, titled "AI in Medicine: The Continuum of Learning," explored the impact of artificial intelligence on education and the field of medicine. The four speakers (from left) were:

- Marinka Zitnik, PhD, HMS assistant professor of biomedical informatics.
- Isaac Kohane, MD, PhD, the Marion V. Nelson Professor and chair of the HMS Department of Biomedical Informatics.
- David H. Roberts, MD '95, HMS dean for external education.
- Bernard S. Chang, AB '93, MD, MMSc '05, HMS dean for medical education.

08 Nancy Oriol, MD '79, co-founder of The Family Van, celebrates inside the van with her classmates, who successfully raised enough funds to name a consultation room in the van in honor of their 45th Reunion.

09 Alumni from the classes of 2009 and 2014 gathered in downtown Boston at Street Bar at Rochambeau for a casual and festive reception.

10 The Harvard Medical Alumni Association's Annual Business Meeting on Friday featured a shoutout to Reunion Committee members, updates on the Alumni Council's work, and results from the Alumni Council election (see story on Page 13). In addition, attendees celebrated A.W. Karchmer, MD '64, as the winner of the 2024 Distinguished Service Award for HMS Alumni (see story on Page 13).

Reunion Giving

588 alumni from classes ending in 4 or 9 raised \$24 million*

* IN ADDITION TO OUTRIGHT GIFTS, THIS TOTAL INCLUDES MULTIYEAR PLEDGES, BEQUEST INTENTIONS, AND LIFE-INCOME GIFTS.



05



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08

LAUGHTER AND LEARNING: INSIDE ALUMNI DAYS

SOCIETY OF THE SILVER STETHOSCOPE MEMBERS—ALUMNI WHO HAVE CELEBRATED THEIR 60TH REUNION—ENJOY A PRIVATE LUNCH DURING ALUMNI DAYS.



➔ Harvard Medical School MD graduates gathered for Alumni Days on June 7–8 to reconnect with each other and celebrate their alma mater.

The first day kicked off with breakfast in the New Research Building (NRB) lobby. Afterward, attendees proceeded to the NRB amphitheater for the Harvard Medical Alumni Association's Annual Business Meeting. Mary P. Mullen, AB '83, AM '87, MD '91, PhD '91, shared updates on HMS Alumni Council projects, summarized election results, and detailed the Alumni Giving Report. Mullen represents HMS as a graduate school director of the Harvard Alumni Association (HAA), serving as an alumni liaison between the Alumni Council and the HAA.

During the meeting, A.W. Karchmer, MD '64, the longtime chair of alumni relations, received the Distinguished Service Award for HMS Alumni (see Page 13).

Next, HMS Dean George Q. Daley, AB '82, MD '91, PhD, delivered a State of the School Address. He shared the School's vision for the Program in Medical Education; discussed how artificial intelligence (AI) is being incorporated into education, research,

and clinical service; and described the latest achievements in collaborative science.

Following Daley's address, attendees were treated to an engaging Alumni Day Symposium, which was titled "AI in Medicine: The Continuum of Learning." Moderated by Isaac Kohane, MD, PhD, the chair of the Department of Biomedical Informatics in the Blavatnik Institute at HMS, the symposium focused on AI and its integration into medical education, what practicing physicians need to know, and AI's future impact on medical sciences.

A lively lunch followed in the NRB lobby, where alumni mingled and reminisced. The afternoon also featured student-led tours, providing glimpses into the Tosteson Medical Education Center, the Blavatnik Harvard Life Lab Longwood, the Countway Library, and Gordon Hall.

The next day, festivities concluded with the Party on the Quad, which featured food trucks, lawn games, photo booths, a DJ, and more.

▶ VISIT ALUMNI.HMS.HARVARD.EDU/ALUMNI-DAYS TO WATCH THE ALUMNI DAY SYMPOSIUM AND DOWNLOAD EVENT PHOTOS.

A QUEST TO SAVE

A DECADE AFTER FOUNDING USHER 1F COLLABORATIVE, COUPLE OPTIMISTIC THAT TREATMENT IS IN SIGHT

→ The diagnosis of a rare genetic disorder for their two daughters thrust Elliot and Melissa Chaikof into a disheartening medical void. Faced with the grim reality that little research and virtually no therapies existed for Usher syndrome type 1F, which causes deafness at birth and progressive vision loss, the Chaikofs founded the Usher 1F Collaborative in 2013. Their mission: drive medical research toward a treatment to save or restore patients' vision.

A decade later, nine groups at universities in the United States, Canada, and Australia are working on treatments for Usher 1F thanks to funding from the collaborative, which has united many other affected families in raising awareness and funding for this disease.

Usher 1F is a particularly severe form of Usher syndrome, which occurs when a gene mutation causes cells in the eye and ear to stop producing an essential protein. David Corey, PhD, the Bertarelli Professor of Translational Medical Science in the Blavatnik Institute at Harvard Medical School, had devoted decades to studying the normal function of the protein. It wasn't until a conference organized by the Chaikofs in Boston in 2017 that Corey met their daughters and found a new motivation for his research, reinvigorating the family's quest for a cure.

"Because David understood the gene so well, he basically leapfrogged ahead of where the research was and hit the ground running," says Melissa Chaikof, chair of the Usher 1F Collaborative.

"THIS IS AN OUTSTANDING EXAMPLE OF HOW BASIC SCIENCE CAN BE TRANSLATED TO THERAPIES."

ELLIOT CHAIKOF

Since that conference, the Corey Lab—backed by funding from HMS and nearly \$1 million from the Usher 1F Collaborative—has made considerable progress in developing three potential gene therapies for Usher 1F blindness. The lab first showed that the therapies could preserve hearing in the ears of mouse models, but they were not optimistic that treatments would work in human patients, who are born profoundly deaf and may have already lost the receptor cells in their inner ear. Conversely, their vision loss is gradual, providing an opportunity to intervene to preserve their sight.

Many people with Usher 1F receive cochlear implants to improve their ability to hear and communicate.

"The project has been enormously complex because we're testing three different strategies in two different organs and four different species," Corey said. He and his collaborators hope that at least one therapy will safely stop and perhaps even reverse vision loss in patients with Usher 1F. Their development of a mini-gene therapy, which has shown the most promise so far, recently received a \$1.2 million boost from the Foundation Fighting Blindness (see story at right).

"I would never have been able to get a major grant from the Foundation Fighting Blindness (FFB) without strong preliminary data showing that we know how to study the anatomy and physiology of the retina," says Corey, whose lab is known for its research in hearing. "The seed money from Usher 1F Collaborative gave us the chance to do that, and as a result our application to the FFB was successful."

Elliot Chaikof, MD, PhD, the Johnson and Johnson Professor of Surgery and head of the Department of Surgery at Beth Israel Deaconess Medical Center, says Corey has made remarkable progress in a very short period of time. "This is an outstanding example of how basic science can be translated to therapies," he says.

A SECTION OF A NONHUMAN PRIMATE RETINA SHOWING EXPRESSION OF THE PCDH15 PROTEIN (GREEN) ALONG THE CALYCEAL PROCESSES IN CONE PHOTORECEPTORS (MAGENTA) AND THE OUTER SEGMENT/ INNER SEGMENT JUNCTION IN ROD PHOTORECEPTORS. (THE OUTER SEGMENT OF THE ROD PHOTORECEPTOR IS LABELED IN BLUE.) DAPI—A FLUORESCENT DYE—LABELS THE NUCLEI (CYAN).

IMAGE: MARYNA IVANCHENKO

PATIENTS' VISION

MINI-GENE THERAPY DEMONSTRATES GREAT PROMISE IN COMBATING BLINDNESS AMONG USHER 1F PATIENTS

➔ In the race against time to save the vision of people with Usher syndrome type 1F, the Corey Lab at Harvard Medical School is sparking hope that its mini-gene strategy can reach the finish line before countless worlds go dark.

Collaborating with researchers at other institutions, scientists in the Corey Lab, including Maryna Ivanchenko, MD, PhD, an instructor in neurobiology who oversees the lab's Usher 1F program, designed a shortened version of the gene that is mutated in Usher 1F. This rare but severe genetic disease causes deafness, lack of balance, and progressive blindness.

"It's completely devastating to be born deaf and then lose your vision, so we hope that this mini gene can eventually be turned into a treatment for this disease," says David Corey, PhD, the Bertarelli Professor of Translational Medical Science in the Blavatnik Institute at HMS.

The mutation renders hair cells inside the inner ear incapable of producing a key protein—protocadherin-15 (PCDH15)—involved in sound perception. In mice, the mini gene stimulated production of a shorter but still functional version of the missing protein, enabling the hair cells to sense sound and restoring hearing. Because vision loss in Usher 1F involves an only slightly different form

of the same protein, the researchers say the same approach may be useful for preventing blindness.

Why a "mini gene"? PCDH15 is a huge protein, and the DNA that codes for it is too large to fit inside the usual delivery vehicle—a small capsule made from a non-infectious virus. The shortened version of the PCDH15 gene can just squeeze inside the viral capsule.

"IT'S COMPLETELY DEVASTATING TO BE BORN DEAF AND THEN LOSE YOUR VISION, SO WE HOPE THAT THIS MINI GENE CAN EVENTUALLY BE TURNED INTO A TREATMENT FOR THIS DISEASE."

DAVID COREY

Corey's next steps are being boosted by a \$1.2 million grant from the Foundation Fighting Blindness, which was established more than 50 years ago by a passionate group of people determined to help find treatments and cures for blinding diseases affecting themselves or loved ones. Since then, the foundation has raised more than \$915 million for leading-edge research in areas such as genetics, gene and stem cell therapies, retinal cell transplantation, and pharmaceutical and nutritional therapies.

In collaboration with Bence György, MD, PhD, who was once a postdoctoral fellow in Corey's lab and is now head of clinical translation and leader of the Ophthalmic Translational Research Group at the Institute of Molecular and Clinical Ophthalmology Basel, the Corey Lab will:

- Test the mini gene's ability to restore vision in a zebrafish model.
- Deliver the mini gene to the mouse retina, then improve the delivery method and targeting of the mini gene.
- Evaluate mini-gene delivery and targeting in human photoreceptors.

"These tests will provide baseline data to support an FDA investigational new drug application and to secure further funding," Corey says. "This is likely the first mini-gene approach to rescue vision in any model of human hereditary blindness and will inform mini-gene strategies for other blindness genes."

People with Usher 1F are usually born deaf and lacking the ability to balance. They develop an eye disease called retinitis pigmentosa, which causes a progressive loss of vision as the retina degenerates. Night vision often disappears first, followed by peripheral vision. Eventually, they become completely blind.

IN BRIEF

The following grants totaling \$250,000 or more were awarded to members of the Harvard Medical School community in support of their work to alleviate suffering and improve health and well-being for all.

For nearly 30 years, the Commonwealth Fund Fellowship in Minority Health Policy at Harvard University has prepared physicians for leadership roles in health policy and public health, equipping them with the tools needed to transform health care delivery systems for historically marginalized populations. The **Commonwealth Fund** renewed its support for the fellowship in 2024 with a grant of over \$888,000, directed by Joan Y. Reede, MD, MPH '90, SM '92, MBA, dean for diversity and community partnership at HMS.



Additionally, the **Commonwealth Fund** is awarding \$175,000 to support a project led by three principal investigators: Russell Phillips, MD, director of the HMS



Center for Primary Care (CPC) and the William Applebaum Professor of Medicine at HMS and Beth Israel Deaconess Medical Center; Amie Pollack, PhD, research director for the CPC; and Zirui Song, PhD '12, MD '14 (below), an HMS associate professor of health care policy. The project team, which is also receiving \$175,000 from the **California Health Care Foundation**, will investigate how increased investment in primary care affects health care practices. The team's goal is to develop a decision guide to assist health care providers and payers in making effective investments in primary care.



The **American Cancer Society** recently awarded a Research Scholar Grant to Kun-Hsing Yu, MD, PhD, an assistant professor of biomedical informatics in the Blavatnik Institute at HMS. With \$960,000 in funding, Yu will develop an artificial intelligence (AI) system to predict the recurrence risk of colorectal cancer precursor lesions by integrating microscopic image patterns, molecular data, and patients' clinical profiles. The objective is to improve personalized patient care and reduce health care costs associated with managing colorectal cancer precursors.



Florence Bourgeois, MD, MPH '05, an associate professor of pediatrics at HMS, a physician at Boston Children's Hospital, and the director of the Harvard-MIT Center for Regulatory Science (CRS), received an \$850,000 grant from the **Laura and John Arnold Foundation**. She will use the funding to establish a unit within the CRS focused on evaluating and enhancing the generation and communication of evidence for FDA-regulated products. The primary objective is to ensure robust evidence for drug approvals by improving communication about drug benefits and enhancing the quality and compliance of FDA-mandated studies in the postmarket phase.

The **Damon Runyon Cancer Research Foundation** is providing a total of \$600,000 in postdoctoral fellowship awards to two researchers in the Blavatnik Institute at HMS. Brooke Huisman, PhD (immunology), is investigating how the thymus prevents T cells from attacking the body's own tissues by eliminating harmful cells and creating regulatory ones. Her project focuses on special thymic cells that mimic other body tissues. She aims to understand how these cells develop, which could enhance treatments for cancer and



autoimmune diseases. James Taggart, PhD (systems biology), is tackling the issue of antibiotic-resistant infections in cancer patients by identifying new drug targets. He seeks to discover how bacteria compensate for inhibition of genes essential to their growth, which could lead to the development of more effective antibiotics.



The **Bluefield Project to Cure Frontotemporal Dementia** recently renewed its support for Wade Harper, PhD, the Bert and Natalie Vallee Professor of Molecular Pathology and chair of the Department of Cell Biology in the Blavatnik Institute at HMS, with a \$547,000 grant. Harper strives to understand how progranulin, a protein important for cell health, and its smaller parts, called granulin peptides, help maintain the health of cellular structures, particularly in brain cells. By studying how granulin peptides are made and how they work within cells, his lab hopes to uncover mechanisms that could lead to new treatments for diseases such as frontotemporal dementia.

Jonathan Green, PhD, a research fellow in neurobiology in the Blavatnik Institute at HMS, is using a \$400,000 Distinguished Scholars Fellowship Award from



The Warren Alpert Foundation to explore how different cell types in the brain's cerebral cortex contribute to cognition. This research has the potential to identify specific cell types that can be targeted for the treatment of brain disorders.

ADVANCING COMPUTATIONAL TOOLS FOR BETTER PATIENT CARE

➔ Artificial intelligence (AI) and computational biology are revolutionizing biomedical innovation and its impact on health care. Two assistant professors of biomedical informatics in the Blavatnik Institute at Harvard Medical School are at the forefront of this revolution.

“IT IS NOW POSSIBLE TO BRING TOGETHER DATA FROM MILLIONS OF PATIENTS, IDENTIFY NEW MECHANISMS OF DISEASE, AND TURN THOSE INSIGHTS INTO TRANSLATIONAL IMPACT.”

SANJIT BISWAS

Pranav Rajpurkar, PhD, is leading the Medical AI Data for All (MAIDA) initiative, collecting medical imaging data from diverse populations and clinical settings worldwide. “In Hindi, ‘maida’ means ‘flour’, and just as flour is a key ingredient in many recipes, MAIDA serves to be a key ingredient in medical AI,” Rajpurkar says. The vision for MAIDA is to drive equitable AI advancement worldwide and ultimately improve diagnosis and treatment for patients everywhere by developing an open global data repository that represents diverse patient populations.

Marinka Zitnik, PhD, meanwhile, aims to build a comprehensive benchmark for evaluating computational drug repurposing systems, with the goal of developing AI models to identify molecules or biological targets that result in therapeutic effects when modulated by a drug.

Drug repurposing offers significant advantages compared to traditional drug development, such as lower cost, reduced risk for safety and efficacy issues, and faster integration into the clinic. “Our overarching goal is to lay the foundation for AI to enable drug repurposing at scale,” says Zitnik, who is also an associate faculty member at the Kempner Institute for the Study of Natural and Artificial Intelligence at Harvard University.

Both projects are made possible by the Biswas Family Foundation, a private grant-making foundation committed to supporting research and innovative programs at the intersection of emerging technology and global health.

In 2023, the Biswas Family Foundation, in partnership with the Milken Institute Science Philanthropy Accelerator for Research and Collaboration (SPARC), conducted a comprehensive review of the computational biology field and identified opportunities for philanthropy to advance the integration of computational tools in biomedical research and clinical care. The findings led to the creation of the Transformative Computational Biology Grant Program, which funds research using computational tools across a range of focus areas, including AI for genomic medicine, diagnosis



By funding teams of scientists and science-focused public health initiatives, the Biswas Family Foundation aims to accelerate both the understanding of complex diseases and translational research in practice to ultimately improve the lives of millions of people worldwide.

of cardiovascular disease, precision oncology therapies, enhancement of clinical datasets, and drug repurposing systems.

This past March, during the first cycle of this grant program, five research teams were selected to receive nearly \$14 million. Rajpurkar and Zitnik each received \$1 million for their project teams. Zitnik is also collaborating with another funded team at the Massachusetts Institute of Technology. That team aims to advance high-throughput single-cell spatial sequencing discovery loops with rapid machine learning approaches to identify candidate genes for precision therapeutics in metastatic melanoma.

“It is now possible to bring together data from millions of patients, identify new mechanisms of disease, and turn those insights into translational impact,” says Sanjit Biswas, CEO of Samsara and co-founder of the Biswas Family Foundation with his wife, Hope Biswas, PhD, an infectious disease and maternal health epidemiologist. “We hope this initial investment will support cutting-edge research that will lead to a significant improvement in human health.”

HUMBLE ADVENTURER LEAVES LEGACY OF SUPPORTING FUTURE DOCTORS

➔ Beyond his accomplishments as a radiologist, professor, and public health leader, Stanley Bohrer, MD '58, MPH '75, was a lifelong sculptor who could carve just about anything out of wood. He spent 14 years at University College Hospital in Ibadan, Nigeria—serving as a professor and, for 10 years, as head of the Radiology Department—and became fascinated by the culture and art of the Yoruba people, drawing inspiration for his carvings.

During that time, which included stints as a visiting professor in Ghana, Kenya, and Tanzania, Bohrer acted as a sculptor of a different sort, helping to shape the lives of future generations of health care professionals. He started the first radiology residency program in Africa.

“It’s about the individuals—patiently attending to patients and training future radiologists, giving them the tools for better health, one at a time,” he said in a 2015 interview with the Harvard T.H. Chan School of Public Health, discussing how to improve living standards in developing nations. “That’s what I did for 14 years and hope those who come after me will continue to do with this legacy gift,” he said, referencing the bequest he intended to leave the school.

After a long illness, Bohrer, who spoke about his African experiences twice at HMS Alumni Day, died in September 2022. His estate not only provided vital assistance for Chan School students but also distributed more than \$2 million to Harvard Medical School to establish an endowed scholarship fund.

“This generous gift from Stanley Bohrer will enable deserving, talented students to pursue their medical education at Harvard without the burden

Stanley Bohrer, who worked for 14 years at University College Hospital in Ibadan, Nigeria, was selected as president of the Association of Radiologists of West Africa and also represented Nigeria at the International Congress of Radiology.



**STANLEY BOHRER (RIGHT)
PLAYS MANCALA WITH
TWO NIGERIAN FRIENDS.**

of financial constraints,” says Ryan Callahan, HMS’s director of financial aid. “It will foster a diverse student body essential to our mission.”

Bohrer’s love of international work led him to Project HOPE, a global health and humanitarian organization with over 1,000 employees in more than 25 countries. He served as HOPE’s program director in Cartagena, Colombia, and then in Quetzaltenango, Guatemala, teaching radiology residents in both places. He completed his contract with HOPE working in government hospitals in Jamaica and Grenada.

In 1981, he accepted a position as a professor of radiology at Wake Forest University (WFU) School of Medicine in Winston-Salem, North Carolina, specializing in bone and trauma radiology. During his time at WFU, he authored a book on bones in sickle cell disease and wrote more than 100 scientific journal articles. He also took three sabbaticals—in Pakistan, India, and Ecuador—to work as an international visiting professor for the Radiological Society of North America.

He retired from WFU in 1998 and worked part-time in the same department for a few years before doing volunteer work at a free clinic. He also continued for a number of years giving annual seminars to students in biomedical engineering studying imaging, exemplifying a life devoted to the betterment of others.

Q&A WITH ISAAC KOHANE

We sat down with Isaac Kohane, MD, PhD, the Marion V. Nelson Professor and chair of the Department of Biomedical Informatics in the Blavatnik Institute at Harvard Medical School, to discuss the promise and perils of artificial intelligence (AI) in medicine.



01

What are the most compelling examples of AI applications in medicine today, and how are they improving patient outcomes?

Right now, organized medicine is only beginning to explore how AI can improve how we care for patients. Patients, by contrast, especially those who are suffering, are far more willing to explore innovative approaches to diagnoses and therapy. I am reminded of a mother whose child went undiagnosed with disabling pain. After three years and 17 doctors, she entered the clinical reports into ChatGPT. The diagnosis suggested by ChatGPT—tethered cord syndrome—was confirmed by Dr. Holly Gilmer, a Harvard-trained neurosurgeon (AB '88), and the child had a successful surgical intervention.

02

How do we ensure that AI systems in health care are free from biases that could lead to disparities in treatment across different demographics?

Currently, the best way to ensure that these systems are bias-free is to check them first. Give them a large number of cases where we know that demographics do not inform the outcomes, and then determine if the systems' decisions are systematically different based on demographics. If so, there are a substantial number of techniques to "steer" these AI systems away from baseless bias. Eventually, there will be a large certification industry that will both identify and correct bias. Until then, the responsibility is on the medical establishment to "trust but verify."

03

What are the challenges in integrating AI systems into existing health care infrastructure?

There are a number of technical challenges, but the most significant challenge is this: How do we develop business models and incentives that promote the use of AI to improve patient outcomes while aligning the job of clinical care more closely with the experience many of us aspired to when we first considered becoming doctors? If we do not address this challenge, fiscal and organizational pressures will make AI less useful to clinical care and only accelerate the path to clinician burnout.



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PULSE

is produced by the
Harvard Medical School
Office of Alumni Affairs
and Development

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18

CELEBRATING THE HEART AND IMPACT OF THE HMS COMMUNITY

PULSE

FALL 24

MAESTAS STARTS TERM AS HEALTH CARE POLICY CHAIR

For the first time since its founding in 1988, the Department of Health Care Policy in the Blavatnik Institute at Harvard Medical School has a new chair. Nicole Maestas, MPP, PhD, the Margaret T. Morris Professor of Health Care Policy, began her term as chair Nov. 1. A specialist in the economics of disability insurance, labor markets, health care systems, and population aging, Maestas has been a faculty member in the department since 2015. She was chosen following a rigorous national search that surfaced numerous outstanding candidates within and beyond the Harvard community. Maestas succeeds Barbara J. McNeil, MD '66, PhD '72, the Ridley Watts Professor of Health Care Policy, who founded the department and served as chair for 36 years.

