

WINTER | 2022

PENN Medicine



GUN VIOLENCE

A DEEPENING CRISIS, NEW
VIEWS ON SOLUTIONS

Honoring Dr. Helen O. Dickens, a Trailblazer
for Black Women in OB-GYN

Drones in Flight and Cheers of Celebration
as New Pavilion Opens

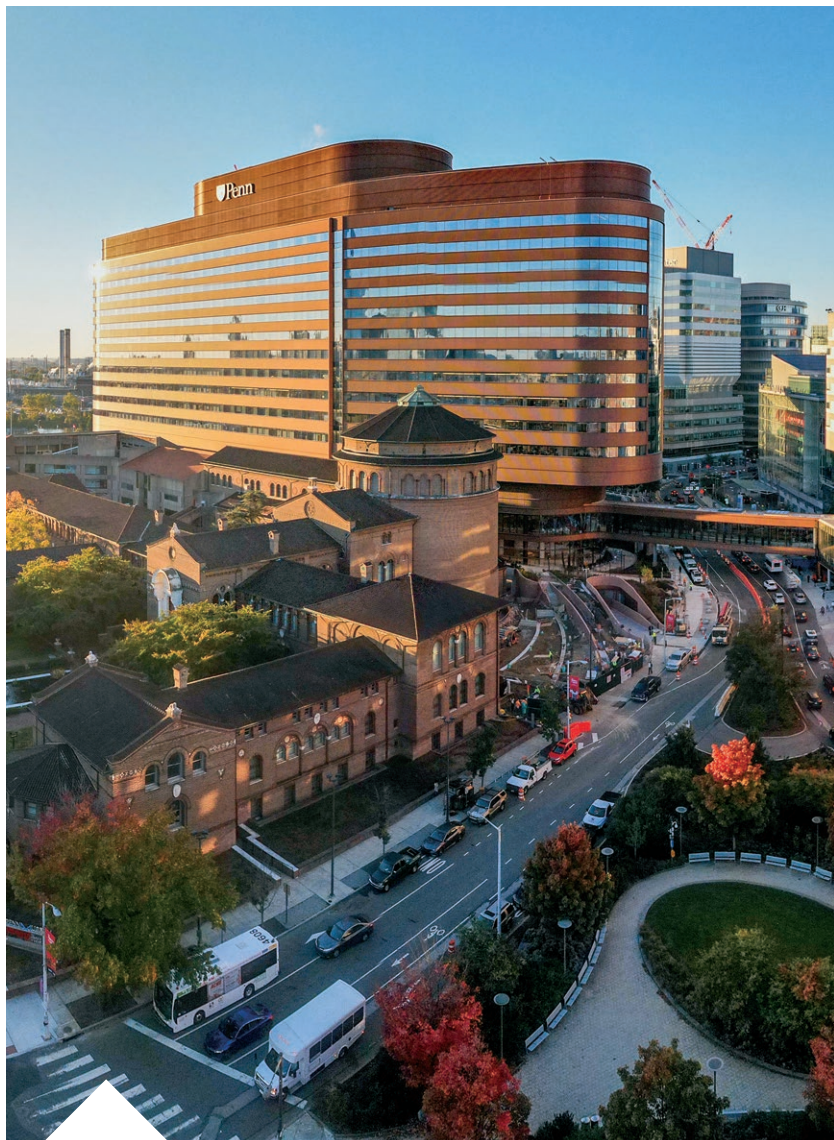
DRESS REHEARSALS AND DRONE FLIGHTS

After more than four years of construction, preparation and celebration marked the final weeks before the opening of the Pavilion, Penn Medicine’s state-of-the-art new 1.5-million-square-foot inpatient facility at the Hospital of the University of Pennsylvania.

In the months before the building opened for patients, every employee who would work there — approximately 10,000 people — participated in a rigorous training designed to ensure that teams would seamlessly transition patient care and operations following the move into the new facility. Three “dress rehearsals” brought multidisciplinary teams together to practice scripted common “day in the life” scenarios, plus walking through more complex scenarios in preparation for their work in the new spaces.



Penn Medicine lit up the night sky over Philadelphia, with a spectacular show of 300 drones in celebration of the Pavilion’s opening. The dynamic light show was visible from up to five miles from the launch site over Fairmount Park’s Lemon Hill area a few days before the building’s opening. The drone show featured shapeshifting patterns of light that outlined the Penn shield as well as the shape of the Pavilion building itself. It also included interactive components — such as a “QR code in the sky” scannable from up to three-quarters of a mile away — to reach a website to learn more about the transformation of medical care underway in the Pavilion.



“There are medical marvels we’ll never see in this lifetime. Then there are those that arrive ahead of their time,” musician John Legend narrates a sweeping video as the viewer’s vantage point floats down from the sky above the Pavilion and follows a patient rolling through the Emergency Department doors. A unique fly-through drone tour shows a five-minute journey through a day in the life of the new building. As the social media posts accompanying the video said, “You’ve never seen a hospital like this. And you’ve never seen a hospital... LIKE THIS.”

▶ **Watch the video at https://youtu.be/tZeR1AGk_Uk.
Read more about the Pavilion on pages 3 and 48 of
this issue online at PennMedicine.org/pavilion-news**

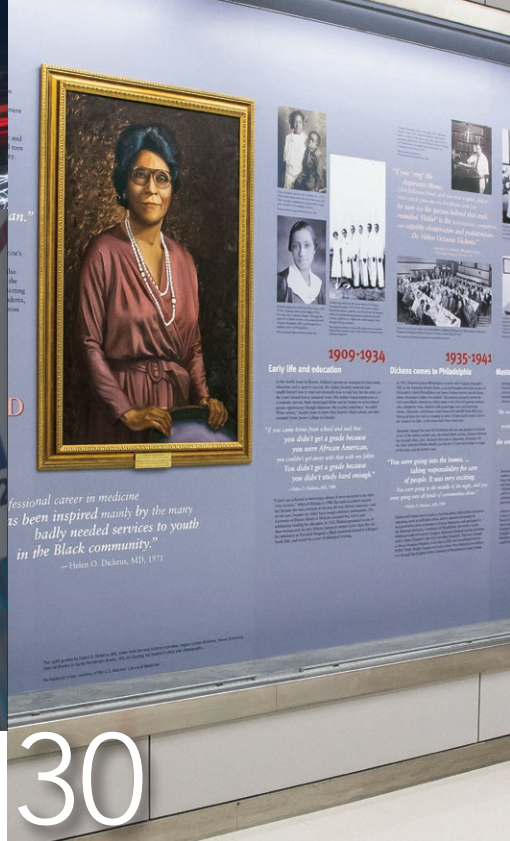


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Exacerbated by the COVID-19 pandemic, gun violence is rising to record levels, both across the country and in Philadelphia. Four Penn Medicine experts close to the epidemic of community violence speak up about the toll and call for bold, urgent solutions.

30 Helen Octavia Dickens: An Expanded View of a Trailblazing Obstetrician/Gynecologist
Dickens' life and career reflect a deep caring and commitment to the lives of Black women and their families in particular, both personally and at the scale of entire communities. In recruiting more underrepresented minorities to Penn, she helped to change the face of the future of medicine. The curator of a new, expanded display surrounding her portrait reflects on that legacy and the process behind the exhibit.

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Legacies, Living and Cultivated

Nearly 20 years after a small sapling was planted on the 36th Street walkway south of Spruce Street, Jayne Henderson Brown, MD, still remembered the spot; she led us directly to the now 40-foot-tall maple on a campus visit this fall. It had been planted in honor of her mother, Helen Octavia Dickens, MD, a few months after she died.

Like the tree, with time and light, Dickens' already formidable legacy as a prominent African-American woman obstetrician-gynecologist, and the first on Penn's faculty, has grown in stature.

Dickens received widespread acclaim in life for her work as a champion for health equity for Black women — campaigning to prevent cancer through Pap smears and much more. Her work as an associate dean to recruit more medical students of color helped improve diversity in the field at a time when she had vanishingly few colleagues who looked like her.

Many of the thousands of the medical students, trainees, and younger physicians who worked alongside Dickens or who she helped recruit, as well as her own family members who followed in her footsteps to become physicians, now continue to sustain and extend her commitment to health equity and diversity in medicine. They are her living legacy who extend her impact into the present day.

Today, Dickens' story has been prominently amplified. An expanded biographical exhibit about her life and career, explained in detail by its curator in this issue on page 30, is now on display surrounding her portrait at a prominent location in Stemmler Hall, which is today home to state-of-the-art research laboratories including many core services and anatomy laboratories for medical student instruction, and the corridor where the exhibit is placed is a connective hub between hospital and adjacent research buildings.

Telling Dickens' story in this way is crucial to expand upon her living legacies for several reasons. Undoubtedly, as a woman of color, racism and misogyny dampened the recognition Dickens received in her lifetime relative to the caliber of her achievements. And those who knew her describe her as down-to-earth; she simply quietly went about her work.

So it was that Deborah Driscoll, MD, recalled at the dedication event for the new exhibit, that despite training under Dickens when she came to Penn in the 1970s as an intern, she had little idea of her achievements until decades later because she was so humble. It was only about 10 years ago that Driscoll, then the chair of Obstetrics and Gynecology at the Perelman School of Medicine, now senior vice president for the Clinical Practices of the University of Pennsylvania, sought to learn more about Dickens and was astonished at the depth and import of the material in the five large file boxes the University Archives staff brought out for her perusal. She had known Dickens' name, her personality, and her clinical skill and compassion, but hadn't known her story.



Deborah A. Driscoll, MD, with Elizabeth A. Howell, MD, MPP, chair of Obstetrics and Gynecology, at the dedication of the expanded display honoring Helen O. Dickens, MD. Dickens' values echo still today at Penn Medicine, where a new systemwide effort aims to closely measure and improve Black maternal health.

Legacies — whether they take the form of living descendants and mentees or inspiration from a story — are a powerful force for change in the face of ingrained challenges and injustices.

Dickens is an important example but not the only one. This issue's cover story, which begins on page 14, comprises a collection of first-person essays on the devastating impact of, and potential solutions to, community gun violence. As noted in the section's introduction, about a quarter century ago, there was little academic attention directed to gun violence as a public health issue. The injury science center then created at Penn was aptly described as a "Mom and Pop shop" by one of its pair of co-founders. From the beginning, though, they set a goal to grow a larger ecosystem of scholars. They recruited and mentored outside their own disciplines by design, and despite limited opportunities for funding, a much wider and more diverse cohort of experts today is living out the legacy of their mentors' earlier vision. At a time when Philadelphia is reeling from the deadliest year on record with an unprecedented rate of gun violence, they are branching out with new solutions, from social interventions to help patients after the trauma of a gunshot wound, to home repairs in disadvantaged and disinvested neighborhoods.

Generations of physicians and scholars build on one another's work through inspiration and deliberate learning. The story of Dickens' life and career achievements is one that can, should, and, increasingly will, inspire current and future physicians and scholars. Without knowing her, they can still know her story, and live the legacy she cultivated.

RE

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SOMEWHERE THAT'S GREEN

Penn Medicine's new Pavilion earns coveted LEED certification for sustainability

Penn Medicine's newest hospital building was designed to ensure leadership in the health care industry. And shortly before its opening, the Pavilion — as the extension of the Hospital of the University of Pennsylvania is known — also became a LEED-er. That is, the building has broken new ground for sustainable health care construction and design with Leadership in Energy and Environmental Design (LEED) Healthcare Gold Certification.

Incorporating sustainability efforts since the beginning of its development, the 17-story facility is the largest certified project in the world to achieve Gold certification or higher in LEED v4 Healthcare (the latest LEED Healthcare rating system version). At 1.5 million square feet, the Pavilion is also the first hospital in the United States of more than 1 million square feet to achieve certification in LEED Healthcare.

LEED, developed by the U.S. Green Building Council (USGBC), is the most widely used green building rating system in the world. To become LEED certified, a building must earn a threshold of points across multiple measurements for green building excellence, from sustainable site development to energy efficiency and water savings.

"Our workforce is deeply committed to climate stewardship," said Kevin B. Mahoney, CEO of the University of Pennsylvania Health System, "and in the Pavilion, they can be proud to be part of a new era in conservation that puts medicine on the map as a force for improving the health of our planet."

Conservation initiatives during the Pavilion project included recycling materials that were collected after the demolition of Penn Tower, which formerly stood on the new hospital's site, including 291 tons of scrap steel and 17,000 tons of concrete. In addition, during the Pavilion's construction, about 25 percent of materials were prefabricated and manufactured off-site, including more than 570 mechanical/electrical/plumbing racks and all 504 patient-room bathrooms.

Overall, the energy efficiency efforts in the Pavilion are anticipated to save more than 14 percent in annual energy costs compared to merely a code-compliant hospital. The building itself also uses 100 percent outside air through its HVAC system, using energy recovery wheels to capture and repurpose waste energy.

Along with saving energy, the facility was constructed to use significantly less water through low-flow fixtures. In addition, more than 20 percent of the water required for HVAC equip-



ment comes from rainwater, condensate, and foundation dewatering.

Perhaps the most visible sign of the Pavilion's green status is an acre of landscaping — including ground-level greenery that helps "bring the outside in" to patients and employees through abundant windows — and green roofs. Landscaped areas will feature native and hardy species that require minimal watering and maintenance.

The facility's eco-friendly qualities extend to enabling green transit options for the thousands who work at and visit the Pavilion each day. In the 690-space underground parking garage, 2 percent of parking spaces have access to electric vehicle recharging stations, and to promote cycling and walking, 352 new bicycle parking spots have been installed at various locations surrounding the Pavilion. A new pedestrian pathway connecting the facility to SEPTA's Penn Medicine Station makes the entire HUP campus easily accessible for staff and visitors who use public transportation.

REINVESTING IN RESEARCH

This fall, University of Pennsylvania President Amy Gutmann announced the launch of a \$750M investment advancing Penn's pathbreaking contributions to innovative and impactful areas of medicine, public health, science, and technology over the next five years. The plan includes major new investments for the Perelman School of Medicine (PSOM) in research space, priority research programs, and faculty recruitment and retention — an initiative designed to have a positive impact across all mission areas across the integrated academic medical center.

“Just as we have made investments to build new clinical and education facilities like the Pavilion and the Jordan Medical Education Center that place us in the vanguard, it is critically important that our space for research keeps pace with the continued growth in funding for our faculty's innovative ideas,” wrote J. Larry Jameson, MD, PhD, executive vice president of the University for the health system and dean of PSOM, and Jon Epstein, MD, executive vice dean and chief scientific officer, in a message to the PSOM community.

In addition, the investment will add programmatic and capital support to areas of rapidly evolving medical research and to infrastructure in multiple advanced technologies. It



will further support investment in recruitment and retention of highly promising research faculty, in particular for those who are underrepresented in science and medicine.

These investments were made possible in part by funds generated from the licensing of Penn Medicine inventions in a variety of fields, including mRNA COVID-19 vaccines and CAR-T cell therapy. “It is a tremendous point of pride that the innovation born within our laboratories is being deployed to save lives across the world,” Jameson and Epstein wrote, “and we are committed to reinvesting these resources responsibly to foster additional breakthroughs that will define medicine as the 21st century unfolds.”

A 'FAST' APPROACH TO HELPING FOOD INSECURITY



A social worker discovers that a patient, who will soon be discharged, has screened positive for food insecurity, meaning they struggle to afford or access enough nutritious food to sustain a healthy life. Rather than spending time calling individual community-based organizations (CBOs), the social worker simply posts a request on a website, and within 24 hours food is delivered directly to the patient's home. Two clicks and the problem is solved.

Welcome to the “FAST” way of doing things.

“We had an undeniable case that this was a need,” said Jaya Aysola, MD, MPH, executive director of Penn Medicine's Center for Health Equity Advancement (CHEA) and assistant dean of Inclusion and Diversity at the Perelman School of Medicine. “Food insecurity is the number one problem in social needs assessments and all health systems

in the city are going to the same CBOs. There was a compelling case to coordinate these connections.”

FAST (Food Access Support Technology) is a new platform created by CHEA that connects health systems, food-access CBOs, and minority-owned small businesses to fight food insecurity. The FAST platform is easy to use. A member logs into the password-protected platform and posts a request — for instance, a health system posts a request for food for a patient. FAST will match this request with organizations that can meet their requirements (for example, maybe it needs to be low in sodium). A CBO will claim it and the request is completed. Food banks that have no way to deliver can also post requests — and FAST's delivery partner, a local Black-owned business, can help.

FAST also captures data from a bird's-eye view of the city.

“Ask any social worker or CBO and they can anecdotally tell the needs but it's only their slice of pie. But if everyone's needs are on a shared platform, the gaps can be identified,” said Ana Bonilla Martinez, CHES, CHEA program coordinator. “We can see all the requests — those that are fulfilled and those that aren't. Data from FAST tells us where needs are clustered or what's missing.”

► **Read more about FAST and other Penn Medicine initiatives supporting health equity in *Service in Action*: CommunityImpact.PennMedicine.org.**

ALL TOGETHER NOW

Despite the challenges of COVID-19, Perelman School of Medicine students resume the White Coat tradition.



Hugs from vaccinated friends and family were a welcome feature of the 2021 White Coat ceremonies, after no in-person ceremony was held in 2020 due to COVID-19.

First-year medical students received their stethoscopes at the White Coat ceremony.

The annual White Coat ceremony welcoming new students to the Perelman School of Medicine at the University of Pennsylvania looked a little different this year — students donned their own coats at their seats, instead of being robed onstage by faculty members, and smiles were hidden behind face masks, due to the ongoing COVID-19 pandemic. Plus: It happened twice.

As a result of the limitations on large gatherings in 2020, both last year's and this year's entering classes had their own in-person ceremonies in Irvine Auditorium in September 2021. For the 156 MS1s, White Coat marked their entry into the profession, including saying the Declaration of Geneva (a modern version of the Hippocratic Oath) for the first time as a public declaration of their commitment. For the 155 MS2s, who already had a year of medical school — much of it virtual — under their belts, it was a promise kept, and the chance to partake in a time-honored ritual that was scuttled last year in the name of safety.

Some parts of the event were the same, with a series of remarks from faculty members and deans, keynote speeches on topics including the meaning and value of the white coat, and the importance of remembering “the why” that inspires each person to become a doctor, as well as recognition of the stethoscopes generously donated by alumnus Louis Matis, MD’75 (the MS2s received theirs last year).

But although students didn't get to experience the rare thrill of being robed in their white coats by their teachers, they still got individual moments to shine: Each took a turn to cross the stage, where their photographs and hometowns were projected, and each used their chance to share a fun fact about themselves as well as briefly thank family and friends for support. For instance, MS1 Quynh-Anh Dang used the opportunity to say hello to her twin sister, also receiving her own white coat at a different institution, who was watching the Perelman ceremony on a Facebook livestream.

Although everyone wore a face mask in the interest of protection from COVID-19, students' voices rang loud with pride and excitement as they recited the Declaration of Geneva from their seats. It was an emotional moment for students and faculty alike, solemnizing their official commitment to the medical profession.

Outside after the ceremony, the masks came off as vaccinated students celebrated the momentous occasion with hugs from their classmates and loved ones. The happy scenes echoed the comments of MS1 Jacob Niculcea from his turn at the microphone: “I'm just really grateful we have this ceremony today. So, like, a shout-out to the faculty for pulling it through!”

— Meredith Mann

10 CRUCIAL YEARS FOR RARE DISEASE RESEARCH

A pioneer in the field of orphan diseases and gene therapy, James M. Wilson, MD, PhD, reflects on 10 years of leading Penn's Orphan Disease Center.

In many ways, rare — or orphan — diseases are the simplest of all to treat, because many are caused by a single defect in a gene, notes James M. Wilson, MD, PhD. Yet orphan diseases have a long history of receiving little interest or funding. In his nearly 40 years of focusing on orphan diseases, progress hasn't happened at the pace Wilson had expected at the outset.

About a decade ago, things began to change, with the opening of the Orphan Disease Center (ODC) at Penn, a first-of-its-kind center dedicated entirely to rare diseases. Wilson, the director and Rose H. Weiss Professor at the ODC, says the center has served as a capstone to his experience at Penn. He is also director of Penn's Gene Therapy Program and professor in Medicine and Pediatrics at the Perelman School of Medicine.

Wilson's groundbreaking research equips adeno-associated virus vectors (AAVs) with the ability to carry healthy DNA into specific cells — work that has changed the field. It has significantly progressed rare disease treatment and delivered hope: However spectacularly rare or even unique the genetic mutation that gives rise to an individual's orphan disease, gene therapy could potentially provide a mutation-specific solution.

As the ODC rounds its 10-year mark, those hopes are only rising further. The anniversary symposium, held virtually in February, was studded with keynotes from luminaries including NIH Director Francis S. Collins, MD, PhD. Scientific interest in rare diseases has grown as the potential for gene therapy to treat them becomes clear, Wilson notes. At the same time, newer industry business models have changed the investment math on developing therapies to treat tiny populations of patients. In the Q&A, Wilson reflects on this progress and the exciting time in the field.

What is it about orphan diseases that drew you in?

Many patients and their families embark on a long journey, in spite of the fact that their lives are often relatively short. Many physicians don't have experience with these rare diseases, so it takes a long time for diagnosis. Frequently, once diagnosed, they are left with little hope in treatment options. It's often when they reach this point that they contact us. Frequently, they're just delighted that someone is even answering the phone. We have a tremendous opportunity and responsibility to these patients, and it's rewarding to watch their despair become hope. That's the part of my job that I really enjoy.

When you reflect on the ODC's decade of research, what stands out the most?

We've made consistent progress with treatments for more than 40 diseases. I'm proud of the fact that we've accomplished that at scale and at a high level of scientific quality. I'm pleased that the staff and faculty has remained true to our mission, which is to address the needs of patients regardless of where they live or with what disease they have.

Traditionally, big pharma has largely steered clear of orphan diseases. How is that changing and what strategies have you employed to get around the lack of interest?

For gene therapy, you're looking at a curative, one-and-done treatment, which is disruptive and different. Much of my 38 years of working in this space, big pharmacy hasn't been interested. But over time, they realized it might be a better way to treat patients. Biotech has been more receptive and willing to take on risk, so we started there, and eventually, big pharma signed on, too.

Now that the technology of gene therapy has come of age and been applied successfully in commercial products, interest in supporting gene therapy has skyrocketed. Because of the history and capabilities in our lab, we're in a position to help support development of these products for many diseases and through many companies. We actually ran out of research and office space and couldn't find any available



James Wilson, MD, PhD, with Juliette Hordeaux, PhD, senior director of translational research at the Gene Therapy Program

in Philadelphia, so we've expanded our research operations to a Discovery Labs site in (nearby) King of Prussia. We will have the ability to support research all the way through submission of new drugs for clinical trials.

It's part of a new ecosystem in life science research in our region. Ten years ago we had five companies incorporating our approach in gene therapy. Today it's 90, and over half are using techniques that came out of Penn.

You recently co-founded biotech company Passage Bio to fund other start-ups interested in gene therapy coming out of Penn, and another startup, iEcure, to develop therapies based on Penn gene-editing technologies. What do you hope to accomplish?

The ODC has about eight different alliances now. I feel strongly that academia, when possible, should do everything it can to assure the translation of research and discovery into treatments that will help people. Yet, academic institutions are not in the business of developing drugs, so we need strong partnerships in the pharmaceutical industry in order to accomplish that. Penn is a real leader in partnering with the pharmaceutical industry, which is appropriate, and allows physicians and scientists to see their research evolve into treatments.

How are you applying your gene therapy knowledge and techniques to develop treatments for COVID-19?

We have engineered a protein that is a soluble form of the receptor COVID uses, which can interfere with the uptake of the virus. It works as a decoy: The virus binds to it and the protein neutralizes the virus so that it can't infect people. We've engineered it so that, no matter what variant is involved, it won't be able to avoid the decoys. We're experimenting with nasal delivery and have many sponsors interested in supporting us. We've started manufacturing for clinical trials so that we can begin formal safety testing with larger animals. We're moving as fast as we can given the Delta variant troubles.

— Interview by Amanda Loudin

Editor's note: Wilson is a Penn faculty member, scientific collaborator, key advisor, and co-founder of numerous gene therapy companies spun out of Penn, including Passage Bio and iEcure. As such, he holds equity stakes in these companies, his laboratory at Penn receives sponsored research funding from them, and as an inventor of the licensed technology he may receive additional future financial benefits under licenses granted by Penn to these companies. The University of Pennsylvania also holds equity and/or licensing interests in these same companies.

'SO MANY WAYS TO MAKE A DIFFERENCE'

New Otorhinolaryngology chair and pioneering surgeon sees special energy at Penn Medicine

From trail-blazing techniques in cancer surgery to fresh ideas for increasing diversity in his subspecialty, D. Gregory Farwell, MD, FACS, has spent his career pushing the envelope for his patients and profession.

In August, after 17 years at UC Davis Health in California, Farwell joined Penn Medicine as the chair of Otorhinolaryngology-Head and Neck Surgery. Why the change? Farwell sees Penn Medicine as his once-in-a-career chance to make even more progress across all mission areas of academic medicine.

"There's tremendous energy at Penn Medicine and that served as a powerful magnet for me," Farwell said. "We have new hospitals and new expansions into the community. There are so many ways to make a difference. That's the secret sauce that made it so enticing to come here."

Farwell is a renowned surgeon specializing in head and neck cancers, thyroid and parathyroid surgeries, and microvascular reconstruction. Perhaps most notably, in 2010 Farwell directed a team that performed only the second laryngeal transplant in history.

As an NIH-funded investigator, Farwell has helped develop a range of novel surgical approaches and non-invasive diagnostic tools. In particular, Farwell cites his work as a pioneer of image-guided surgery, which uses special technologies to map a patient's anatomy and guide the surgeon's movements for more precise tumor removal. To make the concept a reality, Farwell collaborated with engineers, radiologists, and optics specialists, among others.

"We're helping surgeons do a better job of identifying where the cancer starts and stops," he said. "Cancer surgery typically is laser-focused on removing the cancer at all costs, but we've come to think more about what the patient is left with after surgery. This has led to better outcomes and better prognoses."

In thinking about medical education and his specialty's physician workforce, Farwell recognizes that head and neck surgery has not historically been the most diverse profession.

Properly addressing that issue, he says, requires looking beyond the halls of medical school.

"There are a lot of talented people who haven't historically found their way to our field," Farwell said. "There are bright and gifted students who come from different backgrounds. We decided we were going to make the field better, but it's a long track from college to a surgical subspecialty. We wanted to reach even farther back in the pipeline to expose talented high school students to the field."



D. Gregory Farwell, MD

As educators know, this proposition is easier said than done. Still, Farwell and his team put their heads together and ultimately began with specially tailored in-person events. Working with an inner-city high school in Sacramento, they invited students to the UC Davis Health simulation center.

"We had plastic skulls, drills, and titanium plates," Farwell recalled. "We worked with simulated patients to put Humpty Dumpty back together again, so to speak. To see their smiles, their enthusiasm, seeing the light go off that this is a field they could do, was amazing. The likelihood of them feeling that way before the event was extremely small."

As for his tenure at Penn, Farwell says one of his first plans is to hire more researchers — and that makes sense, given that his department at UC Davis increased the number of new clinical research protocols by more than 20 percent during his tenure.

But there's no single area that's necessarily more important than others, Farwell stressed. Indeed, Penn Medicine's strength across each mission was a crucial factor in his decision to join a new faculty.

"We are not going to rest on our laurels here," Farwell said. "There are many opportunities at Penn Medicine, and that's why this was an offer I couldn't refuse."

— Scott Harris

CREATING THE EVIDENCE FOR EQUITY

New Biostatistics, Epidemiology and Informatics chair works toward health justice, inspired by his family's experiences

More than two decades ago, Enrique Fabian Schisterman, PhD, and his wife set out to start a family. But they soon learned a harsh truth: Few effective and affordable treatments were available to help people achieve and maintain healthy pregnancies.

Fast forward to the present. Schisterman is now the proud father of two daughters, and, using expertise in biostatistics and epidemiology, he has made it his life's work to help people start families of their own — particularly people of lower socioeconomic status. It's work Schisterman is continuing at the Perelman School of Medicine, where earlier this year he was named chair of the Department of Biostatistics, Epidemiology and Informatics.



Enrique Fabian Schisterman, PhD

“When my wife and I were trying to start a family, I quickly realized that there wasn't enough evidence out there to help couples become pregnant,” Schisterman said. “And a lot of the treatments that were available were not covered by insurance. Right there, I got motivated to embark on a career to find low-cost interventions that will help couples become pregnant and have a healthy pregnancy.”

Prior to joining Penn Medicine, Schisterman served as a senior investigator for the National Institutes of Health, specifically as epidemiology branch chief in the Division of Intramural Population Health Research in the Eunice Kennedy Shriver National Institute of Child Health and Human Development. He has published more than 350 peer-reviewed papers during his career, but the two he believes may be the most notable are studies that clarify which low-cost strategies can — or cannot — help those hoping to conceive a child.

“Low-cost interventions are critical to removing disparities,” he said. “For example, one of my studies [published in *The Lancet* in 2014] found that nine couples out of 100 were helped when the pregnant women took low-dose aspirin. This is a huge contribution to the ability of couples to afford and have access to care.” The other key study: In 2020, Schisterman published findings in *JAMA* that in couples where male partners supplemented their folic acid and zinc, live birth rates did not significantly improve — despite many claims and beliefs to the contrary.

While reproductive science is his primary research interest, Schisterman does research across a wide range of topics and fields — as does the department he now leads. The Department includes a thriving informatics division whose faculty members develop new methodology in artificial intelligence, natural-language processing, and machine learning; these methods make possible novel analyses of clinical data from electronic-health records and from population-based studies of common diseases.

At Penn Medicine, Schisterman's multidisciplinary background is emblematic of his department's approach to solving any problem.

“Penn Medicine is the perfect place for a person like me,” Schisterman said. “The integration between the academic environment and the medical system puts us in an optimal position to move science into implementation. More specifically in my department, there is integration between implementation science, epidemiology, biostatistics, clinical medicine and informatics, which is not common in many other places. This brings different talents and different people to the table.”

Schisterman is more than a researcher, however. Over the years, education has grown into a second passion, and it's one he is excited to continue at Penn Medicine.

“It has been a gratifying experience to teach and mentor the future generation of epidemiologists, biostatisticians, and informaticians” he said. “I've realized that you have to be open to learning as much as to teaching. That lesson has been extremely rewarding.”

As a new chair, Schisterman is working on a plan for the department that will look as far as 10 years into the future. He envisions modern biostatistical methods, epidemiological trial emulation, clinical insights, and powerful informatics tools working together to offer new and better options for people facing various major health challenges — and where everyone has an equal shot at preventing illness.

“We are in a unique place for population-health and data health science,” he said. “We can take a holistic approach and look at all aspects of biology, modern epidemiology, biostatistics, informatics, and clinical medicine. We are all working together to give people the care they need and to remove disparities once and for all.”

— Scott Harris

FROM FOUNDATIONAL DISCOVERIES TO PANDEMIC PROLIFERATION OF IMPACT

How mRNA research at Penn over decades made powerful new COVID-19 vaccines possible — and opened a new vista for future discoveries



When they contemplate the false starts and adversity they weathered to get to this point, they can only marvel at the direction life has taken.

Most biomedical researchers spend their days in quiet anonymity, patiently enduring months or years of costly exploration before striking gold. For Drew Weissman, MD, PhD, and Katalin Karikó, PhD, this was certainly the case for the majority of their scientific careers. Even after making a series of discoveries that transformed messenger RNA (mRNA) into a viable vaccine platform more than 15 years ago, they were able to fly under the radar.

Then came COVID-19 and a rapid need for revolutionary new vaccines. Today, their impact is being felt around the world.

Without the mRNA technology foundation laid by Karikó and Weissman, the Pfizer/BioNTech and Moderna vaccines that are being deployed across the world would not exist. Now, they are receiving global acclaim, not just for their role in providing hundreds of millions of vaccine doses amidst a pandemic, but also for the boundless potential they unleashed to tackle other diseases now and in the future.

Laying the Groundwork

Born and raised behind the Iron Curtain in a small town in Hungary, Karikó, now a BioNTech executive and adjunct professor of Neurosurgery at the Perelman School of Medicine, could give a master class in resilience. She immigrated to the U.S. in 1985 in search of professional advancement, having developed a singular focus on unleashing the power of mRNA to fight disease.

In the early 1990s, researchers were quickly developing a more nuanced understanding of how the body uses mRNA to instruct cells which proteins to make to remain alive and healthy. Karikó reasoned that by altering this mRNA, she could create proteins with vast therapeutic potential, from enzymes that reverse disease to antibodies that fight infection.

She spent the majority of the 1990s applying for government and corporate grants that would give her the chance to translate hypotheses into results. After years of rejected

applications, she decided to press on despite limited funding. In 1997, she met Weissman, a gifted immunologist who had recently joined the faculty at Penn fresh out of a fellowship under the supervision of Dr. Anthony Fauci at the National Institutes of Health. They struck up their first conversations at Penn by the copy machine where both needed to print personal copies of journal articles to keep up with their distinct, but soon to be overlapping, fields of study.

While Karikó was laser-focused on therapeutic applications for mRNA, Weissman, who currently serves as the Roberts Family Professor of Vaccine Research at the Perelman School of Medicine, has always directed his energies toward applying mRNA research to vaccine development and gene therapy.

After they first crossed paths in 1997, Karikó agreed to create mRNA for Weissman, who needed it to develop vaccines for diseases like HIV. In return, Weissman introduced her to immunology. Each provided expertise the other lacked, and the result was nothing short of revolutionary.

“I always wanted to alter mRNA to make it therapeutic,” Karikó said, “but working shoulder to shoulder with Drew, I ended up laying the groundwork for mRNA vaccines instead.”

The Breakthrough

In retrospect, the road to success was strewn with roadblocks and detours. By 2000, Karikó and Weissman hit a major obstacle in their joint research effort. Rather than reaching its target cells and instructing them to make proteins, the modified mRNA they created was triggering an inflammatory cytokine production in cultured human immune cells.

Each strand of mRNA is made up of four different molecular building blocks called nucleosides. In 2005, Weissman and Karikó recognized that in the synthetic version of mRNA, a building block called uridine was triggering the inflammatory response that rendered the mRNA useless. By replacing it with a slightly altered version, they were able to avoid inflammation altogether. In 2015, they added to their discovery by developing a delivery technique that uses lipid nanoparticles to package the mRNA in a way that helps deliver it to its intended target.



Together, these findings opened up new windows of possibility for mRNA vaccines. “Our research reignited interest in mRNA vaccines, and the field really took off at that point,” Weissman said.

The Right Place and Time

In the years prior to the onset of COVID-19, a coronavirus pandemic couldn't have been further from Karikó and Weissman's minds. Instead, they were focused on testing mRNA vaccines for pathogens like genital herpes and influenza.

But when the pandemic struck, they knew that their 15-year-old discoveries could provide a roadmap to stem the toll — and fast. We knew that one of the advantages of an mRNA vaccine was how quickly it could be created,” Weissman said. In the COVID-19 mRNA vaccines, modified mRNA instructs cells to create proteins that look like the characteristic spike proteins that the virus uses to enter the body's cells. The body responds to the perceived threat of a foreign protein by creating antibodies to combat it, even though it never actually confronts the virus itself.

“We're only beginning to discover all the ways we can use mRNA,” Weissman said. “At Penn and beyond, there is so much more to come.”

Phase 1/2 clinical trials of both mRNA vaccines from Moderna and Pfizer/BioNTech showed signs of early promise, and by Phase 3, the vaccine were shown to offer, respectively, 94 and 95 percent protection from symptomatic disease caused by the virus. “At this point, we were both incredibly relieved,” said Weissman. “What works in mice rarely works in men.” To date, a combined 480 million doses of the Pfizer/BioNTech and Moderna vaccines have been administered in the U.S. alone, with an additional 125 countries using the Pfizer/BioNTech and 70 countries using the Moderna vaccine.

Adjusting to the Spotlight

These days, the pair is approaching celebrity status in the biomedical research community, having recently won the Princess of Asturias Award, the Albany Medical Center Prize in Medicine and Biomedical Research, the \$3 million Breakthrough Prize, the Benjamin Franklin Medal in Life Science, and, most notably, the 2021 Lasker Award — America's top biomedical research prize — for their role in creating the vaccine.

Between ongoing research projects, awards ceremonies, and media appearances, Weissman and Karikó have found very little down time. “My wife and kids joke that I'm happiest when I'm left alone in my lab,” said Weissman. “This sudden change of pace has been a shock to the system. We're

meeting with the king and queen of Spain [in October]. It's hard to believe."

Karikó, who didn't receive a single award in the first 40 years of her career, is also trying to wrap her head around her newfound celebrity status within the biomedical research community. In addition to the many notes of congratulations and encouragement from Penn colleagues and students, she and Weissman frequently receive expressions

of gratitude from strangers all over the world. "It's humbling to receive such an outpouring of support because we were just a few of many people at Penn, as well as BioNTech, who contributed to this achievement," said Karikó.

Next Frontiers

Ultimately, what Karikó and Weissman discovered years ago was a platform, not a treatment for a single disease. The

DEVELOPMENT MATTERS

A GIFT THAT CELEBRATES AND 'LIFTS ALL OTHERS'

While Karikó and Weissman were being showered with well-deserved media attention and international accolades, longtime philanthropic partners of Penn Medicine recognized a singular opportunity — and critical need — would bestow honors of another kind.

"Penn has long been at the forefront of cutting-edge research and technology advancements, and Drs. Weissman and Karikó's breakthrough in RNA-based vaccines is another incredible achievement for the institution and the city of Philadelphia," said Aileen and Brian Roberts, W'81. "We were astounded by their unwavering commitment to and passion for scientific discovery."

This past June, the Roberts family and Karikó and Weissman came together with Penn President Amy Gutmann, PhD; Perelman School of Medicine Dean J. Larry Jameson, MD, PhD; UPHS CEO Kevin Mahoney; and Jack Ende, MD, assistant dean for advanced medical practice; to mark the establishment of the Roberts Family Professorship in Vaccine Research and Katalin Karikó Fellowship Fund in Vaccine Development. Weissman is the inaugural Roberts Family Professor, and the first Karikó Fellowship will be awarded later this year.

"It long has been our family's privilege to support the life-changing work at Penn," they continued, "and we are eager to see how the next generation of scientists and physicians work to accelerate the development of the advanced therapies of the future."

Created through the Aileen and Brian Roberts Foundation, both the professorship and the fellowship will support research aimed at creating vaccines for other infectious diseases, as well as further cement Penn as the home of mRNA research and other novel vaccine-based approaches.

Professorships and fellowships play a vital role in the living tradition of academic medicine. This honor for Weissman and Karikó ensures they will serve as role models for generations to come, empowering and inspiring students, trainees, and



(L-R) Mahoney, Ende, Aileen Roberts, Karikó, Weissman, Gutmann, Brian Roberts, and Jameson

biomedical researchers alike, while carrying on their leading-edge work and creating wellsprings for the next ideas and innovations.

"We are honored by Aileen and Brian's strong support of Penn Medicine and shared passion for health care," said Jameson, who is also executive vice president of the University of Pennsylvania for the Health System. "This most recent gift demonstrates how they are a very special kind of partner. Beyond celebrating the innovations of today, they are helping fuel the breakthroughs, young scientists, and Penn faculty members of the future."

"Our work is the work of lifting all others. Drs. Weissman and Karikó's research has proven critical in our global efforts run in to end this terrible pandemic and is ultimately touching the lives of millions," shared Gutmann. "Doing something meaningful: That's core to Penn's ethos that we see, time and again, embodied by our students and exemplified by our people."

▶ **To learn more about how philanthropy can transform the future of mRNA research at Penn Medicine, see page 40.**



After decades of working in obscurity, Karikó and Weissman have received an outpouring of gratitude for the impact of their work on the COVID-19 pandemic.

genius of the mRNA technology they discovered lies in its limitless potential. In a setup often referred to as “plug and play,” researchers only have to plug in the sequence of the protein they want to create or replace in order to target a specific disease.

Another advantage mRNA technology offers is speed. To create live vaccines used to inoculate against diseases like measles, mumps, and rubella, or inactivated vaccines like those used for flu and polio, researchers must transport and replicate actual pathogens during the manufacturing process. By circumventing the need for actual pathogens, mRNA vaccines allow for faster production and flexible delivery.

Weissman is seizing on these advantages to ensure that the world is ready for the next incarnation of coronaviruses. He and his lab are hard at work developing a pan-coronavirus vaccine that is capable of protecting the population against SARS, MERS, SARS-CoV-2, and any future variants and coronaviruses. At BioNTech, where she serves as senior vice president, Karikó is overseeing parallel but distinct research on a range of diseases in which patients receive mRNA encoding therapeutic proteins.

Like branches of a tree, research projects based on Weissman and Karikó’s foundational research are sprouting quickly at Penn. A growing number of groups, some involving Weissman, are undertaking mRNA research related to cancer, neuro-development disorders, other infectious diseases, genetic conditions, and animal health.

In early 2022, Weissman will partner with Harvey Friedman, MD, a professor of Infectious Diseases and an HSV researcher, to begin human clinical trials of an mRNA vaccine for herpes, the most common sexually transmitted disease. At the newly

created Center of Excellence for Influenza Research and Response (CEIRR), Scott Hensley, PhD, a professor of Microbiology, is creating mRNA vaccines for a wide range of shapeshifting influenza virus strains.

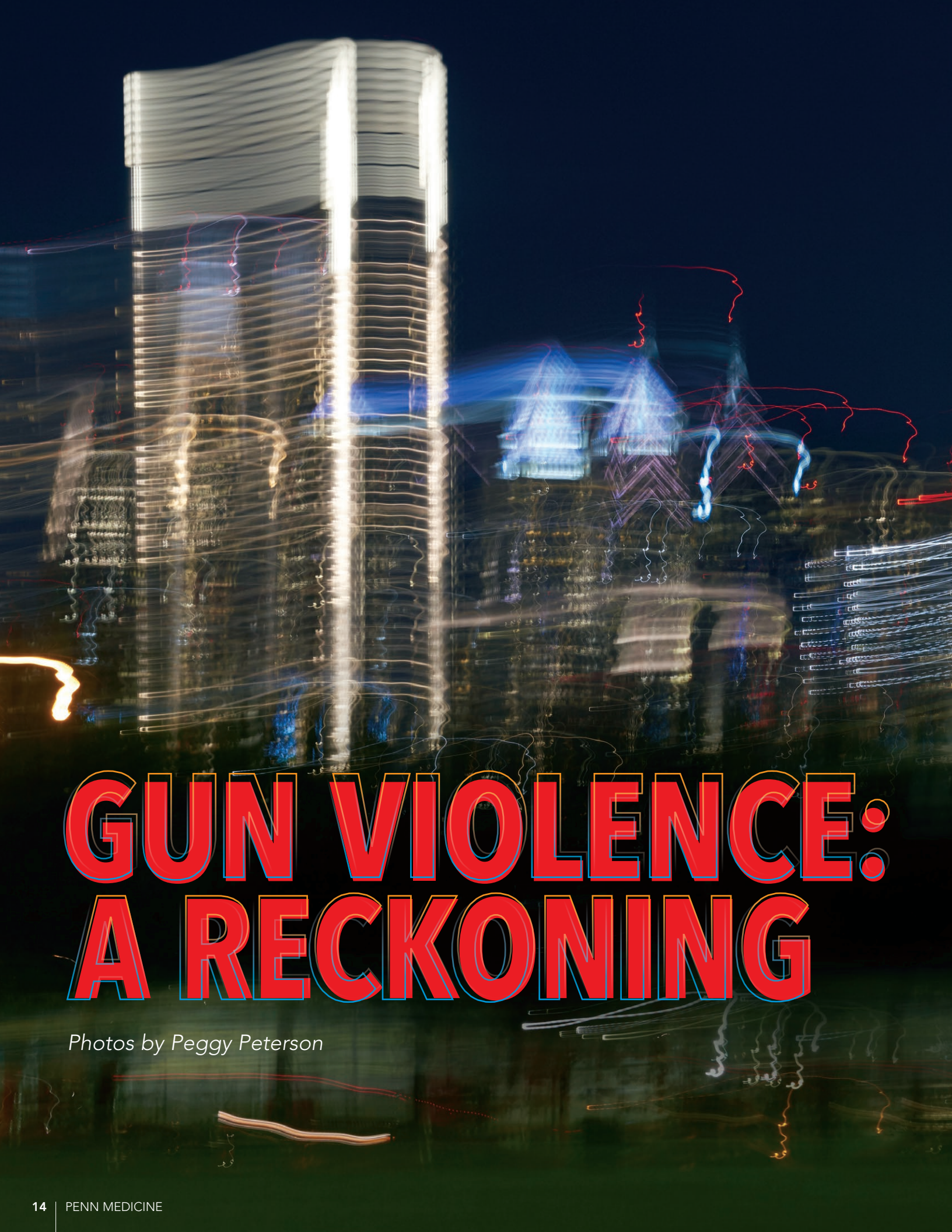
In addition, mRNA technology has also shifted the goalposts for cancer research, as Karikó and Weissman discovered in collaboration with colleagues like Norbert Pardi, PhD, a research assistant professor of Infectious Diseases, who Karikó had mentored back in Hungary before both senior investigators supervised his postdoctoral work at Penn. The researchers discovered that mRNA vaccines can not only create immune response to viruses like COVID-19, but they can also boost the response of cytotoxic T cells in fighting cancer cells.

Developing mRNA vaccines for cancer presents a unique challenge, since the majority of antibodies in tumor cells are specific to each individual, but researchers are feeling their way through the darkness step by step. At least eight pharmaceutical companies, many in collaboration with institutions like Penn, are studying cancer vaccines in ongoing clinical trials.

Nearly 25 years ago, Weissman and Karikó’s chance meeting at the photocopier lit the fuse for a revolution in mRNA technology. Now, hundreds of researchers around the world are picking up the mantle. “We’re only beginning to discover all the ways we can use mRNA,” Weissman said. “At Penn and beyond, there is so much more to come.”

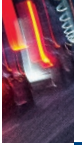
— Ashley Rabinovitch

► **Read more about Penn Medicine mRNA research online at PennMedicine.org/mrna**



GUN VIOLENCE: A RECKONING

Photos by Peggy Peterson



Exacerbated by the COVID-19 pandemic, gun violence is rising to record levels, both across the country and in Philadelphia. Four Penn Medicine experts close to the epidemic of community violence speak up about the toll and call for bold, urgent solutions.

“I am on call Wednesday night. The statistics indicate that then I will once again walk with the chaplain to a small room off the emergency room. I will open a heavy brown door and make eye contact with a room full of people; a mother, perhaps a father or a grandmother. They will look at me with tears welling up, their knees weak, and lean forward while watching my lips, bracing for news about their loved one. I will remain standing and reach out to hold the mother’s hand. My announcement will be short and firm, the intonation polished from years of practice. The words will be simple for me to say, but sharp as a sword for them to hear; ‘I am sorry, your son has died.’”

John P. Pryor, MD, who directed the trauma program at Penn Medicine’s Level 1 Trauma Center then at the Hospital of the University of Pennsylvania, wrote these words in the *Washington Post* in 2007. His essay decried the public’s “triage of compassion and empathy” that made them feel sympathy for the victims of mass casualty events he treated as a U.S. Army combat surgeon, but turn a blind eye to the daily deaths in the “War in West Philadelphia,” as he titled his piece.

That war had raged on for decades — and continues — not just locally in Penn’s surrounding communities, but as a distinctive national problem, according to C. William Schwab, MD, the founding chief of Trauma Surgery at Penn Medicine, now an emeritus professor.

“This is an American problem, something we see in almost no other country in the world, but it’s not a civil war,” he said. “It’s an uncivil war. It’s people against people shooting one another.”

Today, Penn’s trauma center is located at Penn Presbyterian Medical Center and named for Pryor, who was killed in the line of duty in Iraq just two years after decrying the “War in West Philadelphia.” At the John Paul Pryor, MD, Shock Trauma and Resuscitation Unit, physicians continue seeing a flood of patients who have been gunned down, mostly young Black men. By late August this year, when over 1,500 people had been shot in Philadelphia, nearly 300 of them fatally, the *Philadelphia Inquirer* editorial board noted that there had been shootings every day this year, save one (January 2). The near-daily onslaught flowed through the fall; by mid-November, only three days of 2021 had been free of a recorded shooting.

Though the crisis has been long and remains profound, from Schwab’s vantage point today, there is hope.

Seeds Planted in a Frozen Funding Landscape

Public apathy has been one of the biggest challenges to ending gun violence over the decades that Schwab has been studying the problem in response to seeing a flood of patients in the trauma center with fatal and nonfatal gunshot injuries. Too many people, he said, see the problem as “just a part of American life.”

But that was far from the only challenge. In the mid-1990s, federal spending budgets began to include an amendment that blocked government funding of research that could be used to promote gun control — chilling scientific efforts to understand, prevent, and respond to these violent deaths and injuries.

That chill didn't deter Schwab and Therese Richmond, PhD, RN, of Penn Nursing. Together, around that same time, they co-founded the interdisciplinary center now known as the Penn Injury Science Center, where today Richmond remains the director of research. “When we did that, it was him and me,” Richmond said. “We were the people focusing on gun violence. It was not broadly looked at, not something a lot of people on campus were interested in.”

Schwab, as a trauma surgeon, and Richmond, as a trauma and critical care nurse, were confident in their mission. It was just as serious to address gunshot wounds at their root cause, they reasoned, as it was for heart attacks — both a major cause of emergency department care and sudden deaths. “What if in health care we didn't fund research in cardiovascular health problems or stopped for 10 years because it's not politically favorable?” Richmond asked. “What if we didn't think beyond what brings you in with a heart attack and work to understand and treat blood pressure and cholesterol? If we didn't do it, people would say we're negligent.”

They built a community of scholars across disciplines at Penn, connected to collaborators around the country, spanning epidemiology, trauma and emergency medicine and nursing, pediatrics, psychiatry, psychology, and more disciplines. “We started as a mom and pop shop with \$10,000,” Richmond said. “With the support of foundations we were fortunate to escalate our support to several million dollars that allowed us to grow the science, recruit new faculty, and develop the next generations of scholars interested in studying gun violence.”

Meeting the Moment

The need for understanding and acting to end gun violence is as great as ever as the casualty count continues to grow. For the physicians who continue to treat these violent traumas, every night on call becomes a night they are prepared to face a family's tragedy, just as it was for Pryor in 2007, and as it was in the mid-1990s, when Richmond and Schwab saw the need to unite under a new research center.

But the landscape of battle has shifted: The uncivil war of gun violence has converged with the COVID-19 pandemic, as well as with the rising movement for racial justice. In 2021, too, U.S. federal agencies have once again begun distributing grants for research into gun violence, the freeze on such funding now thawed after nearly two decades.

And there are also new opportunities for change. This fall, the Penn Injury Science Center and Penn Trauma were among the partners forming a new West/Southwest Collaborative Response to Gun Violence of community, university, health system, and government stakeholders to address gun violence together in Philadelphia.

They are building on years of steady effort to understand and stop the violence. Schwab cites the growth of federal data on fatal and nonfatal injuries — begun as a pilot program in nine states in the 1990s, now representing 30 states — as a huge step forward over the last two decades.

“It is two things: Having more data and more young scientists who are now able to fund their work are rays of optimism,” Schwab said.

The seeds of injury science scholarship planted by Schwab and Richmond in the 1990s have grown into what Richmond describes as a “vibrant ecosystem” that is well-situated to try novel strategies. “One of the places we have watched evolve over the past two decades is a much stronger recognition that one of the most significant contributors to gun violence is social determinants,” she said. “Inequalities in neighborhood opportunities, intense poverty, investment in some areas of the city and disinvestment in others, leave some populations marginalized and at higher risk.” This wider social view opens up perspectives to understand and try social interventions that may



1,700 vases of silk flowers lined the lawn of Philadelphia's iconic Independence Mall this August. The gun violence memorial recognized the 1,700 people in Pennsylvania killed in gun violence in 2020. The memorial was spearheaded by former Congresswoman Gabrielle Giffords and a coalition of local partners.

have nothing to do with guns, from prevention by investing in neighborhood green spaces to social service support to help victims recover from psychological harm, and communities to heal.

At this pivotal moment — mired in a long and deepening crisis, yet informed by more years of insight from new angles — four individuals at the front line of the uncivil war today share their perspectives in the pages that follow. You will meet:

- An emergency physician who emphasizes the profound pain of her Black colleagues seeing Black bodies — including friends and neighbors — on gurneys night after night.
- A mother who recounts her family's and community's decade-long emergence from an impossible loss.

- A trauma surgeon and researcher who acknowledges the long trajectory of recovery after patients leave the hospital, and how post-treatment intervention and prevention go hand-in-hand.
- A physician-scientist who draws a line between fears for her own young Black sons' safety and research on the disproportionate impact of neighborhood-level investments in Black communities.

Collectively, these essays convey a breadth of research-backed insights, emotional impacts, and ongoing challenges that characterize the uncivil war of gun violence today. Though all four essayists work in health care, they emphasize that solutions will require collaboration with government, communities, and individuals across sectors. Their call to armistice is growing louder as more voices join in unison.

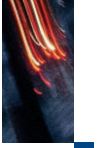
— Introduction by Rachel Ewing

RECOGNITION

Chidinma Nwakanma, MD



When Black doctors see themselves in their patients, another trauma goes unremarked and unmeasured. An Emergency Medicine physician voices this pain.



“That could have been my son...”

A white physician remarked sorrowfully as the Emergency Room (ER) and trauma teams finished tending to the multiple gunshot wounds of a young white man. In his voice was a mix of helplessness, distress, and surprise, as it is not the norm that gunshot victims at my hospital are white.

But for the Black doctors, nurses, techs, registrars, clerks, and environmental service workers in the ER, seeing dead and wounded Black patients has become our norm.

We see our sons, brothers, fathers, uncles, and cousins in the victims of gun violence who come in daily, sometimes multiple times a day. We hold our breaths as we pull bloody, lifeless bodies from police cars and place them on gurneys, hoping not to recognize the victim’s face. But sometimes we do. Many of the Black ER staff have experienced the trauma of seeing and even caring for their wounded loved ones while working. For one of my colleagues, this has happened twice. In one incident, he recounts working diligently as part of the trauma team to save the life of his childhood friend who had been shot. Unfortunately, his friend died in the ER. In the Black community in West Philadelphia, a large proportion of people have been indirectly or directly been victims of gun violence. As Black ER staff members, we literally see ourselves in the victims. We are witnessing the crippling of our communities firsthand.

In addition to seeing victims of gun violence who are members of my racial community, I also experience the added mental strain from caring for victims from my physical community. Last year, my now-husband bought a house in the Cobbs Creek area of West Philadelphia. His plan was to invest in a Black neighborhood and he was charmed by the sense of community he found there. I moved in shortly after and the privilege we had to choose to live in this community is not lost on me.

I’ll never forget receiving an alert on the citizen app about a “shooting in the Cobbs Creek area” on my first full night living in my neighborhood. I headed to work subsequently, pulling up just behind the police car dropping off the young Black man who had been shot blocks from my new home. I parked, dropped my bags, and quickly ran to the trauma bay to join the team in tending to his injuries.

Since then, I’ve walked a few short blocks from my house to memorial rallies of my slain patients. I am not alone in this experience of living in the same community as the gunshot victims who I treat.

For a lot of the Black staff in the ER, gun violence is not a disposable gown they can take off and discard once they leave the threshold of the hospital grounds. It is not something they can clock out of once their shift is over. It is inescapable

and ubiquitous, permeating both work and home life, often leading to feelings of helplessness and detachment.

I asked several Black ER colleagues about their feelings surrounding gun violence and heard an answer come up repeatedly: *Numbness*. The feelings of sadness, anger, frustration that we once felt at the beginning of our tenure in the ER have quickly been replaced with an almost robotic emotionlessness. One of my coworkers told me about her surprise at feeling “almost no emotion” when one of her sons was shot in his senior year of high school. Another coworker expressed her inability to cry and emote in response to major emotional life events, which she attributed to the exposure to constant trauma at work.

Many studies have highlighted the impact of violence exposure on mental health. Significant increases in anxiety, depression, aggression, and even suicide have been observed in adolescents and adults as a result of vicarious trauma. The disproportionately high exposure to gun violence fatalities experienced by racial minorities leads to a higher prevalence of mental health issues in Black/Latinx communities. However, there is little to no evidence illustrating this impact in the workplace.

As gun violence has surged over the past year, we have seen an increase in violence affecting women and children. Unfortunately, the sight of wounded and dead Black men has become commonplace in our workday. However, this new victim demographic has seemingly dislodged this emotional callous that had formed from years of witnessing gruesome trauma. Seeing people who look like our wives, mothers, sisters, and even babies on a trauma gurney reminds us that even the most vulnerable in our communities are endangered.

The flash of recognition that prompts a white colleague to say, “that could have been my son,” is a human reaction — but for us Black physicians and staff members standing at their side, it is too familiar to be shocking anymore. Comments like this show a lack of empathy and connection to Black victims, and they show that our non-Black coworkers cannot truly understand how deeply gun violence cuts us, too. There is a deep, complex emotional toll from constantly seeing Black wounded and dead bodies and hearing the desperate cries of their families. As we work to address the crisis of violence in our communities, this is another trauma that we must recognize and heal.

Chidinma Nwakanma, MD, is an assistant professor of Emergency Medicine at the Perelman School of Medicine; physician lead in the PPMC Emergency Department for inclusion, diversity, equity & antiracism; and director of the underrepresented minority visiting clerkship program. With colleagues Elinore Kaufman, MD, and Zaffer Qasim, MBBS, she is engaged in planning for community- and hospital-based violence-prevention and intervention initiatives.



For each life lost in a flash of gun violence, their loved ones' suffering endures. A mother shares her journey from loss to community advocacy amid broken social systems.



REVERBERATION

Cheryl Graham-Seay

It was the most horrific, painful day in our lives.

My 18-year-old son was killed on our front porch 10 years ago in front of his father. Eight months after losing Jarell I lost my position at Penn Medicine because of organizational restructuring. I was unemployed, relocated to a new neighborhood, and now my husband and I found ourselves drained emotionally, physically, and mentally. I exhausted my retirement funds because I could not find employment and my husband struggled to do his contracting work because Jarell was his partner. He just didn't have it in him.

We sought counseling. Our therapist was an older Jewish white lady who was empathetic, brilliant, and cussed a little. At first I thought, no way this lady is going to be effective with our healing process, but boy was I wrong. She was so instrumental in giving us both the push we needed to work our way through the devastation of losing Jarell. We went to counseling for five years. It was a stepping stone to functioning in our lives.

The main motivation that keeps us inspired to push on 10 years later is our firm belief in our faith, numerous prayers, support, and God's grace and mercy. Had it not been for those things, I don't know where we would be today. With our faith, we persevered in our community service work and established the Jarell Christopher Seay

Love and Laughter Foundation to keep it moving. Our mission is to unite communities by connecting families while helping to protect our children through gun violence prevention, safety, and education.

We participated in rallies in D.C. with other organizations in the city, sat on the 19th District Philadelphia Police Advisory Board, led peace marches and vigils, participated in panels on violence prevention, and many other events and activities across the city. We found that we got most satisfaction and fulfillment when we saw children and parents in the community who would stop us and say, "We remember you, you lost your son Jarell to gun violence, you took us to the beach in Wildwood, we were at your backpack giveaway, received holiday gifts, or we were in your LIPP [Ladies in Power for Peace] girls' empowerment or Defenders summer safety program." When we hear things like that, it really helps us to continue to heal, and most of all brings us joy to know that Jarell's memory lives on.

No one, no matter what side of the gun you are on, should have to lose their life because of gun violence. It's a choice that a person makes and does not have to happen. It makes me so angry to know that someone chooses to be the judge and jury over one's life by shooting them. No one has the right to claim that! What you take away is more than just one victim's life.

Gun violence is the most traumatizing pandemic we've witnessed. The devastating effects on everyone involved re-

main for a lifetime. Those who lose a family member always have that empty feeling. The injured face a lifetime of rehab, pain, and a multitude of medications. Family and friends change. For the past 10 years we lost a sense of time because of our grief process, while the world went on around us. Life changes in a number of ways for many over a decade. In 2016 I was rehired by Penn Medicine as a community health worker and started all over again. I recently received

“Gun violence is the most traumatizing pandemic we’ve witnessed. The devastating effects on everyone involved remain for a lifetime.”

my associate’s degree with honors and am now working on my bachelor’s in Human Services. After all of this, I’m starting to feel like myself again. A decade has passed since losing my Jarell and all I do is in honor of his memory.

As a community health worker I’ve grown to be very humble. I’ve worked one-on-one with patients as young as 18 years old and as seasoned as 96 years old. My job is to support my patients as they work hard to improve their health and deal with everyday life issues, family, and more. As a member of their community, I’m someone who is relatable to them, and that it makes it all more meaningful.

In my role, I also witness broken systems all the time. Systems that are meant to help never seem to work in sync. The welfare program provides just barely enough to make it through. If you make \$10 to \$20 more in pay, you become ineligible for benefits, and then comes the stress and depression. The system doesn’t promote growth in education or physical or mental health, or provide dignity.

Gun violence is a public health problem that is still not

recognized enough. The systems meant to deal with it are broken, too. Too often, just like in social services, it’s just a band-aid approach. There are many layers to work through. Money is a huge part of the problem. Prevention receives little funding, while the prison and justice systems get all the funding needed to house criminals and do not provide effective training and rehabilitation to reintroduce them to society.

The systems put into place hundreds of years ago are not relevant to society today because they treat justice, education, mental health, and other systems as separate problems. These social systems must come together at one time and start chipping away at our nation’s problems, gun violence especially. In one of the richest countries in the world, we are drowning in the failures of antiquated policies, corruption, and injustices. We have scholars, scientists, and experts who care about this problem but still don’t know how to work effectively in unison to address these issues. Until that happens I don’t see change.

Meanwhile, we will continue to honor Jarell’s memory through our work to serve the community. Jarell was a giver. He loved life, family, and his community. Our motto we use and printed on the back of our shirts reads, “Let LOVE Be the Power that Rules YOU!” That is our forever motivation.

Cheryl Graham-Seay is a Penn Medicine community health worker in the Penn Center for Community Health Workers, a national center of excellence where the IMPaCT program for community health workers originated. Graham-Seay is co-founder with her husband, Joel Seay, of the Jarell Christopher Seay Love and Laughter Foundation. The Foundation’s programs include an annual backpack giveaway for kids in West Philadelphia that includes safety and martial arts presentations; Ladies in Power for Peace, a program for girls in grades 6 to 8 to learn about healthy eating, self-care, and staying safe; and the Defenders summer program for younger students focused on safety. The Foundation has received funding for its antiviolence efforts from the Philadelphia District Attorney’s office, Penn Medicine CAREs grants, other grants, and through its own regular fundraisers.

Right: Cheryl Graham-Seay organizes an annual backpack giveaway for kids in West Philadelphia. The day of activities includes safety presentations.

2022-2023
KEEP 2'50"
6 FT APART
WEARING
AVOID ZOO
PACK AID
SANTITAS
STAY HOME
IF YOU
FEEL
SICK
WASH YOUR
HANDS
FREQUENTLY



RECOVERY

Elinore J. Kaufman, MD, MSHP

EMERGENCY
AND
AUTHORIZED
VEHICLE
ONLY

TRAUMA
AMBULANCE
ONLY

AMBULANCE
AMBULANCE
AMBULANCE





“You are going to be okay.”

As a trauma surgeon, I frequently meet people on the worst day of their lives. While the X-rays get taken and the tubes and medications go in, I reassure them, saying things like, “I’m so sorry this happened to you. We are going to take great care of you. You are going to be okay.”

I want to share with them my confidence that they are being treated in one of the world’s leading trauma centers where they will benefit from the best we have to offer in knowledge, skills, training, and resources to stop their bleeding, repair their injuries, and help them recover. I am telling them the truth: Three in four patients with a firearm injury due to interpersonal violence survive, and of those who make it to the hospital, the proportion is closer to 95 percent. There is nothing better in my specialty than to see a critically injured patient heal and walk out of the hospital.

But for many patients, that marks only the beginning of their recovery. They need a lot more before they can be okay.

Even bullet wounds that pass through skin or muscle without harming critical anatomical structures can still shatter patients’ sense of safety. Researchers at Stanford have shown that the emotional and social challenges patients encounter mean that for many, even if they recover physically, they never fully achieve “recovery of the self,” or the ability to return to important roles, identities, and functions.

Most of my firearm-injured patients were shot in their own neighborhoods, near their homes, most often while they were simply going about their usual activities. When they leave the hospital, many live with fear for their lives, become reluctant to set foot outside, or must contemplate the costs of moving far from home.

This dangerous combination of physical, economic, social and emotional impacts of trauma means that approximately 20 percent of survivors suffer a second violent injury. It’s a pattern Dr. John Rich of Drexel University explored in his crucial book *Wrong Place, Wrong Time*: When patients feel threatened, they are more likely to carry weapons. When they have pain and symptoms of depression or anxiety, they are more likely to use alcohol or drugs. When they are out

Leaving the hospital after a gunshot wound is only the beginning. A trauma surgeon and researcher advocates for deeper understanding of the lasting impacts for victims and linking recovery with prevention.

of work, they are more likely to engage in marginal or underground economic activity. These factors all increase their risk of criminal justice involvement and repeat injury.

Systemic racism has a major impact in recovery after trauma. The overwhelming majority of firearm-injured patients that I treat at Penn are young Black men. The structures and systems of disadvantage that put them at risk for injury in the first place also interfere with their recovery by erecting barriers to employment, educational access, health care, and housing.

All these factors pile up on top of the physical aftermath of trauma and trauma surgery. Some patients may have major fractures and reconstructions to heal. For others, our team may have opened their chest or abdomen and removed, re-connected, or rearranged vital organs. Post-surgical home

**THE HEALTHCARE TEAM
AT PENN TRAUMA
SAVES THE LIVES OF
GUN VIOLENCE
VICTIMS (BUT THEY WISH THEY
DIDN'T HAVE TO...)**





care and doctors' visits mean that patients must ask for help with the most basic activities. And many patients report that there is no one with whom they can talk openly about their experiences. Depression and post-traumatic stress disorder are present in up to half of gunshot-injured patients years after injury, according to research published last year in *JAMA Surgery* by a team of my Penn Medicine colleagues.

When we see what patient go through after they leave us, we have to ask, how can we help... more? What role can our hospital play in bringing about comprehensive recovery? The Penn Trauma team is partnering with concerned clinicians throughout the United States to identify effective strategies and to collect the long-term data that can help us understand what works. How clinicians treat our patients can make a difference. Patients value when the health care team acknowledges the impact of their injury and addresses their broad concerns. Inspired by the work of Dr. Rich and others, trauma centers around the country have developed hospital-based violence intervention programs that provide wraparound services, peer mentoring, and case management to help patients recover. To connect with patients, these employ individuals who do not have medical training but do have a shared background and an extraordinary ability to build trust and form lasting bonds with patients and to connect them to the comprehensive services they need to thrive. In a new program supported by grant funding made available through the Pennsylvania Commission on Crime and Delinquency, Penn Trauma has brought on staff our first Violence Intervention Specialist. Across the board our team has welcomed him, recognizing how much unmet need our patients have.

Physicians must also advocate for interventions in our communities and cities. Physical and mental health care and economic support are critical. Time and time again, local, state, and federal government signal that these patients, their families, and their communities don't deserve focused policy or resources to prevent the kind of harm they have suffered or to help them recover.

To achieve strong public policy, the public must better understand that firearm injury is pervasive and profoundly harmful but also preventable — and that its victims are real people who matter. News media have a critical role in the public understanding of the gun violence epidemic, but too often, the victims of gun violence are invisible or are reduced to one line on a screen. When we studied media reporting on gun violence in Philadelphia, we found that half of

shootings never even made the news. And when incidents are reported, follow-up is limited, root causes are not addressed, and the victims' perspectives are missed. Journalists at the Initiative for Better Gun Violence Reporting have taken this on, aiming to expand coverage that represents the experience of individuals and communities most impacted, and that addresses the prevention strategies we really need.

As a surgeon, I don't meet my patients until they have been injured — they are already not okay. But as a researcher with an eye to public health, I know that each patient I meet indicates a series of missed opportunities to prevent harm. It is imperative that we expand comprehensive support for our patients' recovery. But we can do even better: We can avoid the need to recover to begin with. Violence prevention is complex, but it is not intractable. We need effective, tested, interventions at the individual, neighborhood, and community level. Most urgently we need remedies for the structural injustices that concentrate violence in neighborhoods and communities of color. As Dr. Eugenia South writes in this issue of the magazine, decades of systematic disinvestment in Black communities have caused disparities on every axis, but interventions as seemingly simple as cleaning up trash, planting trees, and repairing buildings can strengthen neighborhoods, prevent violence, and improve health. The same goes for repairing our unequal school system and providing meaningful employment opportunities. There's plenty of work to be done. When I know that I am releasing my patients from the hospital into the arms of a community and society that understands what they are going through and that values them entirely, I will truly be able to say: "You are going to be okay. We've got you."

Elinore Kaufman, MD, MSHP'16, is an assistant professor of Trauma Surgery at the Perelman School of Medicine. Kaufman's research interests include health policy and health services, ranging from qualitative assessment of patient-centered care in the trauma bay to national analyses of drunk-driving prevention policies and gun control laws.

Left: Rodney Babb, seen here at a march against gun violence with representatives from trauma centers across the city and numerous community partners, was hired as Penn's first violence intervention specialist in 2021. He helps patients navigate a variety of challenges, including employment and social services needs, during their recovery from gunshot wounds and other violent injuries.

REIMAGINING

Eugenia South, MD, MSHP

Gun violence happens most in places that bear the brunt of generations of inequity. An Emergency Medicine physician and researcher says that if Black lives really matter, we must invest in Black neighborhoods.





Walter Wallace Jr. was shot by police near his home in West Philadelphia.

The shooting happened in the community in which I attend church and work as an Emergency Medicine physician. Wallace, a 27-year-old Black man, was rushed to Penn Presbyterian Medical Center for care last October, and our team worked hard to save his life. They could not.

Gun violence killed Black people at alarming and unprecedented rates last year, and this surge has been palpable in my emergency department. I have participated in countless thoracotomies, a procedure involving a large incision to open a patient's chest to stop bleeding from a bullet. In December, after my team performed a thoracotomy in our final — but unsuccessful — attempt to revive a young Black man, we held a moment of silence to honor his life. After, as I stripped off my bloody gown, I broke down and sobbed.

My tears were from intense sorrow, because I could not help but imagine my two Black sons, ages 7 and 3, lying lifeless on the gurney. My tears were also from anger, because I know gun violence, including at the hands of police, is preventable.

As a nation, we have made a choice to largely ignore what the evidence says about creating safe neighborhoods. We have declined to fund place-based interventions, such as parks and trees, that actually work to protect citizens on a broad scale. And through our inaction, we have decided that Black lives do not, in fact, matter as much as white ones.

Urban gun violence disproportionately affects segregated Black neighborhoods marked by concentrated disadvantage. Over time, a lack of investment into neighborhoods' physical infrastructure has led to a crumbling housing stock, blighted spaces, and a dearth of green space such as trees and parks. These conditions trace to legacies of state-sanctioned structural racism such as redlining, as well as other long-standing and ongoing discriminatory real estate and bank lending practices.

More recently, mass incarceration extracts resources and talent from Black communities, and an on-the-ground police surveillance state feeds prisons with bodies. The inevitable results — entrenched poverty, lack of economic opportunity, underfunded and failing public schools, and deteriorating neighborhood environments — are the root causes of gun violence.

Caring for victims of gun violence early in my career motivated me to turn to science for answers on prevention. I have worked with a team of researchers at the Penn Urban Health Lab to study place-based interventions that promote safe communities. Philadelphia, like many cities, has tens of thousands of dilapidated vacant spaces, often filled with trash, used condoms, and needles. For people living nearby, these undesirable but unavoidable spaces result in fear, stigma, and stress.

Several simple, low-cost, structural change to the neighborhood environment can improve safety and foster well-being. Our research recently demonstrated that investing in structural repairs to the homes of low-income owners — including electrical, plumbing, heating, and roofing repairs — is associated with reductions in crime on the block of those homes. As more homes are repaired, the drop in crime is larger. Securing abandoned houses with working doors and windows has also been shown to be associated with reduced violent crime.

Our research has also demonstrated that turning vacant land into clean and green space reduces gun crime. People living nearby feel safer and less depressed, and they forge deeper social connections with their neighbors. In fact, some residents reclaim these spaces for social activities such as barbecuing and gardening.

Green space has consistently been associated with health benefits. Simply walking past an urban space with grass and trees calms the body, including lowering heart rates. Stress reduction and the positive impact on mental health may explain why being near trees has been associated with lower risk of gun assault among Black adolescents. In another study, we found that for pregnant women with a history of anxiety or depression, urban tree canopy was associated with less stress.

Clean and accessible parks, trees, and micro-green spaces should not be a luxury amenity reserved for those living in affluent, mostly white neighborhoods that have benefited from decades of intentional, government-backed investment. And yet that is precisely the situation we are in, with Black, formerly redlined neighborhoods having the least amount of green space in the present day.

The family of Walter Wallace Jr. reported that he had bipolar disorder and was experiencing a mental health crisis the day he was killed. I have often wondered: What if he had come to my emergency department as a mental health patient instead of a shooting victim? What if he never reached crisis level because his neighborhood conditions supported mental health?

Reimagining safety means making intentional decisions to address the root causes of gun violence through policy changes and financial investment in Black people and Black neighborhoods. One promising opportunity is to reallocate dollars from expansive police budgets — which make up the largest budget item in most big cities — to evidence-based non-police interventions. Place-based initiatives — including restorative natural outdoor spaces — should be at the top of the list. □

Eugenia South, MD, MSHP'12, is an assistant professor of Emergency Medicine in the Perelman School of Medicine, vice chair for Inclusion, Diversity, and Equity in the Department of Emergency Medicine, and faculty director of Penn's Urban Health Lab. She can be found on Twitter @eugenia_south. An earlier version of the essay above was first published in the *Washington Post* in March 2021 as part of its "Reimagine Safety" series.

HELEN OCTAVIA DICKENS

AN EXPANDED VIEW
OF A TRAILBLAZING
OBSTETRICIAN/
GYNECOLOGIST

By Carol Benenson Perloff



Dickens, a physician and advocate for women's health, preventive care, and health equity for Black women and girls, was influential in her profession from the 1930s until her death in 2001. Now, an expanded portrait display honors more of her life and work and features photos not previously widely seen, such as the above, taken by Black photographer G. Marshall Wilson in 1947. Wilson went on to a 33-year career with *Ebony* magazine, capturing iconic images of the Civil Rights era. The photo was provided courtesy of Dickens' daughter, Jayne Henderson Brown, MD.

“History matters,” said Eve Higginbotham, MD, ML, vice dean for Inclusion, Diversity and Equity at the Perelman School of Medicine and a leader of the Action for Cultural Transformation (ACT) at Penn Medicine.

“Words matter,” she continued. “Having all of our pivotal predecessors appropriately represented being reflective of the words we use, being reflective of whose histories we honor through the use of their names and personal narratives, are all part of the way we can acknowledge and reaffirm our commitment to inclusivity.”

ACT is broadly focused on action and is committed to transforming Penn Medicine into an anti-racist, equitable, diverse, and inclusive organization. In parallel, a groundswell of efforts have addressed the names and symbols that detract from the celebration of diversity and have encouraged recognition of those who should be celebrated alongside efforts to achieve better diversity, equity, and inclusion. Last year, with renewed attention to the legacy of racism in the field of obstetrics and gynecology, Penn Medicine’s department took down a painting that depicted a 19th-century physician performing a procedure, assisted by a Black woman who is thought to be enslaved. An effort initiated by Penn OB/GYN residents and medical students, meanwhile, gained unanimous support across departments to rename a retractor tool that bears the name of another gynecologist, a founder in the field known to conduct experiments on enslaved and unwilling Black women. And on Martin Luther King Jr. Day this year, one of the four “houses” designed to foster interaction between classes in the medical school, was renamed to honor Nathan Mossell, MD (1882), the first African-American to earn an MD from Penn.

More recently, the portrait of Helen Octavia Dickens, MD found a new home in Stemmler Hall, surrounded by a new, expanded display recognizing her life, career, and legacy. Installed in August and dedicated at a small, private event in early December upon the 20th anniversary of her passing, the prominent portrait is a symbolic reaffirmation of inclusivity at Penn Medicine visible to all who pass through Stemmler Hall.

Dickens was not only the first African-American woman faculty member in Obstetrics and Gynecology at Penn, but a vital leader in the community advocating for preventive health for women and teen girls of color.

“We have a rich and diverse history and it is important for us to identify and highlight individuals such as Dr. Dickens because they were not self-promoting and, as a consequence, were largely overlooked by the broader community,” as Marisa Bartolomei, PhD, a professor of Cell and Developmental Biology, noted to the exhibit’s historian and curator, Carol Benenson Perloff.

The portrait of Dickens on display since 1992 was painted by her friend, accomplished artist and dermatologist Bennett Johnson, Jr., MD. Its move to Stemmler Hall and expanded interpretive context were a first major change initiated by the Perelman School of Medicine’s Portrait Committee, established as an advisory group to the dean in 2020 as part of a broader goal to address and advance diversity.

As Perloff, the curator of the expanded display, describes in the following pages, Dickens’ life and career reflect a deep caring and commitment to the lives of Black women and their families in particular, both personally and at the scale of entire communities. In recruiting more underrepresented minorities to Penn, she helped to change the face of the future of medicine.

“I hope the exhibit provides encouragement and pride to PSOM faculty, trainees, and staff, and I sincerely hope it provides a framework for telling other important stories of the underrepresented members of our community that have not been heard.”

— Michael Ostap, PhD

Dickens’ legacy continues at Penn Medicine today through a system-wide commitment to lead the field in addressing racial and ethnic disparities in maternal health, shared through collaborative efforts across clinical departments, large and small research efforts, and growing community partnerships. Now that commitment also has a more prominent symbol, a face, and an expanded story.

“I hope the exhibit provides encouragement and pride to PSOM faculty, trainees, and staff,” said Michael Ostap, PhD, co-chair of the portrait committee with Bartolomei and a professor of Physiology, “and I sincerely hope it provides a framework for telling other important stories of the underrepresented members of our community that have not been heard.”

— Introduction by Rachel Ewing

A Remarkable Life Story in 20 Linear Feet

A life-sized photo of Helen O. Dickens, MD, invites viewers into her story, which unfolds across the display in blocks of time. She grew up in Dayton, Ohio, with parents who encouraged hard work and education. Her father, who did janitorial work, died when Dickens was nine years old. Her mother, a domestic servant, continued to nurture her daughter's bold ambition to be a physician, despite the obstacles she'd face. In 1933, Dickens graduated from the University of Illinois School of Medicine as one of three women and the only African-American woman in her class. She did her internship at Provident Hospital, a Black institution located in Chicago's South Side, and stayed on for a year of obstetrical training.

The story then shifts to Philadelphia, where Dickens arrived in 1935 to assist Virginia Alexander, MD, at the Aspiranto Health Home, a six-bed hospital and clinic located in Alexander's North Philadelphia row house. Within two years, Alexander left to pursue further education and Dickens took

over the clinic and heavy load of home deliveries, and joined the staff of Frederick Douglass Memorial Hospital, the city's first African-American-run hospital. The time launched her life's work serving the city's poor Black community.

A lot happened in the six years between 1941 and 1947. Despite being told she might not be happy at Penn's Graduate School of Medicine during her admissions interview, Dickens matriculated there and became its first African-American woman to earn the Master of Medical Science degree. For residency, she returned to Chicago, where she met surgical resident Purvis Henderson, MD. They married and began managing dual careers at a distance when Harlem Hospital offered her an OB/GYN residency. From New York she returned to Philadelphia where, in 1946, she became the city's first African-American woman to receive board certification from the American Board of Obstetrics and Gynecology. She bought a house in North Philadelphia, where she established her practice, resumed work at Douglass Hospital, and headed up OB/GYN at Mercy Hospital. And she gave birth to their first child, Jayne. Dickens and Henderson later adopted a son, Norman.

The expanded exhibit and new home for Dickens' portrait were installed in late August 2021 and dedicated in early December.

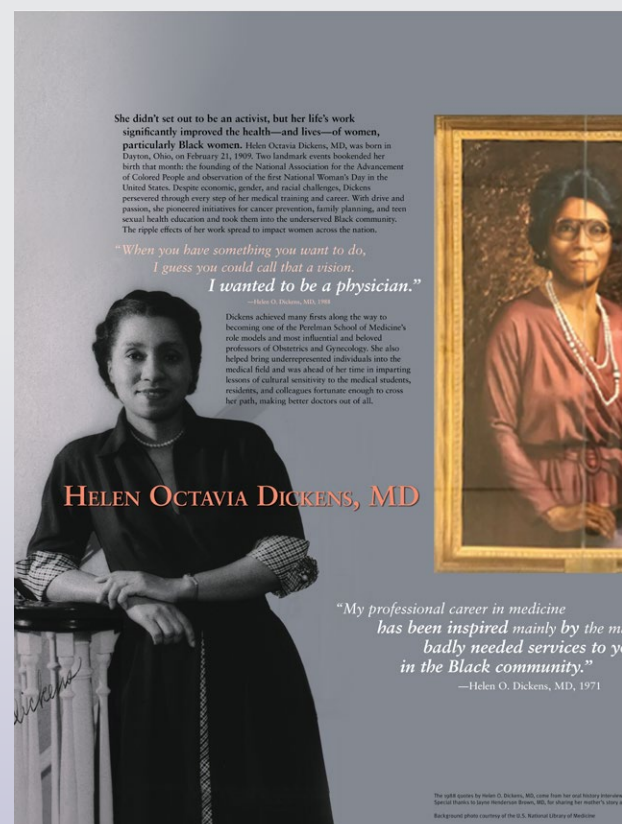


Growing a Photo

A captivating image of the physician at home, casually leaning on a bannister, provides the hook to draw in passersby. Another hook — Dickens' simple yet powerful words: "I wanted to be a physician." In large white typeface, this statement of her underlying determination sets the tone for the narrative.

Making the photo life-size required manipulating the image to make her stand out and adjusting its ratio for the wall space. Exhibit designer Barbara Schwarzenbach painted in her skirt and the bottom of the staircase to lengthen the image. Then she used a special technique of duplicating the photo, erasing the background on the top layer, and then fading the bottom background layer to fade out on one edge.

Photo courtesy of the U.S. National Library of Medicine



Before image editing, and in the exhibit.

Dickens made her mark in cancer prevention and education in the late 1940s, in particular as a crusader for Pap smear testing. This was on top of her private practice and, in 1948, appointment as director of OB/GYN at the newly merged Mercy Douglass Hospital, where she created residency-training opportunities for Black physicians. Dickens lobbied doctors throughout Pennsylvania to offer the Pap test and taught 200 Black physicians how to perform it. Equally important, she addressed reluctance within the Black community for women to have pelvic exams and Pap smears due to fears of sterilization, a concern rooted in generations of mistrust in the medical profession from non-consensual experimentation on Black individuals.

In 1965, Dickens became the first African-American woman faculty member in OB/GYN at Penn. She continued her advocacy for cancer education and made trailblazing contributions to family planning, addressing teen pregnancy and sexual health issues within Philadelphia's Black community. The Teen Clinic she founded at Penn in 1967 provided

counseling and group therapy, educational classes, family planning assistance, and prenatal care. Her efforts to get teens to use contraceptives worked and inspired local schools and health professionals to develop prevention programs. As associate dean for minority affairs, Dickens increased the number of underrepresented minorities applying and coming to medical school at Penn. The University appointed her professor emeritus in 1985. She continued to see patients until age 85.

Helen O. Dickens, MD, achieved many firsts that broke the glass ceiling for Black women in medicine, and the final panel of the exhibit reflects that and many more aspects of her legacy. Her advocacy for Pap smear testing and research into teen pregnancy addressed women's health and disparities affecting the Black community for generations. Her way of helping young women to empower themselves, her lasting influence on students and colleagues, and the Penn Medicine clinics that carry on her mission, all continue to help build toward a healthier future.



1909-1934
Early life and education

In the family home in Dayton, Dickens's parents set examples for hard work, education, and a spirit to succeed. Her father, formerly enslaved, had taught himself how to read and eventually how to read law, but the nature of the times limited him to janitorial work. Her mother found employment as a domestic servant. Both encouraged Helen and her brother to strive toward greater opportunity through education. She recalled attending a "so-called White school," located close to home than Dayton's Black school, and then attended Crane Junior College in Chicago.

"If you came home from school and said that you didn't get a grade because you were African American, you couldn't get away with that with my father. You didn't get a grade because you didn't study hard enough."

—Helen O. Dickens, MD, 1988

"I didn't see a barrier to becoming a doctor. It never occurred to me there were barriers, not until I looked at the 1920s. I was African American and expected in one case, because she was a woman, to have chemistry prerequisites. The scholarship funders believed in me. Her father graduated as one of three women in the class. I didn't see that as a barrier. I was in her class. She did South Side, and I was in the hospital with her. I had a lot of training."

1935
Dickens comes to Philadelphia

In 1935, Dickens came to Philadelphia to work with Virginia Alexander, MD, at the Aspiranto Health Home, a six-bed hospital in Alexander's North Philadelphia row house. Dickens moved where Alexander's father also resided. The practice primarily served the poor Black community, which came to the clinic for acute, emergency visits, obstetric and gynecologic care, at home visits. Alexander and Dickens made house calls and delivered. During at least one visit to a woman in labor, Dickens had the window for light, as the house didn't have electricity.

Alexander charged the same \$3.00 whether she saw one or six. If the patient couldn't pay, she treated them anyway. Her example when, after Dickens's first year at Aspiranto, she went to Yale's School of Public Health, leaving her 27-year-old daughter to run the clinic and her father's care.

"You were going into the homes, taking responsibility for the people. It was very exciting. You were going in the middle of the community. You were going into all kinds of communities."

—Helen O. Dickens, MD, 1988

Dickens still made time to speak at churches about child health, education, work at well-being.



Carol Benenson Perloff (right) collected historical materials to curate the exhibit with help from Jayne Henderson Brown, MD (left), daughter of Helen O. Dickens, MD.

Next comes writing the interpretive narrative. After that, the exhibit designer transforms Word documents and photo files into a visually engaging display.

The research process was no longer typical when COVID-19 restrictions shut down visitor access to the University of Pennsylvania Archives, repository for 27 cubic feet of the Helen Octavia Dickens Papers. Other than a modicum of online photographs and the notes from a 2010 presentation that Deborah Driscoll, MD, Luigi Mastroianni Jr. Professor of OB/GYN, had prepared from research in the Archives, I had to find other inroads to Dickens' story.

Restoring the Lost Details

I was introduced to the work of Helen O. Dickens, MD nearly 30 years ago in the context of the first-ever exhibit I curated, "A Century of Obstetrics," installed in the John Morgan Building. In that historical retrospective of the Department of OB/GYN, Dickens and her innovative teen pregnancy program received honorable mention among luminaries like Drs. Barton Cooke Hirst, Maria Delivoria-Papadopoulos, Luigi Mastroianni Jr., and Celso-Ramon Garcia.

Working with the PSOM portrait committee this year, as a team and individually, we came away from this exhibit experience enlightened and inspired by Dickens' drive to make a difference in Philadelphia's underserved Black community. It left exhibit designer Barbara Schwarzenbach of Cloud Gehshan Associates "amazed at how one person could have such a huge impact on women's health, particularly on Black women's health and their access to quality health care and education." And we saw her do this while successfully juggling the responsibility of parenting two children during the formative years of her career.

Creating an exhibit typically starts with content development: researching archival sources for documentation and photographs, interviewing people, and establishing a story outline.

The Internet never disappoints. It yielded links to a 1988 oral history Dickens participated in for the former Medical College of Pennsylvania's Black Women's Physicians Project, a 2010 dissertation about Dickens and medical activism in Philadelphia, and a 2020 BBC article about Dickens and the Pap smear.

The oral history transcript, in particular, obtained as a PDF from the Harvard University Library, was invaluable in understanding and interpreting Dickens' life. It contained memories of a young doctor in a North Philadelphia practice, venturing alone in the middle of the night in all kinds of communities, finding it "very exciting." It also offered insights of a seasoned clinician-educator who spent years helping the Black community. "Being a Black physician, you may see some of the Black social and cultural issues that a White physician may not, in all honesty, be aware of.... There is a need for a change in medical education so that students become aware of the cultural and religious aspects of the community."

Dickens' daughter, Jayne Henderson Brown, MD, could not have been more gracious in sharing her knowledge, memories, photographs, and insights about her mother's

contributions and priorities. Brown described a laid-back and quiet woman who knew how to assert herself, a very socially active person who always saw that her family was taken care of. Dickens kept close to her children, bringing them with her on Saturday hospital rounds, where they waited in the lobby or the car. The family waited on Christmas celebrations until she returned from delivering a baby. For years, Dickens juggled career and family as a de facto single parent, as her husband was advancing his surgical training and career in Savannah. Brown also shared the prejudices Dickens faced as a woman and an African American, from derogatory statements in medical school to her discouraging admissions interview at Penn.

Brown welcomed Schwarzenbach and me into her home, allowing us to remove treasured family photographs from picture frames and albums to borrow for scanning. She had several stunning images of Dickens and her husband, taken by G. Marshall Wilson. A Black photographer, Wilson went on to a 33-year career with *Ebony* magazine, capturing iconic images of the Civil Rights era. It said something about Dickens's stature in Philadelphia's Black community to be among his clientele.



Photo courtesy of University of Pennsylvania Archives and Records Center.

Dickens, seated in the second row from left, at a Philadelphia Academy of Medicine and Allied Science Testimonial Banquet on May 30, 1939.

"Dr. Dickens is the only woman among the more than 50 people in that picture. Even if the environment at that event were friendly, it must have taken courage and confidence to be a member of that group." —Michael Ostap, PhD

See the expanded version of this story online for more information about this photo's repair and restoration.



In her outreach efforts with the American Cancer Society, seen here in the 1970s, Dickens (at left) was part of a media campaign to educate women about the Pap test and encourage them to get tested at a time when less than 20 percent of women in the community had been tested.

Newspaper clippings provided insights into Dickens' professional and personal life. They also offered historic context for topics like childbirth in the hospital, abortion, child welfare, and preventive health care for the Black community. Newspaper accounts starting in 1940 showed just how impactful Dickens' efforts were to encourage women, and especially Black women, to pursue education, including education about their own health and the benefits of cancer screening and family planning. She worked to change the perception that cancer was a disease of white women and used a community network of Black service organizations, including college sorority contacts, to reach Philadelphia's Black women through seminars held in churches.

Ostap strayed from his lab into historical research. Looking through medical school yearbooks from the 1960s and '70s, he found, "The lack of diversity among the staff and students in these pages and the portrayal of the patient populations is striking and concerning. Dickens' extraordinary contributions are even more impressive when you consider the environment in which she had to work."

Triage for an exhibit means prioritizing themes, photographs, and supporting quotes. Next comes organizing them — in this case, as chronological chapters — and writing drafts till it all flows. Rounds of edits helped address the tricky nuances. One such example was finding the most appropriate way to word the horrific cases of incomplete abortions Dickens saw while a resident at Harlem Hospital in the 1940s, an experience that further motivated her to improve women's health care in underserved communities. Brown and her daughter fact-checked the narrative. The designer laid out a grid for the exhibit and then words and imagery began to join.

Hanging the classic, gold-framed Dickens oil portrait in a glass-enclosed display case within a modern lobby space posed design challenges. The interpretive backdrop needed to harmonize visually with the portrait, pop to compel people to stop and read it, and absorb a lot of information into 20 linear feet. Exhibit design standards set by the Smithsonian to meet ADA guidelines also came into play. Considerations included the placement of narrative and images based on human factors like people's heights and wheelchair access, viewing distances, text size, and typeface.



Above: Dickens holds daughter Jayne at her christening in 1948, surrounded by the baby's godmothers, Virginia Alexander, MD (left), and Sadie Tanner Mossell Alexander (right). Photo by G. Marshall Wilson, courtesy of Jayne Henderson Brown, MD.

Inset: Jayne Henderson Brown, MD, shows the plaque beside the tree planted in her mother's memory in 2002.

Schwarzenbach created a two-tiered layout: the main body of text across the panel at the more comfortable eye level and above it, a photo album of sorts. Shades of coral and white, echoing the dress and pearls Dickens wears in the portrait, stand out from the subdued grey background.

Photographs collected for the exhibit span a period of more than 80 years, the earliest one of Dickens and her brother dating from around 1917. Cleaning up old photos always requires a lot of work, especially when the goal is to enlarge them for an exhibit. For Schwarzenbach, "What's really fun is when you have an old photo that is washed out and you can't see the details, but through a quality scan and the magic of Photoshop you can restore those lost details."

Developing the exhibit likewise let me explore and bring to light much more of the history of this remarkable physician that I briefly touched upon several decades ago. I expected

to learn more about Dickens' tremendous contributions to family planning. I had no idea of the breadth and depth of her work in cancer prevention. Nor did I know that early on, she had championed tuberculosis screening, a campaign she took to Black communities in Philadelphia, Pittsburgh, and Chicago.

A model of grit and grace, Dickens set the bar high. Her story, visible to everyone who visits Stemmler Hall, is one of triumph in the face of socioeconomic challenges and intersecting racial and gender biases through conviction and hard work. It inspires us to continue her life's work of advancing health and dismantling racism and bias in pursuit of health equity. □

► **Read this story online with additional photos at [PennMedicine.org/magazine/dickens](https://www.pennmedicine.org/magazine/dickens)**



Clearing the Path

Scholarship & Scholars Program
Work Together to Increase
Minority Enrollment

Fulfilling Helen O. Dickens' MD, vision for diversity in medicine and justice in health care only begins at inspiration and representation. As Dickens demonstrated while associate dean of minority admissions at the University of Pennsylvania, it requires leadership, determination, and the means for students to follow the trail one has blazed.

The recently expanded Penn Access Summer Scholars (PASS) program, coupled with the new Helen O. Dickens, MD Scholarship, aims to do nothing less than become a model for the nation — in addition to producing exceptional physicians and researchers.

“As one of Dr. Dickens' recruits, I benefited from her visionary community-building,” said Horace Delisser, M'85, RES'88, FEL'91, associate dean for diversity and inclusion and associate professor of Medicine. “And she inspired generations of young physicians, particularly those from backgrounds that are underrepresented in medicine and those who seek to address disparities in health care. I'm honored to continue her work to recruit a student body that reflects the diversity of our communities.”

Access, Excellence, and Opportunity

Penn Access Summer Scholars (PASS) is an eight-week program designed to encourage and support undergraduate students from groups that are underrepresented in medicine (UiM) who are interested in pursuing medical school. More than experiencing what life is like for a medical student, these scholars begin the critical process of building their academic, professional, and support networks — ingredients to success that many take for granted.

“There were resources that I didn't even know I needed, and PASS gave me exposure very early on in my undergraduate career,” explained Maryam Alausa, C'19, M'23. “I also gained mentors along the way who solidified my decision to pursue medicine.”

Over the course of two summers, PASS students conduct and present research, shadow physicians, and visit student-led community clinics. They



Maryam Alausa



get to know both the city of Philadelphia and Perelman School of Medicine faculty, administrators, and staff, and develop lifelong personal and professional relationships.

The program also offers many of the new humanities-focused curriculum enhancements offered at Penn, such as discussions on narratives and art; thanks to donor support, the program was able to quickly leverage technologies that preserved this singular educational experience during the COVID-19 pandemic.

Alausa credits the experience as one of the most formative of her life. She is currently researching hair and skin diseases specific to Black women and volunteers with CUT Hypertension, a program aimed at reducing the prevalence of high blood pressure in Black men in Philadelphia. She also serves as VP of Curriculum for PennHealthX.

“It means so much to me that I am able to pursue my passions for uniting communities of color and discovering ways to finance equitable, affordable, and accessible health-care for all. I am so grateful for the opportunity to have been a PASS student.”

To broaden the program’s reach, the Perelman School established partnerships with several historically Black colleges and universities. “PASS is critical to achieving the educational goals of our school, and expanding the program is a major component of improving diversity in recruitment,” Delisser said.

More than a Tribute

In addition to the sense of camaraderie and cohesion established around a shared experience, those PASS students who meet the Perelman School’s academic and professional requirements are offered admissions linkage and support after matriculation.

As one could imagine, competition is intense for these high-achieving UiM undergraduates. Currently, 80 percent of students who complete PASS attend medical school; 68

For more than 10 years, Perelman School of Medicine students have volunteered through the CUT Hypertension program to perform blood pressure checks and talk about preventive health with primarily Black patrons in local barbershops. This is one of the activities Maryam Alausa, C’19, M’23 (pictured below, opposite page) has engaged in during her medical studies after her undergraduate experience in the Penn Access Summer Scholars program.

percent enroll at Perelman. To ensure that cost does not act as a barrier to admissions — and equity — the Perelman School launched the new Helen O. Dickens, MD Scholarship, to support a student who has completed the PASS program.

“A student in the entering class will incur total expenses of nearly \$400,000 during their four years of medical school,” said Brett Davidson, senior executive director of Alumni Development & Alumni Relations, “so financial aid is critical to matriculate the best qualified students at Perelman regardless of the ability to pay.”

“We have been absolutely thrilled by the response from our alumni and donor community,” he continued. That includes a \$500,000 challenge gift from an anonymous donor, which means other contributions to the Dickens Scholarship will be matched dollar-for-dollar through the end of the 2022 fiscal year.

“Now is the time we can meaningfully live up to Dr. Helen O. Dickens’ ideals of justice, diversity, and inclusivity,” said J. Larry Jameson, MD, PhD, executive vice president of the University of Pennsylvania for the Health System and dean of the Perelman School of Medicine. “With the PASS program and Helen O. Dickens, MD Scholarship, we’re able to transform this historic moment into a movement — and inspiration into positive change.”

By setting an example for other schools to follow, the reach and influence of your support of the Dickens Scholarship and PASS program extends far and wide. You’re invited to contact Brett Davidson at 215-898-9175 or Brett2@upenn.edu to learn more about the Dickens Scholarship match or any of the Perelman School’s inclusion, diversity, and equity efforts.



“Support of basic research is the most effective way to ensure continued medical progress. Drs. Weissman and Karikó’s groundbreaking science has sparked an ambitious research agenda, and our philanthropic partners again will play a vital role in seeing that promise unfold.”

—J. Larry Jameson, MD, PhD
Executive Vice President, University of
Pennsylvania for the Health System
Dean, Perelman School of Medicine

The Promise of mRNA

How Philanthropic Gifts Can Keep Fueling Hope for the Future

The key discoveries that led to the powerful COVID-19 vaccines from Moderna and Pfizer/ BioNTech were forged in labs at Penn Medicine over decades of research — and the rigorous science of Drew Weissman, MD, PhD, the Roberts Family Professor in Vaccine Research, and Katalin Karikó, PhD, an adjunct professor of Neurosurgery and BioNTech executive, may have changed medicine forever.

Given the success of these vaccines, it makes one wonder: why hasn’t this happened sooner? What barriers do we have in developing vaccines and treatments using this technology?

“Simple,” Weissman replies. “Funding. Without it, research teams can’t stay together to focus on important questions or problems.”

There were so many COVID-19 vaccine candidates developed in what seems to be so little time because of investments in basic science research at Penn, the National Institutes of Health, Department of Defense, and other federally funded academic laboratories. It was the extraordinary influx of resources into SARS-CoV-2 research since the pandemic began

“The future of how to treat and prevent disease has changed course. Philanthropic support helps us upgrade with new advanced facilities and infrastructure, welcome new researchers, and take the helm in driving innovation and progress against myriad diseases.”

—Jon Epstein, MD
William Wikoff Smith Professor
of Cardiovascular Research
Executive Vice Dean and
Chief Scientific Officer

that played a critical role in moving breakthrough ideas into breakthrough vaccines and therapies.

“The critical takeaway here,” Weissman explains, “is that consistent and robust funding toward basic research — and this is where we know philanthropy can close the gap — could mean millions of lives saved down the line.”

Sustaining Global Impact

Disproportionate access to vaccines not only puts people in those countries at risk, but it also creates conditions for variants to emerge that jeopardize global health. To that end, Weissman has been collaborating with partners in the World Health Organization and Thailand to develop new mRNA vaccines and the Good Manufacturing Practice (GMP) facilities to produce them so that lower resourced nations benefit from greater access. GMP facilities cost millions of dollars to build and the transfer of technology and expertise to produce mRNA vaccines is complex. What happens after the COVID-19 pandemic?

“We need to ensure the most powerful tool we have against COVID-19 remains available and accessible to the people who need it the most,” says Weissman. “More than that, this mRNA vaccine development and manufacturing infrastructure must remain active to level the playing field against myriad diseases, now and in the future. Philanthropic support and public and private partnerships are essential.”

A global mRNA vaccine research fellowship is another means toward maintaining both worldwide collaboration on infectious disease and that “level playing field.” Weissman’s lab trains scientists from around the world — including



Thailand, Brazil, Argentina, and Japan — thanks to funding from their home institutions. These costs remain a major barrier for researchers from lower-resourced nations, and Weissman and his team are committed to expanding access to these scientists and enabling their success.

Research Funds Advancing a Pan-Coronavirus Vaccine — and Beyond

Over the past two decades, the world has experienced outbreaks of three coronaviruses: SARS-CoV in 2002, MERS-CoV in 2012, and SARS-CoV-2 in 2019. Weissman and other Penn Medicine scientists are laying the groundwork for universal coronavirus vaccines, as well as the development of vaccines for other infectious diseases and chronic conditions. Gifts can provide discretionary support to pursue both foundational and novel research projects, as well as expedite preclinical studies.

Translating mRNA technology to *in vivo* gene therapy for sickle cell anemia would dramatically improve access to treatment. The Weissman lab has developed new technology that allows modified mRNA to be efficiently delivered to bone marrow stem cells, instructing red blood cells to express normal hemoglobin. Additional funding would accelerate development of a therapy that can be easily performed with a simple intravenous injection. Further, this would have

applications to many other congenital gene defects in blood and stem cells.

“Penn is not only at the leading edge in mRNA therapeutics — we created the leading edge,” says Andrew Bellet, director of Development. “We are poised to empower our renowned scientists and uncover many more discoveries thanks to the support of generous and visionary donors.”

It’s just one example of how philanthropy could advance the most promising new applications of mRNA technology to fight disease. Penn Medicine researchers are already working on new therapeutics and products for protein replacement, immunotherapy, and personalized cancer vaccines. They are targeting influenza, herpes, HIV, malaria, orphan diseases and more — treatments that can help the most vulnerable populations around the world.

There are many ways you can become a philanthropic partner ushering in this next great hope in medicine — one with global impact. Contact Andrew Bellet at 215.573.0548 or abellet@upenn.edu.

HONORS & AWARDS

Amber Alhadeff, PhD, an adjunct assistant professor of Neuroscience, **Peter S. Choi**, PhD, an assistant professor of Pathology and Laboratory Medicine, **Erica Korb**, PhD, an assistant professor of Genetics, **Mustafa Mir**, PhD, an assistant professor of Cell and Developmental Biology, **Liling Wan**, PhD, an assistant professor of Cancer Biology, **Ben Black**, PhD, the Eldridge Reeves Johnson Foundation Professor of Biochemistry and Biophysics, and **Jennifer Phillips-Cremins**, PhD, an associate professor of Bioengineering and Genetics, have been awarded grants, totaling more than \$8 million, to support biomedical science research projects through the National Institutes of Health's High-Risk, High-Reward Research program.

Alessandra Chesi, PhD, an assistant professor of Pathology and Laboratory Medicine, has received a 2021 Genomic Innovator Award from the National Human Genome Research Institute for her research aiming to identify causal variants and target genes for neurodegenerative and brain-related disorders.



Cesar de la Fuente, PhD, a Presidential Assistant Professor in Psychiatry, Microbiology, Chemical & Biomolecular Engineering, and Bioengineering, received a 2021 IEEE Engineering in Medicine & Biology Society Academic Early Career Achievement Award for his pioneering work creating novel antibiotics using principles from computation, engineering, and biology. In addition, he received the

American Society for Microbiology Award for Early Career Applied and Biotechnological Research for outstanding contributions to the microbial sciences.



Denise LaMarra, MS, CHSE, director of the Penn Medicine Standardized Patient Program, received an Outstanding Educator of the Year award from the Association of Standardized Patient Educators. She was recognized for her creation of a Standardized Patient Management System, acquired by 12 other medical schools in the U.S. and Canada, to facilitate hiring, scheduling, managing expenses, and other related administrative tasks.



Meghan Brooks Lane-Fall, MD, MSHP, FCCM, the David E. Longnecker Associate professor of Anesthesiology and Critical Care, and associate professor of Biostatistics, Epidemiology, and Informatics, has been chosen as a member of the National Academies of Sciences, Engineering, and Medicine's 2021-2023 New Voices cohort.



Kiran Musunuru, MD, PhD, a professor of Cardiovascular Medicine and Genetics, received the American Heart Association's 2021 Joseph A. Vita Award in recognition of his research in therapeutic gene editing to combat cardiovascular disease.



Florencia Greer Polite, MD, chief of the Division of General Obstetrics and Gynecology, has been selected for the 2022 Carol Emmott Fellowship class by the Carol Emmott Foundation, a national nonprofit organization dedicated to achieving gender equity in healthcare leadership and governance.

Daniel Rader, MD, the Seymour Gray Professor of Molecular Medicine, chair of Genetics, and chief of Translational Medicine and Human Genetics, received the American Heart Association's (AHA) 2021 Research Achievement Award — the AHA's highest



scientific honor — in recognition of his outstanding lifetime contributions to basic and translational research in the genetics and pathophysiology of lipid disorders.

Marylyn D. Ritchie, PhD, a professor of Genetics, director of the Center for Translational Bioinformatics, associate director of the Institute for Biomedical Informatics, and associate director of the Center for Precision Medicine in the Perelman School of Medicine, has been elected to be a member of the National Academy of Medicine.



Sarah A. Tishkoff, the David and Lynn Silfen University Professor in Genetics and Biology and director of Penn's Center for Global Genomics and Health Equity, has been elected to be a member of the National Academy of Medicine, in addition to being awarded \$2.7 million from the Chan Zuckerberg Initiative's Donor Advised Fund for her project on how genetic ancestry influences health and disease at the level of our cells.

Neha Vapiwala, MD, a professor of Radiation Oncology and vice chair of Education in Radiation Oncology, and **Amit Maity**, MD, PhD, the Morton M. Kligerman Professor and executive vice chair of Radiation Oncology, have been named among the 28 Fellows of the American Society for Radiation Oncology.

Send your progress notes and photos to:

Donor Relations
Penn Medicine Development
and Alumni Relations
3535 Market Street, Suite 750
Philadelphia, PA 19104-3309
medalum@dev.upenn.edu

1970s

Robert J. Spiegel, MD'75, was appointed chief medical officer of Insilico Medicine, an end-to-end AI-powered drug discovery company, where he will oversee the clinical translation of the company's preclinical pipeline assets. Following a fellowship at the National Institutes of Health in medical oncology, Spiegel was the director of developmental therapeutics at the NYU Cancer Center. He spent over 25 years at Schering-Plough, where he joined as the first director for Oncology Clinical Research and has subsequently held a series of senior executive positions, including senior vice president for worldwide clinical development and chief medical officer.



Marie A. Bernard, MD'76, was named chief officer of scientific workforce diversity (COSWD) at the National Institutes of Health. In this role, she will lead NIH's effort to promote diversity, inclusiveness, and equity throughout the biomedical research enterprise. Bernard has served as the acting COSWD since October 2020. She has also served as the deputy director of the National Institute on Aging since October 2008. Bernard has played key leadership roles in a broad variety of NIH activities to further

diversity, including serving as a co-chair of the UNITE initiative, and leading the development of the NIA Health Disparities Research Framework. She also directed and supervised the NIA Office of Special Populations, which leads health disparities research and training for scientists from diverse backgrounds within the NIA. She is a founding member of the Diversity Working Group and NIH Equity Committee, and co-chair of the NIH Inclusion Governance Committee, which oversees inclusion in clinical research by sex/gender, race/ethnicity, and age.

Jack A. Elias, BA'73, MD'76, GME'79-80, the Warren Alpert Medical School dean of Brown University, was named senior advisor for health affairs, a newly created position at Brown. Leaving his role as Dean, Elias will work with university leadership to advance the university's relationship with two local health systems to create the first integrated academic health system for Rhode Island, once the merger is approved. In the new role, he will continue to play a key part in working with Lifespan and Care New England to implement plans to align health system operations and Brown's leading-edge research and renowned medical expertise to improve the quality of health care for patients across the state and region. Until his successor is in place, Elias will continue in his current roles as dean overseeing Brown's Division of Biology and Medicine, which encompasses the medical school, and senior vice president of health affairs.

Stanton L. Gerson, MD, GME'78, was appointed interim dean and senior vice president for medical affairs at the School of Medicine at Case Western Reserve University. In addition to the School of Medicine faculty and staff, he has oversight of all appointed faculty who are located at University Hospitals Cleveland Medical Center, Cleveland Clinic, MetroHealth System, and Veterans Affairs Northeast Ohio Healthcare System. Along with his role as interim dean, he will remain as director of the NCI-designated

Case Comprehensive Cancer Center and director of the National Center for Regenerative Medicine. Gerson has been a member of the American Association of Physicians since 1997 and has served on and chaired numerous NIH study sessions and the National Cancer Institute Board of Scientific Advisors. He has earned multiple National Institutes of Health grants and published more than 260 clinical trials. He is the co-editor of the internationally recognized textbook *Gene Therapy of Cancer: Translational Approaches from Preclinical Studies to Clinical Implementation, 3rd ed.*, and the textbook *Clinical Hematology*.

1980s

Alan F. List, MD'80, was appointed chief medical officer of Precision BioSciences, Inc., a clinical stage biotechnology company developing genome editing platforms. List is a world-renowned hematologist with extensive academic and clinical experience in the research and development of hematology and oncology products. Since April 2020, he has been a strategic clinical advisor to Precision BioSciences. Prior to joining Precision BioSciences, List served in various roles at the Moffitt Cancer Center, including president and chief executive officer, executive vice president, physician in chief, and chief of the Malignant Hematology Division.

Donald W. Rucker, MD'81, was appointed chief strategy officer of 1UpHealth, a leading Fast Healthcare Interoperability Resources (FHIR) platform that connects payers, providers, patients, life sciences, and app developers. Rucker has practiced emergency medicine in four states and was Beth Israel Deaconess Medical Center's first full-time attending in the emergency department. He formerly served as national coordinator at the Office of the National Coordinator for Health Information Technology, where he led the development and issuance of ONC's

21st Century Cures Act Final Rule, which supports patient access and interoperability of medical data.

Mark S. Berger, MD, GME'84, was appointed chief medical officer of Genprex, Inc., a clinical-stage gene therapy company focused on developing life-changing therapies for patients with cancer and diabetes. Berger has 25 years of biotech and pharmaceutical company experience in the development of oncology therapeutics. Previously at Actinium Pharmaceuticals, Inc. he served as chief medical officer and was responsible for clinical strategy and development of radiolabeled antibodies. Before that, Berger was senior vice president—clinical research at Kadmon Corporation, where he led all aspects of the company's new drug development.

Douglas G. Cole, MD'86, is co-founder and chairman of Repertoire Immune Medicines, a clinical-stage biotech company decoding the immune synapse to create novel immune therapies for cancer. The firm announced the completion of a \$189 million Series B financing, supporting further expansion of their proprietary DECODE discovery platform, accelerate its clinical and preclinical pipelines, expand its team, and enhance its manufacturing capabilities.

Donald Siegel, MD'87, GME'90, is a co-founder and co-chair of the Scientific Advisory Board for Verismo Therapeutics, a spinout from the University of Pennsylvania that produces T-cell-based immunotherapies for cancer. The company has raised \$16 million in equity financing to advance its development of cell therapies. The company's lead therapy candidates in preclinical development are targeting pancreatic cancer, mesothelioma, and ovarian cancer.

Jonathan A. Finkelstein, MD'88, was appointed senior associate dean for research and scholarship of the Kaiser Permanente Bernard J. Tyson School of Medicine. Previously, he served as senior vice president for safety and quality and chief patient

safety and quality officer at Boston Children's Hospital, where he was responsible for overseeing patient safety and quality improvement. He was a professor of Pediatrics and Population Medicine at Harvard Medical School and co-directed the Clinical Epidemiology and Population Health course for nine years.

Susan Lynn Furth, BA'84, MD'88, PhD, is executive vice president and chief scientific officer at Children's Hospital of Philadelphia, and will help lead a new collaboration with National Resilience, a San Diego-based company that develops "next-generation" biomanufacturing technologies and infrastructure. The goal of the alliance is to develop and manufacture new cell, gene, and nucleic acid therapies that will prevent and treat childhood illnesses.

Edward Gordon Evantash, MD'89, was appointed Chief Medical Officer of Femsys, Inc., a biomedical company developing a suite of women's health care products with minimally invasive, non-surgical, in-office technologies. Evantash previously served as chief medical officer of Alydia Health and vice president of medical affairs at Hologic, Inc., both medical technology companies focused on women's healthcare.

Diana F. Hausman, MD'89, was appointed chief medical officer of Lengo Therapeutics, a biopharmaceutical company developing novel precision medicines that target driver mutations in oncology. Hausman has more than 20 years of clinical drug development experience. Prior to joining Lengo, she served as chief medical officer for Zymeworks, Inc., where she oversaw all aspects of clinical development, including advancement of treatments for biliary tract cancer.

1990s

Mark A. Davis, BA'85, MD'90, was named chief operating officer of the Miami Cancer Institute, which provides access to personalized clinical treatments and comprehensive support

services to cancer patients. Previously, Davis was vice president of Brigham Health International at Brigham and Women's Hospital in Boston, MA, where he led academic collaborations between Brigham and multiple international parties. He also served as executive director of business development and strategic initiatives, working on health system and hospital design, education, research, and operations. Prior to Brigham and Women's Hospital, he served as senior advisor of strategic initiatives and partnership at Harvard Medical School, where he was also an associate professor of Emergency Medicine.

Kathleen Zinger Reape, BA'87, MD'91, was appointed Chief Development Officer of Akouos, Inc., a precision genetic medicine company dedicated to developing therapies for hearing loss. Her more than 20 years of experience in the pharmaceutical industry include significant gene therapy translational and development expertise. Before joining Akouos, Inc., Reape served as chief medical officer at Spark Therapeutics, where she oversaw clinical development, pharmacovigilance, and medical affairs activities, and was a key member of the team responsible for the development and commercialization of the first FDA-approved in vivo gene therapy. Prior to Spark, Reape was senior vice president of clinical development at Allergan and Actavis.

James B. Chung, MD'95, FEL'01, GR'02, was appointed chief medical officer of Kyverna Therapeutics, a company engineering cell therapies for serious immune diseases. Chung has dedicated a significant part of his career to working in translational medicine and early clinical development, especially in drug development for autoimmune diseases, most recently as executive medical director, head of Inflammation and Neuroscience, Global Medical Organization, and global development leader for Enbrel®.

Niko P. Louis, MD'96, was appointed president of the Oscar Medical Group, a collection of physician-owned practices and

subsidiary of health insurance company Oscar Health. In this role, Louis oversees virtual agents and the primary care practice supporting Oscar's Virtual Primary Care offering. Previously at Concentra, she served as vice president of medical operations for the Mountain Region and oversaw medical operations in Nevada, Oregon, Arizona, Washington, Alaska, Colorado, and Utah. Prior to Concentra, Louis served as an urgent care physician at WellStar Health.

Daniel M. Skovronsky, MD'98, is chief scientific and medical officer and president of Lilly Research Laboratories, a biotech company whose COVID-19 antibody drugs etesevimab and bamlanivimab received emergency use authorization. The company recently announced an agreement with the U.S. government to supply 388,000 doses of each of the drugs to treat mild to moderate COVID-19 cases.

Christina M. Coughlin, MD'99, was appointed chief executive officer of CytoImmune Therapeutics, a cell therapy company focused on developing natural killer immune cells to fight cancer. Previously, Coughlin was chief medical officer at Rubius Therapeutics, Inc., where she led the clinical development, translational medicine, and regulatory efforts in the allogenic red cell therapy platform. Prior to Rubius, Coughlin was chief medical officer at Tmunity Therapeutics, Inc.

2000s

Sam Jackson, MD'02, assumed the role of interim chief medical officer of Alector, Inc., a clinical-stage biotechnology company pioneering immune-oncology. He has served as senior vice president, clinical sciences, and has been responsible for the development of AL001, a treatment for dementia that is currently in Phase 3 clinical testing. Prior to Alector, Jackson was the chief medical officer of Alkahest and the executive director of clinical development and drug safety at Dynavax Technologies.

Douglas C. Fisher, MD'03, was appointed partner at Revelation Partners, a healthcare investment firm that provides flexible capital solutions. Before joining Revelation Partners, Fisher spent 15 years at New Leaf Ventures and InterWest Partners focusing on biopharmaceutical, medical device, and diagnostics investments.

Jeffrey C. Haynes, MD'04, was appointed executive medical director of Radiation Oncology at Rochester Regional Health, the largest health system in upstate New York. Its flagship hospital was rated among America's top 50 for outcomes by Healthgrades.

Bhaskar Srivastava, PhD'06, M'07, was appointed vice president of early clinical development of Nimbus Therapeutics, a biotechnology company designing breakthrough medicines through structure-based drug discovery and development. He most recently served as senior director, early development translational science and medicine in immunology at the Janssen Pharmaceutical Companies of Johnson & Johnson.

Daniel A. del Portal, MD'09, MBA, was promoted to senior vice president and chief clinical officer of Temple University Health System, where he will play a key role in the strategic planning and implementation of clinical programs at the system's newly acquired campus in the Juniata Park section of the city. del Portal will remain associate professor of Clinical Emergency Medicine at the Lewis Katz School of Medicine at Temple University. Before joining the faculty at the Katz School, he completed his residency in Emergency Medicine at Temple University Hospital, where he served as chief resident. He also earned a master's degree in business from Temple's Fox School of Business.

Hilary D. Marston, MD'09, MPH, has been appointed director of medical biopreparedness and response at the White House National Security Council. She is serving in the role on a detail from her position as Medical Officer and Policy Advisor in

the Office of the Director of the National Institute of Allergy and Infectious Diseases.

Satya Shreenivas, MD, GME'09, was named chief medical officer of HLT, Inc., a Bracco Group Company that develops heart valve replacement technology. Shreenivas was most recently a primary structural heart physician at The Christ Hospital, and served as the director of the Structural Heart Program and section head of the Catheterization lab at the University of Cincinnati. Shreenivas has participated in most of the pivotal trials for currently approved structural heart therapies and has guided several companies that were performing early-stage medical device clinical trials.

2010s

Ernese Zsiros, MD, PhD, GME'14, was promoted to chair of the Department of Gynecologic Oncology at Roswell Park Comprehensive Cancer Center. On staff at Roswell Park since 2014, Zsiros will also hold the Shashi Lele, MD, Endowed Chair in Gynecologic Oncology. In addition to her clinical and academic roles at Roswell Park, she most recently served as director of research and associate director of fellowships within Gynecologic Oncology.

OBITUARIES

1940s

Robert Elder Forster II, MD'43, professor emeritus of Physiology; Sep. 19. Forster served as a captain in the U.S. Army Quartermaster Corps. He took a post-doctoral fellowship at Harvard and was recruited to Penn 1951 by Julius Comroe. He was chair of Physiology from 1970 until retiring in 1990. In 1956, Forster and Comroe wrote *The Lung*, a textbook that was later updated three times; his research was published extensively in peer-reviewed publications; and he was a member of an advisory

committee to NASA that had recommended against using 100% oxygen during tests on the ground before the Apollo 1 fire in 1967. In 1973, he was inducted into the National Academy of Sciences; 20 years later, he also received a prestigious Von Humboldt Fellowship.



James N. Yamazaki, MD, GME'47, a pediatrician; Mar. 5. Yamazaki was the lone Asian and Battalion surgeon for the U.S. Army's 590th Artillery Battalion in the 106th Infantry Division during World War II. Yamazaki then moved to Philadelphia for his first year of pediatric residency. He was recruited to study the effects of the atomic bombs dropped on Japan with the ABCC (U.S. Atomic Bomb Casualty Commission). In Nagasaki, was Physician in Charge, setting up the initial studies of children and fetuses exposed to the radiation of the bomb. Yamazaki became a professor for the inaugural UCLA Medical School class and opened a private pediatric practice. His biography, *Children of the Atomic Bomb*, was published in 1995.

1950s

Kaighn Smith, MD'54, GME'58, an obstetrician and gynecologist; Sep. 18. Smith served in the U.S. Navy, then worked at HUP for six years before moving to Lankenau Medical Center, where he became chair of OB/Gyn and director of the residency program. The hospital created an endowed chair in Smith's name in 1999. Smith served on the executive committee and board of trustees of Main Line Health and was president of the Obstetrical Society of Philadelphia.

Lawrence C. Blair, MD'56; Sep. 8. Blair served in the U.S. Army during the Korean and Vietnam Wars. He completed residencies in surgery and thoracic surgery in his two tours at Walter Reed Army Medical Center. Blair commanded the Army Hospital in Saigon, Vietnam, and several MUST hospitals in forward deployment. He received the Bronze Star and was awarded the Legion of Merit twice. Blair was assigned as deputy commander of Silas B. Hays Army Hospital at Fort Ord. He was then promoted to colonel and assumed the role of commander of the Hospital. Upon retirement from military service in 1983, Blair served as a physician with the State of California for 10 years.

Paul D. Griesmer, BA'46, MD, GME'56, an obstetrician and gynecologist; July 3. After serving as a lieutenant in the U.S. in World War II, Griesmer graduated from the Wharton School, then earned his medical degree from Thomas Jefferson Medical College. He became a fellow in the American College of Obstetrics and Gynecology and practiced medicine for almost 40 years.

Roy G. Nagle, BA'52, MD'56, GME'60, an internist; May 3. Nagle served as a captain in the U.S. Army. Nagle practiced at Northwestern Memorial Hospital in Chicago for many years until moving to Hawaii, where he established a private internal medicine practice and later served as the medical director of the Kona Hospital.

Craig W. George, MD'57, an ophthalmologist; Aug. 4. George completed his training in eye surgery at the Kresge Eye Institute in Detroit, MI. He practiced ophthalmology for almost 35 years at the Alliance Eye Clinic in Ohio. He served as president of the American Eye Study Club and received the Humanitarian Award in Ophthalmology from the Ohio Ophthalmology Society in 1991.

Allan H. Cristol, MD'59, a psychiatrist; Sep. 19. Cristol completed an internship at Albert Einstein Medical Center and a residency at Temple University Hospital. He was board certified in psychiatry and practiced at the former Temple University Children's Medical Center.

1960s

Raymond J. Parisi, MD'60, an obstetrician and gynecologist; Jun. 3. Parisi completed a residency at Georgetown University Hospital. He served as a physician in the U.S. Army in Vietnam, attaining the rank of major and receiving several medals and commendations, including the Bronze Star. He practiced in Washington, DC, and southern Maryland for 30 years and served as chairman of the OB/Gyn departments at Greater Southeast Community Hospital and Southern Maryland Hospital Center.

Adrian R. Morrison Jr., DVM, PhD'64, professor emeritus of Behavioral Neuroscience; Aug. 3. In 1966, he joined the faculty of Penn's School of Veterinary Medicine was promoted to professor in 1974. Morrison conducted pioneering research into the neurobiological mechanisms controlling sleep. Morrison was among a group of Penn faculty who, in the mid-1980s obtained NIH funding to establish a specialized center of research in obstructive sleep apnea. In 1991, he spearheaded this center's expansion into the Center for Sleep and Respiratory Neurobiology, the first academic center dedicated to sleep research. He co-founded the Sleep Research Society and served as its president; he also served as president of the World Federation of Sleep Research Societies. Morrison also served on task forces on ethical animal research in the U.S. Public Health Service and the NIH; he founded the National Animal Interest Alliance and served as president of the Pennsylvania Society for Biomedical Research. His numerous awards included the Sleep

Research Society Distinguished Scientist Award and the American Association for the Advancement of Science Scientific Freedom and Responsibility Award.

Robert J. Schwartzman, MD'65, GME'69, a neurologist; Aug. 4. Schwartzman completed an internship and residency in internal medicine at Duke University, a residency in neurology at the Perelman School of Medicine, and a fellowship at the National Institutes of Health. At the University of Texas Health Science Center in San Antonio, he was professor and chief of Neurology and program director. He later served as chair of Neurology at Thomas Jefferson University, then Drexel University College of Medicine. Notably, he was a caregiver to former President Gerald Ford after his stroke. An expert on complex regional pain syndrome (CRPS) and the use of ketamine as a treatment, Schwartzman helped found the first CRPS clinic in the nation.

Angelo T. Scotti, MD'65, an internist; Sep. 18. Scotti completed an internship at Philadelphia General Hospital, followed by two years in the U.S. Public Health Service at the CDC, where he taught and conducted research. He then trained at The Mayo Clinic in internal medicine and infectious diseases. He treated patients at his practice in Little Silver, NJ, for more than 56 years.

Gordon F. Schwartz, MD, GME'69, MA'90, a surgeon and oncologist; Aug. 16. After earning his medical degree from Harvard Medical School, Schwartz served as a captain and doctor in the U.S. Army. At Thomas Jefferson University Hospital he rose to full professor and was director of Surgical Academic Programs, the Surgical Residency Program, and the Fellowship in Breast Diseases. He also taught surgery at the Perelman School of Medicine and the College of Physicians and Surgeons of Columbia University. He later became the director of the Breast Care Center at Jefferson. He received the 1996 Race for the Cure Award from the Susan G. Komen Breast Cancer Foundation.

1970s



J. Sanford "Sandy" Schwartz, MD'74, GME'77, Leon Hess Professor of Medicine and Health Care Management and Economics; June 24. After medical school and residency at Penn, Schwartz began his career as an instructor in the department of Medicine and was soon staff physician and researcher, conducting clinically oriented health services research that focused on assessment of medical interventions and practices, medical decision making, and the adoption and diffusion of medical innovation. He went on to become a full professor in both Wharton and the School of Medicine. He also served as executive director of the Leonard Davis Institute of Health Economics, co-director of Penn's Robert Wood Johnson Clinical Scholars Program, and faculty master of Fisher Hassenfeld College House. He received numerous recognitions and awards. He was the founding director of the American College of Physicians' Clinical Efficacy Assessment Project and founding editor of the *American Journal of Managed Care*. He served as vice chair and as a council member of the National Academy of Medicine.

Joel S. Bennett, MD, GME'75, professor of Medicine; June 21. Bennett was an internationally recognized authority on platelet biology. His important findings paved the way for the development of drugs to block platelet aggregation, such as abciximab and eptifibatid, which have been used in millions of patients. Bennett was recognized by the American Society for Clinical Investigation and the Association of American Physicians for the

excellence and breadth of his work. The American Society of Hematology named him a recipient of their Beutler Prize, the society's highest honor.

Walter J. Finnegan, MD, GME'76, an orthopedic surgeon; Aug. 28. Finnegan performed public service with the United States Public Health Service in Salt Lake City, UT, before completing his residency in Orthopedic Surgery at the Perelman School of Medicine. He earned a juris doctor at Nova University, was a member of the Florida Bar Association, and performed independent medical-legal evaluations at Orthopedic Medicolegal Opinions in Allentown.

James J. Nestor, MD'78, an internist; July 31. He was an internist in Saratoga, California in practice for more than 20 years.

1990s

Andrew Freese, MD, GME'97, PhD, a noted neurosurgeon; June 30. Freese conducted the first gene-therapy surgery for a neurological disorder on a human being. He was the chief of Neurosurgery and neurosurgical medical director at Brandywine Hospital. While pursuing his doctorate at MIT, he and his adviser Bob Langer, the founder of Moderna, together published papers and received patents. Upon completing his training, he joined the Department of Neurosurgery at Thomas Jefferson University, where he was vice chairman and associate professor, and director of Neurosurgery Research. Freese became a professor of Neurosurgery at Drexel University College of Medicine and director of the Graduate Spine Center. Freese published extensively. He is renowned for his pioneering work on gene therapy for neurological diseases.

FACULTY

Aaron T. Beck, MD, HON'07, professor emeritus of Psychiatry; Nov. 1. Beck joined the Department of Psychiatry in 1954, developed his pioneering theories

of psychopathology and psychotherapy in the early 1960s, and became globally recognized as the originator of Cognitive Behavior Therapy (CBT). He developed self-report measures of depression and anxiety, including the Beck Depression Inventory and the Beck Hopelessness Scale, which are widely used today in clinical practice as well as re-



search. Over the course of a career spanning more than 70 years, Beck published more than 600 scientific papers and 24 books; therapists around the world have adopted CBT, and thousands of clinical studies have validated its efficacy in treating a wide range of disorders. Among many awards and honors, Beck received the 2006 Albert Lasker Award for Clinical Medical Research, the Gustav O. Lienhard Award for the Advancement of Health Care from the National Academy of Medicine, the American Psychiatric Association Adolf Meyer Award for Outstanding Contributions to Psychiatry, and the American College of Physicians William C. Menninger Memorial Award for Distinguished Contributions to the Science of Mental Health. In 2007 he was awarded an honorary degree from the University of Pennsylvania and was recognized with the Perelman School of Medicine's William Osler Patient Oriented Research Award.

Joel S. Bennett, MD. See Class of 1975.

Richard Allen Davis, MD, associate professor emeritus of Neurosurgery; May 7. Davis earned a bachelor's degree in biology from Princeton University in 1947 and completed medical and anatomy degrees and residency at North-



western under the direction of his father, the pioneering neurosurgeon Loyal Davis. Appointed to Penn in 1958 by Isador Ravdin, Davis rose to associate professor and HUP neurosurgeon, retiring from both positions in 1989. His research on neurological connections to gastric secretion was published more than 50 peer-reviewed papers in medical and scientific journals.

Robert Elder Forster II, MD.
See Class of 1943.

Andrew Freese, MD, PhD. See Class of 1997.

Ronald Steven Litman, DO, LPS'08, ML'18, professor in Anesthesiology and Pediatrics; Apr. 21. Litman came to the Perelman School of Medicine in 2001. Litman participated in medical missions to Mexico and Central America. A longtime member of the Society for Pediatric Anesthesia, Litman was chair of the FDA Anesthetic and Analgesic Drug Products Advisory Committee, medical director at the Institute for Safe Medication Practice, and medical director and vice chair of the Malignant Hypothermia Association.

Adrian R. Morrison, Jr., DVM, PhD. See Class of 1964.

J. Martin Myers Jr., MD, professor emeritus of Psychiatry; July 20. Myers received an MD from the Johns Hopkins University School of Medicine and, after serving in the Medical Corps of the US Army, completed psychiatric training at Johns Hopkins. Coming to the Institute of the Pennsylvania Hospital in 1951, he became its medical director/psychiatrist in chief; in 1970, he headed a developing and expanding Department of Psychiatry at Pennsylvania Hospital, including its Hall-Mercer Community Health Center. He retired in 1985. He was a founding fellow, secretary-general, and president of the American College of Psychiatrists and distinguished life fellow at the American Psychiatric Association.

Elias Schwartz, MD, professor emeritus of Pediatrics; July 17. Schwartz earned a bachelor's and a medical degree Columbia University and served in the Air Force caring for the children of military personnel. Schwartz launched his academic career in 1967 by serving as a professor of hematology and on the pediatric staff of Thomas Jefferson University. In 1972, he was hired as a professor of pediatrics at Penn. He served as the chair of the hematology division and was named physician-in-chief at Children's Hospital of Philadelphia in 1991. He retired in 1997. Schwartz was a member of numerous professional societies, served on editorial boards of several medical journals, and published over 150 research papers.

J. Sanford "Sandy" Schwartz, MD. See Class of 1974.

Michael B. Simson, MD, an emeritus professor of Cardiology; Sep. 14. Simson earned BA and MD degrees at Harvard. In 1971, he joined the Penn faculty. He was named the Samuel Bellet Associate Professor of Medicine in the department of Cardiology in 1984, a position he held until his retirement in 2021. Simson was a leading researcher and specialist in rhythm disorders of the heart. He invented an electrocardiograph instrument designed to alert doctors of ventricular tachycardia which was since patented and mass-produced.

Frank Alexander Welsh III, PhD, emeritus professor of biochemistry; April 2. Welsh earned a BS in chemistry from Stanford University in 1965 and a PhD in pharmacology from Washington University in 1970. He joined Penn's faculty in 1973 in the department of neurosurgery and taught biochemistry. Welsh conducted celebrated scientific research at Penn, focusing on strokes and cerebral blood flow, and published more than 80 peer-reviewed articles. His published research includes collaboration with adjunct professor of Neurosurgery Katalin Karikó and her now-famous studies of messenger RNA.

LEGACY GIVING

Grateful Patients Support the Next "Moonshot"



Maryanne and Mike Plesher on a gondola ride in Venice, Italy.

Maryanne Plesher and her late husband, Mike, shared a full and extraordinary life with plenty of "out of this world" experiences. As a former RCA Aeronautics employee, Mike designed the camera used for the first moon landing and helped to capture the incredible footage we have today. Maryanne had an illustrious career with Bristol Myers Squibb, paving the way for women working in the pharmaceutical sector. Together, the couple traveled the world and even cultivated their own farm in New Jersey—raising prize-winning beef cattle.

When it came to their healthcare needs, they both knew they could trust Penn Medicine. "Through my job, I've worked with a lot of hospitals, and Penn Medicine was always at the top," says Maryanne, "My husband and I always felt at ease." Mike was 45 years old when he discovered he was born without an ascending aorta; the cardiology team at Penn was able to build one grafted from his shoulder. Both received care at the Abramson Cancer Center: Mike for thyroid and kidney cancer, and Maryanne for breast and uterine cancer.

"I am so grateful for my wonderful doctors. They saved Mike's life, and they saved my life," she says. "I cannot say it enough, the two of us were so happy with the care we received at Penn."

After Mike passed away in 2016 from a stroke, Maryanne was interested in finding a way to commemorate the time they spent together and honor their shared legacy as trailblazers. She chose to name Penn Medicine as the beneficiary of her brokerage account—making a deeply meaningful and impactful gift: "Penn was always there for me and Mike when we needed them. I want to help fund the life-saving research at Penn Medicine." Through planned giving, Maryanne can thoughtfully pass on her gratitude and share the gift of healing.

Planned gifts, like Maryanne's generous donation, are one small step for innovative clinical trials and one giant leap for life-saving treatments and interventions that reach patients around the world.

► **For more information, please visit our website at:**
www.pennmedicine.org/plannedgiving.

Planned giving is often described as the final piece of a philanthropic puzzle. Figuring out how this important piece can work best for you, your family, and your philanthropic goals is what we do best. If you are a donor who wants to give through a retirement plan (IRA, 401(k), 403(b), etc.) or through the Charitable IRA Rollover, please contact Christine S. Ewan, JD, senior executive director of development, at 215-898-9486 or at cewan@upenn.edu.

THE PLACE TO BE

By Lauren Ingeno

Photos by Margo Reed



FUTURE PROGNOSIS

The large windows in patient rooms and family lounges in the Pavilion offer sweeping views of the city skyline, West Philadelphia, and Franklin Field.

When Barbara Agurkis started feeling unwell at her home in Haddon Township, New Jersey, she insisted that her son drive her across the bridge to the Hospital of the University of Pennsylvania, where she had undergone a liver transplant months earlier and was continuing to receive care. She had no idea that just two days later, she would be part of what she is calling the “great migration” from HUP into Penn Medicine’s brand new, 1.5 million-square-foot Pavilion, which opened its doors to Agurkis and more than 300 other patients on Saturday, October 30.

Starting at 9 a.m., through a bridge lined with pink and white balloons, Penn Medicine staff members and volunteers safely wheeled patients to their destinations in the new building. Nurses applauded and cheered. Music from a Philadelphia Orchestra brass trio filled the hospital corridors.

The move marked the start of a new era for patient care at HUP. The 17-story Pavilion houses 504 private patient rooms, 47 operating rooms, and HUP’s new emergency department, as well as inpatient care for cardiology and cardiac surgery, medical and surgical oncology, neurology and neurosurgery, and transplant surgery.

Agurkis, a physical therapist assistant herself, was in good spirits by the time she had settled into her eleventh-floor room in the Pavilion that Saturday afternoon.

“I didn’t expect all of this,” she said. “It’s been mind-blowing.”

The sweeping view from her window overlooked Franklin Field and the Philadelphia skyline, and she was flipping through channels on her new room’s big-screen TV. For Agurkis, as she awaited results from tests and imaging, the change of scenery and comfort of her new surroundings put her at ease.

“If you have to be in the hospital, this is the place to be.”



Balloons and flowers lined the path to the Pavilion for the 310 patients who made the move on October 30th.

► **Explore more stories about the Pavilion online at PennMedicine.org/pavilion-news.**

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VOICES AGAINST VIOLENCE

Every night, trauma centers across the city of Philadelphia are inundated with patients who have been gunned down, mostly young Black men. This epidemic of gun violence that has raged for decades has changed, though. It has converged with the COVID-19 pandemic, as well as with the rising movement for racial justice. In the last year, too, U.S. federal agencies have once again begun distributing grants for research into gun violence, and new local coalitions in Philadelphia are beginning to work together.

▶ Read more perspectives on addressing gun violence on p. 14.

