



Together



University of Pittsburgh  
School of Medicine  
2024 Annual Report

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Opposite: Families from the Greater Hazelwood community joined members of the University community at Hazelwood Green for a few events this year, including the commemoration of the final beam raising for Pitt's BioForge.

Right: Dean Anantha Shekhar with Naudia Jonassaint, an MD, MHS, MBA who is the acting chief of gastroenterology, hepatology and nutrition and associate dean for clinical affairs.



## Together

Time and time again, new faculty recruits tell me they love the spirit of collaboration they've found as they settle in at the University of Pittsburgh School of Medicine. As we radically improve health and health care, we will do so by coming together with our neighbors and other partners. Here at the School of Medicine, it's how we operate.

What does that look like? It's team science and much more. We probe for answers across disciplines, across platforms, across continents. We educate our students so that they truly appreciate what other care providers bring to the table. We get to know our neighbors and the barriers they face to well-being. We partner with the people who are actually suffering from the conditions we are trying to treat. We want their input—not only when it's time to test a new therapy, but before that, as we are designing a study. And we incorporate their voices into our curriculum, so that the doctors and scientists we send into the world understand the perspectives of those they will serve.

I hope you'll take a few moments to peruse this annual report to learn about some of the many ways Pitt Med people teamed up last year to build fundamental biomedical knowledge, transform care, turn healing ideas into reality and much more. I am very proud to be part of this growing community, and I thank the many generous supporters who are integral members of our team.

Anantha Shekhar, MD, PhD  
*Senior Vice Chancellor for the Health Sciences  
John and Gertrude Petersen Dean, School of Medicine*

**“Our students view themselves as alumni of both schools.”**

—JAMES FAEDER



A few blocks away

**PITT AND CARNEGIE MELLON ARE TRAINING THE NEXT GENERATION OF BIOMEDICAL LEADERS**

The University of Pittsburgh and Carnegie Mellon University are more than just neighbors. Together, they’re training the next generation of biomedical leaders as their faculty pursue life-changing research.

“Over the years, the two universities have collaborated effectively to attract the best students to the city because of their complementary strengths,” says **Saleem Khan**, PhD associate dean for graduate studies and academic affairs and professor of microbiology and molecular genetics in Pitt’s School of Medicine. “It helps both

**“This is a special part of the Pittsburgh community. There are elite institutions that are unable to collaborate between departments. But we’re able to do that here across institutions.”**

—DOUGLAS WEBER

universities attract and recruit faculty and expands the breadth of their research.”

He says it also gives faculty bargaining power to pull in grants. In fiscal year 2023, their collaborations included 65 principal investigators and spanned 48 awards worth over \$15.8 million, all told.

**Theresa Mayer**, vice president for research at Carnegie Mellon, notes that, overall, “the University of Pittsburgh is far and away CMU’s most frequent and deepest partner in research.”

**James Faeder**, a PhD Pitt Med associate professor of computational and systems biology and Pitt’s program director for the joint Carnegie Mellon–University of Pittsburgh PhD Program in Computational Biology, says there are intangible benefits to Pitt and Carnegie Mellon’s proximity, as well. Faculty from the universities don’t just work in the same neighborhood, they often live on the same blocks and socialize outside the lab. And on the student side, he points to the pride they take in their joint education:

“Our students view themselves as alumni of both schools.”

The serendipitous geography has made it easy to forge alliances. Dozens of Pitt and Carnegie Mellon students are enrolled in formal programs between the universities. Examples include the Computational Biology PhD program, the Medical Scientist Training Program, the Molecular Biophysics and Structural Biology graduate program and the Program in Neural Computation. And there are more informal collaborations than you can shake a pierogi at.

“This is a special part of the Pittsburgh community,” says **Douglas Weber**, a PhD and the Akhtar and Bhutta Professor in mechanical engineering and neuroscience at Carnegie Mellon. “There are elite institutions that are unable to collaborate between departments. But we’re able to do that here across institutions.”

Above, Carnegie Mellon’s Scotty mascot donning Tartan red as well as Pitt’s blue and gold. Right, Pitt Med students Anthony Mauro and Edra Ha enjoy working with their neighbors.



**“The goal is to get them acclimated to working with underserved populations.”**

—TARA MCCOY

Throughout our city

**MED STUDENTS GET TO KNOW THEIR NEIGHBORS**

**Edra Ha** kept herself busy in the kitchen, plating for more than a dozen people who would enjoy a Shabbat meal and were grateful just for each other’s company.

The second-year Pitt Med student spent this particular Friday night in March 2024 helping at the Sally and Howard Levin Clubhouse in Squirrel Hill, where people with psychiatric conditions (and, in some cases, intellectual or developmental disabilities) socialize and build life skills.

Pitt launched a new med school curriculum in 2023 that emphasizes building and strengthening ties between future physicians and the neighbors they’ll serve. Its Community Alliance Program (CAP) places every incoming student with neighborhood organizations in Greater Pittsburgh.

One of those organizations is the Branch, which works to support independence and create a sense of community for people with intellectual, developmental and psychiatric disabilities and their families.

“This new program in the curriculum is not focused on putting the students in a clinical health care setting,” says **Tara McCoy**, CAP assistant director. “The goal is to get them acclimated to working with underserved populations.”

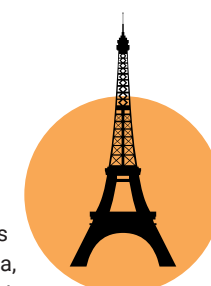
The 24 partner agencies that the students work with offer services ranging from mental health and disability support to feeding families or offering members of the LGBTQ+ community a place to enjoy a sense of belonging.

“The biggest thing is the outreach aspect,” says **Anthony Mauro**, a second-year med student paired with the Maker’s Clubhouse in Homewood—an organization that provides science, technology, engineering, agriculture and math (STEAM)-oriented programs for kids. “You’re usually in a sterile classroom reading books and learning about hard science. Even in clerkships and clinics—you don’t really go out to the community much.

“I had one experience where I was talking to a kid about something, and we started talking about the skin, and I ended up giving him little factoids about it—about how it works and things like that. It felt good to go out there and see these kids and help them learn in a community environment rather than in a clinic, where you’re only seeing someone for an appointment every six months.”

Around the world

**THINKING GLOBALLY**



School of Medicine collaborations connect Pittsburgh with France, China, Kazakhstan, Ghana, Honduras, India, Ireland, Italy, Kenya, Malawi, the Philippines and many other nations.

For instance, 2024 marks the sixth edition of i2Eye, which brought to Pittsburgh nearly 140 scientists, clinicians and engineers mostly from Pitt and Paris’s Institut de la Vision, but also from other top institutions in Europe and the United States.

“These investigators coming from different fields rarely gather in this way,” says **José-Alain Sahel**, Pitt’s Eye and Ear Foundation Professor and Chair of Ophthalmology, UPMC Vision Institute director and founding director of Institut de la Vision. “The engineers developing new technologies seldom have opportunity for direct interactions with the clinicians that may eventually use their tools to study diseases or test the efficacy of new treatments.”

Thanks also to a partnership with Pitt since 2012, Nazarbayev University School of Medicine (NUSOM) in Astana, Kazakhstan, has gained a rare five-year, full accreditation on its first try. It is the only graduate-level MD program in Central Asia, where students typically go into med school directly from high school.

“We are absolutely delighted,” said NUSOM Dean **Massimo Pignatelli**, “and we are extremely grateful to the team from [Pitt Med].”



**“Our goal is to develop an oral medication that is ready for the first phase of human trials within five years.”**

—BILL CHEN

Restoring cognitive function

DESIGNS ON SLOWING DOWN BRAIN AGING

With support from a five-year, \$11.8 million award from the National Institute on Aging, researchers at the Aging Institute at the University of Pittsburgh aim to prevent mild cognitive impairment in late-onset Alzheimer’s disease by designing a novel drug to slow brain aging.

Nearly 14 million Americans could have Alzheimer’s by 2060—nearly double the current number—if effective interventions aren’t available, says coprincipal investigator (co-PI) **Bill Chen**, a PhD professor of medicine in the Division of Pulmonary, Allergy, Critical Care and Sleep Medicine, and deputy director for drug development at the Aging Institute.

“We have assembled a team with extensive drug development and AD [Alzheimer’s] experience, both in the preclinical and clinical arenas, who will investigate drug candidates that improve age-related declines in cognition,” Chen says. “Our goal is to develop an oral medication that is ready for the first phase of human trials within five years.”

He and co-PI **Stacey Rizzo**, a PhD associate professor of neurobiology at Pitt and deputy director for preclinical research at the Aging Institute, plan to augment the activity of an enzyme called nicotinamide phosphoribosyltransferase, or NAMPT, which regulates nicotinamide adenine dinucleotide, or NAD+, a protein involved in energy metabolism.

“As people age, there is a normal decline in NAD+ levels in the brain,” Rizzo explains. “Animal models have shown that a reduction in brain NAD+ is strongly associated with aging and cognitive decline, and that restoring NAD+ can improve cognitive function. We hope that will also hold true for AD patients.”

Loss of NAD+ is accelerated in preclinical AD models, she adds, because neurons are particularly vulnerable to a reduction in intracellular NAD+ levels.

During the past four years, the team has synthesized and tested more than 1,000 novel compounds and identified several lead classes of NAMPT enzyme activators. One of the most promising



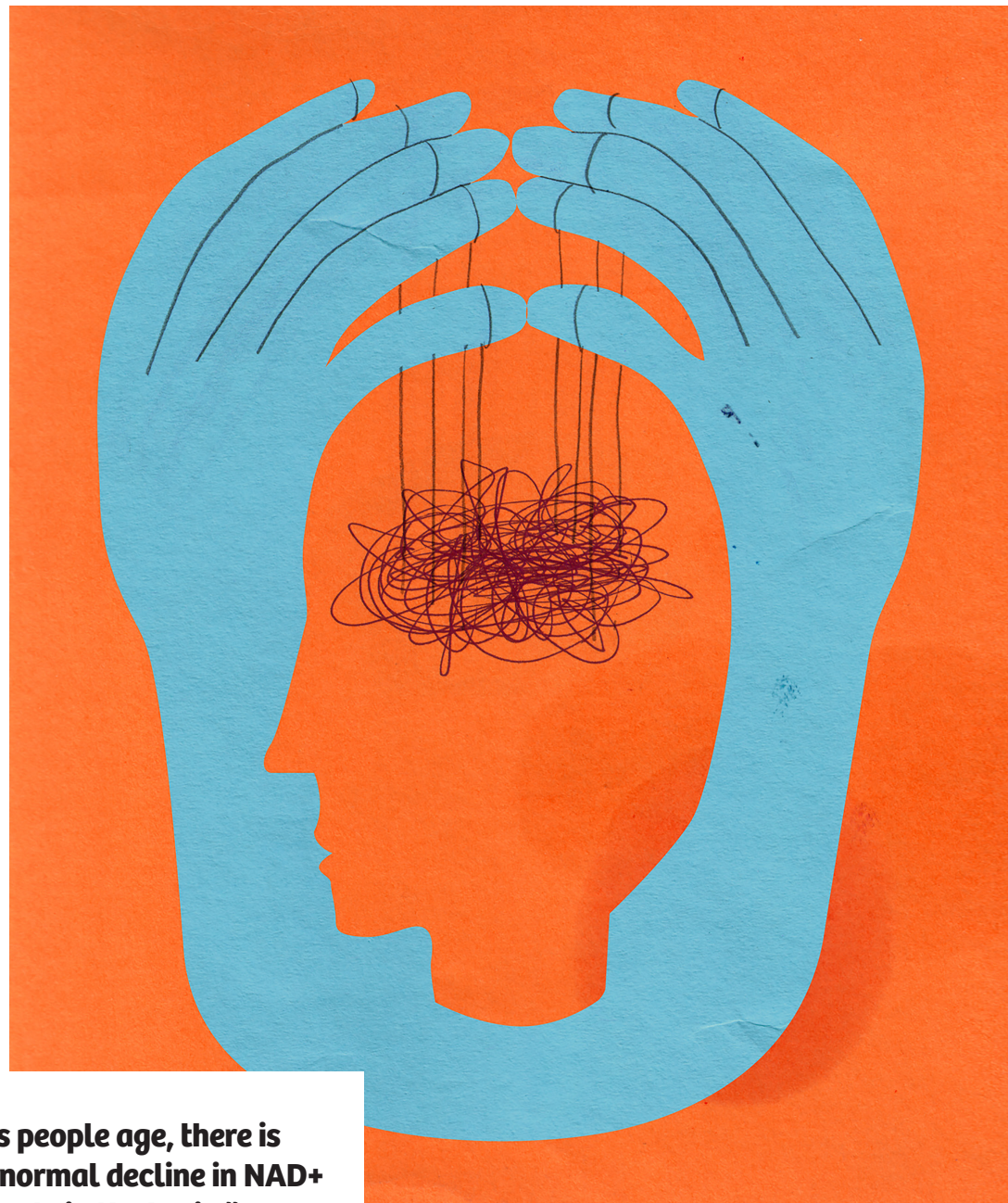
**“As people age, there is a normal decline in NAD+ levels in the brain.”**

—STACEY RIZZO

...molecules possesses potency at low concentrations and an optimal profile of absorption, distribution, metabolism and excretion. Pharmacokinetics studies are now underway.

The team is developing biomarker blood tests to monitor NAD+ dosing and evaluate its effectiveness.

Chen and Rizzo say their goal is to develop an NAMPT activator that maintains neuron NAD+ levels to prevent cognitive decline or boost levels to improve it. They caution that current NAD+ or NADH (another form of NAD) supplements aren’t likely to be effective because they are quickly metabolized and may not enter the brain.



Clinical trials to track

NEW PATHS EXPLORED FOR OVARIAN CANCER TREATMENT

Ovarian cancer research at Pitt has attracted an \$11 million National Institutes of Health grant that could help change how we treat the disease.

**Ronald Buckanovich**, an MD, PhD professor of medicine, and **Robert Edwards**, MD, the Milton Lawrence McCall Professor and Chair of Obstetrics, Gynecology and Reproductive Sciences, lead the NIH-funded Specialized Program of Research Excellence (SPORE) running three clinical trials that share a common question: Why is ovarian cancer so therapy resistant, and how can that be overcome?

Why is ovarian cancer so therapy resistant, and how can that be overcome?

Two trials focus on improving chemotherapy and immunotherapy. The third explores the effectiveness of PARP inhibitors, a cancer drug that targets and destroys BRCA mutated cells, mutations that are carried by roughly a fifth of ovarian cancer patients.

“The quicker we test new drugs, the quicker we can find out if they’re worth moving into the clinic, and [whether they’re appropriate] for everybody,” says Buckanovich.

Ovarian cancer is nearly impossible to detect early. That and its treatment resistance lead to poor outcomes for most women diagnosed. For the SPORE’s patient-participants, this challenging prognosis makes their involvement more meaningful.

The study participants have hope, Buckanovich says. “But it’s really about altruism: helping all the women who come next to know if these therapies will work for them.”



Microproteins, good or bad?

‘HIGH-RISK, HIGH-REWARD’ RESEARCH

Embedded within our genome are thousands of tiny genes with instructions to make small proteins with no obvious function. The National Institutes of Health has awarded a team of Pitt Med researchers a five-year, \$7.6 million Director’s Transformative Research Award to find out how these microproteins interact with the immune system. If they are seen as invaders, they could be related to autoimmune diseases.

The award is part of the NIH’s High-Risk, High-Reward Research program, which supports transformative project proposals that are untested but have the potential to create or overturn fundamental paradigms.

Scientists developed a blood pressure drug from a small protein in Brazilian pit viper venom decades ago. Now, Pitt researchers are learning how microproteins interact with the immune system. Above, left to right, Anne-Ruxandra Carvunis, Alok Joglekar, Maninjay Atianand.

“Are microproteins good for health because they help fight pathogens or bad for health because they trigger the immune system, or both?” asks **Anne-Ruxandra Carvunis**, a PhD associate professor of computational and systems biology and one of the principal investigators. “We are looking forward to finding out. This will be fun!”

Carvunis will work with Pitt co-PIs **Alok Joglekar**, a PhD assistant professor of immunology with a joint appointment in computational and systems biology, and **Maninjay Atianand**, a PhD assistant professor of immunology. **Rasi Subramaniam**, a PhD at the Fred Hutchinson Cancer Center in Seattle, is a fourth investigator.



The young brain is even more astonishing than we thought

TEAMING TO UNDERSTAND PLASTICITY

**Nicholas Sepcic** is remarkably upbeat and articulate for a young man who is missing a sizable part of his brain.

Now a 20-something geotechnical engineer in Salt Lake City, Utah, he underwent brain surgery in 2013 at UPMC Children’s Hospital of Pittsburgh to put a stop to his increasingly serious seizures from epilepsy. “There were no aftereffects, which I was super grateful for,” Sepcic says. “I have a scar and a little dent in my head, but I haven’t had a seizure since.”

While his story is astonishing, he is one of scores of patients who have bounced back from major childhood brain surgery, retaining or relearning many of their cognitive skills.

Through her research into brain plasticity, **Marlene Behrmann**, a renowned vision researcher and a PhD professor of ophthalmology at the University of Pittsburgh, is the first scientist to show how well some patients who had an entire half of their brain removed can identify words and faces. Those two functions are normally seated on different sides of the brain—face identification on the right, word recognition on the left.

“Plasticity is present in the brain for far longer than we previously thought,” says Behrmann. “We have kids who have had surgery in their teens who are showing much better performance than you might have predicted. They are showing roughly 85% accuracy in word and face identification with 50% of the brain. Typically matched controls score roughly 95%.”

Her studies would not have been possible without the participation of more than 100 young patients and their families, like the Sepcics. Behrmann’s work is part of a growing body of evidence that the brain can adapt to surgery and strokes and other injuries much later in life than once believed.

**Breanna Boyer, in her early 20s, has had three brain surgeries since she was 12 to treat epilepsy caused by tumors on the left side of her brain.**

**Breanna Boyer**, in her early 20s, has had three brain surgeries since she was 12 to treat epilepsy caused by tumors on the left side of her brain.

In the second operation, completed when she was 15, doctors removed all of her left occipital lobe, as well as part of her temporal lobe.

Her road has not been easy; but today, Boyer works in Erie finding housing for homeless people. She is able to live independently with the help of her human safety net:

“I have a pretty good group of friends who have supported me. Also, my mom, dad and stepmom are there 100% of the time.”

Says neurologist **Christina Patterson**, an MD associate professor of pediatrics, “Kids continually surprise me in a joyful way. Kids who once had devastating epilepsy are leading functional, productive lives.”

Patterson is among Behrmann’s clinical colleagues who work with young epilepsy patients. She tells parents whose children face surgery that their children’s capacity for growth “is practically exponential. Kids are still making those connections, and their brains are able to rewire.”

Behrmann wants to crack the code of why children’s brains are as adaptable as they are. In a recent study, her team showed that when children have part of their brains removed, the connections among brain regions are “looser” than they’d typically be; their brains are more ready to make new connections and reorganize themselves.



Noise-induced hearing loss understood

LOUD AND, NOW, CLEAR

Anyone who has been to a loud concert knows the feeling of ringing ears. Some people experience temporary or even permanent hearing loss after the blaring stops.

Pitt researchers have discovered a molecular mechanism for this kind of hearing loss and shown medication can mitigate it. They announced their discovery in February 2024 in the Proceedings of the National Academy of Sciences.

They found that noise-induced hearing loss stems from cellular damage in the inner ear that is associated with an excess of free-floating zinc—a mineral that’s essential for proper cellular function and hearing.

Through experiments in mice and on isolated cells of the inner ear, the team found that zinc levels in the inner ear spike hours after exposure to a loud noise. The exposure, they found, releases zinc into spaces within and between cells, which ultimately leads to cellular damage and disrupts normal cell-to-cell communication.

Yet there’s a possible solution: Experiments showed mice treated with a slow-releasing compound that traps excess free zinc were less prone to hearing loss and were protected from noise-induced damage.

“This exciting discovery was only possible thanks to the collaboration and complementary scientific expertise of our colleagues in the School of Medicine,” says the paper’s senior author, **Thanos Tzounopoulos**, a PhD and director of the Pittsburgh Hearing Research Center at the School of Medicine.

**Amantha Thathiah**, a PhD assistant professor of neurobiology, offered expertise in the mechanisms by which cells degenerate, and **Chris Cunningham**, a PhD assistant professor of otolaryngology, brought insight into the biology of cochlear cells. Other authors of the study are School of Medicine postdoc **Brandon Bizup** and Pitt undergraduate **Sofie Brutsaert**.

The researchers are now developing a treatment to be tested in preclinical safety studies, hoping to develop an over-the-counter option for hearing loss prevention.

**Pitt researchers have discovered a molecular mechanism for “ringing ears.”**

Studies that mimic aerosol exposure key to new insights

ADDRESSING THE THREAT OF BIRD FLU

Spreading across the globe among birds and mammals, a new strain of H5N1 avian influenza A that appeared in 2021 has raised concerns about the virus’s threat to humans.

Pitt’s **Simon Barratt-Boyes**, a PhD professor of infectious diseases and microbiology in the School of Public Health, and **Douglas Reed**, a PhD associate professor of immunology in the School of Medicine, have built an improved model to test ways to prevent the disease.

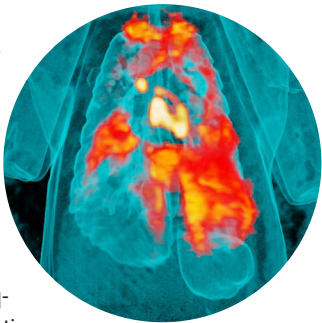
Published papers had reported that macaques exposed to H5N1 through inoculation of liquid in the nose and throat didn’t develop the severity of disease seen in humans. Barratt-Boyes and Reed hypothesized that exposure resulting from inhaling the H5N1 virus in an aerosol might be more likely to resemble severe human disease.

To mimic aerosol exposure, Reed used a vibrating mesh nebulizer with a glovebox biosafety cabinet. The device creates a fine mist by passing an electric current through a metal mesh, causing it to vibrate and separate any liquid traveling through it into tiny aerosol particles. “We saw a massive inflammatory response to the infection. And that’s almost identical to what’s been reported in humans,” says Reed.

In 2017, the researchers were the first to develop a macaque model of severe avian flu disease. In 2023, they reported in iScience that macaques exposed to lower doses of the virus still got severely sick and that vaccinated macaques survived exposure.

While their results indicate that vaccines are possible, they hope to do even better. “One of the things we saw with SARS-CoV-2 was the use of monoclonal antibodies and antivirals, like remdesivir and Paxlovid, as potential therapies,” says Reed.

Barratt-Boyes and Reed are now studying whether a monoclonal antibody that is protective against human influenza viruses can also protect against H5N1 in their infection model.





Chandan Sen is advancing tissue nanotransfection, which uses electrical pulses to deliver genetic codes to the skin.

**“Our work here at Pitt McGowan will not only be about mending tissues and restoring function, it will be about renewing the hope of the people we serve.”**

—CHANDAN SEN



He wants to ensure that patients from all backgrounds throughout Pennsylvania receive the finest care: “The first thing is adherence to standards of care. We have to disseminate awareness to make sure the people who need care are referred to the right clinics.”

To that end, his team received a supplemental \$1 million from the National Institutes of Health dedicated to enrolling underrepresented minorities in clinical trials. He’s teamed up with **Nancy Gauvin**, associate dean for equity, diversity, inclusion and community engagement in the School of Health and Rehabilitation Sciences, and has engaged with congregations at Black churches. He’s also setting up research sites in rural areas.

As he put it in his inaugural address as director of McGowan, “Our work here at Pitt McGowan will not only be about mending tissues and restoring function, it will be about renewing the hope of the people we serve.”

High tech meets equitable care

CHRONIC WOUNDS AND HOPE

**Chandan Sen** has made collaboration a cornerstone of his work to improve wound care for patients today and tomorrow. The new director of the McGowan Institute for Regenerative Medicine brought a team of 43 people, including 14 faculty members, with him when he moved from Indiana University to Pitt in 2023.

Many of them are working together to pursue new frontiers in wound healing. Sen and **Sashwati Roy**, both PhD, MS professors of surgery, are developing electrically charged dressings that can help clear nasty films of bacteria that cause infections that plague chronic wounds.

Sen is also working with partners at Pitt and UPMC to advance a technology he’s pioneered called tissue nanotransfection (TNT). TNT uses electric pulses to deliver genetic codes to the skin that allow it to acquire functions characteristic of other types of tissue and cells. The approach could offer a new way to repair damaged and diseased tissue.

Sen and his team, though, are not waiting for radically novel approaches to help patients now. He’s the special projects chair of the Diabetic Foot Consortium, a multicenter network that aims to improve wound care for the more than 29 million people in the United States who live with diabetes, which impairs the healing process, especially for foot wounds.

Breakthrough adapts tech that’s already available in the clinic

STIMULATING FINDINGS ON PHANTOM LIMB PAIN

More than 1.5 million people in the United States live with lower-limb amputation. Many also live with a painful reminder of what they’ve lost.

Phantom limb pain is the perception that pain is coming from an amputated limb—in **Lauren Gavron**’s case, her missing foot.

“It’s just awful,” says Gavron, who lost her lower left leg to amputation in 2016. “I have pain in my toes right now—they’re screaming. I’m moving my toes right now, and there aren’t even any toes there.”

Gavron has renewed hope, though, thanks to work by scientists at the University of Pittsburgh. They published a study showing that spinal cord stimulation, relatively common as a treatment for chronic pain, has multiple benefits for lower-limb amputees.

The researchers paired electrical stimulation of the spinal cord with a sensorized insole in the patient’s shoe. The patients in the study reported pain reduction of 70% on average. Along with relieving phantom limb pain, it also helped restore sensation and improved gait and balance.

The interdisciplinary team at Pitt’s Rehab Neural Engineering Labs that led the study involved faculty in Pitt’s bioengineering, physical medicine and rehabilitation, and neurological surgery departments, as well as researchers from Carnegie Mellon University.

Their work used electrodes that are already clinically available for other purposes.

“Hopefully,” says **Lee Fisher**, a PhD and Pitt associate professor of physical medicine and rehabilitation, “we can leverage that existing knowledge and infrastructure to make that process more straightforward than it would be if we were developing new surgical procedures and devices that aren’t used for something else clinically.”

**The patients in the study reported pain reduction of 70% on average.**





Treatment for lethal eye melanoma

EYES ON CANCER'S 'COLD CASES'

Uveal melanoma is notoriously difficult to treat. Many researchers assumed that this rare and deadly eye cancer was immunogenically “cold,” meaning that cancer-fighting T cells can’t get into tumors to do their job.

“The thinking was that immunotherapy for uveal melanoma was a dead end,” says **Udai Kammula**, MD associate professor of surgery and director of the Solid Tumor Cell Therapy Program at UPMC Hillman Cancer Center. “But we thought that these challenges actually made it the perfect cancer to study because it would act as a template for other cancers that don’t respond to immunotherapy.”

**“We thought that these challenges actually made it the perfect cancer to study because it would act as a template for other [stubborn] cancers.”**

—UDAI KAMMULA

When he and his team analyzed 100 metastatic tumors from uveal melanoma patients, they found that over half were chock-full of T cells (Nature Communications, April 2024). Although ineffective at fighting tumors within patients, some of the T cells were able to kill tumor cells in a lab dish, leading Kammula to deduce that something in the tumor microenvironment was shutting them down.

His solution? Take the tumor microenvironment out of the equation with “adoptive” cell therapy. This approach involves extracting and selecting the most potent T cells from a patient’s tumor biopsy, multiplying them in the lab, then reinfusing them into the patient.

“Adoptive therapy allows us to rescue T cells from the suppressive tumor microenvironment and successfully treat some patients,” says Kammula. UPMC Hillman is currently the only cancer center in the United States treating uveal melanoma patients with this form of therapy.

To further improve this treatment, Kammula and his team developed a clinical tool that analyzes gene expression in a patient’s tumor to predict whether that patient is likely to respond. Now, the researchers are applying what they’ve learned from uveal melanoma to other difficult-to-treat tumors such as pancreatic cancer.

Their bench-to-bedside work relies on teamwork among research laboratories, a cell manufacturing team and a clinical trials team. They all meet weekly. “This allows us to make progress at a rapid pace,” Kammula says.

Consortium develops bedside whole-blood TBI test

CONCUSSION DIAGNOSIS ON DEMAND

In just 15 minutes, a new blood test can identify a concussion with 97% accuracy based on only a small venous blood draw.

The device’s recent FDA approval means physicians can tell whether patients have concussions right at their bedsides, rather than waiting to have samples analyzed by a lab. The test measures two biomarkers from the brain that may be released into the bloodstream, indicating a possible brain injury.

Pitt clinical researchers were key contributors to a collaboration that developed the new whole-blood test. They’re part of a consortium dedicated to diagnosing and treating traumatic brain injury (TBI) that includes partners such as the University of California, San Francisco, the United States Department of Defense, and the medical device and health care company Abbott, which is manufacturing the test.



**In just 15 minutes, a new blood test can identify a concussion with 97% accuracy based on only a small venous blood draw.**

**David Okonkwo**, an MD, PhD Pitt professor of neurological surgery and a primary investigator on the project, expects it won’t be too far into the future before the test can be used on the sidelines at sporting events or at the scene of a car accident. The U.S. military is already using it to evaluate soldiers overseas, he notes.



Apps designed to help kids cope and to prevent suicide

JOINING FORCES TO SAFEGUARD OUR TEENS

**David Brent** has assembled a team of experts in behavioral health, computer science, health disparities and other fields to take on teen suicide, the rates of which increased by 70% from 2006–2016. Brent, an MD, is a Distinguished Professor of Psychiatry and holds Pitt’s Chair in Suicide Studies.

Suicide attempts rose most markedly in Black and Hispanic youth during those years. The investigators are partnering with Children’s Hospital of Philadelphia as well as UPMC to ensure that minoritized youth are well represented in their sample of 1,200 and that the interventions are appropriate for those kids and their families.

Through a center called ETUDES (Enhancing Treatment and Utilization for Depression and Emergent Suicidality), the researchers are developing and testing a suite of smartphone apps designed to help teens in the moment and to help their pediatricians assess risk and intervene. The team has had success in pilot studies—so much so that the researchers believe they may be able to reduce the incidence of adolescent suicidal behaviors substantially with such techniques.

“These tools are light touch and are easily transportable,” says Brent.

The apps target three major risk factors for suicide: cybervictimization, anhedonia (the inability to experience joy or pleasure) and disrupted sleep. “Sleep is a really potent risk factor for suicidality,” says Brent. The suite can track the mood of texts and activity levels; the apps also offer kids suggestions for coping or for improving their mood in real time. One has a chatbot for dealing with cyberbullies.

The studies are led by investigators here, as well as from Georgia Tech, the University of Oregon and elsewhere. In June, The Pittsburgh Foundation and Pitt’s Department of Psychiatry committed to funding the studies. Previous work out of ETUDES has resulted in nine federal grants.

“We’ve found that the more suicidal somebody is, the more they use the tools,” says Brent.

**The team has had success in pilot studies—so much so that the researchers believe they may be able to reduce the incidence of adolescent suicidal behaviors substantially with such techniques.**



Ken Gabriel and Heidi Ward at Hazelwood Green, where Pitt BioForge, a biomanufacturing innovation facility, is under construction. BioForge is expected to catalyze Pittsburgh's life sciences sector.

Greater Hazelwood neighbors explore life sciences

DNA AND DREAMS

On a snowy February morning, Pitt's Greater Hazelwood Kaleidoscope Summit brought together residents, nonprofit leaders and University representatives to explore the role the life sciences sector could play in uplifting the neighborhood.

"It's essential to connect the needs of the Greater Hazelwood community to what's happening in the life sciences so everyone can have a say in shaping the future," said Heidi Ward, an MBA who is Pitt's director of Greater Hazelwood Neighborhood Commitment and also lives in the community.

The daylong summit took place at Hazelwood Green, the 178-acre former Jones and Laughlin Steel site that's now home to multiple technology institutions, including the under-construction biomanufacturing innovation facility BioForge (see page 13). Pitt is also working to establish a Community Engagement Center in Hazelwood.

Andrea Coleman-Betts, a fifth-generation Hazelwood resident, attended to learn how younger generations might benefit: "I want my grandchildren and great-grandchildren to have better opportunities in workforce development, economic development and social development, especially in education."

The 130 attendees didn't only talk science at the summit. They also got to see it firsthand, extracting DNA from strawberries and exploring how T cells attack infections by playing a matching game.

Events like these are also instructive for Pitt students. Kim Le, then a senior in the David C. Frederick Honors College, contributed to a science activity booklet distributed at the summit.

The opportunity to interact with Greater Hazelwood residents, said Le, gave her "an overall feeling of connectedness to Pittsburgh as a whole."

**"It's essential to connect the needs of the Greater Hazelwood community to what's happening in the life sciences so everyone can have a say in shaping the future."**

—HEIDI WARD

Pittsburgh's 'right to win'

THE PLACE FOR BIOMANUFACTURING SOLUTIONS

Pittsburgh's strength in life sciences research is well established, but turning breakthroughs in the lab into companies that spur the local economy is a challenge of its own.

Pitt is working to overcome that and other hurdles with Pitt BioForge, a biomanufacturing innovation facility under construction at Hazelwood Green. At a panel discussion hosted by Pitt, the Brookings Institution and Carnegie Mellon University, Kaigham (Ken) Gabriel, the chief executive officer of BioForge, explained how the facility will play a key role in stimulating local life sciences activity.

The plan is to identify projects that have the potential for big impact but have been limited by difficulties in manufacturing—for example, precision biologic medicines like gene and cell therapies that are currently prohibitively expensive to manufacture at the necessary scale.

After choosing a project, BioForge will put together an interdisciplinary team and provide it with resources to spend 18 to 36 months solving the problem. BioForge expects to have 12 to 18 of these projects going on at a time. The idea is to get as many "shots on goal" as possible, Gabriel said.

At the same event, Rick Siger, Pennsylvania's secretary of community and economic development, identified life sciences as an industry where Pittsburgh has a "right to win," or an opportunity to successfully compete in the market, thanks to local expertise.

Gabriel and Siger shared the stage with Sam Reiman, director of the Richard King Mellon Foundation, which is supporting BioForge with \$100 million, its largest-ever gift for a single project. "Life sciences has been an area of interest going back to our founding," Reiman said. The foundation is partnering with Pitt to support a thriving life sciences ecosystem, so that a future biotech entrepreneur who is educated and trained here "doesn't have to think twice about whether they want to stay in Pittsburgh."

National Inventors Hall of Fame competition winner

TEST FOR 'TICKING TIME BOMBS'

Up to 5% of the U.S. population suffers from brain (cerebral) aneurysms. When these bulging blood vessels rupture, it's deadly—up to half of the patients die. Of those who make it to the hospital for surgery, two-thirds are left with lifelong, profound disabilities.

Currently, brain surgery is the only available treatment for aneurysm, and detection is complicated. In 2019, Pitt medical student Aditya Mittal and then-UPMC neurological surgery resident Kamil Nowicki, an MD, PhD, were researching potential aneurysm medications with Robert Friedlander, an MD Distinguished Professor and chair of neurological surgery.

Once the pair realized aneurysms leave fingerprints in the blood, they rushed to get Institutional Review Board approval to collect more samples from Pittsburgh hospitals. All of the patients they asked were eager to participate in this early detection research. Many patients and their families described "ticking time bombs" lurking in their bodies. Aneurysms tend to run in families, who live in fear of invasive surgery, impaired lifestyle and sudden death.

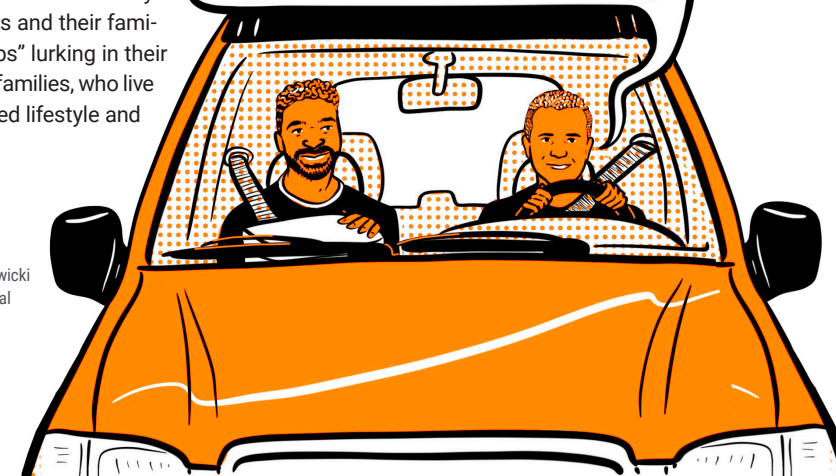
Nowicki and Mittal realized they could not only identify the presence of an aneurysm through the blood samples but also classify the severity of the problem. With guidance from Michael McDowell, an MD assistant professor of neurological surgery, they identified three fingerprints, each indicating a phase of inflammation.

Mittal and Nowicki took a year off from their studies and training to develop a test, named CAT-7.

Their test took first place at the National Inventors Hall of Fame's 2023 Collegiate Inventors Competition. CAT-7 also nabbed a 2023 National Science Foundation Small Business Innovation Research Phase I award.

Astria Biosciences—a startup founded by Nowicki and Mittal—is setting up a multisite clinical trial throughout the United States and United Kingdom. Astria aims to apply for FDA approval for CAT-7 in 2026.

HARDLY ANYBODY KNOWS IF THEY HAVE AN ANEURYSM. YOU GET THE WORST HEADACHE OF YOUR LIFE; AND IF YOU'RE LUCKY, YOU GET EMERGENCY BRAIN SURGERY. IT'S TERRIFYING.



Aditya Mittal and Kamil Nowicki collected samples from local hospitals for further study.



## More than three-quarters of adults over the age of 50 want to age in place. Only 10% of U.S. homes are “aging-ready.”

Practical considerations of aging in place

### HOME SWEET HEALTHY HOME

At Pitt’s Healthy Home Lab (HHL) on Oakland Avenue, just steps from the Cathedral of Learning, a 160-year-old former family home has taken on a new life. The researchers at work there aspire to change the way individuals live—and age—in their homes. HHL is a model of collaboration and community engagement. Here, medical professionals, scientists, engineers, rehabilitation experts and students from the Schools of Medicine, Health and Rehabilitation Sciences, Nursing, Public Health and Engineering come together with community partners to assess common conditions, evaluate and implement technology, and suggest services and interventions to optimize health and independence as people age.

### IN THEIR SHOES

HHL is also an education hotspot. In July 2024, wearing safety goggles covered in Vaseline, **Svea Cheng** navigated a walker through a cramped kitchen, simulating the experience of an older patient with glaucoma recovering from surgery. Her tasks included making a peanut butter and jelly sandwich, walking downstairs to feed the cat and going outside to water plants.

Cheng, a medical student in her Adult Outpatient Medicine Clerkship, was participating in a learning experience developed for health sciences students at HHL to help them better understand challenges facing patients as they return home. The case study was codeveloped with the Pitt Vaccination and Health Connection Hub; organizers began offering the experience in spring 2024.

“We just don’t get anything like this in the classroom. It was the first time that we had a role-playing experience where we were in the shoes of the patient,” Cheng said.

### NOT AGING-READY

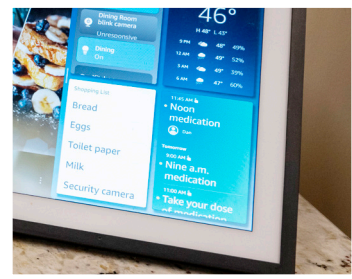
More than three-quarters of adults over the age of 50 want to age in place, yet according to the U.S. Census Bureau, only 10% of U.S. homes are “aging-ready.” Researchers at the HHL are developing high- and low-tech solutions, including stair-climbing devices and adaptable rail systems that add stability where needed. They are also creating assessments to monitor air quality in the home and exploring ways that older adults can embrace smart technology to improve their safety and well-being.

In collaboration with the Allegheny County Area Agency on Aging, the HHL team is implementing a new approach to the Community Aging in Place—Advancing Better Living for Elders (CAPABLE) program by integrating care partners/caregivers into the intervention.



### SMART TECH LENDS A HAND

HHL is also piloting a novel program with UPMC Health Plan called “Home Safe and Smart” that blends smart home technology with traditional home modifications to empower older adults to better manage and perform activities of daily living.

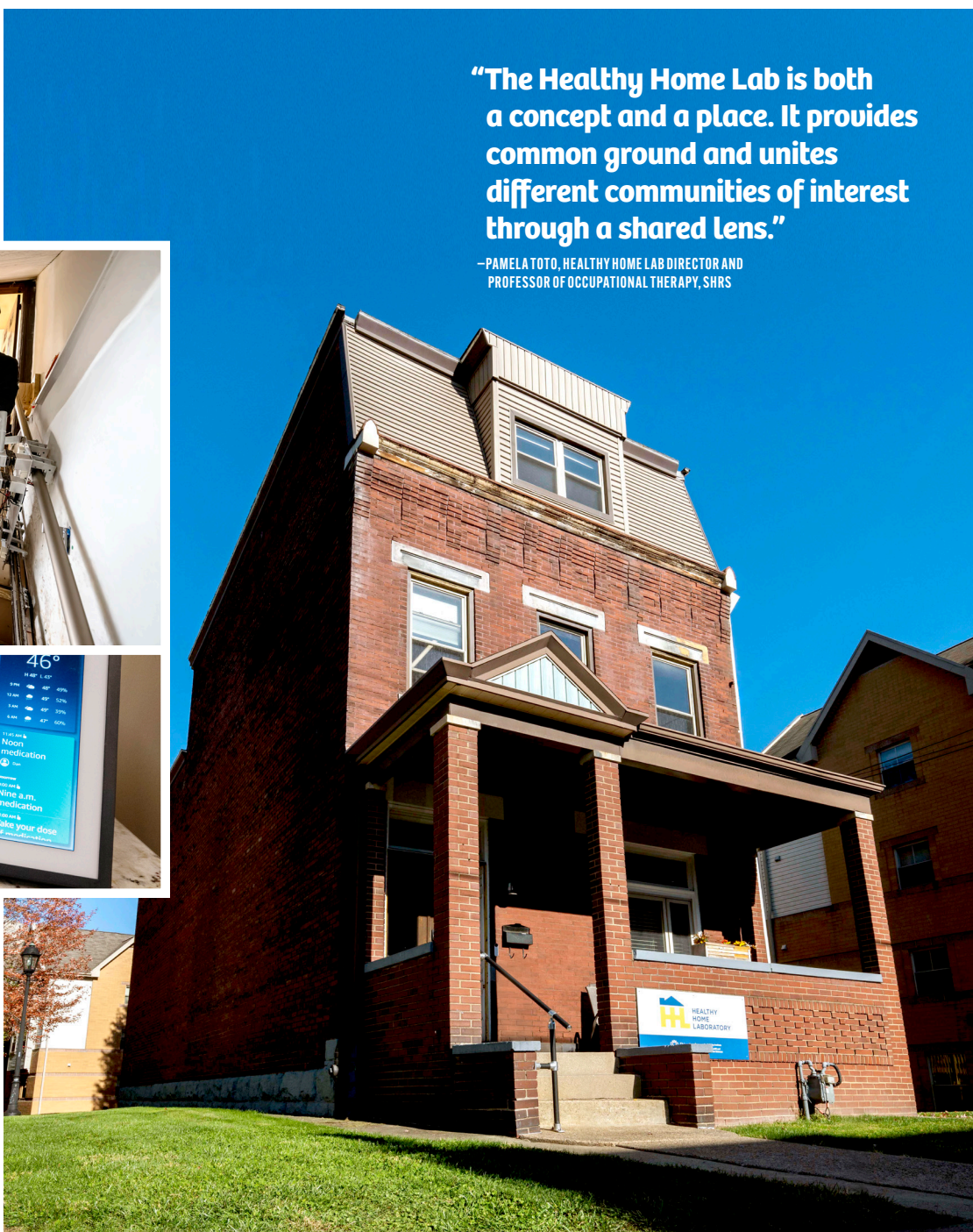


### PARTNERS FOR FALL REDUCTION

HHL recently received a \$1 million grant from the U.S. Department of Housing and Urban Development for its “Moving Beyond Home Modifications: Using Smart Home Technology to Support Safe Living for Older Adults” project. The grant is co-led by **Steven Handler**, an MD, PhD associate professor of medicine and HHL medical director, and **Yong Choi**, a PhD, MPH assistant professor of health information management, School of Health and Rehabilitation Sciences. The grant supports HHL experts as they work with partners from the Allegheny County Housing Authority and its three older adult public housing units in Homestead to create solutions to reduce falls and unintentional injuries.

“The Healthy Home Lab is both a concept and a place. It provides common ground and unites different communities of interest through a shared lens.”

—PAMELA TOTO, HEALTHY HOME LAB DIRECTOR AND PROFESSOR OF OCCUPATIONAL THERAPY, SHRS



### Students learn to work with other health care professionals

### TEAMS WHO CARE

If they are to learn how to care for the whole patient, future physicians and other health care professionals must also learn to appreciate their roles as part of a team.

That’s why interprofessional education is a major theme running through the School of Medicine’s new Three Rivers Curriculum. That thread is led by **Joe Suyama**, an MD professor of emergency medicine and advisory dean, and **Gregory Castelli**, a PharmD associate professor of family medicine.

Throughout their four years, med students are now continuously exposed to nonphysician professionals as educators, complementary to their base physician educators, and they have opportunities to learn alongside students in other health sciences schools. Interprofessional learning objectives are also integrated into weekly clinical cases.

Interprofessionalism is a major theme running through the School of Medicine’s new curriculum.

Beginning in fall 2023, and continuing in fall 2024, 1,400 incoming students from across the health sciences participated in a virtual interprofessional forum on health equity issues.

The 2024–25 academic year brings the launch of a new standardized patient program, offered as a mid-curriculum experience for all health sciences students. The students work through cases as an interdisciplinary team with a standardized patient, played by an actor.

The team learning continues in the clinic as students explore their areas of interest, with a crew of actual health care providers from different disciplines on their rotation, notes **BJ Costello**, DMD, MD associate vice chancellor for interdisciplinary education for the health sciences.

“They experience the team sport of health care as a participant in that rotation as they normally would, but they’re directed to learn about those interdisciplinary interactions from a team standpoint.”

### They nabbed the prize for equity and innovation

### PANTHER PRIDE

Pitt students from across the health sciences received a Healthy Equity Innovation Award at the annual CLARION National Interprofessional Case Competition in May 2024. They were mentored by the School of Medicine’s **Joe Suyama** on their case study on how to prepare and respond to a rising pandemic.

Navigating the "hidden curriculum"

FOCUS ON THE WHOLE MED STUDENT

To build the vital connective tissue between a medical student's personal life, professional goals and academic achievements, Pitt Med has introduced a coaching program for all incoming medical students. It was launched in the 2023–2024 school year.

The program, directed by **Suzanne Templer**, DO associate professor of medicine and assistant dean, pairs each student with a professor who is trained to coach them during monthly meetings and as-needed check-ins. "Our purpose," says coach **Julia Meade**, an MD assistant professor of pediatrics, "is to help the student identify their goals, their values, and how they want to live their life—and to then support that student, often through probing questions and giving the space to open up about these sometimes difficult questions in a supportive and nonjudgmental way."

Previously, students were matched with coaches only if a remedial situation arose; now, the program includes every student, regardless of achievement level or perceived need.



Even though, as Meade often reminds her students, "they are incredible people who are in a place where somebody thought that they were good enough to be a doctor," the confidence to achieve in a high-pressure environment can be hard to maintain—and developing and maintaining this confidence in students is a primary goal for coaches.

A lot of rumors permeate medical education, says Meade. The coaching program sheds a light on those issues directly, including the "hidden curriculum"—skills and knowledge often assumed known that are not typically taught in school, like preparing for boards, financial and loan literacy, and networking skills.

Student **Karensa Tjoa** credits her coach with helping her step into "this new identity of being a medical student, finding balance and perspective with life outside of medicine and training."

"I wish they had this program when I was a med student," says Meade.

**"Most importantly, they will be protective of the patient."**

—HOOMAN RASHIDI

Algorithms for the greater good

MEDICINE NEEDS PROVIDERS AND RESEARCHERS WHO ARE AI SAVVY

"We want Pitt to be known not just for transplants and the like, but for AI," says **Liron Pantanowitz**, the Maud L. Menten Professor and Chair of Pathology and a global leader in computational pathology.

As a starting point, Dean **Anantha Shekhar** and Pantanowitz recruited **Hooman Rashidi**, an MD, MS, to serve as Pitt Med's associate dean for AI in medicine. Shekhar has charged him with making Pitt Med "a world leader in AI literacy," which Rashidi admits might seem heady.

"There are heavy hitters in the field, there's no doubt," Rashidi says.

The type and scale of the education that Pitt provides will differentiate it, he adds.

Rashidi is rolling out an AI curriculum in three phases for MD students: He's delivering several AI "must know" lectures in 2024; introducing a self-paced elective in 2025, which requires absolutely no programming or machine learning experience; and launching a more specialized elective in 2026—one that does involve coding and other computational skills. He's also teaching graduate students.

**Shyam Visweswaran**, an MD, PhD professor of biomedical informatics at Pitt, says there are compelling reasons for getting future physicians acquainted with AI, notably: knowledge overload, data overload and administrative overload.

There are compelling reasons for getting future physicians acquainted with AI, notably: knowledge overload, data overload and administrative overload.

He points out that physicians need the most current and relevant knowledge to provide the best care. However, the rate at which medical knowledge is growing threatens to overwhelm their capacity. Visweswaran says the doubling time of medical knowledge was estimated in 1950 to be 50 years then decreased to 7 years in 1980. By 2020, it was just 73 days.

For instance, diagnosing breast cancer today requires a more robust understanding of the molecular classifications of the disease beyond the histological classifications that were the benchmarks perhaps only 10 years ago, Visweswaran explains.

Rashidi doesn't expect every future clinician or researcher to write code and build machine learning models from scratch. Automated machine learning (AutoML) software tools now exist that make the onscreen aspects of conducting research almost as simple as dragging and dropping.

In previous roles, Rashidi's work led to numerous products and patents, including the AutoML software MILO, which has been licensed to several companies and academic institutions for clinical quality improvement and educational projects.

Pitt Med students will also learn about AI's limitations and be comfortable assessing such models. "Most importantly, they will be protective of the patient," Rashidi says. "If the wrong tool comes into play, you now have a group of people who can potentially call out things that might not be in the best interest of a patient."

In short, Pitt Med grads will know how to use AI wisely.



Students take part in a sustainable cooking class.

A priority for students

GREENING THE MED SCHOOL

Education at a university typically flows from professor to student. But when it comes to environmental health, the model is often flipped, says **Michael Boninger**, an MD Distinguished Professor in the Department of Physical Medicine and Rehabilitation at the University of Pittsburgh.

Recently, a student became interested in disposable stethoscopes "and in a way that only students can do at times," Boninger says, that student's advocacy "really opened up a further dialogue between the University of Pittsburgh and UPMC on infection control and sustainability, on how we can all work together to move the agenda forward."

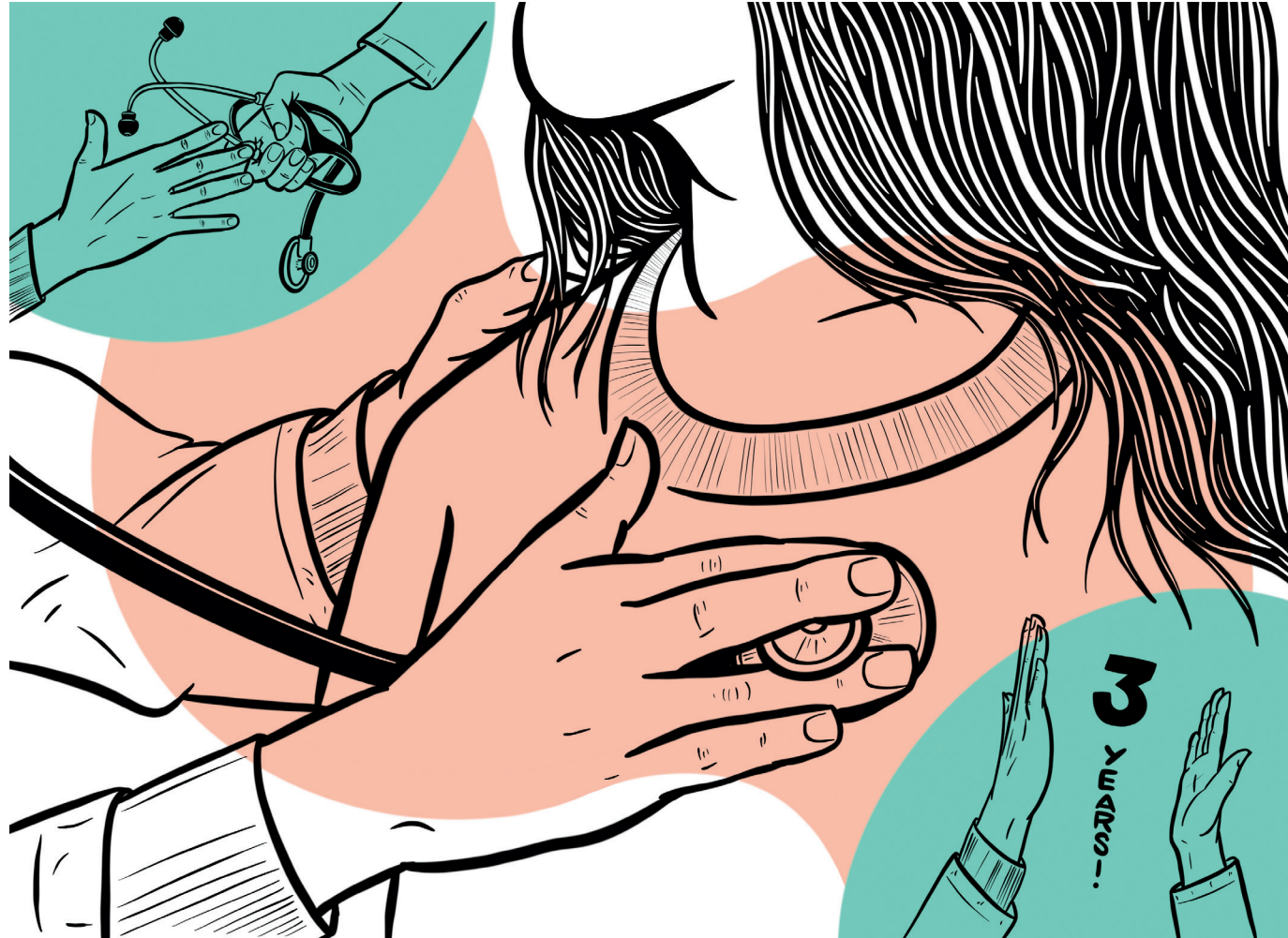
Boninger, who is also chief medical sustainability officer for UPMC, Pitt's clinical partner, was named associate dean for the new Office of Sustainability in the Health Sciences.

His charge is to make Pitt Med a national leader not only in educating students about the impact of climate change on health, but in innovating ways to decrease the impact of climate change on health and our own footprint.

Health care and associated research are responsible for approximately 10% of U.S. greenhouse gas emissions and represent the second-largest industry contributing to landfill waste worldwide.

"The School of Medicine, through its research operations, has a surprisingly large carbon footprint of its own," Boninger says. Among his goals, he says, is making sure Pitt Med is on track with the University's sustainability plan that includes achieving carbon neutrality by 2037.

"This drive toward disposability ignores the impact on the planet," Boninger says. "And we do that at our own peril."



**For decades, the number of new doctors training in primary care relative to specialty care has been declining.**

Pitt's new accelerated program

**AN MD IN 3**

Studies show optimal health outcomes in populations where 40% of the physician workforce practices primary care, yet only about 33% of American physicians do.

For decades, the number of new doctors training in primary care relative to specialty care has been declining. Then, COVID-19 walloped the primary care system, exhausting and further whittling away its workforce.

"It's already happening, but we are going to be short PCPs in the next 20 to 40 years," says **Amanda Casagrande**, an MD practicing family medicine in Pittsburgh who's an assistant professor of family medicine at Pitt.

**In response to the mounting need, Pitt Med launched the Primary Care Accelerated Track (PCAT) in the 2023-24 school year, a three-year path to an MD degree.**

In response to the mounting need, Pitt Med launched the Primary Care Accelerated Track (PCAT) in the 2023–24 school year, a three-year path to an MD degree.

Casagrande directs the program, which is a partnership between the School of Medicine and UPMC Medical Education (the residency and fellowship programs).

The goal of PCAT is to attract outstanding future physicians to pursue careers in primary care specialties, particularly in Western Pennsylvania, ultimately improving quality and access to care in the region.

Students who successfully complete the PCAT requirements have preferred entry into the UPMC residency program of their choice: family medicine at UPMC St. Margaret, UPMC Shadyside and UPMC McKeesport; internal medicine at UPMC University Health Center; or pediatrics at UPMC Children's Hospital of Pittsburgh.

Earning the MD in three years also means 25% less tuition than a four-year program, a welcome prospect to anyone facing a mountain of student loans, which is most medical students.

"I'm ready to kind of get my life on the road, so I'm happy that [PCAT] helps on that front," says **Caleb Jones**, a nontraditional student at age 28 and one of three students in the program's first-year cohort.

Casagrande worked with **Jason Rosenstock**, an MD who is the associate dean for medical education, and the committee overseeing the new Three Rivers Curriculum to make sure that PCAT students would be integrated with the rest of their class when both programs launched in the fall of 2023.

To earn the MD in three years, PCAT students make the most of their summers. One month before the traditional term starts, PCAT first-years take a course on community health, clinical skills and health care systems. They explore the county health department and free clinics in surrounding communities.

"The accelerated track is really for students who know what they want to do," says Casagrande.

They're for kids

PREPARING PEDIATRICIANS

**Monet Weldon**, of Virginia, is the first in her family to graduate from college. **Ivy Yip**, of Hong Kong, is the first in her family to graduate from high school and college. The two were among 11 Pitt Med students with an interest in pediatrics who were awarded a \$1,000 scholarship and mentorship through Dean Anantha Shekhar's office and the Institute for Infection, Inflammation and Immunity in Children (i4Kids) in 2024.

As the New York Times reported recently, there aren't enough pediatricians in this country, and many children are going without care as a result. The Medical Student Scholar Program, through which Weldon's and Yip's awards were given, recognizes the extraordinary achievements of trailblazing students who are interested in pediatric medicine—notably those who are first-generation college graduates. As of 2024, 42 students have received i4Kids scholarships.



**Monet Weldon and Ivy Yip are among Pitt's 2024 i4Kids scholarship recipients.**



TOP FLIGHT

The School of Medicine is just one of six health sciences schools at the University of Pittsburgh preparing researchers, administrators and providers who are among the best in the world. Together, these schools are a powerhouse, reinforcing each other's many strengths. When it comes to the health sciences at Pitt, the whole is greater than the sum of its parts. Yet there's plenty to brag about regarding the separate parts, too. Keep reading, and you'll see what we mean.



A dream dean team: (From left) Amy Seybert, dean of Pharmacy, Anthony Delitto, dean of Health and Rehabilitation Sciences, Christine Kasper, dean of Nursing, Marnie Oakley, dean of Dental Medicine, Maureen Lichtveld, dean of Public Health, and Anantha Shekhar, dean of Medicine and senior vice chancellor for the health sciences.

Top media outlets look to Pitt

WELL READ (ABOUT)

They come for the breakthroughs and stay for the expertise. Reporters increasingly look to Pitt health sciences for insights about health and medicine. In fiscal year 2023–24, health sciences faculty here were featured about **700 times** in media outlets considered top tier for their coverage of medicine and health sciences. Those outlets include NPR, PBS News Hour, National Geographic, CNN, the Associated Press, The Atlantic, The New York Times, The Wall Street Journal, TIME, Science, Scientific American and Nature.

THE SIX SCHOOLS

- School of Dental Medicine
- School of Health and Rehabilitation Sciences
- School of Medicine
- School of Nursing
- School of Pharmacy
- School of Public Health

AMONG THE BEST

(U.S. News and World Report rankings)

School of Medicine ranks Top Tier for research.

7 subjects ranked globally in Top 30 based on research and reputation. Surgery is ranked 7th, Clinical Medicine is 19th, and Infectious Diseases is 20th.

Several programs and specialties ranked nationally in Top 20, for instance:

- 1st Occupational Therapy Programs
- 2nd Nursing-Anesthesia Schools
- 4th Bachelor of Science in Nursing Programs
- 5th DNP Nurse Practitioner: Psychiatric/Mental Health, Across the Lifespan Programs
- 5th Speech-Language Pathology Programs
- 6th Audiology Programs
- 7th Psychiatry Programs<sup>1</sup>
- 8th Physical Therapy Programs
- 9th Pharmacy Schools
- 10th Obstetrics and Gynecology Programs<sup>1</sup>

RESEARCH MIGHT

Top 2% of U.S. universities in externally funded R&D expenditures (\$1.16 billion); Health Sciences accounts for nearly 80% (\$918.4 million) of Pitt's total

24 years in the Top 9 most funded institutions by the National Institutes of Health (NIH)<sup>2</sup>

Ranked 6th in NIH funding to universities (\$658.3 million); \$618.2 million generated by Pitt Health Sciences

Ranked 6th in NIH funding to schools of medicine, when including funding to School of Medicine faculty in the Department of Obstetrics, Gynecology and Reproductive Sciences<sup>3</sup>

12 disciplines ranked in Top 10, and 18 disciplines in Top 20 in NIH funding

LEADING MINDS

- 6 National Academy of Sciences Members
- 9 National Academy of Inventors Fellows
- 17 National Academy of Medicine Members
- 12 Best Female Scientists in the World

TOTAL ENROLLMENT = 5,986

<sup>1</sup> 2023 is most current data point, others are 2024.  
<sup>2</sup> Pitt has ranked in the Top 9 since 1999, except for ranking No. 11 in 2021.  
<sup>3</sup> Blue Ridge Institute for Medical Research ranks the School of Medicine No. 8 when not including funding of faculty in the Department of Obstetrics, Gynecology and Reproductive Sciences.

Faculty distinctions

HONORS



Yuan Chang (top), Patrick Moore

The American Academy of Arts and Sciences elected **Yuan Chang** and **Patrick S. Moore** as new members; the married duo lead the Chang-Moore Lab in the Cancer Virology Program. Chang is an MD, a Distinguished Professor of Pathology, an American Cancer Society Research Professor and the UPMC Professor of Cancer Virology. Moore is an MD, MPH Distinguished Professor of Pathology, American Cancer Society Research Professor and Pittsburgh Foundation Professor of Innovative Cancer Research.

**Leah Byrne** and **Greg M. Delgoffe** have been elected senior members of the National Academy of Inventors. Byrne is a PhD assistant professor of ophthalmology and Delgoffe is a PhD professor of immunology.

**José-Alain Sahel**, an MD, Distinguished Professor, Eye and Ear Foundation Professor and Chair of Ophthalmology, has been named a fellow of the U.S. National Academy of Inventors. He was also recently appointed to French President Emmanuel Macron's Presidential Council for Science—one of 12 researchers selected. And for his studies on restoring sight with optogenics, he and **Botond Roska**, an MD, PhD in Basel, were awarded the 2024 Wolf Prize in Medicine.

**Douglas B. White** and **Paul Palevsky** have been elected to the Association of American Physicians. White is an MD, MAS, the UPMC Professor for Ethics in Critical Care Medicine and a professor of critical care medicine, medicine and clinical and translational science. Palevsky is an MD professor of medicine, critical care medicine and clinical and translational science. In addition to his local roles, Palevsky serves as deputy national executive director of the Veterans Health Administration Kidney Medicine program.

**Babak Razani**, an MD, PhD professor of medicine, was elected a 2024 member of the American Society for Clinical Investigation. The society also named **Aravind Cherukuri**, an MBBS, PhD, MRCP assistant professor of medicine, among its 2024 Young Physician-Scientist Awardees.

**Timothy R. Billiar**, the George Vance Foster Professor and Chair, Distinguished Professor of Surgery and associate senior vice chancellor for clinical academics, received the 2023 Society of University Surgeons (SUS) Lifetime Achievement Award. In other SUS news, **Danny Chu**, an MD professor of cardiothoracic surgery, has been elected the 2025–26 president of the society.

**Jerry Vockley**, an MD, PhD professor of pediatrics, and his team received a 2024 Top Ten Clinical Research Award from the Clinical Research Forum. The researchers were recognized for the Genomic Medicine for Ill Neonates and Infants (GEMINI) study, which investigates the effectiveness and cost of two different genetic testing methods on babies.

Student standouts

ONES TO WATCH

**Ashti Shah**, a member of the MD Class of '25, is in the top 2% for research activity among all systems biologists who've published during the past three years. For her contributions to the field, Shah has been recognized with the Foundations of Systems Biology in Engineering (FOSBE) Young Investigator Award.

As part of the honor, FOSBE and the research publisher Frontiers flew her to Corfu, Greece, in September 2024 to accept the award in person at their annual conference, where she gave two presentations, one on the future of systems biology. Shah was a co-author on a paper on that topic in 2023, along with papers in 10 other peer-reviewed publications that same year. Her research, she says, is inspired by her computational biology background as an undergraduate at MIT; it focuses on modeling how and when inflammation spreads throughout the body in severe inflammatory disease.

Shah's primary mentor during her research year as part of Pitt's Physician Scientist Training Program was **Yoram Vodovotz**, a PhD professor of surgery, immunology, bioengineering, computational biology, clinical and translational science, and communication science and disorders.

During that research year, Shah developed software that can model the cross-tissue spread of inflammation.

Applying for medical school often becomes a full-time job for aspiring doctors—and an expensive one, considering that application and testing fees can total thousands of dollars. These costs prohibit some from entering medicine, while others spend thousands more on consultants to increase their chances of acceptance.

In 2019, **Daniel Pan**, now a fourth-year med student, founded Giving a Boost, an organization that connects current medical students with applicant-mentees to offer “free support to those who can't afford the expensive paid services.”

Giving a Boost prioritizes working with young people who self-identify as coming from underrepresented backgrounds—that includes students facing economic disadvantage, students with disabilities and first-generation college students, among others—and lends the expertise of student mentors directly, at no cost. Their support has reached more than 350 mentees who now attend medical schools like Pitt, Harvard, NYU and Yale. The organization—which began at Pitt Med serving Pittsburgh-area undergraduates—is now branching out to schools where former mentees have matriculated. Already, mentees-turned-mentors have started tens of chapters across the United States.

“I've tried to be the mentor I wished I'd had,” says Pan, who has been a role model to many in his young life. Pan was just recognized with the 2024 West Virginia Governor's Service Award for his commitment to another cause, STEM education in his home state.



Ashti Shah (top), Daniel Pan

CHANCELLOR'S AWARDS

CHANCELLOR'S DISTINGUISHED RESEARCH AWARD

Anne B. Newman, MD, MPH  
Distinguished Professor of Epidemiology  
Professor of Medicine and of Clinical and Translational Science

Mehret Birru Talabi, MD, PhD,  
Assistant Professor of Medicine

CHANCELLOR'S DISTINGUISHED TEACHING AWARD

Marie Norman, PhD  
Professor of Medicine and of Clinical and Translational Science

CHANCELLOR'S DISTINGUISHED PUBLIC SERVICE AWARD

Thuy Bui, MD  
Professor of Medicine

NEW DISTINGUISHED PROFESSORS

Wendie Berg, MD, PhD  
Distinguished Professor of Radiology

Michael Boninger, MD  
Distinguished Professor of Physical Medicine and Rehabilitation

Clifton Callaway, MD, PhD  
Distinguished Professor of Emergency Medicine

ACADEMY OF DISTINGUISHED MEDICAL EDUCATORS AWARDS

STEVE KANTER EXEMPLARY EDUCATOR AWARD

Amar Kohli, MD, MS  
Assistant Professor of Medicine

ANN THOMPSON AWARD FOR LIFETIME ACHIEVEMENT

Thomas Painter, MD  
Professor of Medicine

JAMIE JOHNSTON AWARD FOR SERVICE TO ADME

Cynthia Lance-Jones, PhD  
Associate Professor of Neurobiology



Left to right: Jessica S. Merlin, Kristin Ray and Tiffany Gary-Webb

Investing in academic medicine leaders

READY TO STEP UP

The 29th class of Hedwig van Ameringen Executive Leadership in Academic Medicine (ELAM) and Executive Leadership in Health Care fellows included two School of Medicine faculty members: **Jessica S. Merlin**, an MD, PhD, MBA professor of medicine and director of the CHallenges in Managing and Preventing Pain (CHAMPP) Clinical Research Center, and **Kristin Ray**, an MD, MS associate professor of pediatrics and medical director of population health at the Pennsylvania Pediatric Health Network.

Another Pitt health sciences faculty member, **Tiffany L. Gary-Webb**, a PhD, MHS professor of epidemiology at the School of Public Health, is also a 2024 ELAM grad. Since completing ELAM she was appointed as a faculty Fellow within the Office of the Provost.

The University of Pittsburgh Health Sciences has sponsored dozens of participants in ELAM's programs, usually one or two each year. Among those esteemed faculty members are **Ann Thompson**, an MD, MCCM, recently retired vice dean in the School of Medicine, as well as **Carolyn Meltzer**, an MD who is now dean of the Keck School of Medicine of the University of Southern California. The current chair of neurology, **Page Pennell**, an MD, is an ELAM graduate from Harvard. Multiple other “ELUMS” hold leadership roles here. This year, Pitt is sponsoring five faculty members in the program.

Connections for kids

THE PITTSBURGH STUDY DEEMED BEST IN THE NATION

**The Pittsburgh Study** (TPS), defined by its organizers as “a collective impact initiative of research-practice partnerships that seeks to understand what children need to thrive, as well as to promote racial equity,” has earned recognition for its “exemplary strides” toward productive community engagement. The University of Pittsburgh and TPS won the W. K. Kellogg Foundation Community Engagement Award from the Association of Public and Land Grant Universities, as well as the C. Peter Magrath Community Engagement Scholarship Award.

The study's codirectors are **Felicia Savage Friedman**, an MEd Pitt alumna, who is course director for a health equity class in the med school and founder and CEO of YogaRoots On Location, and **Elizabeth Miller**, an MD, PhD, the Edmund R. McCluskey Professor of Pediatric Medical Education and a professor of pediatrics, of public health and of clinical and translational science. Miller founded the study with **Terence Dermody**, an MD and the Vira I. Heinz Distinguished Professor and Chair of Pediatrics, in 2018.



**“What gets me out of bed is having an impact on a larger level.”**

—ANNE MARIE LENNON

Medicine’s new chair has devoted her career to better tools and better outcomes for patients

**LENNON HELMS DEPARTMENT OF MEDICINE**

Anne Marie Lennon, an MD, PhD physician-scientist and leading innovator in the early detection of pancreatic cancer, is the first woman to chair the Department of Medicine, Pitt’s largest department. She is also chair of medicine at UPMC.

“What gets me out of bed is having an impact on a larger level,” says Lennon, who oversees more than 1,000 faculty members and combined clinical and research revenues of nearly \$600 million. “[Pitt] has incredible people; and when you have incredible people, you can do incredible things.”

A champion of multidisciplinary research to guide personalized clinical care, Lennon is an internationally recognized expert in the care of patients with pancreatic cysts. Her work to develop tests for early cancer detection and incorporate them into clinical practice emerges from her early career research to distinguish precancerous pancreatic cysts from those that are benign and require less invasive treatment. She was previously director of the Division of Gastroenterology and Hepatology and the Moses and Helen Golden Paulson Professor of Gastroenterology at Johns Hopkins University, where she held joint appointments in medicine, surgery, radiology and oncology.

She served on the governing board of the American Society for Gastrointestinal Endoscopy and also co-leads a group that has brought together gastroenterology, pancreatology, radiology and surgery societies from Asia, Europe and the United States to develop international guidelines for patients with pancreatic cysts.

Lennon sees unique potential in Pitt’s integration of the University’s health sciences schools, the VA, UPMC’s insurance arm and its 42-hospital and clinical care system covering urban and rural areas across several states.

“How can we change the way we understand a disease? The way we care for patients? We’ve got brilliant clinicians and scientists, an enterprise treating [more than 4] million, an incredible VA group. My job is to bring people together and support them.”



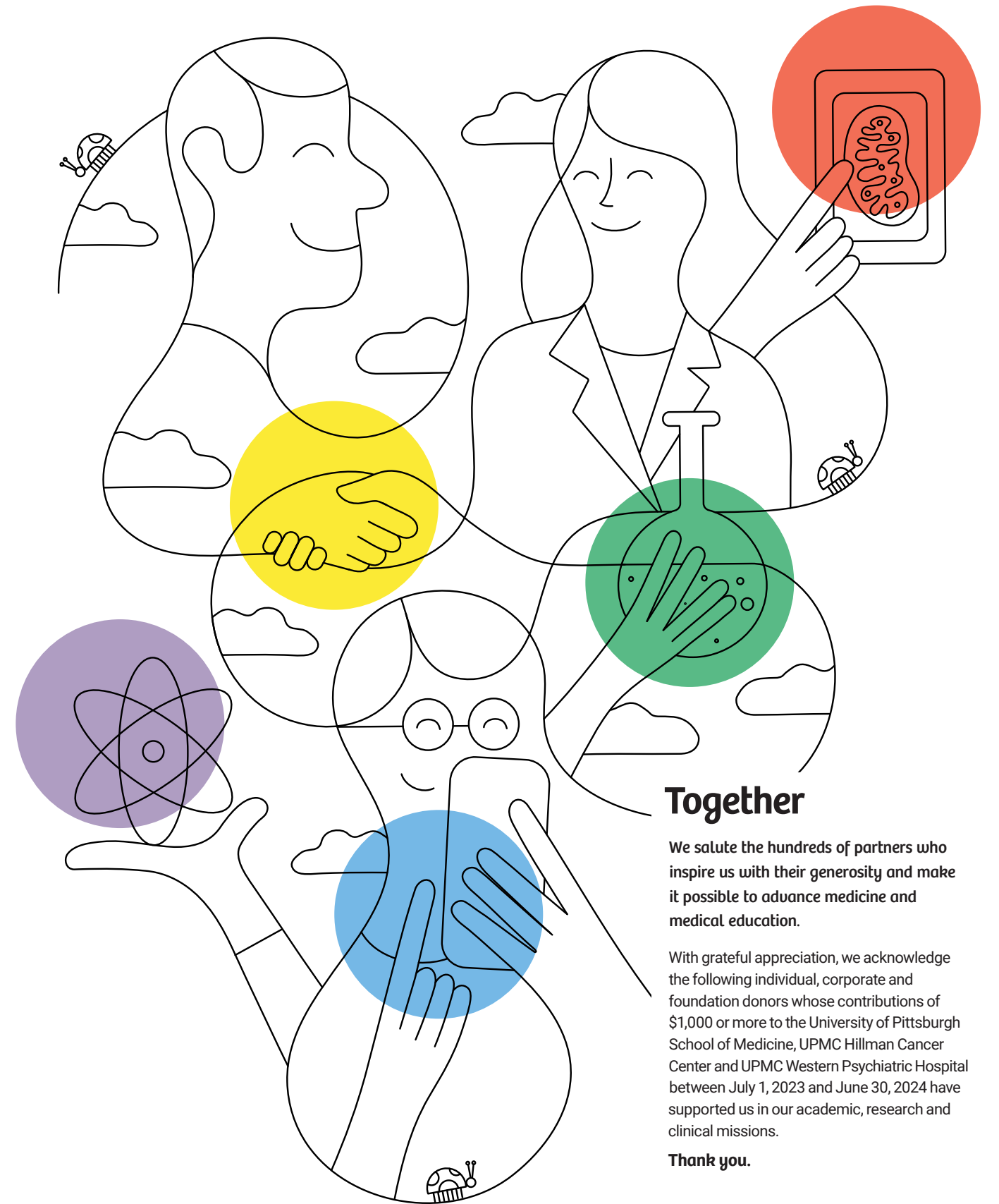
Cancer immunologist appointed chair

**VIGNALI LEADS IMMUNOLOGY**

Dario A.A. Vignali, a PhD, is now chair of the Department of Immunology.

In a career spanning three decades, Vignali has conducted highly cited discovery-based research, translating novel findings to the clinic, and training and mentoring the next generation of cancer immunologists in academia and industry. He is a Distinguished Professor of Immunology, the Frank Dixon Professor in Cancer Immunology and codirector of the Cancer Immunology Training Program. He served as interim chair of immunology from August 2022 until his permanent appointment.

Vignali studies immune regulation and cell signaling and how these processes affect disease. He also leads discovery-based programs aimed at identifying novel targets for therapeutic intervention and works closely with scientists and clinicians to translate his findings into clinical practice, with a focus on solid tumors that are likely to respond to immunotherapies.



**Together**

We salute the hundreds of partners who inspire us with their generosity and make it possible to advance medicine and medical education.

With grateful appreciation, we acknowledge the following individual, corporate and foundation donors whose contributions of \$1,000 or more to the University of Pittsburgh School of Medicine, UPMC Hillman Cancer Center and UPMC Western Psychiatric Hospital between July 1, 2023 and June 30, 2024 have supported us in our academic, research and clinical missions.

**Thank you.**

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Left to right, Jennifer Collinger, Sue Hunter and Marco Capogrosso

Freedom to explore

FROM CONCEPT TO COMMERCIALIZATION

Sue Hunter says her father “believed strongly in the power of capitalism to do good in this world,” and that taking something from concept to commercialization “required early investment and patience.”

As an investment industry icon and founder of Pittsburgh-based wealth management firm Hunter Associates, her father, David Hunter, would’ve known. He died in 2013, but his daughter is likewise impassioned about making profound change through strategic investments. Top of mind for Sue Hunter: helping Pittsburgh stake its claim as not only a clinical, research and robotics powerhouse, but also a global leader in life sciences commercialization.

In 2022 she established the Hunter Family Foundation Traumatic Brain Injury Translational Research Program at the University of Pittsburgh to support early stage developments in neurobiology. The first two grants from that fund were awarded in June 2024 to Jennifer Collinger, a PhD associate professor of physical medicine and rehabilitation, and Marco Capogrosso, a PhD assistant professor of neurological surgery.

Collinger aims to restore arm and hand function in people with quadriplegia. She’ll use her award to further develop brain-computer interfaces that enable patients to move a robotic arm and hand to perform tasks just by thinking about it.

“What I’m really excited about is that this award is allowing us to focus on things that

**“What I’m really excited about is that this award is allowing us to focus on things that can have practical clinical impact.”**

—JENNIFER COLLINGER

can have practical clinical impact,” Collinger says. “We want to make progress in getting these things we’re working on from the lab to the home.

“I’d like to work on improving our ability to control a robotic arm for reaching and grasping ... and get it to a state where it’s much easier to use and much more robust.”

Capogrosso is developing neurotechnologies to enable spinal cord injury and stroke patients to regain control of their hands after paralysis—it’s research that builds on what he’s done with spinal cord stimulation to restore arm and hand movement in stroke patients.

Capogrosso says his newer approach, currently in preclinical testing, is designed to provide stimulation in the brain and along the spinal cord to treat patients with more severe effects from stroke or injury, essentially attacking the problem from above and below at the same time.

“This gives us the freedom to explore something that’s high risk,” he says of the award. “If it works, we can keep fueling this opportunity with other funds.”



David and Jan Ellison Baszucki

Building an evidence base

FOOD FOR THOUGHTS

About four years ago, Matt Baszucki found himself struggling with a situation all too common for patients with bipolar disorder: Standard treatments were doing little to alleviate the suffering the condition put him through. After trying 29 different medications and undergoing multiple hospitalizations, he and his family knew they needed a different approach.

On the advice of a doctor, Matt Baszucki tried an intervention that has begun to show promise for patients like him: a high-fat, low-carb ketogenic diet. After making the switch in 2021, he saw his symptoms go into remission in about four months. “The difference it has made in his life is profound—he’s off about 75% of his medications, fully employed and thriving,” says Jan Ellison Baszucki, Matt’s mother and one of the founders of Baszucki Group, the family’s foundation. Jan also established the Baszucki Group’s Metabolic Mind initiative, dedicated to transforming the study and treatment of mental disorders by exploring the connection between metabolism and brain health.

Ketogenic diets have been used for therapeutic purposes for over 100 years by children with epilepsy. Many adults also find relief. The use of these diets for bipolar disorder is more recent, with studies showing they may relieve the condition. After Matt’s turnaround, the Baszuckis were determined to help scientists learn more. “It felt urgent to build an evidence base to understand who could benefit from this intervention,” Jan says. Among the Baszucki Group’s support for such research is a \$6 million grant awarded to a team at the University of

**“What makes this research so compelling is its comprehensive approach—integrating affective neuroscience, neuroimaging, mitochondrial biology and cellular models.”**

—JAN ELLISON BASZUCKI

Pittsburgh led by Mary Phillips, an MD/MD (Cantab) and The Pittsburgh Foundation-Emmerling Professor in Psychotic Disorders.

Phillips and her collaborators are working to understand how shifting the body’s main energy source—trading glucose from carbohydrates for ketones converted from fats—may boost mitochondrial function and influence the brain’s reward circuitry, which goes out of whack in bipolar disorder. Early findings suggest keto diets seem to stabilize the brain’s dopamine production, which parallels how many drugs for epilepsy and bipolar disorder work.

The Pitt team also includes the labs of Colleen McClung, a PhD professor of psychiatry and of clinical and translational science, and Zachary Freyberg, an MD, PhD associate professor of psychiatry and cell biology.

“What makes this research so compelling is its comprehensive approach—integrating affective neuroscience, neuroimaging, mitochondrial biology and cellular models,” Jan says. “It represents exactly the kind of transformative, rigorous scientific inquiry we are committed to funding.”

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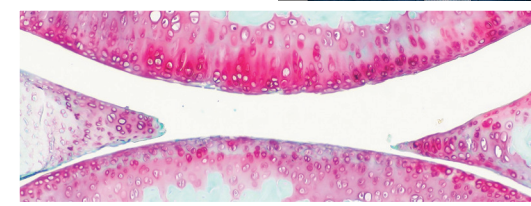
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Joon Lee (left) and Orland Bethel with MaCalus Hogan, who is chair of Orthopaedic Surgery.



## A pain-free future

### TRANSFORMATIONAL GIFTS FOR MUSCULOSKELETAL RESEARCH

More than ruining his weekend golf game, the acute pain in Orland Bethel’s neck and shoulders affected his ability to work efficiently, and work is something he takes much more seriously than golf, even at 86.

For the man who says, “My whole history of life has been the drive to get out and work,” being sidelined wasn’t easy to accept. He negotiated the pain until it put him in a wheelchair, because he couldn’t move his arms or legs without distress.

That’s when Bethel, founder of Hillandale Farms, one of the country’s largest egg producers, turned to Pitt’s Joon Lee, an MD professor of orthopaedic surgery, for relief. Lee had completed a procedure on Bethel in 2014 at UPMC Presbyterian to treat spinal stenosis. Lee’s skill and genuine concern, and the success of that earlier procedure, prompted Bethel to seek his continued care.

Another procedure on Bethel’s neck in 2016 for a more serious condition restored his movement and relieved his pain. A grateful Bethel gave a gift to the University in 2019 to endow the Orland Bethel Professorship in Spine Surgery, which Lee holds. With two other recent gifts, his family’s generosity to the School of Medicine tops \$45 million.

Bethel, who borrowed money from family and worked 18-hour days to get his egg business

up and running, says he feels a kinship with Lee because both have come from humble beginnings to enjoy successful careers. Lee’s family left South Korea for the United States when Lee was 11, and none of the Lees spoke English when they arrived. Later, Lee was able to get into the Yale School of Medicine, and make his way as a top surgeon.

Inspired to do more for the University in no small part because of his relationship with and respect for Lee, Bethel pledged \$25 million in September 2023 through the Orland Bethel Family Foundation, which will be matched equally by the School of Medicine. The gift enables Pitt to elevate its study of musculoskeletal disorders by creating the Orland Bethel Family Musculoskeletal Research Center (BMRC), as well as an array of programs under the new center’s umbrella: the BMRC Core Laboratories, Bethel Research Fellows and an annual conference and seminar.

“When you get to this level, it’s a generational gift, a transformative gift,” Lee says. “The influence of this gift will be felt across the entire system—from young medical school students, through accomplished researchers, on to [those making] improvements in patient care.”

Anantha Shekhar, senior vice chancellor for the health sciences at Pitt and the John and Gertrude Petersen Dean of the School of

**“When you get to this level, it’s a generational gift, a transformative gift. The influence of this gift will be felt across the entire system—from young medical school students, through accomplished researchers, on to [those making] improvements in patient care.”**

—JOON LEE

Medicine, says, “The center will support clinicians, investigators, trainees and students in areas that will bring hope to the hundreds of thousands who face [musculoskeletal] problems every day.”

In September 2024, Bethel followed up with an additional \$18.5 million to create a research biobank—a 10-year initiative to collect human tissues during musculoskeletal-related surgeries.

“The material collected for the repository will place the center on the forefront of global discovery,” says Shekhar, noting the biobank will create a first-of-its-kind database that will be available to researchers around the world who are searching for new therapeutic targets.

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Left and above: School of Medicine graduate and medical students regularly volunteer at adaptive climbing meetups at Ascend, a local climbing gym.

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