THE UNIVERSITY OF PITTSBURGH
SCHOOL OF MEDICINE
2023 ANNUAL REPORT

MOVE

University of Pittsburgh
School of Medicine
2023 Annual Report

MOVE:

MOVE

Albert Einstein changed our understanding of the fabric of the universe beyond Newton's laws of motion and gravity. Yet, at an earthlier level, he also made the astute observation that "life is like riding a bicycle. To keep your balance, you must keep moving."

At the University of Pittsburgh School of Medicine, we are always moving—forward and with purpose. Our momentum has taken us down fascinating paths.

To describe one initiative, I'm thrilled to report that we are collaborating to create a biotech corridor for Pittsburgh that will bring next-generation, life-saving therapies to patients in the region and beyond. And, in another astonishingly promising effort, Pitt neuroscientists have helped people paralyzed by stroke move their arms and hands once again. We are moving from idea to action in a number of significant ways.

These 36 pages offer just a glimpse of what Pitt Med people have achieved in the span of a year. Almost every day I learn of another impressive step that is moving us forward.

I couldn't be prouder of our team, which has moved into high gear. Our overall research expenditures grew $150 million in the last two years. The University is 3rd in National Institutes of Health funding, and the School of Medicine sits at 6th. And with our new curriculum in place, we are applying (and evaluating) what we believe are the most effective ways to educate the medical leaders and healers of tomorrow.

We're also delighted to be moving into enviable new spaces. Students are making themselves at home in Alan Magee Scaife Hall's beautiful West Wing addition. And Pitt scientists and clinicians are pursuing ways to cure blindness and improve mobility at UPMC Mercy Pavilion.

I hope you'll take a few moments to read about the work we've accomplished—and some of the many generous gifts that enable us to set our sights even higher. We are fortunate to have such support to move us forward.

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

MOVE In

“WE’VE REALLY BEEN MOVING TOWARD MORE INTERPROFESSIONAL EDUCATION IN OUR CURRICULUM…AND WE EXPECT THE NEW WING WILL BE A HUB FOR HEALTH SCIENCES STUDENTS.”

—KATIE MAIETTA

The West Wing

The addition to Alan Magee Scaife Hall, known as the West Wing, favors spaces that promote active discussion and learning. It opens just as Pitt’s Three Rivers Curriculum launches.

An ongoing conversation

A reshaped curriculum flourishes in our new home

The School of Medicine's Three Rivers Curriculum, which launched in August 2023 for the incoming class, reshapes medical education into an ongoing conversation among students, instructors and trainees across disciplines and with the larger Pittsburgh community.

The model moves away from lectures, which often see paltry attendance. (Students tend to tune in to recordings instead.) Now, more small-group discussions, facilitated by longitudinal educators who work with students for an entire semester, will engage students as active participants in their education.

The curriculum's case-based approach encourages critical thinking and emphasizes underlying mechanisms in medicine. There's also renewed attention to social medicine, leadership and student well-being worked into the schedule, with new "flex weeks" that allow time for independent learning, shadowing, research and personal activities.

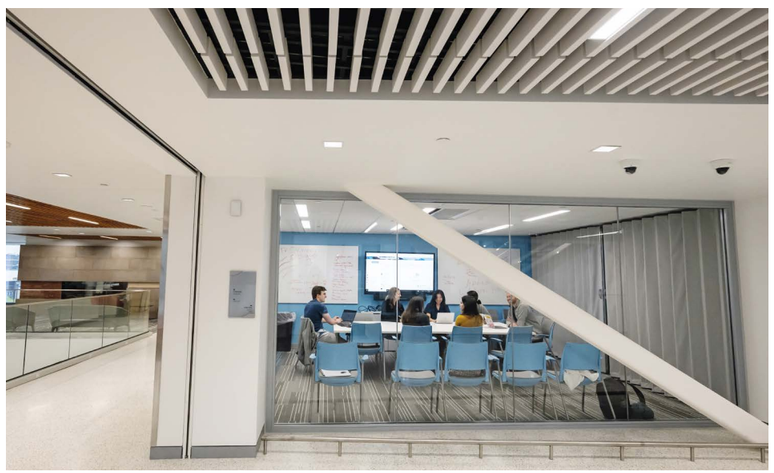
These changes came in part based on the feedback of students themselves. "Students were equal partners in the creation of this," says **Jason Rosenstock**, associate dean for medical education and an MD professor of psychiatry. The curriculum's development also drew on input from a diverse group of faculty, staff and community members. In all, about 400 people took part in its development.

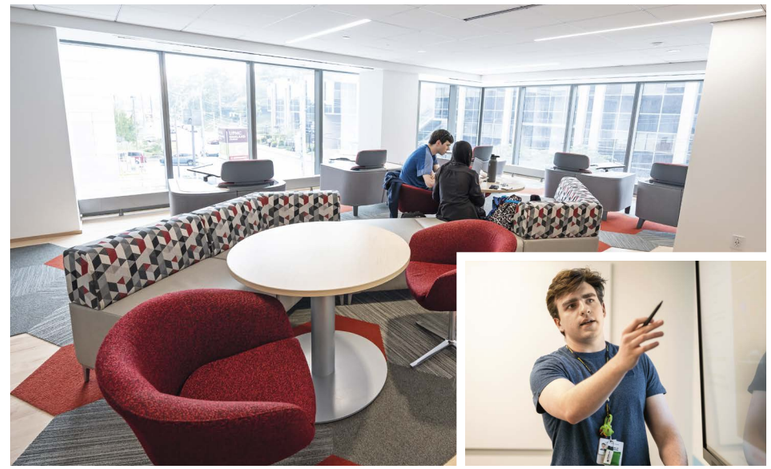
The refreshed curriculum arrives amid the opening of the West Wing of Alan Magee Scaife Hall, a long-awaited expansion for the School of Medicine. Leaving behind rigid lecture rooms, the facility hosts classes in smaller-scale, flexible learning spaces that match the new learning format. And in the seventh-story anatomy lab—past hallway displays featuring cross sections of brains, bodies and other specimens—students dissect cadavers both real and, using virtual reality systems, digital. Nearby, a wet lab spans the width of the building.

Katie Maietta, executive director of the Office of Medical Education, hopes that cross-disciplinary symposia in the building and features like the open, lobby-style seating across multiple floors will encourage more intermingling.

"We've really been moving toward more interprofessional education in our curriculum," she says, adding that she expects the new wing will be a hub for health sciences students.

THE CURRICULUM'S DEVELOPMENT DREW ON INPUT FROM A DIVERSE GROUP OF STUDENTS, FACULTY, STAFF AND COMMUNITY MEMBERS. IN ALL, ABOUT 400 PEOPLE TOOK PART.





"STUDENTS WERE EQUAL PARTNERS IN THE CREATION OF THIS."
—JASON ROSENSTOCK

At the frontier of knowledge

Star players for neuronal health

Cells known as astrocytes may be key to understanding diseases of the eye and brain. These star-shaped bodies help maintain neuronal health by regulating nutrients and directing the chemical messages neurons use to communicate. When stressed, astrocytes are less stellar in that role—yet they can signal the early progression of neurodegenerative diseases.

ASTROCYTE CELLS MAY BE KEY TO UNDERSTANDING DISEASES OF THE EYE AND BRAIN.

Astrocytes are "a new frontier explored in Alzheimer's disease," says Tharick Pascoal, an MD, PhD associate professor of psychiatry and neurology.

Pitt researchers have found that testing blood for a protein released by stressed astrocytes (called glial fibrillary acidic protein or GFAP) in people without symptoms of cognitive decline may be able to predict neurodegeneration later. The protein correlates with activity of other proteins—the accumulation of tau tangles and beta-amyloid, which are infamously associated with the clinical onset of Alzheimer's. With lead author **Bruna Bellaver**, a PhD research assistant professor, Pascoal published their results in Nature Medicine this year. Fellow Pitt psychiatry faculty **Victor Villemagne**, an MD, and **Thomas Karikari**, a PhD, are also authors of the study.

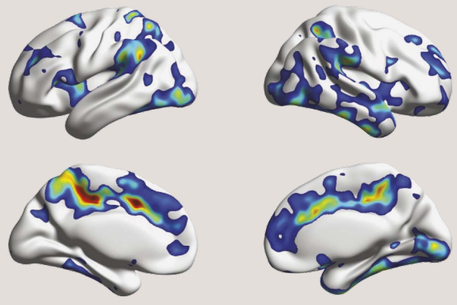
Bellaver notes that astrocytes seem not only to be stars in our neuronal systems, but "might be like a maestro in an orchestra guiding the musicians that are amyloid, tau and all the other cells into the diseased pathway or health pathway."

On the neurological bridge between the eye and the brain, glaucoma can take hold. That's where scientists have noticed astrocyte reactivity and changes in shape that correlate with the disease's progressive vision loss.

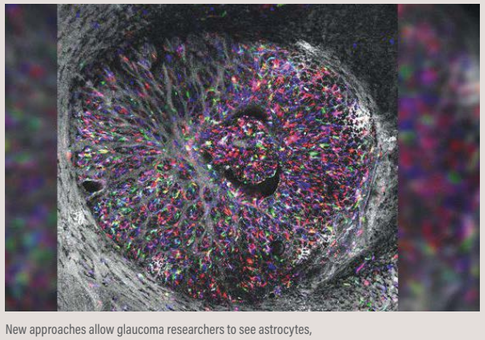
"We know that these changes in astrocyte morphology can be detected before any [observable] neurodegeneration sets in," **Susannah Waxman**, a doctoral student in the Laboratory of Ocular Biomechanics at Pitt, explains in a recent UPMC blog. However, identifying the specific shapes, twists and bends correlating with disease outside of rodent models has been largely limited to examining astrocyte cytoskeletons—which Waxman describes as "a lot like imagining what dinosaurs looked like based on what paleontologists know of their bones."

To push past this limitation—with direction from **Ian Sigal**, a PhD associate professor of ophthalmology and of bioengineering, and principal investigator of the Laboratory of Ocular Biomechanics—Waxman and colleagues from Pitt and Harvard University are using high-resolution images to build 3D models of astrocytes.

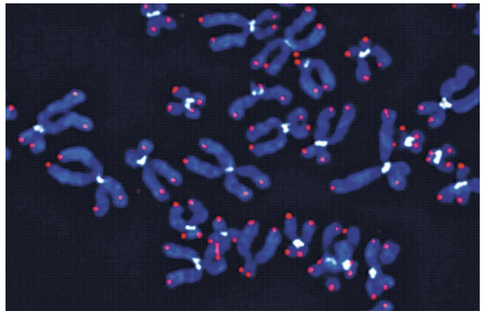
Their work reveals previously unseen structural details (see bottom image) of astrocytes that illuminate their size, shape and complexity, as well as their spatial relationships with their neighbors.



Associations between amyloid and tau pathology (red means more) in the brains of cognitively normal people with stressed (or "reactive") astrocytes. Tracking that reactivity may be key to predicting who gets Alzheimer's.



New approaches allow glaucoma researchers to see astrocytes, key to eye health, as never before.



A combination of mutations promotes extra-long telomere growth in melanoma.

Melanoma's long game

A SECRET TO ITS STRENGTH

Telomeres—the caps on the ends of chromosomes that protect DNA from degrading—typically shorten as people age until their cells can no longer divide. Cancer cells, meanwhile, have telomeres that maintain their length, allowing the cells to continue replicating.

But how do cancers get those special telomeres in the first place? A team of School of Medicine researchers found a combination of mutations that promote extra-long telomere growth in melanoma: a discovery that could change the way oncologists understand and treat it.

The breakthrough came after **Pattra Chun-on**, an internist with a background in cancer biology who came to the University of Pittsburgh for a PhD, joined the lab of **Jonathan Alder,** a PhD assistant professor of medicine. She revived a project Alder had dropped years earlier.

About 75% of melanoma tumors contain mutations in the TERT gene that activate the enzyme telomerase and allow cells to continue growing. Yet, when scientists mutated TERT in cells in culture, they couldn't produce extra-long telomeres.

Chun-on built on past research indicating that a region of a telomere-binding protein called TPP1 was also often mutated in melanoma tumors. When she added mutated TERT and TPP1 back into cells, the two proteins together created the distinctively long telomeres that help melanoma become immortal. The answer was hiding in plain sight, notes Alder.

Alder's team collaborated on the National Institutes of Health–funded study with others from Pitt, including faculty at the UPMC Hillman Cancer Center, like **John Kirkwood**, the Sandra and Thomas Usher Professor and Distinguished Service Professor of Medicine.

"We were in the right place, and many things lined up," Alder says. "But so much of this was driven by Pattra's absolutely unbreakable determination."

Homely but irresistible

SCIENTISTS WANT TO UNDERSTAND MORE ABOUT HOW THE NAKED MOLE-RAT STAYS YOUTHFUL

The naked mole-rat—a wrinkly, furless critter with huge chompers that resides underground in East Africa—can live more than 30 years. That's a long lifespan for a rodent weighing less than a Snickers bar. What's more, naked mole-rat queens never appear to go through menopause, successfully reproducing until their deaths.

These traits fascinate scientists like **Miguel Brieño-Enríquez**, an MD, PhD assistant professor of obstetrics, gynecology and reproductive sciences, who wonder if there aren't components of the naked mole-rat's physiology that can be borrowed to create treatments for humans.

Naked mole-rat colonies are eusocial, which means they are led by a single queen who does all the breeding. All the other females in the colony are subordinate and, by some mechanism scientists are still trying to understand, unable to breed. However, if you take a subordinate female out of the colony, something shifts in her physiology that allows her reproductive organs to flip the switch to the on position.

In essence, the subordinate becomes a queen.

"What it seems like is that when you are a naked mole-rat, and you transform to a queen, somehow, you start to age slower," says Brieño-Enríquez. "And the only thing that is different is that the ovary is actually working."

Now Brieño-Enríquez and his team are mimicking the on switch found in naked mole-rat ovaries and producing some of the same results in genetically modified laboratory mice.

The East African rodents are very different from humans, clearly. Yet the possibility of a drug derived from understanding their physiology is enticing—perhaps one that could help humans produce more eggs or keep the eggs that they have, giving people struggling with infertility a better chance at starting a family.

And the secrets of how these queens stay so healthy with age could be significant, too, Brieño-Enríquez says. "If we cannot turn back time, perhaps we can at least slow the speed of aging, which would mean that people will be in better shape for longer."

Naked mole-rat queens don't appear to go through menopause.

Pittsburgh's next industrial age

Medicine will drive it

Biological therapies known as "living" treatments offer tremendous potential for treating blindness, infectious diseases, cancers and more. But there's a problem—actually, more than one.

The global bioeconomy is in a manufacturing squeeze. Scientific and clinical advancements have prompted an explosion in the development of gene and cell therapies and other biological treatments over the past decade. (Broadly speaking, cell therapies transfer live cells into patients to treat diseases, while gene therapies transfer or edit genetic material to treat diseases.) Transitioning these living therapies from wet labs and animal models into clinical testing—and, if all goes well, widespread use for patients—requires manufacturing them in facilities where they can be purified for human safety and scaled up to clinically important levels.

Yet, the processes for biological therapies, particularly cell and gene therapies, are significantly more complicated than manufacturing traditional pills, and few manufacturers have the specialized know-how to make these clinical-grade therapies. Those that do have yearslong waitlists. Pitt scientists are among the researchers worldwide who have had to wait in queues for their biological products to be manufactured. And there have been growing pains with quality control as manufacturers adapt to producing entirely new products.

"When you look at where life sciences research is going over the next decade, almost all of it is focused on biological products—gene therapy, cell-based therapy, mRNA-based therapy," says **Anantha Shekhar**, Pitt's senior vice chancellor for the health sciences and the John and Gertrude Petersen Dean of the School of Medicine. "These are very different types of technologies. We're no longer going to be just making pills to give to patients. These are living products, most of them, and they have to be manufactured in a very different way. There is both significant unmet need and a huge bottleneck in capacity to manufacture them with current technologies."

The need for investing in and expanding biomanufacturing was underscored in September 2022 when President Joe Biden issued an executive order on the American bioeconomy. "It's not enough to invent new technologies that save lives. We need to manufacture advanced biotechnologies here in the United States," Biden said.

In the executive order, Biden's administration laid out goals to support biomedical research that will "develop genetic engineering technologies and techniques to be able to write circuitry for cells and predictably program biology in the same way in which we write software and program computers" and "advance the science of scale-up production while reducing the obstacles for commercialization so that innovative technologies and products can reach markets faster."

The president would be pleased to see what Pittsburgh has planned.

In 2024, Pitt will break ground for its own biomanufacturing facility, which will be known as BioForge. The futuristic "factory" for biological therapies will rise from Hazelwood Green, a former brownfield that was scrubbed and revitalized thanks to the persistent efforts of community groups and Almono, initially a consortium of four local foundations (which today includes the Heinz Endowments, the Richard King Mellon Foundation and the Claude Worthington Benedum Foundation). Hazelwood Green is the site of the city's last operating steel mill, run by LTV Steel (formerly Jones & Laughlin Steel), which closed in 1998. President Biden has given remarks there twice since 2020 on bolstering America's future in manufacturing.

Hazelwood Green sits along the bank of the Monongahela River, a few miles upstream from Station Square's monument to the steel industry's revolutionary Bessemer process—fitting, because BioForge is being designed not only to meet urgent biomanufacturing needs but also to revolutionize the biomanufacturing process itself.

"There's very little being done in terms of disrupting the existing slow and painful technologies that biomanufacturing is using right now," Shekhar says.

Pitt's BioForge will be built next to Mill 19, site of Carnegie Mellon University's advanced manufacturing innovation facility at Hazelwood Green.

"With Pitt and Carnegie Mellon expertise, we can not only do routine manufacturing, but we can start to add robotics into it or add artificial intelligence and add new biological pathways so that the manufacturing itself can transform—so that we're able to make faster, cheaper and safer products. That's the real long-term value," says Shekhar.

> **"WHEN YOU LOOK AT WHERE LIFE SCIENCES RESEARCH IS GOING OVER THE NEXT DECADE, ALMOST ALL OF IT IS FOCUSED ON BIOLOGICAL PRODUCTS—GENE THERAPY, CELL-BASED THERAPY, MRNA-BASED THERAPY."**
> — ANANTHA SHEKHAR

BIOFORGE—THE FUTURISTIC "FACTORY" FOR BIOLOGICAL THERAPIES—WILL RISE FROM HAZELWOOD GREEN, A FORMER BROWNFIELD.

1

BioForge

Will put Pittsburghers first in line for new treatments and catalyze the city's life sciences manufacturing ecosystem.

- > 185,000-square-foot biomanufacturing facility
- > 2 pocket parks
- > Integrated public art
- > LEED Gold certification

Primed for progress

THIS CITY IS "A WONDERFUL ENVIRONMENT"

Dean Shekhar's team has recruited ElevateBio, an experienced, technology-driven, biomanfuacturing company headquartered near Boston, as an anchor tenant and partner at BioForge.

ElevateBio was founded in 2017 to address the need for next-generation technologies and biomanufacturing capabilities brought on by the new frontier of genetic medicines. "There are more than 1,400 companies currently developing cell and gene therapies focused on treating or curing otherwise intractable diseases," says **David Hallal**, the company's cofounder and CEO.

He notes that Pittsburgh is a prime location for ElevateBio. "With research, innovation and health care at its core, Pittsburgh has always struck me with its great alignment between UPMC, University of Pittsburgh, Carnegie Mellon—and even the insurance community," he says. "It creates a wonderful environment for innovation and delivery of transformative therapies to patients with severe and debilitating conditions."

2

Restoring vision after corneal scarring

Scars of the cornea can lead to significant vision loss, even blindness. Some patients do well with corneal transplants, which might last 10 years or so; those in resource-poor nations typically don't have that option.

Several years ago, Pitt's **James Funderburgh**, a PhD professor of ophthalmology, began developing a stem-cell treatment for the condition. He was inspired by the plight of his life and lab partner, **Martha Funderburgh**, who'd experienced vision loss from scarring. Preclinical results from the approach were promising; then James Funderburgh died in 2019.

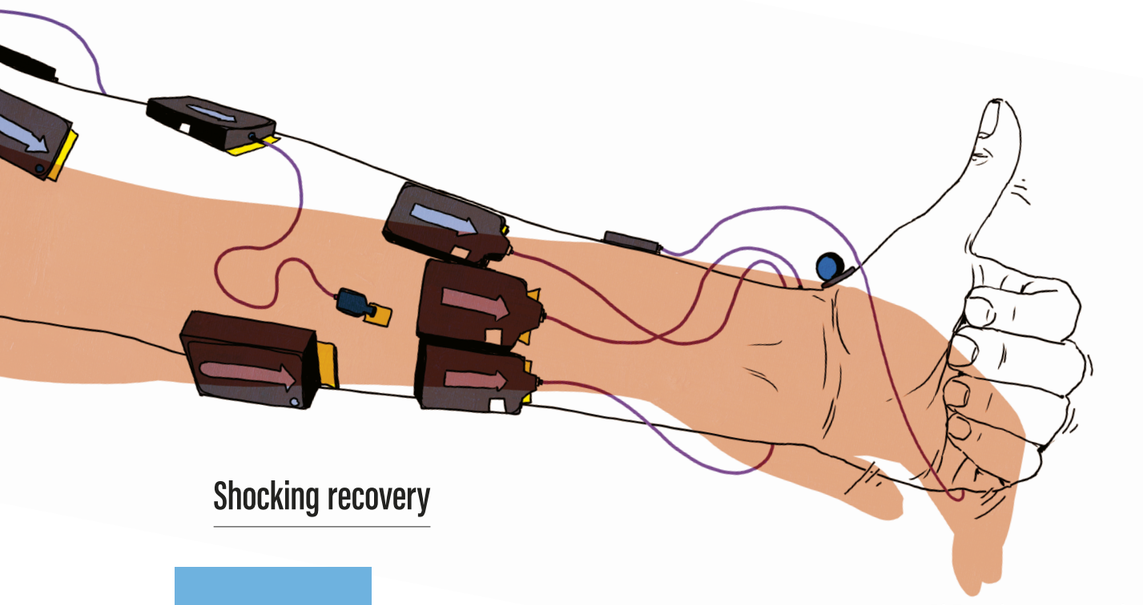
Gary Yam, a PhD research associate professor, is carrying on the work. The idea, says Yam, is to create a simple paste of restorative stem cells that can be applied to a patient's eye. Such a feat would eliminate the need for invasive corneal transplants while providing an option for patients in places where those transplants are not available.

Yam is collaborating with a team at the Pitt/UPMC Immunologic Monitoring and Cellular Products Laboratory, part of UPMC Hillman Cancer Center, to manufacture clinical-grade stem cells and characterize them, paving the way for clinical trials.

This transformative work is taking place in Pitt's Riviera Building, along the Monongahela and just a 10-minute bike ride away from Pitt's planned advanced biomanufacturing site in Hazelwood known as BioForge.

Steel Valley is on its way to becoming Bio Valley.

Meet the neighbors
Soon another iconic building, Pitt's BioForge, will sit next door to the quarter-mile Mill 19 building, site of Carnegie Mellon's advanced manufacturing innovation facility.



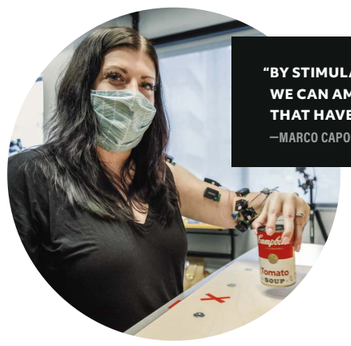
Shocking recovery

Spinal implants restore arm and hand movement for stroke patients

Heather Rendulic suffered five strokes as a college student. Half her body had become paralyzed from a cerebral cavernous malformation—a group of tightly packed, abnormal small blood vessels in her brain that contained slow-moving blood that was clotted.

Her last stroke, more than 10 years ago, proved to be nearly fatal. "My entire left side was paralyzed after the fifth [brain] bleed, and it took me nearly two years to learn how to walk again," she says.

Today she is giving hope to others. In 2021, Rendulic underwent experimental surgery that temporarily restored function to her paralyzed left arm.



"BY STIMULATING THESE SENSORY NERVES, WE CAN AMPLIFY THE ACTIVITY OF MUSCLES THAT HAVE BEEN WEAKENED BY STROKE."
—MARCO CAPOGROSSO

Marco Capogrosso, a PhD and assistant professor of neurological surgery, and **Elvira Pirondini**, a PhD and assistant professor of physical medicine and rehabilitation, collaborated with Douglas Weber, a PhD and the Akhtar and Bhutta Professor in mechanical engineering and neuroscience at Carnegie Mellon University, to use spinal implants to treat arm and hand paralysis in stroke patients.

In May 2021, neurosurgeon **Peter Gerszten**, an MD, MPH and the Peter E. Sheptak Professor in Neurological Surgery, threaded small metal electrodes through an incision in Rendulic's upper back and positioned them in the epidural space over the spinal cord in her neck to engage intact neural circuits.

For the first time in years, Rendulic was able to fully open and close her fists, lift her arms above her head and cut her own steak.

The implant technology delivers pulses of electricity to activate nerve cells inside the spinal cord. Such stimulators have been on the market for years to treat other conditions like high-grade, persistent pain.

"The sensory nerves from the arm and hand send signals to motor neurons in the spinal cord that control the muscles of the limb," says Weber. "By stimulating these sensory nerves, we can amplify the activity of muscles that have been weakened by stroke."

Capogrosso is hopeful that the approach can do the same for others who've had moderate to severe strokes. The research team will be completing clinical tests on a total of eight patients using NIH funding and expects to conclude the study in the fall of 2024.

Go-to O2

PHYSICIAN-ENGINEER'S MEDICAL OXYGEN SOLUTION LANDS IN AFRICA

In 2017, pediatrician **James Newton** was a first-year Pitt Med student who'd just returned from Malawi, working at Kamuzu Central Hospital in Lilongwe. He'd noticed a heart-wrenching theme among the physicians' stories. In Malawi, providers often only have enough oxygen to save one patient in the hospital and have to choose which patient will live.

There must be a better way, he thought, and teamed up with others at Pitt, notably **Mark Adkins**, adjunct lecturer in bioengineering, to develop a portable, solar-powered unit capable of generating medical-grade oxygen; they called it the O2 Cube. Newton and Adkins formed LeanMed in 2018 to pursue the product, with Adkins as the CEO. By 2022, they'd obtained funding to develop their portable oxygen solution. They had global data, and the World Health Organization even recognized the O2 Cube in the 2021 Compendium of Innovative Health Technologies for Low-Resource Settings—but they didn't have a prototype that could generate medical-grade oxygen at the needed rate. So they partnered with the Swanson School of Engineering's IDEA Lab (Innovation and Design Engineering Accelerator), which harnesses the ingenuity of budding and veteran engineers, to bring a new prototype to life.

In July 2021, LeanMed announced a global licensing agreement with Philips to leverage its UltraFill oxygen filling station technology in all O2 Cubes. A commercial version is now operational in Nigeria; it can provide enough oxygen for about 3,000 children with pneumonia a year.

A safer way

AN INTRACRANIAL PRESSURE TEST THAT'S NONINVASIVE

The risks that come with invasively measuring intracranial pressure can be catastrophic enough that it's ruled out for many patients who would benefit from the information, like some who've had a head injury.

Michael McDowell, an MD assistant professor of neurological surgery, and his collaborator Jana Kainerstorfer, a PhD at Carnegie Mellon University, have an alternative. They're developing a device no bigger than a credit card that attaches to the patient's forehead, without a procedure or incision, by either a headband or adhesive.

Once it's secured, near-infrared light passes heatlessly and painlessly through the skin and skull to reach blood vessels in the brain. The light is then temporarily absorbed by hemoglobin within the blood cells. The hemoglobin releases the light, which then makes its way back to the device. The operator calculates the distance the blood cell traveled in the time between absorbing and releasing the light. Fluctuations in blood flow correspond with changes in intracranial pressure.

A preliminary study of patients at UPMC Children's Hospital of Pittsburgh found that the device's results closely matched those of the more invasive method. McDowell is planning a large-scale observational multicenter trial in adults and children.

Positive and powerful

Rebecca Price figured out a way to make ketamine therapy benefits last longer

Roughly 30% of depression patients don't respond to traditional treatments. Using an approach that incorporates computer-based neurocognitive training, **Rebecca Price**, PhD associate professor of psychiatry, is prolonging the antidepressant effects of ketamine therapy.

Ketamine has been used worldwide as an anesthetic in medical settings for more than half a century. Around 2000, researchers began noticing and testing its quick-acting efficacy against depression. Soon, there was enough evidence to prompt clinicians to start prescribing it off-label for treatment-resistant depression, and clinics began opening across the country to administer intravenous ketamine therapy.

However, the benefits tend to be short-lived, with symptoms of depression returning in a matter of weeks after an infusion. Price is working to change that.

A "PSYCHOPLASTOGENIC" DRUG, KETAMINE QUICKLY INCREASES THE BRAIN'S PLASTICITY—ITS ABILITY TO ADAPT IN RESPONSE TO STIMULI.

In a study published in The American Journal of Psychiatry, Price reported promising results. After a single ketamine infusion, people with treatment-resistant depression can quickly learn new ways of processing information that lead to happier thoughts. Price's method involves showing research participants positive words and images paired with self-relevant words and images (like the word "I" and photos of themselves). The approach prolonged depression relief for three months.

A "psychoplastogenic" drug, ketamine quickly increases the brain's plasticity—its ability to adapt in response to stimuli. In a study involving 154 adults, Price was able to capitalize on the brain's malleable period following a single dose of ketamine by adding automated self-association training twice daily throughout four consecutive days.

Extending the effects of a single ketamine dose could dramatically increase the ability of patients to access the treatment. Typically, patients get started with anywhere from four to eight infusions administered in the first few weeks and return for booster doses as necessary, often creating long waiting lists at clinics. (Most health insurance plans don't cover ketamine treatments.)

"I've been flooded with requests from ketamine providers, patients and their families," Price says.

Take a look

At our dynamic community

STUDENTS 2022/23 ACADEMIC YEAR

606 MD students
(235 are in-state residents)

385 PhD students
(including 58 in the Medical Scientist Training Program) and 125 MS students

FACULTY

2,639 regular faculty members

1,718 volunteer faculty members

70 members of the Academy of Distinguished Medical Educators

STUDENT RESEARCH

The Class of 2023 was the 17th med student class to complete the four-year longitudinal research experience.

311 manuscripts published

89 manuscripts submitted

101 manuscripts in preparation

389 national and international presentations/posters

113 local presentations/posters

59 national and state awards

135 local awards

2023 PITT MED COHORT

Applications received: **8,782**

Incoming class: **148**

TRAINEES

575 postdoctoral associates and scholars as of December 2022

As of May 2023, the UPMC Medical Education Program had **1,479** residents and **442** fellows in programs approved by the Accreditation Council for Graduate Medical Education, plus two clinical fellows in nonstandard programs.

At our numbers

Pitt: **No. 3** in NIH funding

School of Medicine:
No. 6 in NIH funding

THE 2022 NIH FUNDING RANKINGS BY PITT MED DEPARTMENTS

Psychiatry—**1st**
Otolaryngology—**2nd**
Physical Medicine—**2nd**
Neurosciences—**3rd**
Anesthesiology—**5th**
Surgery—**6th**
Internal Medicine—**7th**
Dermatology—**7th**
Ophthalmology—**8th**
Anatomy/Cell Biology—**9th**
Pharmacology—**10th**

INVENTIVE

In fiscal year 2023, research at the School of Medicine resulted in:

270 invention disclosures
185 U.S. patent applications filed
124 deals
71 U.S.-issued patents
82 PCT patent applications filed
8 startups

The University of Pittsburgh as a whole ranked **No. 16** for U.S. universities granted utility patents in 2022, according to the National Academy of Inventors.

HIGH MARKS

The School of Medicine rates highly according to U.S. News & World Report.

Best medical schools
11th in primary care
13th in research

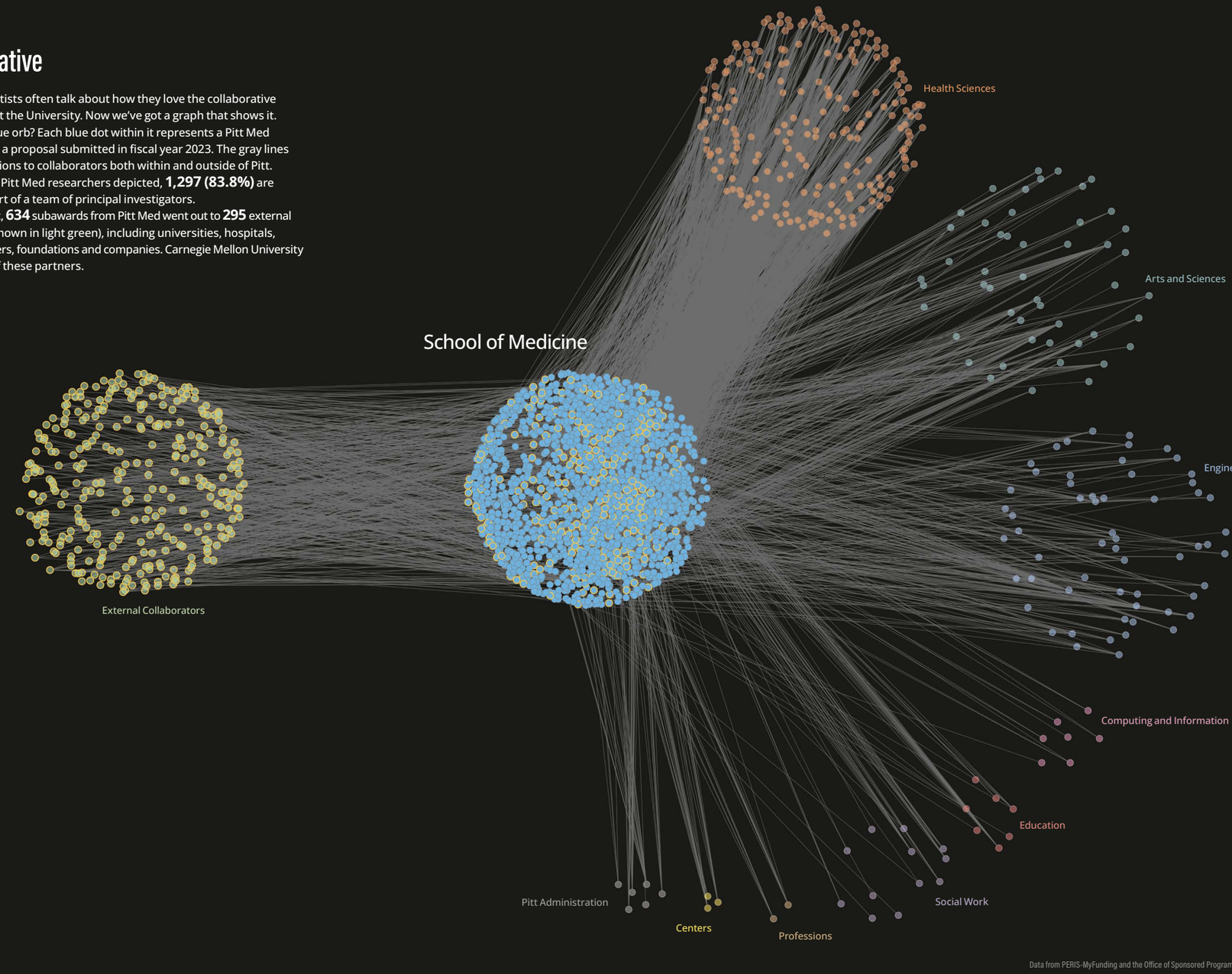
Best specialty programs
7th in psychiatry
10th in obstetrics and gynecology

Collaborative

Pitt Med scientists often talk about how they love the collaborative atmosphere at the University. Now we've got a graph that shows it.

See that blue orb? Each blue dot within it represents a Pitt Med researcher on a proposal submitted in fiscal year 2023. The gray lines show connections to collaborators both within and outside of Pitt. Of the **1,548** Pitt Med researchers depicted, **1,297 (83.8%)** are working as part of a team of principal investigators.

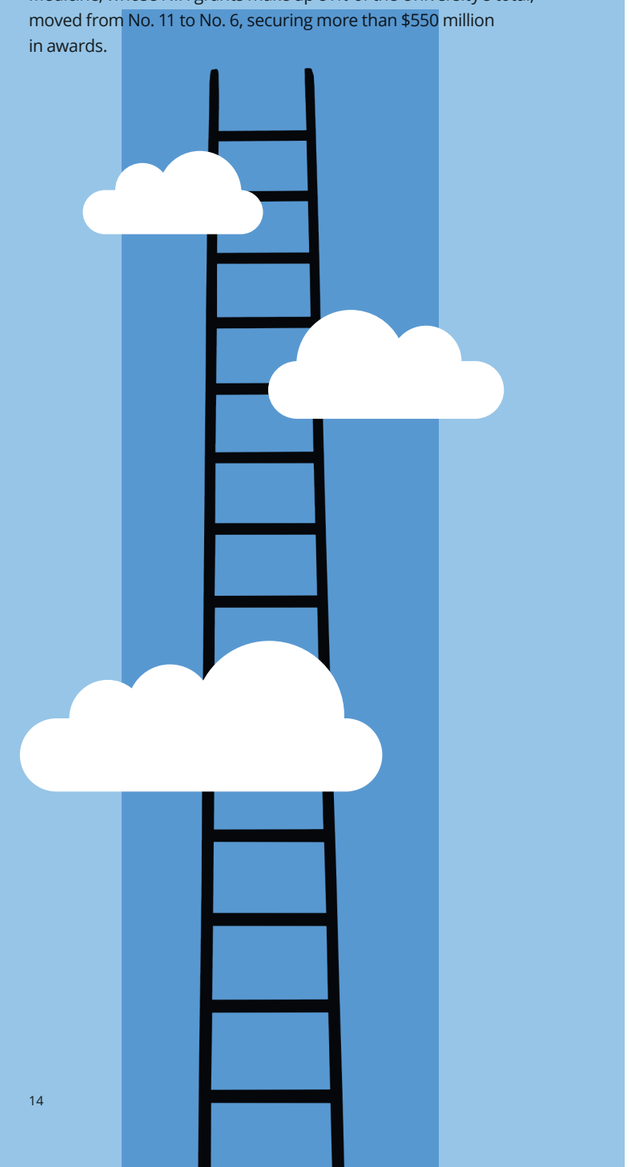
Beyond Pitt, **634** subawards from Pitt Med went out to **295** external institutions (shown in light green), including universities, hospitals, research centers, foundations and companies. Carnegie Mellon University tops the list of these partners.



Data from PERIS-MyFunding and the Office of Sponsored Programs.

Pitt rises to 3rd in NIH funding

The University of Pittsburgh is the **No. 3 ranked** recipient of National Institutes of Health funding for federal fiscal year 2022, up from No. 11 in 2021. The University landed $675 million in NIH awards, a 13% increase from the previous year. The School of Medicine, whose NIH grants make up 81% of the University's total, moved from No. 11 to No. 6, securing more than $550 million in awards.



National leader

Gwendolyn Sowa, an MD, PhD, who is the Endowed Professor of Physical Medicine and Rehabilitation, as well as chair of that department and director of the UPMC Rehabilitation Institute, has been elected to the National Academy of Medicine.

Sowa codirects the Ferguson Laboratory for Orthopaedic and Spine Research at Pitt, where she leads a diverse group of scientists working together to develop treatments for spine conditions and low back pain.

CHANCELLOR'S DISTINGUISHED RESEARCH AWARD

Anuradha Ray, PhD
Professor of Lung Immunology

NEW DISTINGUISHED PROFESSORS

Daniel Buysse, MD
Distinguished Professor of Psychiatry

Dimiter Dimitrov, PhD
Distinguished Professor of Medicine

Michael Fine, MD, MSc
Distinguished Professor of Medicine

Edwin Jackson, PhD
Distinguished Professor of Pharmacology and Chemical Biology

Beatriz Luna, PhD
Distinguished Professor of Psychiatry

Elizabeth Miller, MD, PhD
Distinguished Service Professor of Pediatrics

Mary Phillips, MD, MD (Cantab)
Distinguished Professor of Psychiatry

Standouts

Thuy Bui received the Arnold P. Gold Foundation's 2022 Pearl Birnbaum Hurwitz Humanism in Healthcare Award for her decades of work advancing the well-being of underserved populations, immigrants and refugees.

Bui, an MD professor of medicine, has been director of the Global Health and Underserved Populations Residency Track at Pitt Med and UPMC for more than 15 years.

While serving in the Peace Corps, she ran the Medical Department of Kamuzu Central Hospital, Lilongwe, Malawi, for two years; she maintains relationships in the country and works to further education opportunities and health services there.

Until 2017, she headed the Birmingham Free Clinic. She still sees patients there weekly.

J. Timothy Greenamyre won the 2022 Robert A. Pritzker Prize for Leadership in Parkinson's Research, among the field's most prestigious honors. The Love Family Professor of Neurology at Pitt Med, he is the director of the Pittsburgh Institute for Neurodegenerative Diseases.

Awarded by the Michael J. Fox Foundation for Parkinson's Research, the prize recognizes Greenamyre's extensive contributions to our understanding of the disease. His research into genetic and environmental factors helped demonstrate that pesticides like rotenone and paraquat contribute to the disease. The rotenone model he developed continues to inform other researchers studying the causes of—and treatments for—Parkinson's disease.

Greenamyre, an MD, PhD, also added to the evidence suggesting that mitochondrial function may go awry in Parkinson's.

Alok Joglekar received the National Institutes of Health Director's New Innovator Award, which supports early career scientists pursuing unconventional approaches to major challenges.

Joglekar is a PhD assistant professor of immunology and member of the Center for Systems Immunology. He and his team engineer molecules to manipulate the T cells in the immune system, boosting their ability to fight cancer and keeping them from attacking healthy tissues. He hopes the research will lead to new treatments for diseases such as type 1 diabetes and multiple sclerosis and enhance immunotherapies for tumors.

Sandra A. Murray, a PhD professor of cell biology, will serve as president of the American Society for Cell Biology (ASCB) for 2024. She will be the first person of color to lead the organization, which was started in 1961.

ASCB is an international community of biologists studying the cell, the fundamental unit of life, with members in more than 60 countries. More than 40 ASCB members have won Nobel Prizes in physiology or medicine or in chemistry.

New chairs

JoAnne L. Flynn, a PhD, is now chair of the Department of Microbiology and Molecular Genetics. She is an international expert in the field of tuberculosis and infectious disease immunology.

Flynn has been studying tuberculosis, a disease that kills 1.5 million people annually, for almost 35 years. She has made seminal discoveries that illuminate the roles of various aspects of the immune response against Mycobacterium tuberculosis. Since 2015, Flynn has also served as assistant dean for the Medical Scientist Training Program, as well as codirector of the University of Pittsburgh–Carnegie Mellon University Medical Scientist Training Program.

Victor O. Morell has been appointed chair of the Department of Cardiothoracic Surgery. Morell is an MD and the Eugene S. Wiener Professor of Pediatric Cardiothoracic Surgery. He also serves as director of cardiovascular services and is surgeon-in-chief of UPMC Children's Hospital of Pittsburgh.

A highly accomplished teacher, mentor, scientist, administrator and surgeon, Morell is chief of pediatric cardiothoracic surgery at Children's. His current research interests include transposition of the great arteries, extracorporeal membrane oxygenation as a bridge to cardiothoracic transplantation in pediatric patients, and congenital cardiac surgery education.

Liron Pantanowitz, an MD, PhD, MHA, has returned to the School of Medicine and UPMC as the chair of pathology. He's an internationally recognized leader in digital pathology and informatics.

He first came to Pitt in 2010 as a faculty member in pathology, with a secondary appointment in biomedical informatics. In 2020, he left to join the University of Michigan, where he also served as director of anatomic pathology. Pantanowitz is known for his dedication to training the next generation of pathology clinicians, researchers and innovators.

Physician-scientists celebrated

ASCI MEMBERS AND AWARDEES

Melanie Königshoff, an MD, PhD, and **Matthew Neal**, an MD, are newly elected members of the American Society for Clinical Investigation (ASCI).

Königshoff, professor of medicine, focuses her research on deciphering the mechanisms involved in lung repair and regeneration to identify novel therapeutic targets for age-related chronic lung diseases, such as idiopathic pulmonary fibrosis and chronic obstructive pulmonary disease.

Neal, the Roberta G. Simmons Associate Professor of Surgery, runs a translational research program focused on hemostasis and thrombosis following injury, and his basic science laboratory studies platelet response and mechanisms of immunothrombosis.

Congratulations also to these ASCI Young Physician-Scientist Awardees, who are assistant professors of medicine: **Cary Boyd-Shiwarski**, an MD, PhD, and **Mark E. Snyder**, an MD. **Utibe R. Essien**, an MD, MPH who recently moved from Pitt to UCLA, also received the award. **Richard P. Ramonell**, an MD assistant professor of medicine, was named an ASCI Emerging-Generation Awardee.

AAP INDUCTEES

Four Pitt Med faculty members have been inducted into the Association of American Physicians (AAP), an honorary society for physicians with outstanding credentials in basic or translational biomedical research:

Stephen Chan, the MD, PhD Vitalant Professor of Vascular Medicine and director of the Vascular Medicine Institute, uses bioinformatics and experimental reagents to accelerate translational discovery in pulmonary hypertension. He is also leading a research team exploring cardiovascular links to dementia and a treatment for jet lag.

Pamela Moalli, an MD, PhD professor of obstetrics, gynecology and reproductive sciences and of bioengineering, and director of the Division of Urogynecology and Reconstructive Pelvic Surgery, leads a team that won the $1 million Magee Prize sponsored by the Richard King Mellon Foundation. Moalli's group focuses on the development of biomimetic biomaterials to improve outcomes of gynecologic surgery.

Page Pennell, an MD, the Henry B. Higman Professor of Neurology and chair of neurology, came to Pitt from Harvard University in 2021. She researches maternal health and fetal outcomes of women with epilepsy, antiseizure medication use during pregnancy and the effects of neuroactive steroids on seizure provocation.

Mary Phillips is an MD, MD (Cantab), The Pittsburgh Foundation-Emmerling Professor in Psychotic Disorders, Distinguished Professor of Psychiatry, and a professor of clinical and translational science and of bioengineering. She directs the Center for Research on Translational and Developmental Affective Neuroscience. Her research uses neuroimaging techniques to explain abnormalities in circuits of the human brain associated with major depressive disorder and bipolar disorder.

Ones to watch

When **Anna Li**'s family emigrated from China to the United States with only $20 in cash, they did it so that she could have a future. Today, she's the University's first-ever recipient of the Paul and Daisy Soros Fellowship for New Americans, an annual award that provides $90,000 throughout two years to immigrants and first-generation students pursuing graduate education.

Li, who is pursuing an MD/PhD at Pitt with a focus on treating antibiotic-resistant infections in cystic fibrosis patients, is among 30 recipients in the 2023 class of fellows, who were selected out of nearly 2,000 applicants.

In addition to her studies, Li is the founder and CEO of Korion Health, a startup developing an electronic stethoscope and app that allow patients to accurately monitor their vitals at home and relay that information to their doctor.

Rising third-year medical student **Stephen C. Frederico** received a Medical Scholars Research Fellowship from the Physician-Scientist Support Foundation. Frederico is using his fellowship, which comes with a $50,000 prize for just five students nationally, to support a year of funded brain tumor research at Dana-Farber Cancer Institute in Boston.

Frederico's career path came into view when, shortly before college, he lost a close friend to diffuse midline glioma (DMG), a highly aggressive brain tumor that predominantly affects children; the average survival rate is 11 months or less. Researchers at Dana-Farber have biopsied DMG tumors in children and found a specific target to inhibit the cancer, using a small molecule inhibitor. Frederico has joined their efforts.

He's also pursuing a master's degree in clinical investigation at Harvard University. Frederico's work in the Filbin Laboratory at Dana-Farber seems promising for finding a new drug therapy for treatment resistant tumors, which will form his master's thesis.

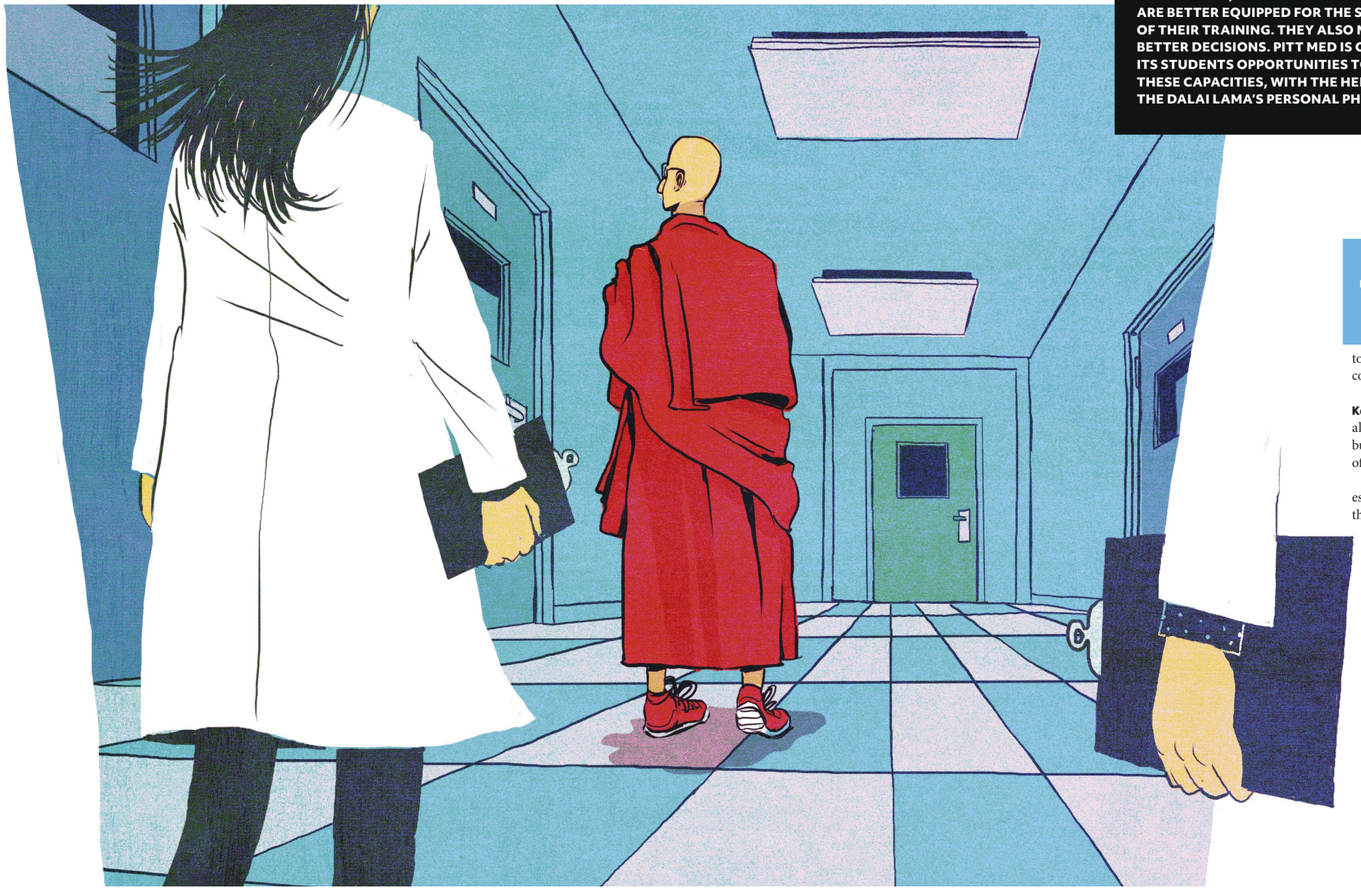
Third-year **Ja'Nia McPhatter** will lead the Student National Medical Association (SNMA) in 2024, serving as national president of the country's oldest and largest organization dedicated to supporting students underrepresented in medicine. McPhatter, who has an MBA in health systems management, will be the second student from Pitt Med to hold the post.

Since joining the local SNMA chapter, she has been inspired by its mission to increase the number of clinically excellent, culturally competent and socially conscious physicians. When the presidency position went unfilled, she thought, "How could I not step up?"

McPhatter is the recipient of a Medical Alumni Association Scholarship.

She is thankful for her supporters who keep her grounded too, notably Rachel Eleazu (MD Class of '23), past national vice president of SNMA and peer-mentor to McPhatter, and former SNMA president and alum J. Nadine Gracia (MD Class of '02), who has served in leadership roles in the U.S. Department of Health and Human Services and is now CEO of Trust for America's Health.

"I'm lucky to have family and friends here to support me in striving to be my best self while leading the organization that's given me so much."



BY CULTIVATING MINDFULNESS AND COMPASSION, HEALTH CARE TRAINEES ARE BETTER EQUIPPED FOR THE STRESSORS OF THEIR TRAINING. THEY ALSO MAKE BETTER DECISIONS. PITT MED IS OFFERING ITS STUDENTS OPPORTUNITIES TO BUILD THESE CAPACITIES, WITH THE HELP OF THE DALAI LAMA'S PERSONAL PHYSICIAN.

Attending to the mind

More clarity and less burnout

National studies show that med students matriculate with healthier mental states than other recent college graduates who don't pursue medicine; however, by their third year, med students are more prone to depression, burnout and suicidal ideation than are their contemporaries and the general population.

That's why the School of Medicine has called on **Barry Kerzin**, the **Dalai Lama**'s personal physician. Kerzin, who is also a monk, lives in India, but he's been traveling to Pittsburgh to work with Pitt Med students as an adjunct professor of psychiatry.

By incorporating secular insights and tools of Buddhism—especially a capacity for mindfulness and compassion—into their lives, students can ease the strain of their studies and the demands to come, says Kerzin. Studies consistently show that meditation and mindfulness approaches reduce stress and improve cognitive performance among nurses and other care providers and trainees.

Kerzin's work here complements a number of initiatives the school has put into place over the years to look out for its students so that they, in turn, can look out for themselves and their future patients.

Building pipelines and understanding

Addressing health disparities

In its efforts to become a more equitable and just institution, the University of Pittsburgh established the Race and Social Determinants of Equity, Health and Well-being Cluster Hire and Retention Initiative in 2020.

The former cochair, **Paula Davis**, explained at the time: "This initiative will increase the University's capacity to address disparities in health by focusing our research lens and attracting a cadre of faculty ready and able to use their investigational and clinical skills to bear on solving pressing problems."

The effort is a fitting capstone to Davis's 37-year career at Pitt, where she was the founding associate vice chancellor for health sciences diversity, equity and inclusion. In addition to her focus on the recruitment and retention of diverse faculty and students for the health sciences schools, her team has helped Pitt people examine the intersections of health, race and marginalized populations. Davis was honored with the Tracy Soska and John Wilds Outreach and Engagement Leadership Award in March of this year for her dedication to nurturing university-community connections.

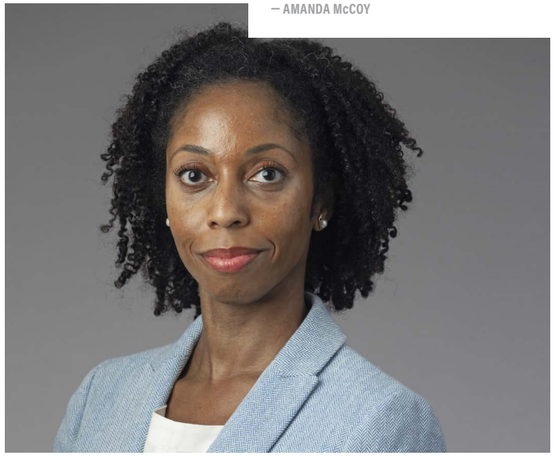
Though she stepped down from her position in June 2023, Davis's efforts will be felt here for years to come.

For instance, with her guidance, Pitt has recruited 46 underrepresented faculty since 2020 (with 42 in the health sciences); the University's goal is 50 by 2024. Among the first cohort of Race and Social Determinants of Equity, Health and Well-being Scholars are **Amanda McCoy**, an MD, MPH assistant professor of orthopaedic surgery, and **Sebastian Sattui**, an MD assistant professor of medicine in the Division of Rheumatology and Clinical Immunology. Here's a glimpse of the work they do.

McCoy, a pediatric orthopaedic surgeon and Pittsburgh native, joined Pitt after serving as interim residency program director at Tenwek Mission Hospital in Bomet, Kenya.

McCoy's research interests include lower extremity deformity and health care access. From her time as an undergraduate at Harvard College to her fellowship in orthopaedic surgery at the Baylor College of Medicine, she has received numerous scholarships and academic awards. In January 2023, McCoy delivered a Grand Rounds lecture at Columbia Orthopaedics and Columbia University Irving Medical Center.

"IT'S ALL ABOUT PIPELINE, IN TERMS OF HOW TO GET SOMEONE FROM HIGH SCHOOL TO PHD IN BIOLOGY OR MD AND WORK AS A CLINICAL DOCTOR."
— AMANDA McCOY



"THERE'S VALUE AND POWER IN REPRESENTATION. THAT'S VERY CRUCIAL, NOT ONLY FOR COLLEAGUES, NOT ONLY FOR MEDICAL STUDENTS, BUT ALSO FOR PATIENTS."
— SEBASTIAN SATTUI

"THIS INITIATIVE WILL INCREASE THE UNIVERSITY'S CAPACITY TO ADDRESS DISPARITIES IN HEALTH BY FOCUSING OUR RESEARCH LENS AND ATTRACTING A CADRE OF FACULTY READY AND ABLE TO USE THEIR INVESTIGATIONAL AND CLINICAL SKILLS TO BEAR ON SOLVING PRESSING PROBLEMS."
— PAULA DAVIS

At Pitt, McCoy and her colleagues are taking a new approach to evaluating common pediatric ortho conditions historically associated with race or ethnicity. McCoy is also mentoring the next generation of underrepresented scholars through programs such as the Children's Hospital Arsenal Middle Medical Mentorship Program of Pittsburgh. She says, "It's all about pipeline, in terms of how to get someone from high school to PhD in biology or MD and work as a clinical doctor."

Sattui is a rheumatologist and director of the UPMC Vasculitis Center. As part of his work studying and treating vasculitis, a rare condition in which immune responses cause inflammation and damage in blood vessels, he strives to improve care for Spanish-speaking patients. Sattui and other physicians partnered with the Vasculitis Foundation to develop educational videos about the condition that take into account the cultural context of Latin American patients and their ability to access treatment.

The Bristol-Myers Squibb Foundation has supported Sattui with a Robert A. Winn Diversity in Clinical Trials Career Development Award, which aims to extend the reach of clinical trials to underserved populations. Recently, Sattui joined the Internal Medicine Residency Program's International Scholars Track for Residents as codirector for research.

"There's value and power in representation," Sattui says. "That's very crucial, not only for colleagues, not only for medical students, but also for patients."

From top, Opresko, Berg, Buranosky

Women of distinction

NEW ENDOWED CHAIRS

Endowed professorships offer distinction and stable support for faculty. Out of 84 such professorships at the School of Medicine, only 13 were held by women in 2021. Yet women make up 44% of the faculty.

When a task force brought this to his attention in 2021, Dean Anantha Shekhar committed to expanding leadership opportunities and support for women faculty. Since then, the school has named three additional women as endowed professors: **Patricia Opresko**, a PhD and leading telomere researcher, is the Dr. Bernard F. Fisher Professor of Breast Cancer Discovery Science. **Wendie Berg**, an MD, PhD admired for her work optimizing breast cancer screening technologies, is the Dr. Bernard F. Fisher Professor of Breast Cancer Clinical Science. And **Raquel Buranosky**, an MD, MPH known for her work in women's health and curriculum development, is the Dr. Leo H. Criep Professor in Patient Experience.

First, listen

Team care on the street

Every Wednesday, accompanied by faculty from the medical school, student volunteers with Street Medicine at Pitt roam Downtown, East Liberty, Shadyside or Oakland asking people without homes what they need—and provide it whenever they can.

Blood pressure checks, wound care and offers of medications, eye drops and ointments are routine, and the clinicians on hand often provide more involved care as needs arise.

The interprofessional student-run group, launched in 2021, follows the lead of those they serve, rather than imposing anything. Often, even those suffering from health problems don't ask for or accept care on the spot—they may have more pressing needs in the moment. Others have felt mistreated in formal medical settings. Many just want a sympathetic ear.

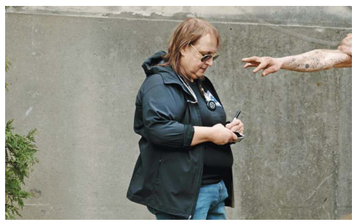
"You are taught to be a fixer in the halls of the medical school," says **Kathleen O'Connor**, a third-year medical student and president of Street Medicine at Pitt. "You really have to let that white coat go when stepping onto the street. The reality is that for many, their chronic conditions are not a priority. They're just trying to survive to the next step."

Their method has deep roots in Pittsburgh: In 1992, Pitt Med alum **Jim Withers** took to the streets to provide care for the unhoused. His efforts turned into Operation Safety Net, which has inspired other programs—many launched by his acolytes—throughout the country.

Street Medicine at Pitt membership includes hundreds of students in occupational therapy, public health, nutrition, dental medicine and other disciplines. The group's cofounders include **Antonio Gumucio**, an EMT and public health student, and **Becky Mackenzie**, a PhD student in bioengineering who was unhoused as a teenager. They keep Wednesday street rounds small with groups of 10 or fewer, but engage other members with book clubs, workshops and speakers. **Anna Marie White**, MD clinical assistant professor of medicine and pediatrics, and **Max Hurwitz**, DO assistant professor of physical medicine and rehabilitation, advise the students and accompany them on rounds.

Some volunteers say it will be difficult to go back inside the clinic, with its checklists and other demands.

"Students have said to me that street medicine has spoiled them from going back to the hospital setting," says **Julia Lam**, an occupational therapist and the group's former president. "And I feel like that's what happened to me."



"IT WAS POWERFUL TO GET TO KNOW AND BUILD STRONG INTERPROFESSIONAL RELATIONSHIPS WITH [STUDENTS FROM] DIFFERENT SPECIALTIES."
—REBECCA BROWN

Teamed up for vaccinations

This is what interprofessional education looks like

A med student, a nursing student and a public health student sit, talking to a patient. This isn't a setup for a joke. It's a description of just a regular day at the Pitt Vaccination and Health Connection Hub. The Hub, for short, is the latest brick-and-mortar space for interprofessional health sciences education on the Oakland campus.

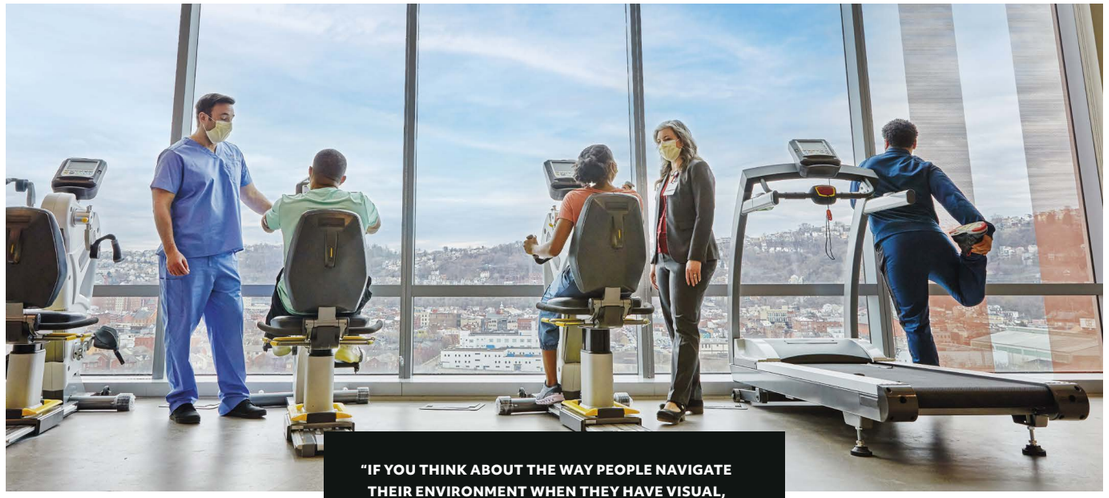
Designed as a kind of health concierge service, the Hub offers wellness screenings to Pitt employees and provides adult vaccinations to the entire Pitt community and the public (five days a week and year-round). It also offers opportunities for the next generation of health care professionals at Pitt to come together as they train.

"In the classroom, we learn a lot about the power of a cohesive interdisciplinary team, but the opportunities to see that truly coming to fruition are limited," says **Julianna Keith**, a nursing student, who kept volunteering at the Hub in 2022, even after completing her requisite inpatient clinical hours. "Everyone was part of a team. Everyone was invited to take part in something bigger than their course syllabus, bigger than the University and bigger than themselves."

Born out of Pitt's response to the coronavirus pandemic, the Hub (previously called Pitt CoVax) focused efforts in its early days on getting people vaccinated for COVID-19. Thousands of Pitt's neighbors reached out to the Hub for help as the vaccines became available. Speedy and equitable distribution was the priority.

In spring 2023, the clinic expanded to offer other adult vaccines (shingles, pneumococcal, tetanus, mpox); more recently it's been rolling out travel vaccinations. The Hub provided nearly 11,500 vaccinations in fiscal year 2022–23.

"It was powerful to get to know and build strong interprofessional relationships with [students from] different specialties," says **Rebecca Brown**, a Pitt Med student. "The experience cemented some humility in me. I will be a doctor one day, and I am only one small aspect of a care team."



"IF YOU THINK ABOUT THE WAY PEOPLE NAVIGATE THEIR ENVIRONMENT WHEN THEY HAVE VISUAL, MOBILITY OR COGNITIVE IMPAIRMENTS, THERE ARE A LOT OF SIMILARITIES IN WHAT WE NEED TO DO IN TERMS OF A REHABILITATION APPROACH."
—GWENDOLYN SOWA

At the leading edge

Independent thinking, together

The UPMC Mercy Pavilion, which opened for patients May 1, 2023, in the Uptown neighborhood of Pittsburgh, serves people "trying to regain their vision, mobility, lives and independence," says **José-Alain Sahel**, an MD, Distinguished Professor and Eye and Ear Foundation Professor. Sahel is chair of ophthalmology at Pitt Med, as well as director of the UPMC Vision Institute.

His faculty is now housed alongside Pitt's physical medicine and rehabilitation experts in the new 410,000-square-foot facility, which is both a clinical and research space.

"If you think about the way people navigate their environment when they have visual, mobility or cognitive impairments, there are a lot of similarities in what we need to do in terms of a rehabilitation approach," says **Gwendolyn Sowa**, an MD, PhD, Endowed Professor and chair of physical medicine and rehabilitation at Pitt, as well as director of the UPMC Rehabilitation Institute.

The research and clinical capacities at the Mercy Pavilion "place Pitt and UPMC at the leading edge of visual and physical rehabilitation medicine worldwide," says Dean **Anantha Shekhar**.

Bridges for addiction research

SCIENCE BENEFITS FROM DIFFERENT PERSPECTIVES

Ask **Jane Liebschutz**, an MD and Pitt's chief of general internal medicine, what's needed in addiction research, and she'll tell you: "We need multidisciplinary approaches. The disease, as many diseases are, is really a result of an interaction between the individual and the environment. It's physical and physiological, but we also need to understand the environment where we treat people and where they live."

The Pittsburgh Foundation is helping address that need with $300,000 in funding for Bridging Connections in Addiction Research. In 2022, the program began supporting three groups of Pitt investigators coming together across disciplines and across the translational spectrum (meaning basic, clinical and population science). "It can seem risky to collaborate with people you haven't worked with before," says Liebschutz, who's the Falk Professor of Ambulatory Medicine. The foundation's support offers an opportunity to test pilot programs and new collaborations. One group has already published results on factors in play in cases of chronic alcohol exposure, withdrawal and pain. "Science really benefits when different perspectives come together," says Liebschutz.

Generosity that moves us and enables us to advance medicine

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, 2022 and June 30, 2023, have supported us in our academic, research and clinical missions.

Thank you.

Move us

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Nicholas J. Alfano
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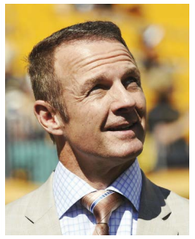
Julia Kofler

Jerome Bettis



Merril Hoge

Neuro heroes

What are the long-term health effects of participating in contact sports? Are some sports more dangerous for your brain health than others? How can you keep yourself or your kids safe from head injuries on the field of play?

These are among the many questions that experts expect to answer at the University of Pittsburgh's National Sports Brain Bank (NSBB). The new initiative is supported with grants from The Pittsburgh Foundation, Richard King Mellon Foundation and Chuck Noll Foundation for Brain Injury Research.

Both a brain donation registry and a novel longitudinal observational study, the NSBB aims to refine the data and diagnostic criteria of neurodegenerative processes following traumatic brain injury. The NSBB team includes director Julia Kofler, MD associate professor of pathology, and Oscar Lopez, the Levidow-Pittsburgh Foundation Professor in Alzheimer's Disease and Related Dementias, MD professor of neurology, of psychiatry and of clinical and translational sciences.

While numerous papers have been published suggesting concussions and subconcussive blows may lead to permanent brain damage or degeneration, many unanswered questions remain. The NSBB offers an ideal opportunity to unravel chronic traumatic encephalopathy (CTE), the causes and effects of which are not well understood. This is, in part, because diagnosing and evaluating CTE is currently possible only through an autopsy, notes Kofler.

However, the NSBB has reimagined the way these data are collected and will be tracking and studying participants over the course of their lifetimes. This process will fill in the gaps left by current research practices by having the volunteers, as well as a study partner, someone who knows them well and interacts with them regularly, answer questions about how their condition might be progressing over time.

Already, NFL Hall of Famer Jerome Bettis and another former Steelers running back, Merril Hoge, have signed on as participants. But the registry is not limited to fan favorites: Becoming a research volunteer for the NSBB is open to any adult who has engaged in a contact sport at any level of play (including collegiate and amateur athletes), served in the military or had a concussion from another cause. Pitt clinical professor of neurological surgery Joseph Maroon, who played football in college, is participating as a brain donor as well.

Kofler hopes the NSBB's approach will enable scientists to offer clearer guidelines to athletes and determine why some people are more vulnerable than others to neurodegeneration "so that people can make an informed decision about what the risks are with individual sports."

Donations to the NSBB will merge with Pitt's existing collection of more than 2,000 specimens in its Neurodegenerative Brain Bank. Then, the de-identified data and tissue samples gathered will be widely shared with the broader research community for further study.

"The [NSBB] is another example of Pitt and Pittsburgh stepping up to serve as national leaders in important work," says Sam Reiman, director of the RK Mellon Foundation.

Another chance


Melodie and George Rogers

When George Rogers, of Fresno, California, needed a liver transplant, his options were few. At 73, Rogers was low on the national transplant list, which meant a longer wait than he was likely to survive with advanced nonalcoholic fatty liver disease. His nephew Casey Rogers was eager to donate part of his liver to him. But the uncle's and nephew's blood types were incompatible. Only a handful of programs in the country regularly offer living donor transplantations. About 6% of liver transplants in the United States come from a living donor; a large portion of those happen in Pittsburgh.

After two years of searching, in May 2020, George and Casey Rogers became part of a four-person living donor paired exchange at UPMC. Casey donated a portion of his liver to a stranger who matched his blood type, and George received a portion of another person's healthy liver. Within months, the recipients' livers would regenerate from the healthy donor cells, and the donors' healthy livers would regenerate, too.

"At the time, we were the only center in the country doing paired exchanges for living donor transplants," says Abhinav Humar, an MD, the Dr. Thomas E. Starzl Professor of Transplantation Surgery and clinical director of the Thomas E. Starzl Transplantation Institute.

"George was an individual who likely would never have received a liver another way," says Humar.

Rogers had built and grown a national staffing agency franchise, Pridestaff, over the course of his career. The agency provided meaningful opportunities for job seekers to improve the communities in which they lived and served. Giving was a central value for George and his wife, Melodie Rogers; they generously supported their communities long before he became sick.

Unfortunately, George Rogers died in February 2021, as a result of a cancer unrelated to his liver. The family remains grateful for the care he received in Pittsburgh.

Recently, the George and Melodie Rogers Foundation made a gift of $1 million to the Starzl Transplantation Institute to support clinical research at the University. The hope is to further advance the field of liver transplantation with new discoveries and treatments. Humar notes they are looking at ways to "achieve tolerance," i.e., convince the body to accept transplanted tissue without requiring a lifetime of powerful immunosuppressive drugs. Starzl Institute researchers are also exploring the machine preservation of livers from deceased donors to extend the lifespan of the organ for those waiting for a transplant.

Melodie Rogers is still grieving the loss of her husband, whom she met at 17 and loved for his patience, mind and generosity of spirit. "The University of Pittsburgh saved my husband's life," she says. "They did things that no other place was willing to do for us. They gave us another year and a half together."

Humar encourages people to follow the Rogerses' example and research their options. "Not many people know about the living donor option," he says. "They saw the remarkable difference that it made.

"The important thing about this story is not the ending but rather the beginning."

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*Congetta Mongelluzzo
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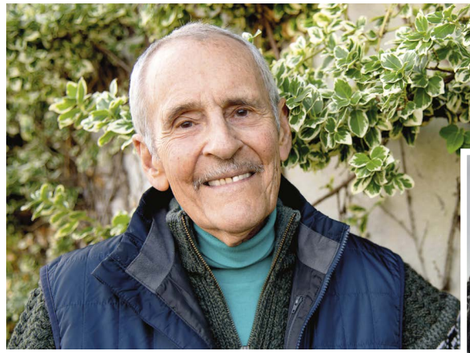
Kaya Usami
Zalman P. Usiskin and Karen M. Usiskin

*Before an individual's name indicates the person is deceased



Charles J. Seigel

Rachel Eleazu

Helping others excel

"I remember standing on the steps of the Litchfield Towers the first year they were opened—like Mary Tyler Moore, hat in the air," Charles J. Seigel, an MD who graduated in 1967, says. His acceptance to Pitt Med in 1963 marked an important transition away from home as a young adult.

Seigel had earned his undergraduate degree in his native New Jersey, but had not been offered any financial aid, despite having to work three jobs and live at home to get through college. Pittsburgh was his first real "college experience."

"I went to football games in between studying for exams. I stayed in the dorms for four years. The first semester of school, I was called into the dean's office and told that I had done very well; if I kept up my grades, I would have a full scholarship," which is what he did. "That made me feel so good. I just always felt something for the University. I wanted to help any other kid [in my position] to graduate."

Seigel has supported students at the School of Medicine annually for nearly 50 years. In fall 2021, he committed to establishing the Charles J. Seigel, MD, FACOG Scholarship Fund through a $100,000 gift. The need-based scholarship will support Pitt Med students with tuition and other education-related expenses.

Following his first year of residency, Seigel was drafted into the military and served in Korea and Japan. He was on the obstetrics team at the Air Force hospital in Tucson, based at the University of Arizona, where he started teaching—with, he points out, just one year of training. He then went on to start the obstetrics department at Monadnock Community Hospital, a rural critical access hospital in New Hampshire and the only ob/gyn private practice in the area. In his 40 years there, Seigel served as department chair of ob/gyn, president of the medical staff and a hospital trustee. He was also an adjunct faculty member at nearby Dartmouth Medical School, teaching and developing relationships with students as they rotated through his practice.

In December of 2022, he contributed additional funds to Pitt Med with an eye toward further growing the scholarship fund.

"I am delighted that I am able to help [other Pitt students] accomplish their goals."

The inaugural Seigel scholarship was awarded in 2022 to Rachel Eleazu, a brand-new MD, part of Pitt Med's Class of '23. Eleazu was a Pitt neuroscience grad who was born in Nigeria and grew up in New Jersey. She served as national vice president for the Student National Medical Association.

"Medical school is absolutely not cheap," said Eleazu in a scholar profile sent to Seigel. "From the financial burden to the mental and physical burden, our rigorous education and training absolutely takes a toll. Having some financial security has provided me with the mental bandwidth to focus on my education and really excel this past year."

Eleazu is now a resident in ob/gyn at Baylor College of Medicine in Houston, Texas. She's committed to health equity and especially focused on access to good prenatal care.

The connection to Seigel's specialty is a happy coincidence.

The right combination


Sameer Agnihotri

The survival rates for two deadly forms of brain cancer tell a grim story about the approach to treating those tumors. But a School of Medicine scientist believes that introducing a new character, actually two, could weave some hope into the plot.

Sameer Agnihotri, a PhD and assistant professor of neurological surgery, is using a $600,000 award from the Sontag Foundation to test treatments for diffuse midline gliomas (DMG) and diffuse intrinsic pontine gliomas (DIPG) in children. Even after decades of research, brain cancers remain the leading cause of death in children with cancer. The gliomas Agnihotri and his team of researchers are targeting—tumors buried deep inside the brain—are especially deadly; the five-year survival rate is about 2% for patients with a DIPG and about 49% for those with a DMG.

Agnihotri thinks traditional approaches—chemotherapy, surgery and radiation—can't solve this problem alone. His team is investigating the possibility that pairing those treatments with dietary interventions, metabolic inhibitors and targeted therapies could be a way forward. He says it's also possible that a combination of such interventions could work without the need for traditional therapies.

"Monotherapy will never work for pediatric brain tumors," he says. "This synergistic approach is a key mission in our lab."

To understand the strategy used by Agnihotri's team, it's helpful to consider how DNA works. You can think of DNA as carrying information, in its own language, that our bodies use to control certain traits. What's known as epigenetics provides the syntax and structure that allow cells to decode the instructions for proper function.

Brain tumors have two key traits: deregulated epigenetics and distorted metabolism. Agnihotri's team explores how cells depend on metabolism to sustain epigenetic function. The tumor cells use nutrients in the body differently than those in normal brain tissue. They can convert the nutrients into chemical reactions that can alter epigenetics.

This connection—nutrient to epigenetics—is in disarray in pediatric brain tumors. The team is targeting the metabolism in the gliomas using diet (methionine restriction), next-generation genomic technologies and novel small molecule inhibitors that can target the brain tumor cells while leaving normal brain cells alone.

The Sontag Foundation, founded by Rick and Susan Sontag after Susan's experience with brain cancer, issued a statement about the award: "Dr. Agnihotri is recognized as an international expert in brain tumor metabolism. We believe his work will better inform preclinical models and has the potential to accelerate therapeutic developments in the brain cancer space. Survival rates for adult and pediatric patients with brain tumors have not changed significantly over the past 45 years despite major improvements made in the treatment of other cancers. The Sontag Foundation believes that investments in researchers like Dr. Agnihotri are essential to changing this statistic."

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