Devoted to noteworthy happenings

at the medical school

Pittsburgh Atlas

Researchers at Dartmouth set out more than 20 years ago to create a map that would describe both where people lived and where they went to get their health care. In the first iteration of what they called the Dartmouth Atlas of Health Care, they split the nation into 306 regions, but many of them crossed state and county lines—there was no way for policy makers or public health agencies to use the map if they had jurisdiction over only part of a region.

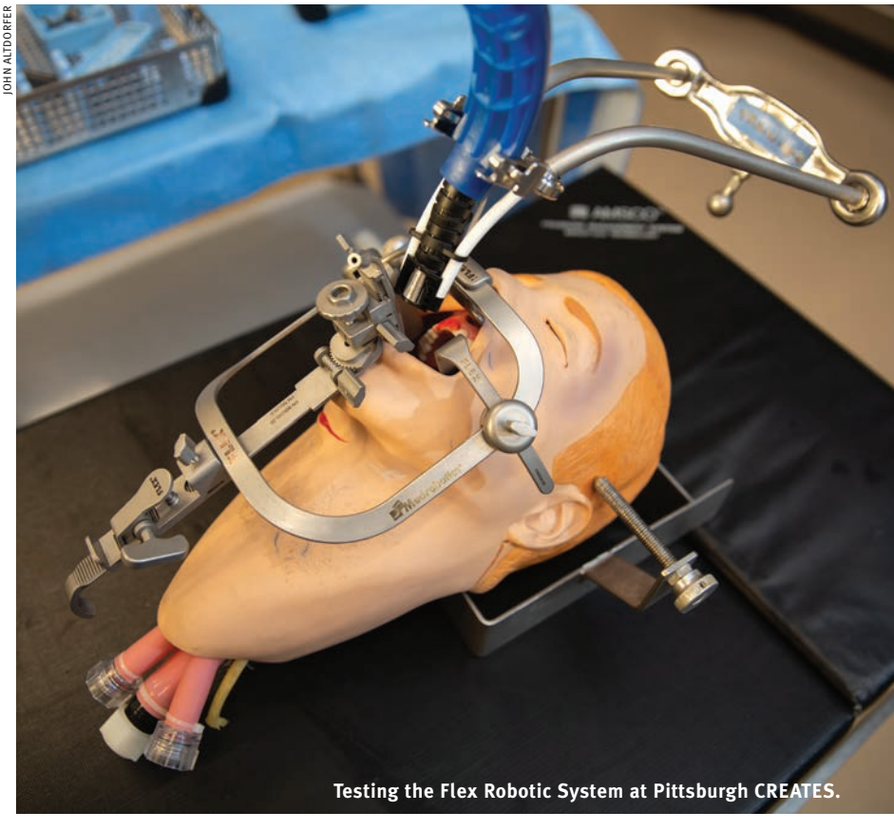
"No one has ownership of a Dartmouth Atlas region," says David Wallace (Fel '11), an MD/MPH assistant professor in the University of Pittsburgh Department of Critical Care Medicine. "You don't have natural stakeholders. If a county is cleaved in half by the Dartmouth Atlas, who takes ownership of the parts?"

Seeing the potential for health care policy to shift toward state powers, Wallace and his team created the Pittsburgh Atlas, a map of care referral regions that factors in state and county borders. The team designed the map using data on where people were receiving emergency care for heart attacks, major trauma, and strokes, as well as data on the outcomes of that care. Wallace says now investigators will be able to compare states and say, "State A has done X, Y, and Z. Has that had a meaningful impact on groups of patients that we can epidemiologically draw dotted lines around?

"The Pittsburgh Atlas is a way of moving beyond comparing apples to apples and into thinking about orchards," he says.

—Evan Bowen-Gaddy

JOHN ALTDORFER



Testing the Flex Robotic System at Pittsburgh CREATES.

Creative Surgical Tech

On the first floor of the UPMC Eye and Ear Institute, a clinician tests a new surgical robot with a flexible arm. The device was developed at Carnegie Mellon University, tweaked at Pitt Med, sold by a private company in Boston, and has found its way back to Pittsburgh, where surgeons are now using the robot for transoral and colorectal surgery. How did engineers, clinicians, and entrepreneurs find their way into the same room? They collaborated at Pittsburgh CREATES, Pitt Med's new lab where clinicians and engineers work side by side to build and evolve surgical technologies.

"What we're there for is to bring thought leaders together with clinicians who probably have the greatest insight into how to improve the outcomes for patients," says Max Fedor, executive director of Pittsburgh CREATES. The lab was developed by Fedor, Umamaheswar Duvvuri, assistant professor of otolaryngology, Carl Snyderman, professor of otolaryngology and neurological surgery, and Jonas Johnson, chair of otolaryngology. It differs from other innovation labs around the country in that it operates on a fee-for-service model; surgeons work on single assignments rather than large research projects. "When we need to bring in clinicians, they're nearby. They can come in for an hour; they can work with us; they can go back to the OR," says Fedor. *—EBG*

CAMI MESA

Overheard: Culture Shock

How do you say "contractions" in Uzbek? Daniel Lattanzi (Res '82), assistant professor of obstetrics, gynecology, and reproductive sciences, works with video translators regularly at UPMC Magee-Womens Hospital. He sees an increasing number of patients from North and Central Asia. But he's finding that communication challenges span more than just vocabulary. For example, Lattanzi learned that in Uzbek culture, women aim for four children. "That's good for business," he says with a laugh. It also emphasizes how much he and his residents have to learn about his patients' various cultures, particularly how those cultures conceptualize motherhood and pregnancy issues.

How do cultures around the world view postpartum depression differently than we do in the United States?

Many cultures do not accept depression as a problem that can be treated and addressed. There are cultural issues related to how you are supposed to behave and feel after having a baby, and there can be stigma or repercussions for the entire family if a woman deviates from these norms. We have to accept the fact that, in other cultures, women have different roles. That's not right or wrong. A lot begins with understanding the cultures we are interacting with and being supportive rather than making everyone American. Many of our patients are separated from family, which puts them at an increased risk for postpartum depression. So many other countries have wonderful systems to take care of women after childbirth, with relatives coming in to take care of the home and other children and the mother herself. Here, there's nobody to help.

How have you adjusted your standard postpartum depression screening tools to better serve this foreign patient population?

Written screening forms are often easier for women to fill out because they feel like they have some privacy, but I will often see women just randomly circling answers because they don't understand the questions. Not only is the concept or perception of depression different in some cultures, but concepts like "sometimes" versus "often" are difficult to grasp. Our forms need to make sense culturally. We collaborate with our social work staff to gather these patients' histories and provide the total care they need.

Has this awareness changed your practice model?

We are trying to establish a specialty subclinic where patients with limited English proficiency can come and be treated in a culturally comfortable way. Our immigrant patients have the same interests and needs as all women. They want a relationship. Someone they can trust. We want to create that environment for them. It starts with good communication. A dream of mine is that everyone will consider that not all patients have the same background and see this as an important part of providing care. —*Katy Rank Lev*

Faculty Snapshots

In March, Bernard Fisher (MD '43), Distinguished Service Professor, received the 2018 Charles M. Balch Distinguished Service Award from the Society of Surgical Oncology. David Bartlett, Bernard F. Fisher Professor of Surgery, says, "[Fisher] changed the way we approach cancer treatment by addressing the systemic process in which it is spread. This lifetime achievement is given to a surgeon who has the greatest impact on surgical cancer care."

Fisher

The American Academy of Arts and Sciences has elected Angela Gronenborn, a PhD, to join its ranks. Gronenborn is the UPMC Rosalind Franklin Professor, a Distinguished Professor and chair of structural biology, and a professor of bioengineering. "It is a great honor to join a truly outstanding society of scholars, artists, and thinkers in all fields. It is a privilege to be a scientist," Gronenborn says. She was also just given the Mildred Cohn Award in Biological Chemistry from the American Society for Biochemistry and Molecular Biology.

Gronenborn

In March, associate vice chancellor Maggie McDonald, a PhD, received the Group on Institutional Advancement Distinguished Service Award from the Association of American Medical Colleges. "What began as a small group of colleagues has grown into an ever-expanding circle of friends," McDonald says. "For any advice I may have shared, I've gotten that back several times over."

McDonald

Jane Schell received the Hastings Center Cunniff-Dixon Physician Award for developing NephroTalk, a communication skills training program that helps doctors discuss end-of-life care decisions with patients suffering from advanced kidney disease. "I think that what I am most proud of is that this award is really honoring kidney palliative care," Schell says. She is an MD assistant professor of medicine within the Section of Palliative Care and Medical Ethics and the Renal-Electrolyte Division.

Schell

For being one of the leading surgical scientists of the last 50 years, Richard L. Simmons was awarded the Medallion for Scientific Achievement by the American Surgical Association. Simmons is chair emeritus of the Department of Surgery. Current chair Timothy Billiar says, "He has always understood that it is through helping others to achieve what they want to achieve that he realizes his greatest fulfillment; and in doing so, he's recognized for greatness." —*Nichole Faina*

Simmons

BURDEN OF GENIUS

It's a *Rocky*-esque story in the world of medicine—that's how Carl Kurlander, a film studies senior lecturer at Pitt, describes *Burden of Genius: Dr. Thomas Starzl's Journey into Organ Transplantation*, a documentary he coproduced with Laura Davis about the legendary Pitt Med surgeon. *Burden of Genius* chronicles the medical and professional challenges Starzl overcame to give hope to patients with liver failure. Starzl, an MD/PhD who died in 2017, performed the world's first successful liver transplant in 1967 at the University of Colorado.

The film, directed by Tjardus Greidanus, won the Cleveland International Film Festival's Global Health Competition prize in April. The heart of the documentary, says Kurlander, is Starzl's unrelenting belief in science's ability to heal. He adds, "If [*Burden of Genius*] was just a movie about a brilliant, innovative surgeon . . . that would have been enough. But in watching this film you realize that it was all driven by a man who had a vision, and he would not be stopped, which is what made him one of the greatest medical figures of the 20th century."

Starzl, who joined Pitt in 1981, also is credited with developing the organ procurement and immunosuppressant protocols necessary for successful transplants. Early in his career, the surgeon acquired many detractors who believed that transplantation was ethically unwise. In fact, it was when one of Kurlander's Pitt film students showed him a 1983 clip of *Nightline*, during which Ted Koppel asked Starzl if he was giving people false hope, that Kurlander realized the narrative potential of Starzl's story. *—NF*

PITTSBURGH POST-GAZETTE/JOHN KAPLAN, PHOTOGRAPHER

MIKE DRAZDZINSKI/ UNIVERSITY OF PITTSBURGH

ABOVE: Starzl and Oscar Bronsther in a photo shown in *Burden of Genius*. BELOW: A statue of Starzl now sits next to the Cathedral of Learning.

Overcoming the Brain's Defenses

What do you do when you're performing brain research and the brains fight back? If you're Tracy Cui, you improvise. Cui, Pitt's William Kepler Whiteford Professor of Bioengineering, is studying why young adults are more susceptible to drug addiction, specifically to cocaine.

But brains (in this case, those of rats and mice) have a way of rejecting sensors. Cui says immune cells tend to damage tissue surrounding the sensor, and the resulting scars block its ability to communicate. To overcome this issue, Cui's team of bioengineers developed a synthetic "zwitterionic" polymer (these neutrally charged molecules like binding with water). The team spreads the polymer on the implant sensors. The approach gives them up to 72 hours to record the effects of cocaine. The previous approach yielded just 5 to 10 minutes.

The sensors have multiple electrodes spanning 5 millimeters in depth.

"We can actually get multiple measurements, and we can compare adult rats and young rats and see if the cocaine concentration ends up being different between them," Cui says. Funded by a National Institutes of Health grant, the two-year study on addiction is aimed at discovering whether the age effect is the result of differences in neuron sensitivity to cocaine or whether it's a result of where in the brain the drug concentrates. "We care about the real-time cocaine concentration in different regions of the brain," Cui says. "How can we [learn about] that? By reducing the foreign body response to the implant, by inhibiting the new cells that are activated because of the insertion."

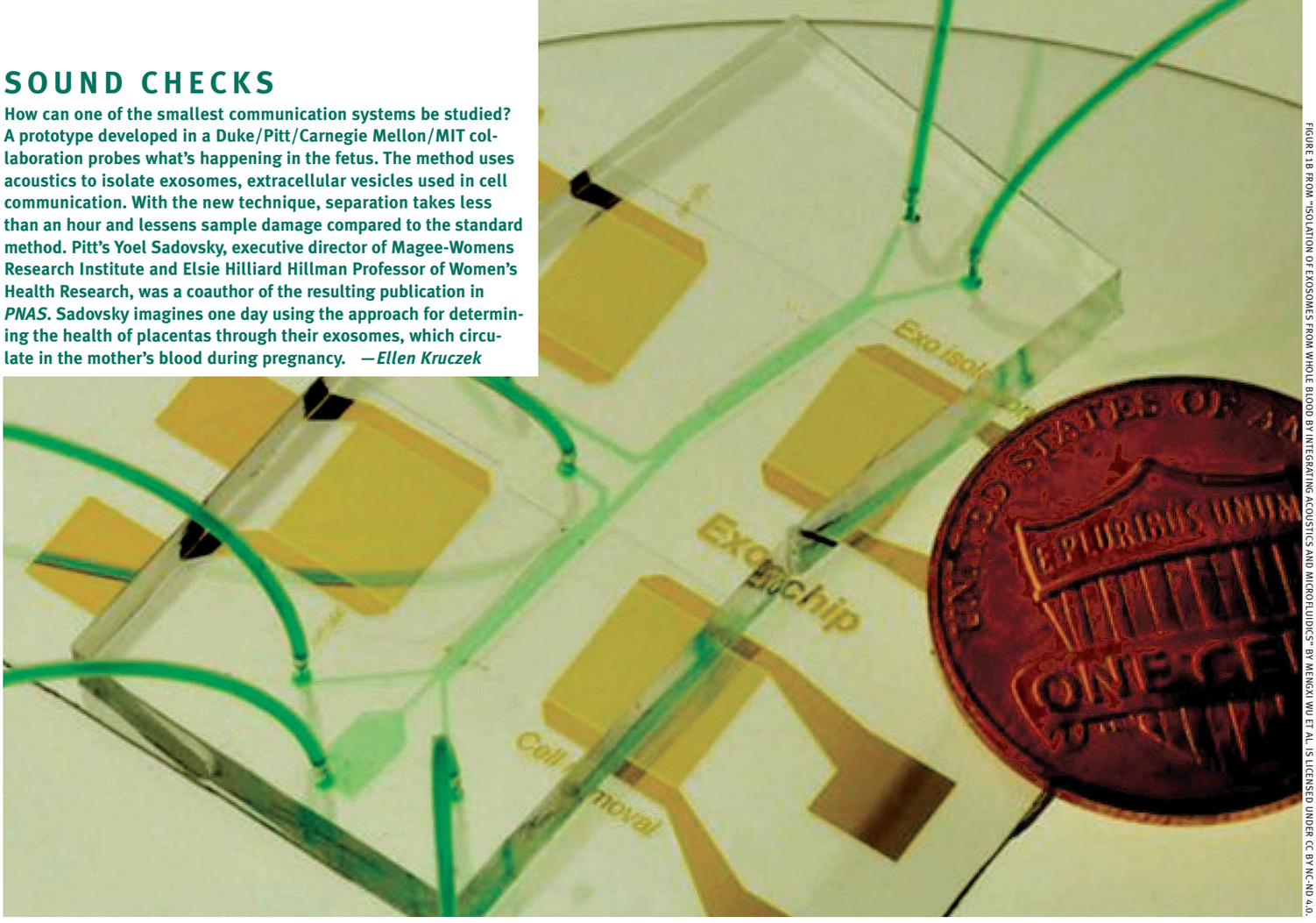
If the sensors are successful, Cui says, they can be used to measure other substances, like alcohol or opioids. *—Gavin Jenkins*

FOOTNOTE

George Harrison—the quiet genius of the Beatles—helped popularize Indian music in America in the 1960s. Vijay Bahl, MD codirector of Pitt Med's endocrine fellowship training program, has been championing the genre for local fans for more than 40 years. Bahl (Res '74, Fel '77) cohosts *Music from India* at 8 p.m. on Sundays on 90.5 WESA with Harish Saluja, who started the show five years before the Pitt Med doc joined. *Music from India* is the longest-running Indian music program in the country, and it features the genre in all its forms, from classical to modern.

SOUND CHECKS

How can one of the smallest communication systems be studied? A prototype developed in a Duke/Pitt/Carnegie Mellon/MIT collaboration probes what's happening in the fetus. The method uses acoustics to isolate exosomes, extracellular vesicles used in cell communication. With the new technique, separation takes less than an hour and lessens sample damage compared to the standard method. Pitt's Yoel Sadovsky, executive director of Magee-Womens Research Institute and Elsie Hilliard Hillman Professor of Women's Health Research, was a coauthor of the resulting publication in *PNAS*. Sadovsky imagines one day using the approach for determining the health of placentas through their exosomes, which circulate in the mother's blood during pregnancy. ***—Ellen Kruczek***



Name Dropping

On May 10, Pitt's 2018 Laureate Lecture Series kicked off when **Botond Roska**, MD/PhD professor of medicine at the University of Basel, Switzerland, delivered his talk, "The First Steps in Vision." The lecture series is a yearlong program featuring top biomedical researchers in their fields. Roska, the founding director of the Institute of Molecular and Clinical Ophthalmology Basel, studies the structure and function of visual circuits in search of new ways to repair visual dysfunction in patients with retinal diseases like retinitis pigmentosa, which affects 2 million people worldwide and can lead to incurable blindness.

Roska and his labmates investigate cell types within the retina, thalamus, and cortex using a number of tools, many of which they invented. With optogenetic methods (which use light to control cellular functions), Roska seeks to restore retinal photosensitivity in patients. It's rare for retinitis pigmentosa to cause complete blindness. Roska explained to the Pitt audience that this can be an obstacle in the lab, because without complete blindness, some photoreceptor cells are intact—and the researchers don't want to change healthy cells. So Roska and his team have begun altering optogenetic wavelengths for people with partial blindness.

Roska's visit took place just as his review on restoring vision came out in *Nature*. His coauthor was Pitt's **José-Alain Sahel**, chair of ophthalmology and the Eye and Ear Foundation Professor; Sahel also heads L'Institut de la Vision in Paris.

The series continued on June 14, when **Bruce Beutler**, MD and director of the Center for the Genetics of Host Defense at the University of Texas Southwestern Medical Center, presented "Studying Immunity by Randomly Inactivating Genes in Mice." Beutler earned a share of the 2011 Nobel Prize in Physiology or Medicine for the discovery of a family of cell receptors that enable mammals to sense the presence of infections, triggering an inflammatory reaction.

The three remaining 2018 Laureate Lectures will be given by . . .

Hopi Hoekstra, a PhD and the Alexander Agassiz Professor of Zoology at Harvard University, as well as a Howard Hughes Medical Institute investigator, will discuss "The Genetic Basis of Parental Care" on Sept. 27.

Pitt's **Yuan Chang**, an MD and Distinguished Professor of Pathology, and **Patrick Moore**, an MD/MPH and Distinguished Professor of Microbiology and Molecular Genetics, are both American Cancer Society Research Professors. On Nov. 8, they will present "Why Do Viruses Cause Cancer?" The Pitt Med duo discovered two of the seven known human viruses that directly cause cancer.

Alan Hinnebusch, a PhD and National Institutes of Health Distinguished Investigator, will deliver a talk titled "The Molecular Mechanism of Scanning and Start Codon Selection in Translation Initiation" on Dec. 5. ***—GJ***

THE LONG RACE

On a spring day at 5 p.m. in her Tower A dorm, Monica Henderson began her routine—right sock, left sock, right shoe, left shoe—and tied her running sneakers. Bending down to touch her toes, she commenced her lengthy stretching sequence, needed for muscles she says are always tight. Then she tied her shoes one more time—just to make sure they were secure.

Henderson is among hundreds of biology and sociology majors at the University of Pittsburgh, but the 18-year-old is anything but standard. She just ran across the United States in support of the Ulman Cancer Fund for Young Adults. Henderson started at the Golden Gate Bridge in San Francisco with her relay team on June 17 and finished at the Brooklyn Bridge on Aug. 4.

UCF helps alleviate the hardships young adults battling cancer commonly face. It hosts the annual 4K for Cancer—that "K" is for thousand, not kilometers—during which participants cover a total of 4,500 miles to raise money for the fund.

Henderson, who is going into her sophomore year, says many of the runners don't have a personal connection to cancer. But for her, the cause hits close to home.

When Henderson was 2 years old, doctors found a tumor growing on her left cheekbone. She was diagnosed with rhabdomyosarcoma, an aggressive soft-tissue carcinoma. Rhabdomyosarcoma accounts for only 5 percent of all pediatric cancers in the United States. Fortunately, after two years of treatment, Henderson was—and remains—cancer free.

Cancer blindsided Henderson's family in 2012 when her oldest aunt was diagnosed with breast cancer. Henderson's mom was diagnosed a year later, and her youngest aunt was diagnosed in the spring of 2017. Henderson's mother and oldest aunt have since fully recovered.

It was never easy for Henderson to verbalize her experiences with cancer. Now that she's a young adult, however, she's finding her voice.

"I always had like this, something inside me telling me that people should know or do something about [childhood cancer]," Henderson says. "It's always been my passion to give back."

Henderson hopes to become a pediatric oncologist.

"My story's not finished," Henderson says. "I'm not done with this fight yet."

—by Hannah Schneider

—Photography by Theo Schwarz

Adapted and reprinted with permission from The Pitt News.