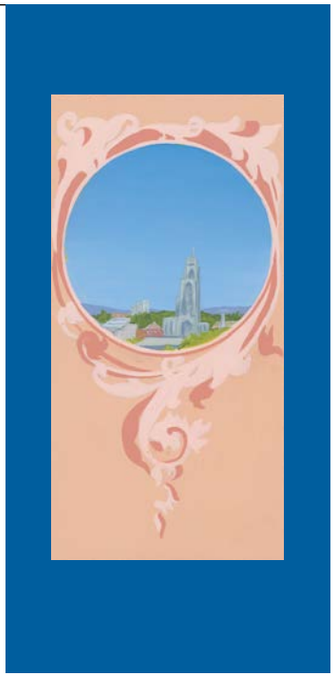
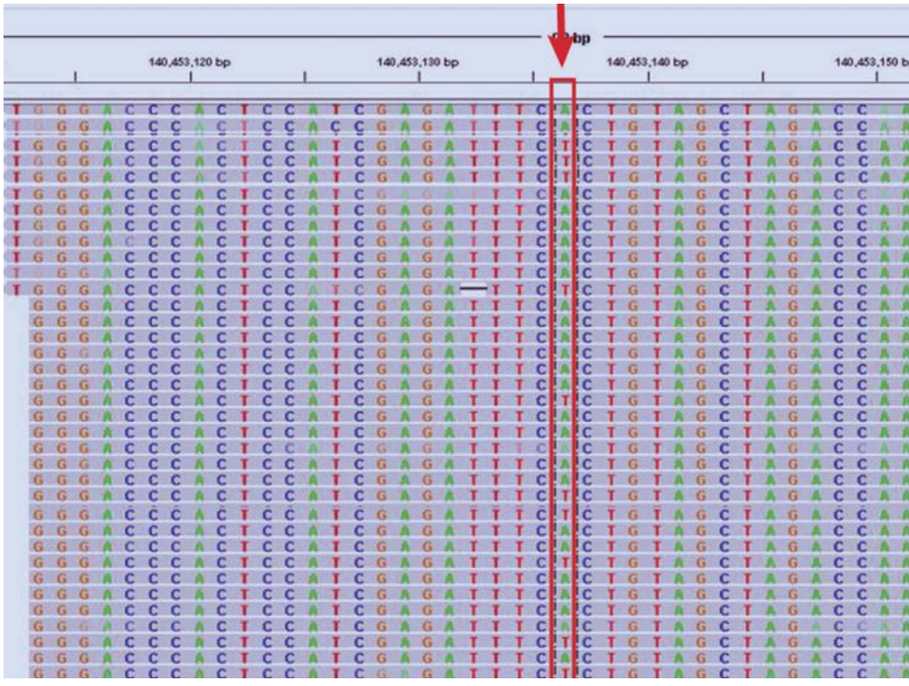


Devoted to noteworthy happenings

at the medical school

ThyroSeq sifts through 112 genes associated with thyroid malignancy.



MARINA NIKIFOROVA

FLASHBACK

Steven Israel remembers sitting in an exam room in the '80s, distraught. The cornerback for the Pitt Panthers realized he'd hurt his ACL badly and might never play again. His doc, Freddie Fu, reassured him. Not only would he fix his knee, Fu said, he expected Israel would one day play in the pros. At that point, no one but Israel's dad had told him he was good enough for the NFL. Israel did get back on the field and found everyone wanted to talk about his "Freddie Fu knee." Israel went on to play for the Rams, the 49ers, the Patriots, and the Saints.

Israel told his story in November at the official naming of the Freddie Fu Sports Medicine Center, part of the UPMC Rooney Sports Complex on the South Side, which Fu helped conceptualize and design two decades ago. Fu and his team have raised the bar on ACL treatment and care for sports injuries of all kinds. There will be more opportunities to honor Pitt's chair of orthopaedic surgery: September 13 is now Dr. Freddie Fu Day in Pittsburgh.



KANTO NAGAI

Next for Nodules

For about 70 percent of patients with thyroid nodules, doctors can determine whether or not a nodule is malignant with a quick needle biopsy, says Marina Nikiforova, MD professor of pathology and director of the Molecular and Genomic Pathology Laboratory. For the rest, however, that determination must be made with a more extensive procedure that can be risky and costly.

Nikiforova and her husband, Yuri Nikiforov, MD/PhD professor and vice chair of pathology, spent more than a decade creating a new test that determines the malignancy of a nodule without surgery. They call it ThyroSeq; it uses next-generation gene sequencing to comb through 112 genes associated with thyroid malignancy.

Sally Carty, MD chief of the Division of Endocrine Surgery and professor of surgery at Pitt, helped test ThyroSeq's clinical validity and is on board with avoiding the surgery when possible: "Why should patients have to go through a diagnostic operation that produces risks or long-term sequelae?"

The test became available nationwide for patients with Medicare in January.

–Evan Bowen-Gaddy



CAMI MESA

Overheard: Mystery in Havana

In 2016, Americans posted at the U.S. Embassy in Havana heard a high-pitched noise. A high-pressure sensation often accompanied the noise, which they heard in their homes and hotel rooms over the span of several months. The symptoms that followed the noise—severe insomnia, nausea when using a computer, ear pain, vertigo, tinnitus, headaches, and cognitive difficulties—were so intense that dozens of U.S. diplomats eventually fled Cuba. A similar case was reported at the American consulate in Guangzhou, China. Soon after, an international firestorm started over whether this was the result of a deliberate sonic attack or hysteria from a string of coincidental symptoms. Now, a couple of years later, a team of researchers including Carey Balaban, a PhD professor of otolaryngology, confirms that personnel who report having these symptoms indeed suffer from real injuries. The researchers examined 130 American embassy personnel (25 of whom reported experiencing symptoms), as well as 10 roommates of personnel affected. (The roommates did not experience symptoms.) The team, led by a University of Miami faculty member, published its results in a recent issue of *Laryngoscope Investigative Otolaryngology*.

Some say it was an acoustic energy weapon while others suggest it was the obnoxiously loud chirping of a Jamaican field cricket. What was your impression when you first heard about this story and the reported symptoms?

Interested and skeptical. I am well aware of the complexities of symptom attribution with balance disorders and novel experiences. Yet, I was also aware that emissions of acoustic (e.g., infrasound or ultrasound) or electromagnetic energy like radio frequencies or light could not be ruled out. For example, it's been known for decades that radar pulses can be audible, produce neuron discharges in auditory networks in the brain, and result in sound that can be recorded inside the head. Parametric speakers [which beam sound focused at high intensity into a relatively small area] use ultrasound as a carrier for directed sound application. Pest control devices use ultrasound and electromagnetic emissions. Hence, I wanted to know more.

Your team tested several Havana personnel. What were the results?

They showed a previously unencountered set of signs [including injury] and symptoms that suggested a primary inner ear effect.

The idea of an attack like this is unsettling. Are there any precautionary measures that we all need to be taking?

In my opinion, it's unsettling, period, whether deliberate or inadvertent. The bottom line is that possible sources of the medical findings do not have an easy or obvious answer. Extremely capable experts in biological, physical, and engineering sciences are currently investigating possibilities.

—Interview by Kate Benz

Faculty Snapshots

In November, physician Ann Thompson was lauded by the Group on Women in Medicine and Science of the Association of American Medical Colleges for her work advancing the roles of women in both academic medicine and science. Thompson is vice dean for Pitt's School of Medicine and professor of critical care medicine and pediatrics.



Thompson

Neurobiologist Peter Strick received the 2018 National Institutes of Health Director's Transformative Research Award for his project, "The Neural Basis of the Brain-Body Connection." Strick is the founding scientific director of the University of Pittsburgh Brain Institute and the Thomas Detre Professor and chair of the Department of Neurobiology. He is one of nine researchers receiving the award which, according to the NIH, supports "exceptionally innovative research projects in the biomedical field with strong potential to shift current paradigms through trailblazing and transformative methodologies that might otherwise struggle to find support via conventional funding."



Strick

For discovering a connection between low vitamin D and high morbidity and disease severity in patients with inflammatory bowel disease, physician David Binion received the Bruce and Cynthia Sherman Charitable Foundation's 2018 Sherman Prize. Binion, codirector of the IBD Center and director of Translational IBD Research, was one of three recipients to receive the prize, which is given to leaders in the IBD field who focus on patient care and is considered the highest honor awarded to an IBD investigator. Binion and his team made the vitamin D discovery during a five-year study that included 965 IBD patients. "We feel fortunate to have received this validation of our work," he says.



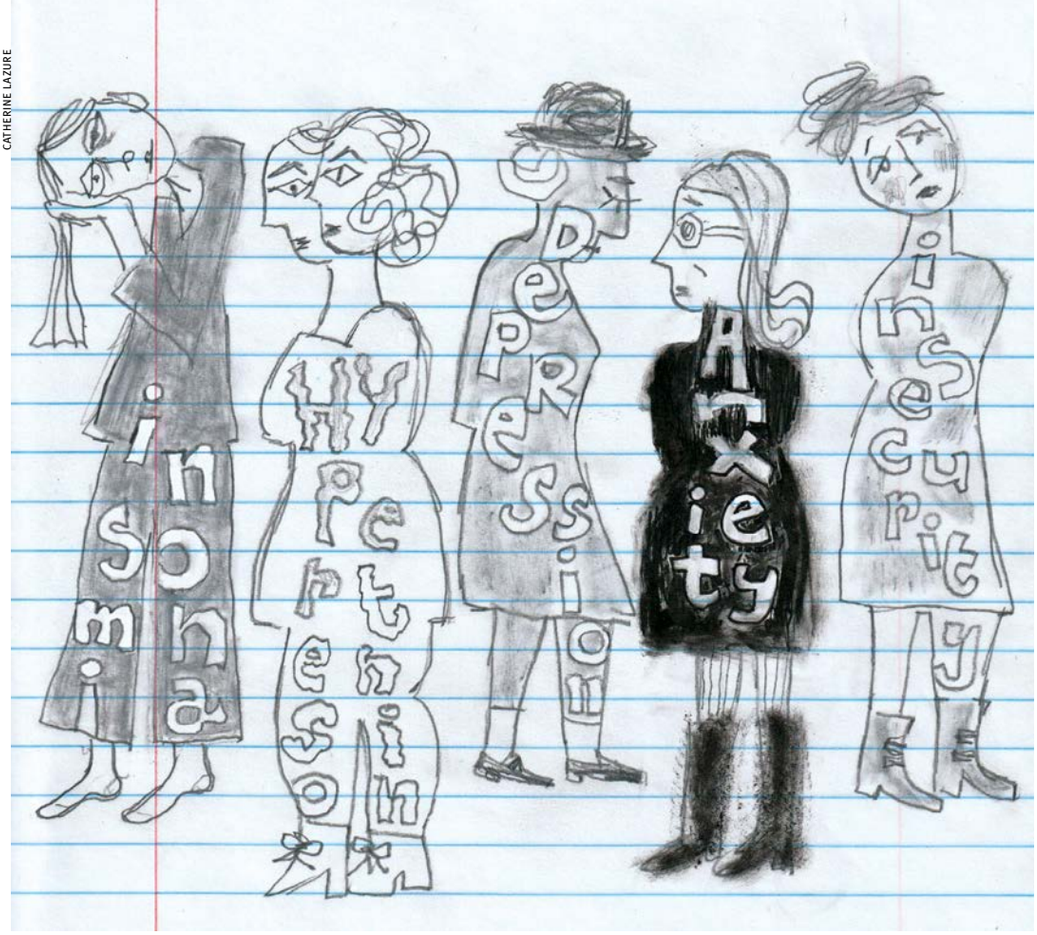
Binion



Bahar

Ivet Bahar will go to Istanbul this March to receive the Kadir Has Outstanding Achievement Award. Bahar, a Distinguished Professor who holds the John K. Vries Chair in the Department of Computational and Systems Biology, was unanimously selected for the award. Named after the founder of Kadir Has University in Turkey, the annual award recognizes a scientist making significant contributions to her field and society. "Complex biomolecular systems dynamics has been my passion for two decades," Bahar says. "It is a nice feeling to receive recognition for the work I love." *–KB*

#METOO IN MIDLIFE



CATHERINE LAZURE

In a study published recently in *JAMA Internal Medicine*, approximately one in five women in midlife reported having been sexually assaulted or harassed. And those incidents can have profound long-term health effects, notes Rebecca Thurston, director of the Women's Biobehavioral Health Laboratory at the University of Pittsburgh.

Thurston is a PhD professor of psychiatry, epidemiology, and psychology. Her team surveyed 304 women ages 40 to 60. Women who'd experienced harassment were nearly four times as likely to have developed hypertension and two times as likely to be dealing with clinically poor sleep than women who did not report a history of harassment. Those who experienced assault had significantly higher odds of elevated depressive symptoms and anxiety in addition to poor sleep. These numbers held true even after adjusting for socioeconomic status, demographics, and medical history.

"We've known for a while that sexual violence is really important for women's mental health broadly, but we haven't focused on measured aspects of their physiology or gone much beyond self-reporting," says Thurston. She notes that sexual assault occurs most often in late adolescence and early adulthood, but there isn't as much nationally representative data on harassment yet.

"We've undergone a transformation as a society and are now more aware of these issues, but our science is just catching up," she says. *—Liberty Ferda*

Serious Stool

You may not think of your intestines this way, but they are, in a certain sense, a shared space; and all of us are landlords, offering residence to a whole slew of actors—gut bacteria. When these tenants aren't helping our health, sometimes it's best to kick them out and invite a new family into our gut microbiome. The best place to find better bacteria? Poop.

Diwakar Davar, UPMC Hillman Cancer Center oncologist/hematologist and assistant professor of medicine at Pitt, is leading a clinical trial to study how fecal transplants could help melanoma patients whose tumors are resistant to immunotherapy. The trial is funded by Merck and the National Cancer Institute.

Davar says the presence of adverse gut bacteria in the intestinal lining can allow cancers to subvert the immune response in patients receiving PD-1 inhibitor therapy. In the trial, he's building a stool bank using samples from patients who have had successful immunotherapies, then transplanting those samples into melanoma patients. "The hope is that this re-energizes the immune system and gets it to work again," says Davar. A team of researchers in Chicago demonstrated in a 2015 *Science* paper that the approach was successful in animal models.

The trial goes hand in hand with the work of cancer immunologist Hassane M. Zarour, who is based at Hillman and is a Pitt professor of medicine, immunology, and dermatology. Zarour studies the mechanism by which cancer cells resist PD-1 inhibitors.

He has been trying to make something like this happen for a while. It wasn't an easy sell. Yet there is now "ample evidence," Zarour says, that certain gut inhabitants can regulate immunity. *–EBG*

FOOTNOTE

Pitt Med leads by example. Literally. Twenty Pitt researchers were named on the 2018 Web of Science report on Highly Cited Researchers. The report spans the past decade and includes 21 fields of science. Highly Cited Papers are defined as those that rank in the top 1 percent for citations for a specific field during a publication year.

DANCING FOR A CAUSE

Classical Indian dance teams from around the country performed at Pitt in February to raise money for the Birmingham Free Clinic in Pittsburgh. The annual dance competition, called Dhirana, was established in 2012 by Pitt students who wanted to celebrate their cultural heritage while supporting a good cause. Since then, they've raised about $79,000 for the clinic, which provides free medical care and social services support to uninsured and medically disenfranchised Pittsburghers. *—LF*



ADERINSOLA POPOOLA/UNIVERSITY OF PITTSBURGH

Pitt and the National Academies

Where does this nation turn for authoritative answers to complex questions about medicine and health? Since 1970, it's been the National Academy of Medicine (which until recently was called the Institute of Medicine). Three physicians from the University of Pittsburgh were recently elected to its membership.

They are Amy Houtrow, MD/MPH/PhD associate professor of physical medicine and rehabilitation as well as pediatrics; Clifton Callaway, MD/PhD professor of emergency medicine, who holds the Ronald D. Stewart Chair; and MD neurological surgery chair Robert Friedlander, the Walter E. Dandy Professor of Neurosurgery and Neurobiology.

Speaking of national academies, Stephen Badylak, DVM/PhD/MD professor of surgery and deputy director of the McGowan Institute for Regenerative Medicine, was elected a 2018 fellow of the National Academy of Inventors. He holds 300 patents worldwide. *—Erica Lloyd*