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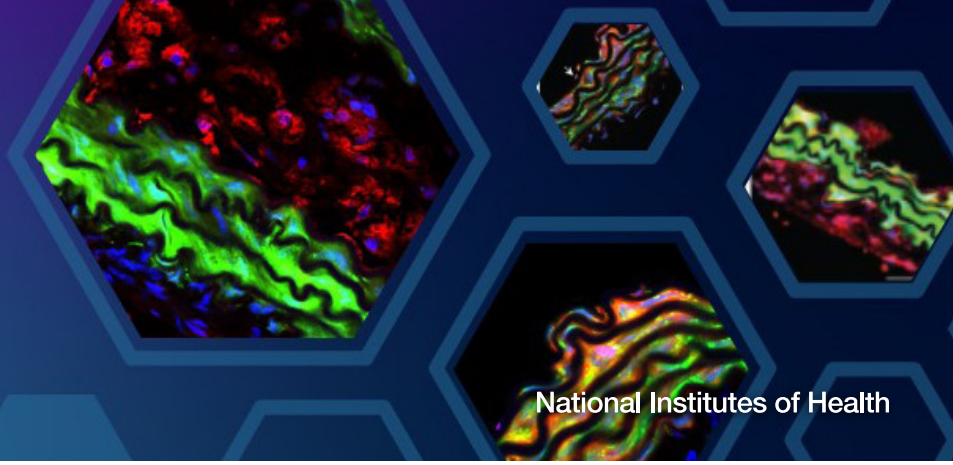


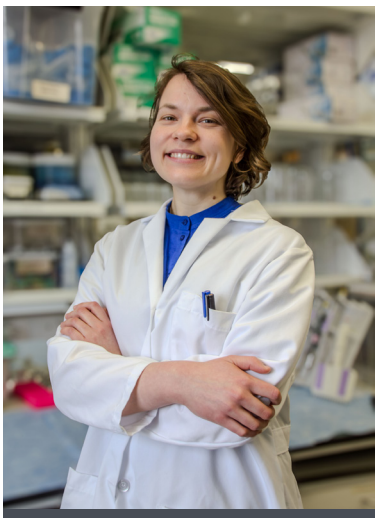
SKIN PROTECTION

NIAID Fellow Uncovers the Skin's Natural Immunity

BY DANA TALESNIK

Everyone's skin may be tougher than they realize. Research led by Dr. Inta Gribonika, a postdoctoral NIH fellow, demonstrates that skin is more than simply a cover from the outside world; it can offer a first line of defense against infection, paving the way for new kinds of therapies.

Gribonika recently completed a four-year stint as a visiting fellow in the Laboratory of Host Immunity and Microbiome at the National Institute of Allergy and Infectious Diseases (NIAID). During her time at NIH, she contributed new knowledge about the skin's role in immune response, research that recently was published in *Nature*.


Dr. Inta Gribonika in the lab at NIH

Her findings show that the skin can act as a lymphoid organ. In other words, a specific immune response can actually be primed in the skin.

Gribonika is a mucosal immunologist. Her doctoral research had focused on how an immune response could be induced in the gastrointestinal tract after vaccination. After reading that the bacteria living naturally on skin is coated in antibodies, she began to wonder how the body could generate antibodies—which it normally would do against an infection—around something that's generally harmless.

"Up until now, we were thinking that B cells—the lymphocytes that produce antibodies—were not living in the skin or coming toward the skin tissue at homeostasis," she said. Her experiments show that B cells do exist in healthy skin.

In the lab, Gribonika painted a beneficial bacterium, *S.epidermidis,* onto the skin of mice. This bacterium is commonly found on human skin, but not on mice.

SEE **SKIN**, PAGE 4

CANCER SURVIVOR SERIES

Mao Discusses Tailoring Integrative Care to the Patient

BY PATRICK SMITH


Dr. Jun Mao

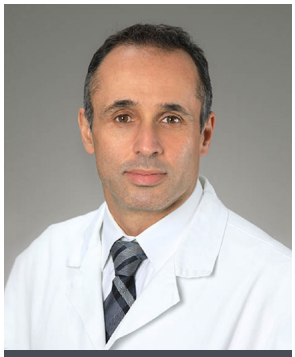
When 55-year-old Jada finished chemotherapy treatment for stage-2 breast cancer, her oncologist at Manhattan's Memorial Sloan Kettering Cancer Center (MSK) prescribed anastrozole—a medicine that interferes with the production of estrogen in post-menopausal women with hormone-receptive breast cancer.

SEE **MAO**, PAGE 7

GOING DOWN MEMORY LANE

NINDS Researchers Discuss the Mysteries of Memory

BY AMBER SNYDER


Dr. Kareem Zaghloul

What—and how—do we remember?

This question is one of neuroscience's many remaining mysteries. Memory is defined as the process of encoding, storing and retrieving information—a deceptively simple definition for a process that scientists are still trying to understand.

Researchers from the National Institute

SEE **MEMORY**, PAGE 6


NIH'ers Wear Red for heart health. See p. 8.

ALSO THIS ISSUE

OER's Lauer Retires

Dr. Michael Lauer

NIH Deputy Director for Extramural Research Dr. Michael Lauer retired from federal service in mid-February. Lauer had served in this critical role since October 2015, overseeing NIH's complex grant enterprise that successfully administers and awards nearly 60,000 grants at more than 2,500 institutions in every state, supporting the work of more than 300,000 researchers.

"In my view, NIH is one of the most outstanding government agencies in the world. The science that NIH has funded or conducted has literally touched every American," Lauer said.

Lauer served as the principal advisor to the NIH director on extramural research and grant funding. During his tenure, he and his Office of Extramural Research (OER) colleagues helped NIH implement high-profile NIH priorities, including enhancing grants oversight and compliance, addressing harassment and foreign threats, improving reporting of clinical trial results, sharing of research data, supporting the NIH eRA grants system—the largest grant system in the U.S. government—and engaging in extensive outreach with the extramural research community.

"It has been one of the greatest privileges of my career to work with and be mentored by Mike," said Dr. Liza Bundesen, deputy director of OER. "He is a gifted leader, a brilliant scientist, and an extremely effective research administrator.

"Perhaps because he is such an avid reader, Mike often teaches and inspires through storytelling, making the most complex concepts accessible to anyone. His work ethic is legendary, and we'd often marvel at his [seemingly] superhuman abilities. No task is ever too large or small for him, and he said that he would never ask his team to do something that he wouldn't do himself.

"But for all of his gifts, what stands out for me the most is that Mike is one of the kindest, most humane people I have ever known—and he lives every aspect of his life with the utmost integrity."

A board-certified cardiologist and researcher, Lauer joined NIH in 2007 as the director of the Division of Prevention and Population Science at the National Heart, Lung, and Blood Institute (NHLBI). In 2009, he went on to become director of the NHLBI Division of Cardiovascular Sciences. He has been actively involved with and is a strong advocate of policies and processes that enhance accountability in government-supported research.

"As I've widely shared over the past year, I've had to deal with a variety of health issues related to a complex case of hypertrophic cardiomyopathy and associated arrhythmias," said Lauer. "NIH research has informed literally every aspect of my care—what medications I'm taking and what surgery and procedures were done. I'm deeply grateful."

Lauer is an elected member of the American Society of Clinical Investigation and an elected fellow of the American College of Cardiology and the American Heart Association. In 2012, Lauer received the Arthur S. Flemming Award for exceptional service in federal government. Prior to joining NIH, he spent more than a decade in several leadership roles at the Cleveland Clinic.

In retirement, Lauer said he looks forward to spending quality time with friends, children and grandchildren. In reflecting on what he'll miss most about working at NIH, he said, "I'll miss working with amazing people—outstanding, dedicated professionals, committed public servants—on a wide variety of challenging problems."

Bundesen added, "Mike's contributions to OER, NIH, and the broader research community are countless, and I'm confident that they will endure time. We are forever grateful."

Principal Deputy Tabak Retires

Dr. Lawrence Tabak

NIH Principal Deputy Director Dr. Lawrence Tabak retired from federal service earlier this month after 25 years of service.

Tabak has held critical NIH leadership roles since 2000, most notably in his current role as the second in command since August 2010, and two years as the acting NIH director from December 2021 to November 2023.

"Working with Dr. Tabak was always a rewarding learning experience, especially when we were dealing with major challenges," said Dr. Alfred Johnson, NIH deputy director for management and chief financial officer. "He constantly provided steady, thoughtful guidance and was always considering what is best for the NIH community."

Tabak also served as the deputy ethics counselor since August 2010 and as director of the National Institute of Dental and Craniofacial Research (NIDCR) from 2000-2010. In addition to his administrative duties, he maintained a research laboratory within the NIH intramural program studying glycoprotein biosynthesis and function.

"Over 138 years of NIH's existence, there may have been principal deputies who were more dedicated, wise and selfless than Larry Tabak, but I rather doubt it," said former NIH Director Dr. Francis Collins. "In his service as director of NIDCR, followed by 15 years as my right arm in the Director's Office, Larry was often the guy asked to tackle the thorniest problems of the organization. Regularly called upon to lead advisory groups, Larry brought his special blend of realism, vision and scientific knowledge to find solutions.

"He was a master of shepherding a group of outside experts through data gathering, intense discussion of options, and ultimate consensus on a conclusion of lasting value. It was my great joy and personal privilege to work in partnership with Larry. NIH owes him a huge debt of gratitude."

"I have worked with Larry for over 30 years," said Dr. Kelly Ten Hagen, associate scientific director at NIDCR. "I cannot overstate how much his selfless support, guidance and mentorship have helped those of us who worked with him navigate our careers and lives. He is one of the few people who truly had our best interests at heart. And his tireless devotion to the NIH and the biomedical enterprise it supports is obvious. He will be greatly missed!"

Prior to joining NIH, Tabak was the senior associate dean for research and professor of dentistry and biochemistry & biophysics in the School of Medicine and Dentistry at the University of Rochester, New York.

Tabak is an elected member of the National Academy of Medicine of the National Academies. He received his undergraduate degree from City College of New York, his D.D.S. from Columbia University and a Ph.D. from the University of Buffalo.

In a statement emailed to all staff, NIH Acting Director Dr. Matthew Memoli wrote, "Dr. Tabak has helped shape important policy decisions at NIH over four administrations. He has guided NIH through complex issues and will be sorely missed."

NIH Prepares for the Return to the Office

Throngs of NIH'ers will soon descend on NIH's Bethesda campus and other NIH facilities across the country, adding to the many who already have been working on site. By executive order, most federal employees will return to the office in-person, 5 days a week.

THURSTONJAM-PEOPLEIMAGES.COM/ADOBE STOCK

Based on HHS guidance sent to all staff: on Feb. 24, all managers and supervisors within 50 miles of their official duty station began reporting to the office. On March 17, HHS employees whose official duty station is within 50 miles of an HHS facility will begin reporting in-person, full time. By April 28, all managers, non-bargaining unit employees, and bargaining unit employees, including those who were hired on remote job announcements, who have an official duty station outside of 50 miles of an HHS facility, will report to an office. HHS will provide details as real estate efforts develop.

An exception to the policy may be granted to employees who are approved with a reasonable accommodation due to disability or qualifying medical conditions.

Equipment

NIH's Office of Information Technology recommends evaluating IT equipment needs prior to returning to work to ensure enough equipment is available. Check with your team/supervisor to see if you are required to bring any IT equipment back to the office that may have been taken home for telework purposes, such as monitors, printers, docking stations, keyboards, mice, PIV card readers and cables.

Commuting

If you anticipate needing a parking permit or transit benefit, contact the NIH Parking Office at nihparkingoffice@ors.od.nih.gov.

Before applying for commuter benefits, your worksite designation must be updated in the NIH Enterprise Directory (NED). For assistance verifying or updating your NED profile, contact your administrative officer.

NIH staff can access the latest transition guidance on the intranet (must be on VPN) at https://go.nih.gov/G9vBBRW.

Stay tuned for updates and resources as this story unfolds.

Get Heart Healthy

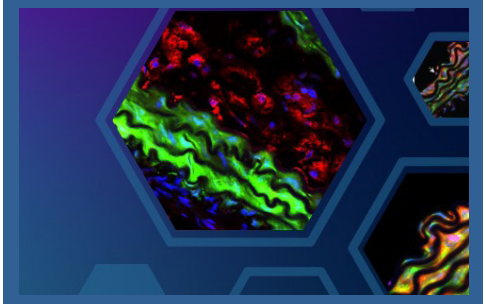
Heart disease is the leading cause of death in the U.S. and impacts some communities disproportionately. But you can do a lot to protect your heart and stay healthy.

American Heart Month, celebrated in February, is a great time to think about lifestyle habits and changes you can implement all year long to reduce your risk for cardiovascular disease.

Banner in front of Bldg. 1 on NIH's main campus. **PHOTO: ERIC BOCK**

Heart-healthy living involves understanding your risk and making healthy choices. By taking preventive measures, you can lower your risk of developing heart disease that could lead to a heart attack. You can also improve your overall health and well-being.

Incorporate heart health into every day of the month. Try a new activity each day and make your favorites part of your regular routine. See: go.nih.gov/xc9awU4.



ON THE COVER: *These images, produced using fluorescence microscopy, show artery sections of a mouse model used in a recent NHLBI-supported study of atherosclerosis, a source of heart disease. In the study, researchers found that using a mouse model expressing a known cancer mutation accelerated cellular changes and worsened atherosclerosis. They also demonstrated that an anticancer drug, niraparib, shows promise for both preventing and treating atherosclerotic cardiovascular disease. The findings could help pave the way for new treatments for heart disease.*

PHOTO: MUREDACH REILLY, COLUMBIA UNIVERSITY AND HUIZE PAN, VANDERBILT UNIVERSITY MEDICAL CENTER. ILLUSTRATION BY JEAN NAUMANN, NHLBI

The NIH Record

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Editor:
Dana Talesnik • *Dana.Talesnik@nih.gov*

Assistant Editor:
Eric Bock • *Eric.Bock@nih.gov*

Staff Writer:
Amber Snyder • *Amber.Snyder@nih.gov*

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Turning Discovery Into Health

Skin

CONTINUED FROM PAGE 1

"I showed that, indeed, skin can recognize this new harmless member of microbiota and generate specific humoral immunity against it," she said. "This can happen without any help from professional immune organs, such as the spleen or lymph nodes."

The antibody works as a barrier protection, Gribonika said. "It works as a health insurance in case this one new member of commensal microbiota that we now acquired decides at some point in the future to become nasty and infect us."

The ability of harmless bacteria on the skin to stimulate an immune response without inflammation opens a world of possibility for topical medications and vaccines. They could be formulated in a cream that anyone could apply to the skin.

"This route is so interesting because it's noninvasive and you wouldn't need a clinical practitioner to help you apply the medicine," Gribonika said.

In reflecting on her time at NIH, Gribonika emphasized how much she enjoyed getting to know the people in the lab. Each investigator had his or her own project, but they all supported each other. And they came from all over the world, bringing their different cultures and perspectives, which she found especially enriching.

"NIH is probably the best place on Earth to do research," she said. "There are so many resources, and the community is so welcoming and willing to share."

When she arrived at NIH, Dr. Yasmine Belkaid was her lab chief. She described Belkaid as a visionary who encouraged her trainees to think big. "She gave me the space and freedom to ask the questions I wanted to pursue," Gribonika said.

Gribonika studied biology at the University of Latvia in Riga.

PHOTO: SERGEI25/SHUTTERSTOCK

Gribonika first became interested in science at a young age. "My mom and dad would always read to me about great discoveries and about the people who made them," she recounted. These stories sparked her imagination and got her thinking about nature and the world from different perspectives.

"I got interested in science to question what's there—what we can see and what we can't see," Gribonika said. "Immunology is heavily focused on microscopy, on the things we don't see just by looking at our skin. But if you ask the right questions and use the right antibody to target the right thing, all of a sudden you see all these interesting things happening in and on the skin."

Gribonika is a native of Latvia, a small northern European country with less than two million people. As her friend Daina Bolsteins, an administrative assistant at NIAID who is also of Latvian descent, noted, "Latvia is better known for producing basketball and hockey players, opera singers and symphony conductors than for producing scientists." Gribonika said she hopes her story will inspire other aspiring scientists from her country.

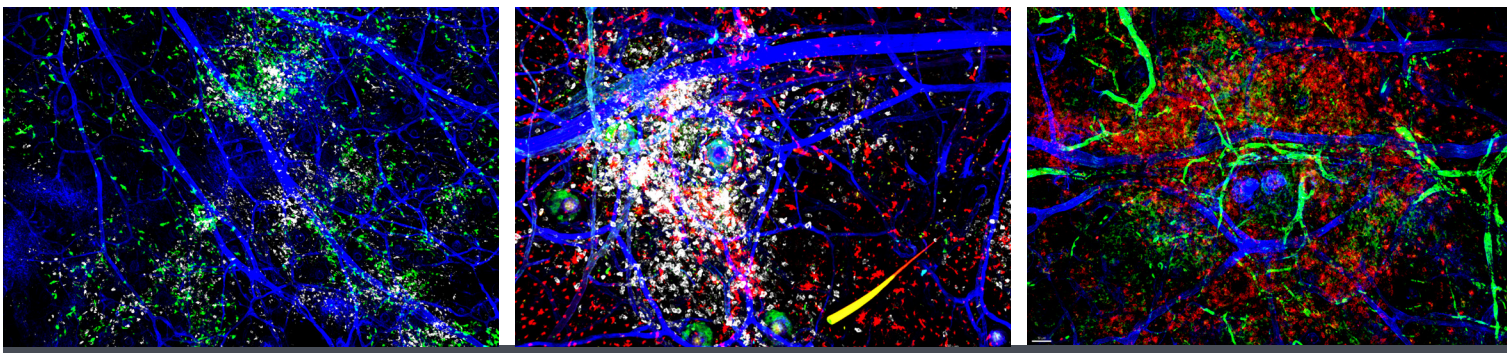
In March, Gribonika headed to Sweden to begin a new chapter as a tenure-track investigator at Lund University.

Her advice to young investigators? Never give up. Remember why you chose this path in the first place, she said.

"If the data disproves your hypothesis, follow the data. If the data conflicts, repeat with other methods and protocols. Be cautious. Verify."

Such rigor in research, she said, opens the door to learning new concepts about the human immune system and overall health.

"Results will take you to places you never thought of," she said. "There's a lot of novelty out there."



The above slides show mouse ear dermis (deeper layer of the skin) and immune cells within this compartment after skin colonization with beneficial and harmless commensal bacteria Staphylococcus epidermidis (member of human skin microbiome).
The first slide shows antigen-presenting cells (in green) and adaptive immune cells (in white); the second slide shows adaptive immune cells (white) and specialized skin antigen-presenting cells called Langerhan's cells (red) around the hair follicle (green area at the center of the white/red cell cluster). The third slide shows antibody (green) secreting cells and B cells (red) forming similar structure to that of lymph nodes.

NIH-Funded Clinical Trial Will Evaluate New Dengue Therapeutic

An *Aedes* mosquito

PHOTO: FRANK60/SHUTTERSTOCK

An NIH-funded clinical trial is testing an experimental treatment designed to help people suffering the effects of dengue fever, a mosquito-borne viral disease. The study will involve exposing adult volunteers to a weakened strain of dengue virus and administering an investigational therapeutic at various doses to assess its safety and ability to lessen symptoms.

Dengue is transmitted via infected Aedes mosquitoes and sickens as many as 400 million people each year, primarily in tropical and subtropical parts of the world. Most people with dengue do not develop symptoms, but those who do commonly experience severe headache and body aches, nausea and vomiting, fever and rash. One in 20 progresses to severe illness. There is currently no FDA-approved treatment for dengue.

The new clinical trial will test the ability of AV-1, an investigational human monoclonal antibody therapeutic developed by AbViro, to mitigate clinical symptoms when administered before and after dengue virus infection.

The trial will enroll at least 84 healthy adult volunteers at two sites. Volunteers will be randomly assigned to one of two groups. One group will receive AV-1 one day prior to being challenged with a mild strain of dengue virus, and the other will receive AV-1 four days after being challenged with the dengue virus. Each group will be further subdivided to receive varying doses of AV-1, delivered in a 60-minute intravenous infusion. For each of the three dosage levels, 12 participants will receive the investigational monoclonal antibody, and two will receive a placebo.

Before or after AV-1 dosing, each volunteer will receive an injection of attenuated (weakened) dengue virus.

Volunteers will be carefully monitored by study staff in regular follow-up visits for at least 155 days. If AV-1 shows promising results in this clinical trial, researchers may pursue further clinical evaluations of its safety and efficacy against dengue virus.

Study Finds Infection-Related Hospitalizations Linked to Increased Rate of Heart Failure

An NIH-funded study has found that adults who were hospitalized for a severe infection were more than twice as likely to develop heart failure years later. The findings, published in the Journal of the American Heart Association, underscore the importance of measures that help prevent severe infections.

The study, part of the NHLBI-funded Atherosclerosis Risk in Communities (ARIC) Study, followed 14,468 adults aged 45-64 for up to 31 years, from 1987 to 2018. None had heart failure when the study began.

The researchers found that individuals who experienced an infection-related hospitalization had a 2.35-times higher risk of developing heart failure at an average time of seven years after surviving the hospitalization, compared to those who did not get an infection. The researchers adjusted for sociodemographic and health-related factors and included different infection types in their assessment.

Heart failure occurs when the heart is unable to pump enough blood to the body's organs and tissues. While there are many different kinds, the study focused mainly on heart failure with preserved ejection fraction (HFpEF), which occurs when the left side of the heart is too stiff to fully relax between heartbeats, and heart failure with reduced ejection fraction (HFrEF), which occurs when the left ventricle is too weak to pump out enough blood to the body.

Electrocardiography heartbeat pulse

PHOTO MELON/SHUTTERSTOCK

The researchers discovered that infections requiring hospitalization were associated with an increased risk of both conditions. Notably, the risk was nearly three times higher for HFpEF, the most common form of heart failure among people over age 65 and the one with the most limited treatment options. Nearly half of participants experienced an infection-related hospitalization emphasizing the potentially large impact of severe infections on the heart health of older adults.

While the study only found an association between severe infections and heart failure, patients still should consider common-sense approaches that keep severe infections at bay. Future research could explore the potential for incorporating infection history into heart failure risk assessments and patient management strategies.

Therapy Helps Peanut-Allergic Kids

Gradually increasing doses of peanut butter over 18 months enabled 100% of children with high-threshold peanut allergy to consume three tablespoons without an allergic reaction. This treatment strategy could fulfill an unmet need for about half of children with peanut allergy, who already can tolerate the equivalent of at least half a peanut, considered a high threshold.

EVGENIY AGARKOV/ADOBE STOCK

The findings come from a NIAID trial. Results were published in *the NEJM Evidence.*

The food allergy treatments currently approved by the FDA were tested in children with low-threshold peanut allergy, who cannot tolerate the equivalent of even half a peanut. Therefore, researchers tested whether a low-cost, convenient treatment strategy could help children with high-threshold peanut allergy increase their tolerance. The mid-stage trial involved 73 children ages 4 to 14 years, who tested the new treatment strategy or continued avoiding peanut.

The peanut-ingestion group began with a minimum daily dose of 1/8 teaspoon of peanut butter and increased their dose every eight weeks up to 1 tablespoon.

Following the treatment regimen, the peanut-consuming children underwent a supervised challenge to see how much peanut butter they could eat safely. All 32 children who participated could tolerate 9 grams of peanut protein, the equivalent of 3 tablespoons of peanut butter. Only three of the 30 children in the avoidance group from the same challenge could tolerate 9 grams of peanut protein.

Children in the peanut-ingestion group who passed the challenge consumed at least 2 tablespoons of peanut butter weekly for 16 weeks, then avoided peanut for eight weeks. Investigators found that 68.4% of the peanut-ingestion group achieved sustained unresponsiveness, while only 8.6% of the avoidance group developed natural tolerance.

The investigators want to learn if the same treatment strategy would work for food allergens other than peanuts. Future follow-up is needed to determine the therapy's effectiveness at inducing long-lasting tolerance of peanut.

Memory

CONTINUED FROM PAGE 1

of Neurological Disorders and Stroke (NINDS)—Dr. Yi Gu and Dr. Kareem Zaghloul—spoke about their memory research at a recent Demystifying Medicine lecture series.

One way to understand it is to look at where it goes wrong. Patients who suffer from epilepsy may experience memory loss as a side effect of their seizures.

Dr. Yi Gu

Zaghloul, a senior investigator and neurosurgeon in the NINDS Functional Neurosurgery lab, researches the activation of cortical networks during memory encoding and recall, and also works as a clinician. He treats patients with drug-resistant epilepsy by identifying and surgically removing the area of the brain where the patient's seizures originate.

One contributor to epilepsy is scarring on the hippocampus, the region of the brain associated with memory and learning. Surgically removing the hippocampus would be much more likely to achieve remission than treatment with standard medications.

Zaghloul uses tools such as functional magnetic resonance imaging (fMRI) and electrodes on the patient's scalp (electroencephalogram/EEG) to identify the "irritative zone" where the seizures originate. He can also surgically implant electrodes in the brain (intracranial EEG/iEEG) for more precise monitoring. Finally, once he has identified the source of the patient's seizures, Zaghloul can surgically remove it.

How does this translate to memory research? Zaghloul's patients who require an iEEG can be monitored in the hospital for up to two weeks while the device collects seizure data, and he has found they are often willing to participate in other, less invasive studies during that time. His research focuses on episodic memory—the memory of a specific event. By asking patients to play memory games and complete other related tasks, he can use the iEEG to observe episodic memory at work.

"We can ask what the pattern of activity looks like when you are forming a memory and, later on, when you are retrieving the memory, we see that you tend to repeat those same patterns," Zaghloul said.

He can have patients repeat these same tasks over a period of time and use that data to create a similarity map, which shows how similar the brain activity is across the iEEG electrodes as the patient tries to recall a memory.

"As the patient is trying to retrieve a memory and is about to say what they remember, they actually replay the same patterns from when they were encoding the memory," said Zaghloul, confirming the trend he observed previously.

Since making this discovery, his lab has primarily focused its research on how this process actually occurs.

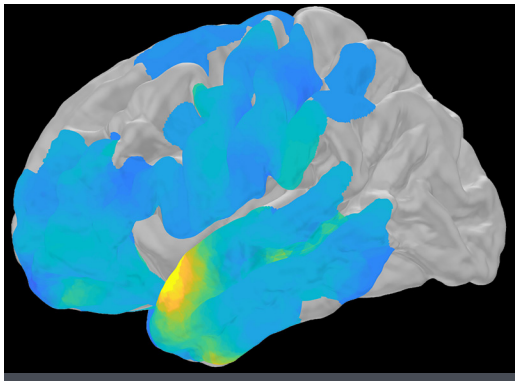
"What is underlying our ability to retrieve and relive memories?" Zaghloul asked. "How do we draw upon our memories to make decisions?"

Gu delved deeper into some of these questions in the second half of the lecture. Her lab studies the neural basis of spatial navigation and memory in rodents, essentially, what happens within the brain to let a rodent memorize and navigate its environment. This occurs in the medial temporal lobe, a structure that contains the hippocampus, the entorhinal cortex and several other elements that collaborate to form memories. Some of the cells within these regions have developed their own unique roles.

"Spatially modulated cells are everywhere in the entorhinal and hippocampal circuits," Gu said, which underscores their importance in memory and navigation. She presented research on two specific cell types within the medial temporal lobe: place cells and grid cells.

Place cells are a type of neuron within the hippocampus that are active when an animal enters a specific place in its environment. Grid cells, which are found within the medial entorhinal cortex, are active at multiple places in an environment and these places are represented as vertices of a triangular lattice, forming a grid. These cell types likely work together to help animals form a "cognitive map" of their environment.

Gu introduced a study in which mice were trained to navigate in virtual reality (VR) to a "reward zone." The mice licked the reward zone and received a treat. When the researchers recorded the activity in the rodents' hippocampus, they could see the activation of place cells that represented the reward zone. If those place cells were stimulated when the mice were in a different area of the environment, they would lick at the area as if it were the reward zone, suggesting that place cell activity can directly drive behavior.



In a study of epilepsy patients, NIH researchers found that split seconds before we recall these events, tiny electrical waves, called ripples, may flow through key parts of our brains that help store our memories, setting the stage for successful retrieval. **PHOTO: ZAGHLOUL LAB/NINDS**

Gu also presented one of her studies on grid cell activity during learning. She first allowed mice to learn a VR environment until familiarization. Then she switched the mice to a new VR environment and studied their grid cell activity. They showed very different activity in the new environment, Gu reported, suggesting the grid cell activity "remapped" to encode information in the new environment. The similarity of grid cell activity continuously increased during learning, supporting its role in spatial memory.

Spatially modulated cells also seem to be affected in conditions such as Alzheimer's disease, as Gu described. Researchers observed impaired place and grid cell activity in both a mouse model of the disease and in patients with Alzheimer's when subjects were asked to complete a spatial memory task.

Using your medial temporal lobe may be a good defense against Alzheimer's and memory decline, Gu said, citing a study showing that taxi and ambulance drivers experienced a lower incidence of memory impairment in comparison to drivers who followed a fixed route, such as bus drivers and pilots.

"The more you use your medial temporal lobe, the more protection you may have from disease and memory decline," she concluded.

The moral of her talk? "Use your medial temporal lobe as much as you can!"

An archived version of the lecture can be viewed at go.nih.gov/6J3uLI8.

Mao

CONTINUED FROM PAGE 1

Jada adhered to her medication regimen, during which her cancer stayed away. But anastrozole's side effects can include joint pain and stiffness. Jada's pain was so pervasive that she considered ending the treatment.

Dr. Jun Mao, a physician at MSK and chief of the cancer center's Integrative Medicine Service, shared Jada's story as part of his lecture in the NCI's Office of Cancer Survivorship (OCS) Director's Series in January. He suspected Jada's pain might be better managed with acupuncture.

Frank Licciardi is a patient advocate who connected with Mao.

"She told me her body ached all the time," Mao recalled. "She wondered whether it was worth continuing to take anastrozole."

After a few acupuncture sessions, Mao said, Jada's pain "essentially disappeared" and she was able to complete her regimen of anastrozole. Ten years later, she remains in remission from cancer.

The lecture was introduced by Frank Licciardi, whose successful treatment of metastatic gastric cancer at MSK led him to help found its Patient & Family Advisory Council for Quality, a committee of patient and family advisors to the cancer center's quality-of-care efforts.

Licciardi recounted his experience following his aggressive treatment. Returning to his high-pressure job in the finance industry, he experienced painful post-treatment side effects. In an effort to avoid a long period of opioid use, Licciardi turned to Mao's integrative medicine team, hoping for relief.

"I couldn't tie my shoes because of lymphedema," recalled Licciardi. "[Mao] told me about lymphatic massage," which he said brought relief and controlled the swelling and pain.

"I'm forever grateful to Dr. Mao for showing me these wonderful, non-pharmacological treatments."

Mao's research explores the concept of precision integrative medicine for conditions such as chronic pain, anxiety, insomnia, cognitive difficulty and joint stiffness in cancer survivors.

Precision medicine—treatment based on an individual patient's genes, environment and other factors unique to each person—has revolutionized the way oncologists approach cancer therapies. Mao wondered if that approach might also offer some benefits to patients whose care is supplemented with integrative medicine, such as acupuncture and other treatments whose origins are in Eastern medicine.

In 2021, Mao and colleagues from MSK, the University of California San Diego, the University of Pennsylvania and a VA medical center in Philadelphia published results in *JAMA Oncology* of a randomized clinical trial studying 360 cancer survivors. Their trial compared electroacupuncture to auricular acupuncture in terms of relief from chronic musculoskeletal pain.

Patients in the Personalized Electroacupuncture vs Auricular Acupuncture Comparative Effectiveness (PEACE) trial reported that both forms of acupuncture—one of which administers a mild electric current to key points and one that applies acupuncture needles to points along the outer ear—helped reduce pain by as much as two points on a ten-point scale.

"Research like this allows us to build evidence" of acupuncture's effectiveness against pain, Mao said. "So now, how do we move beyond evidence-based medicine to precision medicine for acupuncture? There's lots of evidence [of acupuncture's effectiveness] based on population studies. How do we apply that to individual patients?"

In a smaller 2023 study published in the journal *Pain Medicine*, Mao and his colleagues found that a specific polymorphism in a gene that metabolizes dopamine could be a predictor of how well a patient will respond to electroacupuncture.

"If you have the [enzyme] COMT encoded by the A allele," said Mao, "your likelihood of responding to electroacupuncture is 70%."

Webinars in the OCS Director's Series focus on research that examines and addresses the long- and short-term effects of cancer and its treatment on cancer survivors and their families.

For a schedule of future webinars in this series, visit https://cancercontrol.cancer.gov/ocs/about/events/ocs-directors-series. To watch a rebroadcast of Mao's lecture, see: https://bit.ly/3EyEPls.

Jaffe Lecture Will Connect Clinical Practice to Disease Discovery

Dr. Elaine Jaffe

While peering through a microscope over a century ago, German pathologist Carl Sternberg and later, American pathologist Dorothy Reed, independently described giant "Reed-Sternberg" cells, which are the microscopic hallmarks of Hodgkin lymphoma.

Learn how seemingly routine clinical observations can spur the discovery of new diseases and how they are managed at the G. Burroughs Mider Lecture, presented by Dr. Elaine Jaffe. Titled, "The Microscope as a Tool for Disease Discovery," this talk is part of the Wednesday Afternoon Lecture Series (WALS) and will be held on March 5 at 2 p.m. E.T. in Bldg. 10, Lipsett Amphitheater.

In her talk, Jaffe will touch on the historical basis upon which lymphoma is classified today and illustrate how histological observations are integrated with our contemporary understanding of the immune system, genomic findings and a patient's clinical presentation.

Jaffe joined NCI as a resident in anatomic pathology and has been a senior investigator since 1974, focusing on the classification and definition of lymphoid neoplasms. Recognizing her outstanding contributions to the field of hematology, she received the Henry M. Stratton Medal from the American Society of Hematology in 2013, one of her many awards.

Jaffe has served on the editorial boards of *The American Journal of Pathology, Blood*, and *Cancer Research*. In 2008, she was elected to the National Academy of Medicine, one of the highest honors bestowed to a U.S. scientist.

The Mider Lecture was established in 1968 in honor of the first NIH director of laboratories and clinics and is presented annually by an NIH intramural scientist to recognize outstanding contributions to biomedical research.

For those unable to attend in person, the event will be hosted on NIH videocast for HHS only at https://videocast.nih.gov/watch=55025.

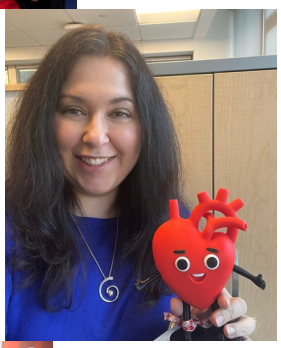
NIH'ers Celebrate Wear Red Day, Heart Health Month

On Feb. 7, NIH'ers across multiple institutes wore red in honor of National Wear Red Day. Some showed their spirit in their virtual meetings; others shared their heart-healthy pledges in person.

Research shows that having social support makes getting regular physical activity, eating healthy, losing weight and managing stress easier. Remember: even small changes can make a big difference.

Cardi-O

Above, members of NHLBI's Engagement & Media Relations Branch include (back row, from l) Mark Sampson, Hillary Archer, Jessica Frost; (front row) Jessica Walcott, Karen Gruebnau and Jean Naumann. Below, NICHD staff sport red during a virtual team meeting. From top l, Rodney Rivera, Jack Goldberg, Cameron Wride, Kimberly Kober, Jessica Wu and Sybil Philip



From top, NHLBI's Alison Brown, Gina Wei, Dr. Cashell Jaquish and Neyal Ammary-Risch; OD's Kevin Purkisar and the CC's Kathleen Fenton