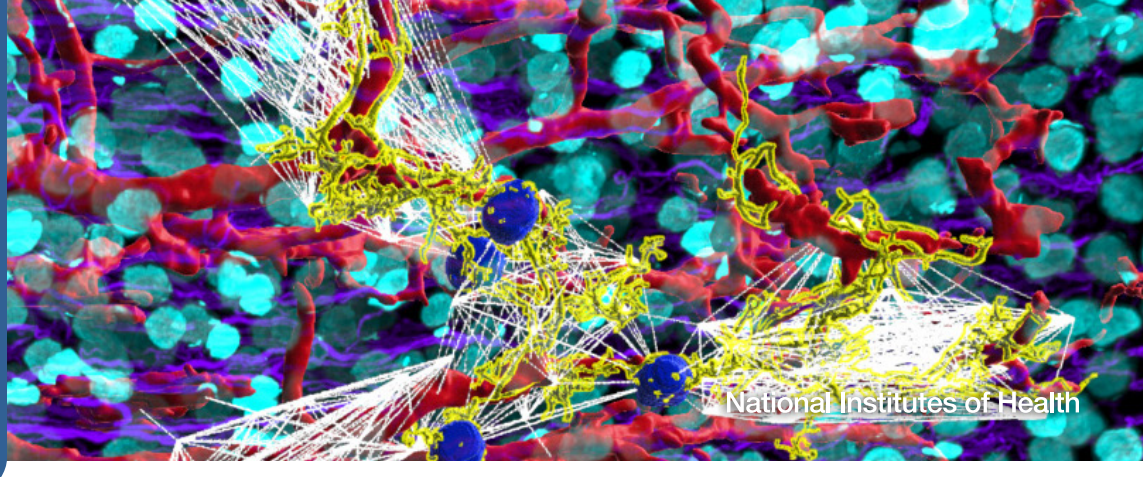
NIH RECORD

September 26, 2025
Vol. LXXVII, No. 20



Balancing a Fluid Situation

BY DENA PROCACCINI

Sometimes, when scientists want to simplify anatomy, they refer to the human body as a "giant bag of mostly water." In many ways, the human body is a complex collection of fluids that must be carefully balanced so it can perform internal processes and remain healthy. To maintain the balance of fluids, nutrients, and other molecules within the body, humans rely on their kidneys to regulate filtration, absorption and blood pressure. While scientists know the general structure and inner workings of the kidney at the level of tissues, the processes at cellular, or even smaller, levels remain a mystery.

To get a closer look, NIH-funded scientists created a 3D map of kidney nerves and vascular components at an unprecedented scale and detail, even down to individual cells. Researchers used the map to identify structures connected by nerve cells that coordinate function across the kidney and fully develop by adulthood. These structures are disrupted in kidney diseases. Understanding kidney structure and function at this level of detail may provide new clues toward future treatments for conditions that affect kidney development or cause kidney-related disease.


NIDDK Director Dr. Griffin Rodgers

As part of solving that mystery, the NIH-funded researchers—Dr. Sanjay Jain of Washington University at St. Louis, Dr. Gloria Pryhuber of the University of Rochester Medical Center, and members of their labs—used cutting-edge methods to examine samples from human patients of different ages to gain new insights about changes in kidney structure and function across the lifespan. This work is part of the NIH Common Fund-supported Human BioMolecular Atlas Program (HuBMAP), which is building an atlas of 3D maps from many organs across the body.

"This finding exemplifies how development of innovative techniques and methods can lead to greater discoveries and treatments for human health," said Dr. Griffin Rodgers, director of NIH's National Institute

SEE **KIDNEY**, PAGE 5


Full NSO performs in the Clinical Center, p. 8.

ALSO THIS ISSUE

Historian Remembers NIH's Role in the Asilomar Conference

BY ERIC BOCK

Fifty years ago, a group of scientists, journalists and lawyers gathered at the Asilomar Conference Center on California's Monterey peninsula to discuss potential biohazards and regulation of recombinant DNA research.

What resulted from the meeting was a set of NIH guidelines that ensured scientists could conduct this research under federal oversight, said Dr. Buhm Soon Park, professor and director for the Center for Anthropocene Studies at the Korea Advanced Institute of Science and Technology (KAIST) during a recent lecture in Lipsett Amphitheater.


Dr. Buhm Soon Park

The contributions of NIH scientists were essential in shaping the responsible conduct of recombinant DNA research, he said. They played crucial roles in the lead up to the conference and in the aftermath.

More than 140 biologists and physicians, and about 10 journalists and lawyers, came to Asilomar at the request of Stanford University biochemist Dr. Paul Berg and other members of a special committee of the National Academy of Sciences (NAS).

The conference is now "known to be the key moment of modern biotechnology developing in a responsible way," Park noted. It established the precedent for self-regulation in science.

Back in 1972, Berg and his colleagues

SEE **ASILOMAR**, PAGE 4

NIH WALS Returns for 2025-2026 Season

Dr. Kathleen Burns of the Dana-Farber Cancer Institute will discuss cancer mutagenesis on Oct. 15.

The NIH Director's Wednesday Afternoon Lecture Series (WALS) launched its 2025-2026 season on Sept. 10 with the G. Burroughs Mider Lecture featuring Dr. Gisela Storz.

Most lectures will be held in person on Wednesdays at 2 p.m. ET in Lipsett Amphitheater in Bldg. 10. All lectures will be broadcast and later archived at https://videocast.nih.gov.

WALS is NIH's highest-profile lecture program. Each season includes some of the best-known names in biomedical and behavioral research. All speakers are nominated by the NIH community.

View the schedule at https://oir.nih.gov/wals.

NIH Conference to Showcase Point-of-Care Technologies

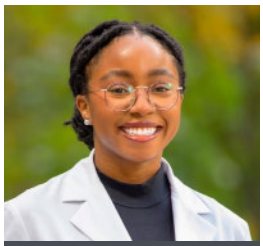
Oct. 15-16

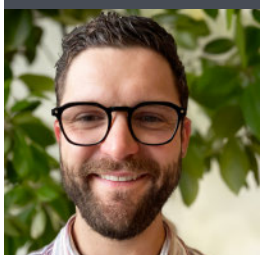
On Oct. 15-16, NIH will host a conference on Research and Innovation Translation Partnerships in Point-of-Care Technologies and Digital Health. The event will feature keynote talks, panel discussions, forums, e-poster sessions and a technology showcase.

The conference will feature technical tracks in the areas of heart disease, chronic respiratory diseases, sleep disorders, cancer, infectious diseases and maternal and pediatric health.

For more information, including the registration link, see: bit.ly/3K0WTYi.

Clinical Center Welcomes MRSP Scholars





MRSP fellows Megan Ezeude (above) and Davis Meadors (below)

Students from across the country have arrived at NIH to begin their year-long research fellowships as part of the 2025-2026 class of the NIH Medical Research Scholars Program (MRSP). The class comprises 27 medical school participants and four dental school participants representing 29 U.S.-accredited universities.

MRSP is a comprehensive clinician-scientist development program. During the year, scholars will engage in mentored research training tailored to their individual interests and long-term career goals. The immersive experience enables them to pursue research across the full spectrum of scientific disciplines with a focus on advancing public health.

Each scholar is paired with a full-time NIH investigator—whose expertise spans basic, clinical or translational research. Throughout the academic year, MRSP scholars will participate in a seminar series with invited speakers that include institute directors and distinguished senior investigators and engage in clinical teaching rounds. They will present their research to the NIH community and at national professional conferences.

The MRSP is supported by NIH and other partners via contributions to the Foundation for the NIH. Since its inception in 2012, more than 600 students have participated in this program.

Making the rounds: Above, NIH Director Dr. Jay Bhattacharya chats with Lara Trump in the NIH Clinical Center before appearing on her show, My View with Lara Trump, on Fox News, later that day. Below, Bhattacharya (c) participates in discussions at NIH's annual Tribal Advisory Committee meeting.

Fogarty Fellows Gather for LAUNCH

Bhattacharya speaks with a scientist after her talk.

NIH's Fogarty International Center welcomed its trainees from across the U.S. and the world in July. The group gathered at a hotel near NIH's campus in Bethesda for a weeklong orientation of Fogarty's Launching Future Leaders in Global Health (LAUNCH) Research Training Program.

LAUNCH supports one-year mentored research training opportunities for U.S. and international scholars at biomedical research institutions and established project sites in low- and middle-income countries.

The orientation included workshops, presentations, lectures and panel discussions featuring global health leaders and experts as well as NIH leadership, including NIH Director Dr. Jay Bhattacharya. This year's trainees are supported by 24 NIH Institutes, Centers and Offices.

Above l, Dr. Jane Simoni, director, NIH Office of Behavioral and Social Sciences Research and, r, Dr. Satish Gopal, director, NIH National Cancer Institute's Center for Global Health, were among the lecturers at LAUNCH.

OACU Hosts Aspiring Science Writers

BY AMBER SNYDER

If a career in science communications doesn't work out, there's always punk rock, right?

According to Jeffrey Everett, art director for NIH's Division of Medical Arts, there are more similarities than differences when it comes to designing artwork for NIH scientists and your favorite musicians.

Presenters from the Division of Medical Arts (from l to r), Jeffrey Everett, Erina He and Ethan Tyler

"Posters about the microbiome and Covid are not that much different than doing posters for the Foo Fighters," he said. "They have the same issues that need to be addressed—how to best connect with the intended audience and help them understand the information."

The rock n' roll designer-turned NIH artist delivered remarks as part of a larger series of presentations for an organization called Curious Science Writers (cSw). Hosted by Americans for Medical Progress (AMP), this high school-focused program has brought students to tour NIH several times in recent years.

NIH's Office of Animal Care and Use (OACU) hosted high schoolers and aspiring science writers Olivia Wood, Shanthi Everett and Eric Yang in July. As part of cSw, each student researches and writes an article on a scientific topic. They also work with a science writing mentor to help guide them along the way. Science communicators at NIH often lend their talents as mentors.

This year's visit featured remarks from NIH communications staff as well as program analysts, researchers and animal care staff.

The students learned about NIH and the OACU from program analyst Angela Szwec, then listened to lectures from science communicators and researchers. They ended the day with an animal facility tour.

The lectures explored complex research topics under NIH's National Institute of Neurological Disorders and Stroke (NINDS) and National Eye Institute (NEI).

Everett emphasized the importance of communicating research in a way the public can comprehend. "What you do with science doesn't mean anything unless people can understand it," he said.

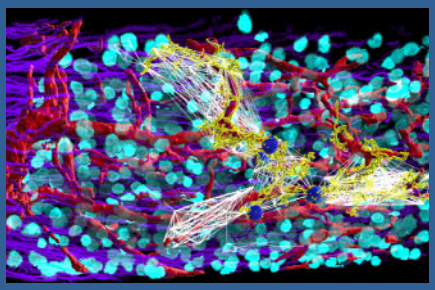
cSw students, mentors and presenters: top row (from l) Jing-Ping Lin, Jennifer Huber, Amanda Lee, Olivia Wood, Eric Yand and Shanthi Everett; bottom row (from l) Amber Snyder, Angela Szwec, Andrew Wegerski and Lesley Earl

Prior to his work at NIH, he designed posters for punk rock bands, and his years of experience have helped him learn to convey the essence of a topic. His colleagues in the Medical Arts Branch (MAB) work directly with scientists to design and illustrate visuals that clarify their research. He was joined by fellow MAB presenters Erina He and Ethan Tyler.

"Science needs storytellers," said medical illustrator He. There are many ways to tell the story, but it should inspire its audience to care about scientific knowledge.

The cSw students spent the remainder of their summer honing their craft and producing their own bit of finished science storytelling. The articles will be published on https://curioussciencewriters.org/.

To read about cSw visits from previous years, see: go.nih.gov/Q5wtogX; go.nih.gov/yvaZAjz and go.nih.gov/lWhQHQu.



ON THE COVER: *3D 5x light sheet fluorescence microscopy image of adult human kidney cortex. Vessels are red, glomeruli are cyan and collecting ducts are in purple. A selection of the neural network that was isolated among several glomerular communities is shown by the yellow nerves, with the white lines representing glomerulus-to-glomerulus neural connections. At the center, in blue spheres, are 'mother glomeruli', which exist as hub points in the overall network.*

IMAGE: LIAM MCLAUGHLIN, SANJAY JAIN LAB, WASHINGTON UNIVERSITY AT ST. LOUIS

The NIH Record

Since 1949, the *NIH Record* has been published biweekly by the Staff News and Public Inquiries Branch, Office of Communications and Public Liaison, National Institutes of Health, Department of Health and Human Services. For editorial policies, email nihrecord@nih.gov.

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

Assistant Editors:
Eric Bock • *Eric.Bock@nih.gov*
Amber Snyder • *Amber.Snyder@nih.gov*

Subscribe via email:
https://go.usa.gov/x6mgQ

Follow: **nihrecord.nih.gov/**

National Institutes of Health
Turning Discovery Into Health

Park lectures in Lipsett Amphitheater.

Asilomar

CONTINUED FROM PAGE 1

were the first scientists to create a DNA molecule made of parts from different organisms, creating recombinant DNA. In the experiment, he inserted DNA from the bacterium *E. coli* into the animal virus SV40.

Berg's peers had concerns about recombinant DNA research. Some believed it was too dangerous to be allowed to continue. They were worried the research would lead to the creation of new plagues and interfere with evolution. Park said one scientist called the idea to genetically engineer DNA "a pre-Hiroshima condition."

In response to the controversy, Berg consulted with NIH scientists about the potential risk of genetically engineering DNA. He met with Dr. Maxine Singer, a lab chief in what was then the National Institute of Arthritis, Metabolism and Digestive Diseases and her husband, Daniel, a lawyer. He also visited with NIH scientists at the now demolished Bldg. 7, known as Memorial Bldg., including Dr. Andrew Lewis of NIH's National Institute of Allergy and Infectious Diseases.

"Dr. Berg was no stranger to NIH," Park said.

A year later, a group of scientists led by Singer published a letter in *Science* asking the NAS president to establish a committee to consider the risks and benefits of recombinant DNA research and recommend specific guidelines.

At Singer's recommendation, the NAS appointed Berg to head an ad hoc committee to study the biosafety of recombinant DNA research. The committee concluded they should organize a conference to review progress, which NIH would help fund.

A self-imposed moratorium on most recombinant DNA experiments went into place until safety concerns could be addressed. After the moratorium went into effect, NIH formed a recombinant DNA advisory committee.

Dr. DeWitt Stetten Jr. and Dr. Leon Jacobs co-chaired the committee, which included expert intramural scientists. The committee has since played a significant role in formulating guidelines and advising the NIH director on recombinant DNA technology.

With Singer's help, Berg organized the Asilomar Conference. On the final day, attendees released a summary statement. Following the conference, NIH's recombinant DNA advisory committee held several meetings to draft and finalize guidelines for minimizing the safety risks based on the summary statement.

Former NIH Director Dr. Donald Frederickson announced that all NIH-funded and conducted research involving recombinant DNA must follow the guidelines.

NIH scientists participated in public discussions and debates about the safety and ethical implications of recombinant DNA research, Park said. Singer, for instance, testified at a city council meeting in Cambridge, Mass. to address public concerns.

Earlier this year, Park attended the "Spirit of Asilomar and the Future of Biotechnology" summit, which revisited the legacy of the 1975 conference and addressed contemporary issues in biotechnology.

More than 300 attendees gathered at the same conference center in California to focus on five key themes: pathogens research and biological weapons, artificial intelligence and biotechnology, synthetic cells, biotechnologies beyond conventional containment and framing biotechnology's future.

Of the summit's attendees, only one worked at NIH. That struck Park as odd, considering the critical role NIH employees played during the 1975 conference. During the conference, Park saw photos of Singer and Stetten. To his knowledge, however, their contributions weren't mentioned.

During this period, NIH navigated "turbulent waters of political and social conflict" while maintaining the integrity of science. NIH's role in history must not be forgotten, he concluded.

Park's lecture was part of the Office of NIH History and Stetten Museum's seminar series, which features lectures, interviews and panel discussions with scientists, historians and experts from different backgrounds and viewpoints. Their topics focus on events, people and policies from NIH's inception in 1887 to the present. The 2025-2026 program begins this month.

Co-organizer and conference participant Maxine Singer (from l) with Norton Zindler, Sydney Brenner and Paul Berg at the Asilomar conference in February 1975

PHOTO COURTESY OF NIH'S NATIONAL LIBRARY OF MEDICINE

Kidney

CONTINUED FROM PAGE 1

of Diabetes and Digestive and Kidney Diseases (NIDDK), one of the NIH institutes helping to manage HuBMAP.

To create the 3D map, researchers used special illuminated molecular tags that can recognize specific components inside kidney cells. The tags bind to those components, and then their position can be noted under a special type of microscope. This technique allowed researchers to identify tagged components and use them as signposts to navigate inside the kidney at the level of individual cells and even smaller. This technique is a major breakthrough; most studies of kidney structure to date are two-dimensional and lack this new level of detail.

Scientists have long known that kidneys are composed of millions of capsules and tubules, which together form a functional unit called the "nephron." Nephrons filter blood inside the kidney to keep the necessary molecules and remove the harmful ones.

At the opening of each nephron, there is a sieve-like network of blood vessels called the "glomerulus." The researchers found that glomeruli organize themselves into communities, connected by a network of nerve cells. Most importantly, the researchers found several patterns of connected communities they named "mother-gloms." The researchers believe the mother-gloms sense and then relay signals to other neighboring nephrons. These control centers appear to help synchronize the responses to changes in the fluid balance of the body, coordinating biological functions and decreasing the burden on individual nephrons.

The researchers also studied how kidney structure changes over time from infants to older adults. In infant kidneys, they found the nerve network of the mother-gloms had not yet matured; the structures were more tightly packed and less interconnected. As the kidneys grew, connections and organization among the glomeruli increased until adulthood.

In older adults, the researchers saw that many glomeruli had shrunk or changed in shape. There were also notable changes in kidney structure in patients with kidney disease or diabetes, including changes to nerve connections among glomeruli and even fewer nerves in diabetes patients.

This work defines how the kidney's structure allows a coordinated response across the organ and how disruptions in this system can lead to disease. It also reveals how the kidneys change over a person's lifetime, offering insights into managing kidney health and preventing related diseases.

HuBMAP is managed by NIH's Office of the Director; NIH's National Heart, Lung, and Blood Institute (NHLBI); NIH's National Institute of Biomedical Imaging and Bioengineering (NIBIB) and NIDDK. R

Staff Flu Vaccinations Begin on Sept. 29

Foil the Flu, the annual seasonal influenza immunization program for all NIH staff, begins Monday, Sept. 29 and runs through Nov. 7.

All staff with a valid NIH identification badge are eligible to receive a free flu vaccine and are encouraged to be vaccinated. Staff with patient contact participate through vaccination or declination.

The flu vaccine will be given by appointment only, for all sites, through an online registration system.

To schedule an appointment, visit www.foiltheflu.gov.

For questions, contact OMS at 301-496-4411.

[1]BUILDING 10 - MAIN CAMPUS SITE - 7TH FLOOR ATRIUM

Sept. 29 - Oct. 3	8:00-11:30am	12:30-3:30pm
Oct. 6 - 7	8:00-11:30am	12:30-3:30pm
Oct. 8	8:00-11:30am	12:30-3:30pm
Oct. 16 - 17	6:00-11:30am	12:30-7:00pm
Oct. 20 - 22	8:00-11:30am	12:30-3:30pm
Oct. 27 - 29	8:00-11:30am	12:30-3:30pm
Nov. 3 - 7	8:00-11:30am	12:30-3:30pm

OFF CAMPUS SITES

Oct. 1 - 9	8:30-11:30am; 1:30-3:30pm	[2] NIEHS
Oct. 6 - 7	9-11am; 1-3pm	[3] IRF Frederick
Oct. 7	9am-noon	[4] RML
Oct. 8	8am-noon	RML
Oct. 9	1-4:30pm	RML
Oct. 9 - 10	9am-3pm	[5] BRC
Oct. 10	8:30-11:30am	NIEHS
Oct.14 - 15	9am-3pm	[6] Fishers Lane
Oct. 14	2-4:30pm	RML
Oct. 15	1-3pm	RML
Oct. 16	9-11am	RML
Oct. 23	9-11:30am	[7] Poolesville
Oct. 23 - 24	9am-3pm	[8] Shady Grove
Oct. 24	1-2:30pm	[9] Harbor Hospital
Oct. 30 - 31	9am-3pm	[10] Rockledge

LEADING WITH 'HART'

Hartzell Emphasizes Importance of Caring in Healthcare Leadership

BY AMBER SNYDER

What is the greatest attribute a leader can have? According to Uniformed Services University Professor Dr. Joshua Hartzell, the top attribute is caring. But caring leaders are in short supply, he contends, especially in healthcare.

Dr. Joshua Hartzell

"Caring is our business in healthcare, yet we often neglect to care for ourselves and each other," said Hartzell at a Clinical Center Staff Clinician Grand Rounds earlier this year. "Connecting to our roots as healers and caring for others is the key to leading effectively."

To demonstrate, he asked the audience to close their eyes and picture the best leader they've ever worked with.

"My guess would be that, in some way, that leader cared about you," he said. "My goal is that, five years from now, someone else will picture you when they are asked this question."

A retired Army colonel who recently published a book on caring in healthcare leadership, Hartzell sees an opportunity for this leadership style to make a positive impact on workplace culture.

A lack of caring in the workplace leads to negative outcomes such as burnout, depression and low employee retention, Hartzell argued. "Leaders need to stop playing catch-up" with these symptoms, he said. "We need primary prevention instead."

Organizational success is driven by its people, he said. Engaged and motivated employees are more likely to do their best work, and they are more likely to be engaged and motivated when they feel supported by their workplace.

Ultimately, that onus falls to those in leadership roles, Hartzell said. "Leaders need to figure out how to best support their people to complete their agency's mission."

Just like caring for patients, Hartzell said, caring as a leader is far from easy. "Taking care of people is the hardest thing we do. There's nothing soft about it."

Hartzell has created a tactical field manual to advise leaders who want to demonstrate caring.

- Be there—be present; "you can't lead from behind your desk."
- Set high expectations and hold people accountable: NIH has a reputation for excellence and people want to continue that legacy.
- Give feedback—both giving and receiving feedback can be challenging, but it's essential for growth and development
- Listen—something many people struggle with; really listen to people and hear what they're saying. "Getting to know someone is worth the time."
- Invest in them—treat employees well and help them grow in their careers
- Say thank you—recognizing and thanking people are crucial belonging cues

Ultimately, Hartzell said, "caring-inspired leadership in healthcare allows us to set the conditions so we can optimally take care of our patients and each other and train the future leaders of medicine."

To view the archived lecture, visit https://go.nih.gov/qNBdB5l.

Summer Science Day Strengthens Connections

BY MARLA BROADFOOT

More than 150 posters lined the Rodbell Auditorium, lobby and surrounding hallways at Research Triangle Park in North Carolina—home of NIH's National Institute of Environmental Health Sciences (NIEHS)—for the institute's Summer Science Day. The July 31 event served as both a celebration of discovery and a chance to strengthen the institute's research community.

Graduate students, early-career trainees, research fellows, biologists and staff scientists shared projects spanning molecular biology, toxicology, epidemiology and structural biology—reflecting the collaborative, multidisciplinary nature of environmental health research at NIEHS.

Dr. Farnaz Fouladi (l) explains that her study on HIV susceptibility has raised new questions for further study.

PHOTO: STEVE MCCAW/NIEHS

For postbaccalaureate fellow Maty Mbye, Summer Science Day provided a welcome opportunity to discuss her research on the hidden perils of botanicals, specifically how some herbal supplements can harm liver cells. Since March, Mbye has been working in the Mechanistic Toxicology Branch.

Postdoctoral fellow Dr. Ruchir Bobde also appreciated the chance to present. Bobde is a structural biologist studying a layer of the placenta that's crucial for exchanging nutrients between mother and fetus. His work focuses on understanding how a protein called syncytin drives the fusion of cells to form this layer. Disruptions in this process can lead to pregnancy complications.

Many presentations explored the environmental underpinnings of complex health conditions. Dr. Farnaz Fouladi, staff scientist in the constrained statistical inference group, presented findings from a study examining how the gut microbiome may influence susceptibility to HIV infection. Her analysis revealed distinct microbial patterns and interactions linked to inflammation and disease progression in men who became HIV positive.

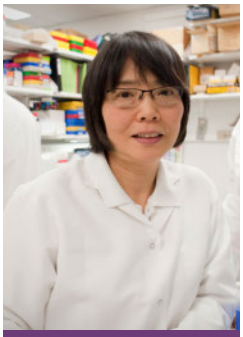
Fouladi said she enjoyed hearing about the breadth of research underway across NIEHS. The event, she said was a great opportunity to network.

In addition to specific research projects, the event's presentations also featured various NIEHS resources and core facilities, such as the Pathology Support Group, which plays a behind-the-scenes role in many research projects.

Renee Fisher, supervisory biologist in the Comparative and Molecular Pathology Branch, and her team offered guidance along the way, from project planning to publication. They helped researchers navigate complex scientific challenges because collaboration is key to advancing discovery.

Summer Science Day was sponsored by NIEHS's Office of Fellows' Career Development (OFCD), the Division of Intramural Research and the Division of Translational Toxicology.

NCI Biochemist Kimura Retires



Dr. Shioko Kimura

Dr. Shioko Kimura, a biochemist at NIH's National Cancer Institute (NCI) who specializes in endocrinology, retired in June after an almost 40-year career at NIH. She studied how certain genes and proteins work in the thyroid gland and the lungs, both when they are healthy and diseased.

Kimura's research focused on the NKX2-1 gene, which acts as a master switch that controls many other important genes in the thyroid and the lungs. Her team was the first to identify and clone the gene, and they demonstrated how the encoded homeobox transcription factor protein NKX2-1 is crucial for development, homeostasis, function, physiology and disease pathogenesis including cancer of the brain, thyroid and/or lung.

Over the course of her career, Kimura provided extensive service to the scientific community by sitting on editorial boards, editing and reviewing for a variety of journals and grants, and participating on numerous NIH and NCI committees. Her dedication to some of these activities spans more than a decade. At NIH, Kimura has been particularly involved with committees to advance women and Asian American and Pacific Islander researchers in science and workplace civility practices. In 2021, she received the NIH Director's Award as part of the CCR Women Scientist Advisors.

Kimura received her Ph.D. in chemistry at Hokkaido University in Sapporo, Japan in 1979. After completing a postdoctoral fellowship at Queen's University in Kingston, Canada, she joined NIH as a visiting fellow at NIH's *Eunice Kennedy Shriver* National Institute of Child Health and Human Development. In 1986, she moved to NCI as a visiting associate scientist in the Laboratory of Molecular Carcinogenesis. She became a senior investigator in 1998 in the Laboratory of Metabolism, which eventually became the Cancer Innovation Laboratory in 2022.

In retirement, Kimura plans to continue working as a special volunteer to help compile data and prepare manuscripts of some of her postdocs and postbacs who recently left NIH. This is critical for their future careers, she noted. She also said she hopes her work with a local biotech company will bring SCGB3A2 closer to development as a therapeutic in treating lung diseases.

First, though, she said, "I'd like to relax a little after decades of intense research in the NCI and spend some time in my hometown in northern Japan."

To learn more about Kimura's research, see this Q&A on NCI's website: https://go.nih.gov/GguTRI0.

NIH Remembers Carbone

Dr. Kathy Carbone

Dr. Kathryn Mary "Kathy" Carbone died peacefully surrounded by family on July 23 in Nashville, Tenn. A physician, researcher, mentor and friend to animals, she spent her days helping people and pets live healthier lives.

After completing her education at Harvard-Radcliffe College magna cum laude in 1979 and the University of Wisconsin School of Medicine in 1983, Carbone specialized in internal medicine and infectious diseases.

Carbone conducted groundbreaking research as a professor at Johns Hopkins School of Medicine and later as associate director for research at the FDA's Center for Biologics Evaluation and Research (CBER). She served as deputy scientific director of NIH's National Institute for Dental and Craniofacial Research (NIDCR) from 2007 to 2015. Her contributions as chief of pediatric and respiratory viruses at CBER and chief of the medicine service at the Phoenix Veteran's Hospital have left a lasting impact on the medical community. Throughout her career, she displayed not only unique intellect, leadership and effectiveness, but also a compassionate patient focus and constant support for the faculty and staff as well as the trainees she mentored.

Beyond her career, Carbone's passion for animals shone brightly. She founded Golden Retriever Rescue, Education and Training (GRREAT) in 1988, one of the nation's oldest purebred dog rescues. Her involvement in rescuing dogs, horses and birds highlighted her compassionate nature. She had a longtime affection for the country, people, food and music of Scotland. After retirement, she loved to tour with the Winnebago Fuse Mobile Home owners group.

NINDS Mourns the Passing of Neurobiology Expert

Dr. (Stephen) Brian Andrews, a senior investigator and chief of the section on analytical cell biology of the Intramural Program in NIH's National Institute of Neurological Disorders and Stroke (NINDS) until his retirement in 2014, and subsequently a special volunteer, died earlier this year at the age of 80. His scientific work at NIH spanned more than 30 years.

Andrews earned his undergraduate degree from Providence College, Rhode Island, in 1966, and his Ph.D. in chemistry from the Massachusetts Institute of Technology in 1971. After completing a postdoctoral fellowship at Yale University School of Medicine, he served as assistant professor and senior research associate at Yale for a decade.

In 1983, he joined NIH's Laboratory of Neurobiology, headed by Dr. Thomas S. Reese, where Andrews set up his own group to become a world leader in the field of biological x-ray microanalysis, pioneering methods to detect trace amounts of diffusible chemical elements, in nanoscale neuronal structures in rapidly frozen brain. For example, he was able to detect minute changes in Ca concentrations in endoplasmic reticulum and mitochondria accompanying neuronal activation.

Dr. Brian Andrews

To accomplish this, the Andrews lab became one of a small number of labs around the world that could cut thin 100-nm cryosections of tissue, required to preserve fine-scale ultrastructure without loss of diffusible ions. In this way, Andrews helped elucidate how neurons regulate cytosolic Ca ion concentrations, and how de-regulation of Ca results in neuronal injury and disease.

Due to NINDS's strong ties with the Marine Biology Laboratory at Woods Hole, MA, Andrews and his family had the opportunity to return to the region of his alma mater in New England during many summers, where Andrews worked intensively on experiments to test novel scientific ideas and to interact with other world experts in the field of structural neuroscience.

Andrews also developed a close long-term collaboration with Dr. Richard Leapman's lab in the National Institute of Biomedical Imaging and Bioengineering (NIBIB) to push the detection limits for measuring smaller elemental concentrations using electron energy loss spectroscopy. More recently, Andrews collaborated with Dr. Alan Koretsky's lab in NINDS, employing synchrotron radiation to measure minute concentrations of manganese ions in presynaptic neuronal terminals by x-ray fluorescence detection.

"Brian will be missed dearly by his colleagues, collaborators and friends across NIH," said Leapman.

"It was always so much fun to talk science with Brian," said Koretsky. "He was so generous with his technology and his broad knowledge led to many insightful suggestions."

Andrews is survived by his wife Sheryl, sons Ethan and Mark, and four grandsons

Andrews, third from r, with lab mates, ca. 2000

A BELOVED TRADITION

Full NSO Performs in the Clinical Center

PHOTOS: CHIA-CHI CHARLIE CHANG, DANA TALESNIK

The National Symphony Orchestra returned to the Clinical Center atrium on Sept. 3 for its annual full orchestra concert. The carefully curated selections from contemporary and classic composers evoked a range of emotions—from the soulful and reflective to the rousing finale of Rossini's William Tell overture.

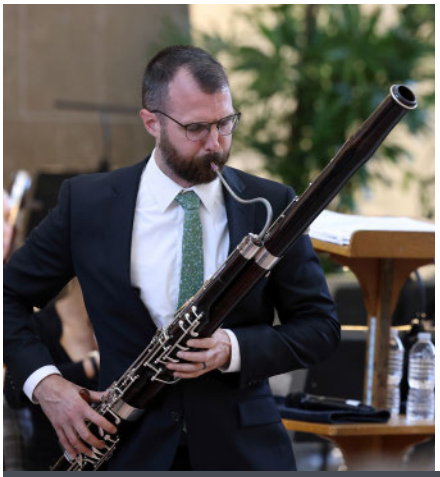
The concert was part of Sound Health, an ongoing partnership between NIH, the Kennedy Center for the Performing Arts and the National Endowment for the Arts that studies how music affects mood, brain function and overall health.

In welcoming remarks, NIH Director Dr. Jay Bhattacharya introduced himself as an orchestra dad. He recalled spending many hours in concert halls and rehearsal spaces—"sometimes helping to carry stands and chairs, sometimes videotaping from the back row"—in support of his daughter Jodie, who played viola.

The NSO's performance, Bhattacharya said, "is a reminder of the deep connection between science and the arts and how, together, they can lift our spirits, strengthen our sense of community and even support the healing process."

Sound Health continues to bring together neuroscientists, musicians, therapists and patients toward a better understanding of the connection between music and medicine. This partnership "raises public awareness of just how powerful music can be," said Bhattacharya. "And here, in the heart of the nation's largest research hospital, that mission feels especially meaningful."

NIH Director Dr. Jay Bhattacharya (l) and Clinical Center CEO Pius Aiyelawo welcome the NSO to NIH.



Above, the full 60-piece National Symphony Orchestra performs in the NIH Clinical Center atrium on Sept. 3. At l, featured soloist David Young on bassoon; c, orchestra view through a harp; at r, soloist Scott Christian (l) finishes his marimba solo and conductor Steven Reineke applauds.