

Senator Reed Visits NIH, Explores Opportunities for Collaboration

BY DANA TALESNIK

Sen. Jack Reed (D-RI) visited NIH in September to discuss data challenges, the promise of RNA and global health. He spent the morning engaged in candid discussions with NIH Director Dr. Monica Bertagnolli and other NIH leaders at the Clinical Center, where he also toured a pediatric oncology lab and met with a young cancer patient.

A theme throughout the morning was how to bolster data collection, access and standards.

“Data is the fuel of every new technology,” said Reed, chairman of the Senate Armed Services Committee and a senior member of the House Appropriations Subcommittee that funds NIH. “We want to be part of the solution.”

Bertagnolli concurred on the importance



(From l): Dr. Ian Nova, program director, NHGRI’s Division of Genome Sciences; Dr. Carolyn Hutter, director, NIH Office of Strategic Coordination; NIH Director Dr. Monica Bertagnolli; Sen. Jack Reed; Dr. Brigitte Widemann, chief, NCI’s Pediatric Oncology Branch PHOTO: CHIA-CHI CHARLIE CHANG

SEE SENATOR, PAGE 8



Emily Graslie (l) and NHGRI Director Dr. Eric Green by the ‘DNA wall’ in Bldg. 31.

POWER OF CURIOSITY Graslie Shares Journey From Artist to Host of ‘Brain Scoop’

BY ERIC BOCK

Emily Graslie would not be able to help scientists share what they do on “The Brain Scoop” without her background as a studio artist.

SEE GRASLIE, PAGE 4

NIDDK Training Program Unlocks Potential of Young Scientists

BY STEPHANIE THORNTON



STEP-UP alum Jude Tunyi

More than 90 aspiring scientists recently gathered at NIH for a two-day symposium, putting the talent of the next generation of medical researchers on full display. The students were participating in an annual program

sponsored by the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK).

The training program, Short-Term Research Experience Program to Unlock

SEE STEP-UP, PAGE 5

NIH Relay Fosters Team Spirit, Breaks Records

BY DANA TALESNIK

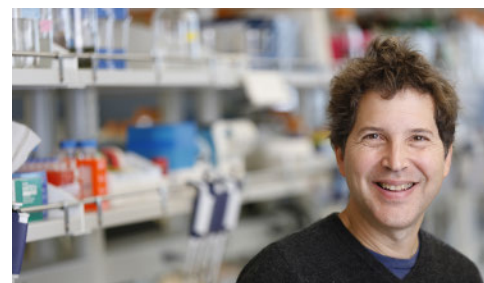
Every year, runners overwhelmingly say their favorite aspect of the NIH Relay is the camaraderie. This year was no different—only bigger.

On a warm, sunny day in September, the 39th annual NIH Relay took off. This time around, the Relay broke records with the most-ever teams participating (121!) and the most community sponsors.



Team Calbindin Snap at the ready PHOTO: MARLEEN VAN DEN NESTE

SEE RELAY, PAGE 6



Three NIH grantees win Nobels. Story on p. 3.

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Happi Explores Using Genomic Surveillance for Containing Disease WALS

Dr. Christian Happi, director of the African Centre of Excellence for Genomics of Infectious Diseases and professor of molecular biology and genomics at Redeemer's University in Nigeria, will deliver a lecture on using genomic surveillance and characterizing microbial threats to detect and contain disease outbreaks in West Africa. The talk, part of the Wednesday Afternoon Lecture Series (WALS), will take place in Lipsett Amphitheatre on Wednesday, Oct. 30 at 2 p.m. ET.



Dr. Christian Happi

Recent viral outbreaks around the world are an important

reminder of the difficulties of predicting when and where the next outbreak will occur. These also highlight the need to greatly expand our ability to rapidly identify and stop these threats.

Infectious diseases are often characterized by fever and are among the most common causes of morbidity and mortality in tropical developing countries. Researchers in Nigeria are translating microbial genomics knowledge and technologies into new diagnostic tools that can rapidly test for a wide array of known and novel microbes simultaneously. These tools are helping local health workers diagnose and treat patients by the their bedsides and prevent outbreaks from escalating.

These new developments lay the groundwork to pursue key scientific questions about the pathophysiology, epidemiology, transmission, evolution and biology of the microbes causing disease.

To view this lecture on videocast, see: <https://videocast.nih.gov/watch=55008>.

Kaplan Explores Cardiovascular Risks in Autoimmune Diseases



Dr. Mariana Kaplan

Should patients with autoimmune diseases worry about premature heart attacks and strokes? An NIH researcher will address this challenge and discuss potential therapeutic and diagnostic approaches.

Dr. Mariana Kaplan, chief of the Systemic Autoimmunity Branch and deputy scientific director at NIAMS, will present the Astute

Clinician Lecture, part of the WALS, on Wednesday, Nov. 6 at 2 p.m., ET in Lipsett Amphitheater in Bldg. 10 and via videocast. Her lecture is titled, "Heart of the Matter: Unraveling Cardiovascular Disease in Autoimmune Disorders."

Kaplan, who is also an active clinician and teacher, focuses her research on identifying mechanisms of immune dysregulation, organ damage and premature vascular disease in systemic autoimmunity. This lecture will address the scope of the problem, the putative pathogenic pathways leading to premature vascular disease in autoimmunity and discuss potential therapeutic targets and diagnostic methods.

The annual Astute Clinician Lecture was established in 1998 through a gift from the late Dr. Robert W. Miller and his wife, Haruko. It honors U.S. scientists who have observed unusual clinical occurrences and, by investigating them, have opened an important new avenue of research.

To watch this lecture by videocast, see: <https://videocast.nih.gov/watch=55009>.

Join NEI's 5K Walk/Run/Roll Oct. 30



On Wednesday, Oct. 30, NEI will host its fifth annual 5K Walk/Run/Roll on the Bldg. 1 front lawn, rain or shine.

The course will exit campus, circumnavigate its perimeter and return through security.

(Remember to bring your ID badge.)

The schedule:

10:30 a.m. – Halloween contests: Bring your pre-carved/decorated pumpkin or wear your scariest, funniest, or most creative costume.

11:00 a.m. – Demonstrations: Watch an NIH Police canine unit demo, learn about Combined Federal Campaign (CFC) charities, the NIH Blood Bank and Children's Inn, and get free eye screenings offered by Howard University.

11:45 a.m. – Warm-up led by NIH Recreation and Welfare (R&W) Association fitness instructors.

12:00 p.m. – Welcome: NEI Director Dr. Michael Chiang and CFC speaker, Samantha Johnson, development officer, Warrior Canine Connection.

12:10 p.m. – Race starts

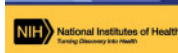
For more details and to register as an individual or a team, visit nei.nih.gov/nei5k.

This event is sponsored by NEI, the Office of Research Services' Division of Amenities and Transportation Services and the R&W.

NIH Announces Maternal Health Challenge Winners

NIH announced the final winners of its Connecting the Community for Maternal Health Challenge.

Eight nonprofit organizations received cash prizes for their efforts to develop, implement and conduct research projects to improve maternal health outcomes in their communities.



NICHD sponsored the two-year challenge as part of NIH's Implementing a Maternal Health and PRenancy Outcomes Vision for Everyone (IMPROVE) initiative, which seeks to reduce preventable causes of maternal deaths and improve health before, during and after pregnancy.

HeroX, in partnership with FedTech, supported the design, implementation and management of the challenge on behalf of NIH through a multi-award contract from NASA.

Nurturely of Eugene, Ore., received first place for "Carrying for the Culture," a project to test the effect of an infant-carrying intervention on lactation and postpartum depression among Black parents.

Second place was awarded to Central Jersey Family Health Consortium of North Brunswick, N.J. Their project, "Can It Happen to Me? Developing a Pre-Pregnancy Maternal Morbidity Risk Algorithm," seeks to develop a data-driven tool to identify maternal risk factors and pregnancy outcomes.

Learn more about the challenge and the winning organizations at <https://go.nih.gov/8mke0Ed>.

OBSSR Releases Strategic Plan

The Office of Behavioral and Social Sciences Research (OBSSR) has released its Strategic Plan 2025-2029, which outlines key priorities for advancing innovation, collaboration and engagement in behavioral and social sciences research across NIH.

The plan capitalizes on OBSSR's unique coordinating role, highlighting scientific priorities that transcend specific diseases and conditions, address critical areas and fulfill the needs of NIH institutes, centers, and offices.



The plan was developed with input from the research community, NIH staff, and federal and community partners. Explore the full plan and see how OBSSR is shaping the future of behavioral and social sciences research at <https://go.nih.gov/Z5FOjVN>.

NIH Grantees Win Nobel Prizes

Three NIH grantees were honored with Nobel prizes in early October, two in medicine or physiology and one in chemistry.

The 2024 Nobel Prize in physiology or medicine was awarded jointly to grantees Dr. Victor Ambros of the University of Massachusetts Chan Medical School, and Dr. Gary Ruvkun of Harvard Medical School and Massachusetts General Hospital, for “the discovery of microRNA and its role in post-transcription gene regulation.”

In a statement, the Royal Swedish Academy of Sciences said, “Their surprising discovery revealed an entirely new dimension to gene regulation. MicroRNAs are proving to be fundamentally important for how organisms develop and function.”



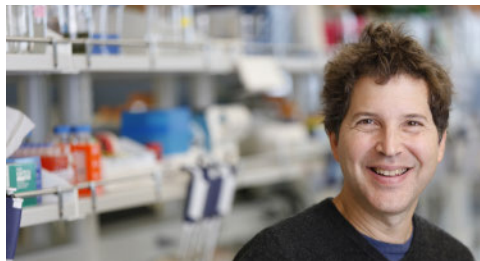
Dr. Gary Ruvkun (l) and Dr. Victor Ambros share the Nobel Prize for physiology or medicine.

PHOTOS: (RUVKUN) KRIS SNIBBE/HARVARD; (AMBROS) COURTESY OF UMASS CHAN MEDICAL SCHOOL

This year’s Nobel Prize in chemistry highlights work with proteins. Sharing the prize with two other scientists was grantee Dr. David Baker of the University of Washington, Seattle, who won “for computational protein design.” The other two, Demis Hassabis and John Jumper of Google DeepMind in London, were honored “for protein structure prediction.”

Baker, the academy stated, “has succeeded with the almost impossible feat of building entirely new kinds of proteins.”

Every cell contains the same set of genes. Yet different cell types, such as muscle and nerve cells, have distinct characteristics. These differences arise due to gene regulation. Ambros and Ruvkun discovered microRNA, a new class of tiny RNA molecules that play a crucial role in gene regulation.



Dr. David Baker wins Nobel in chemistry.

PHOTO: UW SCHOOL OF MEDICINE

It is now known that the human genome codes for more than 1,000 microRNAs. Abnormal regulation by microRNA can contribute to cancer, and mutations in genes coding for microRNAs have been found in humans, causing conditions such as congenital hearing loss, eye and skeletal disorders.

Ambros received funding from the National Institute of General Medical Sciences (NIGMS) and the National Cancer

Institute (NCI) in 1981 and 1983 to 2023 totaling more than \$19 million. Ruvkun has received continuous funding since 1991 from NIGMS, the National Institute on Aging (NIA) and the National Institute of Diabetes and Digestive and Kidney Diseases totaling more than \$43 million.

The diversity of life testifies to proteins’ amazing capacity as chemical tools.

They control and drive

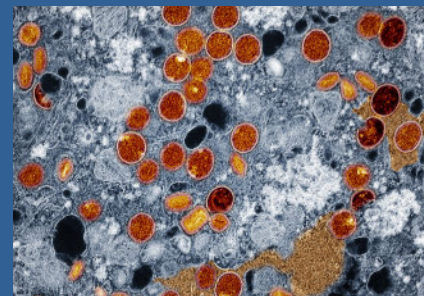
all the chemical reactions that together are the basis of life. Proteins also function as hormones, signal substances, antibodies and the building blocks of different tissues.

“One of the discoveries being recognized this year concerns the construction of spectacular proteins,” a discovery that opens up vast possibilities, said Heiner Linke, chair of the Nobel Committee for Chemistry.

Proteins generally consist of 20 different amino acids, which can be described as life’s building blocks. In 2003, Baker succeeded in using these blocks to design a new protein that was unlike any other protein. Since then, his research group has produced one imaginative protein creation after another, including proteins that can be used as pharmaceuticals, vaccines, nanomaterials and tiny sensors.

NIH has significantly supported the work of Baker with funding from 1995 to the present totaling more than \$24 million. The six NIH institutes and centers that supported this research are: NCI; NIA; National Institute of Allergy and Infectious Diseases; NIGMS; Fogarty International Center and Office of the Director.

“These Nobels are a major win for basic science and taxpayers alike,” said NIGMS Director Dr. Jon Lorsch. “They underscore how basic research leads to medical breakthroughs, and why NIH remains deeply committed to investing taxpayer dollars in this important field of science.”



ON THE COVER: Colorized transmission electron micrograph of mpxv virus particles (red and yellow) found within infected VERO E6 cells (blue). The virus particles are in various stages of maturity, which accounts for differences in shape. Virus factories (brown) are inclusions within infected cells where virus replication, maturation and assembly occurs.

IMAGE: NIAID

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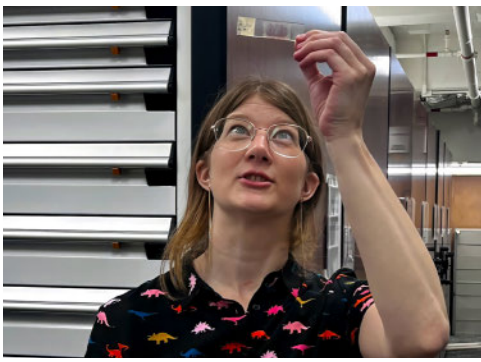


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Graslie

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“I would not be able to do what I do had I not spent my formative years in art school, learning how to communicate a really complex idea in an instant,” said Graslie, creator and host of the popular natural history-themed YouTube series “Brain Scoop,” during a recent National Human Genome Research Institute lecture in Lipsett Amphitheater. Before her lecture, she visited the institute.

Graslie grew up in South Dakota, “a part of the country where many people don’t think about.” A descendent of farmers and ranchers, she saw firsthand the impact of climate change on the environment. One storm could wipe out a year’s worth of profit. Those experiences motivated her to study landscape painting in college.

During her senior year at the University of Montana, one of her friends showed her the natural history collection at the zoological museum on campus. Graslie’s friend invited her to help dissect a mouse. She filled out a label with information about the animal and who conducted the autopsy.

“The coolest thing about it was I got to sign my name on the label as the preparer,” she said. “I got this bolt of energy. I never felt so proud signing my name on a painting.”

From that moment, Graslie knew she wanted to stay involved in this work. She painted portraits of the museum’s specimens. To raise the museum’s profile, she curated an exhibit featuring art inspired by the museum’s collection. She posted photos of the show on her blog, which caught the attention of Hank Green, YouTuber and science communicator. He visited the museum to film an episode for his channel.

Weeks later, they launched the “Brain Scoop.” In each episode, Graslie shares with the public the behind-the-scenes work of natural history museums, their research and collections. Then, a few months later, the Field Museum in Chicago offered her the

opportunity to become the museum’s chief curiosity correspondent.

She went from working in a museum that had 24,000 specimens to one that had more than 30 million objects and artifacts.

“I was out of my element,” she said. “But I knew as a non-scientist, I can be a fantastic proxy for the audience.”

Graslie has hosted and produced more than 200 videos about the research taking place at natural history museums around the country. Some of her most-watched videos are about the shape of King Tut’s head, bullet ant venom and the lack of representation for women science content creators.

When making content, Graslie meets people where they are. Scientific communicators must be aware of the principle of “psychological reactance,” also known as the boomerang effect, she said.

They cannot persuade communities who are resistant to a point of view with fact after fact. Finding out why someone doesn’t want to change their mind is more important, so “you change your strategy to better your own technique for taking anything like that to any kind of audience.”

An executive from Chicago’s PBS station saw her videos and asked if she wanted to host an hour-long TV show. Graslie thought it would be cool to travel through South Dakota and interview scientists.

She suggested South Dakota because there’s a rich fossil history. The rocks at Mt. Rushmore are some of the oldest rocks in the country. One of the largest and most-complete *Tyrannosaurus rex* skeletons ever found was discovered in the state, and Badlands National Park has fossil beds between 40 and 56 million years old. “The executive said, ‘That sounds awesome; let’s pitch it to PBS national!’” she recalled. So they did.

The executives told her that if the show was going to air nationally, they couldn’t film in just South Dakota. With that, the show became a three-part series exploring the paleontology and natural history of the Dakotas, Montana and Wyoming.

“That’s how we came up with Prehistoric Road Trip,” she said.

During filming, Graslie and her production team drove 6,000 miles and filmed at 34 locations across four states. It is the most diverse paleo program ever.

“That’s not just from the representation of people on screen but also in the representation of different organizations,” she said. “I wanted to go to the places where I felt I could relate most with people.”

Filming locations included community colleges and tribal museums. In one episode, she visited Wyoming’s Casper Community College, where she interviewed scientists who work in the same fossil beds where the first paleontologists in the country worked.

The final episode of the series explored the history of fossil theft on tribal land, a topic that was never covered before on a television program. Historically, paleontologists did not request permission to dig for fossils on tribal reservations. They took what fossils they excavated from those places.

“I care about bringing my platform as a non-scientist to highlight the stories of people that don’t have that kind of audience or the skills to get it out into the world,” she concluded. “I’m a conduit for the audience. I’m coming into these stories and using my camera to share them with the world.”

The full lecture can be viewed on demand at <https://www.youtube.com/watch?v=Vc5wyV2Lp30>.

The Brain Scoop can be viewed at <https://www.youtube.com/user/thebrainscoop>. Prehistoric Road Trip can be viewed at bit.ly/3ZQ01Mq. **R**



Graslie talks about her journey toward Prehistoric Road Trip.
PHOTOS: NHGRI



Undergraduate students from the 2024 STEP-UP symposium pose in Natcher. PHOTOS: NIDDK

STEP-UP

CONTINUED FROM PAGE 1

Potential, or STEP-UP, is a summer internship open to high school and undergraduate students. STEP-UP provides mentored, research training that culminates in a summer symposium at NIH, where participants present their research, attend professional development workshops, and network with peers and NIDDK staff.

At this year's symposium, 22 STEP-UP alumni returned to serve as role models to current students, providing advice on navigating their academic and career journeys. Sharing their own professional achievements, the alumni exemplified the value of such early-training programs.

"We're heartened to know NIDDK's investments in training opportunities for high school and undergraduate students are paying off," said NIDDK Director Dr. Griffin Rodgers, who delivered opening remarks.

Many STEP-UP alumni pay it forward by

mentoring current program participants. Dr. Nathalie Fuentes, a five-time STEP-UP alumna who attended the symposium, mentors STEP-UP students every summer. She has had more than 10 mentees, some of whom are now in Ph.D. programs, pharmacy or medical school.

"My students are my pride and joy. They reflect who I am," said Fuentes, who is now a senior scientist in biopharmaceutical development at AstraZeneca. Fuentes is also grateful to her own STEP-UP mentors. "Thanks to them, I learned what research was all about."

Originally from Puerto Rico, Fuentes joined STEP-UP in high school. Her public school did not have a science lab, but she gained authentic research experience through STEP-UP at the medical sciences campus at the University of Puerto Rico.



STEP-UP alumni Dr. Nathalie Fuentes (l) and Mata'uitafa Temukisa Solomona-Fai'ai

"Doing STEP-UP close to home was one of the reasons I applied in the first place. I don't come from a lot of resources," she explained.

STEP-UP is designed to provide opportunities to students regardless of their zip code, by working with coordinating centers throughout the U.S. and its Pacific territories.

For STEP-UP alumna Mata'uitafa Temukisa Solomona-Fai'ai, growing up in Leone, American Samoa, meant having limited access to state-of-the-art research facilities, until she discovered STEP-UP. Solomona-Fai'ai participated in the program twice while attending Leone High School, and twice while in college in Honolulu. After getting her master's degree in Washington D.C., she returned to Leone for two years to work as an epidemiologist for the American Samoa Department of Health and mentoring high school STEP-UP students.

As a Ph.D. candidate at the Yale School of Public Health, Solomona-Fai'ai now studies the cardiometabolic health of adolescents in American Samoa. At the STEP-UP symposium, she presented her dissertation research plan on how diet, physical activity, depression and body image affect obesity, diabetes and hypertension. Her research is personal to her, because adolescents in American Samoa are disproportionately affected by cardiometabolic outcomes and she knows firsthand what it's like to be an adolescent there. Her mother, who recently passed away, was diagnosed with heart disease and diabetes at a young age.

Another STEP-UP alumna presenting research at the symposium was Jude Tunyi, whose interest in science began as a child in Cameroon. He recalled the poor access to medical care there and standing in long lines to see the only doctor in town. After his family moved to the U.S., he was struck by how easily they could visit a doctor. Volunteering in a hospital during high school further inspired his interest in medicine.

"It wasn't until STEP-UP that I started doing research and wondered if a pathway existed that involves both medicine and research. And lo and behold, I'm currently doing a dual degree with hopes to become a physician-scientist," Tunyi said. He is earning a medical degree at Ohio State College of Medicine, and a Ph.D. through the NIH OxCam program, where training is split between NIH and Oxford University.

Tunyi participated in STEP-UP as an undergraduate at the University of Washington in Seattle, where he worked on building computational models that can lead to longer-lasting insulin. After STEP-UP, he completed a two-year postbaccalaureate program at the NIH.

Since 2000, more than 1,300 high school and 1,000 undergraduate students have participated in STEP-UP. Like Fuentes, Solomona-Fai'ai, and Tunyi, many have gone on to pursue advanced degrees and continued to participate in research.

"NIDDK already supports many of the best minds in research and constantly strives to develop new scientific talent," said Rodgers. "The success stories of our STEP-UP alumni reaffirm our longstanding commitment to providing training programs to help build and foster a robust scientific workforce. **E**"



Relay

CONTINUED FROM PAGE 1

“This annual event has truly become a cornerstone in NIH’s culture and employee engagement over the last 39 years,” said NIH Deputy Director for Management Dr. Alfred Johnson in opening remarks.

“Our on-campus events are vital to our NIH community’s happiness at work,” said Tammie Edwards, director, Division of Amenities and Transportation Services (DATS) in the Office of Research Services (ORS), before the first heat got underway. “We value our team-building experiences and being together for some fresh air.”

The Relay consisted of two heats. Teams of 5, each of mixed gender representation, competed. Each runner ran a half-mile loop around Bldg. 1.

This year’s fastest team was Fellows Running Club, unseating defending champs K-Space Invaders, who came in third. PEP in your stepTIDES came in second place by a mere second.

As expected, team names did not disappoint. They included Spore Losers; Legs

Miserables; We’re Just Here for the Ice Cream; Ready, Set...Gonads; Ignorance is Blisters; Chasing LipodysTROPHIES; Urinary TRACK Infection, and ORS-timated Our Abilities.

The Center for Scientific Review (CSR) registered multiples teams, all of whom traveled together from their off-campus offices.

“I don’t see the main campus often,” said Pamela Jeter of CSR’s No-Brainer Trainers. “This is an event that’s about not being sedentary. One of the biggest

risk factors for non-communicable disease is sedentary behavior.”

Robert Bates of CSR’s Stamina Is Our Weakness enjoyed spending time with his colleagues, who all work in different divisions. He was also glad to return to this event. “The last time I ran in this Relay was 20 years ago,” he said.



The starting horn: NCI’s Harold Seifried played the trumpet prior to each heat.



Above, the top three finishing teams: first place, Fellows Running Club; in second, PEP in your stepTIDES; and in third, K-Space Invaders. Below, a runner from Baby Got Track finishing her lap.



NIAID’s Knaunong “Birdy” Xiong (r) wears a pink and purple headband—the colors of eosinophils, a type of white blood cell. She ran with postbacs, fellows and staff scientists on team Eosinothrills. PHOTOS: MARLEEN VAN DEN NESTE





Runners stretch together with a fitness instructor before starting the race.

“This is one of the coolest community events,” said CSR’s Lia Fleming, who was participating in her fourth relay.

“It’s always wonderful to see so many people come out to have fun and get some exercise, but you can’t underestimate the competitive spirit,” said David Browne, co-president of NIH’s Recreation and Welfare Association. “Some teams train weeks in advance.”

For most participants though, the Relay is a friendly competition. “It’s nice to get some sun instead of the fluorescent lights of the lab. Glad to get some vitamin D,” said Angelica Ortiz, a new employee at the National Eye



DATS Director Tammie Edwards

Institute, running with the Really Reluctant Relay Racers. Her teammate, Kiam Preston, Jr., agreed, noting it’s important to get together outside of the lab environment.

Dr. Claudia Camargo of the National Institute of Mental Health, who regularly runs four times a week, was participating in her first NIH Relay. She ran with team NARDIS, research fellows who see each other daily, working in Bldg. 35.

“It’s the best community event at NIH by far,” said Rebecca Orris, who works at the National Center for Biotechnology Information (NCBI) at the National Library of Medicine. “All the NCBI teams agree. Especially in the hybrid and

Relay Top 20 Finishers

| Place | Time | # | Team Name |
|-------|-------|-----|-----------------------------------|
| 1 | 12:43 | 109 | Fellows Running Club |
| 2 | 14:37 | 41 | PEP in your stepTIDES |
| 3 | 14:38 | 24 | K-Space Invaders |
| 4 | 15:01 | 108 | Running into Debt |
| 5 | 15:10 | 93 | Calbindin Snap |
| 6 | 15:18 | 21 | qPAL: curing PD, AD and ALS |
| 7 | 15:33 | 117 | PCR: Postbac Chain Relay |
| 8 | 16:04 | 84 | CellCyclers |
| 9 | 16:23 | 60 | Smell you later |
| 10 | 16:36 | 105 | Host Busters |
| 11 | 16:38 | 77 | Wurtz Possible Runners |
| 12 | 16:47 | 79 | Hodgepodge |
| 13 | 16:49 | 18 | The Lymph Nodes |
| 14 | 16:56 | 34 | GMB Rocks |
| 15 | 17:03 | 67 | Ignorance is Blisters |
| 16 | 17:04 | 56 | CtU Later |
| 17 | 17:06 | 39 | READY, MarmoSET, GO! |
| 18 | 17:31 | 25 | Globetrotters |
| 19 | 17:44 | 44 | No Chasers |
| 20 | 17:44 | 66 | We’re just here for the ice cream |

remote world, this is an event where you can see others on campus and even get to know other people [across] your institute.”

On Relay day, Browne was excited to see the record-breaking turnout.

“When the relay started with the Health’s Angels over 40 years ago, I don’t believe [organizers] could have fathomed what it would turn into,” said Browne, who has worked at NIH for 20 years. “And while we’ve seen changes over the years, such as changing of locations due to construction, the one thing that’s remained the same has been the attendance of NIH’ers year in and year out. Despite the hybrid work schedule, we’ve seen two of our largest turnouts in back-to-back years.”

The NIH Relay is a chance for the NIH community to engage outside of their regular jobs, said Leslie Pont, wellness program manager, ORS. “The event is about building community, having fun and taking a break. At the end of the day, your wellbeing is the most important thing.”



Senator

CONTINUED FROM PAGE 1

of public-private partnerships while noting a major challenge in data access. Companies “are proprietary in ways that hurt our ability to amass and understand the data,” she said. “Our solution is: innovate on what you do with the data; don’t innovate on access to the data.”

The two discussed specific ideas and potential partnerships to help upgrade data sharing, access and security. In this all-of-government endeavor, Bertagnolli said, “We bring the research arm to it.” She and colleagues reiterated that diversity in clinical trials is imperative to ensuring data is robust and reliable.

Bertagnolli and Reed also discussed the potential of artificial intelligence (AI) in scientific applications. She said, “NIH must be a big part of the conversation on real applications and the future of where we hope it can go.”

Reading RNA

NIH leaders described a recommendation in a recent National Academies report that has the potential to have a transformative effect on health—the effort to characterize all Ribonucleic Acid (RNA), referred to as the RNome project.

“The Human Genome Project gave us the alphabet,” Bertagnolli told Reed. “With RNA, we’re going to learn how to read it.”

“The genome comes alive when you analyze RNA,” said Dr. Rick Woychik, director, National Institute of Environmental Health Sciences, who spoke via Zoom. “Going in now and characterizing all of the different RNA molecules that can arise from stretches of DNA across the entire genome is the logical next step.”

Dr. Carolyn Hutter noted the timeliness of this research. “RNA has been around for a very long time, but I think interest is swelling now because there’s a convergence of technology and data advances, where this is the time to do it,” said Hutter, then-director, Division of Genome Sciences at the National Human Genome Research Institute.

“We want to be out in front of all of this and we can be with your help,” Woychik told Reed. “We need large data repositories collecting the information systematically that we can apply in innovative ways,” which



Bertagnolli (r) discusses priorities with Reed (l) as two of his staffers and NIEHS Director Dr. Rick Woychik (on screen) listen.

would include the use of the emerging new AI strategies to study how these RNA molecules work within the cell, Woychik explained.

“We’re also discovering environmental perturbations that can be influencing the production and modifications of RNA,” he continued. His institute is working with colleagues across NIH to study and address the totality of environmental influences—pollution, heat, micro/nanoplastics—collectively often referred to as the exposome—on human biology.

As one concerning example, Reed noted that large amounts of nanoplastics are found in the top two inches of the floor of Narragansett Bay, posing a range of potential health threats to those fishing and swimming in those waters.

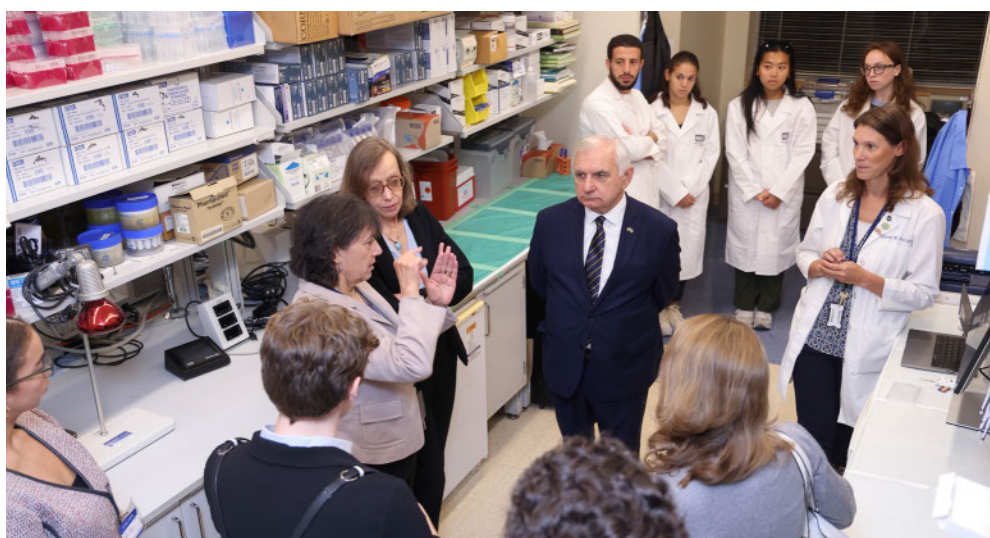
That’s an example of why this research

is so critical, Reed said. “When people wake up and discover a whole world is polluted by plastics and they have a health threat potentially,” he said, “then we better [pay attention] to RNA.”

Studying Sarcoma

Reed visited a pediatric oncology lab, where he met with Dr. Christine Heske, a National Cancer Institute (NCI) investigator who did her residency at Brown University, in the senator’s home state. She discussed sarcoma—a rare, intractable cancer that originates in connective tissues such as bone or muscle.

Many patients with sarcomas have poor outcomes with existing treatments. They may initially respond well but then relapse with difficult-to-control disease. Unfortunately, very few drugs have been developed for patients with sarcoma.



Reed (c) visits a pediatric oncology lab and learns more about the clinical trials process from Bertagnolli (center l), Widemann, next to her, and Heske (r).



Above, Reed (second from l) meets with Ryan (second from r)—a Ewing sarcoma patient who benefited from an NIH trial—and Ryan’s parents. At right, Bertagnolli (l) chats with Reed and Widemann while walking through the CC’s Pediatric Oncology wing. PHOTOS: CHIA-CHI CHARLIE CHANG

Moreover, few experimental drugs wind up making it through clinical trials and it’s especially challenging to implement clinical trials for children with rare cancers, such as these.

Heske then shared a hopeful story. NCI researchers tested an experimental drug in cell lines and mouse models of pediatric sarcoma. In the mice, they treated them just twice and then stopped treatment. The result was promising.

“At six months out, none of the mice had recurrence of tumor,” she said. “This was dramatic and shocking for us because we almost never see this in animal models,” she said, also showing Reed data plotted over time from sarcoma cell cultures using an



Heske (r) shows Reed a well plate containing rows of treated and untreated cells for comparison.

IncuCyte, an instrument that lets researchers see what cells are doing in real-time as they apply different treatments.

A first-in-human clinical trial was run at NCI in adult patients with any solid tumors and the sponsoring company agreed to sponsor a follow-up trial for adolescents and young adults with sarcoma. But when the company went bankrupt, the trial was suspended. To circumvent this challenge, Heske worked tirelessly for almost two years with NCI leaders, patient advocates

and the Food & Drug Administration to get access to this experimental drug and begin this NIH-sponsored trial, which is expected to start enrolling patients shortly.

A Healthy World

The senator also met with Fogarty International Center (FIC) leadership to discuss support for global health, which has ripple effects here at home. With globalization comes disease spread—as the recent Covid pandemic starkly illustrated—and the need for preemptive action.

FIC Director Dr. Kathleen Neuzil

cited the current mpox outbreak as an example of the urgent need to act. Currently, Neuzil leads the mpox vaccine working group for the World Health Organization’s immunization advisory group.

“But if we just react to [a viral outbreak], it’s going to happen again and again,” she said, underscoring the importance of medium and long-term

investments in scientific training and capacity-building.

“Know that Fogarty-trained scientists are at the forefront of the leadership in Africa,” Neuzil said, “and they’re at the forefront of response for Covid...Fogarty’s investments from 10 to 15 years ago are paying off today.”

In fact, FIC Deputy Director Dr. Peter Kilmarx told Reed, “When you’re traveling abroad, there’s probably an NIH collaboration or grantee in any place that you’re going. Reach out if we can be a resource during your travels.”

The discussion also touched on point-of-care (POC) technology opportunities to get resources to rural communities. Bertagnolli referenced a recent effort to help combat a syphilis outbreak in Native American communities in the U.S. Patients received test kits by mail and, after sending test results over their cell phones, received medicine by mail. Such POC efforts could improve outreach in communities across the world.

Beyond infectious disease outbreaks, FIC continues to enhance partnerships in other areas. For example, earlier that week, FIC leaders visited Walter Reed Institute for Research, which has labs throughout the world, to discuss collaborations on trauma and antimicrobial resistance research.

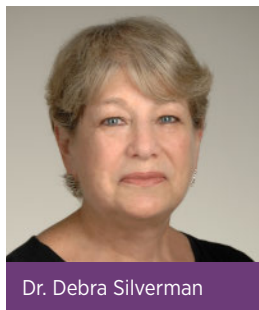
Reed agreed there’s a critical need to do more in these areas and asked for more related data to drive home this urgency in the Senate.

In the end, Reed and Bertagnolli said they’d maintain this dialogue on the vital issues discussed that day. “This is the future,” Reed said. Bertagnolli responded, “There’s never been a time like this for many reasons—for good, hopeful, exciting reasons.” **B**



(From l) FIC Deputy Director Dr. Peter Kilmarx (l), Reed, FIC Director Dr. Kathleen Neuzil and Bertagnolli

NCI's Silverman to Retire after 50 Years



Dr. Debra Silverman

Dr. Debra T. Silverman, former director of the Occupational and Environmental Epidemiology Branch (OEEB) and senior investigator in the Division of Cancer Epidemiology and Genetics (DCEG) at the National Cancer Institute (NCI), will retire in November,

after more than 50 years of service and 16 years leading OEEB.

Silverman dedicated her career to investigating occupational, environmental and host factors associated with cancers of the bladder, lung and pancreas. She has directed highly influential epidemiologic studies, yielding definitive answers on the causes of these malignancies. Her work resulted in the classification of diesel exhaust as a human lung carcinogen, which affected regulatory actions around the world, and identified arsenic contamination in drinking water as the cause of excess bladder cancer mortality in New England, leading to remediation efforts.

Her investigations of bladder carcinogens and diesel exhaust piqued an interest in related environmental factors. She expanded her research on air pollution and water contaminants, where she has made important discoveries. Most recently, she has studied perfluoroalkyl and polyfluoroalkyl substances (PFAS), a class of chemicals widely used in industry and consumer products. In 2014, perfluorooctanoic acid (PFOA) was classified as a possible human carcinogen based in part on limited epidemiologic evidence of associations with kidney and testis cancers in heavily exposed subjects.

To expand understanding of the role of PFOA in cancer etiology, particularly at the population level, Silverman established and led the NCI PFAS working group. In this role, she directed the initiation of DCEG studies to evaluate cancers associated with PFAS at exposure levels found in the general population. Those studies confirmed important associations with kidney and testis cancers.

Some of her earliest work focused on pancreatic cancer. In the 1980s and 1990s, Silverman's research led to definitively establishing cigarette smoking as a cause of pancreatic cancer. Her research also identified etiologic roles for obesity, longstanding diabetes, heavy alcohol consumption and family history of an array of tumors. She also identified factors contributing to the high rates of pancreatic cancer experienced by African American individuals. These studies laid the foundation for current research.

For the past 25 years, Silverman has served on the Promotions and Tenure Review Panel (PTRP) for the division. PTRP plays a crucial role in career

advancement, particularly for tenure-track investigators. Silverman has participated in the reviews of almost all tenured investigators in DCEG

In addition to research that has informed regulatory standards and protected public health, Silverman has developed and overseen a robust research and training program in her branch. She has mentored countless junior researchers who have gone on to successful careers in government, academia and industry.

When she arrived at NIH, Silverman was one of just a handful of women in cancer research. Throughout her career, she paved the way for other women to enter the field of biostatistics and epidemiology, shepherding junior investigators to senior roles. Those individuals are now completing their own rigorous investigations at NCI, universities and research institutions around the world.

NIMH Selects Lau as Jackson Memorial Award Winner



Dr. Anna Lau

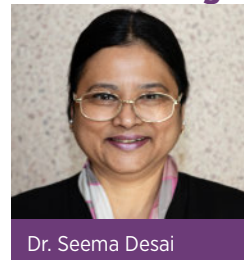
The National Institute of Mental Health (NIMH) selected Dr. Anna Lau as the 2024 James S. Jackson Memorial Award winner. This award, established in 2021, honors outstanding researchers who have demonstrated exceptional achievement in minority

mental health and mental health disparities research, community engagement and mentorship.

Lau is a professor of psychology and Asian American studies at the University of California, Los Angeles and associate dean for inclusive excellence in the life sciences. She is a faculty member in the clinical psychology Ph.D. program and directs the Culture and Race/Ethnicity (CARE) in Youth Mental Health Lab. Lau trains students in evidence-based treatment for youth and teaches courses in Asian American mental health and the psychology of diversity.

Earlier this month, NIMH hosted Lau's award ceremony and lecture, during which she discussed her research program and career trajectory within the framework of mental health disparities and minority mental health.

Remembering NIMHD's Desai



Dr. Seema Desai

Dr. Seema N. Desai, who died suddenly in April 2024, was a program director in the Division of Integrative Biological and Behavioral Sciences (DIBBS) in the National Institute of Minority Health and Health Disparities (NIMHD).

She was an immunologist, microbiologist and HIV research scientist with multidisciplinary minority

health research experience, widely recognized for her scientific contributions in these areas.

Desai received her master's degree and a Ph.D. in microbiology from the University of Mumbai and studied innate immunity in HIV-infected children and adolescents during her postdoctoral training at the University of Miami-Miller School of Medicine in Florida. Her experience spanned pediatric to geriatric research: basic, bio-behavioral, clinical and translational. Her research focused on racial and ethnic disparities among people living with HIV; stress and depression; HIV and addiction; HIV and HIV/hepatitis C virus pathogenesis; HIV, aging and end-organ diseases; and HIV and women's health.

She was an investigator for various NIH-funded studies, served on journal editorial boards, and earned numerous accolades throughout her career, including several prestigious national and international scholarships and awards.

Desai's career in science was influenced early in life, growing up in India with her mother, a nurse, and her father, a medical photographer, at King Edward Memorial Hospital in Mumbai. Her keen interest in science and research translated into her academic successes and gratifying career trajectory.

Before joining NIMHD in December 2022, Desai was an instructor and assistant professor at Rush University Medical Center in Chicago. She led a NIMHD-funded P2O center award on early senescence in HIV among African Americans living with HIV. She also led laboratory research and studies in various epidemiological cohorts, including the Southern HIV and Alcohol Research Consortium (SHARC), the Rush Center of Excellence on Disparities in HIV and Aging (CEDHA) and the Women's Interagency HIV Study (WIHS), now the Multicenter AIDS Cohort Study (MACS)/WIHS combined cohort study.

Desai's colleagues at NIMHD remember her as a positive and compassionate person. "She was a wonderful, cheerful, friendly and caring team member," said Dr. Rina Das, director of DIBBS. "We will miss her dearly."

Desai was also a great cook and enjoyed making various dishes and bringing them to work to share communally and build bonds. Most recently, before her passing, she was very active during an NIMHD staff volunteer event at The Children's Inn at NIH, helping with cooking and serving the families.

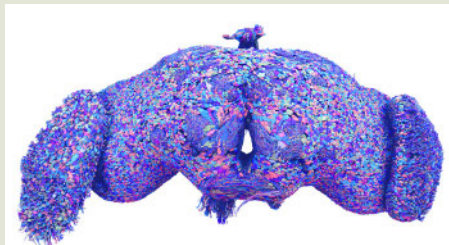
She also enjoyed writing, including poetry for many occasions, and editing. She was editor-in-chief of the Pulse, NIMHD's Inclusive Diversity Committee (IDC) inaugural newsletter. As a co-lead of NIMHD's IDC, Desai not only embodied the ideals of inclusivity and belonging with her day-to-day activities, but also advocated for the inclusive treatment of others around her, often checking on and following up with colleagues to see how she could help them feel included and find their sense of belonging.

Desai demonstrated the impact that one person can make during their time in service. Her light will continue shining in all the lives she touched.

Researchers Map Neural Connections of Fruit Fly Brain

An NIH-supported scientific team revealed the first complete map of the neural connections of the common fruit fly brain. The map provides a wiring diagram, known as a connectome, and is the largest and most complete connectome of an adult animal ever created.

This work offers critical information about how brains are wired and the signals that underlie healthy brain functions. The study, which details over 50 million connections between more than 130,000 neurons, appears as part of a package of nine papers in *Nature*.



A neuronal wiring diagram of the adult fly brain, which comprises 139,000 neurons and more than 50 million synapses.

IMAGE: TYLER SLOAN/PRINCETON UNIVERSITY

The connectome map details the full set of cell classes in the fruit fly brain, identifying different types of neurons and chemical connections,

or synapses, between neurons. It also provides insight into the type of neurotransmitter (chemicals such as dopamine or serotonin) secreted by each neuron.

The researchers also created a map of projections between brain regions, known as a projectome, that tracks the organization of the hemispheres and behavioral circuits within the fly brain. It allows for the detailed mapping of specific brain circuits that control behavior, such as the ocellar brain circuit, which takes in visual stimuli and outputs behavioral changes that orient the fly's body during flight.

In a companion paper, the researchers provided additional details critical for researchers who will use the connectome to advance our understanding of brain physiology and behavior.

The fruit fly is capable of surprisingly advanced cognition and behavior, making it an ideal candidate for this initial connectome project. For example, they can form long-term memories, engage in social interactions and navigate over large distances.

Now that the fruit fly connectome has been established, the same methodology could be used to rapidly create similar maps in larger-brained animals. The new map might serve as a reference to understand how a host of human mutations affect brain connections.

NIH-Led Studies Point to Potential for New Cataract Drug

NIH researchers and collaborators have identified a protein, known as RNF114, that reverses cataracts, a clouding of the eye's lens that occurs commonly in people as they age. The study may represent a surgery-free strategy for managing the condition. The study was published in the *Journal of Clinical Investigation*.

This new discovery was part of ongoing research at NEI involving the 13-lined ground squirrel. Its ability to withstand months of cold and metabolic stress during hibernation make it an ideal model for vision scientists to study a range of eye diseases.

During hibernation, the ground squirrel's lenses became cloudy at around 4 degrees Celsius but quickly turned transparent after rewarming. By comparison, non-hibernators (rats in this study) developed cataracts at low temperatures that did not resolve with rewarming.

The lens focuses light onto the retina at the back of the eye. As we age, cataracts form when proteins in the lens start misfolding and block, scatter and distort light as it passes through the lens. Aging can disrupt protein homeostasis. One previously known role of RNF114 is to help identify old proteins and facilitate their degradation.

The researchers developed a lens-in-a-dish model using stem cells engineered from ground squirrel cells to explore the squirrel's reversible cataracts at a molecular level. They found RNF114 was significantly elevated during rewarming in the ground squirrel, but not in the non-hibernating rat.

They compared these results with a rat cataract model that had been pre-treated with RNF114. Normally, such cataracts would not resolve with rewarming, but in the pre-treated lenses there was a rapid clearing of the cataract upon rewarming.

According to the scientific team, these findings are proof-of-principle that it is possible to induce cataract clearance in animals. The process will need to be fine-tuned so scientists can stimulate specific protein degradation to see how to precisely regulate protein homeostasis. This mechanism is also an important factor in many neurodegenerative diseases.



PEOPLEIMAGES-YURI A/SHUTTERSTOCK

New Cancer Diagnoses Did Not Rebound as Expected after Pandemic

Cancer incidence trends in 2021 largely returned to what they were before the Covid-19 pandemic, according to a study by NIH researchers. However, there was little evidence of a rebound in incidence that would account for the decline in diagnoses in 2020, when screening and other medical care was disrupted. One exception was breast cancer, where the researchers saw an uptick in diagnoses of advanced-stage disease in 2021. The study appeared in the *Journal of the National Cancer Institute*.

A previous study showed that new cancer diagnoses fell abruptly in early 2020, as did the volume of pathology reports, suggesting that many cancers were not being diagnosed in a timely manner. To determine whether these missed diagnoses were caught in 2021, possibly as more advanced cancers, NCI researchers compared cancer incidence rates for 2021 with those expected from pre-pandemic trends using data from NCI's Surveillance, Epidemiology, and End Results Program.

A full recovery in cancer incidence should appear as an increase over pre-pandemic levels (called a rebound) to account for the missed diagnoses. The researchers looked at cancer overall, as well as five major cancer types that vary in how they are typically detected: through screening (female breast and prostate cancer), due to symptoms (lung and bronchus and pancreatic cancer) or incidentally during other medical procedures (thyroid cancer).

Cancer incidence rates overall and for most specific cancers approached pre-pandemic levels, with no significant rebound to account for the 2020 decline. However, in addition to an uptick in new diagnoses of advanced breast cancer in 2021, the data also provided some evidence of an increase in diagnoses of advanced pancreatic cancer. Also, new diagnoses of thyroid cancers in 2021 were still below pre-pandemic levels.

The researchers concluded that 2021 was a transition year still affected by the Covid-19 pandemic, which continued to impact medical care. They said the findings highlight the need for ongoing monitoring to understand the long-term effects of the pandemic on cancer diagnoses and outcomes.



PICKLEBALL IS FOR EVERYONE NIH's Newest Club Brings Pickleball to Campus

BY ERIC BOCK

Have you ever wanted to play the fastest growing sport in the United States? Well, now's your chance.

A new pickleball club has begun playing at a converted tennis court near Bldg. 60. Sponsored by the Recreation and Welfare Association, the club meets on Tuesdays and Thursdays from 4 - 8 p.m. and Wednesdays from 7 a.m. - 2 p.m. for open social play.

Pickleball is a fun, fast-paced game that's a combination of badminton, tennis and ping-pong. It's played on a badminton-sized court with a tennis-like net and paddles that are slightly larger than table tennis paddles. Beginners of all ages and skill levels can quickly learn the rules.

"Anybody can pick up pickleball," said Tonya Lee, a management analyst with the National Institute of Neurological Disorders and Stroke and club co-president. "It's more a game of strategy than physical prowess. No one should feel discouraged, even if they don't think of themselves as athletic or don't have the ability to play other sports."

Lee doesn't consider herself a "very sporty person," but she fell in love with the welcoming community after taking a pickleball class. The people she played with taught her the rules and how to keep score.

"Pickleball is something that we've wanted to bring to the NIH community for a long time," she said. "It's the happy hour of tennis."

Those interested in joining don't need any experience to play, said Lee.

The club is a "no judgement zone" and its goal is to introduce the sport to anyone who wants to learn, so there are more people to play with.

Lee met the club's co-president Liz Hackett a year ago. She heard that Hackett also played pickleball and, after a meeting, they made plans to play together. Soon after, they began thinking of how to bring the sport to NIH.

"I started playing pickleball during the Covid-19 pandemic as a way to stay active and safely socialize," said Hackett, director of the Division of Administrative Operations for the Office of Research Services (ORS).

Hackett decided to co-found the club after she heard patients at the Clinical Center were looking for a place to play. She approached ORS leadership about repainting an underused tennis court near Bldg. 60. Once the court was repainted, the club was ready to start.

"NIH emphasizes diversity, equity, inclusion and accessibility. There's another evolution in this space around the idea of belonging," she said. "Pickleball supports belonging in your community."

Patients, staff and visitors of all ages and abilities can exercise together and get to know each other in a setting outside work.

The courts are open to the NIH community on a first-come, first-served basis outside of designated NIH Pickleball Club social play hours and club-sponsored events. To stay up-to-date on the latest news about tournaments and leagues, and to schedule play time with other members, join the listserv at go.nih.gov/45iu4Sy.



NIH'ers take a break to enjoy a friendly game on NIH's new pickleball courts.

COURT PHOTOS: ERIC BOCK



Liz Hackett (l) of ORS and Tonya Lee of NINDS recruit for the Pickleball Club at the NIH Relay.

PHOTO: MARLEEN VAN DEN NESTE