

Honoring Women of NIH

In recognition of Women's History Month, the NIH Record is celebrating the many talented, driven women working at NIH. Throughout March, we're featuring stories of investigators and administrative leaders from across the agency. These profiles are the first in the series.

SAFE, SUPPORTED, MENTORED

Samara Finds Her Calling at NIH

BY DANA TALESNIK

In the lab she runs, Dr. Nadine Samara strives to be the mentor she wishes she had while trying to find her calling. The mentors she eventually found, who guided her

through graduate school and post-graduate life, continue to be her primary support system.

Samara studies oral disease-causing bacteria at the National Institute of



Dr. Nadine Samara

Dental and Craniofacial Research (NIDCR), where she heads the structural biochemistry unit.

Before coming to NIH, Samara spent years unsure of her career path.

She attributed the delay to a lack of mentorship, resources and hands-on experience

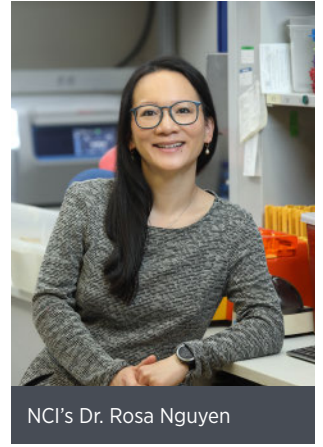
SEE **SAMARA**, PAGE 4

Nguyen's Career Leads to Path of Discovery

BY ERIC BOCK

Growing up, Dr. Rosa Nguyen's parents always told her: "Grind a metal block and one day you will make a needle." It's a Vietnamese saying with the moral that success comes from hard work.

"I live by that belief," said Nguyen, a pediatric oncologist and physician-scientist at the National Cancer Institute (NCI).



NCI's Dr. Rosa Nguyen

SEE **NGUYEN**, PAGE 4



Gov. McAuliffe tours zebrafish facility. See p. 3.

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BUGS INSIDE OF BUGS

Moran Introduces the Insect Microbiome

BY AMBER SNYDER

You've heard about the human microbiome. Now, get ready for the...insect microbiome?



Dr. Nancy Moran

"It's been a revelation to realize that a lot of what we see in insect biology is due to the microbes living in them," said Dr. Nancy Moran, an evolutionary biologist and entomologist from

the University of Texas at Austin.

In a recent WALS lecture, "The World of Insect-Bacterial Symbiosis: What We Have and Have Not Learned," Moran delivered a

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OUT OF THE OFFICE

NIH'ers Trade Science for Swords on the Weekends

BY MYRANDA TARR

Ever wonder what your fellow NIH colleagues are up to on the weekends? It turns out some return to the Bethesda campus on Saturdays and Sundays—but not to work. A small group of NIH'ers in the Kenjutsu Club can be found training with classic Japanese

SEE **KENJUTSU**, PAGE 8



NIH'ers John Buckley (l) and Dr. Connie Noguchi perform kusarigama kata, Japanese martial arts.

PHOTO: MARK RAUGAS



An award honors the late Dr. James S. Jackson, a renowned social psychologist.

NIMH Calls for Jackson Memorial Award Nominations

The National Institute of Mental Health (NIMH) recently called for nominees for the 2024 James S. Jackson Memorial Award. Nominations close at 11:59 p.m. ET on Friday, Apr. 26.

NIMH seeks nominations from the field for exceptional minority mental health and mental health disparities researchers who exemplify and demonstrate excellence in mentorship, fostering a diverse and positive learning environment, scholarship and community outreach and engagement. The winner will receive a \$5,000 prize.

This award is named in honor of the late Dr. James S. Jackson, a renowned social psychologist who was the Daniel Katz distinguished professor of psychology at the University of Michigan.

To acknowledge Jackson's great impact on the fields of disparities research, minority mental health and his commitment to mentoring trainees, NIMH will honor an outstanding researcher who has demonstrated exceptional individual achievement and leadership in minority mental health and mental health disparities research and excellence in mentorship, influence and support of trainees.

For more information on nomination criteria and the application process, visit nimh.nih.gov/jacksonaward.

NIHSA Open House Set, Mar. 6

Join the NIH Sailing Association (NIHSA) at its Open House on Wednesday, Mar. 6, from 6:30 to 8 p.m. Explore your interest in learning to sail and discover all the opportunities for sailing with the NIHSA. Information will be available about basic training classes, the racing program and all the other social activities the club offers. For details, visit the website: <http://www.nihsail.org>.

Attend the Open House at Davis Library, Meeting Rm. #1 (downstairs), 6400 Democracy Blvd., Bethesda, Md. Plenty of parking available. If

using Metrobus, the J1 and J2 buses leave from the Medical Center Metro station and go directly to Davis Library. Use this link for bus schedule: <https://bit.ly/3XGGWYI>.

CCDI Holds Year's First Community Forum

Join the National Cancer Institute's Childhood Cancer Data Initiative (CCDI) on Monday, Mar. 18 from noon to 1 p.m. ET for its first Community Forum of 2024. Community forums are part of CCDI's ongoing webinar series and provide an open space for discussion and insights.



Dr. Subhashini Jagu of NCI answers questions at a fall 2023 CCDI forum.

The event will cover topics aimed at advancing understanding of childhood cancer and accelerating research efforts. Highlights include:

- Expansion of the Molecular Characterization Initiative
- Update on the Coordinated Pediatric and Young Adult Rare Cancer Initiative and collaboration with the European Union Outcomes from February's Genomic Harmonization Task Force meeting
- Highlights of CCDI-funded project successes

Beyond providing important CCDI updates, the forum looks for active input. Contribute to the conversation by sharing questions and feedback during the Q&A session. Engagement is crucial and can help shape the future of CCDI.

CCDI webinars are free and open to the public, though registration is required to receive the event link. For more information, including past event recordings, visit <https://go.nih.gov/7pEWETS>. Also, explore events.cancer.gov to conveniently enroll in any available CCDI events.

Individuals with a disability who need reasonable accommodation should email CCDIevents@mail.nih.gov as soon as possible.

Get Ready for Take Your Child to Work Day

Apr. 25

NIH's 30th Take Your Child to Work Day (TYCTWD) returns on Thursday, Apr. 25 from 9 a.m. to 4 p.m. ET.

Parents and their children are invited to experience in-person, hands-on experiences as a part of this year's event, which also will include Earth Day activities.



A microsurgery demonstration during Take Your Child to Work Day 2023

PHOTO: LESLIE KOSSOFF

Virtual and prerecorded activities will once again be offered for remote workers and employees at other NIH locations.

Look for emails announcing registration:

- Mar. 11, noon—Pre-registration
- Mar. 19, noon—Registration phase 1
- Mar. 26, noon—Registration phase 2

The National Institute on Aging is also sponsoring a book drive for this year's event. You can drop off new or gently used children's books K-12 in Bldg. 10 and 31 now until Friday, Apr. 5. Donations will be inspected and categorized by grades. The books will be given out on TYCTWD.

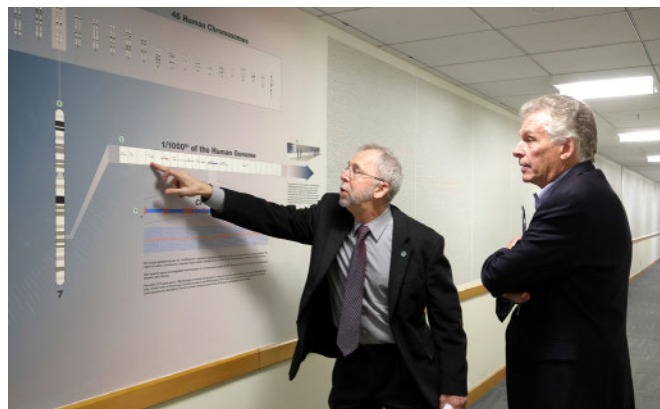
Volunteer opportunities will also be available for students in grades 9-12 to help with virtual activities. For details, visit <https://takeyourchildtowork.nih.gov/>.

Email questions to Take-Your-Child-To-Work@nih.gov. The Office of Research Services' Program and Employee Services is the primary sponsor of TYCTWD 2024.



Deposit new or gently used children's books for ages kindergarten through 12th grade in receptacles like this in Bldgs. 10 and 31.

PHOTO: ERIC BOCK



On a tour of NIH, former Virginia Governor Terry McAuliffe (l) chats with (from l) Cristina Kapustij, chief of NHGRI's Policy and Program Analysis Branch; NHGRI Director Dr. Eric Green; and Zebrafish Core biologists Blake Carrington and Kevin Bishop. "The zebrafish model is poised to be a pivotal tool in advancing human health as science marches toward the achievable goal of personalized precision medicine," Bishop said on the tour. "As we move research forward, the use of different animal models will only enrich the quality and longevity of human health." At right, Green gives the governor a crash course in genomics.

PHOTOS: CHIA-CHI CHARLIE CHANG

Former Virginia Governor Visits NIH

Former Virginia Gov. Terry McAuliffe visited the National Human Genome Research Institute (NHGRI) recently to gain a deeper understanding of genomics and its contributions to the research and health care ecosystems.

NHGRI Director Dr. Eric Green spent half a day giving the governor a crash course in genomics. The two met with a patient directly benefiting from research at the Clinical Center. They visited with former NIH Director Dr. Francis Collins, now serving as an NIH distinguished investigator at NHGRI's Center for Precision Health Research and head of the molecular genetics

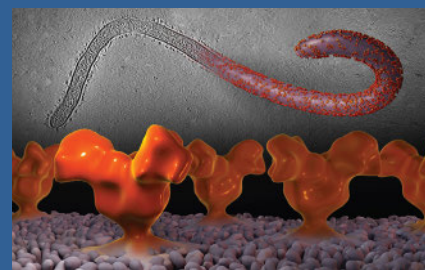


Former NIH Director Dr. Francis Collins (l), now serving as a distinguished investigator at NHGRI, and Erin Mansell, a postbaccalaureate fellow, talk with McAuliffe.

section, to discuss the work he is doing in his lab. And McAuliffe rounded out his visit with a tour of NIH's zebrafish facility, which is integral to the basic research that eventually leads to bedside treatments.



At left, McAuliffe gets an up-close look at NIH's zebrafish research with Bishop. At right, Green, Clinical Center Director Dr. Benjamin Solomon and Kapustij welcome the former Virginia governor to the Clinical Center.



ON THE COVER: *Ebola* in 3D. Cryo-electron tomographic image of a virus-like particle displaying Ebola virus surface spikes (top) and visualization of their three-dimensional structure (bottom).

IMAGE: VERONICA FALCONIERI & SRIRAM SUBRAMANIAM/NCI

The NIH Record

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The *NIH Record* is recyclable as mixed paper.





Samara points to screen showing second highest score while out bowling with her lab mates last spring.

Samara

CONTINUED FROM PAGE 1

during college. And, she had many interests.

One thing, though, was certain. “My dad is a physician and I knew I did not want to be a [medical] doctor,” she said. “I didn’t have a desire to directly treat people or perform surgery.”

Born in New York, Samara grew up in Saudi Arabia, then moved to Lebanon for high school and college. While studying chemistry at the American University of Beirut, she was researching peptides and pondering career options. Her senior advisor suggested she pursue a doctorate, specifically at Rutgers University where she could continue their peptide project.

At Rutgers, Samara still wasn’t excited about a specific subject. But then came a defining moment when she attended a seminar on structural biology and crystallography.

“This is the most amazing research I’ve ever seen,” she recalled thinking. She then headed up the road to Princeton for a research position and went on to get her doctorate in molecular biophysics at Johns Hopkins University.

Samara came to NIH in 2011 as a structural biologist at the National Institute of Diabetes and Digestive and Kidney Diseases. Four years later, she transitioned to staff scientist at NIDCR.

“My proudest achievement is that I managed to somehow, with two young children at home, set up a lab right before the pandemic started, getting it going and recruiting people who feel safe and supported and mentored in my group,” said Samara, who also is an Earl Stadtman tenure-track investigator.

Samara’s lab studies polysaccharide biosynthesis, namely, the sugars that bacteria make and use to evade the host immune system. Bacteria produce a protective matrix consisting of proteins, DNA and polysaccharides, called biofilm.

“We study the enzymes that make the sugar chains in our biofilm,” Samara explained. “If we understand these enzymes, maybe we can target them, or the polysaccharides they make, for therapeutics for oral diseases.”

Samara said she’s grateful for autonomy in the lab and her flexible schedule. But “I’ve recently had challenges as I became more senior in my position,” she said.

As a woman in science, she said, implicit biases remain. For example, she has received frustrating comments that were not directed at her male colleagues in the same situation. These seemingly little biases add up, she noted.

Her advice? “Surround yourself with supportive people. That’s a very valuable component of my experience.” **R**

Nguyen

CONTINUED FROM PAGE 1

“Without hustle, it’s hard to achieve something in life.”

Her determined attitude brought her to NCI’s Center for Cancer Research (CCR), where she runs her own lab. It’s focused on developing new cellular and cytokine-based immunotherapies for pediatric solid tumors, such as neuroblastomas.

“I cherish the many encounters I’ve had with patients and their families, who told me that I was able to help them get through treatment and make a difference in their lives,” she said. “I’m proud to have put together a great lab with budding and established scientists who wake up every day with the motivation and passion to find a new way to cure childhood cancer.”

Before starting her own research group, she completed postdoctoral fellowships at the National Heart, Lung and Blood Institute and NCI. “I was in awe of the way science and clinical care take place in the CCR,” she recalled.

Math, biology and chemistry classes first sparked her interest in science. Her pediatrician inspired her to consider a career in medicine.

“I remember sitting in the waiting area and seeing children of all different ages and with different problems and she could help them all—wow!” she said, on the *I am Intramural* blog. “Over time, I realized that I, too, wanted to be a pediatrician and a role model to young children.”

In 2023, she became a Lasker Clinical Research Scholar, an NIH-funded initiative that supports early-career medical scientists and helps bridge the widening gap between cutting-edge research and improved patient care.

There have been several positive changes in biomedical research since she first started medical school. There are many new techniques and methods that didn’t exist a few years ago.

Recently, for instance, Nguyen and her colleagues developed a new technology to help T-cell therapies work better against solid tumors in mouse models of adult and pediatric cancers.

T-cell therapy is a type of immunotherapy in which a patient’s own immune cells are removed from the body, manipulated and



Last June, Nguyen (r), a physician-scientist early investigator in NCI's Pediatric Oncology Branch, talked to staff from the offices of congressional representatives and the First Lady about research to develop innovative new therapies.

PHOTO: CHIA-CHI CHARLIE CHANG

cancers. That same success hasn't been seen in the treatment of solid tumors.

"Solid tumors lack the optimal environment for T cells to function," she said, "because their surroundings lack the nutrients and signals needed to help stimulate and support T-cell activity."

To address the problem, the researchers developed a method where they attached two molecules called cytokines to the surface of


multiplied in the lab before being given back to the patient. Historically, T-cell therapy has been successful in treating many blood

engineered T cells. The engineered cells containing the cytokines lead to greater eradication of tumors.

Nguyen appreciates the steps NIH has taken to create a more inclusive biomedical workforce. Despite these positive developments, she said, some female trainees still have a hard time balancing their career with family responsibilities.

"Reproductive health and childcare continue to be the most challenging aspects that women in academia face when they want to have children," she said. "These problems used to be hard 'back in the day' but continue to pose a true challenge to women who decide to remain in academia and have children nowadays."

She advised those considering a career in research to find mentors who "are invested in your success, willing to teach and promote you.

"A career in science and medicine is a beautiful path of the unknown that leads you to the excitement of discovery and can culminate in true change," Nguyen concluded. "Although it can be hard, it has been a very rewarding journey for me." 

NIH Hosts National Nutrition Month Events

'BEYOND THE TABLE'

National Nutrition Month, an annual initiative established in March 1973 by the Academy of Nutrition and Dietetics, focuses on making informed food choices and fostering healthful eating and physical activity habits. This year's theme, "Beyond the Table," delves into the farm-to-fork aspect of nutrition, covering everything from food production and distribution to navigating grocery stores, farmers markets, home food safety and storage practices. Also, it explores the various ways we consume food—on the go, in schools and restaurants, and at events.

The Division of Amenities and Transportation Services at the Office of Research Services (ORS) is promoting several events in observance of the month. All times ET.

- **Healthy Cooking Demonstration: Keeping it Simple**—live, online with Elizabeth Bilodeau, a registered dietitian, showcasing how to cook with five ingredients or less. Wednesday, Mar. 6, noon-12:50 p.m. Zoom pre-registration <https://bit.ly/49y4LrI>
- **Food & Mood Webinar**—panelists from ORS, National Institute of Mental Health and National Institute of General Medical Sciences will discuss the gut-brain connection, the role of the microbiome, eating with the seasons and impact on overall health. Tuesday, Mar. 12, noon-12:50 p.m. Zoom link <https://bit.ly/4bH7HEj>
- **Kaiser Permanente Mobile Health**—coming to Bethesda campus (Lot 10H, south side of Clinical Center) complimentary biometric screenings, including blood pressure, diabetes screening (A1C), cholesterol check, health education and flu vaccine. Pre-registration details will be available soon. Open to all NIH staff with ID badge; walk-ins welcome. Thursday, Mar. 21, 8:30 a.m.-3 p.m.
- **Virtual Grocery Store Tour**—effectively navigate the aisles, prepare ahead, understand food labels and shop in-season to maximize freshness. Friday, Apr. 12, noon-12:50 p.m. Zoom registration: <https://bit.ly/4bHvDHO>

Visit <https://wellnessatnih.ors.od.nih.gov/Pages/news-and-events.aspx> for updates.



PHOTO: PROSTOCK STUDIO/SHUTTERSTOCK



NIH Scientific Workforce Diversity Seminar Series How Does Diversity Impact Innovation in Team Science?

Second Scientific Workforce Diversity Seminar Scheduled, Mar. 13

The Chief Officer for Scientific Workforce Diversity (COSWD) office is hosting its second Scientific Workforce Diversity Seminar Series event of the 2023-2024 season on Wednesday, Mar. 13 from 10:30 a.m. to noon ET.

"How Does Diversity Impact Innovation in Team Science?" will be held in collaboration with United Kingdom Research and Innovation (UKRI) and will offer perspectives on diversity in team science-related data findings from the United States and the U.K.

COSWD Dr. Marie Bernard and URKI Deputy Director for Research Culture and Environment Dr. Karen Salt will moderate the 90-minute discussion. Panelists will describe approaches to improve training, foster inclusive teamwork and impact leadership in the scientific workforce and the outcomes of this work.

For details and to register, see <https://go.nih.gov/akkfLfd>.

Insect

CONTINUED FROM PAGE 1

“broad talk for a broad field that has developed a lot.”

If this is your first time hearing about the insect microbiome, you're not alone. Moran was among the first researchers to study insect-bacterial symbioses in the early 1990s, but progress was slow until molecular tools such as next-generation sequencing became widely available in the mid-2000s. The reason? Many of these microbes cannot grow outside of their host, so next-generation sequencing enabled researchers to isolate microbial genetic material within their insect host's tissues.

Organisms that form the insect microbiome are called “symbionts” and can be classified into four general categories: primary, secondary and host-specialized symbionts, and environmental microbes.

Primary symbionts are essential for their hosts' development and daily functions. They are transmitted from mother to offspring (also called vertical gene transfer) and are housed in specialized cells called bacteriocytes.

A common example is the pea aphid. Its primary symbiont is *Buchnera aphidicola*, which was named in honor of Paul Buchner, an embryologist who first noticed the symbionts inside aphid embryos.

Aphid prenatal development occurs inside the mother's body, and the *Buchnera* symbiont colonizes the embryos very early in development. This trusty bacterium performs a vital task for its host: synthesizing essential amino acids.

Aphids consume plant phloem sap, which is not a nutritionally balanced food. *Buchnera* makes up for this by recycling the aphid's metabolic waste into amino acids. Primary symbionts of various beetles, cockroaches and whiteflies also synthesize amino acids for their hosts.

Human blood is a poor source of B vitamins, so you can thank the primary symbionts of bed bugs, lice, ticks, tsetse flies and others for enabling their hosts' vampiric lifestyles.

The evolution of primary symbionts has been millions of years in the making—more than 450 million years (when life came onto land), specifically. Moran and her collaborator Dr. Paul Baumann examined

the molecular phylogenies—analyzing and comparing the genetics of species to see how they evolved over time—for numerous host-symbiont pairs.

“It turns out that the host and symbiont phylogenies map onto each other exactly,” Moran explained. Translation: the host and symbiont evolved together, and the evidence is in their genes.

One downside to this togetherness (for researchers, at least) is that primary symbionts cannot survive outside their hosts and therefore cannot be cultured in the lab. Secondary symbionts are a bit more flexible.

Pea aphids also have a secondary symbiont: *Hamiltonella defensa*, a pathogen-like bacteria that lives mostly in its host's hemolymph (the insect equivalent of blood). It can be transferred maternally and also horizontally (from donor to recipient), which is similar to how infectious pathogens are transmitted.

Hamiltonella helps defend its host from a species of parasitoid wasp. Understanding the symbiont's role is important because the wasps are a common form of aphid biocontrol. However, aphids have a “huge variation of susceptibility” to the predator.

Wasp immunity is not as simple as possessing the *Hamiltonella* bacteria, Moran found.

Aphids who were given the bacteria in the lab were still susceptible to the wasp—unless the bacteria contained a bacteriophage called APSE. The phage genome encodes multiple toxin genes that are useful for

combating parasitoid wasps, but there is a tradeoff involved. The phage is detrimental to *Hamiltonella*, but the compromise still works in the bacteria's favor if its aphid host lives in an area where the wasps are present. APSE does not persist in wasp-less environments, though, because there is no benefit to the host balancing out the cost to its symbiont.

Perhaps the perfect place for the next category of symbiont is a beehive. Host-specialized bacteria transmit through social contact. Moran's research has focused on the honeybee gut microbiome, which she discovered is “dominated by highly host-specific bacteria.” The hindgut of a honeybee contains five core species, each adapted to its specific microenvironment.

Honeybees acquire their microbiota in their first four days of life as adults, through social contact with other hive workers. Agricultural herbicides and antibiotic usage (a common beekeeping practice) can disrupt the microbiota, causing greater in-hive mortality and greater susceptibility to pathogens.

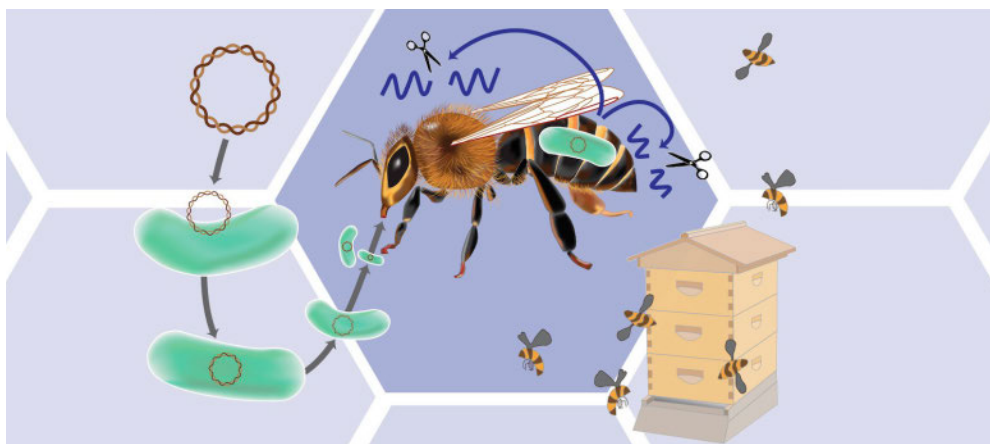
In the lab, Moran found that microbiota-free bees die very quickly when exposed to a bee pathogen, and even a single inoculation of one microbiome species is enough to offer some protection. A full suite of gut microbes is most protective.

The final category of insect symbionts Moran discussed was environmental microbes. These bacteria may colonize their insect hosts and have an impact on their physiology, but the host does not have much



Pea aphids are one of the insect species that caught Moran's interest.

IMAGE: MORAN LAB



A graphic depicting a current project in Moran's lab that seeks to alter the expression of certain bee genes by engineering their native symbiotic gut bacteria.

IMAGE: MORAN LAB

of an impact on the bacteria.

One “really striking example,” Moran shared, is the gut bacteria in mosquitoes. Mosquitoes must have a population of gut microbes in order to develop into mature adults. Their microbes have not “co-evolved”

with them like pea aphids and *Buchnera*, but are somehow still crucial to mosquitoes.

Can insect symbionts be useful to human health? *Wolbachia* is a common symbiont in many insect species. It can function as a primary or secondary symbiont, and

researchers in the World Mosquito Program have discovered a way to use it to control dengue virus. They transferred *Wolbachia* from fruit flies into lab-raised *Aedes aegyptii* mosquitoes and then released them into areas with ongoing dengue transmission. The *Wolbachia* carriers are poor vectors for dengue and quickly spread through the population as they are passed from mother to offspring, eventually eliminating dengue virus in the local region.

Symbionts “provide the potential for manipulation, as well as targets for control measures,” Moran summarized.

To truly understand insect biology and its potential to shed light on our own biology, she concluded, we must look at the bugs inside of bugs.

View the archived lecture at: <https://videocast.nih.gov/watch=51171>. **R**

Alcohol Research Publication Celebrates 50th Anniversary

This year marks the 50th anniversary of *Alcohol Research: Current Reviews* (ARCR), an open-access, peer-reviewed journal published by the National Institute on Alcohol Abuse and Alcoholism (NIAAA).

While the journal has evolved over time, its mission remains unchanged. ARCR is committed to making relevant scientific developments accessible to alcohol researchers and other interested audiences such as health care practitioners, educators, policymakers and more.

In 1974, NIAAA first published the journal as an experimental issue called *Alcohol Health and Research World*. Over the years, the journal has evolved. Its name has changed twice—to *Alcohol Research & Health* in 1999 and then to the current *Alcohol Research: Current Reviews* in 2012. Its format has also changed.

While earlier editions contained primary research, the journal now focuses exclusively on review articles. Additionally, while the journal began as a quarterly print journal, ARCR is now published online on a rolling basis, thereby increasing accessibility, and reaching a larger number of readers around the world.



For information about how to access previous issues of the journal, visit <https://arcr.niaaa.nih.gov/about-arcr>.

ARCR's influence (as measured by its Journal Impact Factor) has also risen steadily over the years. The journal is now ranked first among 38 journals in the Social Sciences Citation Index “substance abuse” category.



At left, the original print publication as it debuted as an “experimental issue” in fall 1974; above, a view of the current journal, now published online on a rolling basis. ARCR's influence (as measured by its Journal Impact Factor) has risen steadily over the years.

The journal's successes have only been possible through the work of many dedicated individuals. Federal and contract staff, past and current members of its editorial advisory board, authors and peer reviewers have all worked toward the goal of publishing high-quality articles that provide insight into the field of alcohol research and its progression over the past half century.

ARCR will celebrate its 50th anniversary

throughout 2024, highlighting major milestones. To stay current:

- Subscribe to the email listserv (<https://public.govdelivery.com/accounts/USNIAAA/subscribers/qualify>), which shares updates and new article releases
- Follow and engage via LinkedIn <https://www.linkedin.com/company/alcohol-research-current-reviews/>
- Check the ARCR News & Notes web page <https://arcr.niaaa.nih.gov/news-and-notes>.

Kenjutsu

CONTINUED FROM PAGE 1

weapons every weekend in Bldg. 35.

Kenjutsu is an umbrella term for the various schools of ancient Japanese swordsmanship. The NIH club alternates between practicing Shindō Musō-ryū, or the stick art, and Yagyū Shinkage-ryū, the sword art. No, the club does not use real swords in their practice; instead, they opt for a leather-covered bamboo training weapon. The club does train with the actual stick, or jo, when practicing Shindō Musō-ryū.

The Kenjutsu Club was formed in 1998 by staff at NIH: David Samuels and Bradley Duker, and included Robert Deppe—who is still a member. All were training with current instructor Dr. David Hall in Rockville until establishing a formal club with the NIH Recreation & Welfare Association (R&W).

Shortly after the club was founded, Dr. Connie Noguchi of the National Institute of Diabetes and Digestive and Kidney Diseases joined to gain weapons experience while working on her third black belt in karate. Twenty-five years later, Noguchi now organizes the club of 23 members.

Noguchi describes Kenjutsu as a subtle art that requires both physical and mental strength. Each discipline revolves around

partner work and is choreographed, allowing participants to concentrate on specific aspects of the techniques while protecting each other.

“It’s special in the way that you have to have complete trust in your partner and you get to focus on what’s immediately on hand,” Noguchi explains. “Once you bow in, for the next two hours that’s all you’re thinking about.”

John Buckley was working as a biomedical contractor with the National Cancer Institute in 1998 when he started looking for local groups and instructors practicing sword styles. It wasn’t until he asked around on local boards that he found out about the club.

“The guy who ran the board said, ‘the only person I know of who is credentialed is someone who lives in Rockville, Maryland.’ And I thought to myself, ‘I live in Rockville, Maryland,’” recounts Buckley. “And then he says, ‘Yeah, he has a club at the National Institutes of Health.’ And I said, ‘Oh the place that I work?’”



“Shindo Muso-ryu jojutsu, a Japanese martial arts form shown here, was restricted to the Japanese warrior police (gendarme) during the late feudal period (1600-1868),” said Dr. Connie Noguchi. “In 1930, it was re-introduced to the modern Metropolitan Police Department in Tokyo where it became a mainstay of the modern Japanese ‘riot police’ and is still used today. The system is oriented around two classical weapons arts and their modern derivatives: jojutsu—the art of the jo, with primary focus on the 4’ medium-length staff, and kenjutsu—the art of the Japanese sword and a training sword (bokken) usually made of Japanese white oak.” Performing jo kata in the Bldg. 35 atrium are Melissa Cesaire of NINDS (r) and training partner Ian Hall.

PHOTO: CONNIE NOGUCHI

With the stars aligned, Buckley attended a session and was impressed by Hall’s knowledge and talent.

“I fell into it by sheer happenstance,” Buckley says. “It’s been worthwhile enough that I’ve stayed here doing this for 25 years—almost half my life.”

During the Covid-19 pandemic, National Heart, Lung, and Blood Institute Senior Investigator Dr. Justin Taraska was looking to get more involved with the NIH community. Taraska had been practicing aikido

for years, and the Kenjutsu club description caught his eye. He joined with no expectations and found a welcoming group of like-minded individuals.

“For scientists, I think it’s a really meaningful activity because it involves a lot of attention, careful practice, a spirit of exploration and discovery, and it has a very developed mentorship system,” explains Taraska. “I really think that scientists mesh with that style of learning and development.”

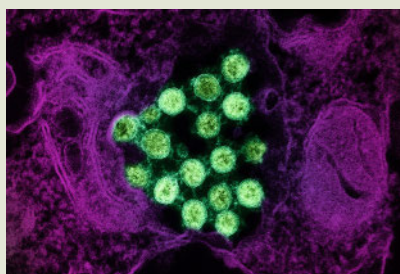
The club trains on Saturdays and Sundays in the Bldg. 35 atrium. If you are interested in joining the club—no experience is necessary—contact Noguchi at connien@nidk.nih.gov.

View the entire list of clubs offered at NIH at govemployee.com/nih/rw-services-membership/clubs-organizations/. **R**



In addition to jojutsu, Noguchi explained, Shindo Muso-ryu collateral arts include: tanjo-jutsu (tanjo—short staff about 3’), jutte-jutsu (jutte—police truncheon), and kusari-gama-jutsu (kusari-gama—sickle & weighted chain replaced by a wooden training weapon with a rope and padded ball). Although not a police weapon, the kusarigama became famous during Japan’s feudal period because of its use by skilled practitioners in dueling. In jutte-jutsu, the truncheon is often used in combination with the tessen (“iron fan,” which in training is made of hardwood). At left during training in Sterling, Va., performing jutte kata are Buckley of NCI with the jutte and Noguchi of NIDDK with the sword. PHOTO: MARK RAUGAS At right, in Bldg. 35, performing jo kata are Dr. Justin Taraska of NHLBI with the jo versus instructor David Hall who wields a sword.

Covid-19 Vaccination, Boosting During Pregnancy Protects Infants



Transmission electron micrograph of SARS-CoV-2 virus particles (colored green), isolated from a patient sample

IMAGE: NIAID

Women who receive an mRNA-based Covid-19 vaccination or booster during pregnancy can provide their infants with strong protection against symptomatic Covid-19 infection for at least six months after birth, according to an NIAID study. The findings were published in *Pediatrics*.

Covid-19 is especially dangerous for newborns and infants. Even healthy infants are vulnerable to the virus and at risk for severe disease.

Earlier research with pregnant volunteers showed that antibodies induced by an mRNA Covid-19 vaccine could be found in their newborn's cord blood. This suggested the infants likely had some protection.

In this study, researchers analyzed data from 475 infants born while their pregnant mothers were enrolled in the MOMI-Vax study. The study took place at nine sites nationwide. It included infants whose mothers had received two doses of an mRNA Covid-19 vaccine during pregnancy as well as infants whose mothers received both vaccine doses and a booster.

Blood samples from the infants revealed they had high antibody levels at birth and greater protection from Covid-19 infection during their first six months. Infants whose mothers received an additional booster dose while pregnant had higher levels of antibodies at their follow-up visits.

The current study reinforces the importance of receiving both a Covid-19 vaccine and booster during pregnancy to ensure infants are born with robust protection that lasts until they're old enough to be vaccinated.

Law Enforcement Seizes More 'Shrooms'

Law enforcement seizures of "magic mushrooms" or "shrooms" containing the psychoactive component psilocybin increased dramatically in the U.S. between 2017 and 2022. A new NIDA study cited the number of law enforcement seizures rising from 400 in 2017 to nearly 1,400 in 2022. In addition, the total weight of psilocybin mushrooms seized by law enforcement increased from 500 pounds seized in 2017 compared to 1,800 pounds in 2022.



3D illustration of psilocybin mushrooms

PHOTO: KATERYNA KON/SHUTTERSTOCK

Researchers found that most seizures occurred in the Midwest, followed by the West. The greatest total weight in seizures came from the West, followed by the South. Investigators found total seizure weight peaked in 2021.

The analysis, published in *Drug and Alcohol Dependence*, was led by researchers at NYU Langone Health, New York City, and the University of Florida, Gainesville. Data used for the analysis were collected through the High Intensity Drug Trafficking Areas grant program that is administered by the Office of National Drug Control Policy.

Psilocybin mushrooms fall under a broader drug category known as psychedelic and dissociative drugs, which can temporarily alter a person's mood, thoughts and perceptions and cause hallucinations.

Adverse effects include distorted thinking, perceptual changes, putting oneself in physical danger, and intense feelings of fear, anxiety and confusion. Users of psilocybin may also experience short-term side effects such as raised blood pressure and heart rate, agitation, confusion, vomiting or nausea, which may be severe and require medical attention.

Psilocybin is not currently approved by FDA for treatment of any condition or disease. Any research on psychedelic drugs as a potential medical treatment is done in a controlled environment, under tight supervision, with follow-up sessions.

"We are in the middle of a rapidly evolving cultural, media and legal landscape when it comes to psychedelics, and we need data to help shape informed and appropriate public health strategies," said NIDA Director Dr. Nora Volkow. "Moving forward, we must continue to track data on the availability of psychedelics, patterns in use and associated health effects to guide efforts in promoting accurate education and reducing potential harms among people who do plan to use psychedelic drugs."

New Links Discovered Between Brain, Surrounding Environment

In a recent study of the brain's waste drainage system, researchers from Washington University in St. Louis (WUSTL), collaborating with NINDS investigators, discovered a direct connection between the brain and its tough protective covering, the dura mater. The links may allow waste fluid to leave the brain while also exposing the brain to immune cells and other signals coming from the dura.

This challenges the conventional wisdom that suggests the brain is cut off from its surroundings by a series of protective barriers, keeping it safe from chemicals and toxins lurking in the environment.

"Waste fluid moves from the brain into the body much like how sewage leaves our homes," said Dr. Daniel Reich of NINDS. "In this study, we asked what happens once the 'drain pipes' leave the 'house'—in this case, the brain—and connect up with the city sewer system within the body."

Reich's lab used high-resolution magnetic resonance imaging (MRI) to observe the connection between the brain and body's lymphatic systems in humans. Meanwhile, Dr. Jonathan Kipnis's WUSTL lab was independently using live-cell and other microscopic brain-imaging techniques to study these systems in mice.

Using MRI, Reich's lab scanned the brains of a group of healthy volunteers who had received injections of gadobutrol, a magnetic dye used to visualize disruptions in the blood-brain barrier. Kipnis's lab injected mice with light-emitting molecules. Like with the MRI experiments, fluid containing these light-emitting molecules was seen to slip through the arachnoid barrier where blood vessels passed through.

Together, the labs found a "cuff" of cells that surround blood vessels as they pass through the arachnoid space. These arachnoid cuff exit (ACE) points act as areas where fluid, molecules and even cells can pass from the brain into the dura and vice versa, without allowing complete mixing of the two fluids. In some disorders like Alzheimer's disease, impaired waste clearance can cause disease-causing proteins to build up.

"In the brain, clogs at ACE points may prevent waste from leaving," Kipnis said. "If we can find a way to clean these clogs, it's possible we can protect the brain."

Reich and his team also observed more dye leaked into the surrounding fluid and space around the blood vessels in older participants, which may help explain why our risk for developing neurodegenerative diseases increases as we get older.



Dr. Sean Mooney

Mooney Joins NIH to Head CIT

Dr. Sean Mooney has been selected as director of the Center for Information Technology (CIT). He joins NIH this month. Mooney specializes in bioinformatics and has expertise in implementing and governing a multi-faceted research IT department. He has spent his career developing collaborative computing systems to support biomedical research.

As CIT director, Mooney will oversee an approximately \$400 million portfolio that includes a world-renowned supercomputer allowing researchers to conduct large-scale data analyses; a state-of-the-art network that enables research across NIH and around the world; and cloud-based services offering a cost-effective way to access datasets and advanced computational tools and services. CIT collaborates with the NIH intramural community in computational bioscience, engineering, informatics and statistics to help make biomedical discoveries. Additionally, CIT provides IT infrastructure and IT services to support all of NIH.

Mooney joins NIH from Seattle where he served as a professor of biomedical informatics and medical education at the University of Washington (UW) School of Medicine. As part of this role, he served as chief research information officer, interim director for the UW Institute for Medical Data Science and director of informatics for the UW Institute of Translational Health Sciences.

Originally trained in chemistry and informatics, Mooney's research interests focus on leveraging computational cyberinfrastructure and data science to enable discovery.

NINDS Mourns Research Pioneer Spatz

BY SHANNON E. GARNETT

Dr. Maria Spatz, a retired senior scientist in the Division of Intramural Research at the National Institute of Neurological Disorders and Stroke (NINDS) and a pioneer in research on the blood-brain barrier, died Jan. 26 at age 99.

She was one of NIH's first leading women scientists and a highly esteemed member of the NINDS family. She served as section chief in the Laboratory of Neuropathology and Neuroanatomical Sciences from 1970 to 1990, then as a senior scientist in the Stroke Branch from 1991 to 2005, and later as a special volunteer in that branch from 2005 to 2018.

Her research focused on blood-brain barrier regulation and alterations in cerebral blood flow associated with cerebral ischemia and traumatic brain injury. She was one of the first scientists to isolate and culture cerebral microvascular endothelium cells and define properties linked to the function of the blood-brain barrier in ischemia. Her seminal work on cerebral microvessels helped establish the NIH neuroscience initiative to study brain ischemia in the early 1970s.

Born in Poland in 1925, Spatz earned her undergraduate degree from Jagiellonski University in Krakow and her medical degree from Philips University in Marburg, Germany. She then immigrated along with her husband Marek to the U.S., where she began her clinical residency in New Jersey.

Upon receiving her degree, she furthered her studies at the University of Michigan, where she became a faculty member in the department of pathology. She studied the effect of gut disease on the neural brain system. This captured the attention of the scientific community and led to a principal investigator position in NIH's Department of Pathology.

In addition to her work at NIH, Spatz served as a special expert in the neurotrauma

department at the Naval Medical Research Center in Silver Spring, Md., from 2003 until the time of her death.

Well-known as a brilliant and accomplished scientist, Spatz is remembered not only for career achievement but also by

many for her warm and outgoing personality. According to former colleagues, she enjoyed helping young scientists and did everything she could to encourage their success. At professional meetings she frequently was surrounded by former postdocs and collaborators. She and Marek enjoyed hosting dinner parties for their friends and were strong supporters of the arts—especially opera.

Spatz was preceded in death by her parents Stanislav and Helen Poznanski, her sister Lila, and Marek, her husband of nearly 70 years. Donations in honor of Spatz can be made to the Children's Inn

at NIH, <https://childrensinn.org>.



Dr. Maria Spatz



Dr. Dilys Parry

Retired NCI Investigator Parry Remembered

BY JENNIFER LOUKISSAS

Dr. Dilys Parry died peacefully in her sleep on Feb. 2, after a long illness. For 30 years, she was a staff clinician and principal investigator in the Division of Cancer Epidemiology and Genetics (DCEG) at the National Cancer Institute (NCI). Following

retirement from federal service in 2007, she continued to engage with colleagues on projects as a special volunteer.

Parry's medical genetics research focused primarily on genetic and clinical studies of neurofibromatosis 2 (NF2) and chordoma, a rare bone tumor derived from the notochord, and adult brain tumors. She was deeply committed to educating people about the natural history of these diseases and helping patients and at-risk relatives receive genetic testing or other types of screening to aid in early detection and treatment. Her research helped to identify susceptibility genes for and delineate the spectrum of clinical manifestations associated with NF2 and chordoma. She also elucidated correlations between the specific types of variants in the gene NF2 and clinical findings. Much of the momentum that exists in chordoma research traces back to Parry's early interest in the disease.

Parry helped establish the NIH Inter-Institute Medical Genetics Training Program and served as its associate director from 1980 to 1994 and director from 1994 to 1995. Being involved in its development and mentoring the outstanding fellows who participated were some of the most fulfilling aspects of her career. She was recognized with the NIH Director's Award in 1989 for her role in establishing and maintaining the training program. Also that year, she was recognized for her outstanding mentorship as co-recipient of the first DCEG Mentoring Award.

In DCEG, Parry developed and directed the interdisciplinary cancer genetics fellowship program to ensure proper training of scientists engaged in the field, which at the time was in its infancy. She received an NIH Award of Merit in 2002 for fostering the program.

In addition to her research and mentoring, Parry served the institute in critical roles on the NCI Special Studies Institutional Review Board, both as vice chair and chair.

She is survived by her husband, Richard, stepdaughter Sarah, and extended family.

NIH Mourns Nursing Research Pioneer Fagin

Dr. Claire Mintzner Fagin, a trailblazer in the field of nursing and nursing research and a former NIH staffer, passed away on Jan. 16 at age 97. In the early 1950s, she served as the first director of children's programs at the Clinical Center for the National Institute of Mental Health.

In addition to her tenure at NIH, the list of Fagin's accomplishments is long. She was a nurse, educator, nurse scientist, nursing advocate and one of the first women to lead




Dr. Claire Mintzner Fagin

PHOTO: BILL CRAMER/WIKIMEDIA COMMONS

an Ivy League school, serving as interim president at the University of Pennsylvania in 1993-1994.

A member of the first generation of nurse scientists, she undertook research to improve patient care and pushed for practitioners to have a science-based education at colleges and universities, pioneering landmark baccalaureate and doctoral programs to raise the bar in education and status of the next generation of clinicians.

"I am sorry that I did not have the opportunity to know Dr. Fagin, who so

clearly was a tremendous force for good at NIH," noted NIH Director Dr. Monica Bertagnolli in a joint statement with Dr. Shannon Zenk, director of the National Institute of Nursing Research (NINR). "Dr. Fagin was a transformational leader who inspired a generation of nurse scientists through her advocacy and by elevating the nursing profession through science and rigor, while also prioritizing the holistic perspective of nurses. As a prominent and trailblazing woman in science, her legacy lives on through the women scientists for which she helped pave the way, and through her influence on the innovative work of nurse scientists supported by NINR and across NIH. We will honor her legacy by doing all that we can to carry this valuable work forward." 

People with Lupus Needed

NHLBI wants to test whether a dietary supplement called Nicotinamide Riboside (NR) can decrease some markers of inflammation in the blood of people with systemic lupus erythematosus. At the same time, researchers will explore whether NR prevents blood vessel elasticity loss, a marker of increased risk for coronary artery disease. Participants do not pay for tests, treatments or procedures. Travel may be reimbursed. Contact the Clinical Center Office of Patient Recruitment at (866) 444-2214 (TTY users dial 711) or ccopr@nih.gov. Refer to study #001621-H. Online: <https://go.nih.gov/GyIFtVv>.

Volunteers Sought for Metabolic Health Study

Researchers at NIDDK seek volunteers 18-60 years old to participate in a study examining how processed and unprocessed food affects metabolic health. Compensation is provided. Contact the Clinical Center Office of Patient Recruitment at (866) 444-2214 (TTY users dial 711) or ccopr@nih.gov. Refer to study #22-DK-0002. Online: <https://go.usa.gov/xJxDr>.

Eczema Study Seeks Participants

Eczema, a stubborn skin problem that shows up as redness and intense itching, can affect people of all ages. It's more common in infants and young children. Various triggers, such as irritants, allergens and stress, can worsen eczema symptoms, increasing discomfort and flare-ups that affect health and sleep. NIH researchers are looking for volunteers ages 3-21 for an eczema study. Contact the Clinical Center Office of Patient Recruitment at (866) 444-2214 (TTY users dial 711) or ccopr@nih.gov. Refer to study #15-I-0162. Online: <https://bit.ly/3BGyFLD>.

Study in Search of Pregnant Women with SCD

A research study at NHLBI is looking for pregnant women with sickle cell disease (SCD) between ages 18 and 45 who are at risk of having an infant with SCD to donate their baby's cord blood. Tests and procedures provided at no cost. Contact the Clinical Center Office of Patient Recruitment at (866) 444-2214 (TTY users call 711) or ccopr@nih.gov. Refer to study #01-H-0122. Online: <https://go.nih.gov/6KDclKd>.



On NIH's Bethesda campus, Bldg. 1 dons a banner for the month of February, American Heart Month. At right, Tom Izzard and Courtney Coombes, both on staff in NHLBI's Immediate Office of the Director, take a selfie for the occasion with a cardboard cutout of mascot "Cardi-O."

SEEING RED

NHLBI Leads Annual Celebration of American Heart Month

In 2003, the National Heart, Lung and Blood Institute (NHLBI) teamed up with the American Heart Association and other organizations to raise awareness of women and heart disease. NHLBI introduced the red dress as a national symbol for the effort and a Go Red for Women movement was born. The campaign became an annual celebration.



At right, at a recent Go Red event in New York to celebrate American Heart Month are (from l) Karina Guzman, Dr. Shondelle Wilson-Frederick, Dr. Vandana Sachdev, Neyal Ammary-Risch, Dr. Lenora Johnson, Dr. Gina Wei, Brittany Royall, Melissa Barrett and Dr. Patrice Desvigne-Nickens.



The National Football League's Damar Hamlin (second from l), a Buffalo Bills defensive player who survived a cardiac arrest on the field in 2023, joins NIH'ers (from l) Royall, Ammary-Risch and Wei at a 2024 Red Dress fashion show in New York City.



NHLBI's Division of Cardiovascular Sciences celebrates American Heart Month on Wear Red Day.