

HARNESS HELP, AVOID HARM NASA, NCI Scientists 'Demystify' Radiation

BY AMBER SNYDER

What do the sun and cancer treatments have in common? Radiation.

The final Demystifying Medicine lecture of the 2023 season focused on that commonality, featuring NASA heliophysicist Dr. Nicola Fox and National Cancer Institute radiation oncologist Dr. Freddy E. Escorcia.

In a talk titled "Solar Winds and Magic Bullets: Making Our Way in a World of Solar Radiation," the speakers discussed the radiation at work in our solar system and in earthly cancer treatments.

Defining Radiation's Power

According to the NCI, radiation is energy

released in electromagnetic waves. Common sources include cosmic rays from outer space and medical x-rays. Radiation can slow the growth of cells by damaging their DNA; if the radiation dose is high enough, it can kill cells outright.

On Earth, the closest we get to cosmic radiation is the ultraviolet light (UV) radiation from the sun that reaches us through our planet's atmosphere. But, out in space, radiation is much more plentiful—and dangerous.

Going to the Source

Fox, associate administrator of the NASA Science Mission Directorate, currently oversees more than 140 missions that enable a deep scientific understanding of Earth and other planets,

the sun and our universe. Her lecture described heliophysics and solar radiation.

Heliophysics is the science of understanding the sun and its interactions with Earth and the solar system, including space weather. The sun is a ball of hot plasma heated by nuclear fusion reactions at its core. Its upper atmosphere—the corona—releases

a stream of charged particles known as solar wind, which influences the aurora borealis and man-made power grids.

The heliophysics field is only about 60 years old, founded by Fox's mentor and fellow NASA physicist Dr. Eugene "Gene" Parker.

Parker initiated a chain of discoveries leading to the first-ever mission to "touch" the sun. The Parker Solar Probe launched in 2018 and

SEE RADIATION, PAGE 4



PHOTO: SKORZEWIAK / SHUTTERSTOCK



Jazz combo jams in the Clinical Center. See p. 12.

ALSO THIS ISSUE

NCI Hosts Congressional Staffers.....	2
NIH Again Captures Bike to Work Crown.....	3
Multiscale Modelers Convene at NIH.....	5
Cafeteria Closes for Emergency Repairs.....	7
Digest.....	10
Milestones.....	11
Seen.....	12

WILDFIRE HAZE AFFECTS WELLNESS DAY 12th Annual Event Returns on Site for First Time Since 2019

BY LAUREN BURDEN

The 12th annual Safety, Health and Wellness Day transformed the south lawn of the Clinical Center on June 29. The widely anticipated event—held in person for the first time since 2019—provided staff an

SEE WELLNESS, PAGE 6



At the recent wellness event, Respiratory Safety Specialist Lola Vosfieva (seated) of DOHS offers information about proper use of masks, fit-testing and other related safety tips.



From NLM's "Many Faces of Diabetes" exhibit
AMERICAN DIABETES ASSOCIATION/NLM COLLECTION

ACHIEVING DEIA NLM Collection Demonstrates Breadth, Depth

A multidisciplinary staff of the National Library of Medicine (NLM) maintains and makes publicly available a world-renowned collection of material spanning 10 centuries, originating from all parts of the globe. This collection encompasses various formats including monographs, original manuscripts, audio-visuals and born-digital material to constitute the future historical record.

SEE DEIA, PAGE 8



Dr. Rosa Nguyen (r), a physician-scientist early investigator in NCI's Pediatric Oncology Branch, talks about her lab's work to develop innovative new therapies, including immunotherapy approaches, for high-risk neuroblastoma.

PHOTOS: CHIA-CHI CHARLIE CHANG

Congressional Staff Visit NIH, Children's Inn

Congressional staff from the offices of Reps. Kathy Castor (D-FL) and Mike Kelly (R-PA); Sens. Shelley Moore Capito (R-WV), Chris Van Hollen (D-MD) and Tammy Baldwin (D-WI); and the Office of the First Lady visited NIH's Bethesda campus on June 28.

The visit was coordinated by the National Cancer Institute (NCI) and marked the fifth annual NCI-led visit for congressional staff focused on childhood cancer research.

The group met with NCI extramural program leaders Drs. Malcolm Smith, Nita Seibel, Greg Reaman and Michelle Mollica as well as leadership of NCI's Pediatric Oncology Branch (POB) Drs. Brigitte Widemann and Carol Thiele, and participated in two lab tours with POB investigators Drs. Troy McEachron, Zhihui Liu and Rosa Nguyen.



POB Deputy Chief Dr. Carol Thiele (third from l) and POB Chief Dr. Brigitte Widemann (third from r) welcome staffers and discuss features at the Clinical Center model, ahead of a visit to two labs.

The staff also participated in a tour of the Clinical Center and a tour of the Children's Inn at NIH, which provides free lodging and services for many families with children, adolescents and young adults participating in clinical trials and natural history studies at NCI and other NIH institutes and centers.



Jennie Lucca (eighth from l), CEO at the Children's Inn at NIH, hosts congressional staffers at the new HOPE sculpture, which is the centerpiece of the inn playground. The playground was renovated over the winter and re-opened in June.

Feds Feed Families 2023 Virtual Giving Campaign at NIH

NIH is participating in "Feds Feed Families," the annual federal government summer food drive. The 2023 virtual campaign is now active through Sept. 30. Many families are still facing food insecurity and hunger. The NIH community has always given generously through this campaign to support those in need. Visit go.nih.gov/KIXxhjQ to learn ways the NIH community can donate online to fight hunger.

Research Festival Returns on Site

The NIH Research Festival will be held Sept. 18-22. The annual festival highlights the diversity of scientific disciplines within the NIH Intramural Research Program. It will feature an NIH information fair, workshops, lectures, poster sessions, NIH Green Labs Fair and biotech vendor information booths in and around Bldg. 10. This will be the first such festival since September 2019. For more information, visit <https://researchfestival.nih.gov/>.

Stay tuned for updates: Sign up for the festival listserv at <https://go.nih.gov/10qwUsG> or email researchfest@mail.nih.gov.

Sign Up Now for 38th NIH Institute Relay, Sept. 14

On your mark, get set...go! It's time for the 38th NIH Institute Challenge Relay. The relay consists of teams of five runners, each of whom run a loop around Bldg. 1.

All institutes, centers, divisions, offices and contractors are invited to enter as many teams as they wish. Each team must have diverse gender representation.



NIA's B'more Benchwarmers captured second place in the 2016 relay.

PHOTO: DANIEL SOÑÉ

The race will be held on Thursday, Sept. 14 in front of Bldg. 1. Registration opens by 11 a.m. and heat 1 will start at 11:45 a.m.

Gather your team, come up with a creative team name and of course, start training. Sign up your teams now through Sept. 1 for \$25, heat 1 or heat 2.

For details or to volunteer to help with the event, email David Browne at the NIH Recreation and Welfare Association, browned2@mail.nih.gov.

NIH Once Again Earns Bike to Work Honors

BY ERIC BOCK

NIH won the 2023 Bike to Work Day (BTWD) Employer Challenge for being the organization with the most participants biking to work in the Washington, D.C. area.

“NIH serves as an example for other employers in the region and you’ve done that for years,” said Nicholas Ramfos, director, Transportation Operations Programs of Metropolitan Washington Council of Governments, a regional non-profit that regularly brings leaders together to develop solutions to the region’s major challenges, including better transportation.

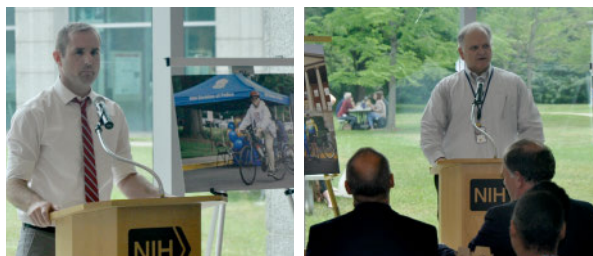


Ramfos (l) and Browne salute NIH’s cyclist-friendly workplace.

He presented the first-place plaque to NIH during a recent luncheon in the Natcher Bldg. Each year, the challenge is held to encourage participation on BTWD. The top five organizations with the greatest number of bicyclists are placed into a raffle for a random chance to win a luncheon.

This year, 539 NIH’ers participated in BTWD; 184 of them were first-timers. Rounding out the top five large employers were the State Department, the Environmental Protection Agency, the Department of Defense and the University of Maryland.

In the D.C. area, more than 14,600 people stopped at one of the 107 pit stops, a 15% increase compared to last year. NIH staff



Cullinane (l) and Joe Cox give remarks at the ceremony.



At the presentation are (from l) Sean Cullinane, quality assurance specialist, Division of Amenities and Transportation Services (DATS), NIH Office of Research Services (ORS); Tim Tosten, ORS associate director of program and employee services; Colleen McGowan, ORS director; Nicholas Ramfos, director of transportation operations programs, Metropolitan Washington Council of Governments; Dr. Alfred Johnson, NIH deputy director for management; Tammie Edwards, DATS director; and Collin Browne, communications director, Washington Area Bicyclist Association.

PHOTOS: ERIC BOCK

stopped by 31 different pit stops, including Bldg. 1, Pike and Rose, Rockville Town Center and downtown Bethesda. Many first-time participants continue to use biking to commute after the event.

Bicycle commuting has a lot of room to grow. According to a recent survey, 16% of area commuters live within five miles of where they work. Events like BTWD show people that pedaling to work is a realistic, fun and healthy option.


“I’m excited to win this award again,” said Joe Cox, chief of the Transportation Services Branch, Division of Amenities and Transportation Services (DATS), Office of Research Services. “We couldn’t do it without NIH leadership.”

Cox credited Ramfos for teaching him about the transportation issues facing commuters in the area. “He passed along a lot of knowledge to me about car- and vanpooling and transit subsidies,” he said. “Nick is one of the leading experts on transportation programs.”

Bicycling to work is a great form of exercise, said Dr. Alfred Johnson, NIH deputy director for management. Those who pedal to work reduce their carbon footprint and use less parking.

The event would not have happened without the support of the NIH Bicycle Commuting Club, DATS, NIH Police, Office of Research Facilities’ Division of Environmental Protection, and the Recreation and Welfare Association, among others, Johnson noted.

The award is presented by BTWD co-organizers, Commuter Connections, and the Washington

Area Bicyclist Association. To learn more about biking to work, visit <https://www.nihbike.com/home>. 



ON THE COVER: 3D rendering of bacteria and other microbes found in the gut

IMAGE: DONNY BLISS/NIH OCPL

The NIH Record

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

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Radiation

CONTINUED FROM PAGE 1

will orbit the sun 24 times, recording data about the flow of energy from the sun.

Radiation in Space

One huge concern for off-planet travelers is radiation exposure. Astronauts in low Earth orbit (such as the International Space Station) are protected from space radiation by Earth's atmosphere. Beyond that, human explorers are exposed to radiation from particles trapped in Earth's magnetic field, galactic cosmic rays from beyond our solar system and radiation emitted from the sun.

Exposure is measured in Milli-Sievert (mSv), with one mSv equal to the radiation produced by three chest x-rays. Most missions are generally under 100 mSv, according to Fox, and NASA limits total career exposure to 600 mSv. A mission to Mars would be double the career exposure limit, she estimated.

So, how can NASA protect astronauts as it plans for missions going deeper into space?

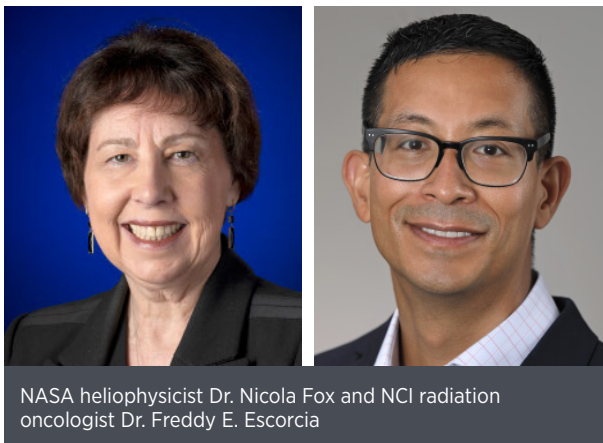
Enter the space biology program. Described by Fox as “science enabling exploration and exploration enabling science,” the program seeks to better understand how spaceflight affects living systems. Scientists are currently studying ways to mitigate and protect against radiation.

Back Down to Earth

On Earth, researchers have harnessed the power of radiation beneficially for more than a hundred years in diagnostics and therapy. Wilhelm Röntgen, the “father of radiology,” discovered x-ray radiation in 1895. He and other scientists began using radiation for therapeutic purposes soon after; in 1905, for example, radiation therapy caused dramatic tumor shrinkage in a patient with lymphoma.

These days, Escorcia, a Lasker clinical research scholar and NIH distinguished scholar, heads the Laboratory of Molecular Radiotherapy at NCI's Center for Cancer Research. His group engineers radioconjugates (a radioactive isotope attached to a targeting agent that seeks out cancer cells) to yield molecular imaging and therapeutic agents for liver cancer.

More than half of all cancer patients receive radiation therapy, which involves aiming a beam of radiation at the tumor.



NASA heliophysicist Dr. Nicola Fox and NCI radiation oncologist Dr. Freddy E. Escorcia

However, “local treatments can only get us so far,” Escorcia said. A patient could have a tumor shrink in one area only to later have metastatic disease develop outside the treated area.

‘Can We Make Something Better?’

Escorcia believes there may be alternatives. He proposed creating a group of drugs dubbed “theranostics”—engineered biomolecules with a radioisotope attached that could double as diagnostic and therapeutic agents. Tumors often have genes that are overexpressed in the diseased tissue. Researchers can identify these genes with gene sequencing and use them as targets for treatments.

How might theranostics work? Escorcia described using it against hepatocellular carcinoma (HCC), the most common type of liver cancer.

To see many cancers, scientists employ positron emission tomography (PET) scans, which use a radioactive tracer that binds to tumors and shows up on the resulting image. PET scans using the commonly used clinical agent, 18-F-fluorodeoxyglucose or FDG, do not work well for liver cancer because the tumors do not usually take up the tracer.

“Maybe liver cancer needs its own imaging agent,” Escorcia realized. He already had a target gene: Glypican-3 (GPC3), which is expressed in 75% to 90% of HCC cases.

Additionally, the traditional treatments for HCC—including delivering radiation-containing microspheres via a catheter in the hepatic artery or with radiation beams—show that HCC is sensitive to radiation. Still, the clinical outcomes of patients with this disease remain poor and more effective treatments are needed. Escorcia decided to build a molecule that would double as an imaging agent and a therapeutic agent.

‘Where the Rubber Hits the Road’

After some trial and error, he settled on a nanobody (similar to an antibody but 10 times smaller) that was specific to GPC3 and attached a radioconjugate to treat the tumor. The nanobody worked well as an imaging agent for PET scanning but it also showed up strongly in the kidneys, which could potentially cause kidney

toxicity if it were used for therapy.

Although the GPC3 nanobody needs more fine-tuning to mitigate the kidney toxicity, Escorcia is optimistic about deploying the process to other cancers.

“You could theoretically apply this to any cancer as long as you have the right target,” he said, “and that’s where the rubber hits the road.”

In addition to building new molecules, researchers can also repurpose existing agents. Prostate-specific membrane antigen (PSMA), for example, is a tracer target for PET imaging in patients with prostate cancer. Research from Johns Hopkins University showed that PSMA is also overexpressed in liver cancers and may be another theranostic target for HCC. Escorcia has launched a clinical trial at NCI evaluating whether a PSMA PET imaging agent could be helpful in diagnosing and monitoring treatment response in patients with HCC (<https://tinyurl.com/mr33venh>).

Putting It All Together

In 2016, the National Center for Advancing Translational Sciences partnered with NASA for the Tissue Chips in Space program. Chips simulating heart tissue, bone and cartilage, muscles, intestines and other organs have traveled to and from space, with the most recent launch on Mar. 14.

Escorcia and Fox also see potential for similar collaboration in making agents that protect against radiation. Patients undergoing radiation therapy can experience unpleasant side effects in healthy tissue around the treated area. This is still an area of active research, but Escorcia thinks it could also be applied to astronauts.

View the archived lecture at <https://go.nih.gov/7QwolFp>. 

IMAG MARKS 20TH ANNIVERSARY Multiscale Modelers Convene at NIH

BY RAY MACDOUGALL

The spark in 2003 that launched the Interagency Modeling and Analysis Group (IMAG) has flared into a potent scientific catalyst and not only among the multiple federal agencies that fund computational modeling of biomedical, biological and behavioral systems—including NIH, the National Science Foundation, NASA and the Department of Energy. Members of the Multiscale Modeling Consortium (MSM), external researchers who vie for federal grants in the computational modeling field, also are feeding the flame.

IMAG celebrated its 20th year during the two-day annual IMAG MSM meeting in late June at the Natcher Conference Center and via virtual attendance.

While the field of mechanistic modeling has come far from the days when computational modelers had to make an effort to locate one another within these agencies, the IMAG MSM community has become a vital proponent for this technology as a platform now more widely used to study complex biological systems. The meeting theme was “Lessons from the past to guide the future.”

From NIH, organizers of the meeting included IMAG co-chairs Dr. Grace Peng of the National Institute of Biomedical Imaging and Bioengineering (NIBIB), Dr. Elizabeth Ginexi of the National Center for Complementary and Integrative Health (NCCIH) and Dr. Reed Shabman of the National Institute of Allergy and Infectious Diseases (NIAID).

Reflecting on the evolution of IMAG over 20 years, Peng’s opening talk described the network of federal and external proponents as very synergistic.

“The IMAG and MSM are the sum of their parts and everything lives on the wiki,” she said. The IMAG wiki, <https://www.imagwiki.nibib.nih.gov/>, established at the organization’s outset, is where



IMAG MSM meeting organizers include (from l) Elizabeth Ginexi, NCCIH; Bruce Lee, CUNY; Denise Kirschner, University of Michigan; Jason Haugh, N.C. State University; Grace Peng, NIBIB; Reed Shabman, NIAID; and Herbert Sauro, University of Washington, Seattle.

PHOTOS: RAY MACDOUGALL/NIBIB

much of the research collaboration is accomplished and the tool has withstood the test of time.

The origin of the group coincided with Peng’s arrival in September 2002 as an NIBIB program director with a curiosity about NIH’s computational modeling scene. IMAG was formed in April 2003 by program staff she convened from NIH and NSF. The group raised the idea of multiscale modeling as a niche that IMAG could address.

“This was a grassroots effort to promote modeling above and below the scales of interest,” she said, referring to the tendencies of modelers to push the boundaries that biomedical scientists typically observe in terms of the spatial scales of their research.

Peng referenced a seminal 2003 paper by New Zealand biomedical engineer and MSM member Dr. Peter Hunter of the University of Auckland.

That paper introduced the integrated continuum framework that couples mathematical modeling with observable behavior in studies of cardiac anatomy.

Peng said the paper introduced “how the scales of the human body should be thought of in terms of the spatial and temporal scales, from genes to proteins, to cells, tissues, organs and clinical medicine.”

Peng also referred to IMAG member Dr. Ron White, who at that time represented NASA within IMAG. He formulated a vision for the foundational structure needed to create a digital human. The digital human concept would model the multiplex systems of human anatomy and physiology as a reference for a person for whom the virtual system is designed.

“Throughout the years we’ve been moving to the population levels as well,” Peng continued. “Think of where we have come from!”



IMAG roundtable discussion of current IMAG initiatives included (from l) Zhilan Feng, NSF; Ilana Goldberg, NHLBI; Emrin Horgusluoglu, NCCIH; Fred Leve, Air Force Office of Scientific Research; Virginia Pasour, Army Research Laboratory; Stephanie George, NSF; Elena Sizikova, FDA; Lee; and Peng.

Jumping forward to a fall 2019 meeting focused on integrating mechanistic modeling and machine-learning methods, Peng said, “It was basically a tsunami of ideas, applying MSM-ML methods to patient safety models and digital twins.” Of the 2020 and 2021 meetings that were respectively truncated and cancelled due to the Covid-19 pandemic, Peng commended organizers’ foresight in building a fully developed agenda around the theme of diversity in MSM.

“They were way ahead of the game,” she said. “Diversity of people, methods and pedagogy...it’s all being talked about regularly now.”

Today, the group seems to be on the cusp of even greater things. Peng and subsequent speakers referred to “the big project,” a gathering of all the individual models at numerous spatial and temporal scales into a large integrated platform for studying biomedical, biological and behavioral systems—the digital human concept—on the verge of realization. **R**



Attendees of the IMAG MSM annual meeting, assembled at Natcher Conference Center.



At left, a star-studded leadership team launches the 2023 Safety, Health and Wellness Day at NIH. Shown are (from l) Derek Newcomer, deputy director, DOHS; Dr. Maryland Pao, clinical director, NIMH; Dr. Susan Amara, scientific director, NIMH; Dr. Jessica McCormick-Ell, director, DOHS; Angela Luz Rosas, NIMH safety officer; Roxy Grossnickle, event chair; and Ann Huston, executive officer, NIMH. At right, a demonstration, “Workplace Emergency Response to Sudden Cardiac Arrest,” is presented by a Division of Occupational Health and Safety CPR Training Program representative.

PHOTOS: MARLEEN VAN DEN NESTE

Wellness

CONTINUED FROM PAGE 1

opportunity to rejuvenate their commitment to overall well-being. Sponsors included NIH’s Office of Research Services (ORS), Office of Research Facilities, occupational safety and health committee and the Laboratory Sustainability Group along with 2023 co-sponsor the National Institute of Mental Health (NIMH),

An unforeseen decline in air quality—due to smog from wildfires in Canada—required a mid-day relocation indoors and other adjustments to ensure the safety of attendees.

As enthusiastic staff gathered to participate in a wide range of informative demonstrations and activities, the event kicked off as scheduled, offering a variety

of health and wellness showcases such as chemical safety, ergonomics, heart-saving CPR training, integrated pest management, mental health awareness, nutrition, roadway safety and total worker health. Two tents had been set up to accommodate rows of booths, where institutes and other organizations shared insights on safety, health and wellness.

One standout attraction was the “Chemical Cornhole” game presented by the ORS Division of Occupational Health and Safety (DOHS). After successfully tossing a bean bag onto the board, participants were asked to randomly select a chemical from a bucket and place it in the correct storage container. The activity allowed employees to enhance their knowledge of chemical storage safety protocols in a fun way.



Barbara Liles of the Office of Research Services, was the runner-up in the NIH Mission First Safety Always Award. The award was created to recognize NIH personnel who have demonstrated leadership, innovation and involvement in their organization’s safety culture.



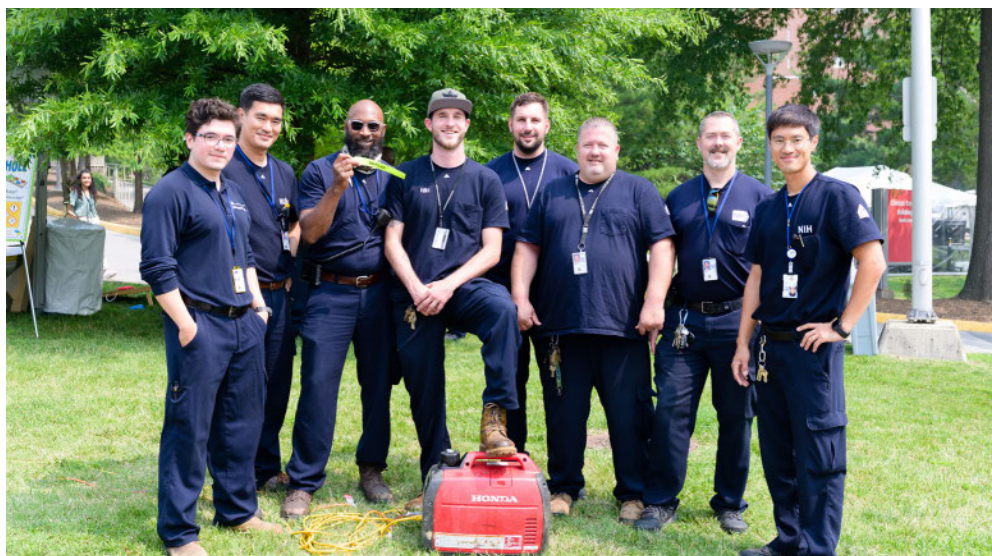
At left, a few game enthusiasts try their hand at “Chemical Cornhole” and learn about safety hazards from Biorisk Management Branch expert Rick Bauman (r), in the process. At right, NIMH exhibitor talks with an attendee about the importance of mental health.



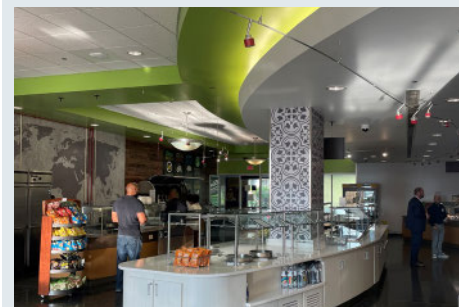
Attendees inquire about books on biosafety in microbiological and biomedical laboratories and information on biological shipping offered by Jeffs Potts and Althea Treacy of DOHS's Biorisk Management Branch.

As attendees browsed the different booths, they were able to pick up an assortment of handouts. NIMH gave away pamphlets on different mental illnesses, such as anxiety disorder and panic disorder. If the booths and handouts didn't provide enough wellness and safety tips, attendees had the opportunity to listen to seminars and participate in demonstrations, ranging from dance and yoga classes to CPR training.

However, as the day progressed, the deteriorating air quality became more apparent. Concern for the well-being of attendees prompted organizers to prioritize safety and shift the event to a virtual format. By noon, the booths and outdoor activities were closed, and the remainder of the event proceeded online, allowing staff to participate from the comfort of their workstations.



Just a few members of the dedicated NIH workforce helping to keep the Safety, Health and Wellness Day event running smoothly



The Bldg. 31 cafeteria is closed for repairs.

Bldg. 31 Cafeteria Closes for Emergency Repairs

The Bldg. 31 cafeteria closed after lunch on July 21 for urgent, extensive and unexpected facility repairs. The cafeteria is tentatively expected to reopen on Sept. 25.

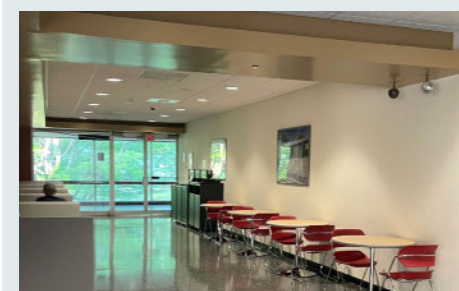
The Maryland Business Enterprise for the Blind concession stand is an alternative. It reopened on July 25. NIH'ers can find snacks, grab & go foods and lots of sundries. The stand is open Monday through Friday from 7 a.m. to 4:30 p.m., excluding federal holidays.

While the renovations are occurring, a portion of the Bldg. 31 seating area remains open. Use the rear doors located closest to the stand to access the area.

Elsewhere on campus, the cafeterias in Bldgs. 12B, 10-B1 and 35 remain open. The other cafeterias are a short walk or shuttle ride away from Bldg. 31. For more information, visit the Office of Research Services' Division of Amenities and Transportation Services food website at <https://go.nih.gov/YIzTDvR>.

Additionally, the NIH Recreation and Welfare Association hosts food trucks on the Bethesda main campus in the 10H parking lot. Weather permitting, the trucks operate daily from 11 a.m. to 2 p.m., or until the food runs out. A full list of food trucks and menus can be found on the R&W website at <https://tinyurl.com/yj5yky2y>.

Questions? Contact the food services team at (301) 827-3248 or ORSWEPB@ors.od.nih.gov.



While the cafe is undergoing renovation, a portion of the seating area will be open.

PHOTOS: ERIC BOCK

DEIA

CONTINUED FROM PAGE 1

Below are examples of recent achievements in collection stewardship and public engagement that demonstrate how NLM contributes to diversity, equity, inclusion and accessibility (DEIA) through its public service as a national library at NIH.

Recent Acquisitions

NLM's acquisition of rare and unique material complements the diverse and global scope of its collection. Among these acquisitions are several from China and Japan, including a first edition of an illustrated obstetrical work by Shusai Omaki.

Published in 1826, the book was edited by Hoyuu Morisaki, Omaki's female assistant, who added observations of her own on the prevention of miscarriage, breech babies, bleeding in the mother and more. The book, which reveals that Morisaki supervised five women trainees, is likely the first in Japanese medicine written or edited by a woman.

NLM staff will spotlight these and other new acquisitions as part of an ongoing series on the blog *Circulating Now*, which has been viewed more than 69,000 times.

Traveling Exhibitions

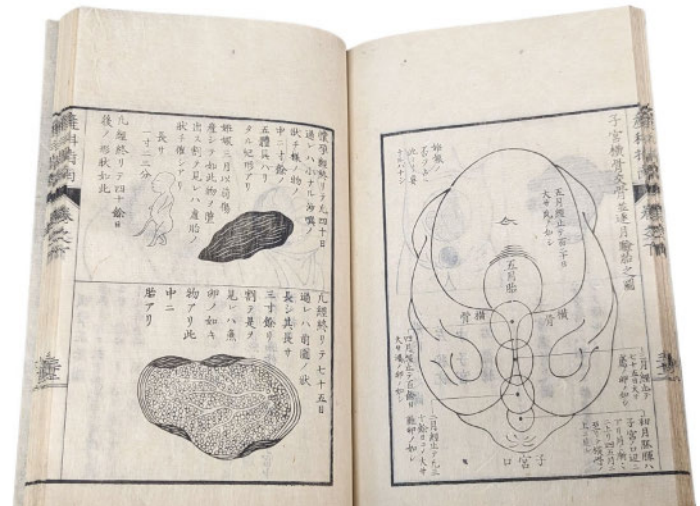
DEIA is a hallmark of NLM's portfolio of 29 traveling exhibitions. The popularity of these exhibitions stems from how they reflect DEIA perspectives in the history of

medicine that support the efforts of NLM's users to raise awareness of DEIA's importance in their institutions and the communities they serve.

Curated from NLM's collection and available through an equitable booking process, the exhibitions travel to hundreds of locations throughout the U.S. and Canada. Beginning January 2023 and running through May 2025, the exhibits are reaching 256 institutions in 223 cities across 47 U.S. states and three cities in Canada.

Exhibition hosts come from a wide range of institutions, such as academic and public libraries, cultural and professional organizations and even a private high school. Among these venues nearly 200 are members of the Network of the National Library of Medicine who work to advance the progress of medicine and improve public health by promoting equitable access to biomedical and health information among health professionals and the public.

For example, "Care and Custody: Past Responses to Mental Health" examines how immigration has been an important part

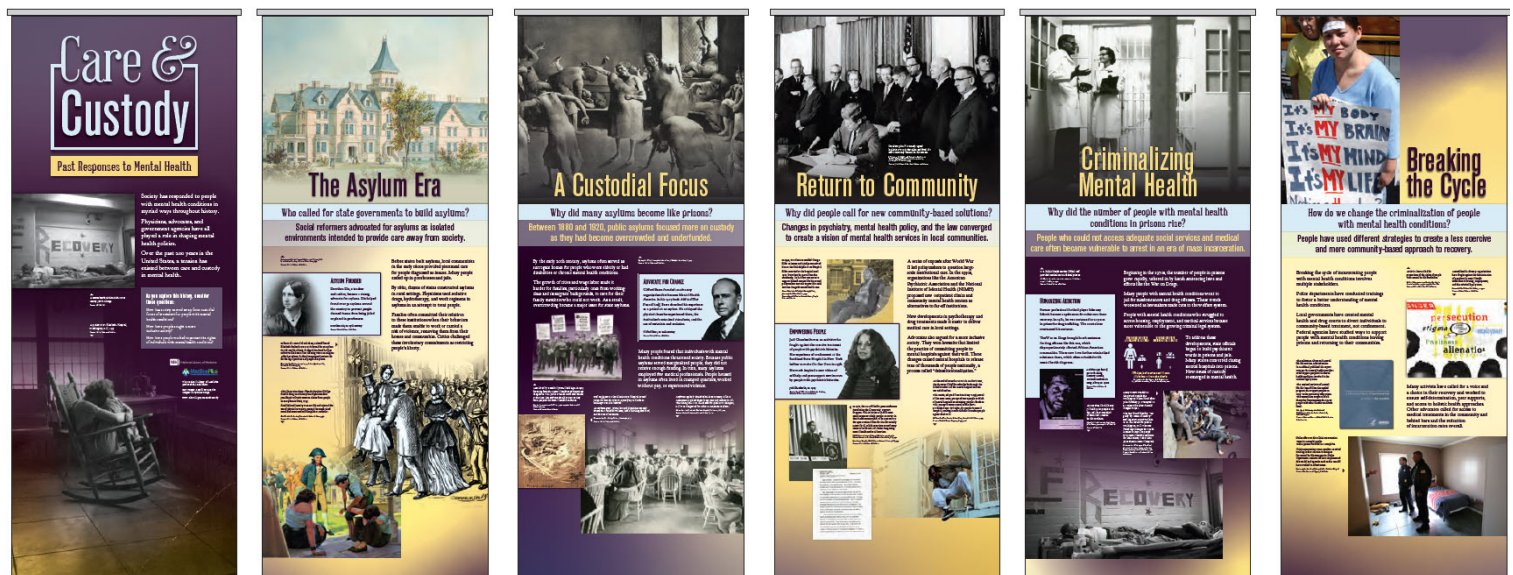


In NLM's rare and unique materials collection is this first edition of an illustrated obstetrical work by Shusai Omaki, published in 1826.

IMAGE: COURTESY NLM

of the American story, and how health care and medicine have played a role in inclusion and exclusion, in dividing communities and strengthening them.

After hosting *Care and Custody*, staff from Oak Bluffs Public Library in Massachusetts said, "This was a wonderful opportunity to highlight mental health issues and resources for our community...which inspired so many positive connections!" Joining *Care and Custody* and many other traveling exhibitions are English/Spanish bilingual exhibitions, all supporting NLM strategies through the lens of DEIA.



The "Care and Custody: Past Responses to Mental Health" exhibition examines how immigration has been integral to the American story.

IMAGE: COURTESY OF NLM

Research Access to Collection

DEIA also characterizes research access to the collection by diverse cadres of NLM Michael E. DeBakey fellows in the History of Medicine and invited speakers in the NLM History Talks series.

To date, NLM has named 31 DeBakey fellows, providing each with research stipends to support their work in NLM's collections both onsite and remotely.

This international and multidisciplinary cohort has produced an impressive body of published research—including five scholarly books, four articles and 18 essays on *Circulating Now*—that has been viewed almost 40,000 times collectively.

Research topics have highlighted DeBakey's successes as a surgeon, statesman, educator and humanitarian, and gone beyond his personal legacy to explore urban health care models, health science librarianship, gender roles in the history of medicine, civilian wartime internment, maternal health and more.

NLM History Talks, a popular lecture series based on research completed in the NLM collection, showcases the diversity of researchers from around the world. Since 2020, NLM has hosted 24 topics ranging from ancient Islamic manuscripts to Renaissance art to Covid in the 21st century.

Web Archiving

NLM also advances DEIA through its web archiving program, where staff prioritize online resources that represent historically underrepresented groups, communities or perspectives, and



The 2022-2023 NLM Michael E. DeBakey Fellows in the History of Medicine: Clockwise from upper left: S.J. Zanolini, Lac (Johns Hopkins Medical School); Dr. Ogechukwu Williams (Creighton University); Dr. Winston Black (St. Francis Xavier University); Dr. Marina Pérez de Arcos (Forward College—Europe/London School of Economics and Political Science); Brice Bowrey (University of Maryland-College Park); Jennifer Hutton (University of Bristol).


further the diversity and inclusion of the collection.

Among key elements staff use to ensure representation and inclusion is the *All of Us* Guide for Diversity and Inclusion table published in the 2020 article “Diversity and inclusion for the *All of Us* research program: A scoping review.”

Such elements inform how staff assess informational and intrinsic value, and uniqueness to include sites like that of the Native Women's Society of the Great Plains, which offers resources aimed to end domestic and sexual violence against Native women.

Moving Forward

NLM began in 1836 as a small collection of medical books and journals in the office of the U.S. Army Surgeon General. As NLM approaches its third century of public service, in 2036, its multidisciplinary staff will continue to advance DEIA through its collections and by engaging the public through current and expanded products and services.

Laura Hartman, Jiwon Kim, Ken Koyle, Christie Moffatt, Krista Stracka and Jeffrey Reznick contributed to this article. 

NIBIB Launches Lesson Plan Challenge

The National Institute of Biomedical Imaging and Bioengineering (NIBIB) has launched the Biomedical Engineering Adapted for Middle Schoolers (BEAMS) Challenge through the Challenge.gov mechanism. BEAMS seeks biomedical engineering lesson plans that spark excitement and interest in middle schoolers and focus on how a biomedical engineering approach can be used to address health care problems.

NIBIB will award \$5,000 to up to five lesson plan creators. At the conclusion of the challenge, the winning biomedical engineering-specific lesson plans will be freely and publicly available for middle school teachers around the country to implement in their classrooms.

For details, visit <https://go.nih.gov/eAC3oUW>. Deadline to apply is Saturday, Sept. 30.

Omega-3 Fatty Acids Appear Promising for Maintaining Lung Health

Omega-3 fatty acids—abundant in fish and fish oil supplements—appear promising for maintaining lung health, according to new evidence from a large, multi-faceted NIH study in healthy adults. The study provides the strongest evidence to date of this association and underscores the importance of including omega-3 fatty acids in the diet, especially given that many Americans do not meet current guidelines.

Funded largely by NHLBI, the study results were published in the *American Journal of Respiratory and Critical Care Medicine*.

The U.S. Department of Agriculture's Dietary Guidelines for Americans recommends that people eat at least two servings of fish per week. In addition to fish and fish oil, other sources of omega-3 fatty acids include nuts and seeds, plant oils and fortified foods.

Past studies have suggested that omega-3 fatty acids may contribute to lung disease prevention efforts, due largely to their established anti-inflammatory actions. However, robust studies of this association have been lacking, until now.

To learn more, researchers developed a two-part study on the link between omega-3 fatty acid levels in the blood and lung function over time.

In the first part, scientists conducted a longitudinal, observational study involving 15,063 Americans. The participants studied were generally healthy when the study began, were racially diverse, 55% female, with an average age of 56.

Findings showed that higher levels of omega-3 fatty acids in a person's blood were associated with a reduced rate of lung function decline. The researchers observed the strongest associations for docosahexaenoic acid (DHA), an omega-3 fatty acid found at high levels in fatty fish such as salmon, tuna and sardines.

In the second part, researchers analyzed genetic data from more than 500,000 European patients from the UK Biobank. They studied certain genetic markers in the blood, which showed that higher levels of omega-3 fatty acids—including DHA—were associated with better lung function.

As part of this ongoing project, researchers plan to examine whether consuming omega-3 fatty acids could benefit people with chronic obstructive pulmonary disease or COPD.

Study first author Dr. Bonnie Patchen, a nutritionist at Cornell, said, "In the future, this could translate into individualized dietary recommendations for people at high risk for chronic lung disease."

New Atlas of Human Kidney Cells to Help Unlock New Research

In a major breakthrough toward understanding and treating kidney disease, a nationwide NIH-funded research team has created the most comprehensive atlas of the human kidney. Data from the Kidney Tissue Atlas will allow the comparison of healthy kidney cells to those injured by kidney disease, helping investigators understand the factors that contribute to the progression of kidney disease and kidney failure or recovery from injury.

The atlas, part of the Kidney Precision Medicine Project (KPMP), was supported by NIDDK, and published in *Nature*.



Sources of omega-3 fatty acids
PHOTO: ALEXANDER PROKOPENKO/SHUTTERSTOCK

Due to the complexity of the kidney, scientists have struggled to develop kidney models that accurately represent human kidney structures and function, which has limited the ability to develop new treatments.

The atlas comprises maps of 51 main kidney cell types that include rare and novel cell populations, 28 kidney cellular states that represent injury or disease, a repository of raw gene data, and interactive 3D models of cells and microenvironment relationships created from 45 healthy donor kidneys and 48 kidney disease biopsies.

The atlas thus establishes a critical foundation for KPMP's overall goal to help discover new treatments for chronic kidney disease and acute kidney injury, medical conditions that present a significant global health burden. The publicly available data created by KPMP, including all 3D renderings and analytical tools, can be accessed at <https://atlas.kpmp.org/>.

Low-Dose Atropine Eyedrops No Better Than Placebo for Myopia

Use of low-dose atropine eyedrops (concentration 0.01%) was no better than placebo at slowing myopia (nearsightedness) progression and elongation of the eye among children treated for two years, according to a randomized controlled trial conducted by the Pediatric Eye Disease Investigator Group.



PHOTO: PEOPLEIMAGES-YURI A/SHUTTERSTOCK

The NEI-funded trial aimed to identify an effective way to manage this leading and increasingly common cause of refractive error, which can cause serious uncorrectable vision loss later in life. Results from the trial were published in *JAMA Ophthalmology*.

Importantly, the findings contradict results from recent trials, primarily in East Asia, that showed a benefit from 0.01% atropine in slowing myopia.

"The overall mixed results on low-dose atropine show us we need more research," said Dr. Michael Chiang, NEI director. "Would a different dose be more effective in a U.S. population? Would combining atropine with other strategies have a synergistic effect? Could we develop other approaches to treatment or prevention based on a better understanding of what causes myopia progression?"

Identifying an optimal approach for preventing high (advanced) myopia is urgently needed given the escalating prevalence of myopia overall and the risk of it progressing to high myopia. By 2030, it's predicted that 39 million people in the U.S. will have myopia. By 2050, that number is expected to grow to 44 million in the U.S. and to 50% of the global population.

Much stronger concentrations of atropine eyedrops (0.5-1.0%) have long been used by pediatric eye doctors to slow myopia progression. While effective, such doses cause light sensitivity and blurry near vision while on the nightly eyedrops.

For the study, 187 children ages 5 to 12 years with low-to-moderate bilateral myopia were randomly assigned to use nightly atropine (0.01%) (125 children) or placebo (62 children) eyedrops for two years. After the treatment period, and 6 months after treatment stopped, there were no significant differences between the groups in degree of myopia compared with baseline.

"Vision scientists may help us figure out what's different about the myopic eye, even among different races and ethnicities, to help create new treatment strategies," said study author Dr. Katherine Weise of the University of Alabama at Birmingham. "It will take a real convergence of eye research to solve the environmental, genetic and structural mystery of myopia."

NIH's First Latina Scientific Director Nápoles Retires

Dr. Anna Nápoles, NIH's first Latina scientific director and only the second scientific director at the National Institute on Minority Health and Health Disparities, retired early this year.

Since taking the helm in 2017, Nápoles expanded the nascent division's research programs with robust research and training to advance the science of minority health and health disparities.

Today, the division holds the institute's first tenured senior investigator, who was recruited as a tenure-track investigator, and six Stadtman tenure-track investigators, along with a host of fellows and trainees. Through its three branches, researchers are making discoveries in social and behavioral sciences, population and community health sciences, and epidemiology and genetics. The division also hosts the Neighborhood and Health Laboratory of Dr. Shannon Zenk, director of the National Institute of Nursing Research.

Known as a magnet for attracting underrepresented trainees, Nápoles enabled her science leaders to build their training and mentoring programs, while hosting scholars in her own lab. Her enthusiasm for next-generation researchers from diverse racial and ethnic communities reverberated beyond NIMHD, and she was regularly invited to speak about her journey and career as a woman and Latina scientist.

As a cultural change agent, Nápoles facilitated a bold collaboration that created the Global Burden of Disease U.S. Health Disparities Collaborators at NIH project, which involves several NIH entities and the Institute for Health Metrics and Evaluation at the University of Washington. The first

findings, which capture estimates of life expectancy by race and ethnicity for every county in the U.S. between 2000-2019, were published in *JAMA* in May 2022.

Nápoles also encouraged colleagues at the Clinical Center to include social determinants of health factors into patient records to

provide deeper insights into patients' lived experiences, which could in turn impact not only study design and outcomes, but also strategies to enhance patient care.

Leveraging her passion for equity, Nápoles championed the NIH UNITE initiative, serving as co-chair of the N committee, which contributed to the NIH Common Fund Transformative Research to Address Health Disparities and Advance Health Equity at Minority

Serving Institutions initiative.

Nápoles' leadership during the Covid-19 pandemic fostered the necessary attention to the communities hardest hit. She launched a coordinated national survey to evaluate the impact of the pandemic on racially and ethnically diverse communities.

Early data from the Covid-19's Unequal Racial Burden (CURB) survey, published in 2022, revealed Covid-19-related discrimination was experienced by all racial and ethnic minority groups, and existing resentment toward these and other minority groups

in the U.S. had worsened. Nápoles and colleagues called for careful and responsible public health messaging during public health crises to help prevent and address discrimination against groups that have been marginalized.

In collaboration with the NIMHD director and deputy director, she co-authored a paper in May 2020, calling attention to the growing number of Covid-19 cases and poor outcomes in the same populations experiencing health disparities prior to the pandemic. The paper, which has been cited more than 1,200 times,

further reinforced the need for inclusive research participation among these same communities using proven community-engaged research approaches.

Nápoles was honored with both NIH and NIMHD Directors' Awards for her leadership.

"Anna's leadership at NIMHD Intramural has been foundational and this legacy will yield benefits for many years," said NIMHD Director Dr. Eliseo Pérez-Stable. "In addition, her ability to create collaborations across NIH contribute to the rich legacy of impact that NIMHD has on the research enterprise and its progress toward inclusive racial and ethnic cultural diversity in its leadership."

Prior to joining NIMHD, Nápoles served as a professor of medicine at the University of California, San Francisco (UCSF). While there, she led discoveries in patient-clinician communication, interventions to improve the quality of life of Latina breast cancer survivors, and community-based models of research to address cancer health disparities, among other areas that have influenced cultural competency in health care and evidence-based interventions for underserved populations and people with limited English proficiency.

Nápoles grew up in a Mexican American family in Southern California. She earned her master's in public health from the University of California, Berkeley and was recruited to work at UCSF as a research coordinator. She subsequently obtained her doctorate in behavioral epidemiology from the UC Berkeley while working full-time. **R**



Dr. Anna Nápoles

"Anna's leadership at NIMHD Intramural has been foundational and this legacy will yield benefits for many years."

-DR. ELISEO PÉREZ-STABLE

VOLUNTEERS

EBV Vaccine Trial Recruits Volunteers

NIAID researchers are enrolling healthy volunteers ages 18-29 living in the D.C., Maryland and Virginia areas in an investigational Epstein-Barr virus (EBV) vaccine clinical trial. If you are eligible, consider joining to help research to stop the spread of EBV—the most common cause of infectious mononucleosis (mono) and associated with some cancers. Compensation will be provided, up to \$2220 over the course of the trial. For more information, contact the Office of Patient Recruitment at (866) 444-2214 (TTY users dial 711) or ccopr@nih.gov. Refer to study #21-I-0005. Online: <https://go.usa.gov/xsYK5>.



Shown above at right, group members are (from l) Danny Villanueva (percussion), Gerry Kunkel (guitar), Joey Antico (drums), John Previti (acoustic upright bass) and Jon Ozment (piano).

PHOTOS: JANICE DURAN

Jazz Ensemble Jams in CRC Atrium

The University of Maryland Jazz Ensemble performed a lunchtime concert in the atrium of the Clinical Research Center on July 13.

They started the set with *Surrey With the Fringe On Top*, played with a light jazzy air.

“It was a perfect way to begin the set, I thought,” said Gerry Kunkel, the group’s guitarist. “Some of my favorite songs we did were *Poinciana* featuring Jon Ozment on piano. This piece became a jazz chestnut when the great Ahmad Jamal performed it. I love how Jon plays this one and it is a favorite of the whole band...We also played two Antonio Carlos Jobim classics, *Triste* and the ever-beautiful *Corcovado*. I used my nylon string with these two tunes and it lent a more authentic Brazilian sound to the songs, plus I love to play acoustic nylon string guitar anyway and it was a good chance to use one of my favorite instruments. We ended the set with an ode to the season, *Summertime* by George Gershwin. We played it with an up-tempo Afro-Cuban beat, which I love and it was a strong way to bid our listeners adieu.”

The group features University of Maryland professors and alumni and is a perennial campus favorite.

