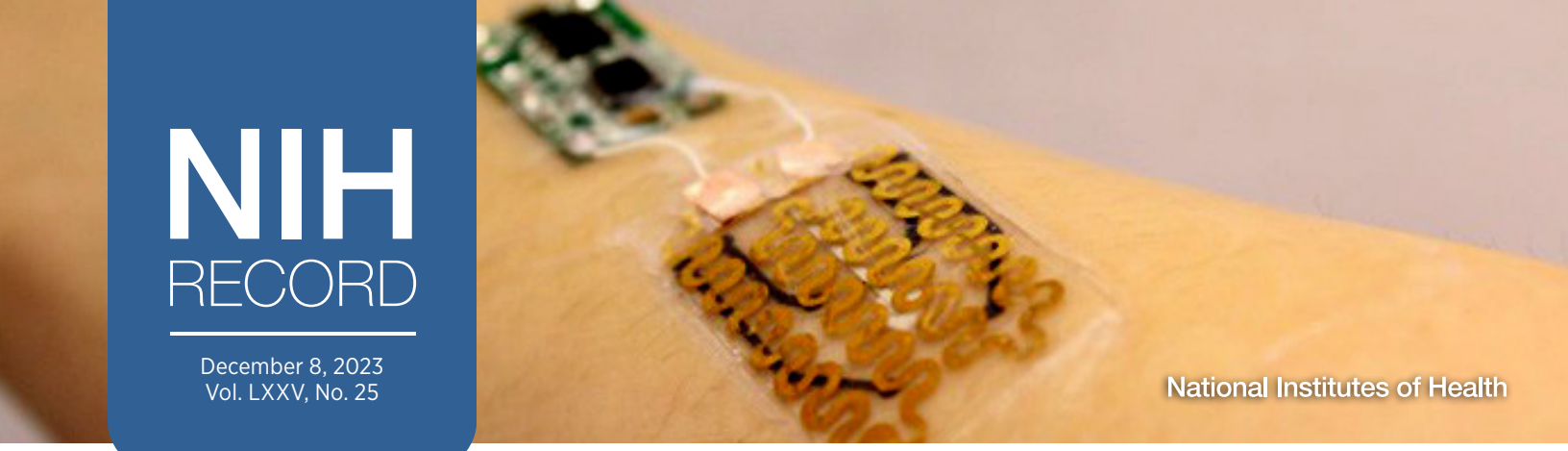
NIH RECORD

December 8, 2023
Vol. LXXV, No. 25



Gratitude Tour Rolls on with DEM Stop

BY ERIC BOCK

NIH leadership thanked the Office of Research Services' (ORS) Division of Emergency Management (DEM) staff for their "grit and determination" while keeping NIH prepared and ready to respond to pandemics, natural disasters and other dangers.

"What you accomplish is really amazing," said ORS Director Colleen McGowan during a Nov. 2 "Gratitude Tour" stop in a Bldg. 31 conference room. "You are here when people need you most."

DEM, the principal emergency planning component for NIH, is responsible for coordinating resources essential for preparedness. The Emergency Communications Center (ECC), part of the division, receives service calls to dispatch police, fire and rescue and other emergency resources as required.

The ECC is staffed 24 hours a day, seven days a week. Last year, the center answered 30,000 calls, said DEM Director Jordan Southers. Personnel also monitor radios, alarms and cameras located around campus.

DEM staff at the gratitude event include (from l) Lissa Snyders, Samantha Hughes and Jordan Southers.

PHOTO: CHIA-CHI CHARLIE CHANG

"The ECC staff does so much with grace under pressure," said McGowan. "A lot of people who call are angry, anxious or agitated. We need to advocate for our staff [in the ECC] and make sure they get the respect they deserve."

During the first year of the Covid-19 pandemic, DEM faced many challenges, said then-NIH Acting Principal Deputy Director Dr. Tara Schwetz. DEM set up a dedicated Covid-19 call center and worked with the Division of Occupational Health and Safety and the NIH Fire Department to open the Covid-19 testing car line at NIH Gateway Center.

The division ordered and distributed more than 200,000 masks around campus over the course of the pandemic. DEM also helped NIH comply with Executive Order

SEE **GRATITUDE**, PAGE 8

See what NINR staff served up for Children's Inn families, p. 7.

ALSO THIS ISSUE

CC EPIDEMIOLOGIST TAKES NOTE

What We Learned from Covid Response

BY AMBER SNYDER

Dr. David Henderson

The Covid-19 pandemic highlighted both strengths and weaknesses in our public health infrastructure and beyond. What can we learn from it? And how can we use it to prepare for future threats?

Former Clinical Center hospital epidemiologist and 41-year NIH veteran Dr. David Henderson recently took the (hybrid) stage to deliver what he called "the gospel according to Henderson," or his assessment of the U.S. response to the 3½-year health crisis.

SEE **HENDERSON**, PAGE 4

MENTAL HEALTH RESEARCH EVOLUTION

NIMH Celebrates 75 Years of Transforming Treatment, Prevention

BY ERIC BOCK

UC-Irvine Professor Dr. Karen Lincoln

The most significant advances in managing and treating mental health conditions did not happen by accident, but rather through several decades of National Institute of Mental Health (NIMH)-supported research, said NIMH Director Dr. Joshua Gordon.

"For the past 75 years, our government, through NIMH, has made a commitment to transform the treatment and prevention

SEE **NIMH**, PAGE 6

Donate Use-or-Lose Hours to the Leave Bank by Jan. 13

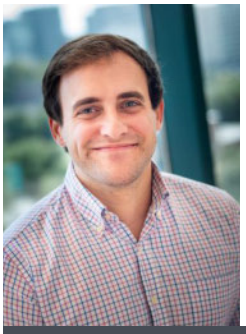
In 2022, NIH employees lost an estimated $5.9 million in annual leave. Don't lose yours this year! The Leave Bank offers the opportunity to put that leave to use by donating your use-or-lose annual leave to the bank by Jan. 13, via ITAS. When you donate to the Leave Bank, you help a co-worker in need, like this recipient:

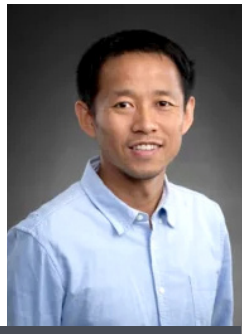
"Words cannot express my gratitude for the leave bank. My son has a very serious (and terminal) illness, resulting in many hospital stays, as well as multiple surgeries. Knowing that the leave bank is available gives me the peace of mind to know that remaining in pay status is something that I no longer have to worry about and that I can put all my attention and care where it should be, with my son. From our family to yours, thank you for helping us through this very difficult time."

To donate, log in at https://itas.nih.gov. On the tool bar, select "Donate to Leave Bank." Enter the type of leave (annual or restored annual), then the number of hours you wish to donate and select "OK."

More information on the program can be found at https://hr.nih.gov/leavebank.

For questions, call (301) 443-8393 or email LeaveBank@od.nih.gov.





St. Jude's Clay McLeod (l) and Dr. Xin Zhou

Childhood Cancer Data Initiative Hosts Webinar, Jan. 23

The Childhood Cancer Data Initiative (CCDI) will host its first webinar of 2024, exploring two research data sharing platforms from St. Jude Children's Research Hospital.

On Tuesday, Jan. 23 from 1 to 2 p.m., Clay McLeod, director of product development and engineering, and Dr. Xin Zhou, director of data visualization—both in St. Jude's department of computational biology—will demonstrate PeCan v2 and the St. Jude Survivorship Portal. They will delve into navigating the platforms and show how the tools can enhance research and advance knowledge of childhood cancers. Attendees may ask questions during a Q&A session.

CCDI webinars are free and open to the public, though registration is required to receive the event link. For more information, including past recordings, visit https://go.nih.gov/Ofn9ubU. Individuals who need reasonable accommodation to participate may email CCDIevents@mail.nih.gov.

Sant Returns for Annual Thanksgiving Concert

Caesar Sant, 15, returned to the Clinical Center on Nov. 20 to play violin at his third Thanksgiving concert, giving thanks to his clinical team for the life-changing treatment that cured his sickle cell disease. Sant—at times accompanied by former NIH Director Dr. Francis Collins on guitar and former National Cancer Institute postbac Robert Masi on piano—performed several Bach pieces and two original compositions.

Collins called the event "the best way I can think of to celebrate Thanksgiving—which is to have an opportunity to give thanks for the combination of talents of a remarkable young violinist, Caesar Sant, and NIH, which has given Caesar a lease on life after his bone marrow transplant two years ago." He said Caesar's story is a prime example of how music can help with resilience and healing.

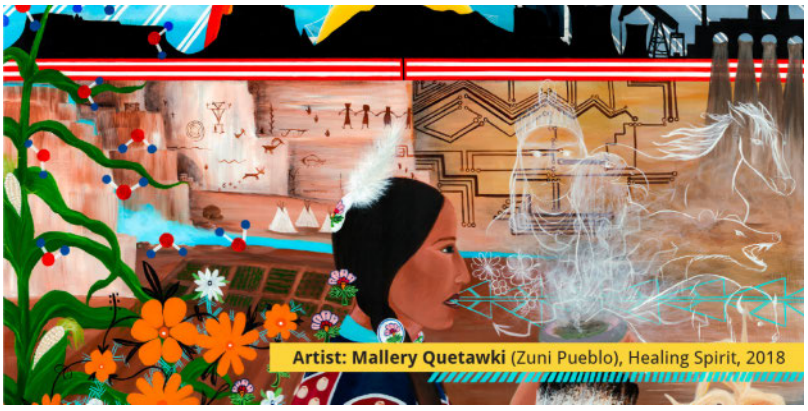
Giving thanks: Caesar Sant, age 15, performs solo and with former NIH Director Dr. Francis Collins (l) on guitar and Robert Masi, a former NCI research fellow and current Harvard medical student, on piano.

PHOTOS: JANICE DURAN AND DANA TALESNIK

THRO's Walters Celebrates Native American Heritage Month with Talk About Families

In celebration of Native American Heritage Month, Dr. Karina Walters, director of NIH's Tribal Health Research Office (THRO), presented "Watering the Seeds of AI/AN Ancestral Love and Wisdom to Create Healthful Families and Generations" on Nov. 3 as a featured speaker for the Administration for Native Americans (ANA), part of the Administration for Children and Families. She spoke about American Indians cultivating the love and wisdom of their ancestors to create healthful families and future generations. Afterward, Walters and ANA Commissioner Patrice Kunesh talked together about issues related to the health of Native children and families.

Watch the recording at https://bit.ly/49TN9rl.



Artist: Mallery Quetawki (Zuni Pueblo), Healing Spirit, 2018

At the Oval Office for the presidential memorandum signing are (from l) Shalanda Young, director of the Office of Management and Budget; Dr. Victor Dzau, president, National Academy of Medicine; initiative chair Dr. Carolyn Mazure, director of women's health research at Yale University; First Lady Dr. Jill Biden; President Joe Biden; Maria Shriver, journalist and longtime women's health advocate who founded the Women's Alzheimer's Movement; Jennifer Klein, director of the White House Gender Policy Council; HHS Secretary Xavier Becerra; NIH Director Dr. Monica Bertagnolli; and Dr. Janine Clayton, NIH associate director for research on women's health and director of NIH's Office of Research on Women's Health.

NIH, ORWH Named to New White House Initiative for Women's Health

At a White House event on Nov. 13, President Joe Biden established, within the Office of the First Lady, the first-ever White House Initiative on Women's Health Research to be led by a chair holding a dual role in the Office of the First Lady and on the staff of the White House Gender Policy Council.

"We can—and must—increase our efforts to invest in research that maximizes our ability to prevent, diagnose and treat health conditions in women across the United States," said Biden, in a presidential memorandum.

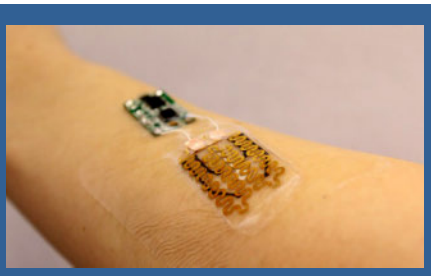
"Meaningful progress requires robust, dedicated research infrastructure—including a strong, diverse research workforce—and investment within and beyond the federal government," he continued. "We all have a part to play in galvanizing women's health research, developing innovative and cutting-edge interventions that promote women's health and ensuring that women across the United States have access to high-quality health care."

The new initiative's mission is to advance women's health research in the United States. Initiative functions, which are advisory, include

- assessing the federal research landscape to identify opportunities for additional investments that could catalyze significant progress in addressing women's health needs;
- setting initiative-wide priorities to help guide strategic federal research investments
- improving coordination among agencies pursuing women's health research by better integrating research efforts and facilitating interdisciplinary research
- developing policy recommendations to better ensure that the health needs of women are assessed and reported for federal research and data collection efforts
- forming targeted recommendations to address health disparities and inequities affecting women, including those related to race, ethnicity, age, socioeconomic status, disability and exposure to environmental factors and contaminants that can directly affect health
- developing recommendations to support the translation of research advances into practical benefits
- identifying opportunities to develop public-private partnerships and to increase coordination with the private and philanthropic sectors in order to drive innovation
- engaging the scientific and research communities by helping promote the dissemination of actionable research and data
- assessing opportunities to recruit, train and support women pursuing health and biomedical research careers to help strengthen and diversify the research workforce
- identifying ways to increase public awareness of the need for greater investment in and attention to women's health research, as well as women's health outcomes

The group's first assignment—to provide recommendations of concrete actions to advance women's health research—was due in 45 days.

Members of the initiative consist of the heads of a number of departments, agencies and offices, specifically including NIH and NIH's Office of Research on Women's Health, the Advanced Research Projects Agency for Health, the Department of Health and Human Services, the Office of Science and Technology Policy, the National Science Foundation, the Food and Drug Administration, the Centers for Disease Control and Prevention and the Agency for Healthcare Research and Quality. R



ON THE COVER: *Prototype of a smart bandage equipped with temperature and pH sensors (lower right) printed directly onto the surface of a thin, flexible medical tape. Also shown is the "brain" of the operation: a microprocessor (upper left). When the sensors prompt the microprocessor, it heats up a hydrogel heating element in the bandage, releasing drugs and/or other healing substances on demand. It can also wirelessly transmit messages directly to a smartphone to keep patients and doctors updated.*

IMAGE: TUFTS UNIVERSITY WITH NIH SUPPORT FROM NIAMS, NIBIB & NHLBI

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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NIH National Institutes of Health
Turning Discovery Into Health

Henderson

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His talk, "The Covid-19 Pandemic: Looking Back and Looking Forward," was a recent installment in the Contemporary Clinical Medicine: Great Teachers lecture series.

Henderson opened with what appeared to be a familiar scene: a graph showing the progression of viral cases over time. "[This is] the kind of epi-curve most of us sweat bullets over in the last 3 years," he said.

In this case, however, the virus in question was not Covid-19, but the 1918-19 flu.

Just over 100 years prior to the pandemic of our time, this public health situation looked very similar: 675,000 people died in the U.S. alone and health care workers urged people to wear masks to limit the spread of disease.

Covid "seems like déjà vu all over again," Henderson said. About one-third of Americans have had documented infections, and the death toll at the time of the lecture stood at about 1.17 million people in the U.S. alone. Henderson expressed incredulity at the numbers.

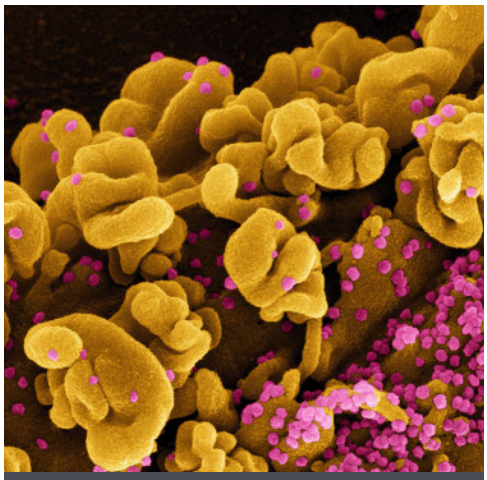
"Consider this," he said. "In a time when science and medicine have made astounding diagnostic, therapeutic and preventative interventional strides, we did not fare much better in the Covid pandemic than we did in 1918, when we didn't have diagnostic tests or any therapeutic interventions other than supportive care."

This is not to say that there were no triumphs in our Covid response, Henderson acknowledged. Vaccine development was an "astounding success" in many aspects.

The virus was sequenced on Jan. 12, 2020, and the first vaccine emergency use authorizations (EUA) were issued on Dec. 11 and 18 of that same year. There were also numerous platforms for the vaccines, from the familiar protein subunit and adenovirus vector to the new and incredibly successful mRNA vaccines.

Finally, the vaccines themselves were safe and effective, and still provide protection from severe disease and death as new Covid variants continue to evolve.

But, as Henderson's Covid/1918 flu comparison showed, the U.S. still has many opportunities for improvement. Many of these problem areas "could have been obviated by availability of aggressive testing,



Colorized scanning electron micrograph of a cell infected with the Omicron strain of SARS-CoV-2 virus particles (pink), isolated from a patient sample.

IMAGE: NIAID RESEARCH FACILITY, FORT DETRICK, MD

contact tracing and quarantine," he said.

The first at-home test kits were not approved until November 2020. In the meantime, states and municipalities scrambled to implement rapid, widespread testing efforts. Health care workers also ran into difficulties obtaining personal protective equipment (PPE), especially masks and gowns.

The Strategic National Stockpile, which was created in 2006, had limited PPE inventory and could not distribute enough supplies to states beyond the first three months of the pandemic.

Henderson said, public health infrastructure in the U.S. is "antiquated, understaffed, under-resourced, under-incentivized and [in need of] revitalization."

Only 187 health care facilities reported electronically to the Centers for Disease Control and Prevention (CDC) at the start of the pandemic. That number has risen to 25,000, but still only accounts for one-quarter of health care facilities in the country.

Our public health systems are "light years behind where they need to be," Henderson estimated.

He said misinformation and poor communication also played an outsized role in the country's pandemic response.

One early example was the mixed messaging over mask recommendations. Masking was initially discouraged for the general public in order to save supplies for health care workers, with the recommendation changing in early April 2020. That "likely set us back a bit," said Henderson.

The thorny issues of politics quickly became entangled in pandemic policy as well, to the detriment of public health. Public figures downplayed the severity of the virus, cast doubt on the efficacy of masking and social distancing, expressed support for conspiracy theories and unproven treatments and shared inaccurate information about side effects of Covid vaccines.

Henderson wants to "get everyone on the same page—we're all facing the same foe."

Some effects of the pandemic response may be here to stay: working from home, source control masking, hand hygiene dispensers, individualized risk assessment and focus on vulnerable populations. These changes are for the better, Henderson said.

• • •

"In a time when science and medicine have made astounding...interventional strides, we did not fare much better in the Covid pandemic than we did in [the] 1918 [flu]."

-DR. DAVID HENDERSON

• • •

Experts agree that Covid will not be the last pandemic the world faces. How can we prepare for the next one?

Start with a federal government-led response, Henderson said. The response should be centralized and coordinate with state and municipal health departments. The public health system should also be well-funded and equipped to handle the strain of a prolonged pandemic response.

Transparency is of the utmost importance; communication with the press and the public should "[emphasize] the difference between what we know and what we think," Henderson said, noting that this was a point of weakness in the U.S. Covid response.

Additionally, the response should balance between protecting health while still minimizing disruption to normal societal functioning. It is better to begin with more restrictive policies and be able to relax them later, Henderson opined.

He also emphasized institutional preparedness. Most pandemic preparedness plans were developed from H1N1 and the 2003 SARS outbreak, and need to be updated with new knowledge from Covid.

During the 2014 Ebola epidemic, for example, the Clinical Center staff created a pandemic response plan for treating a symptomatic patient.

"We drilled with [a mock patient]...and met every afternoon at 3 for a month or two describing what went right and what went wrong," Henderson explained.

"We were very prepared" to keep immune-compromised CC patients safe while treating symptomatic Ebola patient Nina Pham in October 2014.

There are still lingering societal complications for which Henderson has no solution, he admitted. Science denialism, anti-vaccine sentiment and extreme politicization are more hurdles that must be addressed to successfully weather future pandemics.

As British chemist and X-ray crystallographer Rosalind Franklin once said, Henderson quoted, "Science and everyday life cannot and should not be separated."

The archived lecture can be viewed at https://videocast.nih.gov/watch=49891.

Religion SIG Hosts Webinar, Dec. 19

The NIH Religion, Spirituality and Health Scientific Interest Group will present its final webinar of the year on Tuesday, Dec. 19 from 2 to 3:30 p.m. ET with Dr. Francis G. Lu, Luke & Grace Kim professor in cultural psychiatry, emeritus, University of California, Davis, on "Where Do Religion and Spirituality Appear in the American Psychiatric Association DSM-5-TR (2022)?" via Zoom: https://bit.ly/49ZZ9rw.

Dr. Francis G. Lu

Individuals who need sign language interpretation should email requests to joan.romaine@nih.gov at least five business days prior to the event.

17TH NCI DIRECTOR NAMED

Rathmell Appointed to Lead Cancer Institute

President Joe Biden announced on Nov. 17 that he intends to appoint Dr. W. Kimryn Rathmell as the 17th director of the National Cancer Institute (NCI).

An internationally recognized expert in kidney cancer, "Rathmell is an ideal candidate to lead NIH's efforts to end cancer as we know it," said NIH Director—and 16th NCI Director—Dr. Monica Bertagnolli in a statement to NIH staff. "She has spent her career driving efforts to boost support and improve outcomes for those facing a cancer diagnosis, living the principles of President Biden's Cancer Moonshot Initiative."

Dr. W. Kimryn Rathmell

Rathmell currently serves as the Hugh Jackson Morgan chair in medicine, chair of the department of medicine and physician-in-chief at Vanderbilt University Medical Center (VUMC) in Nashville.

A medical oncologist and translational scientist, Rathmell takes her work from the laboratory to the patient's bedside. Her lab focuses on the molecular biology of kidney cancer and is integrated into a clinical research program at VUMC and Vanderbilt Ingram Cancer Center. This groundbreaking work has yielded better ways to detect and treat cancer using molecular biomarkers.

"I especially admire Dr. Rathmell's dedication to mentorship and training the next generation of physician-scientists," said Bertagnolli. "She has led numerous training and career development programs at Vanderbilt and the University of North Carolina, where she previously served on the faculty."

In 2022, Rathmell was elected to the National Academy of Medicine, which recognized not only her many research achievements but also her mentorship of physician-scientists.

Rathmell has served on NCI's Board of Scientific Advisors and as a member of the Cancer Genome Atlas program; she was recognized with the 2021 American Association for Cancer Research Team Science Award. Additionally, she has held leadership positions for the Kidney Cancer Research Foundation and the American Society for Clinical Investigation. She is a member of the Association of American Physicians and a fellow of the American Society of Clinical Oncology.

After receiving her undergraduate degree in chemistry and biology at the University of Northern Iowa, Rathmell earned her Ph.D. in biophysics and M.D. from Stanford University. She participated in an internal medicine internship at the University of Chicago and completed an internal medicine residency and medical oncology fellowship at the University of Pennsylvania.

Rathmell succeeds Bertagnolli, who in recent weeks began her tenure as NIH director. Rathmell's appointment does not require Senate confirmation. She is expected to take the helm at NCI this month.

NIMH Anniversary

CONTINUED FROM PAGE 1

of these devasting illnesses," Gordon said during the institute's 75th anniversary symposium.

Gordon's remarks opened the "NIMH 75th Anniversary Kick-Off: The Evolution of Mental Health Research" symposium recently in the Natcher Bldg.

On July 3, 1946, President Harry Truman signed the National Mental Health Act, which called for creating NIMH. Three years later, the institute was formally established. From the beginning, the institute has been committed to transforming the understanding and treatment of mental health.

There's a false narrative that's oft repeated, said Gordon. It suggests "everything that has been done to improve care for individuals with mental illness happened accidentally and investments in mental health research haven't changed the way we treat illness."

Panelists (from l) DiCarlo, Herculano-Houzel, Murray and Zarate speak at NIMH's 75th anniversary symposium.

Since its early days, NIMH has transformed the outlook for individuals with mental illness. Dr. Julius Axelrod's basic research on neurotransmitter re-uptake in the 1950s and 1960s led to the development of a new class of antidepressants.

NIMH-supported research led to development of what is now known as cognitive behavioral therapy. In the 1970s and 1980s, studies demonstrated the effectiveness of the therapy for treating various mental disorders, including depression, anxiety and phobias.

Celebrating NIMH's milestone anniversary are (from l) Dr. Cori Bargmann, Dr. Susan Amara, Dr. Rui Costa, Dr. Karen Lincoln, Dr. Steven E. Hyman, Dr. Karl Deisseroth, Dr. Joshua A. Gordon, Dr. Sarah Lisanby, Dr. Shelli Avenevoli, Dr. James DiCarlo, Dr. Suzana Herculano-Houzel, Dr. Elizabeth Murray, Dr. Dani Bassett, Dr. Alon Chen and Dr. Carlos Zarate.

PHOTOS: MARLEEN VAN DEN NESTE

More recently, the Recovery After an Initial Schizophrenia Episode (RAISE) research initiative demonstrated the effectiveness of coordinated specialty care to treat first-episode psychosis in communities. There are now more than 300 coordinated specialty care clinics across the country that help thousands of patients every year.

NIMH's budget is nearly double what it was just seven years ago, when Gordon's tenure as director started. The White House and Congress share a commitment to funding mental health research.

Despite the many accomplishments, there's still much work to do.

"We're in a mental health crisis, especially for our youth," Gordon emphasized. Scientists around the world are ready to "face down that challenge with new ideas and approaches" that reach everyone.

Former and current NIMH directors, (l to r) Dr. Alan Leshner, Dr. Steven E. Hyman, Dr. Richard K. Nakamura, Dr. Thomas R. Insel, Dr. Bruce Cuthbert and Dr. Joshua A. Gordon

For far too long, many people have discounted the importance of mental health, said then-Acting NIH Director Dr. Lawrence Tabak. Since the Covid-19 pandemic disrupted daily routines, there is more widespread appreciation for how essential mental health is to health and well-being.

"Mental illness is not always easy to see, but that makes it even more crucial to study and understand," Tabak said.

NIMH has invested billions of dollars in research to revolutionize our understanding of the human brain, he noted.

In 1993, the institute coordinated the Brain Project, a multi-institute effort that developed an internationally accessible, comprehensive neuroscience database. Twenty years later, NIMH co-led with NINDS the BRAIN Initiative®, a partnership between federal and non-federal partners with a goal of accelerating development of innovative neurotechnologies.

Being part of the initiative was rewarding for Dr. Cori Bargmann, former co-chair of the BRAIN working group of the advisory committee to the NIH director. Giving the symposium's scientific keynote address, Bargmann said BRAIN allowed her and other scientists to return to the same questions with better and more powerful tools.

For example, she said, for a long time, researchers couldn't study neuropeptides and neuromodulators as closely as other molecules such as synapses because they weren't as tractable to the methods of electrophysiology and of neuroanatomy.

Take *Caenorhabditis elegans*, a type of round worm whose nervous system has 302 neurons. For comparison, the human brain has 86 billion neurons.

Gordon at the mic

"Every one of these neurons can be identified in every individual worm—we know exactly what genes they express, we know what connections they make at baseline," she said. "We have a tremendous amount of information in order to generate more understanding of these complex systems."

Specifically, Bargmann's team researches the internal states of these organisms. Internal states bind behaviors together over different periods of time. Scientists identify these states by studying the spontaneous animal behavior.

An example of internal state is the circadian rhythm that regulates biological functions throughout the day in animals, including sleep, eating schedules and metabolism. "Remarkably, the molecular pathway is conserved across this entire suite of animals," Bargmann said.

Sickness behavior is another internal state. A sickness behavior involves adaptive changes that help animals cope with an infection.

"We know these responses well," Bargmann noted. "Things like fatigue, reduced appetite, excessive sleepiness, decreased sociability, nausea and aversive learning are characteristics of these different kinds of outcomes after infection."

Her lab has studied this state in *C. elegans* after it has been exposed to *Pseudomonas aeruginosa*, a bacteria found in the environment. *P. aeruginosa* is an opportunistic infection that can sicken people and worms.

When exposed to the bacteria for as little as four hours, *C. elegans* began avoiding the pathogen. If the animal is taught to avoid *P. aeruginosa* shortly after hatching, it will avoid the bacteria for the rest of its life. And, in certain conditions, this avoidance behavior can be passed down from mother to offspring.

Researchers began searching for animals that didn't have the normal aversion behavior. "This led to identification of a variety of different genes that we could use as a starting point for studying the animals' biology," Bargmann said. Recent findings suggest a neuron called AVK releases a neuropeptide called FLP-1 in response to an infection.

"As we develop better tools to measure physiology, we'll be able to do more than just look under the lamppost of the molecules that we know about," she concluded. "We can begin to think more broadly about what kind of changes are occurring in different brain areas and the body that communicates with the brain."

In addition to Bargmann's scientific keynote, the anniversary event featured speakers from within and outside of NIMH describing exciting breakthroughs in genetics, imaging, systems, neuroscience, services and interventions.

The symposium will be the first of several events NIMH will host to celebrate its anniversary. Visit https://www.nimh.nih.gov/75years for details.

NINR Director Dr. Shannon Zenk and NINR staff provide dinner to the children and families at the Children's Inn. In the kitchen are (from l) Wendy Pond, Eddie Byrnes, Olga Acosta, Will Thompson, Zenk, Sarah Yoon, David Timpane, Joanie Dawson, Tanna Nelson, Paula Stonebanks, Kalli Mays and Pooja Varma.

PHOTOS: OLGA ACOSTA

NINR Staff Serve Up Dinner and More at the Children's Inn

Since the National Institute of Nursing Research (NINR) is leading the Combined Federal Campaign at NIH this year, staff have been thinking a lot about giving back to the community by donating money or time to charities. The Family Dinner Program is one option for volunteering at the Children's Inn at NIH. In this program, volunteers prepare a meal for children with rare and serious diseases and their families. NINR staff enthusiastically served in this capacity on the evening of Nov. 8.

Mays (l) and Stonebanks helped coordinate the dinner.

NINR staff glove up and mask up in order to serve up!

Eleven volunteers from NINR prepared a lasagna dinner for about 40 children and their family members. Starting at 3 p.m., volunteers heated up lasagna and garlic bread. Around five, the meal was served along with salad, cold drinks and desserts, all brought in by the volunteers. By six, the NINR staff were cleaning up. And, close to seven, they left, feeling deeply grateful for this special opportunity to serve.

As the inn website states, "A shared meal builds camaraderie by giving children and families a chance to get to know one another, gives caregivers a break from shopping and cooking and alleviates financial stress." The NINR staff knew they had served this up for one special night.

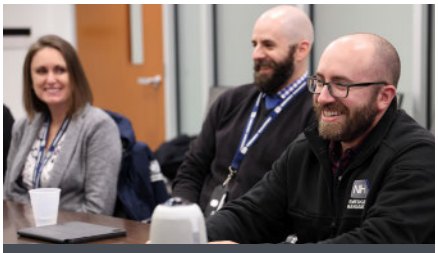
In the Emergency Communications Center are (from l) Dominique Neal, ORS Director Colleen McGowan with Bonita Farrier, and Betty Hicks.

Gratitude

CONTINUED FROM PAGE 1

14043, which requires Covid-19 vaccinations for federal employees. DEM created status reporting forms and other proof-of-vaccination documents.

DEM coordinated with ORS's Program and Employee Services to launch the At-Home Antigen Test Kit Pilot for distribution of home Covid testing of NIH staff. Between February and September 2022, the program distributed more than 365,730 individual tests to 21,000 employees.



The call center's Michael Mowbray (l); above right, Hughes, Southers and Aaron Salter take in the appreciation.

PHOTOS: CHIA-CHI CHARLIE CHANG

"1,800 staff reported a positive test [to NIH] using those kits, allowing them to isolate at home," Schwetz noted. "God only knows how many transmissions you've prevented from happening."

Emergency Management Specialist Wael Khudr started at NIH in October 2020 and began working on the Covid-19 testing car line. Right off the bat, "there was so much on our plate," he recalled. "Coming to NIH and seeing how everything was so well-organized was eye-opening."

Over the past few years, he's been encouraged to take on additional responsibilities, something he couldn't do where he previously worked. The division also plans and executes emergency training exercises and annual evacuation drills around campus. Along with the Fire Department and Division of Police, DEM recently conducted a full-scale active-shooter drill.

NIH Deputy Director for Management Dr. Alfred Johnson said he has always noticed and respected DEM's work preparing campus for and responding to emergencies. He first got to know the division's importance when he was ORS director. Back then, he recalled, communicating during an emergency was a challenge. DEM has since debuted AlertNIH, the official emergency notification system for the NIH community.

"You do so many great things for this community," Johnson concluded. "We all really appreciate it."

NIH leadership including NIH Deputy Director for Management Dr. Alfred Johnson, McGowan, Chief of Staff John Burklow and then-NIH Acting Principal Deputy Director Dr. Tara Schwetz with DEM staff

VOLUNTEERS

EBV Vaccine Trial Recruits

NIAID researchers seek to enroll healthy volunteers ages 18-29 living in D.C., Maryland and Virginia in an investigational Epstein-Barr virus (EBV) vaccine clinical trial. If you are eligible, consider joining to help stop the spread of EBV, the most common cause of infectious mononucleosis (mono) and associated with some cancers. Compensation will be provided, up to $2,220 over the course of the trial. For more information, contact the Clinical Center 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(link is external).

Severe Aplastic Anemia Study Seeks Volunteers

NHLBI seeks adults with severe aplastic anemia (SAA) for a research study determining viability and safety of early initiation of oral therapy with cyclosporine and eltrombopag in patients with SAA. All patients will receive standard treatment with cyclosporine, eltrombopag and horse antithymocyte globulin (h-ATG) unless there is complete count recovery with oral therapy. Compensation will be provided. For more information, call the Office of Patient Recruitment at 1-866-444-2214 (TTY users dial 711). Refer to study 20-H-0033. Online: https://go.nih.gov/KnlRIpY.

NIAMS Coalition Meeting Highlights Federal, Nonprofit Collaborations

BY MASON SCOTT

The ninth biennial 2023 NIAMS Coalition Outreach and Education Meeting recently convened NIH staff and representatives from more than 40 organizations. The coalition—composed of more than 95 professional and voluntary organizations interested in NIAMS's research and mission—met in person on the NIH campus for the first time since 2019.

NIAMS Coalition co-chairs Lee Grossman and Tricha Shivas

NIAMS Director Dr. Lindsey Criswell kicked off the meeting with a high-level overview of key institute activities and research partnerships, including programs within the Accelerating Medicines Partnerships® (AMP) and the Helping to End Addiction Long-term (HEAL) Initiative®. Criswell also underscored the institute's commitment to ending structural racism and provided brief updates on the forthcoming 2025-2029 NIAMS strategic plan.

When asked how organizations can best support NIAMS, Criswell noted her appreciation for how the coalition works together. "I would encourage you to think about the issues and concerns you share and how you can work together to represent our [shared] mission areas," she said.

NIH Principal Deputy Director Dr. Lawrence Tabak noted his appreciation for the collective voices the group represents. Commenting on how patient advocacy organizations can influence change, Tabak, who formerly led the National Institute of Dental and Craniofacial Research, said, "as an institute director, it influenced dramatically how we positioned ourselves, how we re-organized our priorities to be more patient-centric."

For the meeting's first plenary session, the group heard from Dr. Julie Gerberding, chief executive officer of the Foundation for the National Institutes of Health (FNIH). She discussed FNIH's mission to accelerate and amplify the value and impact of NIH research. Gerberding also discussed the AMP program, which FNIH manages, and highlighted future AMP-related programs soon to launch.

NIAMS Director Dr. Lindsey Criswell

In the second plenary, Dr. Renee Wegrzyn, director of the Advanced Research Projects Agency for Health (ARPA-H), spoke about ARPA-H's first funded project: Novel Innovations for Tissue Regeneration in Osteoarthritis (NITRO)—a topic of great interest to NIAMS and many coalition organizations. NITRO will focus on finding new ways to help the human body repair itself by investing in injectable substances that regenerate bone and cartilage, and replacement joints built from human cells. The plenary sessions, along with the opening remarks, are archived at https://videocast.nih.gov/watch=52254.

Multiple breakout sessions covered topics ranging from how to engage with NIAMS program directors, to patient-focused initiatives, to the role of data science and artificial intelligence in health and biomedical research. Attendees also had an opportunity to learn from each other and network during a poster session.

Dr. Stephanie Burrows, chief of the NIAMS Scientific Planning, Policy, and Analysis Branch, gave an in-depth update on the NIAMS FY 2025-2029 strategic plan. She also discussed progress to date and upcoming opportunities for coalition partners to provide input, including a recently published Request for Information, which is available for comment until Jan. 1, 2024.

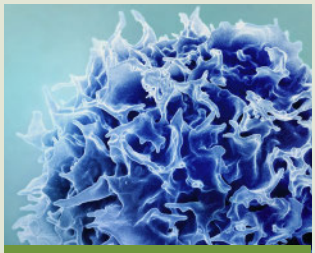
At the end of a fruitful meeting, Tricha Shivas of the Foundation for Sarcoidosis Research and Lee Grossman of the Orthopaedic Research and Education Foundation summed up the day: "As [coalition] co-chairs, we were delighted to see the enthusiasm, energy and momentum that evolves from the power of bringing NIH leaders together with patient advocacy organizations and medical societies."


Attendees at the 2023 NIAMS Coalition meeting gather outside the Natcher Bldg.

Supercharging T-cell Therapies Against Solid Tumors?

NIH researchers have developed a way to potentially increase the effectiveness of T cell-based immunotherapy treatments, such as CAR T-cell therapy, against solid tumors. The findings, by NCI investigators, appeared in *Clinical Cancer Research.*

T cells are specialized white blood cells of the immune system that eliminate infected or abnormal cells. In animal studies, the enhanced T-cell therapies were effective against cervical cancer and neuroblastoma, a common solid tumor in children.



Colorized scanning electron micrograph of a T cell

PHOTO: NIAID

CAR T-cell therapy is a form of cellular immunotherapy that involves engineering T cells in the laboratory so they can specifically target and kill tumors. CAR T-cell therapy has been successful in treating blood cancers, but has not worked well for solid tumors.

To improve the effectiveness of T-cell therapy against solid tumors, researchers at NCI's Center for Cancer Research engineered T cells (CAR T cells and another form of cellular immunotherapy called TCR T cells) to carry cytokines, which are proteins that can boost T-cell function.

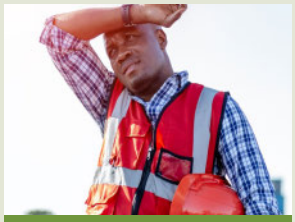
In laboratory studies, CAR and TCR T cells modified to express the cytokines IL-15 and IL-21 on their surface killed far more cancer cells than T cells carrying just one of these cytokines or neither of them. Previous research has found that treating patients with large amounts of cytokines caused severe, potentially fatal, side effects. The new approach aims to deliver this cytokine boost in a more targeted way.

In a mouse model of cervical cancer, T cells carrying both cytokines shrank tumors completely in 4 of 5 mice, compared with just 1 of 5 mice treated with T cells carrying a single cytokine. Mice treated with T cells carrying both cytokines also lived longer than mice treated with T cells carrying just one cytokine.

The approach also showed potential in mouse models of pediatric neuroblastoma. Treatment with T cells carrying both cytokines shrank tumors to a greater extent than treatment with T cells carrying one or no cytokines. In the cervical cancer and neuroblastoma models, T cells carrying the cytokine pair did not cause any serious side effects.

Hazards of Climate Change

Cardiovascular-related deaths due to extreme heat are expected to increase between 2036 and 2065 in the U.S., according to an NIH-supported study. The researchers, whose work is published in *Circulation,* predict that adults ages 65 and older and Black adults will likely be disproportionately affected.



Extreme heat is projected to increase cardiovascular deaths. Older and Black adults are at higher risk.

PHOTO: FOTO EAK/SHUTTERSTOCK

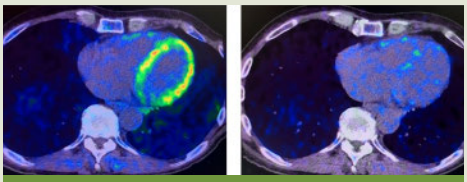
While extreme heat currently accounts for less than 1% of cardiovascular-related deaths, the modeling analysis predicted this will change because of a rising heat index. Older adults and Black adults will be most vulnerable because many have underlying medical conditions or face socioeconomic barriers that can influence their health—such as not having air conditioning or living in locations that can absorb and trap heat, known as "heat islands."

To generate these predictions, researchers evaluated county-level data from the contiguous 48 states between May and September 2008-2019. More than 12 million deaths related to cardiovascular disease occurred during that time. Using environmental modeling estimates, they also found the heat index rose to at least 90 degrees about 54 times each summer. Researchers linked the extreme temperatures during each summer period to a national average of 1,651 annual cardiovascular deaths.

Using modeling analyses to forecast environmental and population changes, the researchers looked to 2036-2065 and estimated that each summer, about 71 to 80 days will feel 90 degrees or hotter. Based on these changes, they predicted the number of annual heat-related cardiovascular deaths will increase 2.6 times for the general population, assuming greenhouse gas emissions are kept to a minimum. If emissions rise significantly, deaths could more than triple.

For older adults and Black adults, the projections were more pronounced. Among those 65 and older, deaths could almost triple, increasing from 1,340 to 3,842 if greenhouse gas emissions remain steady—or to 4,894 if they don't. Among Black adults, deaths could more than triple, rising from 325 to 1,512 or 2,063.

Study author Dr. Sameed Khatana of the University of Pennsylvania said, "Due to the unequal impact of extreme heat on different populations, this is also a matter of health equity and could exacerbate health disparities that already exist."



Heart PET scans from a study participant who developed Parkinson's disease. The scan at right shows low dopamine-derived radioactivity, which appeared before symptom onset.

IMAGE: GOLDSTEIN LAB/NINDS

PET Scans May Predict Lewy Body Dementia, Parkinson's

In a small study, NIH researchers found that positron emission tomography (PET) scans of the heart may identify people who will develop Parkinson's disease or Lewy body dementia among those at-risk for these diseases. The findings, published in the *Journal of Clinical Investigation* and led by NINDS scientists may advance efforts to detect the earliest changes that years later lead to Parkinson's disease and Lewy body dementia.

In this study, researchers conducted PET scans of the heart to gain insight into levels of the neurotransmitter norepinephrine. They found the scans could distinguish individuals who would later be diagnosed with Parkinson's or Lewy body dementia—brain diseases caused by abnormal deposits of the protein alpha-synuclein that form clumps known as Lewy bodies. The research was conducted at the Clinical Center, currently the only location for ^{18}F-dopamine PET scanning.

In the study, 34 people at risk for Parkinson's had cardiac ^{18}F-dopamine PET scans every 18 months for up to 7.5 years or until they were diagnosed with the disease. Participants had three or more Parkinson's risk factors, which included a family history of the disease; loss of sense of smell; a sleep disorder in which people act out their dreams; and symptoms of orthostatic intolerance, such as light-headedness upon standing.

Of nine individuals with low cardiac ^{18}F-dopamine-derived radioactivity at their first scan, eight were diagnosed later with Parkinson's or Lewy body dementia. Only 1 of 11 participants with normal initial radioactivity developed a central Lewy body disease. All nine participants who developed Lewy body disease had low radioactivity before or at the time of diagnosis.

"We think that in many cases of Parkinson's and dementia with Lewy bodies the disease processes don't actually begin in the brain," said NINDS Principal Investigator Dr. David Goldstein. "The loss of norepinephrine in the heart predicts and precedes the loss of dopamine in the brain in Lewy body diseases…If you could salvage the dopamine terminals that are sick but not yet dead, then you might be able to prolong the time before the person shows symptoms."

Schwetz Named NIH Deputy Director for Program Coordination, Planning and Strategic Initiatives

Dr. Tara Schwetz has been appointed as NIH deputy director for program coordination, planning and strategic initiatives and director of the Division of Program Coordination, Planning and Strategic Initiatives (DPCPSI) in the Office of the Director. Most recently she had served since December 2021 as acting NIH principal deputy director and since 2019 as the NIH alternate deputy ethics counselor.

Dr. Tara Schwetz

Schwetz leads DPCPSI in meeting its mission to identify emerging scientific opportunities, rising public health challenges or scientific knowledge gaps that merit further research; developing and applying analytic tools and methodologies in support of portfolio analyses and priority setting; and coordinating strategic planning, performance monitoring, evaluation and reporting. DPCPSI also coordinates or supports research related to AIDS, behavioral and social sciences, women's health, disease prevention, dietary supplements, research infrastructure, sexual and gender minorities, tribal health, data science and nutrition, and includes the office that manages the NIH Common Fund.

For much of 2021, Schwetz was on detail to the White House Office of Science and Technology Policy as assistant director for biomedical science initiatives. In this role, she led the effort to stand up the Advanced Research Projects Agency for Health (ARPA-H). The Biden administration created ARPA-H to tackle some of the biggest health challenges facing Americans by driving medical innovation more rapidly.

Prior to 2021, Schwetz served as NIH associate deputy director.

Throughout her more than 10-year tenure at NIH, she has held multiple positions. She has served as acting director and acting deputy director of the National Institute of Nursing Research (NINR), chief of the Strategic Planning and Evaluation Branch at the National Institute of Allergy and Infectious Diseases, senior advisor to the NIH principal deputy director and health science policy analyst at the National Institute of Neurological Disorders and Stroke. She started her NIH career as an AAAS science and technology policy fellow at NINR.

Schwetz earned a B.S. in biochemistry with honors from Florida State University and a Ph.D. in biophysics from the University of South Florida, followed by a postdoctoral fellowship at Vanderbilt University.

NIA's Kohanski Retires

Dr. Ronald Kohanski, director of the National Institute on Aging's Division of Aging Biology (DAB), has retired after 18 years of service at the institute. Kohanski joined NIA as a DAB program officer in 2005. He became DAB deputy director in 2007 and served as acting director before moving into his latest role in March 2021.

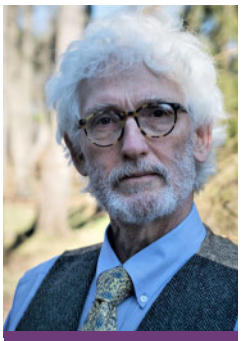
"Ron's intellect, commitment to science and constructive impatience will leave a valuable legacy to the research field, and for me personally, lasting appreciation and gratitude," said NIA Director Dr. Richard Hodes.

Throughout his career, Kohanski gained recognition for his ability to connect scientists from around the world from multiple disciplines via NIA's diverse scientific portfolios.

"Ron's creativity both professionally and personally is an inspiration and is a testament to his open-mindedness and thoughtful approach to leading and managing a division that has doubled in size and has become increasingly diverse during his tenure," said Dr. Stacy Carrington-Lawrence, DAB deputy. "I am honored to have worked so closely with Ron over the past couple of years and had the pleasure to know him as not only my supervisor, but more importantly as an unwavering humanitarian."

Several colleagues acknowledged his lasting contributions as a leader, scientist and collaborator.

"Ron is a rare find in our line of work," said Dr. Max Guo, chief of DAB's Cell Biology Branch. "His bold ideas have never been murky. Ron often argues with people on science passionately and fiercely, but always with a smile and a sense of humor." Dr. John Williams, a DAB program officer, added, "Ron is one of the best-read scientists I have met and he has a keen understanding of the highly integrative nature of the science."



Dr. Ronald Kohanski

Kohanski's research is on enzymology and developmental biology of the insulin receptor. He earned his doctorate in biochemistry from the University of Chicago in 1981. After a postdoctoral fellowship at Johns Hopkins University (JHU) School of Medicine, he worked as a faculty member at the Mount Sinai School of Medicine, and then in the same capacity back at JHU.

He has authored or co-authored 64 peer-reviewed scientific articles, contributed to six books or book chapters and has written published reviews of literature in his field. Kohanski received numerous NIH merit awards over his career for outstanding contributions that have advanced the NIA and broader NIH missions.

Post-retirement plans include more time to design and build furniture and play with his grandchildren.

"It has been a privilege to work with the biology of aging research community and my colleagues at NIH, seeking a better understanding of aging and to promote geroscience," Kohanski concluded.

Former NIH'er Faucette, Pioneer Medical Research Participant, Is Mourned

A former NIH histology technician, Lawrence Faucette, who had terminal heart disease and received the world's second genetically modified pig heart transplant, died Oct. 30. Faucette, 58, received the transplant on Sept. 20 and lived for nearly six weeks following the surgery.

"Larry worked for me as a histotech from 2003 to 2008 at [the National Institute of Allergy and Infectious Diseases]," recalled Dr. Jerry Ward, retired veterinary pathologist who currently serves as a special volunteer at the National Cancer Institute. "He previously worked at the AFIP [Armed Forces Institute of Pathology], where he was also a histotech. His appreciation of medical research surely came from his work experiences."

Faucette first came to the University of Maryland Medical Center (UMMC) as a patient on Sept. 14. He was in end-stage heart failure. He was deemed ineligible for a traditional heart transplant due to his advanced medical conditions including peripheral vascular disease. FDA granted an emergency authorization for the surgery on Sept. 15 in the hope of extending his life.

"We mourn the loss of Mr. Faucette, a remarkable patient, scientist, Navy veteran and family man who just wanted a little more time to spend with his loving wife, sons and family," said Dr. Bartley Griffith, in a statement released by UMMC. Griffith, the Thomas E. and Alice Marie Hales distinguished professor in transplant surgery and clinical director of the Cardiac Xenotransplantation Program at UM School of Medicine (UMSOM), surgically transplanted the pig heart. "Mr. Faucette's last wish was for us to make the most of what we have learned from our experience, so others may be guaranteed a chance for a new heart when a human organ is unavailable. He then told the team of doctors and nurses who gathered around him that he loved us. We will miss him tremendously."

Dr. Muhammad Mohiuddin, scientific/program director of UMSOM's Cardiac Xenotransplantation Program and long-time NIH grantee, said, "We cannot express enough gratitude to Mr. Faucette and his family for enabling us to continue to make significant advancements towards making xenotransplants a reality. Mr. Faucette was a scientist who not only read and interpreted his own biopsies but who understood the important contribution he was making in advancing this field."

WALL OF WATERCOLORS

2D Microscopes Featured in CC Gallery

Scientists and other research enthusiasts at NIH can view medical instruments in a novel way: A wall of watercolors featuring microscopes painted as portraits by artist Sue Fierston was recently installed at the Clinical Center.

"I love thinking about these microscopes and instruments as beings from another place and time," said Fierston. "They carry a cultural record with them: the round wooden German microscope here was fashioned by German toymakers who were used to carving wood with a delicate hand."

A simple botanical microscope, c. 1775-1800, magnifies approximately 10x using two lenses. "This is a pocket brass microscope, designed for fieldwork, measuring about 4 inches tall," Fierston notes, "probably made in England."

Microscopes, before electricity and the lightbulb, were designed to capture as much light as possible, she explained. "Microscope designers tried everything to illuminate the stage of the microscope including candles, bullseye lenses and mirrors. These microscopes had fanciful, almost animated shapes as designers aimed lenses or lengthened tubes in an attempt to see the magnified objects."

Fierston drew the microscopes on site at the University of California, Berkeley, in October 2022. Dr. Steven Ruzin, curator of the historic Golub Collection, allowed her to choose any microscopes that caught her attention.

"I sat with them and positioned them as I wished and then drew them from life," the artist recalled. "I took photos at the time to help me remember the lighting and reflections because I did my painting back home in Maryland."

The two historic scientific instruments, the tangent galvanometer and the heliostat, come from the collection of Mark McElyea. "I drew them at an exhibit of his collection that appeared at the San Francisco International Airport in 2022," Fierston said. "I found them by chance as I was traveling through."

At left, Fierston's The Conversation features a screw barrel ivory microscope (l) with an articulated bullseye magnifying lens. Edmund Culpeper, England c. 1720. Culpeper would later go on to develop the free-standing mirror to increase illumination on the microscope platform. A brass compound microscope with bullseye magnifying lens shares the frame. Nachet et Fils, France, c. 1860. 140 years later, microscopes included mirrors as a matter of course. The Golub Collection. In frame at right, The Situation includes three instruments: a Nuremburg three-pillar microscope, Germany, 1830; a silver compound microscope, probably French, c. 1775-1800; and an improved camera lucida, Paris, Nachet et Fils, 1892. This rare magnifier allows the viewer to see both specimen and drawing paper simultaneously.

The series is a continuation of one she began around 2007. At that time, the artist painted eight historic microscopes from the Billings Collection at the National Museum of Health and Medicine (NMHM). The work was shown at NIH, NMHM and the Lombardi Cancer Center in Washington, D.C.

"My research and painting took about a year from initial idea to framed paintings," Fierston said. "At one time I hoped to paint them in colorful acrylics on pizza boxes! My idea was to offset their seriousness with a fanciful painting style. But I faced a deadline and, in the end, I returned to watercolor on the plastic surface Yupo with the limited color palette of French ultramarine/cobalt and burnt/raw sienna.

"I also love the challenge of painting reflections on silver and brass," she continued. "Yupo gave me an opportunity to do this abstractly, because watercolor runs randomly across the plastic until the pigment dries. As an artist, I am drawn to the contrast between a carefully drawn microscope and the random paint that fills the image."

In 2022, Fierston was awarded an artist grant from the Arts and Humanities Council of Montgomery County to help support the project. The funding enabled her to frame the paintings and pay for supplies.

Fierston's exhibition is on display until Jan. 5, 2024 in the first floor corridor of the Clinical Center.

Artist Sue Fierston

At left, a Silbermann heliostat sextant, c. late 1800s, "projects an intense beam of sunlight in a fixed direction by means of a mirror," writes the artist. "The instrument follows the sun by tracking sunlight using calibrated gears, as in a mechanical clock. At the time, the bright light was used to illuminate scientific instruments, such as microscopes. This principle is still used today to increase light falling on solar panels." At right, a tangent galvanometer, c. 1910, was an early measuring device for determining the direction and presence of small electric currents.

PHOTOS: LILLIAN FITZGERALD