

AMID PANDEMIC, DISPARITY & DISTRUST ACD Addresses Research's Complex Current Climate

BY CARLA GARNETT

As the advisory committee to the NIH director (ACD) met virtually June 9-10, NIH acting director Dr. Lawrence Tabak said two things keep him awake at night.

“NIH resources are being concentrated in fewer and fewer institutions,” he said, following his director’s report. “If we’re not careful, the so-called top 20 may become the only 20. This concentration of resources is really something that I worry a great deal about.

“The other thing that I’m worried a great deal about is misinformation in and about

science,” he continued. “The fact that there is a lack of trust in science by so many people is not a new phenomenon, but it seems to be spreading in a very malignant sort of way. This bothers me a great deal. I don’t want to make too much of a connection between these two observations, but if you concentrate much of the scientific effort in a very small number of institutions, the opportunity for local communities to embrace and engage with working scientists is lessened.”

Tabak’s concerns, which several ACD



NIH acting director Dr. Lawrence Tabak recently convened the 124th meeting of the ACD.

SEE **ACD**, PAGE 10

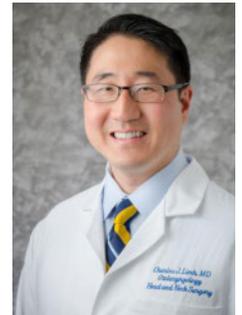
THE SOUND OF MUSIC

Making Music Enjoyable for Cochlear Implant Users

BY AMBER SNYDER

From a 35,000-year-old bird-bone flute to today’s Tik Tok hits, music is a diverse, expressive and persistent kind of sound. It can convey emotion without words and is found in every culture. But what happens when music becomes garbled?

Cochlear implants (CI) are good at helping those with hearing loss perceive speech, but the devices are not so



Dr. Charles Limb
PHOTO: UCSF

SEE **MUSIC**, PAGE 4

AUTOPSIES ADD INSIGHT

Pathology Studies Reveal SARS-CoV-2 Present Throughout the Body

BY ERIC BOCK

The virus that causes Covid-19, SARS-CoV-2, is capable of replicating in multiple tissues across the body, said Dr. Daniel Chertow during a recent Covid-19 scientific interest group lecture.

“SARS-CoV-2 is widely disseminated across the human body and brain early in infection,” said Chertow, a tenure-track investigator in the Clinical Center’s Critical Care Medicine



Dr. Daniel Chertow

SEE **CHERTOW**, PAGE 8

‘COMMUNITY EVENT, YAY!’

Hundreds Hike for Exercise, Much-Missed Camaraderie

BY DANA TALESNIK

“Who’s ready to move today?!” challenged Tammie Edwards before the start of the 14th NIH Take a Hike Day on June 16. Several hundred NIH’ers descended on the Bldg. 1 lawn that afternoon, basking in the opportunity to walk or run in the sunshine, excited to see, or meet for the first time,

SEE **HIKE**, PAGE 6



ORS’s Tammie Edwards issues a challenge to move.



Juneteenth inspires movement. See p. 12.

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FAES Online Workshops Offer In-Demand Skills

The Foundation for Advanced Education in the Sciences (FAES) offers ongoing online workshops in essential subjects that help advance your science. Do more with your data with techniques including analysis from next generation sequencing, image processing, and data visualization and analysis using R and Python. Hone your writing skills to publish your research, or gain foundational knowledge of statistics, cellular immunology, deep learning and more.

Workshops are between 2- and 5-days long, affordable and designed for working scientists and staff. Participants earn CEUs and digital badges. Registration is open to all NIH staff and to non-NIH members of the public.

Upcoming workshop titles include:

- Writing and Publishing a Scientific Paper, Thursdays through July 28
- Project Management Essentials, Mondays July 11-25
- Introduction to Data Science Using Python, July 13-15
- Practical Scientific Statistics, July 26-28
- MATLAB Fundamentals, Aug. 2-4

Register at education.faes.org. For questions or help registering for a workshop, contact FAES at (301) 496-7976, or email registrar@faes.org.

Individuals with disabilities who need reasonable accommodation should email the registrar. Requests should be made at least 5 days in advance of the workshop start date.

At-Home Antigen Testing Pilot Program Resumes

NIH recently announced an additional opportunity to participate in the voluntary At-Home Antigen Testing Pilot Program.

NIH staff (employees, contractors, trainees, tenants, etc.) who are in Return-to-Physical-Workplace Groups O, A, B, 1A and 1B, and who have not received tests from this program after Apr. 4, can place a one-time online order for 10 tests.

Employees who meet the criteria may place online orders by completing the form at <https://safer-covid.org/mytest/nihorder.html> using their home address. Orders may not be canceled since they are processed immediately and are normally delivered within 3 business days.

This program is part of NIH's continued efforts to mitigate workplace transmission of Covid-19, serving as a supplement to onsite asymptomatic testing services. As of May 27, more than 350 staff have tested positive using the kits prior to coming in on site—keeping our workplace safer for others.

If you have any questions about the testing process or test results, contact the Occupational Medical Services Call Center at (301) 480-8990 (Monday to Friday, from 9 a.m. to 4:30 p.m. ET).



Members of the inclusion, diversity, equity and accessibility committee and campus supporters at NIAID's Rocky Mountain Laboratories stand under the Progress Pride Flag. Below, Brandi Williamson attaches the final hook securing the flag as supporters and members of the RML inclusion, diversity, equity and accessibility committee enjoy the moment.

PHOTOS: RYAN KISSINGER

RML Raises Rainbow Flag

The Progress Pride flag hangs outside the Visitor's Center, the main entry to NIAID's Rocky Mountain Laboratories in Hamilton, Mont.

Since 1978, the rainbow flag has been a symbol of lesbian, gay, bisexual, transgender and queer (LGBTQ) pride and LGBTQ social movements. A progress design in 2018 added a chevron featuring black, brown, light blue, pink and white stripes to bring those communities (marginalized people of color, trans people, and those living with HIV/AIDS and those who have been lost) to the forefront.

This year marks the first time the Pride flag has been raised at RML.



Next Methods Webinar Set, July 21

Join the Office of Disease Prevention (ODP) on Thursday, July 21 at noon ET for a Methods: Mind the Gap webinar with Dr. Richard Hooper on the use of integrated data analysis in prevention science.

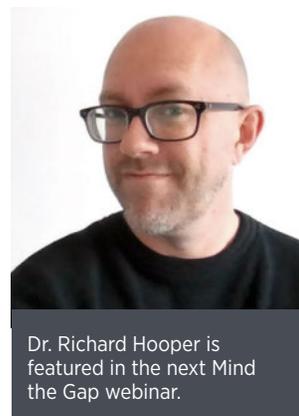
Hooper is a professor of medical statistics at Queen Mary University of London, UK. He has a 30-year career in health services research as a medical statistician.

His current research program aims at driving innovation in

the design of randomized evaluations of health interventions and quality improvement programs, including stepped wedge trials and other novel approaches to clustered trials.

Registration is required. Register at <https://bit.ly/3Nki2Zs>. The webinar will be recorded and available on the ODP website within approximately 2 weeks.

The webinar series explores research design, measurement, intervention, data analysis and other methods of interest in prevention science. For more information, visit prevention.nih.gov/MindTheGap.



Dr. Richard Hooper is featured in the next Mind the Gap webinar.



At BSU, NIH deputy director for management Dr. Alfred Johnson (c) is joined by (from l) Dr. Carl Goodman, Bowie State University provost and vice president for academic affairs; Annette Owens-Scarboro, NIH Small Business Program Office program manager/HBCU coordinator; Bowie State University president Dr. Aminta Breau; Diane Frasier, NIH head of the contracting activity and director, Office of Acquisition and Logistics Management; Dr. Ericka Boone, E committee cochair, NIH UNITE, and acting director, Division of Biomedical Research Workforce, NIH Office of Extramural Research; and Robert Vinson, Jr., program manager for small business and entrepreneurial development, OER.

Johnson, Extramural Research Leaders Visit Bowie State University

NIH deputy director for management Dr. Alfred C. Johnson and a delegation of agency leaders, including several representing the UNITE committee for extramural research, visited Bowie State University recently to learn more about the school's biomedical research capabilities and activities.

The campus visit followed an invitation from university president Dr. Aminta H. Breau, who had attended a presentation on UNITE that Johnson delivered during a roundtable discussion with historically black colleges and universities (HBCUs).

An HBCU, Bowie State University participates in NIH's Path to Excellence and Innovation Initiative 2.0 cohort, which provides HBCUs with resources for building contracting capacity and infrastructure by specifically targeting acquisition opportunities.

During his presentation, Johnson explained that NIH created UNITE to address structural racism in the biomedical research enterprise. Each letter in UNITE has a meaning and a committee tasked with specific objectives.

The U represents Understanding stakeholder experiences, N focuses on New research on health equity, I is for Improving the NIH culture for equity, T signifies transparency and communication and E represents the extramural research ecosystem.

Among other goals, the E committee's charge includes developing strategies to address funding disparities and increase applications that would support individuals from underrepresented groups.

Bowie State is the oldest HBCU in Maryland and has several programs that parallel the E committee's goals.

During their visit, NIH's were introduced to BSU's Entrepreneurship Academy, Entrepreneurship Living Learning Community and Center for Natural Sciences, Mathematics and Nursing.

The academy is a resource for entrepreneurship among students, faculty and alumni. The initiative is made possible by a team of experts, businesses and donors shaping the next generation of entrepreneurs. The entrepreneurship ecosystem consists of students, faculty, staff and alumni.

The Entrepreneurship Living Learning Community (ELLC) connects the university to the community. With housing for more than 500 students, retail space and resources for entrepreneurs, ELLC is a real-world innovation hub that encourages creative collaboration and entrepreneurial thinking.

Bowie State's Center for Natural Sciences, Mathematics and Nursing includes research and instructional laboratories, flexible classrooms, a nursing simulation wing and a fully enclosed greenhouse.

According to participants, the visit resulted in a better understanding and awareness of the research being conducted at Bowie State and other HBCUs. **R**



ON THE COVER: *Chitin exoskeleton of a female Rocky Mountain wood tick (Dermacentor andersoni) collected on Goat Mountain in the Bitterroot Valley of Montana. These ticks are vectors for many diseases including Rocky Mountain spotted fever, Colorado tick fever, and tularemia, and can produce a salivary neurotoxin that causes tick paralysis.*

IMAGE: ADAM NOCK, JACQUELINE LEUNG, ELIZABETH FISCHER & TED HACKSTADT, NIAID ROCKY MOUNTAIN LABS

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Music

CONTINUED FROM PAGE 1

good at conveying the complexity of pitches found in music, said Dr. Charles J. Limb of the University of California, San Francisco. In his recent Clinical Center Grand Rounds lecture “Music for Deaf Ears: Cochlear Implant-Mediated Perception of Music,” he explored why CI users often have trouble enjoying music and how researchers might address it.

Hearing How-To’s

“Hearing is fundamentally an electric process,” Limb said. The temporal bones, which form the sides and base of the skull and surround the ear canal, translate vibrational energy (that is, sound) into electrical signals in the brain.

Sound is transmitted from the ear canal to the eardrum and then through the bones of the middle ear, which amplifies the vibrations. The vibrations travel into the fluid of the inner ear (in the snail-shaped cochlea) and trigger neural impulses in the auditory nerve. The auditory nerve sends those neural impulses to the brain, where they are translated into sound.

As a self-described “music junkie,” Limb was fascinated by our ability to perceive music. Sinusoids, or pure tones, are “blips and beeps” that he studied in his early days of otology and neurotology. Sinusoids are a far cry from music, but they are actually “a very difficult feat for the auditory system,” Limb said. “And we know [this] because when we try to recreate that experience in a CI user, we basically fail.”

He pointed to a survey of CI users that evaluated their music taste before hearing loss and after CI implantation. Participants had varying levels of interest in music before hearing loss, but, after CI implantation, almost 40 percent indicated that they no longer enjoyed listening to music.

What Goes Wrong?

Cochlear implants bypass damaged portions of the inner ear and stimulate the auditory nerve. Inner ear damage may be congenital or may be caused by aging or external factors such as noise exposure or a viral infection.

In a CI, electrodes do the work of transmitting sound signals to the auditory nerve in the form of electricity. However, the roughly 20 electrodes that are part of the CI cannot convey the complete

range of sound that a fully functional auditory system can.

When graphed, music covers a much wider range of volume (decibels) and pitch (frequency or Hertz) than language.

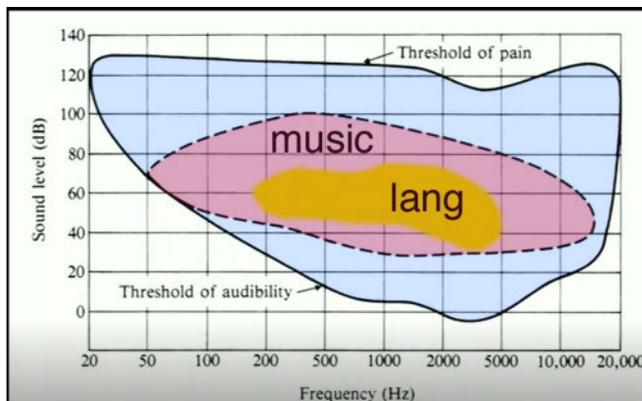
“If you look at the acoustic properties of music as opposed to language, you find right away that music is a more difficult stimulus than language,” Limb explained. “On basic sound dynamics and frequency range, [music is] just a more expansive sound.”

Not only is music more expansive, but it is also more complex because it often involves multiple instruments. “And because it is a complex sound...you can then deconstruct it and use it as a way to understand the limits of one’s hearing,” Limb reasoned.

All About That Bass

What does music sound like to a CI user? Out of five musical elements evaluated (pitch, rhythm, timbre, sound quality and dynamics), only rhythm was still clear to CI users. Music tends to

sound out of tune, the dynamic range (how loud or soft the music is) is limited and the general sound quality is poor. This degradation of sound can be especially difficult for individuals who lost hearing later in life



Hearing music is a much more sonically demanding task than speech, requiring listeners to pick up on sounds that are much higher, deeper, louder and softer than speech, according to Limb.

and are no longer able to hear music the way they used to.

Pitch and sound quality seem to be the biggest obstacles for CI users, Limb has found. He has identified three potential pathways for improving music: change the CI, change the brain or change the music itself.

How would these work? You could change the way the electrodes fire by making them more precise.

“Right now, it’s like trying to water a single blade of grass with a garden hose,” Limb explained. If you could narrow the current of electricity, the CI user could hear pitches more precisely.

Another CI modification involves use of a “phantom electrode,” which involves guiding electricity into the apex of the cochlea (the innermost part of the spiral) with the hope of hitting lower-frequency neurons. The effect is what Limb calls a “bass boost,” which helps CI users hear lower-pitched sounds and can actually improve the sound quality of both music and spoken language.

Interestingly, CIs can benefit people who still have some hearing left. A person who can still hear lower frequencies can benefit from “dual-modality hearing.” The CI restores their ability to hear higher frequencies and the individual’s natural ability to hear at lower frequencies enriches the effects of the CI. These folks also have better pitch perception.

This effect is also observed in hearing individuals; Limb used the example of *Yeah* by Usher, played both with and without the bass line. The song sounded “better” with bass.



This bird-bone flute was used by our ancestors to create music about 35,000 years ago.

Future CIs may also be able to be “tuned” or adjusted more precisely to the placement of the electrodes in the cochlea and the user’s specific needs.

What about changing the brain? It’s not so much changing as training, Limb explained. People with “perfect pitch,” who can recognize the pitch of any note or produce any given note without a musical guide, do not necessarily have better hearing than the rest of the general population; they just have better training.

“The difference is in [the] brain’s ability to interpret complex combinations of pitches,” which is accomplished through training, said Limb. Many people with perfect pitch were exposed to music at a very young age. CI users also go through auditory training, but their version is speech-based.

Adding music training might improve CI users’ ability to detect different frequencies. In fact, young children who have received CIs and then undergo music education classes are better at distinguishing between pitches than CI users with no musical training.

Tonal languages such as Taiwanese, in which changing the inflection of your voice changes the meaning of a word, are also beneficial for teaching pitch perception to CI users. Children with CIs in Taiwan were markedly better at distinguishing between pitches than their English-speaking counterparts.

“It’s not because their CIs were better,” Limb said, “but...because they’re living in a tonal language-based society, where they must give meaning to these tone sweeps and they’re better able to do it.” And, the earlier a child is taught to do this, the more successful they will be.

Reasons for Hope

Bass boosts, music education, improving CI placement—there are multiple opportunities for improving the sound of music for CI users.

Music has enriched humans’ lives for thousands of years. Hopefully, the work of Limb and other researchers can restore this experience to CI users.

“If you can hear music better, you can hear everything better,” said Limb.

View the archived lecture at <https://videocast.nih.gov/watch=45354>. 

Williams Named EDI Director

Kevin D. Williams has been appointed director of NIH’s Office of Equity, Diversity and Inclusion (EDI). He began his new position on June 21.

EDI’s portfolio includes diversity and inclusion programs and training aimed at cultivating a more diverse and equitable work culture. As EDI director, Williams will guide the strategic direction for NIH on diversity, equity, inclusion and accessibility matters and will serve as NIH’s equal employment opportunity (EEO) officer. He also will oversee the analysis and publication of NIH workforce data, which informs the agency’s approach to fostering a more inclusive work environment and equitable organizational culture.

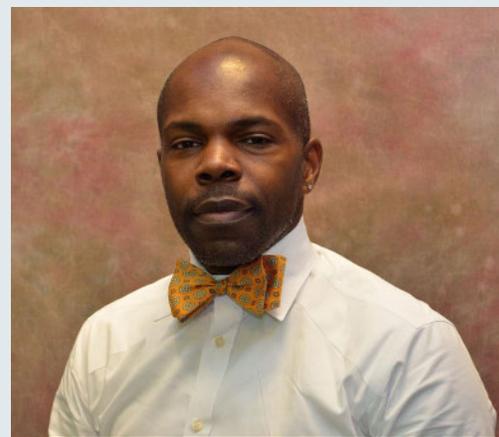
Williams joins NIH from the U.S. Federal Trade Commission, where he most recently served as deputy executive director. He oversaw the management and administration of an agency with more than 1,200 staff and ensured the efficient and effective operations of the organization.

Williams also was a member of the Pandemic Response Team, which assessed the effects of the coronavirus and its impact on the FTC staff and operations.

He previously served as director of the FTC Office of Equal Employment Opportunity and Workplace Inclusion. He first joined the office as attorney advisor in 2007 and was promoted to director in 2011. During his time as director, he developed and implemented employee anti-discrimination and anti-harassment policies and provided training across the agency. Additionally, he introduced an online reporting tool and improved processing procedures for allegations of workplace discrimination.

Williams has more than 20 years of experience working on equity, diversity and inclusion policies and efforts, EEO law and compliance programs and culture change initiatives within the federal government. He served as the subject matter expert for FTC on EEO and diversity and inclusion issues, representing the agency on internal and external committees tasked with addressing agency and broader EDI challenges, programs and efforts.

Williams earned a bachelor of arts degree in political science from Morehouse College and a Juris Doctor from Howard University School of Law. He replaces Debra C. Chew, who departed in September 2020. Dr. Shelma Middleton Little and Treava Hopkins-Laboy both served as acting EDI director in the interim.



New EDI director Kevin D. Williams

FEVS Closes, July 22

Only 2 weeks remain to take the 2022 Federal Employee Viewpoint Survey (FEVS), which closes on Friday, July 22. The annual government-wide survey administered by the Office of Personnel Management (OPM) allows eligible federal employees an opportunity to provide confidential feedback about their work satisfaction, organization and its leaders and work/life balance.

Check your inbox for the following:

From: Federal Employee Viewpoint Survey-HE

Subject: [EXTERNAL] 2022 OPM Federal Employee Viewpoint Survey

For details, visit: <https://hr.nih.gov/workforce/fevs> or email NIHFEVS@nih.gov.

2022

FEDERAL
EMPLOYEE
VIEWPOINT
SURVEY

SHARE YOUR FEEDBACK BY JULY 22ND



National Institutes of Health
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Resources



At left, NIH deputy director for management Dr. Alfred Johnson offers encouragement before the hike began. Above, walkers prepare to take stride on a weather-perfect “Take a Hike Day” 2022.

PHOTOS: CHIA-CHI CHARLIE CHANG

Hike

CONTINUED FROM PAGE 1

colleagues they hadn’t seen in person since the pandemic began.

Edwards, director of ORS’s Division of Amenities and Transportation Services, introduced NIH deputy director for management Dr. Alfred Johnson, who arrived in a suit and tie, fresh from the final DDM seminar of the season. In past years, Johnson enthusiastically joined hikers for this event, but duty called that day and he had to rush off to a meeting.

The pandemic derailed hiking in person the last 2 years, “but it’s time to be back out to regather and do what NIH does best,” said Johnson in welcoming remarks, “and that’s to take our own best advice—to have a life of well-being that includes exercise. And this 3.25-mile hike is a way to get started.”

As participants assembled and the group

began to build, NIH fitness instructor Shannon Oussoren led a pre-hike warm-up, helping dozens of NIH’ers stretch their hamstrings under the shade of a big tree.

Johnson reminded the group to bring their badges to re-enter campus, as the route winds around the perimeter, in large part off-campus. That prompted a handful of would-be hikers to dart off in different directions to their offices and later rejoin the hike.

Johnson then called out, “Stay safe! Have fun!” and the runners and hikers took off.



At left, CIT deskside support services colleagues Michael Castro and Leathicia Younsi celebrate finishing the hike in front of Bldg. 1. At right, a star-spangled stepper runs the whole course with banner waving high.



Runners take off first.

“I was so excited about the hike today,” said CIT’s Michael Castro, IT support services team lead, who started working at NIH in summer 2020 and for many months came in regularly to a largely barren campus. “I thought: community event, yay! Events like these are amazing, getting together and feeling like we’re part of something bigger than ourselves.”

Another first-time hiker, NIA’s Dr. Alice Kaganovich has worked at NIH for 15 years but never made it to this event. “It was tough to schedule in the past. I have so many things to do at work,” said Kaganovich, who works in a Bldg. 35 lab that studies Parkinson’s disease. “But this year I decided to come out for this.”

Several groups of colleagues embarked on the hike together as a team-building exercise. NCI’s Dr. Andres Lebensohn and his lab mates from Bldg. 37 brought along a future colleague who begins her job in a few weeks.



NIH fitness instructor Shannon Oussoren leads a pre-hike warm-up, helping dozens stretch under the shade of a big tree.



A group of eight from NIMH also enthusiastically joined the hike. None of them usually come to the office on Thursdays but they adjusted their schedules for the event.

"I've missed this and am excited it's back on," said NIMH's Kimberly Blackmon, who has worked at NIH for 13 years.

"For a lot of us, it's our first time back on campus in 2 years and this event feels like [a step] toward a return to normalcy," said Matthew White of NINDS's data management section, whose group came for the event from their off-campus Executive Blvd. offices.

"I love fitness. This is one of my favorite events here," said India Taylor, ORS Medical Arts production lead who remained on campus throughout the pandemic creating and updating safety signage. "This one was smaller than in the past but it's nice to see the progress and feel some sense of community again."



Supporters cheer participants at the finish line.

Cancer Death Rates Among Black People Decline but Remain Higher Than Other Groups

Rates of cancer deaths declined steadily among Black people in the U.S. from 1999 to 2019, but Black people still had considerably higher rates of cancer death than people in other racial and ethnic groups.



Dr. Wayne R. Lawrence

The findings, based on a large epidemiologic study led by NCI researchers, appeared in *JAMA Oncology*.

"Even though there has been a decline in cancer mortality nationally among Black people, they

continued to bear a higher cancer burden overall than all other racial and ethnic groups studied," said Dr. Wayne R. Lawrence, a postdoctoral fellow in the Metabolic Epidemiology Branch of NCI's Division of Cancer Epidemiology and Genetics, who led the study.

Lawrence and his colleagues used death certificate data from CDC's National Center for Health Statistics to analyze age-adjusted cancer death rates by age, sex and cancer site among non-Hispanic Black people ages 20 and older in the U.S. They then compared cancer death rates in 2019 among Black men and women with those in other racial and ethnic groups.

In that 20-year period, more than 1 million Black men and women ages 20 and older died of cancer. Among this group, cancer death rates decreased by 2 percent per year, with a more rapid decrease among men than women.

Death rates declined for most cancer types; the most rapid decreases were in lung cancer among men and stomach cancer among women. However, over the same 20-year period, deaths from liver cancer increased among older Black men and women and deaths from uterine cancer increased among Black women.

Lawrence noted these overall declines could be due to some combination of improved access to screening, earlier detection, advances in treatment and behavioral changes, such as declines in cigarette smoking.

However, the researchers found that Black men and women had higher rates of cancer death, overall and for most cancer types, than White, Asian or Pacific Islander, American Indian/Alaska Native and Hispanic/Latino men and women.

"The disparity in deaths likely reflects systemic and preventable barriers to getting quality care, whether it's screening for cancer, timely diagnosis or the receipt of proven treatments," said Lawrence. **R**

New Daily Digest of Events Debuts

This week, all NIH staff started receiving a daily digest email from the NIH Calendar of Events. This new feature provides a list of events occurring that day, as well as reminders such as registrations dates. It even has an option to save events to your Outlook calendar.

Starting July 25, this digest will be the primary method for announcing events. Instead of receiving numerous emails throughout the day about individual events via the all-NIH listserv, staff will receive this one daily email.

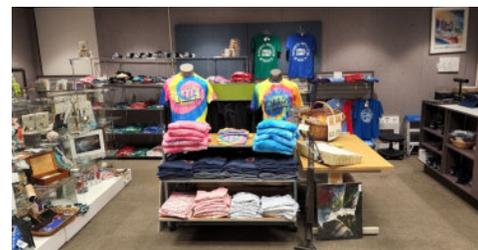
"Event information will now be easier to find and distribute," said Renate Myles, acting director of the NIH Office of Communications and Public Liaison (OCPL). "These changes have the added benefit that high-priority all-staff emails will not be diluted by an overuse of the listserv."

The NIH Office of the Chief Information Officer (OCIO) launched the NIH-Staff email list in 1996 and processed approximately 700 all-staff emails a year; 70 percent were advertising events that pertained only to a subset of staff. The process was labor intensive, expensive and messages were often missed in the barrage of daily emails most of us receive.

OCPL acquired the list from OCIO and modernized the process to free up employees' inboxes and allow for more effective and predictable communication about events.

Events with broad interest, such as NIH Town Halls or Take-Your-Child-To-Work Day and non-event related messages that are pertinent to the entire community, will continue to be shared via the all-staff email list.

Learn more about the new process at: <https://employees.nih.gov/pages/all-staff-transition.aspx>. Want to add an item to the calendar? Register and submit your event at <https://calendar.nih.gov/>.



R&W Reopens Gift Shop in Bldg. 31

After being closed for just over 2 years, the R&W Gift Shop in Bldg. 31 reopened. Shop Tuesdays-Thursdays, 8 a.m.-2 p.m. Each month the R&W plans to offer special sales, so check with store manager Fran Mann for details or email r_w_assoc_list-1@list.nih.gov to be added to the listserv for updates. New NIH apparel and gift items are expected to begin arriving in July.

Chertow

CONTINUED FROM PAGE 1

Department and in NIAID's Laboratory of Immunoregulation.

Between March 2020 and March 2021, his laboratory and colleagues from NCI's Laboratory of Pathology performed 44 autopsies of patients who had the virus. More than 10,000 tissue samples were taken from all major organs. In addition, brain samples were taken from 11 patients.

Eighty-six percent of patients died from complications of Covid-19; the complication usually was respiratory failure. The rest died with—but not from—Covid-19.

"None of these individuals were vaccinated and all were infected before variants of concern were widely circulating in the United States," he noted.

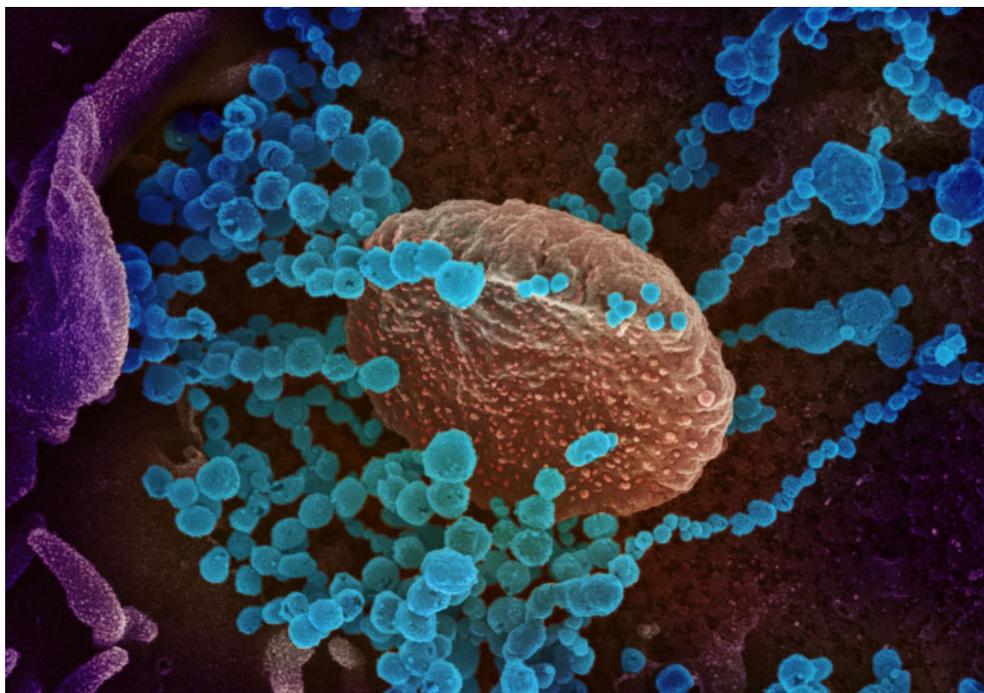
On average, the patients autopsied were [59 years old]. They received intensive care in the hospital for long periods of time. About three quarters of them had underlying health conditions associated with higher risk of severe Covid, including cardiovascular disease, chronic respiratory disease, diabetes, hypertension and obesity.

The study is a result of a collaboration with the University of Maryland. Critical care providers from seven Maryland hospitals notified researchers of patients who died with Covid-19. Next of kin gave consent and the remains of the deceased were transferred to the CC.

Chertow's team and intramural collaborators used several techniques to detect SARS-CoV-2 RNA in tissue samples,



Chertow leads the emerging pathogens section in the Clinical Center's Critical Care Medicine Department.



Novel coronavirus SARS-CoV-2

IMAGE: NIAID

"SARS-CoV-2 is widely disseminated across the human body and brain early in infection."

-DR. DANIEL CHERTOW

including quantitative polymerase chain reaction (PCR), droplet digital PCR technology, *in situ* hybridization and cell culture.

Together, these methods allowed them



to quantify viral levels in tissue samples. Scientists took samples from respiratory, cardiovascular, lymphoid, gastrointestinal, genitourinary, endocrine, skeletal muscle, peripheral and central nervous, and ocular tissue.

"We detected SARS-CoV-2 RNA across all tissue groups, with the highest levels detected in respiratory and cardiovascular tissues," he said.

During the first week following symptom onset, the virus seeds across the body and infects cells throughout the body, including the brain.

One autopsied patient had a mild case of Covid-19. He later died from liver failure unrelated to his Covid-19 infection. An analysis of tissue samples from his body revealed the presence of

viral RNA 8 months after his infection.

Despite the presence of viral RNA in the brain, scientists found no evidence of viral cytopathic effect—structural changes in host cells caused by viral invasion.

More research must be conducted to determine why the virus eludes the immune system in organs besides the lungs for months, Chertow concluded.

To view the virtual presentation, see: <https://videocast.nih.gov/watch=45296>. 

VOLUNTEERS

NCI Immunotherapy Study Recruits

NCI is looking for volunteers with metastatic cancers, including breast, ovarian, endometrial, gastrointestinal, genitourinary, hepatobiliary, pancreatic, melanoma, non-small cell lung cancer and multiple myeloma with solid masses. Potential participants will be evaluated for new treatments using cell transfer immunotherapies in a research trial. Study-related tests are provided at no cost. Travel reimbursement may be provided. To learn more, contact the immunotherapy referral office at (866) 820-4505 (TTY users dial 711) or IRC@nih.gov. Online: <https://ccr.cancer.gov/surgery-branch/clinical-team>.

Immune Modulator Drugs Improved Survival for People Hospitalized with Covid-19

Treating adults hospitalized with Covid-19 with infliximab or abatacept—drugs widely used to treat certain autoimmune diseases—did not shorten recovery time but did substantially improve clinical status and reduced deaths. This research comes from a large randomized, placebo-controlled clinical trial led by NIH, part of the Accelerating Covid-19 Therapeutic Interventions and Vaccines (ACTIV) public-private initiative.

In some Covid-19 patients, the immune system unleashes excessive amounts of proteins that trigger inflammation that can lead to acute respiratory distress syndrome, multiple organ failure and other life-threatening complications. NIH launched the ACTIV-1 Immune Modulators clinical trial to determine whether certain drugs that help minimize the effects of an overactive immune response could speed recovery and reduce deaths in adults hospitalized with moderate to severe Covid-19.

NCATS coordinated and oversaw the trial with funding from HHS's Biomedical Advanced Research and Development Authority (BARDA).

This protocol tested several different immune modulators to evaluate multiple investigational agents simultaneously. ACTIV-1 participants were randomly assigned to one of the immune modulator drugs or placebo in addition to the standard of care, which may include remdesivir (Veklury) supplied by Gilead Sciences, Inc., or dexamethasone.

From October 2020 through December 2021, the ACTIV-1 trial enrolled 1,971 participants at 46 medical facilities in the U.S. and 23 medical facilities in Latin America.

“When given in addition to standard of care treatments, like remdesivir and dexamethasone, infliximab and abatacept each offered a substantial reduction in mortality,” said the trial’s protocol chair, Dr. William G. Powderly, director of the Institute for Clinical and Translational Sciences and co-director of the Division of Infectious Diseases at Washington University School of Medicine in St. Louis. “These drugs could potentially add to the therapeutic options available for the treatment of patients hospitalized with Covid-19.”

NIH Launches Trial of Monoclonal Antibody to Treat Asthma in Urban Youth

NIH has launched a clinical trial testing whether a monoclonal antibody, dupilumab, can reduce asthma attacks and improve lung function and asthma symptoms in children with poorly controlled allergic asthma who live in low-income urban neighborhoods. The investigators also aim to define the activity levels of asthma-associated gene networks that correspond to specific health outcomes during antibody treatment in these children, most of whom are anticipated to be Black or Hispanic.

NIAID, Regeneron Pharmaceuticals Inc. and Sanofi are co-funding the phase 2 trial, called Prevention of Asthma Exacerbations Using Dupilumab in Urban Children and Adolescents, or PANDA. The NIAID-funded Childhood Asthma in Urban Settings (CAUSE) Network is conducting the study at seven medical centers located in Aurora, Colo.; Boston; Chicago; Cincinnati; New York; and Washington, D.C.

Dupilumab is FDA-approved as an add-on maintenance treatment for certain types of moderate-to-severe asthma in people ages 6 years and older. However, little data exist on the effectiveness of the drug in Black and Hispanic children, who are disproportionately affected by severe asthma.

Black and Hispanic children who live in low-income urban environments in the U.S. are at particularly high risk for asthma attacks. These children often have many allergies and are exposed to both high levels of indoor allergens and traffic-related pollution, which can make their asthma even more difficult to control.

In an earlier study, NIAID-supported investigators identified numerous networks of genes that are activated together and are associated with asthma attacks in minority children and adolescents living in low-income urban settings. Some of these gene networks are specifically associated with a systemic allergic response called Type 2 inflammation, shown to play a major role in asthma in this population.

Because dupilumab works by blocking interleukin 4 and interleukin 13, two small proteins involved in Type 2 inflammation, PANDA investigators hypothesize that the drug will reduce asthma attacks and improve lung function and asthma symptoms in study participants.

The PANDA study team will enroll approximately 240 participants ages 6 to 17 years who have poorly controlled allergic asthma that is prone to attacks and who have biological markers of Type 2 inflammation. All participants also will receive asthma care based on NHLBI guidelines.



PHOTO: DRAGON IMAGES/SHUTTERSTOCK

NIH Researchers Discover New Eye Disease

NEI researchers have identified a new genetic disease that affects the macula, a small part of the light-sensing retina needed for sharp, central vision. The findings on this novel, yet-to-be-named macular dystrophy were reported in *JAMA Ophthalmology*.

Macular dystrophies are disorders that usually cause central visual loss because of mutations in several genes, including *TIMP3*.

For example, people with Sorsby Fundus Dystrophy, a genetic eye disease specifically linked to *TIMP3* variants, usually develop symptoms in adulthood. They often have sudden changes in visual acuity due to choroidal neovascularization—new, abnormal blood vessels that grow under the retina, leaking fluid and affecting vision.

TIMP3 is a protein that helps regulate retinal blood flow and is secreted from the retinal pigment epithelium (RPE), a layer of tissue that nourishes and supports the retina’s light-sensing photoreceptors. All *TIMP3* gene mutations reported are in the mature protein after it has been “cut” from RPE cells in a process called cleavage.

“We found it surprising that two patients had *TIMP3* variants not in the mature protein, but in the short signal sequence the gene uses to ‘cut’ the protein from the cells,” said lead author Dr. Bin Guan. “We showed these variants prevent cleavage, causing the protein to be stuck in the cell, likely leading to retinal pigment epithelium toxicity.”

The research team followed these findings with clinical evaluations and genetic testing of family members to verify that the two new *TIMP3* variants are connected to this atypical maculopathy.

“Affected individuals had scotomas, or blind spots, and changes in their maculas indicative of disease, but, for now, they have preserved central vision and no choroidal neovascularization, unlike typical Sorsby Fundus Dystrophy,” said Dr. Cathy Cukras, a medical retina specialist who clinically evaluated the patients.

Dr. Rob Hufnagel, senior author and director of NEI’s Ophthalmic Genomics Laboratory, said, “Discovering novel disease mechanisms, even in known genes like *TIMP3*, may help patients looking for the correct diagnosis and will hopefully lead to new therapies for them.”

ACD

CONTINUED FROM PAGE 1

members said they shared, added more food for thought to an already packed mid-year agenda and complex medical research landscape. The committee also heard about NIH's budget outlook and the climate for medical research-related legislation during an election year.

ARPA-H Moves Forward

Discussing one of NIH's recent and most ambitious endeavors, NIH acting principal deputy director Dr. Tara Schwetz reported forward momentum on standing up ARPA-H, the Advanced Research Projects Agency for Health. Authority for it was transferred to NIH in April. President Joe Biden requested \$5 billion for the new entity in his fiscal year 2023 budget.

The new entity will be "leveraging an approach that was pioneered at DARPA," Schwetz said, explaining key elements of the model such as its aim for "high risk-high reward" projects that will be evaluated according to quantifiable metrics and carried out by investigators with a large measure of autonomy. ARPA-H expects to recruit about 100 new full-time employees over the next year. Using innovative strategies in its infrastructure design and initial organization, ARPA-H also represents one way NIH hopes to broaden and diversify the scientific workforce, she pointed out.

HHS Secretary Xavier Becerra named



Dr. Kafui Dzirasa of Duke University School of Medicine, shown above at NIH's "Celebration of Science" in 2012, joined his first ACD meeting as a member this June.

Dr. Adam Russell as acting ARPA-H deputy director on June 6. Russell spent a decade combined at IARPA and then DARPA, prior to joining the University of Maryland as chief scientist of the Applied Research Laboratory for Intelligence and Security. He briefly joined in the ACD meeting and responded to questions from the group.

Still in Pandemic

As evidenced by the 5th straight online-only convening of ACD, the lingering Covid-19 pandemic continued to consume much of the session's time and attention. On day 1, NIAID director Dr. Anthony Fauci gave a recorded update and answered the group's questions live.

"The data are sobering," he said. "Globally, we are over a half billion cases with more than 6.2 million reported deaths. The death toll is probably one- or two-fold greater than that according to WHO projections—probably closer to 15 million deaths. In the United States, we have about 80 million cases and we have gone over that terrible landmark of one million deaths."

He described the "rollercoaster" ups and downs the world has been experiencing since the beginning of the outbreak, with different variants of the virus surging and subsiding over the past 2½-plus years. He also highlighted the stark differences Covid has demonstrated in cases, hospitalizations and deaths among Black, Hispanic and American Indian/Alaska Native people compared to the White population.

"It is very clear that we continue to have



New ACD member Dr. Atul Butte of UCSF has a long history serving NIH, shown here appointed to NICHD's advisory council in 2016.



Shown here at NIH in 2013 giving the annual Dr. James C. Hill Memorial Lecture, Columbia University's Dr. Wafaa El-Sadr is one of five new ACD members.

PHOTO: ERNIE BRANSON

this disparity when it comes to severity of disease," he said.

At the time of the ACD meeting, the U.S. was experiencing 100,000 cases—with 300 deaths—per day, Fauci reported. The still-high numbers were due to several factors, he said: Increased transmissibility of new variants, waning immunity in both previously infected and vaccinated people, and relaxation of preventive measures such as masking and social distancing.

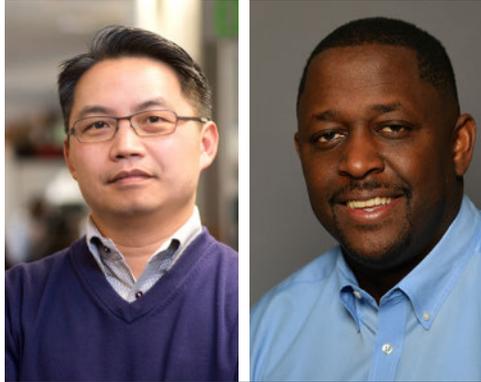
"We've been through the fulminant phase of this pandemic," he said. "We've seen deceleration of new cases...but we are not out of the pandemic. We are still in the pandemic."

In answer to a question by ACD member Dr. Barbara Wold of Caltech on allocation of NIH pandemic resources, Fauci said, "We do not have enough money to do the work that needs to be done for preparation for what's ahead. The money is all being spent on the purchase of vaccine and tests and antivirals to distribute. So it is a heavy emphasis on implementation and distribution of countermeasures and less so on basic and clinical research."

Later in the meeting, NINDS director Dr. Walter Koroshetz discussed the latest developments by RECOVER (the cross-NIH Researching Covid to Enhance Recovery initiative) to understand long-term Covid, also known as post-acute sequelae of SARS-CoV-2 infection. NICHD director Dr. Diana Bianchi followed with a presentation on Covid-19 in children and people of reproductive age.



Dr. Marie Bernard, Tabak and Dr. Tara Schwetz, during the recent ACD virtual meeting



Dr. Howard Chang (l), Virginia and D.K. Ludwig professor of cancer research and professor of genetics at Stanford, and Dr. Garth Graham, director and global head of health care and public health at Google/YouTube, are new ACD members.

DEIA Efforts Advance

On day 2, the group learned about NIH’s progress with diversity, equity, inclusion and accessibility (DEIA) efforts. NIH chief officer for scientific workforce diversity Dr. Marie Bernard and representatives of UNITE gave updates.

“Much of what we’re looking at ultimately is culture change,” explained Bernard, responding to a question about what it will take to implement the expansive proposals included in the DEIA strategic plan. “Culture change takes time. It takes intellectual effort and it does take investment of resources.”

Reiterating NIH leadership’s appeals to Congress for additional funding and the agency’s overall commitment to DEIA on all fronts, Tabak said, “We are continuing to make this a priority.”

The 124th ACD meeting also included discussions from its working group on rigor and animal use as well as NIH’s data sharing policy. In addition, five new members joined ACD for their first meeting. Tabak said the group’s shared worries about concentration of NIH resources and public distrust and misinformation about science would be added to the next ACD discussion docket.

Full deliberations from both days are archived online at <https://videocast.nih.gov/watch=45593> and <https://videocast.nih.gov/watch=45595>. **R**

Holy Cross Names Science Complex for Fauci

The College of the Holy Cross, founded in 1843 in Worcester, Mass., named a campus facility after NIAID director Dr. Anthony Fauci, who graduated from the school in 1962. A dedication ceremony was held on June 11.

“One of the most important things I ever did was to balance the science that I learned in physics, chemistry and biology with being introduced to the history of people, civilizations and the humanities,” recalled Fauci, visiting the college in celebration of his 60th class reunion.

“Because if I had chosen a different pathway to medicine and science, I might not have wound up in the public health career that I have, addressing such challenges as HIV/AIDS, pandemic flu, Ebola, Zika and, of course, our current crisis with Covid-19. So everything I do, from my basic research to my care of individual patients, to my responsibility to the groups of patients in a clinic trial, to my responsibility to domestic and global public health, to advising seven presidents of the United States...it truly is all rooted here in my education at the College of the Holy Cross.”

At the ceremony held in an atrium of the complex, Holy Cross President Vincent Rougeau said, “[Fauci] embraced his Jesuit education...at Holy Cross and its mission to serve others...In many ways, his faith and his family loaned him to us and we are proud to now loan him to the world...[He] has shown us that mankind can be courageous, kind and undeterred. We can trust science and eschew the ‘normalization of untruths’...Dr. Fauci, this is our abiding gift to you. Within the [facility], the ‘most young’ scholars of Holy Cross will rise. They will continue to engage in learning across multiple academic disciplines to encourage the kind of broad and collaborative thinking one



NIAID director Dr. Anthony Fauci tries on his Holy Cross lab coat, observed by (from l) College President Vincent Rougeau, incoming chair of the board of trustees Dr. Helen Boucher and students Fernanda Perez-Alvarez and Tianci Guan.

PHOTOS: MICHAEL IVINS/HOLY CROSS

needs to thrive in an interconnected and just world. They will actively participate in research and debate, encompassing science, ethics, the environment, psychology and human behaviors. They’ll embrace their Jesuit values, take risks and learn from mistakes, and channel your unbridled energy and optimism.”

In 2010, Holy Cross completed renovation of the \$64 million science complex, the most ambitious building project in its history. Fauci gave the keynote address at the building’s opening that spring. Construction of a new four-story building linked to existing science and social science buildings in 2009 and complete refurbishment of Haberlin Hall in 2010 had resulted in 142,000 gross square feet of classroom, lecture, research and laboratory space.

“I never would have imagined in my wildest dreams when I walked onto this campus in 1958 and looked at the far-smaller number of buildings that are here today, that one day a building—this wonderful integrated science complex—would be named after me,” said Fauci. “This was a great college 60 years ago and it is an even better place today.”



At left, Rougeau introduces the honoree. At right, Fauci talks with Holy Cross and Celtics legend Bob Cousy following the dedication ceremony.



Celebrating Juneteenth are (from l) Eric Starks, Dr. Lola Olufemi of NINDS, Dr. Ericka Boone of OD, Evangeline Vivens, Dr. Sadhana Jackson of NINDS, Dr. Mia Rochelle Lowden of OD, Benjamin Vivens, Greyson Underwood and Joseph Vivens.



Above, NEI director Dr. Michael Chiang supported #moveforequity. Below, on the Juneteenth holiday, Dr. Vidya Vedham of NCI's Center for Global Health and her family hiked along the Magruder Branch Trail in Damascus Recreational Park.

'MOVE FOR EQUITY'

8CRE Hosts Juneteenth Activity

Supporters of 8CRE hosted a "Move for Equity" event on June 20, the federal observance of Juneteenth. Participants were encouraged to walk, run, dance or engage in another form of fitness for a distance of 1.9K or a duration of 19 minutes. Many made it a family affair. Some shared their experiences on social media.

8CRE, or 8 Changes for Racial Equity, were proposed in 2020 by members of the NIH community motivated to ensure the workplace culture is free of racism, discrimination and harassment, and committed to compassion, respect and understanding for all.



8CRE supporters (from l) Jackson, Lowden, Olufemi and Boone in stride on Juneteenth federal holiday. Other NIH'ers also posted about focusing on physical activity for the day, using #moveforequity.



NIEHS Marks Juneteenth with Lecture, Lunch

NIEHS marked Juneteenth on June 16 with a lecture, "A New Birth of Freedom: A Look at the Hawkins and Crutchfield Family in Historical Memory and Photography from Henderson, NC to Cambridge, MA during the Jim Crow Era," by André Vann, coordinator of University Archives and instructor of Public History at North Carolina Central University. Vann described the oral and journal histories of one family across five generations. Dr. David B. Resnik (above, r), a bioethicist at NIEHS, wrote and performed a song for the event. At left above, Ransom Holliday of NIEHS Comparative's Medicine Branch enjoyed a holiday-inspired meal of Texas barbecue in the cafe. Red foods and drinks are traditionally featured at Juneteenth events. At right, NIEHS deputy director Dr. Trevor Archer (l) and Juneteenth planning committee member Beth Perry of NIEHS's Office of the Director are among those in the meal line.



BIG Holds Outreach Event for Holiday

NIH's chapter of Blacks In Government (BIG) celebrated Juneteenth by hosting a community outreach event—a school supply drive—at the Smithsonian National Museum of African American History and Culture on the National Mall.

BIG members shown below are (from l) Chanteshea Bulluck, web administrator; Earl Simmons, regional council representative; Harold Atkins, acting 1st vice president; Carl Clay, financial secretary; Alexis Braxton, president; Alfreda Layne, 2nd vice president; and Brenda Agunyego.



PHOTOS: STEVE MCCAUX/NIEHS