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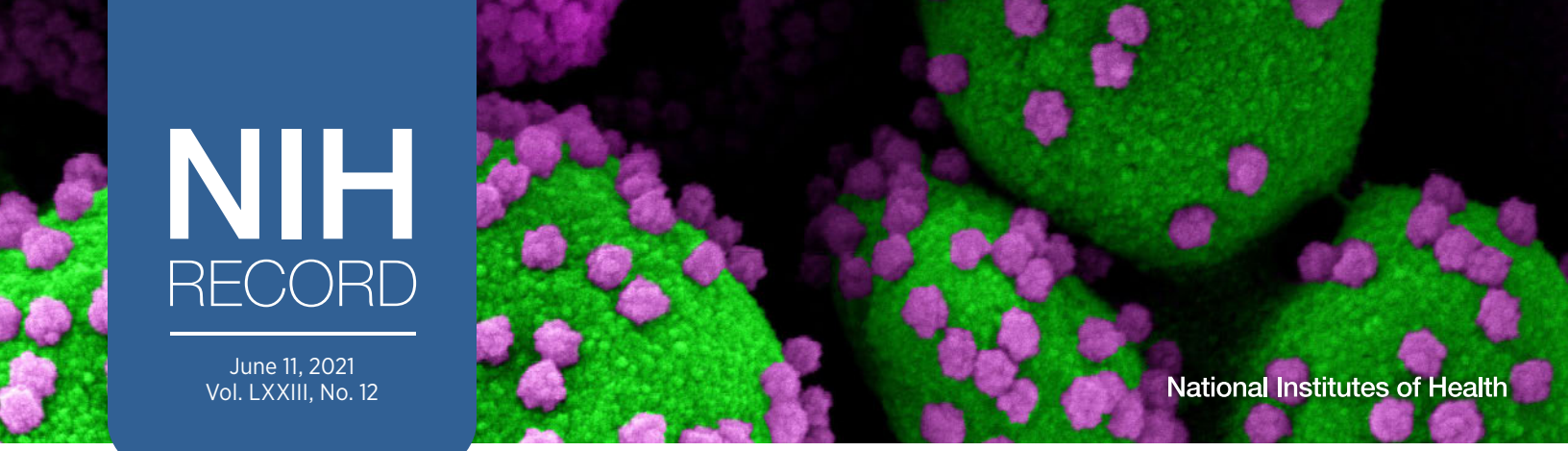


UNRAVELING HEALTH DISPARITIES

Valantine Discusses Genomics in Organ Transplantation

BY CARLA GARNETT

A decades-long career in medicine and research never occurred to an adolescent Hannah Valantine. Born in Banjul in the small West African nation of The Gambia, 13-year-old Hannah and her family relocated to London, where she was the only youngster of color in her high school. Within a student population of 500 adolescents, her sense of isolation took a toll.

"My academic struggles at age 18 were such that I had zero aspirations to go to university," recalled Valantine at a recent Clinical Center Grand Rounds. "[High school] was my first encounter with being excluded. I attribute the lapse in my career path to my feelings of being excluded." That and other teen distractions at the time—"the Swinging Sixties, the Rolling Stones, the Beatles"—also may have contributed to her less than enthusiastic embrace of textbooks.


Dr. Hannah Valantine

"That's my story and I'm sticking to it," Valantine quipped, smiling.

A job in a microbiology lab put her back on an achievement-filled educational trajectory that has led to an M.D. degree, cardiology fellowship at Stanford University, her own lab and principal investigator authority on numerous grants, authorship of 200-plus peer-reviewed publications and more than 30 years pursuing medical research as a full-time profession.

No stranger to NIH, Valantine served for 6 years since 2014 as the agency's first chief officer for scientific workforce diversity while also maintaining a lab as a senior investigator in NHLBI's intramural research program. She returned to her post as professor of medicine and cardiology at Stanford Medical Center in spring 2020.

In her NIH virtual lecture, "Inclusive Excellence in Biomedical Research—Applying Genomics to Unravel Health Disparities in Organ Transplantation," she used evidence from some of her NHLBI

SEE **VALANTINE**, PAGE 4


"Eye Candy" of the plant world? See more, p. 12.

ALSO THIS ISSUE

A SCIENTIFIC JAM SESSION

Panelists Collaborate to Develop Toolkit for Music-Based Therapies

BY DANA TALESNIK

Performers and music lovers the world over will attest that music moves and rejuvenates us, affecting our brains in profound ways. But can investigators prove it?


Opera singer Renée Fleming

Four years ago, world-renowned soprano Renée Fleming spent 2 hours in an MRI scanner that tracked her brain activity as

SEE **MUSIC**, PAGE 8


NIBIB director Dr. Bruce Tromberg (r) briefs visiting senators on RADx Tech.

PHOTO: CHIA-CHI CHARLIE CHANG

Cadre of Senators Visit NIH, Take Home Tech

A bipartisan contingent of U.S. senators and staff members visited NIH on May 17 for science briefings, a lab tour and biotech demonstration. The group included Sen. Tammy Baldwin (D-WI), Sen. Roy Blunt (R-MO), Sen. John Boozman (R-AR), Sen. John Cornyn (R-TX), Sen. Dick Durbin

SEE **SENATORS**, PAGE 6

"Allyship in Action" poster art

'ALLYSHIP IN ACTION'

Join EDI in Celebrating Pride Month

The Office of Equity, Diversity and Inclusion will celebrate Pride Month—June—with a focus on cultivating and enhancing allyship in the NIH community.

The theme, "Allyship in Action," emphasizes usage of correct pronouns as an act of allyship for sexual and gender minorities (SGM). EDI hopes to encourage the regular expression of pronouns in emails, meetings, conversations and all settings at NIH to help support the broad diversity of identities within the SGM community.

Gender identity is multifaceted and nuanced, and gender expression varies immensely. In addition, pronouns and gender identities are not inherently linked and may not match in socially predictable ways.

EDI invites the entire community to join Allyship in Action, which will provide an opportunity to learn more about pronoun usage, how to be an ally and where to find resources.

EDI will co-host a Twitter chat to discuss pronoun usage with contributors from across NIH using #NIHPronounAlly.

Additionally, in collaboration with Salutaris, the NIH SGM employee resource group, EDI will host a presentation by Dr. Erin A. Cech, department of sociology, University of Michigan, Ann Arbor, on research in the most extensive study of barriers for LGBTQ professionals in STEM on Wednesday, June 23 from 1 to 2 pm.

Also staff are encouraged to sign up for quarterly Safe Zone training at https://www.edi.nih.gov/people/sep/lgbti/safezone.

Follow on Twitter (https://twitter.com/nih_edi) and Instagram (https://www.instagram.com/nih_edi/) to stay abreast of news and events for Pride Month. Check out EDI's SGM Portfolio page (https://www.edi.nih.gov/people/sep/lgbti/about) to learn more about the diversity and inclusion strategy.

A scene from the Community Market pre-Covid

Community Market Returns to Campus

The NIH Community Market, sponsored by the NIH Recreation and Welfare Association, has returned to campus on Tuesdays, from 10 a.m. to 2 p.m. on the south lawn of the Clinical Center, Bldg. 10. Expected are 5-7 vendors each week. Confirmed currently are All Things Olive (olive oils/vinegars), the Caramel Kettle (gourmet popcorn), Cupcakes Lounge (baked goods), Shafa Blends (spices) and Apple Valley (fresh produce).

While at the market, don't forget to visit the food trucks for lunch between 11 a.m. and 2 p.m. The schedules and menus of trucks can be found at https://govemployee.com/nih/food-trucks/. Make sure to maintain proper social distancing and other safety measures.

The NIH Blood Bank will also make appearances periodically to discuss donation. For details about the R&W, call (301) 594-2411 or visit online: www.govemployee.com/nih.

NIDA Launches Drug Addiction Treatment Challenge

The National Institute on Drug Abuse has launched the "Mapping Patient Journeys in Drug Addiction Treatment" Challenge. Applicants are challenged to create a "journey map" to show the good and bad experiences people with substance use disorder have when navigating the health care system to get treatment, an experience that's often challenging, confusing and inconsistent.

Submissions, due Sept. 22, will enable NIDA to focus research efforts into alleviating those areas of difficulty.

The challenge offers up to 3 awards: $50,000 (1st pl.), $30,000 (2nd) and $20,000 (3rd). Anyone who has experience with a patient's journey with substance use disorder is encouraged to participate.

Knowledge and experience of steps individuals take on the road from addiction to recovery are invaluable in solving this challenge.

Journey maps incorporate physical and emotional experiences with the aim of capturing patient obstacles, interactions and movement through the health care system along with the patient's behavior, feelings, motivations and attitudes across episodes of care.

Learn more at https://www.challenge.gov/challenge/mapping-patient-journeys-in-drug-addiction-treatment/ or email NIDAChallenge@nih.gov.

2nd Lecture in 'Diverse Voices' Series Set

June 24

NIH's Office of Research on Women's Health will host "Analysis and Action: Applications of Intersectionality in Covid-19," the second lecture in the Diverse Voices: Covid-19, Intersectionality and the Health of Women series, on Thursday, June 24 from 1 to 2 p.m. ET.

The virtual presentation features two speakers. Dr. Lisa Bowleg of George Washington University and Dr. Tonia Poteat of the University of North Carolina at Chapel Hill.

To participate in this webinar, register at https://nih.zoomgov.com/meeting/register/vJIsce2urD-wjGUOB7CXzPxET5ft_pBDbrCM. Details are available at https://orwh.od.nih.gov/about/newsroom/events/analysis-and-action-applications-intersectionality-covid-19.

NIH's Sammie nominees are (from l) Dr. Kizzmekia Corbett, Dr. Barney Graham, Dr. Gary Gibbons, NIMHD director Dr. Eliseo Pérez-Stable and below, Dr. Brigitte Widemann.

'OSCAR' NODS ANNOUNCED

NIH'ers Among 2021 Sammies Finalists

Five employees of NIH are among 29 finalists for the 2021 Samuel J. Heyman Service to America Medals (Sammies), the nonpartisan, nonprofit Partnership for Public Service recently announced. The partnership called the 29 nominees "exceptional federal employees who have helped make the nation healthier, safer and more prosperous."

Also known as the "Oscars of federal service," the Sammies are the premier awards program recognizing America's best in government. This year, the partnership added a Covid-19 Response medal to recognize the extraordinary federal workers who played a leading role in responding to the pandemic and saving lives.

NIH'ers were nominated in two categories, including the newly added pandemic bracket. The Covid-19 Response Category recognizes outstanding efforts to support Americans' health, safety and economic security during the pandemic.

NIH finalists in that category include NIAID/Vaccine Research Center fellow Dr. Kizzmekia Corbett and VRC deputy director Dr. Barney Graham, who were cited for conducting groundbreaking research that led to the development of highly effective vaccines in record time that are protecting hundreds of millions of people from contracting the deadly coronavirus that swept across the globe in 2020 and 2021.

Also contending in the pandemic category are NHLBI director Dr. Gary Gibbons and NIMHD director Dr. Eliseo Pérez-Stable, who developed and implemented federal programs—RADx-UP and the Community Engagement Alliance Against Covid-19 Disparities—to increase testing as well as participation in Covid-19 treatment and vaccine trials in underserved communities across the country.

The Science and Environment Category recognizes significant accomplishment in fields such as medicine, economics, energy, information technology, space, meteorology and resource conservation.

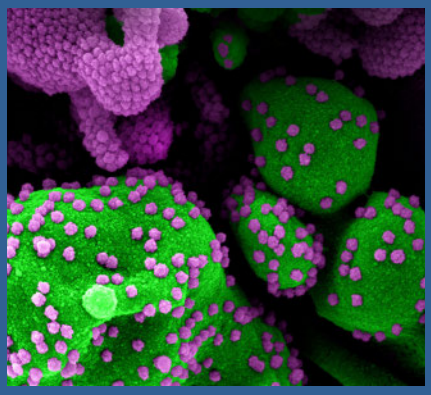
NIH's nominee, NCI senior investigator and Pediatric Oncology Branch chief Dr. Brigitte Widemann and team, developed a breakthrough medical treatment for children with inoperable tumors that cause disabling pain, disfigurement, blindness and motor dysfunction.

"For each of the unprecedented challenges we have faced in the last year, dedicated public servants have worked behind the scenes to move our country forward, heal our nation and strengthen our democracy," said Max Stier, partnership president and CEO. "The 2021 Service to America Medals finalists have shown tremendous commitment to the public good, and they, like all public servants, deserve our support and recognition."

Finalists contend in six other categories, in addition to the Covid-19 award. Winners will be announced in the fall.

All 29 finalists are also eligible for the Service to America Medals People's Choice Award. Members of the public can vote online for the federal employee they believe has made the most significant contributions in public service. Go to https://servicetoamericamedals.org/peoples-choice-award/ by Friday, July 2 to vote. The People's Choice winner will be announced in the summer.

Renamed the Samuel J. Heyman Service to America Medals in 2010 to commemorate the organization's founder, the program has honored more than 500 outstanding federal employees since its inception in 2002. Details about the program and the 2021 finalists are available at servicetoamericamedals.org. R



ON THE COVER: *Novel Coronavirus SARS-CoV-2. Colorized scanning electron micrograph of an apoptotic cell (green) heavily infected with SARS-CoV-2 virus particles (purple), isolated from a patient sample. Image at the NIAID Integrated Research Facility in Fort Detrick, Md.*

IMAGE: NIAID

The NIH Record

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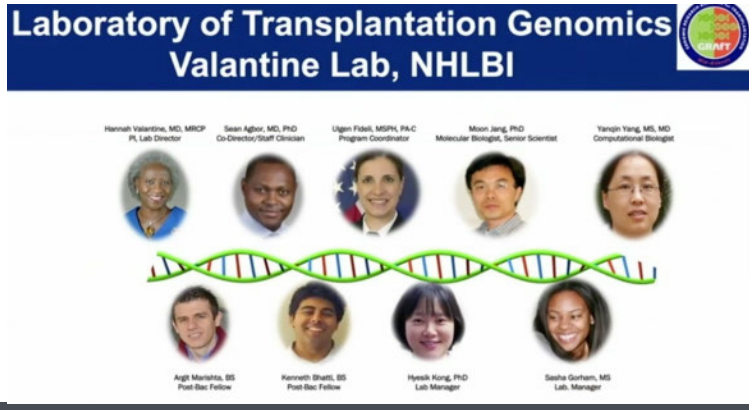


During a virtual Clinical Center Grand Rounds, Valantine shows the diverse composition of her lab while at NHLBI.

Valantine

CONTINUED FROM PAGE 1

clinical studies on organ rejection to make the case for diversity in the scientific workforce. Arguably, Valantine's own career could be Exhibit A.

It was at Stanford in 1985 that she first became "fascinated by the idea of transplantation"—extracting an organ from a deceased person and getting it to work effectively in a living person. "Quite frankly, I'm still in awe of the idea," she admitted.

Valantine gave several reasons that the world's biomedical investigation workforce ought to include professionals and trainees from diverse racial, ethnic, minority and underserved communities: To achieve excellence in research, improve the quality of patient care and expand participant inclusion in clinical research.

"All of these are in the NIH mission," she noted.

Valantine cited journal articles documenting the impact of diversity. Physicians from underrepresented groups in medicine are twice as likely to work in underserved communities. Patients are twice as likely to adhere to recommendations and advice—about diabetes, cholesterol screening, flu shot, for example—from physicians of similar racial and ethnic backgrounds.

In addition, she noted, "physician-scientists are more likely to focus their research on topics/diseases that disproportionately affect their communities."

The quality and applicability of clinical research, including clinical trials, increase when the investigator and patient populations are diverse, Valantine pointed out.

"These factors put together point significantly to reducing racial disparities in a wide spectrum of disorders, including hypertension, cancer, diabetes, maternal and infant mortality, Covid-19 and organ transplant rejection," she said.

Turning to her own specialty—organ transplantation, specifically development of chronic heart rejection—and the focus of her recent research, she set out to answer a series of questions: What is the role of genetic distance between donor and recipient? Is the organ rejection due to mitochondrial DNA mismatch, even when the genetics of the nuclear DNA are absolutely identical? What might be the contribution of social determinants of health?

About 10 years ago before coming to NIH, Valantine initiated a collaboration with preeminent Stanford geneticist and biophysicist Dr. Steve Quake, who developed diagnostic technologies using next generation sequencing. The Valantine and Quake groups worked together on a technique to identify potential signs of organ rejection using donor-derived cell-free DNA (dd-cfDNA) in solid-organ transplantation.

"We were able to do the proof-of-concept experiments and publish a range of articles indicating that indeed [dd-cfDNA] was a significantly important marker of graft injury and therefore rejection."

Subsequently, Valantine and colleagues were able to use the technology to predict which transplant patients might develop an infection, which is one harbinger of organ rejection and poorer survival.

★★★

"Our work is really cut out for us to achieve equity at all academic levels. Individual interventions are not sufficient to take us where we need to go."

-DR. HANNAH VALANTINE

★★★

The Valantine Lab at NHLBI, the Laboratory of Transplantation Genomics, teamed with other like-minded investigators to establish GRAfT, the Genomic Research Alliance for Transplantation, a collaboration with health care organizations that offer organ transplantation and organ procurement centers. GRAfT provided measures of reproducibility and research rigor, in addition to mechanisms for long-term follow-up of patients. GRAfT also recruited a disproportionately large number of African Americans; that rare patient enrollment profile gave researchers a unique cohort to study how social determinants of health might impact diagnoses of problems related to organ transplantation.

In 2017, Valantine, in her role as NIH chief officer for scientific workforce diversity, chats with Dr. Dennis Jones of Massachusetts General Hospital, a participant in that year's Future Research Leaders Conference.

PHOTO: MARLEEN VAN DEN NESTE

Using the technology developed by Valantine's team, investigators were able to detect signs of organ rejection 3 months before biopsy.

"This becomes very important," she explained, "because it gives us the opportunity to act and treat those patients before they progress to chronic rejection" and poorer survival risk.

GRAfT results also revealed that Black transplant patients show evidence of the dd-cfDNA marker as early as the day after transplant. Importantly, levels of dd-cfDNA in Black patients remained higher than in White patients throughout the follow-up period, despite equivalent blood levels of the anti-rejection drugs.

"This eliminates the idea that [organ rejection in Black patients] is in some way related to non-compliance with medications or different metabolism of immunosuppressive drugs," Valantine explained.

Conclusions drawn from GRAfT have led to a host of new questions to answer and avenues of research to explore, she pointed out.

"Which brings us all the way back to who is going to be doing this work and why attention to the scientific workforce—and the diversity of perspectives embedded in the scientific workforce—is so critically important...Our work is really cut out for us to achieve equity at all academic levels. Individual interventions are not sufficient to take us where we need to go. We must continue with institutional interventions... that means transparency and accountability as well as systematic review of hiring and promotion policies...The most important thing I learned from my time at NIH is that we must be linking the diversity and equity work to institutional reward systems."

Valantine closed by countering the popular thought that great minds think alike. "Great minds think differently," she emphasized, using oft-quoted words from Einstein to end: "'We cannot solve our problems with the same thinking we used when we created them.'"

Watch the full lecture with Q&A at https://videocast.nih.gov/watch=41679.

HEALTH DISPARITIES EVENTS COMING UP

NIMHD Seminar Hosts NYU's Trinh-Shevrin, June 24

Dr. Chau Trinh-Shevrin

The NIMHD Director's Seminar Series will feature Dr. Chau Trinh-Shevrin of the New York University Grossman School of Medicine on Thursday, June 24 at 2 p.m. ET. Vice chair for research and head of the section for health equity in the NYU's department of population health, she will present "Achieving Health Equity for Asian Americans: Research, Policy and Action."

For more than 20 years, Trinh-Shevrin's research has been centered on the rigorous development and evaluation of multi-level strategies to reduce health disparities and advance health equity among Asian-American populations. She is a multiple principal investigator on several NIH grants including the NYU Center for the Study of Asian-American Health and leads the NIH Community Engagement Alliance to End Covid-19 Disparities in New York.

For reasonable accommodation, call (301) 402-1366 or the Federal Relay, 1-800-877-8339. The talk will be videocast at https://videocast.nih.gov/watch=42154.

Learn about the NIMHD Director's Seminar Series at https://nimhd.nih.gov/news-events/conferences-events/directors-seminar-series/.

Poster Submission Open for Nutrition Health Disparities Workshop

On Sept. 21-23, 2021, NIH will host a virtual nutrition health disparities workshop to review the state of the science on food insecurity and the neighborhood food environment. Participants will identify research gaps and explore innovative research strategies that could inform policies and practices.

As part of the event, NIH is encouraging early-stage investigators, as well as doctoral and postdoctoral students working in food insecurity, nutrition health disparities or implementation science to submit an abstract for the poster sessions.

Selected researchers will have an opportunity to present their research at the event and receive an award. Submit your poster abstract by July 9 to qualify. Learn more and register by Sept. 7. https://bit.ly/3dY3D6H.

At left, U.S. Sen. Chris Van Hollen (D-MD), arriving on campus, bumps elbows with NIH director Dr. Francis Collins. At right, VRC director Dr. John Mascola (r), describes research on a tour of a Vaccine Research Center lab.

PHOTOS: CHIA-CHI CHARLIE CHANG

Senators

CONTINUED FROM PAGE 1

(D-IL), Sen. Roger Marshall (R-KS), Sen. Lisa Murkowski (R-AK) and Sen. Chris Van Hollen (D-MD). Many are members of the appropriations committee.

NIH director Dr. Francis Collins and NIAID director Dr. Anthony Fauci welcomed the group at the Vaccine Research Center. A tour of a VRC lab, a demonstration of Rapid Acceleration of Diagnostics (RADx) technology, a briefing on mental health amid the pandemic and a discussion of the potential "ARPA-H" were packed into the afternoon. Senators and staff members were separated into two groups to facilitate occupancy in small spaces.

For the lab tour, VRC director Dr. John Mascola; VRC deputy director Dr. Richard Koup, who is also chief of the Immunology Laboratory; and Dr. Nancy Sullivan, chief of the biodefense research section, joined in a discussion about vaccine development.

In a tent erected not far from the VRC, NIBIB director Dr. Bruce Tromberg provided an overview of RADx and walked the delegation through several technologies including Covid at-home tests, point-of-care tests and lab tests. [See sidebar, p. 7] He highlighted efforts developed via RADx over the past year and showed a large sampling of new tests and products from 32 different companies. Each senator and staffer received a box of two at-home tests they could take with them.

In a large Porter Bldg. conference room, NIMH director Dr. Josh Gordon and deputy clinical director Dr. Joyce Chung discussed mental health and Covid-19. Gordon provided an overview, with Chung presenting on intramural research efforts, collaborations and preliminary findings on the impact of the pandemic on mental health.

Collins briefly discussed ARPA-H, a potential new health research component devoted to scientific breakthroughs that would be housed within NIH. President Joe Biden proposed creating ARPA-H in a recent speech to Congress. Collins also talked about what the senators would see during their visit, which included several presentations on NIH's multifaceted response to the Covid-19 pandemic.

Afterward, on social media, Blunt posted a message: "Thank you to National Institutes of Health (NIH) Director Dr. Francis Collins & researchers for giving us a terrific tour & presentation of their latest work to save lives. Because of medical researchers' ingenuity & drive, we are on the edge of finishing the fight against Covid & on a faster timeline than we thought possible a year ago."

NIBIB director Dr. Bruce Tromberg chats with Sen. Roy Blunt (R-MO). At right, the Senate delegation asks questions during the lab tour.

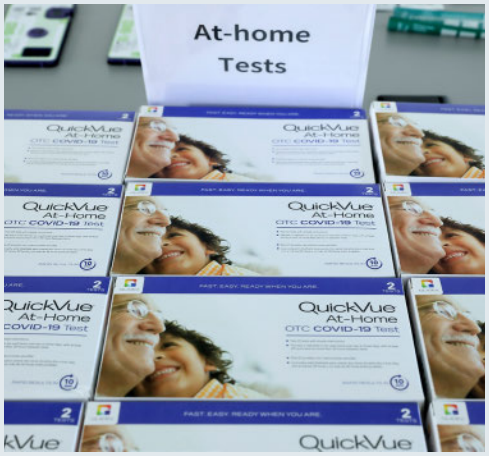
NIMH director Dr. Josh Gordon (l) and deputy clinical director Dr. Joyce Chung discussed mental health and Covid-19. At right, Collins briefly discusses "ARPA-H," a potential new health research component devoted to scientific breakthroughs that would be housed within NIH.

RADx Tech Tent Show

Visiting U.S. senators browsed Covid-19 diagnostic technologies on display May 17 in a tent erected for the occasion.

The RADx Tech and Advanced Technology Platforms (ATP) programs have supported the development and production of 33 technologies, including those shown here:

NIBIB director Dr. Bruce Tromberg demonstrates Ellume's Covid-19 antigen test that displays its result in 15 minutes via a smartphone app. Sen. Tammy Baldwin (D-WI) extends the microphone, while NIBIB health science policy analyst Dr. Patricia Wiley holds the paired smartphone.



- a Covid-19 home test kit developed by Ellume that produces a result within 15 minutes (FDA authorized in December 2020)
- MatMaCorp's portable mini-lab that that can rapidly perform multiple RT-PCR assays (FDA authorized in December 2020)
- Quidel's lateral flow immunoassay used with Sofia analyzers that provides results within 15 minutes (FDA authorized in May 2020)
- Talis One Covid-19 point-of-care test cartridges that insert into the Talis One instrument to detect SARS-CoV-2 through isothermal amplification of viral RNA and an optical detection system, returning a result in under 30 minutes;
- Two-pack boxes of QuickVue At-Home Covid-19 Tests that produce a result at home in 10 minutes (FDA authorized in December 2020).

Music

CONTINUED FROM PAGE 1

she sang. The experiment was part of Sound Health, an NIH-Kennedy Center initiative that Fleming helped launch to study the impact of music on health and healing.

Since then, Sound Health has hosted performances, scientific workshops and community activities while also supporting investigative research into the science of music. Now, NIH's music and health working group—a medley of scientific minds from across NIH—is orchestrating a toolkit to help researchers conduct rigorous music-based interventions for brain disorders of aging.

NIMH researcher Dr. David Jangraw reviews brain scans with Fleming at NIH.

"The field has incredible potential to provide new insights into how our brain works, along with noninvasive and cost-effective treatments using creative arts therapies," said Fleming, during a recent virtual gathering of researchers, clinicians, music therapists, patient advocates and creative arts representatives.

It was the first of three meetings—a prelude to start hammering out the components of the toolkit—in this new phase of Sound Health, in partnership with the Renée Fleming Foundation and the Foundation for the NIH. The 26 panelists spent the afternoon developing guidelines and methodologies to spur rigorous, data-driven research on the impact of music on health.

"Musicians and creative arts therapists have, through personal experience, always been aware of the holistic value of music for healing," said Fleming. "But to improve and expand individualized care, and engage the support of policymakers, insurers and health care institutions, we need this incremental process of research to solidify knowledge of the concrete impacts of music on health."

In welcoming this working group session, Fleming said she's excited to take part in this process, hopeful the research could yield therapies that will improve millions of lives. "I hope to keep singing this to the rafters in the coming years," she said.

Three sponsoring institutes are also singing its praises. NIA director Dr. Richard Hodes underscored the potential of music therapy to help treat Alzheimer's, Parkinson's, stroke and other disorders of aging. There's great interest in finding effective interventions that could intercept neurodegenerative processes and maximize quality of life with age.

This initiative is also an opportunity to study the therapeutic benefits of music across the lifespan. "Many of us at NINDS have been hypothesizing that...engaging with music during early life may in fact build the resilience that allows one to thwart the forces that would lead to neurodegeneration in aging," said NINDS deputy director Dr. Nina Schor. The goal is "not just to treat [these] disorders, but also to prevent them in the first place."

Music therapy has little risk of negative side effects. It's a natural, nonpharmacological intervention with the potential of becoming more integrated into mainstream health care, said NCCIH director Dr. Helene Langevin. "Singing and playing a musical instrument clearly involves both the mind and the body."

Even listening to music, or thinking about music, can have physical and psychological effects. Interestingly, when Fleming was in the MRI machine, the scans showed her brain was most active not while singing or talking, but while imagining she was singing.

Music may have medicinal powers, but don't make assumptions to fit your hypothesis, cautioned NINDS program director Dr. Shai Silberberg.

A particular intervention may benefit some study volunteers, but what if some participants are tone deaf or hard of hearing? Will the intervention be therapeutic if the subject is tasked with listening to opera but—gasp—(apologies to Fleming) despises that musical genre?

In designing studies, beware of unintentional bias, said Silberberg. He cited a decades-old psychology study in which students were told certain rats were bred to be smarter. The students repeatedly found those rats to be fastest at their task; but there were no trained rats.

"There was expectation bias on the side of the students," he said. "They expected the bright rats to learn faster, so that's what they found."

Silberberg said his toolkit would include a mirror, a balance, blindfolds, dice and a statistician. The mirror is to reflect on unconscious biases; the balance represents taking measures to minimize their impact. Blinding all participants in a clinical trial can prevent expectation bias, he said. Randomizing participants among the groups can increase the chance that comparison groups are balanced. But be careful how you roll the dice.

In a pilot study on music therapy to enhance mobility for Parkinson's patients, investigators randomized the participants. The test group was exposed to specific life activities and received multiple music sessions per week, while the control group did not participate in the music or activities. Was the music itself beneficial and restorative? The study was inconclusive.

"We should do our best to adjust the groups to be equal except for the one intervention being tested and, importantly, try to use objective, reliable outcomes," advised Silberberg.

Music has long been thought to have healing powers. But don't make assumptions to fit your hypothesis, cautions NINDS investigator Dr. Shai Silberberg, whose advice could apply to any clinical trial design.

Aim for transparent data, he added, and large effects that make the research worth pursuing and may attract broader support.

UNITE Sets Initial Priorities

NIH's UNITE Initiative, which was established to identify and end structural racism at NIH, released its initial priorities at a Feb. 26 special meeting of the advisory committee to the NIH director (ACD). Consisting of nearly 80 employees representing each of NIH's 27 institutes and centers, UNITE is set to present an update on progress and priorities at a session of the June ACD meeting.

UNITE has five committees and each committee has focused priorities according to its charge.

The U committee is charged with "Understanding stakeholder experiences through listening and learning." Priorities for the committee include soliciting feedback from NIH staff and the extramural community via listening sessions and focus groups; conducting qualitative data analysis from feedback received and submitting institute/center data requests to all ICs; and reviewing responses on recent, past, ongoing and upcoming diversity, equity and inclusion activities.

To learn more about UNITE and NIH's efforts to end structural racism, visit https://www.nih.gov/ending-structural-racism.

The N committee addresses "New research on health disparities, minority health, and health equity." The committee's priorities include proposing a Common Fund Initiative: "Innovations and Transformation in HD/HE Research; empowering IC leaders and project officers with a data dashboard that tracks and provides visualizations of research investments, analyzing and improving business processes from ideation to funding in order to achieve equity, and achieving equitable support for health disparities, minority health and health equity research at NIH to measurably reduce health inequities.

The I committee seeks to "Improve the NIH culture and structure for equity, inclusion and excellence." Priorities for the committee include revising the *NIH Manual* chapter on addressing harassment and inappropriate conduct, publishing accessible data on NIH workforce demographics, and establishing an anti-racism steering committee that will assist with developing racial equity plans for each IC.

The T committee is charged with ensuring "Transparency, communication and accountability with our internal and external stakeholders." The committee's priorities include developing a webpage with a data dashboard that provides transparent NIH and UNITE data, developing a UNITE toolkit to help ICs communicate diversity, equity and inclusion efforts and updating the portraiture and art installations throughout NIH's physical spaces and the agency's online presence to reflect the diversity of identity and career paths at NIH.

The E committee is focused on the "Extramural Research Ecosystem." The committee's priorities include building and sustaining research capacity for fuller participation in modern research enterprise, identifying policies that contribute to inequities in extramural funding, launching programs that spur institutional culture change in support of inclusivity and equity and increasing career opportunities for individuals from diverse groups, including those from underrepresented groups.

To learn more about UNITE and NIH's efforts to end structural racism, visit https://www.nih.gov/ending-structural-racism.

NIGMS Renames Lecture Series for Greenberg

The NIGMS Director's Early Career Investigator (ECI) Lecture Series will be renamed the Judith H. Greenberg ECI Lecture Series to honor NIGMS's former deputy director. Greenberg retired last October after 45 years of service to NIH, most of which were spent at NIGMS. She twice served as the institute's acting director, from May 2002 to November 2003 and from July 2011 to August 2013.

Dr. Judith Greenberg

Throughout her career, Greenberg held a strong interest in bioethics issues and in research training and career development, and advised NIH on topics that included human embryonic stem cells, gene therapy and biomedical career advancement for women.

"Judith especially had a deep commitment to helping early-career scientists, and naming this lecture in her honor seems a very appropriate way of recognizing everything she did for NIGMS and NIH," said NIGMS director Dr. Jon Lorsch.

The series was established in 2016 to encourage undergraduate students to pursue careers in biomedical research. The scope has since broadened to include graduate through postdoctoral students and other early-career scientists.

More information on the Greenberg series, including details about this year's event, which will be held Sept. 29, can be viewed at https://www.nigms.nih.gov/News/meetings/ECI/.

Turning Imagined Handwriting into Text

Researchers developed a system that quickly translates brain signals for handwriting into text. While preliminary, this technology could help people with spinal cord injuries and neurological disorders who have lost the ability to write and speak to communicate.

Thoughts turned into text: Two implanted electrode arrays record brain activity produced by thinking about writing letters. A computer processes the data in real-time and converts it into words on a screen.

IMAGE: ERIKA WOODRUM (ARTIST), SHENOY LAB

The study, funded by NIH's BRAIN Initiative, as well as NINDS and NIDCD, appeared online in *Nature*.

Brain-computer interfaces, or BCIs, enable a direct link between the brain and an external computer. Using BCI technology, people who are paralyzed can control a robotic arm or type with a computer cursor. But point-and-click typing using BCIs can be a slow process, making it inefficient to use.

In the new study, researchers developed a BCI that translates thoughts of handwriting movements into text in real time. They assessed the speed and accuracy of the system with a person who was paralyzed from a spinal cord injury. The participant was told to imagine he was holding a pen on a piece of ruled paper. He attempted to copy letters displayed on a screen, as well as symbols for spaces and stops, as if his hand was not paralyzed.

Electrodes implanted in the brain recorded activity from roughly 200 neurons that responded to the "writing" of each character. A machine-learning algorithm used these signals to learn to identify the neural patterns representing individual letters. After a series of training sessions, the system allowed the participant to form new sentences, with the computer displaying letters in real time.

Using the new system, the participant could compose sentences at about 90 characters per minute with 94 percent accuracy. This speed is comparable to someone of a similar age typing on a smartphone. In contrast, "point-and-click" interfaces have only achieved about 40 characters per minute.

"This study represents an important milestone in the development of BCIs and machine learning technologies that are unraveling how the human brain controls processes as complex as communication," said Dr. John Ngai, director of the NIH BRAIN Initiative. "This knowledge is providing a critical foundation for improving the lives of others with neurological injuries and disorders." —adapted from *Research Matters*

NIH-funded Study Finds Higher Dose of DHA Lowers Preterm Birth Risk

Women taking 1,000 mg of docosohexanoic acid (DHA) daily in the last half of pregnancy had a lower rate of early preterm birth than women who took the standard 200 mg dose, according to an NICHD-funded study that appears in *EClinicalMedicine*. Women given the higher dose who entered the study with a low DHA level had the greatest reduction in early preterm birth, defined as birth before 34 weeks of pregnancy, which increases the risk of infant death and disability.

Previous studies on the potential effects of DHA and other omega-3 fatty acids—nutrients found in fish and eggs and supplements like algal oil—have been inconclusive and have not identified a specific type or dose of omega-3 fatty acids.

A higher dose of DHA in the last half of pregnancy may reduce risk of early preterm birth.

ISAYILDIZ/ISTOCK/GETTY

Researchers enrolled nearly 1,100 women and compared the effects of administering 1,000 mg of DHA in one group and 200 mg in another group on the early preterm birth rate. Overall, fewer women in the high-dose group delivered early preterm compared to the standard-dose group. Among women who had high DHA levels at study entry, the rate of early preterm birth was low and did not differ by dose. The authors called for screening DHA levels in pregnancy so that women with low levels could consider taking a higher daily dose.

Tailored, Earlier Cardiac Rehab Shows Benefits

New research shows that an innovative cardiac rehabilitation intervention started earlier and more custom-tailored to the individual improved physical function, frailty, quality-of-life and depression in hospitalized heart failure patients, compared to traditional rehab programs. These findings, supported by NIA, were published in the *New England Journal of Medicine*.

Research shows tailored, earlier cardiac rehab can benefit heart failure patients.

FLY VIEW PRODUCTIONS / GETTY

"These results mark encouraging progress on a path to better overall quality-of-life and physical function for the millions of older Americans who develop heart failure each year," said NIA director Dr. Richard Hodes.

For this new study, a research team followed 349 people with heart failure enrolled in "A Trial of Rehabilitation Therapy in Older Acute Heart Failure Patients" (REHAB-HF). Participants had an average of five comorbidities—diabetes, obesity, high blood pressure, lung disease or kidney disease—that also contributed to loss of physical function.

In an earlier pilot study, researchers found striking deficits in strength, mobility and balance in older patients with acute heart failure, along with the expected loss of endurance, worsened by the prescribed lengthy bedrest. The REHAB-HF team designed earlier and more customized exercise programs that emphasized improving these areas of physical function.

The team also began REHAB-HF during a patient's hospital stay when feasible instead of waiting until the traditional 6 weeks after discharge. After release from the hospital, study participants shifted to outpatient sessions 3 times per week for 3 months.

Compared to a control group that received usual cardiac rehab care, REHAB-HF participants showed marked gains in measures of physical functioning and overall quality-of-life, including significant progress in a series of tests to evaluate lower extremity function and mobility. They also had notable improvements in self-perception of their health status. And, more than 80 percent of REHAB-HF participants reported they were still doing their exercises 6 months after completing the study. The research team plans to expand REHAB-HF into larger and longer-term trials with broader participant subgroups.

NIH'ers Win Flemming Awards

Two NIH'ers are among the 12 public servants who will be honored at the 72nd annual Arthur S. Flemming Awards. Winners are recognized for performing outstanding service in the fields of applied science and engineering, basic science, leadership and management, legal achievement and social science.

NHLBI's Dr. Keir C. Neuman and NIDA's Dr. Tisha R. Wiley are NIH's 2020 Flemming Award recipients.

For more than 70 years, the awards have celebrated stellar employees with 3 to 15 years of federal government service. Recipients are nominated by their federal agencies, selected through a competitive judging process and presented by the Arthur S. Flemming Commission in partnership with the George Washington University Trachtenberg School of Public Policy and Public Administration and the National Academy of Public Administration.

In the basic science category, Neuman, chief of the Single Molecule Biophysics Laboratory, was cited "for the development of innovative technology enabling pioneering studies of the structural dynamics of twisted (also known as supercoiled) DNA and topoisomerases, the essential enzymes that control DNA supercoiling and preserve genome integrity in cells. He has perfected physics-based approaches and built unique instrumentation to control individual DNA molecules with unprecedented precision. His research has provided novel insights and resolved longstanding questions concerning essential mechanisms of topoisomerases, the inhibition of topoisomerases by anticancer chemotherapeutic agents and fundamental aspects of DNA topology."

Dr. Tisha R. Wiley and Dr. Keir C. Neuman are 2020 Flemming Award recipients.

In the social science category, Wiley, chief of the Services Research Branch and associate director for justice systems, was recognized as "the primary architect of the Justice Community Opioid Innovation Network (JCOIN), an ambitious initiative that seeks to address the drug overdose crisis by reimagining the way the justice system responds to addiction. JCOIN builds linkages between scientists at academic centers and justice systems—jails, prisons, probation/parole, drug courts, juvenile justice and similar settings—so that policy and practice innovations can be rapidly launched and rigorously tested. JCOIN's focus is provision of evidence-based opioid treatment services to individuals as they transition from the justice system to the community."

Established in 1948, the award is named after Arthur Sherwood Flemming, a distinguished government official who served seven presidential administrations, most notably as secretary of the Department of Health, Education and Welfare under President Dwight Eisenhower.

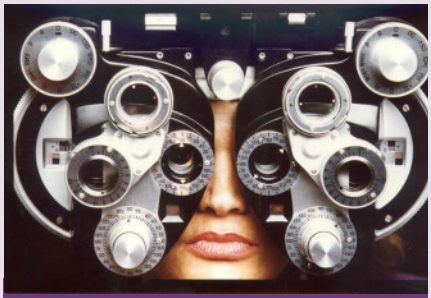
NEI Retiree Huss Mourned

BY KYM COLLINS-LEE

Linda Maxsell Huss, former NEI public affairs specialist, died Apr. 11, after a long illness. She was 64.

Huss was a familiar face at NEI for nearly 3 decades, overseeing exhibits, publications, images and photographs. She witnessed NIH's first computers and the dawn of NIH's official websites and social media accounts. She retired after 40 years of federal service in 2015.

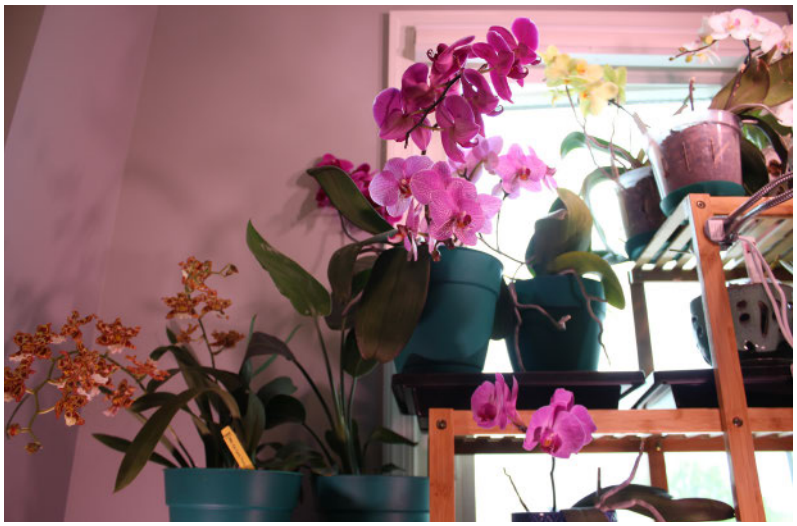
Huss grew up in Montgomery County and graduated from Albert Einstein High School. She began her federal career in 1975 at the Food and Drug Administration Bureau of Biologics, which at that time was located on the NIH campus. She worked in the Division of Compliance, filling out protocols for new drug applications, and later worked in the Bureau of Biologics Freedom of Information Office. In 1981, she moved to the communications office in the National Institute of General Medical Sciences.



As a communication specialist, Linda Huss developed publications and other materials to promote NEI-supported research. She coordinated photo shoots for the institute using volunteer staff—including herself shown above behind a phoropter—as models.

In 1987, Huss took a position in the NEI communications office where she spent the last 28 years of her career. Huss developed publications and traveling exhibits to promote NEI-supported research. She and colleagues coordinated photo shoots for the institute using volunteer NEI staff and family members as models. These photos were used for the NEI's first official website, two traveling exhibits, conference exhibits and publications for patients and the public. The photos were also used extensively by the media and public and professional organizations.

Huss is survived by long-term partner, retired NIH'er David Pair; her mother; a son and daughter-in-law; and many other family members and friends.



BLOOMING ORCHIDS

Keeping Personal Connections Alive Amid Pandemic

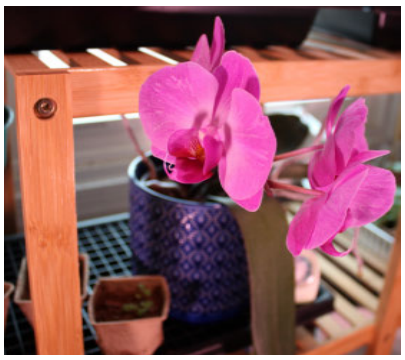
The *Record* asked readers to share pics of their plants grown during the pandemic. Jo-Ann Krieble of NINR responded splendidly:

"Before COVID, I had started rehabbing the office orchids and learning about how to encourage them to bloom again," she emailed. "Most of them are phalaenopsis (i.e., moth orchids) and are the type most typically sold at grocery stores. I had a collection of 5 or 6 'phals' that I would care for in the office, and then give them back to their owners when they were in bloom. When lockdown happened, I brought them all home so they'd continue to get the TLC they needed. I didn't get to share their blooms in person this year, but have shared photos with the office so their rightful owners could enjoy them. Photos of 3 favorites are [shown here], as well as a group photo of all 'the girls.'

"Rebecca (above, r) is a phal that belongs to an office mate and has beautiful purplish blooms. Isla (below, l) belonged to a former colleague and was in pretty rough shape when her former owner left our IC. We didn't know what she'd look like if I could get her to recover, but she bloomed this spring for the first time in years. Oncostele (below, 2nd from l) is the last orchid I bought at an orchid sale just before lockdown. This one is known as Oncostele Eye Candy 'Penny Candy.'

Aside from producing beautiful blooms that brighten the office, helping others take care of their orchids has given me a way to help keep our personal connections alive during Covid. I look forward to being able to share them in real life next blooming season!"

PHOTOS: OTTO BLAIS-NELSON



More Green Thumb Goodies

At left, Oxalis, or purple shamrock; heather (c) and Fern kokedama (kokedama = "poor man's bonsai")—**Laurie Doepel, NIAID**

There's still time to see your plant photos in the *Record*. Email hi-res images with a caption to nihrecord@nih.gov.