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National Institutes of Health

MENTAL HEALTH A CONCERN

JHU's Everly Prescribes 'Psychological First Aid' During Pandemic

BY CARLA GARNETT

Founding father Thomas Paine certainly could have been writing about 2020, when he said in *The American Crisis*, "These are the times that try men's souls." (Of course, being enlightened, he would've included women's souls too, and noted that the crisis is global.)

Caveats aside, most authorities on mental health agree that the enormous psychological toll of the Covid-19 pandemic—and the measures we've all had to take to limit its spread—must be acknowledged and addressed before we can get back to any kind of normal.

Dr. George Everly

For insights and coping strategies on the problem, NIH director Dr. Francis Collins called on world-renowned expert on psychological impacts of disaster Dr. George Everly, psychologist and professor at Johns Hopkins University's Bloomberg School of Public Health. He gave a virtual presentation, "Psychological Aspects of Pandemic and Human Resilience," aimed specifically at the NIH workforce.

Acknowledging this "really unique and surreal year called 2020" wherein we're experiencing "a prolonged example of a disaster wrought by an invisible virus," Collins introduced the event. "Covid-19 has profoundly affected all of us," he said. "Nobody has gone through this without having a range of emotions, from stress, anxiety, fear—just grief about all the things that have happened and the lives that have been lost and the terrible stresses and economic distress that have happened to people...and certainly loneliness, the inability to gather together the way many of us love to do, which has not been possible with our requirements to be safely sheltered at home."

The presentation was held on Sept. 10, World Suicide Prevention Day. Suicide is the nation's 10th leading cause of death and is in many cases preventable.

"Concern in the U.S. about a rise in the

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Rafters ringing yet? CRC bluegrass show, p. 2.

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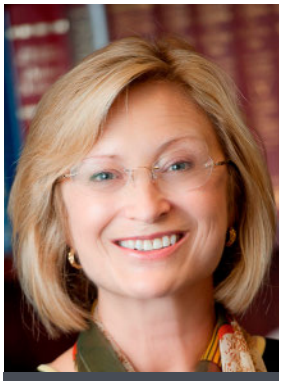
Brown Studies Consequences of Adolescent Alcohol Use

BY ERIC BOCK



Dr. Sandra Brown

Long-term studies on adolescent alcohol use are revealing the effects of alcohol exposure on brain development and the genetic and environmental factors for increased risk of adolescent alcohol use, said Dr. Sandra Brown at NIAAA's 12th annual Jack Mendelson Honorary Lecture held via videoconference recently.

"For over 15 years now, we've had evidence that the brains of youth exhibit

SEE **BROWN**, PAGE 8

MENDING BROKEN HEARTS

Fellow Explores DeBakey's Far-Reaching Legacy

BY DANA TALESNIK

Dr. Sara Farhan

The late Dr. Michael E. DeBakey is a medical legend. Dubbed the Texas Tornado by a colleague, DeBakey—a cardiac surgeon, innovator, educator and research advocate—inspired countless doctors and medical students in the United States during his 75-year career. His scientific contributions and teachings also transcended national borders. The son of Lebanese

SEE **DEBAKEY**, PAGE 6

Ends Dec. 14

Federal Benefits Open Season Is Underway

The benefits open season began on Nov. 9 and runs through Dec. 14. Don't miss this opportunity. If you plan to make an open season election, now is the time to do it. Unless you experience a qualifying life event during the year, the annual open season is your only opportunity to enroll, cancel your enrollment or make a change to your enrollment for the participating programs.

For detailed information about the Federal Benefits Open Season, view the announcements at https://hr.nih.gov/benefits/change-open-season/benefits-open-season.

The three participating programs are:

• Federal Employees Health Benefits (FEHB) Program—To enroll, cancel or change your FEHB enrollment, you must use myPay at https://mypay.dfas.mil/mypay.aspx. Open season elections will be effective on Jan. 3, 2021. Your current enrollment will automatically continue into next year, if you do not take any action during open season. (Exception: If you will be retiring between now and Jan. 2, 2021, do not use myPay to make your open season change. Instead, you must submit a hard copy Health Benefits Election Form, SF 2809, along with your retirement paperwork to your benefits specialist.)

• Federal Employees Dental and Vision Insurance Program (FEDVIP)—To enroll, cancel or change your FEDVIP enrollment, you must use the BENEFEDS Portal at www.benefeds.com or call 1-877-888-3337 (TTY 1-877-889-5680). Open season elections will be effective on Jan. 1, 2021. Your current enrollment will automatically continue into next year, if you do not take any action during open season.

• Flexible Spending Accounts (FSA) Program—To enroll in an FSA for 2021, you must use the FSAFEDS website at www.fsafeds.com or call 1-877-372-3337 (TTY 1-866-353-8058). Note that your current enrollment will not automatically continue into next year. If you want an account in 2021, you must enroll during open season. Elections will be effective on Jan. 1, 2021.

If you have questions, email AskBenefits@nih.gov or your benefits contact. To locate your contact, visit https://hr.nih.gov/contacts/benefits.

Open Enrollment for NIH Leave Bank

Fall open enrollment for the NIH Leave Bank runs until Dec. 14. The membership period will begin on Jan. 3, 2021.

The Leave Bank is a pooled bank of donated annual and restored leave available to eligible members. It acts like a safeguard for your paycheck and amounts to paid leave for members who have exhausted all of their own sick and annual leave and are affected by a personal or family medical condition.

Bluegrass Players Make Rafters Ring

The bluegrass quintet We RNA String Band performed in the atrium of the Clinical Research Center on Nov. 10. Band members include NIH director Dr. Francis Collins (top, l) and Dr. Ivan Vujkovic-Cvijin on guitar, Dr. John Tisdale on bass, Dr. Dominic Golec on mandolin and Dr. William Sears on fiddle. "It was great fun!" said Collins, who also played piano. The setlist included *Whiskey Before Breakfast*, *Temperance Reel*, *Angeline the Baker*, *Ashokan Farewell*, *House of the Rising Sun*, *Cherokee Shuffle*, *Redwing*, *Milkcow Blues*, *Old Joe Clark*, *Tennessee Waltz* and *Orange Blossom Special*.

PHOTOS: CHIA-CHI CHARLIE CHANG

To become a Leave Bank member, access the Integrated Time and Attendance System during open enrollment and select "Leave Bank Membership" to enroll. If you are a 2020 Leave Bank member, your membership will automatically continue into 2021, unless you opt out. The yearly membership contribution is one pay period's worth of annual leave accrual. The membership contribution will be waived automatically if you lack sufficient leave.

For more information, visit http://hr.nih.gov/leavebank or contact (301) 443-8393 or send email to LeaveBank@od.nih.gov.

SYMPOSIUM SET

NIAAA Celebrates 50 Years of Advancing Alcohol Research

This December marks the 50th anniversary of the creation of the National Institute on Alcohol Abuse and Alcoholism. Over the past five decades, NIAAA-funded researchers have made tremendous progress in advancing the understanding of how alcohol affects health.

NIAAA director Dr. George Koob said, "While we have much more work to do, today we know more about how alcohol affects the brain and body than ever before, and we have better interventions to prevent and treat alcohol misuse, thanks largely to the determined and uncompromising efforts of the talented researchers supported by NIAAA. These efforts have provided the foundation for the recognition of alcohol use disorder (AUD) as a medical disorder ranging from mild to severe, rather than a moral failing."

To commemorate five decades of biomedical discovery in the alcohol and health field, NIAAA will host a virtual scientific symposium, "Alcohol Across the Lifespan: 50 Years of Evidence-Based Diagnosis, Prevention and Treatment Research" on Nov. 30 and Dec. 1. The event can be viewed at https://www.niaaa.nih.gov/news-events/meetings-events-exhibits/niaaa-50th-anniversary-symposium.

It will include presentations by top research experts on the state of the science and opportunities to continue advancing the field. Featured topics will include updates on how to diagnose and treat AUD, as well as trends in the prevalence of and risk factors for the disorder. Speakers will also cover topics related to the biology of alcohol use and alcohol, such as the effects of alcohol exposure or consumption on fetal and adolescent brain development, liver pathology and the stress system.

Dr. George Koob

Created in 1970, NIAAA's broad research portfolio focuses on health topics that touch the lives of almost every family and community across the United States. Today, thanks to NIAAA's legacy of supporting innovative research, advances in evidence-based interventions have contributed to a steady decrease in underage drinking over the past two decades. NIAAA has also made great strides in understanding the deleterious effects of prenatal alcohol exposure and in elucidating the biological underpinnings of AUD and alcohol-associated liver diseases, efforts that are paving the way for improved diagnosis, prevention and treatment.

Just as expanding the knowledge base is important, so is translating the evidence into valuable resources for the public, such as Rethinking Drinking (https://www.rethinkingdrinking.niaaa.nih.gov/) and the NIAAA Alcohol Treatment Navigator (https://alcoholtreatment.niaaa.nih.gov/), which are resources to help people evaluate their drinking habits and find treatment, respectively.

Other resources include CollegeAIM (https://www.collegedrinkingprevention.gov/collegeaim/), which helps colleges and universities identify effective evidence-based alcohol interventions, as well as a youth alcohol screening guide (https://www.niaaa.nih.gov/sites/default/files/publications/YouthGuide.pdf) designed to assist health professionals in efficiently conducting alcohol screening for adolescents ages 9 to 18. Adding to these resources, new evidence-based materials are on the way and will be available soon.

NIAAA also remains nimble and mobilizes to pursue emerging avenues of research in addition to its long-standing priorities. For example, the novel coronavirus pandemic has yielded many urgent research questions, and NIAAA is funding research related to alcohol and the pandemic—and contributing to Covid-19 activities across NIH. Information about NIAAA's response to the pandemic and resources for the public, health care providers and researchers is available on the NIAAA website.

Of great importance is the need for diversity and inclusion, both in terms of the research that NIAAA supports, the individuals who conduct that research and the staff that supports the research enterprise. NIAAA's commitment to increasing diversity in the scientific workforce encompasses intramural and extramural research programs and spans the pipeline from early education to established scientists. The institute has renewed its commitment to address the health needs of underserved populations so that all members of society may benefit from the work that NIAAA funds.

The community of alcohol practitioners and researchers has gained valuable knowledge during NIAAA's first five decades—knowledge that provides a strong foundation upon which to build. However, there is still a lot more work to do. NIAAA looks forward to further scientific advances that will help prevent AUD and improve the lives of those affected by it.

To learn more about NIAAA's history and plans for the symposium, visit https://www.niaaa.nih.gov/niaaa-50-legacy-advancing-alcohol-research. R

ON THE COVER: *Hydractinia tentacles, close up. A little-known ocean-dwelling creature most commonly found growing on dead hermit crab shells may sound like an unlikely study subject for researchers, but this animal has a rare ability—it can make eggs and sperm for the duration of its lifetime. Called Hydractinia, the animal produces germ cells—precursors to eggs and sperm—nonstop throughout its life. Studying this unique ability could provide insight into the development of the human reproductive system and the formation of reproductive-based conditions and diseases in humans.*

IMAGE: ANDY BAXEVANIS, NHGRI

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NIH National Institutes of Health
Turning Discovery Into Health

Everly

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suicide rate was already there before the pandemic, and now with covid, concern has grown," Collins said. "Maybe we don't entirely know the full impact of that yet, but certainly the sense of isolation, the loss of economic support [and] fear of illness cannot help with this circumstance of causing people who are already feeling the depression to take even more drastic action. We want to talk about these issues. We want to reinforce and support the fact that we at NIH care deeply about our staff and what you're going through."

Everly first gave what he called a "30,000-foot overview" of what is now his third pandemic as a consultant. He has advised policymakers and other national officials in Hong Kong with SARS, Singapore with H1N1 and now Covid-19, in addition to Ebola. He also has worked around the globe to address the mental health consequences of natural disasters, terrorist attacks and other catastrophes.

"[Covid] has been the most challenging," he admitted.

"Anything that threatens mental health threatens the core of society," Everly declared. "A nation will never recover from the effects of disaster until its people recover. Psychological recovery is not only important, but I would argue it's the imperative."

He said the coronavirus pandemic may give rise to a "hidden pandemic" that finds a high volume of folks in mental health crisis.

"People who previously coped well may ultimately succumb to the multiple stressors [that covid presents]," Everly explained. "People who were already suffering from a mental condition may get worse."

★★★

"A nation will never recover from the effects of disaster until its people recover. Psychological recovery is not only important, but I would argue it's the imperative."

-DR. GEORGE EVERLY

★★★

Speaking directly to an NIH audience replete with pandemic scientists, physicians, nurses and other health care providers and affiliated employees, Everly cautioned that performance of such roles comes with tremendous costs—the most obvious and pernicious perhaps being burnout.

"Especially looking at frontline workers and first responders, we have seen heroic efforts on their parts, but not without a consequence—exhaustion being one," Everly pointed out.

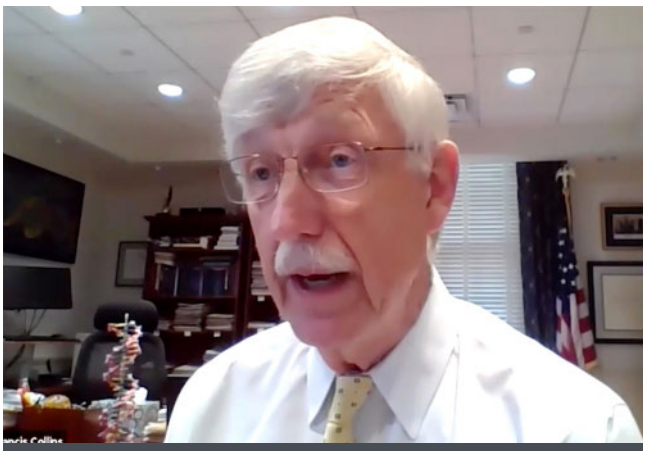
He explained why studying the psychology of an infectious disease is important and looked at issues specifically related to psychological impact of the pandemic.

Themes of distress that Everly's team recorded among health care workers in Arizona include lack of clear information; new rules and responsibilities; overwhelming emotions such as worry and frustration; and conflicting emotions as well as concern for family members.

Everly explored resilience and how some people seem better able to bounce back than others.

In a sample of more than 7,150 contacts compiled from late April to late August by the Mental, Emotional, Spiritual Health Collaborative at Johns Hopkins Medicine, Everly cited in excess of two dozen recurring commonalities. Among the more important to note are fear of infecting family members, physical fatigue, emotional exhaustion, feelings of isolation, fear of furlough or losing a job and distractions working from home or inability to stay focused on task.

"I want to reassure you that if you're experiencing any of these, you're not alone," he said.



NIH director Dr. Francis Collins wondered whether we should employ different coping tactics for short-term catastrophes as opposed to disasters that linger on.

Everly also explored resilience and how some people seem better able to bounce back than others.

He and his team found several key characteristics that were common among firefighters, police officers, Navy SEALs and other military special ops team members as well as people who had recovered from catastrophic medical issues—active optimism, decisiveness, tenacity, following a moral compass and connectedness.

His group outlined several psychological phases of disasters, from impact to honeymoon through disillusionment until recovery/moving on. Using that timeline, Everly forecast a psychological trajectory and talked about estimating overall toxicity and casualty levels.

He closed his lecture with specific recommendations for fostering resiliency.

How do we help others bounce back? Everly cited 2003 Institute of Medicine

research that suggested, "In the past decade, there has been a growing movement in the world to develop a concept similar to physical first aid for coping with stressful and traumatic events in life. This strategy...is most commonly referred to as 'psychological first aid (PFA).'"

Not to be equated with mental health diagnosis or treatment, PFA provides a "compassionate and supportive presence designed to stabilize and mitigate acute distress, instill hope and facilitate access to continued mental health care," Everly said.

Folks such as frontline workers who themselves are "facing a pandemic of exhaustion" could stave off its most harmful effects, Everly said, by adopting several strategies to recharge: exercise moderately every day, limit consumption of caffeine and other energy-boosting substances, get at least 7 hours of sleep per night, take a power nap when tired and practice some form of relaxation such as meditation, prayer, mindfulness or focused breathing.

Summing up, Everly shared several personal and family anecdotes about managing stress.

The presentation ended with an open conversation between Everly and Collins, who asked pointed questions about coping, including whether we should employ different coping tactics for short-term catastrophes as opposed to disasters, like this pandemic, that linger on.

"Different, definitely," Everly replied. "The first thing is expectation. If we expect this to be short-lived, we have been remarkably, if not catastrophically, disappointed."

He drew on lessons that World War II survivors recalled learning from the London Blitz, when what had at first been forecast as a massive but short-term air raid ultimately became a prolonged 9-month bombing campaign. Once they realized the onslaught was going to continue beyond early predictions, survivors' mindsets began to recalibrate and their resolve formed.

The acceptance seemed to be a turning point for emotional recovery, Everly suggested. "The expectation, the self-fulfilling prophecy—the 'What are we in for? We're in for a long haul'—That in and of itself may be a game changer."

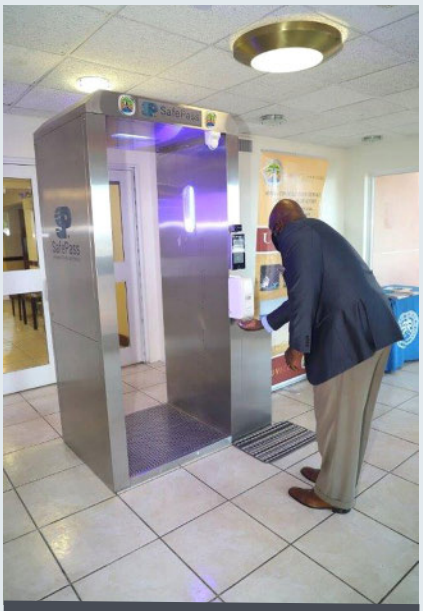
The full session is archived at https://videocast.nih.gov/watch=38425.

PATH TO EXCELLENCE

Collaboration Between HBCU, Business Featured on NIH Virtual Industry Day

A novel approach for combating Covid-19 developed by a minority business and a historically black university was demonstrated to participants in a Federal Industry Day sponsored by NIH recently.

Typically, the last week of September is recognized by the White House Initiative on Historically Black Colleges and Universities (HBCUs) as National HBCU Week and includes a conference that draws thousands of HBCU leaders and advocates to the nation's capital. This year, because of the global pandemic, the meeting was held virtually rather than in a hotel conference center.



Dr. Oluwafemi Banjoko, senior contracts and grants specialist at UVI, demonstrates the SafePass Intelligent Disinfecting Station.

Events during the last 2 days of the conference focused on increasing HBCUs' competitiveness in federal contracting. Three contracting workshops were held on Sept. 24 and Federal Industry Day followed on Sept. 25.

According to Diane Frasier, head of contracting activity and director of the Office of Acquisition and Logistics Management at NIH, revenue from federal government contracts is relevant to HBCUs because "they can create more jobs on campus, which will also stimulate local economies and provide employment opportunities for students."

"As procurement forecasts and acquisition plans are drafted for FY21, it is critical for Historically Black Colleges and Universities to have a seat at the table," said Annette Owens-Scarboro, who manages NIH's Small Business Program Office (SBPO).

She and Frasier have been working for several years to increase the agency's engagement with HBCUs in accordance with White House Presidential Executive Order 13779, which directs agencies to develop plans to assist in strengthening HBCUs' ability to participate equitably in federal programs through contracts, grants and cooperative agreements.

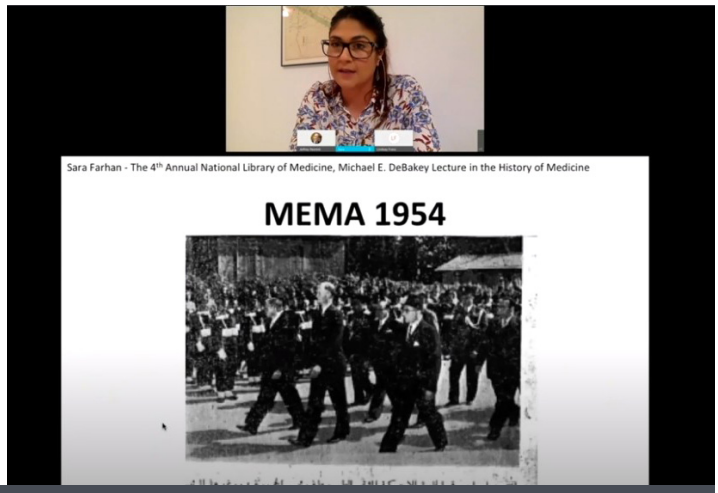
With that goal in mind, SBPO's Path to Excellence & Innovation Initiative provides outreach, training and technical assistance to HBCUs interested in pursuing contracts at NIH and other federal agencies. The University of the Virgin Islands (UVI) is one of six HBCUs participating in the initiative's pilot program.

Dr. David Hall, president of UVI, highlighted a partnership with entrepreneur and biologist Donald Toatley and his company SafePass IDS. Together, they developed a science-based technology designed to mitigate the consequences of Covid-19: the SafePass Intelligent Disinfectant Station, a full-body, zero contact unit. According to Toatley, this product is possibly the first technology that combines 3 sanitizing modalities and 2 health mandates in 1 system.

SafePass uses a vaporized disinfectant hydrogen peroxide mist that is gentle to the skin and recommended by the Food and Drug Administration. Additional decontamination is provided by a Far UVC light at a wavelength between 200 and 400 nanometers, a sanitizing feature that is routinely used to kill bacteria and viruses and is harmless to the human body, as well as blue light therapy, according to an informational video (https://youtu.be/DJnBmRoKOBA) presented at the conference by Hall.

The station also distributes hand sanitizer, detects whether a person is wearing a face mask and takes his or her temperature.

Along with the presentation on the SafePass station, NIH's Federal Industry Day featured matchmaking sessions between representatives of 27 HBCUs and 43 government agencies. During these one-on-one conversations, HBCU representatives had the opportunity to present their institutions' technical capabilities to federal procurement officials responsible for acquiring goods and services for the government.



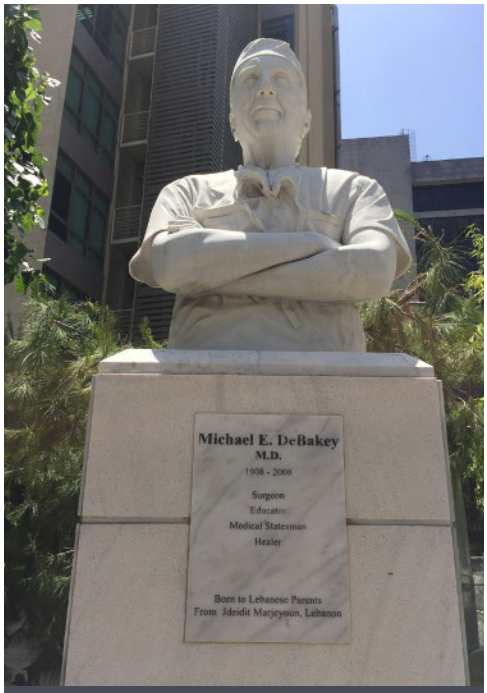
Dr. Michael DeBakey arrives in Lebanon in 1965 to advise physicians there about the health of former Syrian President Shukri Kuwatli (1891-1967). Kuwatli had lived in exile in Beirut since 1958. **PHOTO: EMBASSY OF LEBANON** At right, Farhan delivers NLM's 4th annual Michael DeBakey Lecture in the History of Medicine.

DeBakey

CONTINUED FROM PAGE 1

immigrants, he was especially revered across the Middle East.

The National Library of Medicine houses an archive of DeBakey's seminal papers and further honors his legacy by hosting a namesake annual fellowship program and lecture. Recently, Dr. Sara Farhan, the 2019 DeBakey fellow, spoke via videocast at the 4th NLM Michael DeBakey Lecture in the History of Medicine.



A statue honoring DeBakey on the American University of Science and Technology's campus in Beirut

"DeBakey's heritage was a source of pride not only to doctors, but also to the general population in the Middle East," said Farhan, an Iraqi-born scholar. "When mentioned, almost always, his Lebanese heritage is underscored alongside his innovation, research and professional accomplishments."

The pioneer of open-heart surgery, DeBakey designed cardiac pumps and surgical instruments, some of which are still used today. Having learned to sew from his mother, in the early 1950s, he stitched the first Dacron grafts to replace sections of blood vessels damaged by aneurysms.

In the 1960s, DeBakey performed the first successful coronary bypass and some of the first heart transplants. He performed more than 60,000 surgeries in his lifetime and operated on some internationally prominent figures, including the shah of Iran and members of the Saudi royal family. During his 50-year affiliation with Baylor College of Medicine in Houston, where he was chief of surgery, he trained surgeons from around the world.

Farhan, who teaches history at the American University of Sharjah in the United Arab Emirates, has been researching the internationalization of the medical profession—with a focus on medical schools in Iraq and Lebanon—and DeBakey's historic role in the process. She highlighted his April 1954 visit to the region during which he attended the Middle East Medical Assembly (MEMA) at the American University of Beirut (AUB).

DeBakey's attendance at MEMA was significant on multiple levels and was viewed as an opportunity to bolster international ties among surgeons and medical professors.

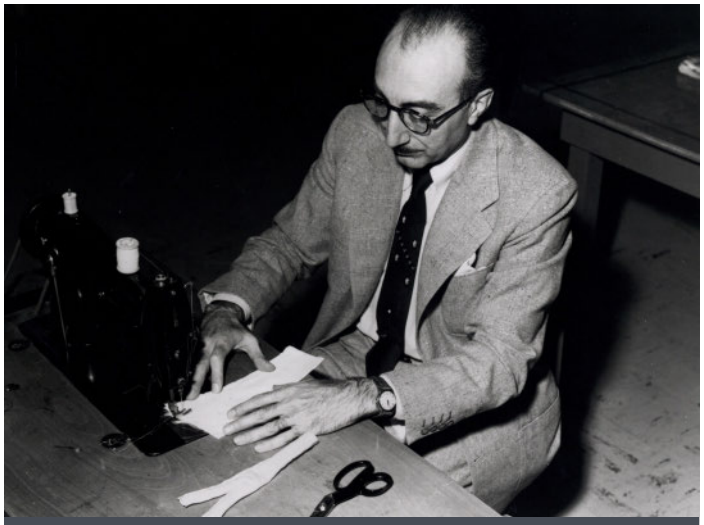
> ***"DeBakey's footprints in the Middle East were planted prior to his 1954 visit. Medical colleges in the Middle East studied, applied and taught DeBakey's findings. His name was part of the medical lexicon in the region."***
>
> ~DR. SARA FARHAN

"Doctors in the Middle East were members of an international professional community where the exchange of knowledge was rooted in lifelong learning," Farhan said. Their networking with other prominent doctors from around the world symbolized that they did not work in a vacuum, she added, helping to dispel notions of the Middle East as a backward, isolated region.

From Beirut to Baghdad, doctors embraced new developments in medicine

and had been captivated by DeBakey's life-saving cardiovascular innovations for years.

"DeBakey's footprints in the Middle East were planted prior to his 1954 visit," Farhan said. "Medical colleges in the Middle East studied, applied and taught DeBakey's findings. His name was part of the medical lexicon in the region."



DeBakey stitches a Dacron graft artificial artery at home, on his wife's sewing machine in 1955. One of DeBakey's most important surgical innovations was the Dacron vascular graft, which he developed to replace sections of blood vessels damaged by aneurysms, especially in the aorta.

PHOTO: BAYLOR COLLEGE OF MEDICINE

The 1954 MEMA came at an auspicious time, when medical educational ties were flourishing between the United States and the Middle East. After World War II, anti-colonial movements across the Middle East presented new opportunities for collaboration. As ties weakened with France and England, the two major colonial powers, students and doctors increasingly sought training at American colleges, said Farhan.

During this period of heightened Arab nationalism, the work of medical pioneers of Arab descent, including DeBakey—whose Lebanese family name was Dabaghi—gained growing attention across the region. "DeBakey became an extension of the region's contribution to the history of advancement in modern medicine," said Farhan.

Against this backdrop, it's not surprising that the U.S. State Department encouraged DeBakey to travel to Beirut for the MEMA in 1954.

"I speculate that the State Department hoped DeBakey would establish new ties in Beirut in hopes of persuading doctors and politicians alike to consider the United States as a worthwhile ally for medical meetings, missions and campaigns," said Farhan.

The MEMA conference lasted 3 days, but DeBakey would remain in the Middle East for a month, lecturing and touring at 5 medical colleges in 3 countries. His lectures mainly focused on the science. But in Syria, where he traveled to two medical colleges with a local doctor, DeBakey boldly expressed concern that Arab nationalism—instruction in Arabic and the ban on foreign language books—was hindering international networking opportunities there.

Medical journals in the Middle East had cited DeBakey's work as early as 1940, describing his sleeve-valve transfusion syringe, one of his first inventions back in medical school at Tulane University.

"But the exchange of knowledge was not one-directional," said Farhan. DeBakey collaborated with surgeons and had studied the works of doctors from the region, including prominent Iraqi surgeon Dr. Yousif al-Naaman and AUB's Dr. Amin Khairallah.

"This is especially important because it highlights that DeBakey celebrated the knowledge exchange shared between the Middle East and the United States," Farhan said. "He did not see himself as superior to medical professionals in the region, but as their equal." His relationships with medical professionals across the Middle East continued to flourish for decades, until his death in 2008.

Farhan closed by sharing a poem she came across in NLM's archival collection that she thought highlighted DeBakey's influence on the region. In his 1953 *A Brief Medical Bible: Ethics in Medicine,* Khairallah wrote: "Today well-lived makes every yesterday a dream of happiness, and every tomorrow a vision of hope."

NINR Director To Address Health Impacts of Where People Live

Dr. Shannon Zenk, the new director of NINR, will present "All Health Is Not Created Equal: Where You Live Matters" on Wednesday, Dec. 9, from noon to 1 p.m. Her talk (webcast only) is the 2020 Stephen E. Straus Distinguished Lecture in the Science of Complementary Therapies, which honors NCCIH's founding director.

New NINR director Dr. Shannon Zenk will deliver the 2020 Straus Lecture.

There's a saying that "you are what you eat," but maybe it should be "you are where you eat." Social and economic factors, such as where a person lives, powerfully influence health. Such factors affect one's risk of exposure and susceptibility to many diseases and conditions, as well as various other health, functioning and quality-of-life outcomes and risks.

Zenk, a leading population health scientist and a registered nurse, will explore the science behind social determinants of health, discuss development of effective interventions to address health and health inequities and share how we can better understand what affects people's health and drives health disparities.

Her research focuses on social inequities and health with a goal of identifying effective, multilevel approaches to improve health and eliminate disparities. Zenk's portfolio has included NIH-supported work examining urban food environments (including food deserts), community health solutions and veterans' health. More about the NINR director is available at https://www.ninr.nih.gov/aboutninr/zenk.

To attend this virtual event, register at https://strauslecture2020.eventbrite.com. The lecture will be archived at videocast.nih.gov. It is supported by the Foundation for the National Institutes of Health with a gift from Bernard and Barbro Osher.

Individuals who need reasonable accommodation to participate should contact info@nccih.nih.gov or the Federal Relay, 1-800-877-8339, by Dec. 2.

Brown

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neuroanatomical differences across ages from childhood to adolescence to young adulthood," said Brown, vice chancellor for research and distinguished professor of psychology and psychiatry at the University of California, San Diego.

Adolescence—the transitional period that begins at puberty and continues to legal adulthood—is a pivotal time for children. During this period, they become more independent, develop social skills and learn to control their own behaviors, thoughts and emotions. They also take more risks, such as using alcohol and other substances.

The behavior of adolescents has changed over the past 25 years, said Brown. Today, almost all youth have smartphones and fewer get driver's licenses. The teen pregnancy rate has decreased, while the rate of depression and anxiety in teens is increasing.

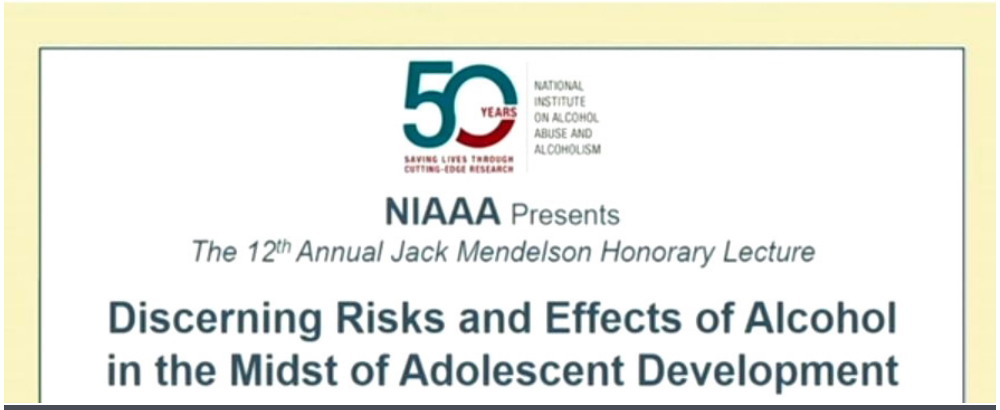
Alcohol is an adolescent's preferred substance of use, she said. The rate of use increases dramatically from 8th to 12th grade. Eight percent of eighth graders reported drinking in the last month, in a national survey of substance use. By 12th grade, 30 percent have consumed alcohol in the last month and 20 percent reported being drunk in that period.

Youth drink differently than adults, Brown continued. Those under 21 drink about half as often as adults, but when they do drink, they consume twice as much. Because alcohol is illegal for underage drinkers, they often drink faster.

There are consequences of teen drinking. A third of teens who drink say their grades suffered and one-fifth reported unsafe driving related to alcohol use. One in 2 say they regret their behavior while under the influence and 1 in 5 admit that alcohol created relationship problems, including early, unwanted or risky sex.

Animal models of adolescent alcohol consumption and its consequences have found that juvenile mice consume 2 to 3 times more alcohol than adults, Brown explained. They are more sensitive to the rewarding effects of alcohol, and have memory and executive function problems because of it.

To determine how early these neurological problems and mood disruptions begin after an adolescent starts drinking, researchers set up a long-term study to observe the effects in boys and girls ages 12-14. Three years after the study started, they found that learning and memory problems followed the onset of heavy drinking. Not all of these problems are permanent, however.



Stress and trauma appear to be related to the onset of moderate to heavy alcohol use, said Brown.

> *"Impulsivity appears to be a strong predictor of earlier consumption rather than later consumption."*
>
> -DR. SANDRA BROWN

Brown found that when youth stop drinking heavily, they spend more time on homework and increase their exercise. Following abstinence, boys are more anxious than girls initially, while girls showed poorer mood states for longer, her team found. It's not clear why.

In 2012, NIAAA established the National Consortium on Alcohol and Neurodevelopment in Adolescence (NCANDA). Brown, who co-directs the consortium with Dr. Susan Tapert, said 5 sites across the U.S. enrolled more than 830 adolescents.

Each year, study participants undergo brain imaging scans, neuropsychological testing and assessments of their behavioral functioning, including alcohol use and related problems. The group's goal is to determine the effects of alcohol use on the developing adolescent brain and examine brain characteristics that predict alcohol use problems.

"Over the course of 10 years of study, we will be observing these youth during key periods of time when it's most likely they will have onset and offset of alcohol disorders," Brown said.

So far, the consortium researchers have found that heavy drinking during adolescence disrupts normal brain growth trajectories in inhibition and integration. They've also discovered that youth drinkers have more sleep disturbances, suggesting that alcohol and sleep influence each other.

"Impulsivity appears to be a strong predictor of earlier consumption rather than later consumption," Brown reported. These

findings suggest that risk factors change as a person matures.

Stress and trauma appear to be related to the onset of moderate to heavy alcohol use. In the NCANDA sample, almost 50 percent have experienced a traumatic event such as a death in the family, a natural disaster, severe accident or sexual assault or abuse.

Brown said the consortium has also developed a smartphone app called M-NCANDA to assess what youth are doing daily.

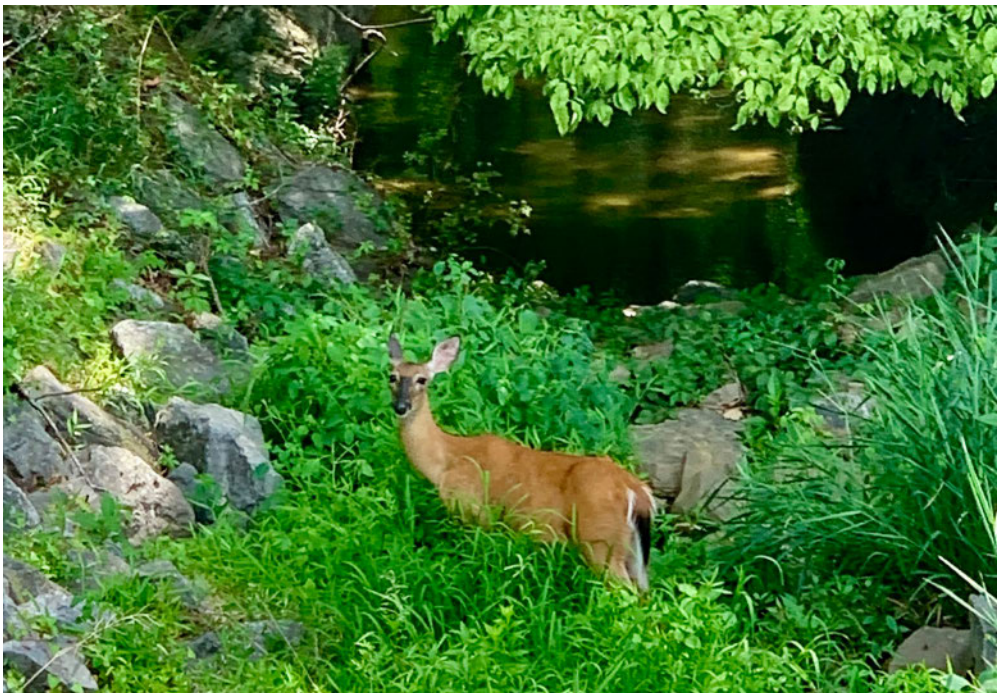
Although NCANDA is a large study, "It takes much more than that, especially if we're interested in looking at additional roles of genetics and other environmental factors," cautioned Brown.

Another study, the Adolescent Brain Cognitive Development (ABCD) Study that Brown co-directs with Dr. Terry Jernigan, has recruited almost 12,000 9- and 10-year-olds and will follow them for a decade. The objectives of the study are to develop standards for normal brain development and measure individual developmental trajectories of cognitive function and health behaviors.

The larger sample size will enable researchers from the 21 sites across the country, as well as scientists around the world, to study the roles of genetic and environmental factors on development and how physical activity, sleep and social activities influence development. Through ABCD, scientists will also be able to observe how the onset of mental health disorders might interact with substance use.

"NCANDA and ABCD are not experimental studies, they are observational studies," Brown concluded. "Their data should lead to hypothesis-driven experiments that can answer important developmental questions."

The Mendelson Lecture honors Dr. Jack Mendelson's scientific contributions to the field of alcohol research. It features an investigator who has made significant contributions to understanding susceptibility to alcohol use disorder (AUD), alcohol's effects on the brain and other organs and the prevention and treatment of AUD.



CLOSE TO HOME

Nature Made

Answering the *NIH Record's* call for images spied in nature, Dr. Ji Luo, an investigator in NCI's Laboratory of Cancer Biology and Genetics, took these photos over the summer on outings not far from his home.

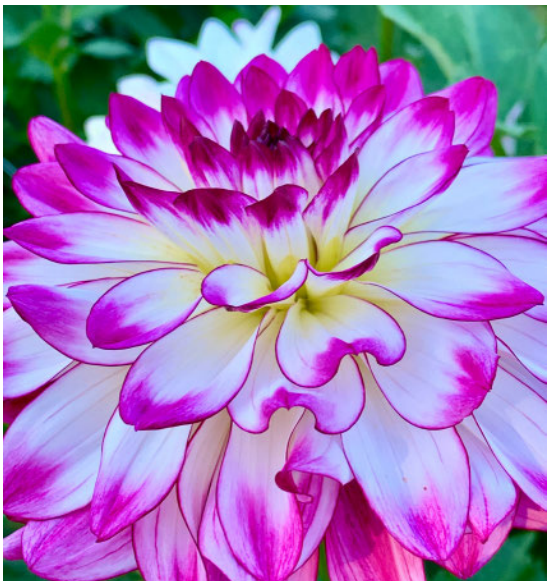
Clockwise (from above):

This deer peered at him from the woods near Quince Orchard High School.

This vibrant dahlia was blooming at the Agricultural History Farm Park in Derwood.

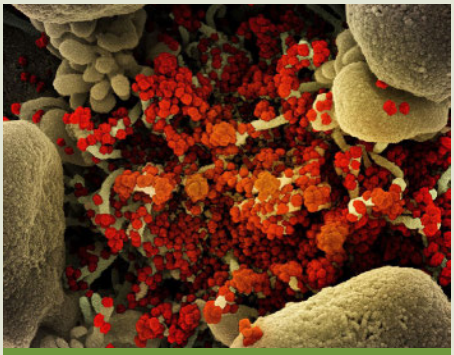
Luo spotted this baby goat at Homestead Farm in Poolesville.

Luo noticed this colorful mushroom sprouting up by the trail around Clopper Lake in Seneca Creek State Park.



Treatments for People with Early Covid-19 Infection Is Urgent Research Focus

Covid-19 treatments for people with early infection are needed urgently, according to a *JAMA Viewpoint* article by NIAID director Dr. Anthony Fauci and colleagues. Treating people early in the course of infection with SARS-CoV-2, the virus that causes Covid-19, would speed their recovery, reduce the likelihood that they develop severe outcomes and reduce demand on the health care system, they write.



Colorized scanning electron micrograph of an apoptotic cell (tan) heavily infected with SARS-CoV-2 virus particles (orange), isolated from a patient sample

IMAGE: NIAID INTEGRATED RESEARCH FACILITY, FORT DETRICK, MD.

Despite experiencing only mild symptoms early in infection, many Covid-19 patients progress to severe disease that leads to hospitalization. Some also will experience lengthy recoveries and develop long-lasting fatigue, mental impairment and problems with heart and lung function.

While several treatments such as remdesivir and dexamethasone are either available or in development for severe Covid-19, interventions that can be administered early during the course of infection to prevent disease progression and longer-term complications are urgently needed.

Studies are underway to assess whether existing antivirals can be repurposed for early treatment. Scientists also are exploring the effectiveness of early treatment with therapies that specifically target SARS-CoV-2, such as convalescent plasma and monoclonal antibodies. Investigators also are exploring strategies to deliver therapies by alternative routes other than by intravenous infusion, such as by inhalation or intramuscular injection.

Continued research is needed to refine current treatment candidates and develop new drugs, and treatments will need to be administered easily and made available widely at low cost, according to the authors.

NIH Researchers Identify Gene in Mice That Controls Food Cravings, Desire to Exercise

NIH researchers have discovered a gene in mice that controls the craving for fatty and sugary foods and the desire to exercise. The gene, Prkar2a, is highly expressed in the habenula, a tiny brain region involved in responses to pain, stress, anxiety, sleep and reward. The findings could inform future research to prevent obesity and its accompanying risks for cardiovascular disease and diabetes. The study was conducted by Dr. Edra London, a staff scientist in the section on endocrinology and genetics at NICHD, and colleagues. It appears in *JCI Insight*.

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Prkar2a contains the information needed to make 2 subunits—molecular components—of the enzyme protein kinase A. Enzymes speed up chemical reactions, either helping to combine smaller molecules into larger molecules, or to break down larger molecules into smaller ones. Protein kinase A is the central enzyme that speeds reactions inside cells in many species. In a previous study, the NICHD team found that, despite being fed a high-fat diet, mice lacking functioning copies of Prkar2a were less likely to become obese than wild type mice with normally functioning Prkar2a.

Gut Trains Immune System to Protect Brain

The membranes surrounding our brains are in a never-ending battle against deadly infections, as germs constantly try to elude watchful immune cells and sneak past a special protective barrier called the meninges. In a study involving mice and human autopsy tissue, researchers at NIH and Cambridge University have shown that some of these immune cells are trained to fight these infections by first spending time in the gut.

"This finding opens a new area of neuroimmunology, showing that gut-educated antibody-producing cells inhabit and defend regions that surround the central nervous system," said Dr. Dorian McGavern, senior investigator at NINDS and co-senior author of the study, which was published in *Nature*.

The central nervous system (CNS) is protected from pathogens both by a three-membrane barrier called the meninges and by immune cells within those membranes. The CNS is also walled off from the rest of the body by specialized blood vessels that are tightly sealed by the blood-brain barrier. This is not the case, however, in the dura mater, the outermost layer of the meninges. Blood vessels in this compartment are not sealed, and large venous structures, referred to as the sinuses, carry slow-moving blood back to the heart. The combination of slow blood flow and proximity to the brain requires strong immune protection to stop potential infections in their tracks.

"The immune system has invested heavily in the dura mater," said McGavern. "The venous sinuses within the dura act like drainage bins, and, consequently, are a place where pathogens can accumulate and potentially enter the brain. It makes sense that the immune system would set up camp in this vulnerable area."

Researchers have shown that some immune cells are trained to fight infections by first spending time in the gut.

In this study, McGavern's team worked with researchers in a lab led by Dr. Menna Clatworthy of the UK's University of Cambridge to look at what immune cell types reside in the outer layers of the meninges of mice and humans. What they discovered was rather surprising: there were many immune cells previously educated to make antibodies against specific microbes. These antibody-producing cells, called IgA cells, are typically found in other barriers such as the mucous membranes of the bronchial tree of the lungs and gut.

Farhat To Direct NIMHD Office

Dr. Tilda Farhat

Dr. Tilda Farhat has been named director of the Office of Strategic Planning, Legislation and Scientific Policy at the National Institute on Minority Health and Health Disparities. The office will soon be called the Office of Science Policy, Planning, Evaluation and Reporting.

Farhat will oversee NIMHD's science policy, scientific reporting, strategic planning, program evaluation, data management and analyses. She will collaborate with staff across NIMHD to uncover scientific gaps, identify research opportunities and facilitate informed decision-making to promote minority health and health disparities research.

Prior to this role, she has served as a health scientist administrator and lead for the data, analysis, resources and evaluation team in the office.

Farhat came to NIMHD from the National Cancer Institute, where, as a program director at the Center to Reduce Cancer Health Disparities, she managed a portfolio of biomedical and behavioral research programs designed to reduce disparities in cancer prevention, diagnosis, treatment and survivorship. She also provided expertise in monitoring and evaluation of program performance and effectiveness in addressing cancer health disparities.

Prior to NCI, her research at NICHD's Division of Intramural Population Health Research examined adolescent and young adult health nationally and internationally through an ecological and developmental perspective.

Farhat's research and areas of interest focus on behavioral and social epidemiology, intervention research for behavior change, adolescent and young adult health, social, ecological and developmental perspectives on health and health disparities, as well as global health. Her public health programmatic and research experience ranges from conducting nationally representative, population-based surveillance and cohort studies examining multilevel influences on health and health disparities, to developing and evaluating interventions to improve health.

Farhat received her Ph.D. in health behavior from the Gillings School of Global Public Health at the University of North Carolina at Chapel Hill and completed a fellowship in population studies at UNC's Carolina Population Center. She also earned certificates in international development (UNC) and population policy communication (Population Reference Bureau).

Farhat received an M.P.H. in epidemiology and biostatistics and a B.S. in environmental health from the American University of Beirut.

Loud Retires After 27 Years at NCI

Dr. Jennifer Loud retired after 27 years of service at NCI.

Dr. Jennifer Loud, adult nurse practitioner and assistant chief in the Clinical Genetics Branch (CGB), Division of Cancer Epidemiology and Genetics (DCEG), retired in August after 27 years of service to the National Cancer Institute. She played a pivotal role in multiple clinical and epidemiologic studies aimed at improving our understanding of clinical cancer genetics and the psychosocial impact of high genetic risk of cancer on affected individuals and families.

"Jennifer was one of the first people I recruited to CGB," said Dr. Mark Greene, NIH scientist emeritus and former chief of CGB. "I could never have envisioned recruiting an investigator and colleague with the extraordinary array of traits, skills and potential that Jennifer embodied."

Prior to her arrival in DCEG, Loud spent 7 years as a nurse practitioner with NCI's Medical Oncology Branch, working with individuals enrolled in clinical trials of new cancer treatments. During that time, she was a clinical trials coordinator and an associate investigator on two chemoprevention trials for women at increased risk of breast cancer.

Loud held leadership roles throughout the division, at NCI and other professional communities. She served on key committees, including the technical evaluation of questionnaires committee, committee of scientists and the NCI women's health activities committee. Her dedicated involvement with NCI's Clinical Center institutional review board, first as affiliated scientist and then as deputy chair, established her as an invaluable resource for human subjects research regulatory matters.

In the months before her retirement, Loud's expertise in web-based data and patient management systems was critical to DCEG's Covid-19 pandemic response, bringing the COVIDcode study of genetic and immunologic contributions to the severity of disease from conception to production in less than 6 months.

"Jennifer's kind and gentle spirit, clinical and scientific rigor and mentoring of staff at all levels has been the foundation for CGB's continued success," said Dr. Sharon Savage, DCEG clinical director and chief of CGB. "She has been my right hand, my voice of reason, my sound board—and she will be missed dearly."

VOLUNTEERS

Fatigue Study Needs Cancer Survivors

NIH researchers are enrolling cancer survivors to better understand fatigue in people with cancer. Fatigue is a common side effect of cancer and cancer treatment, but it is poorly understood. Research has indicated that cancer-related fatigue may be caused by a number of factors, including immune system responses to cancer treatment. To learn more, or to participate, call the Office of Patient Recruitment, 800-411-1222 (800-877-8339 TTY/ASCII) or email PRPL@cc.nih.gov. Refer to study 11-NR-0014. Read more at https://go.usa.gov/xGcgw.

A moment for love: A screenshot from NIH's first virtual Halloween charity fair and mask contest

CFC Virtual Halloween Event Raises Awareness

NIH's first virtual Halloween charity fair and mask contest in support of the Combined Federal Campaign took place Oct. 29 and was available via NIH Videocast. The National Institute of Biomedical Imaging and Bioengineering is leading the 2020 NIH CFC.

Hosts Debra Gale, NIH CFC program manager, and Monica Hanson, CFC team and charity lead, welcomed everyone to the event. Traditionally, the CFC Halloween charity fair is held outside at Bldg. 31, rain or shine. This year, participants did not have to worry about the weather and simply viewed the proceedings in the comfort of their office or remote location.

The event included three CFC charities, which provided information about their mission and expressed how thankful they were for donations, acknowledging that every dollar counts.

Costume prize winners speak (from l): "My mask is made of cardboard with pantyhose for the flesh for the face, makeup, sponge for the bulging eye, fake eyelashes, fake wounds, glitter, plastic teeth, paint, makeup, headband, paper, string and spiders," said top contestant Lisa King. "People travel from all around to hang their wishes on the Wishing Tree, which provides the people with hope that their wishes will come true," said second-place finisher Joyce Coffman. "My mask celebrates the causes that aim to address health issues that have plagued my family and friends," said third-place finisher Danielle Fenwick. Those issues include breast cancer, mental health and epilepsy.

The highlight of the day was the 12 brave NIH staff who entered the mask contest. Contestants were asked to design original masks that were creative, inspirational, funny or scary, using different types of materials, to paint, decorate and draw messages. Designs that included a CFC message earned an extra point.

Several masks included the CFC theme "Show Some Love," which made it difficult for the judges to select the top three winners.

Taking the top three places were "Love Conquers All" by Lisa King of NCI, "The Wishing Tree" by CSR's Joyce Coffman and "Mask of the Causes" by Danielle Fenwick, also of NCI.

To view the event, visit videocast.nih.gov and check past events.

To learn more about the CFC, visit https://cfc.nih.gov and consider making a pledge today.

For more information, contact Gale at (301) 496-2370 or email NIHCFC2002@mail.nih.gov.