

## NO HYPERKATIFEIA HERE!

### Research Festival Speakers Inspire Trainees

BY RICH MCMANUS

If you think world-class science lacks humor or the ability to stun, you probably didn't attend NIH's 33rd Research Festival, which took over most of the public space within Bldg. 10 on Sept. 11. There's one thing the day-long celebration of intramural science didn't include—hyperkatifeia, an extremely negative emotional state comparable to withdrawal from opioids.

"We have a whole herd of neurotransmitters in our brain that are designed to make us feel lousy—they are principally involved in the fight-or-flight response,"



"Cells communicate!" said Nobel laureate Dr. Ferid Murad. "They create messenger molecules to accomplish that."

said NIAAA director Dr. George Koob, in the second of three plenary sessions that drew trainees—the event's main audience—to Masur Auditorium. He said he's been obsessed for the past 20 years with discovering why substance abusers of all stripes, from drinkers to druggers, keep bingeing when the

downside of their preoccupations is so dependably miserable.

"Opioids and alcohol *cause* pain," he exclaimed.

To find a term to describe this dire state, common to all drugs of abuse, Koob leaned on his brother Stephen, a Greek scholar and conservator, who provided "hyperkatifeia," a painful mouthful that Koob hopes will catch on.

Most of the day, however, was more akin to the pleasure of discovery science, NIH's stock in trade.

Even Koob's talk about "deaths of despair" (88,000 people die yearly from excessive alcohol use and 14.5 million Americans are afflicted with alcohol use disorder, he said; another 2.1 million suffer from opioid use disorder) had an

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NIH'ers' helping hand is generous. See p. 12.

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## 'THIS IS REAL THEFT'

### NIH Investigates Foreign Influence at U.S. Grantee Institutions

BY ERIC BOCK



Dr. Michael Lauer

NIH has identified more than 100 instances of troubling foreign influence on extramural research, including withholding information about funding sources and conflicts of interests and

violating the confidentiality of peer review, said Dr. Michael Lauer, NIH deputy director for extramural research.

"These all represent forms of theft," said Lauer during an inter-institute bioethics

SEE INVESTIGATION, PAGE 4

## THE LIZARD LADY

### NIH'er Writes Children's Book About a Herpetologist

BY DANA TALESNIK

Kids love a good dragon tale. One recently published children's book, written by NIH's



Dr. Patricia Valdez

Dr. Patricia Valdez, is a true story of real dragons and the kind, clever, fearless heroine who took care of them.

The book's muse was Murphy, the Komodo dragon that Valdez and her family have long enjoyed visiting

at the National Zoo. Her curiosity about

SEE VALDEZ, PAGE 8

### Upcoming String Quartet Performances

The 31st season of Manchester String Quartet performances at NIH is now underway. The concerts—all on Mondays—are free and begin at 12:30 p.m. in Masur Auditorium, Bldg. 10.

Upcoming concert dates include:

Oct. 7—Mozart Quartet in G Major, K. 387, Beethoven Quartet in F Major, Opus 18 #1.

Nov. 18—Beethoven Quartet in E flat Major, Opus 74 “Harp.”

Dec. 9 (in Lipsett Amphitheater)—Mozart Viola Quintet in G Minor, K. 516, Guest artist: Chiara Deiguez, viola.

The series is supported by the Foundation for Advanced Education in the Sciences. For reasonable accommodation, contact Sharon Greenwell at (301) 496-1776 or sgl15f@nih.gov.

### Exhibit Shows Scale of Human Genome Sequence

Constantly seeking new opportunities to promote genomic literacy and spark scientific curiosity, the National Human Genome Research Institute has teamed up with the National Center for Biotechnology Information to create an educational



NHGRI director Dr. Eric Green (l) and NIH director Dr. Francis Collins, who worked on the Human Genome Project together, admire the scope of information represented.

PHOTO: ERNESTO DEL AGUILA

exhibit illustrating the remarkable scale of the human genome sequence.

A little over a year ago, NHGRI obtained and renovated new space in the 4B corridor of Bldg. 31. The renovation created a lengthy, continuous wall in the public hallway that screamed out for appropriate décor. NHGRI director Dr. Eric Green opted to avoid the traditional approach of hanging framed journal covers and symposium posters, aiming for something “different, novel, educational and funky.”

Green decided to use the opportunity to illustrate the amazing scale of the human genome’s sequence of some 3 billion letters (i.e., bases). The nearly 100-foot wall was just the right size to display 1/1000th (or about 3 million letters) of the



### Congressional Working Group Visits NIH

Members and staff of the House freshmen working group on addiction visited NIH on the afternoon of Sept. 9 to learn about the HEAL (Helping to End Addiction Long-term) Initiative and tour labs whose technology is helping advance addiction research. Seven of the group’s 36 members made the visit, which opened with a meeting with NIH leadership. In the group photo above are (standing, from l) Rep. Denver Riggleman (R-VA), Rep. TJ Cox (D-CA), Rep. John Joyce (R-PA), Rep. Donna Shalala (D-FL), Rep. David Trone (D-MD), Rep. Conor Lamb (D-PA) and Rep. Susie Lee (D-NV). Seated are (from l) NIMH director Dr. Joshua Gordon, HEAL Initiative director Dr. Rebecca Baker, NIH director Dr. Francis Collins, NIDA director Dr. Nora Volkow and Dr. Linda Porter, director, Office of Pain Policy, NINDS. Below, Collins shows Clinical Research Center model to group including (from l) Lamb, Shalala, Cox, Trone, Riggleman and Mariam Jalloul from the office of Rep. Rashida Tlaib (D-MI).

PHOTOS: MARLEEN VAN DEN NESTE



human genome sequence. Working with Darryl Leja, Dr. Gerard Bouffard and colleagues at NCBI, the team implemented this vision, which includes an explanatory tutorial about cells, chromosomes, DNA and genes.

The Bldg. 31 4B hallway could only accommodate 1/1000th of the human genome sequence—the complete human genome sequence would require

about 15 miles of hallway. To put this in perspective, a similar representation of the entire human genome sequence would wrap around the fence line of the NIH campus more than five times.

The hallway exhibit is designed to be a teaching tool for all NIH staff as well as the public. Visitors to Bldg. 31 are encouraged to stop by the 4B corridor to check it out.

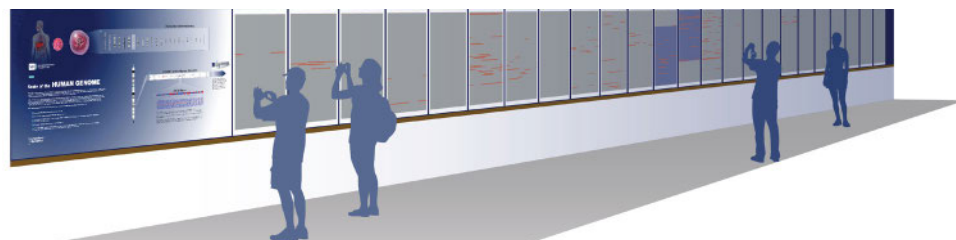


Illustration shows scale of the human genome sequence’s some 3 billion letters. IMAGE: DARRYL LEJA

## SNOEZELEN, ANYONE? NIDCR Seeks Ways to Reduce Dental Fear

BY ANNA MARIA GILLIS

People range from being comfortable to fearful when it comes to visiting the dentist. Being afraid enough to skip basic care often results in more cavities and poorer oral health.

To explore the problem, NIDCR convened a workshop, “Addressing Fear and Anxiety: Steps Toward Accelerating Progress and Building a Cumulative Science.” The meeting was held recently in Bethesda and drew researchers from dentistry, psychology and psychiatry.

The participants discussed interventions that might help patients with dental anxieties. They also considered what could be learned from the behavioral sciences and mental health and addressed challenges to integrating fear-reducing interventions into dental care. NIDCR will use this input to set research directions.

“Given the wide range of potential intervention targets to address dental fear and anxiety, a challenge is determining the logical next steps for research in this area,” said Dr. Melissa Riddle, chief of NIDCR’s Behavioral and Social Sciences Research Branch.

An estimated 10-20 percent of U.S. adults experience dental fear, and preventing anxiety in this population is a priority, the panel said. The participants noted that there are tools to help the “haters, but goers”—people who show up despite their aversion. But dentists can’t help people who never appear. There was a consensus that advancing oral health on a broad scale will require a wider public conversation to counter negative views of dental visits.

The attendees agreed that preventing fear should start early, perhaps before a child’s first dental visit. Although researchers know less than they would like to about how children develop anxiety, they do know that children pick up on the anxiety of their caregivers. Studies show that the way caregivers talked with children about medical and dental procedures shaped children’s memories of how distressing those procedures were.

The extent of anxiety predicts how cooperative children will be. Creating positive experiences builds positive associations for patients. One participant, a dentist who works with children with special needs, described how his practice draws on Snoezelen, a Dutch approach to designing a space that feels comfortable, safe and fun. His practice’s space includes a trampoline for jumping off nervous energy and tailored sensory environments, where lights, sounds, textures and experiences are designed specifically for a patient’s needs. Children are allowed multiple visits



Attending the workshop were (seated, from l) Drs. Martha Somerman (NIDCR), Helen Lee (University of Illinois, Chicago), Marisol Tellez Merchan (Temple University), Amy Smith Slep (New York University), Cameron Randall (University of Washington). Standing are (from l) Drs. Melissa Riddle (NIDCR), Michael Sigal (Little Bird Dentistry), Barbara Rothbaum (Emory University), Laura Seligman (University of Texas Rio Grande Valley), Richard Heyman (New York University), Daniel McNeil (West Virginia University), Richard Heimberg (Temple University), Teodor Postolache (University of Maryland), Marc Kiviniemi (University of Kentucky), Paul Moore (University of Pittsburgh), Siggí Saemundsson (University of North Carolina at Chapel Hill), Douglass Jackson (University of Washington), Elise Rice (NIDCR).

to use equipment or to practice strategies that help them manage their anxieties and acclimate to the dentist’s office. This approach makes it possible to treat children who otherwise might not get dental care, he said. (People with special needs have worse dental health and more untreated caries than the general population.)

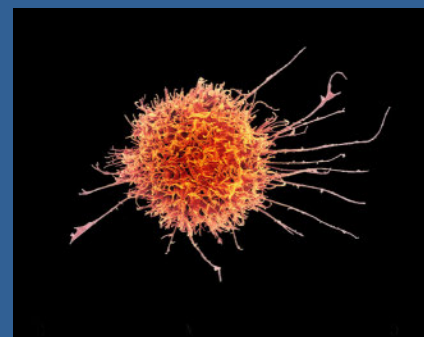
The participants from mental health fields described proven treatments for anxiety and fear that could be used in dental settings. The psychologists noted cognitive behavioral therapy’s success in helping people face situations that scare them by reducing the fear-inducing qualities of those experiences over time. Virtual-reality exposure therapy, which was highlighted, exposes patients to virtual simulations of fear-invoking situations, and, with a therapist’s guidance, patients learn to overcome those feelings. It has been used to successfully treat people who are afraid of heights or flying and to help combat veterans diagnosed with post-traumatic stress disorder.

In addition to behavioral methods, there is also a place for pharmacological interventions to manage anxiety in the short term, the researchers said. Behavioral approaches seem to provide the advantage of long-lasting results, and they give patients coping skills that are transferable to other settings. Concerns were raised about access to behavioral treatments in underserved settings, highlighting the need for equity in dental fear intervention research.

Workshop participants emphasized the need for the right intervention for the right person at the right time, a goal that is hampered by the lack of universal assessment standards for fear. A potential solution is to include assessments that specify fears on patient intake forms. Studies are being conducted to learn whether smartphones and iPads could be used to deliver pre-treatment interventions at home or in the dentist’s office, and early results are promising.

Integrating anxiety treatments into dental practices poses logistical hurdles. Questions were raised about work flow and care roles. Who in the office—the hygienist, dentist or someone else—should administer interventions? How could technology best be used to deliver behavioral therapies?

There is also the issue of training. While some participants suggested that dental students receive more training in patient communications or mental health, they also noted that the heavy coursework and clinical requirements faced by dental students might make extra training a challenge. **R**



ON THE COVER: *Colorized scanning electron micrograph of a natural killer cell from a human donor.*

IMAGE: NIAID

### The NIH Record

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## Investigation

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interest group seminar on Sept. 9 in Bldg. 45.

NIH has investigated at least 180 scientists at more than 65 institutions for violating policies requiring grantees to report their foreign ties. The agency has referred 21 cases to the HHS Office of the Inspector General for debarment to prevent scientists from applying for grants.

Most—but not all—are ethnic Chinese scientists conducting preclinical research in many areas, he said. Nearly every scientist under investigation is well-funded and established. They are not postdoctoral fellows or students.

“This is not xenophobic racism, this is not targeting and this is not stigma. This is real theft,” Lauer said.

The investigation has focused on China’s Thousand Talents Plan (TTP). Established in 2008 by the central government of China, the program recruits top scientists—most ethnically Chinese who are living overseas, under 55 years of age, or foreign scientists under 65—to work at Chinese universities. To apply for TTP funding, an applicant who works outside China must have employment or a firm employment offer from a Chinese university.

If an applicant receives funding through the plan, he or she receives a formal contract with terms of employment. The size of the employment contracts ranges from a few hundred thousand dollars to millions of dollars per year. Awardees typically get laboratory space and equipment, staff, a signing bonus and other benefits, Lauer said. In return, scientists are expected to produce “deliverables” for China, including publications and patents.

“In many cases, people who get these awards don’t tell their American employer they got the award,” Lauer said. For scientists working for the U.S. government, this arrangement is illegal; for scientists working at universities, it may be a violation of the institution’s conflict of interest policy, depending on the strengths of university policies.

Many academic institutions have strict policies against outside activities without obtaining prior approval, he noted. International collaborations between scientists are acceptable and often encouraged.



“We are very serious about this,” said Lauer.

PHOTOS: CHIA-CHI CHARLIE CHANG

But the relationship must be vetted and disclosed prior to entering an agreement with a foreign entity.

Lauer has also seen instances where NIH-funded researchers spend most of their time on their China-based work. Essentially, researchers

were working for competing employers on company time. There were scientists who were absent for as much as 150 days from their U.S. labs.

If NIH knows that a researcher getting NIH money also receives an employment contract from a foreign institution, the agency might not support the researcher (or would limit the amount of support), given that “our funding success rates are only 20 percent.” Instead, NIH would devote its resources elsewhere.

In one contract, Lauer found that a grantee scientist was expected to issue 2-3 Chinese patents. In another, a grantee researcher was required to publish scientific articles in top scientific journals representing his foreign institution. Lauer has seen instances where Chinese researchers who receive TTP funding recruit other Chinese researchers at their American universities.

Lauer said that some grantees’ Chinese employment contracts included intellectual property clauses that American institutions would likely find unacceptable. But in nearly all cases, American institutions were not given the opportunity to review the foreign employment contracts prior to signing.

Other contracts explicitly state that the goal is “to move the lab back to China,” Lauer said.

The intelligence community refers to these scientists as “non-traditional” collectors, he explained. By having stealth employment at a Chinese university while maintaining a lab in an American university, they can pass along information about what’s

happening in the American lab.

“Institutions are waking up and now have a better idea of what’s going on,” said Lauer.

NIH has also uncovered instances where researchers don’t report their ownership stakes in foreign companies, Lauer said. There have even been cases where Chinese companies owned Chinese patents that appeared to leverage NIH-funded research. Again, these patents were never disclosed to American institutions.

One researcher at the University of California, San Diego, founded a pharmaceutical company with his wife in China. He never disclosed his ownership stake in the company to his American university or to NIH.

NIH has also found that scientists have violated the confidentiality of the peer-review process. Confidentiality allows for the open exchange of scientific opinions and evaluations and protects proprietary information.

In one instance, a peer reviewer for NIH who also received funding from the TTP sent unfunded R01 applications by email to scientists in China, all the while cautioning them that the applications should be considered confidential.

“When you write a grant, you expect the only people who are going to see that grant application are the reviewers and the NIH staff who have the business of looking at it. You certainly have no anticipation that your grant is going to get emailed off to other scientists in foreign countries so they can use it to their advantage,” Lauer said.

If NIH finds evidence that a reviewer has shared confidential information, the agency can inform the institution leaders where a reviewer works, terminate his or her service on peer review or refer the reviewer to the Office of Inspector General for potential prosecution.

“We are very serious about this,” warned Lauer. “Serving on a peer review committee is a privilege. If you get applications to look at, you are the only one who is supposed to see them.”

NIH is working closely with several federal agencies, including the Department of Justice, the FBI, Department of State, Department of Homeland Security, and non-federal associations to conduct investigations into foreign influence on extramural research.

“This is not just an NIH effort,” Lauer concluded. **B**

## Stetten Lecture on Engineering Novel Biosensors, Oct. 23

Whether animals are looking for food or mates, or avoiding pathogens and predators, they rely on biosensors—molecules that allow animals to sense and respond to their environments. Creating new kinds of biosensors to receive, process and transmit molecular information will be the focus of the 2019 DeWitt Stetten Jr. Lecture, an NIH Director's Wednesday Afternoon Lecture Series event sponsored by NIGMS.

Dr. Christina Dawn Smolke will describe her innovative approaches to designing biomolecules that have applications in diagnostics, drug



Dr. Christina Smolke

development, green chemistry and more. Her talk, "Scalable Platforms for Generating RNA Sensors and Controllers," will be held on Wednesday, Oct. 23, at 3 p.m. in Masur Auditorium, Bldg. 10.

Smolke is a professor of bioengineering and, by courtesy, chemical engineering, at Stanford University. Her lab has created RNA molecules, or switches, that can detect the disease

state of a cell and are being further developed for targeted drug delivery. However, in spite of these successes, current means for designing biomolecules remain inefficient and laborious.

To improve the design of biomolecules, Smolke is developing high-throughput methods to obtain information about the biochemical activity of millions of RNA switches in a single experiment. These data are used for producing new computational methods to predict the function of RNA molecules based on their sequence and structure. Smolke's work may accelerate our ability to rapidly design and build biomolecules for a variety of applications in medicine and environmental conservation.

NIGMS has supported Smolke's work since 2002. She also has received funding from the National Cancer Institute and the National Center for Complementary and Integrative Health.

The annual DeWitt Stetten Jr. Lecture series was established in 1982 in honor of NIGMS's third director. The talk is open to all and will be followed by a reception in the NIH Library.

Those who require sign language interpretation or other reasonable accommodation to participate in this event should contact Jacqueline Roberts at [jacqueline.roberts@nih.gov](mailto:jacqueline.roberts@nih.gov) (or 301-594-6747) at least 5 days before the lecture.

## Gregurick Named Associate Director for Data Science

NEW ADDS

Dr. Susan Gregurick has been named NIH associate director for data science (ADDS) and director of the NIH Office of Data Science Strategy (ODSS). She has served as senior advisor to ODSS since November 2018, and began her new role on Sept. 16.

Gregurick will help lead NIH efforts in coordinating and collaborating with appropriate government agencies, international funders, private organizations and stakeholders engaged in scientific data generation, management and analysis. As the ADDS, director of ODSS and a co-chair of the trans-NIH scientific data council, she is well positioned to lead the NIH Strategic Plan for Data Science.

"She brings substantial experience in computational biology, high-performance computing and bioinformatics to this position," said NIH director Dr. Francis Collins, who made the appointment. "Additionally, she has worked across sectors, in the government at NIH and the Department of Energy, on trans-government committees, and in academia, which is critical in the convening role that the ADDS plays."

Since 2013, Gregurick has been director of the Division of Biophysics, Biomedical Technology and Computational Biosciences at the National Institute of General Medical Sciences. In that role, she oversaw programs that advance research in computational biology, biophysics and data sciences, mathematical and biostatistical methods and biomedical technologies.

Prior to joining NIGMS, Gregurick was a program manager for DOE from 2007 to 2013; she oversaw the development and implementation of the DOE Systems Biology Knowledgebase, a framework to integrate data, models and simulations for a better understanding of energy and environmental processes. Before that, she was professor of computational biology at the University of Maryland, Baltimore County, from 2000 to 2007. Her research interests include dynamics of large biological macromolecules.

Gregurick earned a B.S. in chemistry and mathematics from the University of Michigan and a Ph.D. in computational chemistry from the University of Maryland.

She succeeds previous ADDS Dr. Phillip Bourne, who left NIH in 2017 for an academic post.



## NICHD Director Honored as Leader, Mentor

Dr. Diana Bianchi (l), NICHD director, accepts the 2019 Pioneer Award from the International Society for Prenatal Diagnosis at its annual conference in Singapore. The award recognizes transformational research in prenatal diagnosis, leadership within the society and commitment to mentoring young scientists. Dr. Neeta Vora, a former postdoctoral fellow of Bianchi's and now an NICHD grantee at the University of North Carolina School of Medicine, presented the award.



At left, festival co-chairs Dr. Amy Newman of NIDA and Dr. John Gallin of the Clinical Center thank attendees at the close of the day-long event. NCI's Dr. Marston Linehan (c) discusses the metabolic basis of kidney cancer. At right, Dr. Carlos Zarate of NIMH talks about the rapid action of ketamine, a treatment for depression.

PHOTOS: CHIA-CHI CHARLIE CHANG

## Festival

CONTINUED FROM PAGE 1

upside—there are compounds (corticotropin releasing factor antagonists) that show promise in reversing hyperkatifeia.

The day's first scientific talk featured Nobel laureate (1998) Dr. Ferid Murad, an alumnus of the NHLBI intramural program (1967-1970) who gripped the edges of the podium and never looked down once as he seemingly read nearly an hour-long talk from the eyes of the audience.

"Dr. Murad told me this morning that he's the oldest living scientist [83] studying messengers," noted Clinical Center scientific director Dr. John Gallin, who co-chaired this year's festival with NIDA's Dr. Amy Newman. So it was doubly astonishing that Murad's command of the complicated way that cells talk to one another was so seamless, comprehensive and unrelenting.

Murad shared his Nobel prize for work showing how nitric oxide relaxes smooth muscle; his research underlies the effectiveness of Viagra. Stopping often to observe how much fun it is to untangle the endless game of Telephone that molecules play with one another (and to cheer the opportunities for employment that the discovery of druggable targets offers), Murad finished with an anecdote: Doctors in Turkey are successfully using the little blue pill, combined with puffs of nitric oxide, to rescue blue babies.

In recognition of Murad's "resilience and persistence, which are really important qualities for scientists," NIH deputy director for intramural research Dr. Michael Gottesman then presented him with the NIH Distinguished Alumnus Award.

Exemplifying those virtues was the next speaker, Dr. Marston Linehan, chief of NCI's Urologic Oncology Branch, who declared

that his 35 years of work on kidney cancer have shown that "kidney cancer is not kidney cancer. It's many cancers that just happen to affect the kidney. At least 17 genes cause it, so it's at least 17 different diseases."

Linehan and his team have studied the DNA of some 4,312 kidney cancer patients over the years and have discovered the gene for Von Hippel-Lindau syndrome (it's an oxygen sensor) as well as several new cancers, including hereditary papillary renal carcinoma (and its cause, the MET gene) and hereditary leiomyomatosis and renal cell cancer.

"Kidney cancer is fundamentally a metabolic disease," said Linehan "and we'll have better therapy if we can understand the metabolic basis."

He and his colleague Dr. Ramaprasad



NIAAA director Dr. George Koob explores the paradoxical allure of substance abuse despite its guaranteed downside.

Srinivasan have employed several agents, including bevacizumab and erlotinib, that appear to prolong survival.

"We're not home yet, but we're encouraged," he concluded.

Like Linehan, Dr. Carlos Zarate, chief of NIMH's Experimental Therapeutics and Pathophysiology Branch, has had long experience—at least two decades—of clinical investigation, in his case, of patients suffering from depression. Since 2000, NIMH has pursued "the road less traveled"—specifically, a deep dive into the roles of glutamate and neuroplasticity in depression and suicide.

While the drug memantine, another NMDA receptor antagonist, has been explored in depression, the headline-making news has been ketamine, an anesthetic agent with very rapid action against depression (within hours) and benefits lasting up to 2 weeks with a single administration.

"It was, I must say, an eye-opener," said Zarate of studies showing that ketamine can, within 40 minutes of intravenous administration, reduce instances of suicidal thinking for about a week. This contrasts with MAO inhibitors and other antidepressants, which can take 8 weeks to show full benefit and have low rates of remission in those who have already tried other antidepressants.

Zarate and his colleagues have spent the last 10 years figuring out how ketamine works, via "reverse engineering." The drug has approximately 24 metabolites, and perhaps some of them bear the clinical benefits, minus the side effects, which include risk of addiction and hallucinations. The NIMH scientists, in collaboration with NIA, NCATS and the University of Maryland, are currently focusing on one



At left, Dr. Lauren Atlas discusses the benefits of merging painkillers with the placebo effect. At right, NIH deputy director for intramural research Dr. Michael Gottesman (r) visits the festival poster session on the FAES Terrace.



The CC's Dr. Andrew Mannes (l) describes the benefits of RTX, a therapy for severe pain. NIBIB's Dr. Hari Shroff shares unpublished work on improvements to microscopy.

metabolite—hydroxynorketamine—and will begin studies at the Clinical Center early next year.

“We are trying to separate the wheat from the chaff,” said Zarate.

Two speakers presented potential solutions to medicine's over-dependence on opioids for management of pain.

Taking advantage of the finding that placebo effects are largest in patients with pain and depression, Dr. Lauren Atlas, head of NCCIH's section on affective neuroscience and pain, with joint appointments at NIMH and NIDA, is studying how to harness the placebo effect in tandem with opioids such that dependence on the latter can be significantly reduced. Not yet tested in patients, her approach nonetheless shows promise, as it suggests an additive effect is likely.

And not that it's going to show up in your medicine cabinet anytime soon, but Dr. Andrew Mannes, chief of the CC's department of perioperative medicine, in collaboration with multiple institutes and principal investigator Dr. John Heiss of

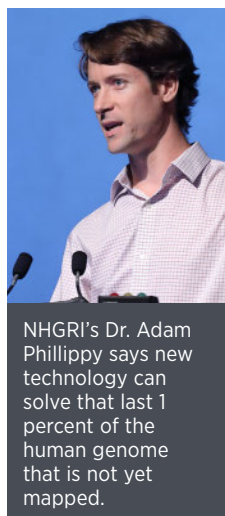
NINDS, had recent success with a non-opioid painkiller that can step in when cancer pain exceeds even the ability of opioids to offer relief. Like ketamine, RTX (resiniferatoxin) is “very potent, very specific and very quick,” which is especially important in the 15 percent of cancer patients for whom other analgesics fail.

RTX is not for headaches. Mannes, who has studied RTX for 10 years, called it a palliative drug that can benefit patients in severe pain with advanced illness.

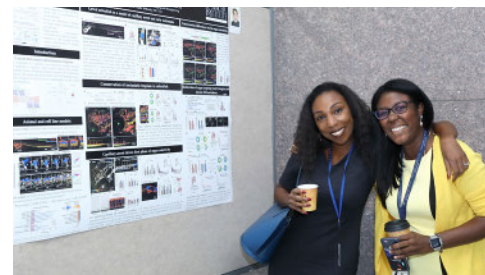
Patients typically experience a reduction in pain, he said, and need far fewer opioids. “Bedridden people have been able to get up and resume some activities of daily living... It gives people a better chance of having a better quality of life.”

There are adverse effects, including urinary retention, some loss of heat sensitivity in the extremities and increased risk of irregular heartbeat. The research team is learning to manage the downsides and has recently learned that how the drug is given is as important as the dose.

Before the day ended with a much-anticipated performance by NIH director Dr. Francis Collins's group The Affordable Rock 'n Roll Act Band on the CC's south lawn, festivalgoers absorbed a few more insights:



NHGRI's Dr. Adam Phillippy says new technology can solve that last 1 percent of the human genome that is not yet mapped.



Dr. Kandice Tanner (l), a Stadtman investigator in NCI's Laboratory of Cell Biology, awaits the start of the poster session with Dr. Paule Joseph, a Lasker Clinical Research Scholar with appointments at NINR and NIAAA.

• Using a real-time nanopore sequencing machine no larger than a person's fist, scientists are nearing gap-free reconstruction of a complete human genome, said Dr. Adam Phillippy, head of NHGRI's genome informatics section. Even though it's been 20 years since the human genome was “completed,” the job is only 99 percent finished, he said. There are some 370 unresolved issues and 102 gaps, which may yet yield to the work of the Telomere-to-Telomere Consortium now at work on the problem.

• A new lentiviral vector offers promise as therapy for chronic granulomatous disease, said Dr. Elizabeth Kang, head of NIAID's hematotherapeutics unit. Gene therapy is now poised to, if not succeed transplantation, at least be a viable alternative for the treatment of CGD.

• Dr. Hari Shroff is using deep learning to improve microscopy at NIBIB, where he is senior investigator in the section on high resolution optical imaging. He shared yet-unpublished applications that de-noise, de-blur and de-aberrate images, among other benefits. He recently hired three staff scientists as NIBIB's trans-NIH Advanced Imaging and Microscopy Resource “is now open for business.”

• Dr. Hannah Valentine put aside the diversity hat she is known for as NIH's chief officer for scientific workforce diversity and instead showed how liquid biopsy can be used as a noninvasive way to detect early rejection in the 32,000 solid organ transplants that are performed annually. She is also senior investigator in NHLBI's Laboratory of Transplantation Genomics.

“I think today shows that the greatest strength of the NIH Intramural Research Program is its people,” concluded event co-host Gallin. “The IRP is alive and well and is thriving.” **R**



The Affordable Rock 'n Roll Act Band performs behind Bldg. 10 at the end of the festival. They include (from l) Dr. Scott Durum, NCI (with sax); Laura Chopp, NCI; Dr. John Tisdale, NHLBI; Quino Maduro, NHGRI; Cecelia Tamburro (obscured), NHGRI; NIH director Dr. Francis Collins; Dr. Peter Grayson, NIAMS; Dr. Michael Lenardo, NIAID; Dr. Will Sears, NIAID (fiddle); Dr. Mike Pazin, NHGRI (unseen on drums, behind Sears); Dr. Ivan Vujkovic-Cvijin, NIAID; and Dr. John O'Shea, NIAMS.

## Valdez

CONTINUED FROM PAGE 1

Komodo dragons, the world's largest lizards, ultimately led Valdez to write *Joan Procter, Dragon Doctor: The Woman Who Loved Reptiles*, published in 2018.

Valdez, an OER research integrity officer, started writing stories for her children Mateo and Maya, now 12 and 14, when they were little.

"I used to come home and tell them stories about my work," said Valdez, who previously worked as a staff scientist in an NIAID lab. "I'd write little stories about the bad guy germs being defeated by our immune system."

Six years ago, Valdez started writing stories about women scientists. One who piqued her interest was a British scientist named Joan Procter—the first female curator at the London Zoo's Reptile House—whose name Valdez once stumbled upon while reading about Komodo dragons.

It's particularly impressive to Valdez that Procter, the story's herpetologist heroine, made her mark a century ago. She was the first person to describe Komodo dragons in captivity back in the 1920s, not long after they were first discovered.

"To have someone working with Komodo dragons [back then] was unusual," said Valdez, "and to have a woman scientist was unusual as well."

Valdez's colorful picture book recounts how news spread of a fierce dragon coming to the zoo from the Indonesian island of Komodo. "It was rumored to be...30 feet long! Faster than a motorcar! Stronger than an ox!" Procter was intrigued, unafraid and excited to meet the mysterious creature.

Procter had always been enchanted by reptiles and amphibians. As a young girl, she studied them and kept lizards, snakes, and even a baby crocodile as pets. As a young scientist, she published papers about pit vipers and pancake tortoises. As an artist, she created models and drawings for reptile exhibits at London's Natural History Museum. She later designed the Reptile House at the London Zoo, bringing in heated rocks, plants and other special features to mimic the animals' natural habitats.

When the two Komodo dragons arrived at the zoo in 1927, the first in all of Europe, Procter cared for and befriended them. She



Valdez's colorful picture book recounts how news spread of a fierce dragon coming to the zoo from the Indonesian island of Komodo.

PHOTO: DANA TALESNIK

had a special bond with one in particular, named Sumbawa.

"Joan thought Sumbawa was brave; the keepers thought Joan was brave," wrote Valdez. Procter gave many adults and children a closer look at Komodo dragons and dispelled the myths. They grew to be 8-10 feet in length, were not nearly as fast as a car and were usually gentle creatures.

Procter became an international sensation in her time, though faded into obscurity as the years went by. Valdez found a trove of information about her at Cambridge University's Girton College, where Procter's sister had worked. She bequeathed an archival gold mine of family stories, articles, photos and Joan's artwork.

From the collection, "I got a good sense of her personality," said Valdez. "She was pretty funny and a no-nonsense kind of person."

Procter never went to college and had missed a lot of school due to a chronic illness. She got her professional start thanks to Dr. George Boulenger, a curator at the Natural History Museum, who recognized her potential and hired her as his assistant.

"One of the important things in science is for women to have a mentor," said Valdez. "Showing that interaction and relationship [illuminates] how mentors can be advocates

for women and minorities."

Valdez hopes her book will inspire children, especially girls, who traditionally have been underrepresented in science fields, to become future scientists.

"I love how this cover shows Joan Procter as womanly," said Valdez. "She's got her pearls and yet she has these reptiles, [illustrating] that you can be feminine and be a scientist."

Valdez has written a second children's book, currently in production, that highlights a living female scientist involved in the discovery of gravitational waves.

"I think kids are fascinated by space and the new things we're discovering," she said.

Writing children's books has become an important outlet for Valdez. As an NIH research integrity officer, she often deals with unpleasant topics such as allegations of research misconduct and undisclosed foreign influence. Having this positive hobby is a nice escape, she said, and she relishes being part of the author community.

Kids of all ages, even grown-ups, are likely to enjoy *Joan Procter, Dragon Doctor*, learn a lot and appreciate the vibrant illustrations.

Valdez is grateful for the illustrator's whimsical style. "That's kind of what I was feeling when I wrote the story and I think they got it just right." [B](#)

## VOLUNTEERS

### HIV Vaccine Study Needs Subjects

Vaccine Research Center researchers seek persons 18-60 years old who are living with HIV for a research study. The study evaluates an investigational product targeting the HIV virus to determine if it is safe and can generate an immune response. Compensation is provided. For more information, call 1-866-444-1132 (TTY 1-866-411-1010) or email [vaccines@nih.gov](mailto:vaccines@nih.gov). Se habla español.

### Flu Vaccine Study Seeks Normal Volunteers

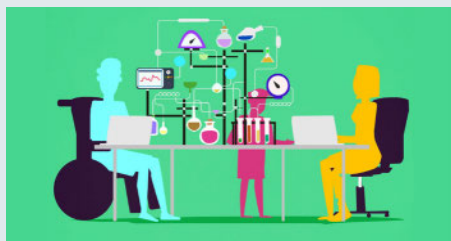
NIAID researchers seek healthy volunteers, 18 to 70 years old, to participate in an influenza (flu) vaccine study. Scientists are testing an investigational vaccine to determine if it is safe and if there are any side effects. Compensation is provided. For more information, call 1-866-833-5433 or email [vaccines@nih.gov](mailto:vaccines@nih.gov).



## 'CULTIVATING INCLUSION'

**Disability Champions, Allies To Be Honored, Oct. 24**

NIH recognizes October as National Disability Employment Awareness Month, which was established in 1988 by Congress to raise awareness about disability employment issues and the many varied contributions of America's workers with disabilities. This year, NIH's theme is "Impacting Scientific Discovery Through Disability Inclusion" to celebrate people with disabilities, past and present, who have made an impact towards scientific discovery.



NIH's Office of Equity, Diversity and Inclusion wants to show its appreciation for disability champions and allies by recognizing them for their work on removing workplace barriers. EDI will present the Disability Champion Award and the Disability Ally Award to honor those who encourage others by their example and demonstrate unconditional commitment, compassion and understanding towards the disability community, as well as those who bring more of themselves into the workplace to make it more inclusive.

Awardees will be honored during the first annual awards ceremony, Cultivating Inclusion: Honoring NIH Champions and Allies of Disability, on Thursday, Oct. 24 at the Natcher Conference Center, balcony B from 10:30 to 11:30 a.m.

To view online, visit <https://videocast.nih.gov/summary.asp?live=34945&bhpcp=1>. For all inquiries, contact David Rice at [David.Rice@nih.gov](mailto:David.Rice@nih.gov).

**Rice To Give NCI Seminar, Oct. 9**

The first woman to serve as president of Morehouse School of Medicine (MSM)—Dr. Valerie Montgomery Rice—will deliver the next lecture in the NCI Center to Reduce Cancer Health Disparities' Continuing Umbrella of Research Experiences Distinguished Scholars Seminars on Wednesday, Oct. 9 from 1 to 2:30 p.m. at the NCI Shady Grove Campus, Rm. 110. Her talk is titled "Advancing Cancer Health Equity: Understanding the 'Why' and 'What' Is Needed to Transform the Landscape."

Montgomery Rice, who is both president and dean of the institution, has made significant contributions in the areas of health equity, women's health and physician and scientific workforce diversity, among others. Prior to becoming president in 2014, she served as dean and executive vice president of MSM. She held leadership and faculty positions at health centers prior to coming to Morehouse. At Meharry Medical College, Montgomery Rice was the founding director of the Center for Women's Health Research, one of the first U.S. research centers dedicated to examining diseases that disproportionately affect women of color.

An infertility specialist and researcher, she completed her bachelor's degree in chemistry at Georgia Tech, her medical degree at Harvard Medical School, her residency in obstetrics and gynecology at Emory University School of Medicine and her fellowship in reproductive endocrinology and infertility at Hutzel Women's Hospital in Detroit.

To register for the seminar via WebEx, visit <https://buff.ly/2Qb6JKU>. Those who need reasonable accommodation to participate should contact Victoria Coan at (240) 276-7659 and/or the Federal Relay Service (1-800-877-8339) at least 2 days before the meeting.

**NIH Director's Lecture on Brain Machinery, Oct. 16**

Dr. Miguel Nicolelis of Duke University Medical Center will deliver the first of three NIH Director's Lectures in the 2019-2020 Wednesday Afternoon Lecture Series (WALS). His talk, "Brain-Machine Interfaces: From Basic Science to Neuroprostheses and Neurological Recovery," is Oct. 16 from 3 to 4 p.m. in Masur Auditorium, Bldg. 10.

Nicolelis has dedicated his career to investigating how the brains of freely behaving animals encode sensory and motor information. He was the first to propose and demonstrate that animals and human subjects can use their electrical brain activity to directly control neuroprosthetic devices via brain-machine interfaces.

WALS convenes on most Wednesdays from September through June. The WALS Director's Lectures feature leading researchers from around the globe and are specially approved by the NIH director.

There will be a reception, sponsored by FAES, and an opportunity to meet with Nicolelis in the NIH Library following the lecture. For more information and reasonable accommodation, contact Jacqueline Roberts, (301) 694-6747 or email [WALSoffice@od.nih.gov](mailto:WALSoffice@od.nih.gov) at least 5 days before the lecture. The lecture will be videocast (<https://videocast.nih.gov>). For more information about the WALS season, visit <https://oir.nih.gov/wals>.

**Combined Federal Campaign Starts Oct. 16**

The Combined Federal Campaign kicks off on Wednesday, Oct. 16 at 11 a.m. in front of Bldg. 1, with the theme, "Show Some Love." The National Eye Institute is co-chair of this year's campaign, along with NIH director Dr. Francis Collins. Several CFC charities will be on hand to share information about their work. Lunch will be available from a variety of food trucks. This year's NIH goal is \$2 million.

Upcoming CFC activities include:

- NEI 5K: Show Some Love for CFC on Thursday, Oct. 24. Outside Bldg. 1. Warm up at 11:30 a.m.; race begins at noon.
- Halloween celebration on Oct. 31. Bldg. 31A patio, 11 a.m. to 1 p.m. Costumes encouraged!
- Directors' Challenge. Nov. 14, Clinical Research Center atrium, 10 a.m. This year's challenge is a karaoke competition between institutes and centers—details to come!
- CFC selfie challenge: Take a selfie that references your favorite charitable organization. You can take a picture while volunteering or holding a sign about your charity. Post on social media using the hashtag #selfie4CFC. If you are not on social media, you can email the photo to [NIHCFC2019@mail.nih.gov](mailto:NIHCFC2019@mail.nih.gov).



Representatives from Hero Dogs participated in NIH's CFC kickoff in 2016.

PHOTO: ERNIE BRANSON

## Teen Girl ‘Night Owls’ May Be More Likely to Gain Weight

Teen girls—but not boys—who prefer to go to bed later are more likely to gain weight, compared to same-age girls who go to bed earlier, suggests a study funded by NIH. The findings by researchers at Kaiser Permanente



Teen girls who go to bed later are more likely to gain weight, compared to same-age girls who go to bed earlier, suggests an NIH-funded study.

IMAGE: IMGORTHAND/GETTY IMAGES

and other institutions appear in *JAMA Pediatrics*. A total of 804 adolescents (418 girls and 386 boys) ages 11 to 16 took part in the study. The children responded to questionnaires on their sleep habits and wore an actigraph—a wrist device that tracks movement. Researchers measured their waist size and calculated their proportion of body fat using a technique called dual-energy x-ray absorptiometry. They also estimated the children’s social jet lag—the difference between their weeknight and weekend bedtimes. Those who stayed up far later on weekends than weeknights were considered to have high social jet lag.

The authors noted that previous studies had found that adults who preferred to stay up late and had high social jet lag were more likely to gain weight than those who went to bed earlier and did not have social jet lag. Researchers undertook the current study to determine if the same associations would be seen in young people.

Study funding was provided by NICHD, NIDDK, NCI and NHLBI.

## Few People with Peanut Allergy Tolerate Peanut After Stopping Oral Immunotherapy

Allergy to peanut, which is often severe, is one of the most common food allergies in the United States. Although previous studies have shown



Discontinuing oral immunotherapy or continuing it at a reduced dose led to a decline in its protective effects, according to recent research.

IMAGE: DAISY-DAISY/GETTY IMAGES

that peanut oral immunotherapy (OIT)—ingesting small, controlled amounts of peanut protein—can desensitize adults and children and prevent life-threatening allergic reactions, the optimal duration and dose is unknown. In a study that followed participants after OIT successfully desensitized them to peanut, discontinuing OIT or continuing OIT at a reduced dose led to a decline in its protective effects.

The study, supported by NIAID and published online Sept. 13 in *The Lancet*, also found that several blood tests administered before OIT could predict the success of therapy. The phase 2 study may inform who may benefit from peanut OIT and what changes in this experimental treatment should be implemented.

Investigators at Stanford University enrolled 120 people ages 7 to 55 with diagnosed peanut allergy in the Peanut Oral Immunotherapy Study: Safety Efficacy and Discovery, or POISED. While otherwise avoiding peanut throughout the trial, 95 participants received gradually increasing daily doses of peanut protein up to 4 grams, and 25 participants received daily placebo oat flour OIT. After 24 months, participants were given gradually increasing amounts of peanut in a controlled environment, to assess their tolerance. Of those participants who received peanut OIT, 83 percent passed the peanut challenge without an allergic reaction, while only 4 percent on placebo OIT did so.

Those on OIT who passed the challenge were then randomized to receive either placebo OIT or were switched to a 300-mg daily dose of peanut protein. One year later, more participants on 300-mg peanut OIT (37 percent) passed the challenge than those on placebo OIT (13 percent), confirming insights from smaller trials that desensitization is maintained in only a minority of participants after OIT is discontinued or reduced.

## Surgery May Benefit Women with Two Types of Urinary Incontinence

Surgery for stress urinary incontinence (leaking that occurs with a cough or sneeze) improves symptoms of another form of incontinence, called urgency urinary incontinence, in women who have both types, according to a study supported by NIH. The findings challenge current treatment



Surgery for stress urinary incontinence (leaking that occurs with a cough or sneeze) improves symptoms of another form of incontinence, called urgency urinary incontinence, in women who have both types, says a study supported by NIH.

IMAGE: KALI9/GETTY IMAGES

guidelines, which suggest that the surgery may worsen urgency urinary incontinence in women with both forms, also called mixed urinary incontinence. The study appears in the *Journal of the American Medical Association*. Funding was provided by NICHD and the Office of Research on Women’s Health.

“Women with mixed urinary incontinence may have more bothersome symptoms than

women with either stress or urgency urinary incontinence alone,” said Dr. Donna Mazloomdoost, study author and program director of the NICHD Pelvic Floor Disorders Network. “The findings show promise in treating a condition that can be hard to manage under existing practices.”

Roughly one-third to one-half of all women with urinary incontinence have mixed urinary incontinence. Urgency urinary incontinence results from the spontaneous contraction of bladder muscles, leading to a strong and sudden need to urinate. Stress urinary incontinence occurs when urine leaks out after abdominal pressure increases following a sneeze, cough, laugh or movement, which squeezes the bladder.



Surgeon General Jerome Adams (c), Radm. Richard Childs (l) and Radm. Peter Kilmarx (second from l) join NIH Commissioned Corps officers who were promoted this year.

PHOTOS: JEFF ELKINS

## NIH Holds Annual Corps Promotion Ceremony

NIH's Public Health Service Commissioned Corps held its annual promotion ceremony in Masur Auditorium recently.

The ceremony began with the presentation of colors by the U.S. Surgeon General's Color Guard, the National Anthem and the Public Health Service march. Rev. Ellen Swinford provided the invocation and benediction. Radm. Richard Childs, assistant U.S. surgeon general and NHLBI clinical director, introduced special guests including Surgeon General Jerome Adams and NIH associate deputy director Dr. Tara Schwetz, who gave keynote remarks.

Ten of the NIH Commissioned Corps officers who were promoted this year participated in the ceremony. Categories, ranks and promotees are:

Medical officers, promoted to commander—Jane Baumbblatt, Ian Myles; nurse officers, promoted to captain—Megan Mackey; promoted to commander—Tat'Yana Worthy; promoted to lieutenant commander—Frances Andrada, Patrycja Hoffmann,



Adams invited children in attendance to the stage for a photo.

Melanie Webb; environmental health officers, promoted to captain, Jason Barr; promoted to commander, Matthew Deptola; dietician officer, promoted to captain, Merel Kozlosky.

Promotees had provided remarks in advance on what it means to them to be an officer. Childs read the sentiments as each officer reported on stage. Attention to orders were read and family members, friends and colleagues changed shoulder boards to reflect officers' new ranks.

Adams congratulated the promoted officers and invited children in attendance to the stage for a photo. The ceremony ended with recognition of newly retired officers and new calls to active duty.—**Theresa Yu**

## Ellis Named CSR Executive Officer

Bonnie Ellis has been selected as the new executive officer of the Center for Scientific Review. Since July 2018, she has served on detail as acting executive officer at CSR.



Bonnie Ellis

"Bonnie brings a stellar leadership vision, strong expertise across multiple facets of administration and a proven track record in promoting high standards and transparency in our operations. CSR

is very fortunate to have her join our leadership team," said Dr. Noni Byrnes, CSR director.

Ellis holds an M.B.A. from the University of Maryland. She has been at NIH since 1989, in positions with increasing levels of responsibility.

Most recently, she served as chief administrative officer at the National Institute on Alcohol Abuse and Alcoholism since 2017 and in other capacities at NIAAA since 2013. Prior to this, she was an administrative officer in CSR, and before that, a hub manager in the NIH Office of the Director's Division of Extramural Administrative Support, which involved managing support staff in multiple institutes and centers, including CSR.

In her new position, Ellis will oversee administrative, financial management, committee management, procurement and management analysis services that enable CSR to fulfill its mission. Each year, the center receives about 80,000 grant applications and engages more than 18,000 reviewers in approximately 1,600 review meetings.

## Former Bldg. 1 Assistant Ceja Mourned

Belia "Bel" Ceja, 94, a special assistant to three NIH directors, died July 4 at a hospital in Washington, D.C. The cause was pneumonia and complications from myasthenia gravis, according to a family member.



Belia "Bel" Ceja

Ceja retired in September 1985 after more than 29 years of federal service. She had won an NIH Director's Award in 1977 "for virtuosity in maintaining the smooth and efficient operation of the immediate Office of the Director, a role she performs with exceptional diligence, tact and good judgment."

She was born Belia Landa in Chicago and moved to the Washington area in the late 1950s. She joined NIH in 1959, serving briefly in the Division of Administrative Services in Bldg. 13 before moving to Bldg. 1 for the rest of her career.

Ceja was special assistant to NIH directors Dr. Robert S. Stone, Dr. Donald S. Fredrickson and Dr. James B. Wyngaarden.

When she retired in 1985, it was to work for Fredrickson at the Howard Hughes Medical Institute. But Ceja returned to NIH from 1986 to 1990, serving as special assistant to the director of the National Library of Medicine.

Ceja's husband of 62 years, the late Salvador Navarro Ceja, died in 2007. She is survived by children Sybil and Paul; grandchildren Nathan, Natalie, Paul David, Lona and Morgan Head, Jason and Hannah Ceja; four great-grandchildren; her brother, Alfred Landa; and her son- and daughter-in-law Larkin Head and Kathryn Ceja. **R**

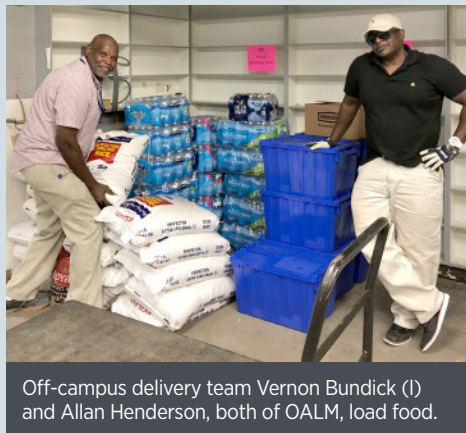


NCI's Battle of the Towers CANstruction team included (from l) Tabatha Schrader, Tonia Cumberledge, Karen Smith, Barry Goldspiel, Deputy Executive Officer Eric Cole, Kelly Lawhead, Jordan Neal and Nanci Gottlieb.

PHOTO: ERIC WILLIAMS

## NIH Exceeds 'Feds Feed Families' Goal

During this year's annual government-wide Feds Feed Families campaign, NIH donated 49,228



Off-campus delivery team Vernon Bundick (l) and Allan Henderson, both of OALM, load food.

pounds of non-perishable food items, greatly exceeding the 28,000-pound goal.

Over the course of 8 weeks, NIH'ers contributed to the campaign that will benefit three local partners—the Children's Inn at NIH, Capital Area Food Bank and the Safra Family Lodge, as well as food pantries in the communities of NIH worksites in Arizona, Montana, North Carolina and Frederick and Baltimore, Md.

The successful effort combined employee generosity and diligent work by campaign lead, the Office of Research Services, which joined the Office of Acquisitions and Logistics Management to collect and sort donations and coordinate the giving with all 27 institutes and centers. In addition, food services vendor Eurest repeated its successful "Fighting Hunger" voucher program and added the new "Keep the Change" effort in its campus cafeterias; all proceeds (more than \$6,000) directly benefitted the Children's Inn and Safra Family Lodge.



An HHS truck picks up NIH donations for delivery to the Capital Area Food Bank.



Standing on sort duty are volunteers Shalini Sharma (l) of NINDS and Gene Burden of ORS; seated are Hana Desta (l) and Addie Brinkley, both of ORS.



Volunteer Shannon Griffin of NHLBI sorts donations.



At left, volunteer food collectors (from l) Stinson Mackie, Burden and Mark Patrick, all of ORS, take a photo break. Also on the team, but not shown is Percy Woods. At right, Darrick Akiyama (l) and Phil Waltz, both of NIAMS, won the 2019 "IC Food Fighting Hunger" CANstruction contest for creativity and number of donations. "We wanted a design that represented the work and research NIAMS does," Akiyama said. "Focusing on arthritis, we came up with the design of a hand that had arthritis [cans in red]. It took a couple of hours to design it using Excel and about 2 hours to construct it." About 540 cans were used—yellow (white beans) for the background, blue (black beans) for the hand and red (tomato) representing arthritis. Frank Quintanilla (not shown) was also instrumental in the design.



Among sorters are (from l) Nina Bennett, OD; Cheryse Sankar, NINDS; Linda Kiefer, ORS; Cathy Troutman, NHLBI; and Brinkley.