



Psilocybin Might Aid in Treatment of Mental Disorders, Addiction

BY ERIC BOCK

The hallucinogenic compound psilocybin could help treat depression, anxiety and substance abuse, said Dr. Roland Griffiths at a recent NIMH Director’s Innovation Speaker Series lecture at the Neuroscience Center.

“We have a class of drugs that was put in the deep freeze—not studied for a period of decades. Now, we can pull them out and ask all sorts of questions,” said Griffiths, founding director of the Johns Hopkins Center on Psychedelic and Consciousness Research and professor of behavioral biology in the department of psychiatry and

behavioral sciences and the department of neuroscience at Johns Hopkins University School of Medicine.

Psilocybin is a psychoactive compound made by certain types of mushrooms. When ingested, it produces changes in perception, emotion and cognition.

Anthropological evidence suggests that various cultures have been using psilocybin for hundreds, if not thousands, of years for religious and healing purposes, Griffiths said. In the 1950s and early 1960s, researchers began studying the compound’s potential for the treatment of mental disorders. By the next decade, research ground to a halt in response to safety concerns coupled with unfavorable media coverage, resulting in misperceptions of risk and passage of highly restrictive regulations.

It’s thought that psilocybin destabilizes established neural networks, allowing the

SEE **PSILOCYBIN**, PAGE 4



Dr. Roland Griffiths speaks at seminar.



CURE talk addresses culturally competent care in cancer. See story, p. 12.

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SPEAK UP Hurt Inspires Us to Build ‘Courageous Cultures’

BY DANA TALESNIK

It’s a workplace conundrum in organizations big and small, among supervisors and staff of all ages. Managers say they want and ask for good ideas, yet their employees are reluctant to share them.

At a recent Deputy Director for Management Series lecture in Lipsett Amphitheater, leadership expert and author Karin Hurt offered tips on how



Karin Hurt

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NIH Holds Inaugural Seminar on American Rural Health

BY MOHOR SENGUPTA

One in 5 Americans live in rural America and face health disparities every day due to higher rates of poverty and less access to health care. They are likelier to die from chronic diseases and have experienced a dramatic rise in opioid addiction and suicide deaths over the past decade. Recently, NIH hosted the inaugural rural health seminar in an effort



Dr. Christopher Austin

SEE **RURAL HEALTH**, PAGE 8

Seminar on the Law Lag, Scientific Progress, Feb. 13

The National Institute of Mental Health will host Dr. Sheila Jasanoff—a leading scholar on the relationships among science, technology, law and political power—on Thursday, Feb. 13 at 3 p.m. at the Neuroscience Center, located at 6001 Executive Blvd., in conference room C. Her talk is part of the NIMH Director's Innovation Seminar Series, which is dedicated to innovation, invention and scientific discovery.

Jasanoff is Pforzheimer professor of science and technology studies at the John F. Kennedy School of Government at Harvard University, where she founded the science, technology and society program. Her research centers on the interactions of law, science and politics in democratic societies. She is particularly concerned with the construction of public reason in various cultural contexts and with the role of science and technology in national and global institutions.



Dr. Sheila Jasanoff

The talk will be webcast at <https://videocast.nih.gov>. More details are available at <https://innovationspeakers.nimh.nih.gov>.

Webinar on Using Technology to Understand and Promote Physical Activity

Join the Office of Disease Prevention (ODP) for a Methods: Mind the Gap webinar with Dr. Siobhan Phillips. She will provide an overview of how digital health tools can be used to better understand and optimize physical activity promotion interventions. The event takes place Thursday, Feb. 20 at 1 p.m.



Dr. Siobhan Phillips

Physical activity is consistently associated with improved health and disease outcomes across a wide range of populations. Yet, the majority of the population is insufficiently active. Improvements in technology provide opportunities to better understand the

determinants and health outcomes of physical activity and to promote such activity.

Phillips is an associate professor in the department

of preventive medicine at Northwestern University's Feinberg School of Medicine and director of physical activity promotion at the Robert H. Lurie Comprehensive Cancer Center. Her interdisciplinary research is focused on understanding the determinants and outcomes of physical activity—designing, testing and optimizing innovative and effective behavior change interventions—and disseminating and implementing this research to practice with a primary focus on cancer survivors.

Register for the webinar at <https://prevention.nih.gov/education-training/methods-mind-gap/using-technology-understand-and-promote-physical-activity-behavior>. The webinar will be recorded and available on the ODP website within about a week.

Credit Union Celebrates 80 Years at NIH

This year, the NIH Federal Credit Union (NIHFCU) marks 80 years of continuous operation. On Jan. 11, 1940, when 9 federal employees pooled \$75 and began transacting business out of a shoebox, NIHFCU was born. From a cramped 5'x 6' space on campus to today's advanced mobile banking solutions, NIHFCU has enjoyed a long history (see <https://www.nihfcu.org/about/>).

"The evolution of the NIHFCU from its humble beginnings is quite remarkable," said Rick Wieczorek, NIHFCU's president & CEO. "Its ability to grow through the vast social, regulatory and economic changes over the decades is a tribute to all those who have touched the NIHFCU in some way. This includes our volunteer board and committee members, dedicated employees and, of course, our incredibly loyal members who continue to provide us with the privilege of serving their financial needs."

To help celebrate, NIHFCU has a Celebrate 80 Years webpage (<https://www.celebrate80.com/>) where members can share their stories about how the credit union has made a difference in their lives or for their loved ones. Members who provide stories will also be entered to win a share of \$800 in cash prizes. The credit union will highlight some of the most unique stories throughout the celebratory year.

"Our story search is a great way for our members to chronicle their experiences over past decades," said Steve Levin, NIHFCU's vice president of marketing and business development. "With NIHFCU's new 'Discover Banking with Heart' brand position, the timing of our anniversary celebration is perfect and we look forward to receiving and sharing the many genuine and powerful stories from our membership."

In addition to the story search, the credit union will also mark its 80th anniversary by opening a new "branch of the future" in Silver Spring, expanding its community service and volunteerism and announcing a variety of member special opportunities throughout the year.



NICHD's Stratakis Honored

NICHD scientific director Dr. Constantine Stratakis was named the 2019 Society for Endocrinology (SfE) Dale Medal winner for his significant contributions to the field of genetics of pituitary and adrenocortical tumors and related disorders, most recently identifying genes responsible for gigantism, acromegaly and Cushing syndrome. This is the highest honor accorded by the SfE.

E-Learning Course on Sex, Gender

The ORWH website now features free online courses designed to give users a thorough and up-to-date understanding of sex and gender influences on health and disease and NIH requirements on factoring sex as a biological variable (SABV) into research design.

Learners will be able to apply this knowledge of sex and gender influences when designing and conducting research or interpreting evidence for clinical practice. Course material showcases examples from basic science through clinical trials and translation into practice to ensure learners understand the importance of considering the influence of sex and gender throughout the research spectrum and beyond.

The first course, Bench to Bedside: Integrating Sex and Gender to Improve Human Health, was developed in partnership with the Food and Drug Administration's Office of Women's Health. The course's first module, which focuses on immunology, is now available.

Additional modules on cardiovascular disease and pulmonary disease are forthcoming. A second course, Sex as a Biological Variable: A Primer, will be added in early 2020.

The courses are open to the public and registration is free.

Research Needed for Osteoporotic Fracture Prevention

More than 10 million people in the United States have osteoporosis. This condition can lead to bone fractures, which may impair a person's ability to live independently and even threaten their life. Several Food and Drug Administration-approved medications have been shown to effectively prevent osteoporotic fractures for those at highest risk when used for 3-5 years; however, national trend data show these treatments are under-prescribed and patients are not taking them when prescribed.

Osteoporosis cannot be cured and patients may need long-term therapy with some of the medications. However, there are uncertainties related to gaps in the scientific data about how long osteoporotic preventive medications should be taken and the benefits and harms of using osteoporosis drugs for more than 3-5 years. More research is needed to help individuals and physicians make informed decisions about osteoporosis treatment.

The NIH Office of Disease Prevention, NIA and NIAMS recently co-sponsored the NIH Pathways to Prevention Workshop: Appropriate Use of Drug Therapies for

Osteoporotic Fracture Prevention to address these research gaps.

After listening to scientific presentations and patient perspectives on the topic and reading a systematic evidence review and public comments, an independent panel of clinical and public health experts published a report outlining future research priorities. These include increasing the use of innovative research designs to assess optimal treatment duration for osteoporotic drugs, the need for research in diverse patient populations, more research on rare but serious adverse effects and the need to better understand patient and physician barriers to drug therapy.

After the workshop, representatives from across the federal government met to discuss ways to work together to address the panel's recommendations. They developed an action plan to support more research on several areas, including mechanisms of a couple of rare adverse effects, factors influencing therapy and ways to overcome barriers to treatment.

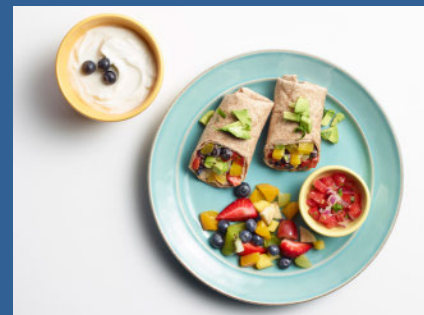
The group also identified some large existing datasets that researchers could use for further studies and called for collaborative communication efforts. NIAMS and NIA also outlined next steps and plans to address the recommendations, in collaboration with relevant partners.

To help share the results of these meetings, workshop planners and content experts hosted symposium presentations during the annual meetings of both the American Society of Bone and Mineral Research and the Gerontological Society of America.

For more information, visit www.prevention.nih.gov/P2PFracturePrevention. **R**

Healthy Volunteers Needed

NIAID researchers seek healthy volunteers, 18-50 years old, for the study of an investigational product targeting malaria. Financial compensation is provided. To learn how to participate, call 1-866-833-5433 or email vaccines@nih.gov.



ON THE COVER: Veggie wraps and fresh fruit, one of the many delicious and heart-healthy recipes that are part of the DASH Eating Plan, which is scientifically proven to lower blood pressure. February is American Heart Month. This year's theme is "Eat healthier together." Find the wrap recipe at <https://www.nhlbi.nih.gov/health/educational/wecan/eat-right/veggie-wrap.htm>.

IMAGE: NHLBI

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Workshop planners and speakers gather for a photo.

PHOTO: ANDREW PROPP

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Turning Discovery Into Health

Psilocybin

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connection of new neural networks. The compound might permit the rewiring of brain networks that play a role in psychiatric disorders, similar to “resetting a computer.”

Griffiths said psilocybin decreases activity in the default mode network, a brain network associated with self-referential processing—the act of thinking about oneself. Such decreases in default mode network activity have also been observed in long-term practitioners of meditation. Increases in default mode network activity have also been observed in people with depression.

Psilocybin isn’t considered addictive because it doesn’t cause uncontrollable drug-seeking behavior, noted Griffiths. Medical emergencies as a result of taking the compound are rare.

“Despite the apparently low risk for toxicity and addiction, there’s nonetheless concern about use of psilocybin,” he explained. “That’s based primarily on concerns about adverse effects, such as panic reactions and possibly the precipitation of enduring psychiatric conditions.”

A few years ago, Griffiths surveyed almost 2,000 people who had taken psilocybin about the worst experience they ever had on the drug. Eleven percent indicated they put themselves or someone else at risk of physical harm, 3 percent sought medical help and 10 percent reported enduring psychological symptoms lasting more than a year. These adverse effects are uncommon in clinical studies where patients are carefully screened, prepared and given psychological support during and after the psilocybin session, he said.

Since Griffiths began his research 2 decades ago, his lab has treated more than 370 patients across 700 sessions. His lab has studied healthy volunteers, meditators, religious professionals, psychologically distressed cancer patients, cigarette smokers who wanted to quit and patients with major depressive disorder.

Study participants take a capsule containing psilocybin in a comfortable, living room-like setting under the supervision of two people who monitor the event. Conditions are optimized to maximize the potential therapeutic effect.

During sessions, participants are



Griffiths said the FDA recently designated psilocybin as a “breakthrough therapy.”

PHOTOS: LESLIE KOSSOFF

encouraged to lay down on a couch, listen to music and direct their attention on their inner experience. It takes about 30 minutes for psilocybin to take effect, with peak effects occurring at 2 to 3 hours and then tapering off over the next few hours. The monitors generally don’t intervene unless participants become anxious or uncomfortable and require reassurance.

★ ★ ★

“We have a class of drugs that was put in the deep freeze—not studied for a period of decades. Now, we can pull them out and ask all sorts of questions.”

-DR. ROLAND GRIFFITHS

★ ★ ★

Even though these experiences can be highly valued, Griffiths cautioned they are not “feel-good experiences.” They can be “among the most terrifying of your life.” It’s not uncommon for people to have brief frightening experiences that open into positive ones.

During the preparation phase, the monitors build rapport and trust with participants, so they feel safe during the session.

After their experience, Griffiths asks

how their day went and “a very common response is ‘I can’t possibly tell you,’” because “they don’t even have a language to describe this experience.”

Not being able to describe it is a feature of a mystical-type experience, he noted. The other features of the experience are a sense of unity accompanied by a sense of preciousness, sacredness or reverence, the feeling that one is encountering ultimate reality, deeply felt positive mood and the transcendence of time and space.

“Mystical experience is defined by a constellation of empirically measured phenomenological dimensions,” he said. “It does not imply supernatural or unknown rational levels of explanation.”

Such mystical experiences are associated with enduring positive changes in attitudes, moods and behavior. In several studies, researchers predicted a decrease in anxiety and depression and a reduction in cigarette cravings.

The most interesting feature of taking psilocybin and similar compounds, according to Griffiths, is that the resultant memories and positive attributions don’t diminish long-term. Anecdotally, participants rate these experiences to be among the most personally meaningful of their entire lifetime, comparing it for instance to the birth of their first child or the death of a parent.

Another valued part of these experiences is that people often report having highly valued psychological insights. Griffiths said this may take various forms, such as insight into personal problems or in the realm of interpersonal relationships.

Recently, the Food and Drug Administration designated psilocybin as a “breakthrough therapy” for treatment-resistant depression and major depressive disorder. The designation is meant to speed up the development and review of a drug if preliminary evidence suggests it might demonstrate substantial improvement over available therapy.

“There’s something about these experiences that is fundamentally reorganizational and powerful. Although much more pre-clinical and clinical research is needed to understand biological and behavioral mechanisms of action, it appears plausible that variations of this therapeutic approach may demonstrate efficacy across a wide variety of psychiatric disorders,” Griffiths concluded. **R**

Congressional Staff Discover Innovative NIBIB Biotech

BY PATRICIA WILEY

A smartphone app to help make health care more accessible for people with anemia who need to measure their hemoglobin levels. An optical imaging system to see nerves under the skin during surgeries. These were two of the technologies recently showcased by NIBIB scientists and grantees to a group of 40 congressional staffers. The recent congressional tour at NIH exhibited National Institute of Biomedical Imaging and Bioengineering-supported biotechnologies and gave the visitors a hands-on experience with a broad spectrum of research projects.

NIBIB director Dr. Bruce Tromberg opened the day with brief remarks highlighting NIBIB's history and impact at NIH. He joined the five groups of exhibitors in demonstrating to congressional staff the innovative biotechnologies that address health problems.



NIBIB director Dr. Bruce Tromberg (l) helps demonstrate an optical imaging system developed to non-invasively image peripheral nerves. Dr. Guillermo Monroy, postdoctoral fellow at the FDA, helps guide Tromberg's hand while Dr. Daniel Hammer, an FDA scientist, observes the image on the screen.

"The event was a great success," said Tromberg. "NIBIB takes its charge seriously about informing the public and Congress on how taxpayer dollars are spent. These projects are wonderful examples of how NIBIB-funded research leads to the development of game-changing technologies that benefit patients."

The tour came at the invitation of the American Institute for Medical and Biological Engineering (AIMBE) and was organized in part by NIBIB's Office of Science Policy and Communications. AIMBE is an advocacy group that supports medical and biological innovation and aims to increase public understanding of scientific advances.

The presentations included a demonstration from NIBIB's newest intramural investigator Dr. Kaitlyn Sadtler, chief of the immunoengineering section. She showcased protective gels that help program an immune response to promote the integration and



Participants try out an app developed by researchers at Georgia Tech and Emory University that measures hemoglobin by taking an image of the fingernails.

PHOTOS: MARLEEN VAN DEN NESTE

growth of engineered tissues. This work could accelerate the development of next-generation materials used in medical devices such as pacemakers and drug delivery vehicles.

Dr. Wilbur Lam and his postdoctoral fellow Dr. Robert Mannino from Emory University and Georgia Institute of Technology presented their smartphone app that non-invasively measures hemoglobin levels in patients with anemia, the most common blood condition. Hemoglobin levels are currently measured through blood tests. By using a picture of a person's fingernails, accurate hemoglobin levels can be obtained without a trip to the clinic. The new technology could be useful in settings where medical resources are limited.

Dr. Bin He, a professor at Carnegie Mellon University, and his postdoctoral fellow Dr. Abbas Sohrabpur, explained their brain-mapping technique that helps surgeons plan for operations on patients with epilepsy. The imaging technique uses novel machine-learning algorithms and EEG test results taken during a patient's seizure. The resulting images show physicians the sites where seizures are originating and help them understand the disease better.

Congressional staff handled and examined 3-D printed phantom tissues created at the University of Maryland by Dr. John Fisher and his team. Graduate student Sarah Van Belleghem and Dr. Bhushan Mahadik gave presentations on how the biomaterials can help build scaffolds to repair damaged tissues or deliver drugs to precise locations. Dr. Guang Yang showcased a 3-D printed bioreactor that helps supply cells or tissues with nutrients in a controlled manner, so cell or tissue interactions can be more easily studied.



Congressional staff take a close-up look at phantom tissue and gels created by NIBIB's intramural investigator Dr. Kaitlyn Sadtler. The protective gels program an immune response that promotes tissue integration and growth after engineered tissues are transplanted.

Legislative aides had the opportunity to look under their skin and see their nerves with an imaging technology brought by a team of researchers from the FDA and Massachusetts General Hospital. FDA scientists Drs. Srikanth Vasudevan and Daniel Hammer guided and imaged the hands of aides using the advanced optical imaging system. The system may provide better outcomes during operations by helping surgeons visualize nerves below the skin.

Visitors also viewed apps created by NIBIB's Office of Science Policy and Communications. The Understanding Medical Scans app uses images and videos to provide patients with infor-

mation about the various types of medical scans many people undergo during an illness. The team also showcased their Surgery of the Future app that displays what a futuristic surgery room may look like with the help of NIBIB-supported technologies. Both apps are available for free download on most devices. **R**

Courageous

CONTINUED FROM PAGE 1

to address this disconnect by creating “a courageous culture,” an atmosphere where people speak up and readily share ideas.

“We’re not talking about the big ideas that are going to transform science,” said Hurt. “We’re talking about the little ideas that would change processes and make it easier to get things done, that would improve the employee experience without the soul-sucking negative behaviors that make people scared.”

Hurt and her husband David Dye, who together founded the Let’s Grow Leaders consulting firm, collaborated with the University of Northern Colorado’s social research lab to explore the correlation between workplace courage and daily innovation. In interviews with executives and employees across multiple sectors around the world, they overwhelmingly heard the same few answers as to why employees didn’t share their ideas with their supervisors.

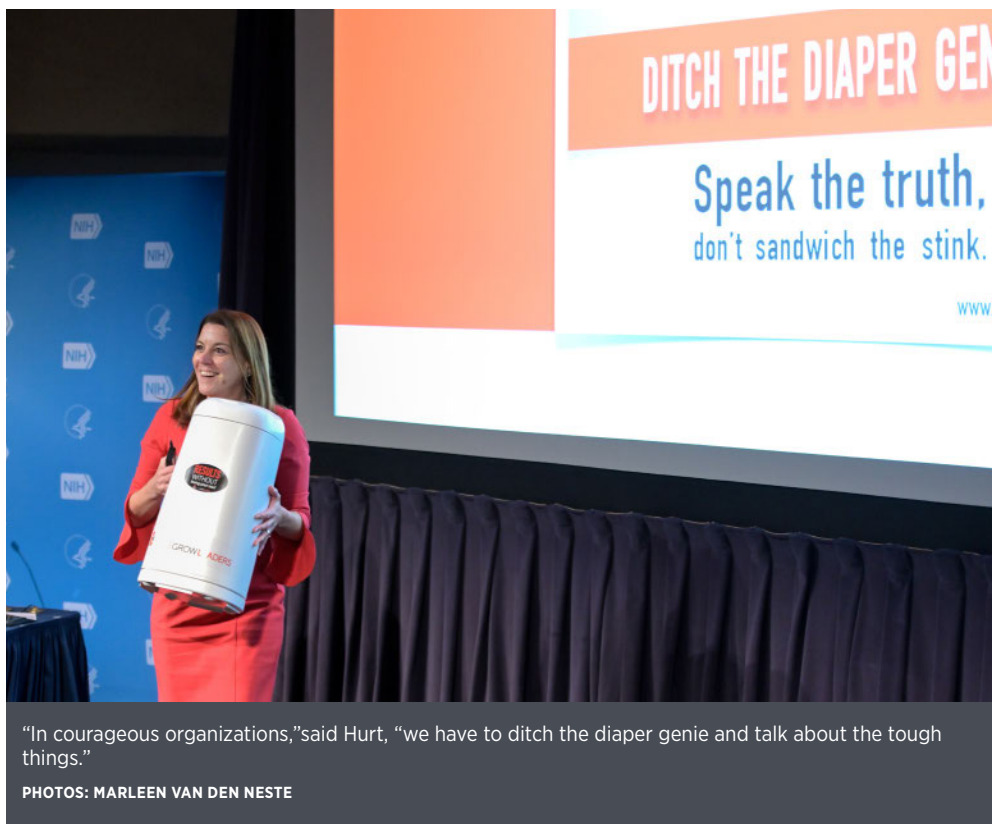
Many respondents said nobody asked. More than half said they stopped bothering, discouraged because nothing happened when they proposed ideas—the bulk of which focused on improving efficiency and productivity. Others feared getting in trouble or not being taken seriously; some simply didn’t know how to share their ideas.

But have no fear. Hurt described six strategies to embolden employees and supervisors to create a more courageous culture. First, navigate your narrative. “Be the leader you want your boss to be,” she said.

Hurt learned this lesson after getting promoted to her first executive role. She had asked employees to tap into their personal experiences to inform new policies but failed to share her own story about navigating her new role as a single mom. After an employee challenged her, they revised their plan into an award-winning, culture-changing policy.

“You don’t have to share your personal experience at work,” said Hurt. “But in this instance, I was asking my team to do things I was unwilling to do, and that’s not leadership.”

The narrative may lead us down unexpected paths. When Hurt once witnessed a pompous outburst from another executive, her boss advised her to ignore it for her career’s sake. Brimming with frustration, Hurt wrote down her ideas about effective



“In courageous organizations,” said Hurt, “we have to ditch the diaper genie and talk about the tough things.”

PHOTOS: MARLEEN VAN DEN NESTE

leadership and told her colleagues to confront her if she ever inadvertently acted that way. That weekend, she started a leadership blog, which led to speaking engagements and her first of three books.

Hurt has heard many scenarios in workshops she’s conducted over the years. Sometimes the narrative involves a toxic situation, such as harassment, which takes courage to report and expose.



Hurt’s husband and consulting partner David Dye moderates a lively Q&A. Audience members submitted their questions to him, each one “asking for a friend.”

She said, “That’s how you build a culture: one person at a time, one courageous moment at a time, to stand up for what matters, to speak the truth.”

The second strategy toward creating a courageous culture is to forage for fears. Hurt suggested a simple exercise when starting a new project or perhaps going into the new year with a fresh outlook. Give members of your team index cards marked on one side with “H” and on the other side with “F.” Ask each person to jot down their biggest hope and fear and use the submissions to create an honest dialogue.

Next, connect to your cause, perhaps the most effortless strategy at NIH. “I can’t think of a more purpose-driven organization than NIH,” Hurt said.

“When people are feeling frustrated or disconnected or you’re not getting their best ideas,” she said, “if you can help remind them about the cause, no matter what their role is—connecting what you’re asking them to do to why you’re asking them to do it—that can make them much more inclined to give the extra effort to contribute.”

Hurt and Dye’s research also revealed that the most successful, innovative organizations know how to create clarity and cultivate curiosity.



Hurt emphasizes clarity in communications.

To solicit or propose great ideas, Hurt suggested considering all criteria within the “IDEA” acronym. Is the suggestion Interesting, Doable, Engaging and what Actions or first steps can put the plan in motion?

“When we talk about clarity, one good conversation about expectations can prevent 14 different ‘why didn’t you?’ conversations,” she said. “[Managers should] be clear about what kinds of ideas would make an impact and [that they’re] open to doing things in a different way.”

A technique she encourages is what she calls ditching the proverbial diaper genie. Diaper pails seal in dirty diapers; although the stench is concealed, it’s still there.

“If you can’t smell it, you can’t solve it,” said Hurt. “In courageous organizations, we have to ditch the diaper genie and talk about the tough things.”

To cultivate curiosity, ask courageous questions and be open to the answers. Own the “UGLY” of missed opportunities. What are we Underestimating? What’s Gotta go? Where are we Losing or missing the Yes?

Lastly, respond with regard. Let employees be part of the process to test or hone proposed ideas. Create a place where ideas are welcomed and implemented. Then employees feel valued and teams can operate at their fullest potential.

If you’re thinking that courage sometimes feels lonely, “find the others,” advised Hurt, “the people here who want to lead well, who want to build courageous teams, who want to tell the truth. Find your peers, find mentors, because that will help you to build a courageous culture.” **B**

NIH Hosts BIRCWH Meeting

The annual meeting of the Building Interdisciplinary Research Careers in Women’s Health (BIRCWH) program, sponsored by the Office of Research on Women’s Health, was held recently on campus. Keynote speaker Dr. Judith Regensteiner (r), a professor at the University of Colorado’s Center for Women’s Health Research, delivered the Ruth L. Kirschstein Memorial Lecture. In a talk titled “Strategic Career Development: Charting the Course,” Regensteiner advised junior BIRCWH investigators: “Take a strategic approach to an academic career... Develop your mission and vision. Don’t be afraid to be bold. Focus on getting good mentorship... And get training where you can.” Welcoming her is ORWH director Dr. Janine Clayton.



Wallace To Give AGI Seminar in Neuroregeneration

The National Eye Institute’s Office of Regenerative Medicine has invited Dr. Valerie Wallace to give the 2020 Audacious Goals Initiative (AGI) Seminar in Neuroregeneration. Her talk is titled “Cytoplasmic Material Exchange Between Sensory Neurons *in vivo*.” The seminar will be held from 10 to 11 a.m. on Tuesday, Mar. 3 in Masur Auditorium, Bldg. 10.



Dr. Valerie Wallace will give a 2020 AGI Seminar.

Wallace is director of vision sciences and chair of the Vision Science Research Program at the Toronto Western Research Institute/University Health Network. She holds appointments in the departments of ophthalmology and vision sciences and laboratory medicine and pathobiology at the University of Toronto.

A molecular and developmental biologist by training, she is recognized for her work on the role of Hedgehog signaling in neural progenitor proliferation in the central nervous system. Her lab is now applying this knowledge towards investigating the role of morphogen signaling in tumorigenesis and the development of cell-based approaches for the treatment of blinding eye diseases.

For details about AGI, visit <https://www.nei.nih.gov/AGI>.

For assistance, including the need for sign language interpretation or other reasonable accommodation to participate in this event, contact the NEI Office of the Director at (301) 496-2234.

Workshop on Physical Activity Interventions for Wheelchair Users

The Office of Disease Prevention will hold a Pathways to Prevention Workshop: Can Physical Activity Improve the Health of Wheelchair Users? Mar. 30-31 at Natcher Conference Center. It will assess the scientific evidence to better understand the potential benefits of physical activity interventions for people at risk of using, or currently using, wheeled mobility devices such as a manual wheelchair, motorized wheelchair or scooter.

Speakers will identify and address research gaps related to the safe and effective types and amount of exercise for people who use wheeled mobility devices.

The workshop is designed for researchers, health care professionals and non-scientists. Individuals who use wheeled mobility devices and caregivers are particularly encouraged to attend. Cosponsors include NICHD’s National Center for Medical Rehabilitation Research and NINDS.

The event is free and open to the public. Register at prevention.nih.gov/P2P-PAforWheelchairUsers-Register. Attendees can join either in person or via NIH Videocast.

Rural Health

CONTINUED FROM PAGE 1

to focus attention on health disparities prevalent in rural communities. It brought together researchers, scientists, medical practitioners and others to explore ideas and innovations for rural health improvement.

In opening remarks, NCATS director Dr. Christopher Austin recollected the dearth of health care facilities in vast stretches of Alaska, where he served as a physician. “Rural Americans face health disparities that are rooted in racial, economic and geographic health workforce issues,” he said. “They experience higher rates of poverty and lack of health care access and are likelier than their urban counterparts to die from heart disease, cancer, chronic lower respiratory disease, stroke, addiction, suicide and substance overdose.”

“Income is a critical predictor of life expectancy,” said NIMHD director Dr. Eliseo Pérez-Stable. Health outcomes among people in rural areas must be evaluated by race, ethnicity and socioeconomic status as well as geographic setting, he suggested. Race/ethnicity of rural residents differs by region with variations in community cohesion and resilience that promote better health.

Data from various studies show that rural populations are older than urban populations, have fewer years of education, shorter life expectancy and access to fewer physicians and hospitals, he continued. Structural determinants of health that affect rural areas include limits on: transportation, broadband internet access, mobile phone services and access

to healthy food options, Pérez-Stable noted.

NHLBI director Dr. Gary Gibbons emphasized the importance of hearing out problems of the rural community, appreciating their heterogeneity and acknowledging that the rural community will eventually be drivers of their local solutions. “In America’s breadbasket, you have situations of food deserts,” he said of the large distances to grocery stores in rural midwestern and southern states. He suggested data science implementation to inform interventions tailored for specific rural communities, where one size doesn’t fit all.

Guest speaker Dr. Gene Brody, Regents professor of child and family development and founder and director of the Center for Family Research at the University of Georgia, found that there is a deficit in scientific knowledge about rural communities.

“Poverty and economic distress are pervasive features of the 623 counties known as the ‘Black Belt’ that stretches from North Carolina into South Carolina, Georgia, Alabama, Mississippi and Louisiana,” he said. According to the “weathering hypothesis,” chronic stressors including poverty, racial discrimination and limited access to health care are the root of health disparities in rural African-American young adults that develop over their life course and possibly begin at conception.



NICHD director Dr. Diana Bianchi (r) makes a point. Looking on are NIMH’s Dr. Andrea Beckel-Mitchener and NIDA deputy director Dr. Wilson Compton.

PHOTOS: CHIA-CHI CHARLIE CHANG

for African-American rural youth. His work has shown that rural parents who participate in family-centered drug prevention programs manage their parenting requirements better, raising kids with decreased stress levels.

Discussing the theory of “skin-deep resilience,” Brody pointed out that “there might be a cost of resilience; people could have a single-minded determination to succeed and psychosocially be doing great, but the cost of working diligently, letting your health go by the wayside, may undermine your health.” Upward mobility of rural African-American children was associated with diabetes and asthma, unlike their white counterparts.

In the panel discussion, Dr. Melissa Walls, director of the Great Lakes Hub for the Johns Hopkins Center for American Indian Health, addressed the resilience, a coping mechanism, seen in rural tribal communities. Dr. Stacey Arnesen of NLM advised providing health information access to rural communities in a format they can use. Dr. Wilson Compton, deputy director of NIDA, stressed attention to the drug abuse that exists in rural areas, often overlooked as solely an urban problem. NIGMS director Dr. Jon Lorsch talked about the IDEa program that funds research and infrastructure development in states that have historically received less NIH support and are home to a predominantly rural population. A more nurturing environment for diverse trainees at NIH was suggested by NIMH Office of Disparities director Dr. Andrea Beckel-Mitchener. And NICHD director Dr. Diana Bianchi talked about promoting rural health initiatives in social media, enabling greater awareness of these issues. **R**



Seminar participants included (from l) Dr. Gene Brody, NIMHD director Dr. Eliseo Pérez-Stable and NIGMS director Dr. Jon Lorsch.

Downward mobility of a community affects the people living it, added Brody. However, such effects are watered down when there is a high social and parental support factor. His research attempts to strengthen developmentally appropriate parenting practices



Women who breastfed their infants exclusively for 7 to 12 months may have a lower risk of early menopause, study finds.

IMAGE: TUNED_IN/ISTOCK

Pregnancy, Breastfeeding May Lower Risk of Early Menopause, Study Suggests

Women who breastfed their infants exclusively for 7 to 12 months may have a significantly lower risk of early menopause than their peers who breastfed their infants for less than a month, according to an analysis funded by NIH. The study also suggests that pregnancy can reduce the risk of early menopause.

The study was conducted by Christine Langton of the University of Massachusetts at Amherst and colleagues. It appears in *JAMA Network Open*. Funding was provided by NICHD and NCI.

“The study results provide the strongest evidence to date that exclusive breastfeeding may reduce the risk of early menopause,” said Dr. Lisa Halvorson of the NICHD Gynecological Health and Disease Branch, which oversaw the research.

Previous studies have suggested that menopause before age 45 (early menopause) increases the risk of early death, cognitive decline, osteoporosis and cardiovascular disease. Smaller studies have found evidence linking pregnancy and breastfeeding with later menopause, but because of their size and other limitations, the results are inconclusive. Moreover, the earlier studies focused on timing of menopause and not on the risk of early menopause.

Drug Increases Brown Fat Activity in Healthy Women

An NIH study found that chronic treatment with mirabegron, a drug approved to treat overactive bladder, activated brown fat in a small group of healthy women and had several other beneficial

metabolic effects. Brown fat, or brown adipose tissue, is a form of fat that burns calories to generate heat. The research, led by Dr. Aaron Cypess at NIDDK, was published Jan. 21 in the *Journal of Clinical Investigation*.

Fourteen women ages 18-40 of diverse ethnicities participated in the study at the Clinical Center’s metabolic clinical research unit. For 4 weeks, each participant received daily doses of 100 mg of mirabegron, an amount exceeding the 50 mg maximum dosage approved by FDA.

At 4 weeks, the participants’ brown fat activity had more than doubled since the first day, though their body weight and body mass stayed the same. Other changes included:

- Increased resting energy expenditure
- Higher levels of HDL (high-density lipoprotein) cholesterol—often referred to as “good” cholesterol—and bile acids, which help digest fats and regulate cholesterol
- Improved processing and regulation of blood glucose (blood sugar).

Combined Prenatal Smoking and Drinking Greatly Increases SIDS Risk

Children born to mothers who both drank and smoked beyond the first trimester of pregnancy have a 12-fold increased risk for sudden infant death syndrome (SIDS) compared to those unexposed or only exposed in the first trimester of pregnancy, according to a new NIH-supported study.

SIDS is the sudden, unexplained, death of an infant under 1 year of age. Many studies have shown that the risk of SIDS is increased by maternal smoking during pregnancy. Some studies have also found that prenatal alcohol exposure, particularly from heavy drinking during pregnancy, can increase SIDS risk. Now, the NIH-funded Safe Passage Study provides a look at how SIDS risk is influenced by the timing and amount of prenatal exposure to tobacco and alcohol. A report of the study appears in *EclinicalMedicine*, an online journal published by *The Lancet*.

“Ours is the first large-scale prospective study to closely investigate the association between prenatal alcohol and tobacco exposure and the risk of SIDS,” said first author Dr. Amy Elliott of the Avera Health Center for Pediatric & Community Research in Sioux Falls, S. Dak. “Our findings suggest that combined exposures to alcohol and tobacco have a synergistic effect on SIDS risk, given that dual exposure was associated with substantially higher risk than either exposure alone.”

Alcohol-Related Deaths Increasing in U.S.

An analysis of U.S. death certificate data by researchers at NIAAA found that nearly 1 million

people died from alcohol-related causes between 1999 and 2017. The number of death certificates mentioning alcohol more than doubled from 35,914 in 1999 to 72,558 in 2017, the year in which alcohol played a role in 2.6 percent of all deaths in the United States.

The increase in alcohol-related deaths is consistent with reports of increases in alcohol consumption and alcohol-involved emergency department visits and hospitalizations during the same period.

The new findings are reported online in *Alcoholism: Clinical and Experimental Research*.



Nearly 1 million people died from alcohol-related causes between 1999 and 2017.

IMAGE: ZZZVUK/ISTOCK

“Alcohol is not a benign substance and there are many ways it can contribute to mortality,” said NIAAA director Dr. George Koob. “The current findings suggest that alcohol-related deaths involving injuries, overdoses and chronic diseases are increasing across a wide swath of the population. The report is a wakeup call to the growing threat alcohol poses to public health.”

In the new study, Dr. Aaron White, senior scientific advisor to the NIAAA director, and colleagues analyzed data from all U.S. death certificates filed from 1999 to 2017. A death was identified as alcohol-related if an alcohol-induced cause was listed as the underlying cause or as a contributing cause of death.

The researchers found that, in 2017, nearly half of alcohol-related deaths resulted from liver disease (31 percent; 22,245) or overdoses on alcohol alone or with other drugs (18 percent; 12,954). People ages 45-74 had the highest rates of deaths related to alcohol, but the biggest increases over time were among people ages 25-34.

High rates among middle-age adults are consistent with recent reports of increases in “deaths of despair,” generally defined as deaths related to overdoses, alcohol-associated liver cirrhosis and suicides, primarily among non-Hispanic whites. However, the authors report that, by the end of the study period, alcohol-related deaths were increasing among people in almost all age and racial and ethnic groups.

Shonat Named CSR Division Director

Dr. Ross Shonat has been named director of the Center for Scientific Review's Division of Physiological and Pathological Sciences.

He joined CSR in 2005 as a scientific review officer in the bioengineering sciences and technologies integrated review group (IRG). In 2009, he became chief of the interdisciplinary molecular sciences and training IRG and, in 2018, he moved within CSR to oversee the bioengineering sciences and technologies IRG.

Shonat has been involved in multiple trans-NIH initiatives, including his service on the trans-NIH biomedical informatics coordinating committee and as CSR liaison to the Office of Research Infrastructure Programs, part of the Division of Program Coordination, Planning and Strategic Initiatives.

At CSR, he's taken the lead in developing new review tools and formats including the precursor to the virtual meeting format, now used across NIH, and video-assisted and telepresence meetings.

Before joining CSR, Shonat was an assistant professor in the department of biomedical engineering at Worcester Polytechnic Institute, where his research focused on oxygen tension imaging in the diabetic eye. He held funding from both the National Science Foundation and NIH and regularly published in high-impact journals.

Shonat received his Ph.D. from the University of Pennsylvania and did postdoctoral research at the University of Arizona focused on microcirculatory physiology. He also did research at Carnegie Mellon University, where his work explored aspects of neurophysiology and molecular biology using magnetic resonance imaging.



Dr. Ross Shonat

NIDA Notes Editor Anderson Retires After 20 Years

NIDA Notes Editor David Anderson has retired after 20 years at the helm of NIDA's signature science publication. When he arrived at NIDA in 1999, the biweekly newsletter was printed in 2 colors and had a mailing list of around 16,000 subscribers. Under his leadership, the publication now enjoys more than 1 million online views each year.

In 2006, Anderson updated the publication to a 4-color format, and in 2007 published the article "Drugs and Neurotransmission," the first of a series of reference articles which, after a 2017 update, continues to be the most-read article every month. In 2012, he led the switch to a digital-only publication over



NIDA Notes Editor David Anderson recently retired.

the objections of many readers who loved seeing the printed *NIDA Notes* in their mailboxes every other month. Avid fans soon realized the advantages of the online format, which gave NIDA the ability to post journal article summaries more quickly—linking to the journals

themselves—and offering a platform for animations and videos.

In 2014, Anderson published the first installment of his "Narratives of Discovery" series, hoping to offer readers an intimate look at the complex and often agonizing journey of a research career. The stories followed selected grantees in their quest to develop breakthrough addiction treatments. One series, now four installments long, is still chronicling the work of University of Kentucky grantee Dr. Linda Dwoskin as she works to develop a compound to treat methamphetamine addiction.

Anderson also developed the NIDA journal *Science & Practice Perspectives* (later titled *Addiction Science & Clinical Practice*)—the first journal to initiate a direct

conversation between researchers and clinicians as they reviewed and commented on each other's articles. The journal published 10 issues, and in 2011 was handed off to Boston University School of Public Health, where it continues to be published with its original translational mission.

Anderson set a high standard while translating complex scientific concepts in the challenging field of drug use and addiction. With each *NIDA Notes* article, he illuminated and honored the work of NIDA-funded investigators, with a profound respect for the science.

OAR Deputy Holtz Honored

Dr. Timothy H. Holtz, deputy director of the NIH Office of AIDS Research, has been promoted to the rank of rear admiral of the Public Health Service Commissioned Corps. The flag-rank position also includes designation as assistant surgeon general.

Holtz joined OAR in June 2019. He has served as a Commissioned Corps medical officer since 1999.

"Maximizing public health impact through effective leadership has been my professional goal," said Holtz, who added that as a flag officer, he will continue to work to advance the NIH/OAR vision to End the HIV Pandemic in collaboration with the HHS *Ending the HIV Epidemic: A Plan for America* initiative.

NINDS's Chub Mourned

Dr. Nikolai Chub, a staff scientist in the section on developmental neurobiology, NINDS, died Jan. 10 from complications following a heart attack. He had worked at NIH for 28 years.

"Nikolai was a world-class neurophysiologist who pioneered our understanding of the mechanisms regulating the genesis and organization of motor activity in the developing spinal cord," said Dr. Michael



Dr. Timothy H. Holtz



Dr. Nikolai Chub passed away on Jan. 10.

episodes and is reset by the episode to a lower level. Between spontaneous episodes, the equilibrium potential recovers due to the action of an inwardly directed chloride transporter.”

Later modeling work showed that this mechanism alone was sufficient to account for the occurrence of activity, thereby identifying a completely novel mechanism for spontaneous episodic bursting.

Chub’s ideas have found wide acceptance within the neuroscience community, noted O’Donovan, and it is now appreciated that the general principles he uncovered in the spinal cord apply throughout the developing nervous system.

Chub pioneered the use of chloride imaging in the spinal cord, which confirmed his electrophysiological observations. He also had a fruitful collaboration with Dr. Peter Wenner at Emory University that revealed that activity-dependent changes in the chloride equilibrium potential represented a new mechanism underlying homeostatic plasticity.



“Nikolai was an extraordinarily talented electrophysiologist who was universally respected by his scientific peers.”

-DR. MICHAEL O'DONOVAN



published in the *Journal of Neuroscience* in 1998. In it, he showed that spontaneous rhythmic bursting in the chick embryo could be generated either by purely excitatory or by purely inhibitory spinal networks. This demonstrated that spontaneous activity in the developing spinal cord does not depend on the precise neuronal architecture of the networks generating it. Rather, it was a consequence of the excitatory nature of the classically inhibitory neurotransmitters glycine and GABA.

“To investigate the mechanisms responsible for this activity, in a technical *tour de force*, Nikolai then applied the perforated patch clamp technique to motoneurons in the chick embryo spinal cord. He was the first person in the world to obtain such recordings from the intact isolated spinal cord,” said O’Donovan. “He showed that the chloride equilibrium potential is continuously modulated by spontaneous activity such that it increases between bursting

Toward the end of his career, Chub became interested in understanding how stimulation of motoneurons could activate spinal networks. He focused on the role of astrocytes and oligodendrocytes in this process. He showed, using calcium imaging and whole cell recording, that glial cells became active following stimulation of motor axons.

“His tragic and premature death prevented him from exploring this remarkable observation further,” O’Donovan said. “Nikolai was an extraordinarily talented electrophysiologist who was universally respected by his scientific peers. He was a gentle and private individual who was devoted to his work and well-liked by his colleagues. He will be missed not only by his coworkers at NIH but also by the wider community of spinal cord physiologists.”

Chub is survived by his wife, 2 daughters and 2 grandchildren.

NIH Alumnus Dingell Dies

Dr. James Victor Dingell of Vienna, Va., passed away on Dec. 21, 2019, at the age of

88 at home with his children by his side.

He received his doctorate from Georgetown University and worked in research at NIH in the 1950s and early 1960s, then left to teach pharmacology at Vanderbilt University.

Dingell returned to NIH



Dr. James Victor Dingell

in 1975 and spent time at various institutes including the National Heart, Lung and Blood Institute, where he managed an extramural research program for the Division of Heart and Vascular Diseases. He also held posts at the National Cancer Institute and the National Institute on Drug Abuse, from which he retired in the late 1990s.

Among his positions at NIDA were director of the Division of Preclinical Research and director of the Division of Basic Research.

Dingell was also a member of the PHS Commissioned Corps, from which he retired as a captain.

Dingell was preceded in death by his wife of 34 years, Gigi, and is survived by 2 sons, a daughter, a sister, 4 grandchildren and 1 great-grandchild.

In lieu of flowers, the family requests that memorial contributions be made to the Capuchin Soup Kitchen, 1820 Mt. Elliott St., Detroit, MI 48207 or the Little Sisters of the Poor, 4200 Harewood Rd., NE, Washington, DC 20017-1554. [R](#)

Montgomery Rice Addresses Workforce Diversity, Culturally Competent Care

“Giving people what they need, when they need it, in the amount they need to reach their optimal level of health.”

That is how you achieve cancer health equity, said Morehouse School of Medicine president and dean Dr. Valerie Montgomery Rice during a recent talk in the Continuing Umbrella of Research Experiences (CURE) Distinguished Scholars Seminars. In her presentation “Advancing Cancer Health Equity: Understanding the ‘Why’ and ‘What’ Is Needed to Transform the Landscape,” Montgomery Rice focused on increasing workforce diversity and the importance of culturally competent care, often assessing these issues in the medical school context.

The seminars recognize outstanding former CURE scholars and are sponsored by NCI’s Center to Reduce Cancer Health Disparities (CRCHD). A widely respected infertility specialist and researcher, Montgomery Rice was one of the first recipients of a CURE diversity supplement. Her program director at the time was now-CRCHD director Dr. Sanya Springfield, a long-time mentor of hers.

“The most important thing we need to do is diversify the health care workforce,” said Montgomery Rice, who is committed to expanding and developing the next generation of underrepresented minority (URM) physicians.

She said URM medical school applications and acceptances have “flatlined,” with a decreasing number of black men pursuing medical school. The gap between black female and male applicants to medical school was wider in 2017-2018 than at any point in the past nearly 40 years. In 2018, 257 black males attended medical school out of more than 21,000 medical students.

“We have a responsibility to recruit, educate and train because we know that gender diversity and representation matter. We know that racial and ethnic diversity matters,” said Montgomery Rice.

Interventions should begin in third grade to encourage the next generation to consider science and medicine, she added. For 5 years, Morehouse School of Medicine (MSM) has adopted the Tuskegee Airmen Global Academy, a K-5 school in Atlanta composed of 600 students—98 percent of whom are on free lunch. The entire student body visits MSM 4 times a year, and more than 125 MSM employees are certified to visit the school to teach important lessons, such as getting students excited about science.

“Sometimes you’ve got to see something to believe it’s possible, so they get to see us—our doctors, medical students, our researchers,” Montgomery Rice said.



NCI’s Dr. Sanya Springfield (l) and Morehouse School of Medicine president and dean Dr. Valerie Montgomery Rice at the recent CURE Distinguished Scholars Seminar

She stressed the necessity of practicing culturally competent research and health care, which requires

that health care professionals understand their own cultural beliefs, learn and accept those of the health care consumer, recognize the differences between the two and acquire a basic understanding of the consumer’s environment.

“Disease always occurs within a context of human circumstances,” said Montgomery Rice, noting factors such as social position, economic status, culture and environment.

When she conducted research on ovarian cancer in mice, she kept a photograph of an ovarian cancer patient on her desk to remind her of who would ultimately benefit from her work. She also sought out and got to know the patients whose cells she analyzed, to provide herself with helpful context.

“Whether you’re working in a lab or helping a patient make a clinical decision, you have to ask that question—“Based on who’s sitting in front of me, what’s possible?”” Montgomery Rice said.

In conclusion, she credited audience members for their role in “delivering the promise of science,” which “makes miracles every day.

“Make sure that promise is not limited. The promises of hope are not limited based on somebody’s gender, their identity, their race, their ethnicity, their orientation, [or] where they live.” **R**

SEEN



FAES Opens Third Bldg. 10 Retail Shop

The Foundation for Advanced Education in the Sciences (FAES) has opened a third retail location in Bldg. 10, conveniently located outside the B1 cafeteria and near the NIH Federal Credit Union branch. Plan a visit to the new store, which specializes in gifts for all occasions including new baby, housewarming, birthday and seasonal. The new FAES Gift Shop will also offer an assortment of new NIH emblematic clothing and merchandise to celebrate and honor the NIH community.

Don’t forget about the FAES Gift Shop in the north atrium and the FAES Bookstore near Masur Auditorium as well, which are always stocked for your shopping needs. Hours for these stores are 9 a.m. to 5 p.m., Monday through Friday. You can also shop for NIH merchandise online at www.shopfaes.com.

If you have any questions about the FAES retail stores, contact retail supervisor J.T. Knight-Inglesby at (301) 496-5272 or jt.knight-inglesby@nih.gov. The FAES appreciates feedback and ideas about potential new items for every occasion.