

BLOCK THE 'PASSENGER' Beware the Intruder Hijacking Your Meetings

BY CARLA GARNETT

Ever wonder why so many meetings are so unproductive? Chances are good an uninvited guest has been riding shotgun. Turns out this unseen hitchhiker loves to sabotage your well-organized, well-intentioned workplace gatherings.

At a recent Deputy Director for Management seminar, author and business advisor Al Pittampalli, who has studied meetings for the past decade, introduced a Masur Auditorium audience to this invisible, yet powerful saboteur he calls “the passenger.”

Surveys estimate that anywhere from 25 percent to 50 percent of all meetings are unproductive, Pittampalli said. People report they feel that as much as half the time they spend in meetings is wasted. By a show of hands, NIH audience members nearly unanimously confirmed—perhaps humorously, perhaps not so much—that they’d attended at least one meeting that had made them reconsider their life’s purpose.

“Nothing can ever take the place of human beings getting in a room together to talk things out,” Pittampalli acknowledged. “Meetings are at the heart of how we communicate, how we collaborate, how we decide on the most important issues facing the organization. If that’s weak, then it’s hard to fulfill the mission of the organization. I’m here to tell you the meeting is weak.”

Pittampalli was an IT consultant for Fortune 500 companies around the country

SEE PITTAMPALLI, PAGE 6



Al Pittampalli addresses NIH audience.



“Cell-fies” at Science Day. See story, p. 9

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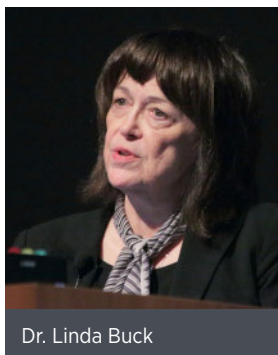
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Buck’s Research Helps Unravel Mysteries of Scent

BY ERIC BOCK

The sense of smell is extremely important in everyday life. It can, for example, warn us of danger or alert us to the presence of food. Thanks to researchers like Dr. Linda Buck, scientists can now better learn how smell works.

“Through the sense of smell, humans and other mammals can detect a vast array of chemicals in the environment,” said Buck, Nobel laureate (2004) and full member of the basic sciences division at Seattle’s Fred Hutchinson Cancer Research Center, at the



Dr. Linda Buck

SEE BUCK, PAGE 8

Wagers Tracks Aging in Muscle Cells

You don’t need to be a gym rat to know that muscle matters; without it, we wither toward our own personal finish line.

“Declining muscle function is a significant contributor to deficiencies in health and a powerful predictor of mortality,” said Dr. Amy Wagers, who studies how tissues

maintain themselves and how they regenerate over time.

Wagers is Forst family professor of stem cell and regenerative biology at Harvard University and Harvard Medical School, senior investigator,



Dr. Amy Wagers

SEE WAGERS, PAGE 4

Essence Editor Emeritus Taylor To Speak, May 22 in Lipsett

The Office of Equity, Diversity and Inclusion will host Susan L. Taylor, editor-in-chief emeritus of *Essence* magazine in a lecture at NIH on Monday, May 22 at 11 a.m. in Lipsett Amphitheater, Bldg. 10. The talk celebrates Women in History with the theme “Be Inspired” in honor of NIH’s commitment to EDI 365 and in support of equal opportunities



Susan L. Taylor

for women to achieve their fullest potential.

When Taylor joined *Essence* in 1970, she was the only single mom on staff. As she moved up the editorial ladder, she stressed the importance of enabling female staffers to live their personal lives as fully as

their professional lives. Serving as editor-in-chief for 19 years, she helped *Essence* expand beyond publication with branded products and events such as the Women Who Are Shaping the World Leadership Summit.

Taylor is the first and only African-American woman recognized by the Magazine Publishers of America, winning the industry’s highest honor—the Henry Johnson Fisher Award. She was also inducted into the American Society of Magazine Editors Hall of Fame.

In addition to being a gifted writer, speaker and entrepreneur, Taylor is founder and CEO of the National CARES Mentoring Movement, which focuses on emotional, social and academic development.

The lecture will be available to view live at video-cast.nih.gov.

Individuals with disabilities who need sign language interpreters and/or reasonable accommodation to participate in this event should contact Joy Gaines at (301) 451-9662 or Joy.Gaines@nih.gov.

Your Science on Our Masthead

The masthead atop each new issue of the *NIH Record* relies on color scientific images submitted by NIH scientists or grantees. We need fresh images for future issues of the *Record*. If your laboratory has a candidate image, email a high-resolution color digital photo to the editors (Rich.McManus@nih.gov, Carla.Garnett@nih.gov), along with a brief caption and credit line. Since the space we need to fill is horizontal, images that work best in that orientation are most appreciated.



NIGMS Lecturer Describes Her Research, Career Path

Dr. Namandjé Bumpus (l) recently delivered the second annual NIGMS Director’s Early Career Investigator Lecture. In her talk “Drug Metabolism, Pharmacogenetics and the Quest to Personalize HIV Treatment and Prevention,” Bumpus described her research investigating the mechanisms involved in HIV drug activation and metabolism. She then engaged in an informal Q&A session with NIGMS director Dr. Jon Lorsch (r) as well as answered questions from students. Bumpus discussed her career path, including when she knew she wanted to be a scientist, what she would have done differently and how mentors have supported her. After the talk, Bumpus met with University of Maryland undergraduates (from l) Natalia Fongrat, Jayshree Surage and Dorcas Adeola. Bumpus is an associate professor in the department of medicine, division of clinical pharmacology at Johns Hopkins University School of Medicine. The lecture is archived on the NIH VideoCasting and podcasting site.

PHOTO: CHRISTA REYNOLDS



CC Celebrates Medical Laboratory Professionals

Members of the Clinical Center’s department of laboratory medicine celebrated Medical Laboratory Professionals Week on Apr. 26. Special guest was hospital CEO Dr. James Gilman (suited at rear, l), who enjoyed lunch with members of the department. Next to Gilman is department chief Dr. Thomas A. Fleisher.

PHOTO: ERNIE BRANSON

Cystic Echinococcosis Is Focus of 2017 Neva Memorial Lecture

Dr. Thomas Junghanss, a tropical medicine and infectious disease physician and chair of the World Health Organization working group on echinococcosis, will present the annual Franklin A. Neva Memorial Lecture on May 25 at 10 a.m. in Lipsett Amphitheater, Bldg. 10. His talk is titled “Cystic Echinococcosis—Staging Matters.” Cystic echinococcosis is a parasitic type of tapeworm infection.

Junghanss heads the clinical tropical medicine unit at Heidelberg University Hospital in Germany. He works in a broad range of settings at the hospital and in countries with limited resources.

In 2016, he received the Order of Merit of the Federal Republic of Germany for his contributions to tropical medicine in sub-Saharan Africa.

Junghanss was initially trained in marine geology with a focus on reef development, which gave him a deeper understanding of ecology. His work has also been informed by his fascination with the philosophical undercurrents of the 20th century and the Anthropocene—the era of man’s influence on Earth ecology.

He has a special interest in neglected tropical diseases (NTDs), which affect more than 1 billion people in 149 countries,

costing developing economies billions of dollars every year, according to the WHO.

Cystic echinococcosis (CE), a parasitic NTD most prevalent in sheep-raising regions of the world, is caused by larval-stage tapeworms (*Echinococcus granulosus*) found in dogs, the primary host. Ungulates are intermediate hosts. Humans become infected accidentally by consuming food, water or soil contaminated with infected dog feces.

Disease is caused by cysts that grow slowly and quietly over many years, mainly in the liver and lungs, but also in other organs. The cysts can cause discomfort and symptoms or be detected by chance. Treatment of advanced disease is demanding: health services are regularly overextended in countries with limited resources where most CE patients live. Immigrants to non-endemic countries often face health care institutions unfamiliar with CE.

CE imaging has been a breakthrough in helping to guide treatment decisions. Most clinicians agree on four treatment options: drugs, skin treatments, surgery and “watch

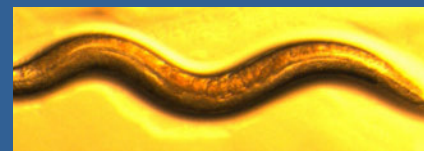


Dr. Thomas Junghanss

and wait.” The WHO working group on echinococcosis advocates for improved care and evidence-based treatment, hoping to move echinococcosis into mainstream clinical medicine.

Junghanss reviews best practices for diagnosing and treating CE and hopes to close knowledge gaps to provide better care for patients suffering from one of the most neglected tropical diseases.

The lecture series honors Neva, a noted virologist, parasitologist, clinician and former chief of the NIAID Laboratory of Parasitic Diseases. He helped grow parasitology research at NIH from a narrow area of focus to a large program now spread among 4 NIAID research groups and involving about 400 scientific staff at laboratories in Bethesda and abroad. Neva died in 2011 at age 89.



ON THE COVER: *Adult Caenorhabditis elegans*, 5 days old. *C. elegans* has become one of the most studied organisms on the planet. Researchers have determined that *C. elegans* has exactly 959 cells, 302 of which are neurons.

IMAGE: COLLEEN MURPHY, PRINCETON UNIVERSITY

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Gamm To Address 3-D Retinal Organoids at NEI Seminar

Dr. David Gamm will present “Production, characterization and application of stem cell-derived photoreceptors,” on Tuesday, June 6 at 3 p.m. in Lipsett Amphitheater, Bldg. 10.

Gamm is an associate professor of ophthalmology and visual sciences at the University of Wisconsin. He investigates the cellular and molecular events that occur during development of the retina, the light-sensitive tissue in the back of the eye. A major focus of his work is generating cells for retinal disease modeling and cell replacement therapies.

Gamm will summarize efforts to develop retinal organoids, miniature retinas that can be grown from patient-derived stem cells. Retinal organoids are the subject of the recently launched NEI 3-D Retina Organoid Challenge.

The NEI AGI Seminar Series in Neuroregeneration explores topics relevant to regenerative neuroscience and medicine, with special emphasis on the visual system. For more information about the series, visit www.nei.nih.gov/audacious/.



Dr. David Gamm

June 6

NIH National Institutes of Health
Turning Discovery Into Health



Wagers

CONTINUED FROM PAGE 1

Joslin Diabetes Center and principal faculty, Harvard Stem Cell Institute. In a talk titled “Stem cells, aging and aging stem cells” on Apr. 5 in Masur Auditorium, she reviewed how aging impairs stem cell function.

Those who maintain it is hell getting old already know the practical implications of the loss of unipotent satellite cells, which regrow muscle after damage.

Like man, mice lose satellite cells as they get older. An old mouse has about half of its original store of such cells, said Wagers, and those that remain are less robust than they were in the springtime of life, no longer responding as vigorously to damage signals. In their number, function and genomic profile, satellite cells figuratively hurtle toward Earth with age.

Examining the transcriptional profile of satellite cells in mice, Wagers and her colleagues have discovered “arrested myogenic differentiation due in part to accumulated DNA damage.”

Nearly all animal cell types make use of a substance called NF- κ B (nuclear factor kappa light chain enhancer of activated B cells), which is thought to be a master regulator of inflammatory responses in mammals. Wagers and her team have shown that NF- κ B regulates the aging of satellite cells and have proven its involvement in muscle degeneration.

Her studies have shown that blunting

NF- κ B activity delays the emergence of age-related defects in muscle cells. Further, she has shown that lipid mediator production plays a role in NF- κ B function, driven in part by a gene called PLA2G5.

One other protector from the ravages of aging is caloric restriction.

In somewhat deeper dives into the chemical pathways of aging, Wagers and colleagues have conjoined young and old mice to examine how blood-borne factors from younger partners may improve function within the older animal—this is

★ ★ ★

“There are many avenues to promote regenerative function.”

—DR. AMY WAGERS

★ ★ ★

called “heterochronic parabiosis.”

Wagers and her colleagues have shown that the factors “impact multiple age-related phenotypes in diverse tissues.”

One protein has stood out as a factor in the aging process—GDF11, whose expression varies with age and which may be regulated by immune cells.

In mice, GDF11 supplementation has been shown to reverse cardiac hypertrophy, said Wagers. GDF11 appears to have a tantalizing “anti-geronic” action.

“But it depends on the dose and the context,” cautioned Wagers. “It can have negative [pro-geronic] effects too...[GDF11]



NIA director Dr. Richard Hodes chats with Wagers after her Mahoney Lecture.

PHOTOS: BILL BRANSON

has an interesting relationship with aging and might be a target for therapy someday.

“There are many avenues to promote regenerative function,” Wagers concluded.

Meanwhile, it’s probably still best to take your muscles regularly to the gym.

Wagers’ talk, which can be seen in full at <https://videocast.nih.gov/summary.asp?Live=22115&bhcp=1>, was the annual Florence S. Mahoney Lecture on Aging, named in honor of Florence Stephenson Mahoney (1899–2002). She devoted the last half of her life to successfully advocating for the creation of the National Institute on Aging and increased support for NIH. —Rich McManus [@](#)

NAS Welcomes Belkaid

NIAID’s Dr. Yasmine Belkaid is among 84 new members and 21 foreign associates elected to the National Academy of Sciences in recognition of their distin-



Dr. Yasmine Belkaid, shown speaking Mar. 31 at an event in Marburg, Germany
PHOTO: MARKUS FARNUNG/
PHILIPPS-UNIVERSITÄT
MARBURG

guished and continuing achievements in original research.

Belkaid is chief of the mucosal immunity section in the Laboratory of Parasitic Diseases.

Those elected May 2 bring the total number

of active members to 2,290 and the total number of foreign associates to 475. Foreign associates are nonvoting members of the academy, with citizenship outside the United States.

The National Academy of Sciences is a private, nonprofit institution that was established under a congressional charter signed by President Abraham Lincoln in 1863. It recognizes achievement in science by election to membership, and—with the National Academy of Engineering and the National Academy of Medicine—provides science, engineering and health policy advice to the federal government and other organizations.



Dr. Mark Hayward (c) receives the Excellence Lecture Award from Dr. Bill Riley, director, OBSSR, and OBSSR's Dr. Erica Spotts, who chaired the Excellence Lecture selection committee.

OBSSR Holds 10th White Riley Honors

Dr. Matilda White Riley (1911-2004) was a celebrated scientist and member of the National Academy of Sciences whose transformative work and leadership in the behavioral and social sciences at NIH is honored annually by the Office of Behavioral and Social Sciences Research. This year marked the 10th year OBSSR has celebrated the NIH Matilda White Riley Behavioral and Social Sciences Honors.

The winner of the 2017 Excellence Lecture Award is Dr. Mark Hayward, professor of sociology and director of the Population Health Initiative at the University of Texas.

"Dr. Hayward's research examines the complex linkages between mortality and social influences such as educational attainment," said OBSSR director Dr. Bill Riley. "His research attempts to explain the complexity and dynamic interplay in understanding health inequities—an application of behavioral and social sciences which, in many ways, honors Dr. White Riley's own research and leadership mission at the NIH."

Also presenting at this year's celebration were the winners of the 2017 Matilda White Riley Early Stage Investigators Paper Competition, awarded for recent influential papers published by early stage investigators. The presenters included Dr. Erika Fuchs, University of Texas Medical Branch; Dr. Emily Hohman, Pennsylvania State University; Dr. Frank Infurna, Arizona State University; and Dr. Jacqueline Torres, University of California, San Francisco.



OBSSR's Riley (third from l) and Dr. Bill Elwood (r), chair of paper competition selection, join presenters (from l) Dr. Erika Fuchs, Dr. Jacqueline Torres, Dr. Emily Hohman and Dr. Frank Infurna.

JOINT EFFORT

NIH, Indian Council of Medical Research Staff Meet

On Apr. 11, representatives from the Indian Council of Medical Research (ICMR), along with visiting scientists, joined staff from NIDDK, FIC and NIAID to discuss the converging epidemics of diabetes and tuberculosis. FIC director Dr. Roger Glass, secretary of the Department of Health Research and ICMR director general Dr. Soumya Swaminathan and NIDDK director Dr. Griffin Rodgers led discussions.

In 2012, the U.S. and Indian governments initiated a formal research relationship in diabetes. This collaboration is spearheaded by NIDDK and ICMR. Afterward, in response to joint efforts of the two agencies, researchers from both countries began working together on projects that could provide unique insights into diabetes and help lead to improved health for people with or at risk for diabetes in both countries. "We are taking research where the opportunities really lie," Glass said.

The idea to explore the convergence of diabetes and tuberculosis stemmed from discussions in 2016 by the joint steering committee for the Indo-U.S. diabetes research collaboration, which also held its sixth meeting the day before the scientific session. Both diabetes and tuberculosis worsen outcomes for the other.

Swaminathan said there was a need to identify strategies to solve the growing problems of diabetes and tuberculosis. "It is the right time to really think about [these] research questions," she said.

Rodgers concurred, saying, "With each meeting and collaboration, we have been able to capitalize on our shared goals with projects that advance public health, at a scale beyond which we could achieve alone."—**Amy F. Reiter**

McLellan Receives First Joint NIDA-NIAAA Lifetime Science Award



NIDA and NIAAA directors Drs. Nora Volkow and George Koob (r) present the first jointly sponsored NIDA-NIAAA Lifetime Science Award to Dr. A. Thomas McLellan (c) at the Joint National Advisory Council for the Collaborative Research on Addiction at NIH meeting on May 3. This first-time award was presented to McLellan for his outstanding contributions to the field of drug and alcohol research. McLellan is the founder and board chair for the Treatment Research Institute in Philadelphia and a long-standing leader in the field.



Attending the meeting were (from l) FIC director Dr. Roger Glass, secretary of the Department of Health Research and ICMR director general Dr. Soumya Swaminathan and NIDDK director Dr. Griffin Rodgers.

Pittampalli

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when meeting malaise first struck him. He set out to find treatments, if not a cure. For the first few years, he admitted, he had little success. Fine-tuning the meetings wasn't working. He had to dig deeper.

"I don't really care about meetings," he confessed. "What I'm fascinated by is the organization. The promise of an organization is that lots of people working together in concert can do way more than any individual [could]...The meeting is just the tool that allows that to happen."

Pittampalli said most everyone agrees on the requirements for a good meeting—a well-thought-out agenda, designated time limit, clear purpose, that a gathering is necessary in the first place. However, hardly anyone believes that having all these elements guarantees an effective session.

The issue "is not a knowledge gap," Pittampalli explained. "It's not that we don't know what to do. It's that we don't do what we know."

• • •

"Virtually every meeting is a decision-making meeting."

—AL PITTAMPALLI

• • •

But, why don't we? What's stopping us?

Imagine you're on a cross-country road trip, Pittampalli said. The destination is your organization's mission, the ultimate goal. Meetings are the stops you make en route, for fuel, comfort breaks and rest.

"Unbeknownst to you," he said, "an invisible passenger is in the car with you, causing the unproductive pit stops." This specter embodies "psychological forces that operate within the human mind."

Also known as "procrastination, "distraction" and "weakness of will," these forces, Pittampalli said, lurk like a ghost at your meeting.

For the passenger, immediate gratification is top priority. "The passenger is all about getting what it can right now...has no interest in pursuing more speculative goals that pay off in the long term," Pittampalli pointed out.

The passenger is also "a master in the art of deception," he explained.

Consider two ways we are diverted from accomplishing our goals: "not-work" and "make-work." Not-work includes all sorts of "pleasurable distractions," like playing games on your portable device. But it's also accompanied by guilt. "Guilt motivates us to get back to work," Pittampalli said.

Make-work, however, is more diabolical. It resembles actual work, but can include seemingly harmless activities such as web-surfing, a delaying tactic that deadline-besieged writers often dub "research." Meetings, Pittampalli contended, are a kind of make-work.

"They look like work," he said, but so often



Next, who is the decision owner? Hint: it's not "consensus." The passenger likes to undermine your meeting by obscuring responsibility for any decision. If you wait to get a consensus, your meeting may never end and may never be productive, Pittampalli explained. The decision owner makes sure the meeting ends with a result.

"If the passenger can prevent us from having a single point of accountability, it can turn our meetings into make-work," he said.

Finally, does this meeting contribute significantly to our major goals? Identify just a few major goals, Pittampalli advised, and use those as your organization's compass. Don't call a meeting just for the sake of sharing information, for example. These days there are many other ways to communicate instead of meeting.

"We have to be more committed to achieving our goals than the passenger is to sabotaging them," he concluded.

Audience members asked several questions: What can we do when no one follows through on decisions that were made? How do I tell the boss that meetings are not effective?

Pittampalli said everyone in the meeting shares responsibility for making it successful. Employees can help block passenger diversion by asking: What actions need to be taken? Who will take them and when?

"The reason this problem is so difficult to fix is that it's cultural," Pittampalli acknowledged. "We need a culture where people can ask these questions of each other...Culture change is tough, but it starts with [seminars] like this, where people are willing to get a little out of their comfort zone." **B**

The Art of Sealing the Biomedical Tech Deal

BY RAYMOND MACDOUGALL

Could you convince an investor to back a biomedical technology that you invented or designed? Could you make the pitch in 10 minutes or less?

The scenario is reminiscent of a popular television show called *Shark Tank*, which provides aspiring entrepreneurs with a slender opportunity to make an on-the-spot business deal with dubious investors. For 16 teams of NIH-funded scientists and engineers, transforming scientific savvy into business-oriented value propositions and investment strategies was the challenge each met recently at the end of their intensive 6-month commercialization boot camp.

The teams that came from universities and biotechnology startups from across the country received a research grant from NIH and a supplement to that grant enabling them to join the commercialization course developed by the Wallace H. Coulter Foundation. Each team polished its ideas and presentations over the span of months, then gave its best pitch before a panel of business experts with experience in the commercialization of biomedical technology.

Dr. Jane Carrington made the pitch for a product called the Clinical Event Communication and Management System (CECAMS). She is assistant professor in the College of Nursing at the University of Arizona and described CECAMS as a dashboard for patient health records designed so that any member of the care team can quickly see the status of the patient.

Carrington's pitch produced a faux deal, but she wasn't totally satisfied.

"It took 6 months to get to that pitch—and it still needs some work," she said, explaining that the commercialization course challenged her team to rebrand the tool, from one that would be useful to nurses to one that would help the entire care team. "Ultimately, it pulls information from the electronic health record that otherwise would get lost. The providers—lab, nutrition, nursing, radiology, anybody who comes near that patient—would benefit from this interface."

The range of biomedical technologies presented during the exercise ran the gamut, from a robotic



He Zhang of the University of Arkansas, Little Rock, demonstrates the Robocane—a technology to assist the visually impaired—that his team pitched during boot camp.

PHOTO: CANG YE, UALR

camera device to improve navigation for the visually impaired, to a one-shot prostate cancer therapy, to a screening and therapy-guidance tool for concussions and other neurological deficits. The concepts that began as a seed idea in the biomedical laboratory each were presented as a marketable product—with a business valuation and identification of the local and global markets. The presenters spoke the language of commerce as well as science and engineering.

The new technologies could have a wide range of health benefits.

Dr. Christopher Drake, director of radiology at Sofie Biosciences, presented an imaging diagnostic tool for cancer immunotherapy.

"What we're hoping to do is to make sure that the right patients get the right immunotherapy to help them beat their disease," he said.

David Maine, chief operating officer at DxDiscovery, presented a rapid diagnostic test for fungal nail and hair infections.

"What I hold in my hand is a prototype," he explained. "You would take a scraping off your nail or your child's skin, put it in this buffer here, shake it up, put a drop on our test and find out within 10 minutes if you have a dermatophyte infection."

Each presenter hopes an investor will give his/

her product a second look. The investment might be for funds to continue the research phases of product development, including clinical trials, or to scale up and manufacture before launch of a product. In some cases, the next step in product development would be application for additional funding from NIH.

"We have created a partnership with the Coulter Foundation whereby we provide support for NIH-supported investigators to go through this entrepreneurial training course," said Todd Merchak, program specialist at the National Institute of Biomedical Imaging and Bioengineering. Merchak manages NIBIB's small business programs, including Small Business Innovative Research and Small Business Technology Transfer grant programs.

Merchak recalled the point 4 years ago when he met with representatives of Coulter and both realized there was a natural alignment of their organizations' priorities and missions.

"NIBIB's mission is to improve human health through the development of innovative biomedical technologies," he said. "Likewise, the mission of the Coulter Foundation is to support the translation of biomedical innovations into products that can help patients."

Coulter has supported more than 400 teams of scientists and engineers through the commercialization process. Those teams have produced 35 products on the market; 22 more are now in clinical trials.

The number of NIH-supported teams is steadily growing too, with the goal for NIH of translating more of its funded discoveries into products that will help patients. The cohort practicing pitches this time is the third sponsored by NIH; it included 11 NIBIB-funded teams, along with 3 funded by the National Institute of Neurological Disorders and Stroke and two funded by the National Institute of Diabetes and Digestive and Kidney Diseases.

"We are ramping up a little bit more every year, as we are figuring out ways to promote the program to get more people trained," Merchak said. "We'll have 24 teams and 4 institutes participating next year." The National Heart, Lung and Blood Institute will be the newest NIH sponsor.

Merchak explained that Coulter has curated a network of mentors and business advisors to bolster its curriculum.

"Most of these folks are either former or current entrepreneurs, each of whom has experience in the various market sectors around device development. Some of them are venture capitalists and each has a specific domain expertise," he said, adding that more important than the curriculum itself is mentoring by those with prior experiences in industry. "That's really the crux of the program and what we see as the true value added for these teams—to gain insight from people on the front lines who have experienced the commercialization process first-hand." **R**



Boot camp presenters are (from l) Jane Carrington, Ryan Flynn of pxAlpha and Todd Merchak of NIBIB.

PHOTOS: LISA MAPLES, R. MACDOUGALL



Buck meets with a student at a reception in the NIH Library following the Pittman lecture.

PHOTOS: BILL BRANSON

Buck

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annual Margaret Pittman Lecture recently in Masur Auditorium.

Smell is governed by the olfactory system, which she notes “is characterized by exquisite sensitivity and discriminatory power.” Certain odors trigger changes in reproductive and stress hormones or cause instinctive aggressive or fearful behavior.

“All of these so-called odorants are small molecules, but somehow they are perceived as having different odors based on their different structures,” she explained. If the molecular structure of an odorant changes—even slightly—the perception changes. That’s why pear and banana odorants, for instance, have similar molecular structures but don’t smell the same.

Buck said, in mouse studies, odor signals move through two neural pathways in the brain: the main olfactory pathway and the vomeronasal pathway.

When odorants enter the nose, olfactory sensory neurons activate. These neurons are found in the olfactory epithelium lining the nasal cavity, an air-filled space above and behind the nose.

The neurons transmit signals to the main olfactory bulb, an area of the brain. More specifically, the neuron signals converge on areas of the bulb called glomeruli. From there, the signal moves to the olfactory cortex and, finally, to other areas of the brain thought to control perception and

deep limbic areas such as the amygdala and hypothalamus, parts of the brain influencing basic drives and emotions, including fear.

The olfactory system can also detect pheromones, chemicals that influence basic drives and instinctive behaviors, through both the main and vomeronasal pathway. Vomeronasal neurons transmit signals through another region of the olfactory bulb and then travel to the amygdala and hypothalamus.

In 1991, Buck and her then-colleague Dr. Richard Axel first discovered odorant receptors while studying rodents. There is one

type of receptor in each olfactory sensory neuron. Each receptor can detect multiple odorants and each odorant can be detected by multiple receptors. Humans have roughly 350 different receptors, while mice have about 1,000. Millions of sensory neurons populate the olfactory epithelium.

“The olfactory receptor gene family is the largest one known. It comprises about 1-4 percent of all known genes in humans and mice,” Buck said.

Her lab is now studying how the olfactory system stimulates instinctive behavioral changes in mice. In one recent study, mice were exposed to bobcat urine or TMT, a component of fox odor. Researchers in her lab used an engineered virus to identify the region in the olfactory cortex that’s associated with the fear response.

“Predator odors can induce instinctive fear responses in mice that include instinctive behavior as well as increases in blood stress hormones,” she said.

Buck and her colleagues discovered a tiny region of the cortex responsible for the hormonal response. This area is called the “amygdalo-piriform transition area,” or AmPir. When artificially activated, the AmPir stimulated the release of stress hormones.

And when blocked, there was no hormonal response to predator odors. However, the animals still froze when exposed to predatory odors. Buck suspects the hormonal and behavioral responses are controlled by different areas of the olfactory cortex. **R**

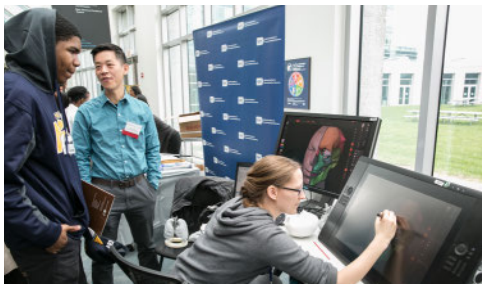
NIAMS Hosts Career Forum for Intramural Trainees

NIAMS recently hosted “The Path to Academia” Career Forum for trainees, which focused on how to transition to an independent academic faculty position. Invited investigators from the NIH extramural community, including NIAMS alumni, discussed their research interests and career journeys. Panel



sessions covered topics that included searching for a faculty position, interviewing, negotiating, mentoring and getting tenure. The event was organized by the Career Development and Outreach Branch in the NIAMS Intramural Research Program, led by Dr. Robert Walker, Jr., (l) branch chief. Trainees (r) participated in several networking opportunities during the day-long forum.

PHOTOS: COLLEEN DUNDAS



Above left, NLM's Dr. Jeff Day (c) and his colleague Kristen Browne pique the interest of a student. At right, Dr. Hank Eden, NIBIB, explains the process of thermal imaging. PHOTOS: CHIA-CHI CHARLIE CHANG
Below, students donned lab coats and posed for "cell-fies" at the exhibit table of Shelly Pollard, NIGMS. PHOTO: REBECCA NEWTON

DREAMS DO COME TRUE

Science Day at NIH Seeks to Empower Students

BY REBECCA NEWTON

Dreams of becoming a doctor often remain only dreams for many students from disadvantaged communities. Generally, their schools may lack the academic enrichment programs and direct mentoring, which greatly benefit students from other backgrounds. However, Science Day seeks to inspire and prepare kids from diverse backgrounds to become health care and science professionals.

This year marked the 4th year of the partnership between the National Library of Medicine, Friends of NLM and the non-profit organization Mentoring in Medicine (MIM). The National Institute on Minority Health and Health Disparities also joined the endeavor this time.

Nearly 500 middle and high school students—many of them African-American, Latino and Middle Eastern—participated in presentations about biomedical research career options, hands-on activities and Lunch with a Scientist at the Natcher Conference Center. Coincidentally, the 4th annual Science Day occurred during National Minority Health Month.

While 40 percent of the current population belongs to racial and ethnic minorities, according to the Bureau of Labor Statistics in 2014, only 5.5 percent of physicians and surgeons identified as African-American and only 6.3 percent as Latino.

Betsy Humphreys, NLM deputy director, kicked off Science Day, sharing what she loves about her NIH career—which spans more than 40 years. She also introduced a welcome video message from NLM director Dr. Patricia Brennan.

Throughout the day, students heard from a diverse group of institute directors and scientists who shared their journey to research.



NIMHD director Dr. Eliseo Pérez-Stable (via video)

message) discussed his immigration from Cuba to the United States. "I did not learn English until the fourth grade," he emphasized. "I worked and studied very hard."

NIH principal deputy director Dr. Lawrence Tabak talked about his career path. "I submitted 29 applications to medical school! But I didn't give up." He explained how he sought mentorship opportunities along his route to becoming a scientist.

Dr. Lynne Holden, who co-founded MIM in 2006, is an emergency medicine physician who has been in practice nearly 20 years. She worked with NIH to plan the day and motivated students with remarks about her journey into medicine.

During a panel discussion, Dr. Jeff Day showed students how they can turn their interest in medicine into a fantastic career in medical illustration. Students were in awe as Day, an informatics fellow and medical illustrator for NLM, projected moving images he created of an animated large intestine on the auditorium mega screen.

Day was also an exhibitor at one of more than 20 activities tables. He and his colleague brought a huge digital pen computer, used for anatomical digital drawings. Students were able to see, first-hand, how these medical professionals, who are also artists, clearly communicate their message to broad audiences.

Other exhibitors representing an array of institutes and centers allowed students to venture briefly into their world via various activities and demonstrations: health disparities Jeopardy, suture a banana, medical bingo, thermal imaging, CPR, 3-D printing, bioengineering, backyard brains, decoding messages to youth in smoking ads, transitioning from high school to medical school and many more.

A few institutes shared information about their enrichment programs for high school and undergraduate students who aspire to enter the medical field. Several components donated takeaway items such as pens, folders and pamphlets.

The day offered students plenty of encouragement and motivation to become science professionals, which will not only promote diversity in the biomedical workforce, but also turn these dreamers into confident scientists and practitioners. **R**

Human Forebrain Circuits Under Construction in a Dish

NIH-funded neuroscientists have created a 3-D window into the human brain's budding executive hub assembling itself during a critical period in prenatal development. What's more, they used it to discover and experimentally correct—in a petri dish—defective cell migration caused by an autism-related disorder.

Dr. Sergiu Pasca, an NIMH grantee at Stanford University, and colleagues reported on experiments with forebrain spheroids Apr. 26 online in the journal *Nature*.

The study advances a fast-developing "disease-in-a-dish" technology, in which cultured neurons derived from an individual's readily accessible skin cells connect with each other to form 3-D brain organoids or "spheroids."

Although tiny, these replicate rudimentary circuitry that can reveal a person's brain's unique secrets—even from when it was still under construction.

During mid-to-late gestation, neurons migrate from deep brain structures to their appointed places and organize themselves into the key working tissue of what will become the human cortex, the outer layer of the brain and seat of higher-order mental functions. This building process is complex and especially vulnerable to genetic and environmental insults that can set the stage for autism, schizophrenia and other neurodevelopmental brain disorders.

Discovery in Mice Could Lead to New Meds Against Obesity

A team of scientists led by NIH researchers has identified an enzyme that could help in the continuous battle against mid-life obesity and fitness loss. The discovery in mice could upend current notions about why people gain weight as they age and could one day lead to more effective weight-loss medications.

"Our society attributes the weight gain and lack of exercise at mid-life (approximately 30-60 years) primarily to poor lifestyle choices and lack of will power, but this study shows that there is a genetic program driven by an overactive enzyme that promotes weight gain and loss of exercise capacity at mid-life," said lead study author Dr. Jay H. Chung, head of the NHLBI Laboratory of Obesity and Aging Research.

Chung and his team used mice to test the potentially key role this enzyme plays in obesity and exercise capacity. They administered an inhibitor that blocked the enzyme in one group being fed high-fat foods, but withheld it in another. The result was a 40 percent decrease in weight gain in the group that received the inhibitor.

The study, the first to link the increased activity of this enzyme to aging and obesity, appeared in the May 2 issue of *Cell Metabolism*. Its findings could have ramifications for several chronic illnesses.



Bill Branson poses in 2011 with one of his award-winning CFC photos.

PHOTO: ERNIE BRANSON

'I LIKE TO PLAY' Campus Loses Half a Photographic Institution

BY RICH MCMANUS

Here are 10 things you didn't know—call them snapshots—about Bill Branson, the longtime NIH photographer who retired Apr. 29, but who, along with his brother and fellow photographer Ernie, made “Call the Bransons” as reliable a professional shorthand as “Make a Xerox copy” or “Google it.”

■ He used to play tackle football, without equipment, with a bunch of Bethesda neighborhood kids on the land where the NIH Firehouse now stands.

■ He was a track athlete at both Walter Johnson High School and Montgomery College, competing in pole vault, high jump and javelin, and was on MC's first swim and track teams.

■ While in Marine Corps boot camp on Parris Island, he was the corps champion in pull-ups and was one of the four best riflemen in his battalion.

■ He came under friendly fire as a Marine serving in Vietnam and later drove the truck that transported the shooter and his victims to a helo pad for medical evacuation.

■ He once pulled from his beard an *Ascaris* (parasitic worm) that had crawled out of his intestines and up his esophagus while he was asleep in Isfahan, Iran.

■ He has lived and worked in both Peoria, Ill., (laborer by day, restaurant by night) and Barrow, Alaska, (janitor, videographer) but cannot recommend that anyone consider them retirement destinations; Phoenix, however, where he was an apartment manager for 3 months, is okay.

■ He once flew home from Europe and, discovering there was no one to pick him up at Dulles, simply unpacked the 10-speed bike he had bought in England and pedaled back to Bethesda.

■ He's probably the only guy you know who

graduated from Mankato State University, a Minnesota school he chose only because it was cooler than Vieques, Puerto Rico, where he mustered out of the Marines following a 3-year hitch.

■ He spent time as a teacher in both Mexico City and in a suburb of Melbourne, Australia, where he introduced basketball to middle schoolers and acquired a lifelong love of squash.

■ He trekked for 3 months by bus with 23 other travelers from Katmandu to London, stopping along the way to hike for 10 days in Nepal.

■ While getting his master of fine arts degree in photography at Southern Illinois University, he lived in a series of rooming houses and trailer parks with Ernie and both earned internships on the local daily newspaper, the *Southern Illinoisian*.

Topping the latter list is completion of the 300-mile Catamount Ski Trail in Vermont, only half of which he has finished. “I want to be an end-to-ender,” he said. “There's only about 80 of us.”

“I always knew Bill was amazing, and whenever he passed me on Jones Bridge Rd. on the way to work, I knew he must not be new at biking,” said NIH director Dr. Francis Collins. “But I had no idea of his checkered past. Talk about a non-linear pathway! But Bill has brought all of those experiences to his work at NIH and we are the better for it. Nobody had to say ‘cheese’ when Bill was taking the pictures. His skill and happy demeanor just made you smile.”

“Bill is as much a part of NIH as any person or structure on campus,” said NIAID director Dr. Anthony

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“It is hard to imagine this place without Bill running around and climbing up a ladder with his camera, telling us one of his silly jokes to get us to smile.”

-DR. ANTHONY FAUCI

• • •

Wait. Was that 11 items? The snapshots should be generous—together they sketch a biography testifying to resilience, adaptability and adventure that will likely beggar Branson's post-retirement gig: assembling, at the request of the Office of Intramural Research, the vast archive of photos he took at NIH from January 1984 until the present. He has been given an office in the Cloister to tackle this task, as the Office of NIH History's emeritus photographer.

“They told me I can be as busy as I like,” said Branson, who, in reviewing his life, realized, “I've had kind of this Forrest Gump mentality. [Gump] went to get the mail and just kept running.”

There may be no better way to describe Bill Branson than as an ambassador whose good-nature and talent won him the respect not only of NIH leadership and the many IC and NIH directors whom he served, but also a worldwide cast of friends with whom he still plans adventures.

Fauci. “It is hard to imagine this place without Bill running around and climbing up a ladder with his camera, telling us one of his silly jokes to get us to smile. He has documented almost everything that I have done over the past 4 decades, from being the photographer at my wedding 32 years ago to taking the annual picture of me with my laboratory. We will certainly miss him.”

Added NIA director Dr. Richard Hodes, “Bill Branson is an extraordinary person who both captured photographically and himself became an integral part of NIH, its mission and its history. Each of Bill's pictures evokes not only the memory of those photographed, but of Bill himself as dynamic and delightful friend, behind the camera, on ladder, on foot or on bike. It is our great fortune that Bill's lifelong adventures brought him to NIH for a memorable stay.”

Branson, who just turned 70, didn't pick up a camera until well after college. After spending 13



At left, Branson cavorts at Red Rock Canyon National Conservation Area, just west of Las Vegas, Nev. At right, cross-country skiing is one of Branson's enduring passions.

months teaching middle school to the children of Yugoslav and Greek immigrants in Australia, and having no job to return to stateside, “I took my time coming home. I flew off to Singapore and bought a camera [an Olympus OM-1], then traveled to Malaysia” before embarking on the epic truck ride from Katmandu to London.

“I took some photos on that trip,” he recalls, “and still have some of the color slides.”

It was in London that he purchased a Dawes 10-speed bike, got a youth hostel card then pedaled north out of town—“It took forever to get out of London”—falling in with two Americans from Washington State who had been cycling around Europe. The three rode together throughout England, Scotland, Wales and Ireland.

In August 1975, after safely biking home from Dulles—a cop had pulled him over on the access road for doing 17 in a 65 mph zone and warned him not to get on the Beltway—Branson worked briefly for the Census Bureau before wanderlust struck him again.

A friend talked him into attending the 1976 Olympics in Montreal. They paid \$300 for a VW bus, with the goal of visiting Alaska after the games.

Halfway across Canada, roughly north of Minnesota, the VW broke down. Branson found a replacement engine in a local junkyard and installed it himself; he was bound and determined to see the Canadian Rockies.

Once he reached Seattle, he became reacquainted with one of his bicycling pals from Europe, now working as a TV anchor. Branson stayed with him, sold the VW bus and got talked into flying to Barrow for a job. That’s where health and photography finally married.

Branson worked by night as a janitor in an Eskimo school, and then, because he had been a phys ed/health major at Mankato State, got a day job doing video documentation of the realities of rural health care for the North Slope Borough department of health & social services, which serves an area the size of Utah. The video gig paid \$100 a day, enough for Branson to hire a high school student to assist him.

“That turned out really well,” he recalls. “I also did still photography for brochures and pamphlets.”

The school where he worked had a darkroom to which, as janitor, he had a key. He called Ernie, by then at SIU, “and he taught me over the phone how to process and print” film.

After 5 months in Barrow, a bare-knuckled whaling town, Bill was persuaded by Ernie to enroll in graduate school at Southern Illinois. “I don’t think I hesitated,” he recalls.

They converted their trailer’s bathroom and bedroom into a film processing laboratory and learned the trade together. Ernie graduated first and Bill stayed on for another year, finishing his MFA and working in the school’s botany

department, where he had his own lab and a salary that paid tuition.

“I moved into a better trailer, too,” Bill laughs.

Ernie got hired at NIH, but it would be several years, and jobs, before Bill joined him. Bill worked at the Armed Forces Institute of Pathology and the Uniformed Services University of the Health Sciences, doing soup-to-nuts photography. “It was a sweatshop, but I learned a lot.”

In January 1984, Bill arrived at NIH as a photographer in the medical arts department, where he has remained, documenting presidential visits, major events, IC ceremonies, celebrities (for Bill Gates, he was given 20 seconds) and, for 32 years, weeklong Camp Fantastic assignments.

“What I take from my perspective is what a great place this really is,” he said. “There is such a variety of professions. People are really dedicated to their jobs here. I have yet to see anyone goofing off, everyone’s crankin’.”

He continued, “I have a great deal of respect for the mission here, and for NIH leadership, which is why I

stayed so long. I’ve always been made to feel like a team member by the IC directors. I feel like I’m part of their world, but at the same time I’m not under anyone’s thumb.” He estimates, “99.9 percent of my customers have been really great.”

He also treasures the variety of friendships he’s made. “I’ve got a really good network of friends here...It’s nice to hang out with smart people,” he said. “You kind of hope some of it rubs off on you.”

In retirement, Branson, who confesses, “I like to play,” will indulge interests in paddling canoes, kayaks and stand-up boards, mountain and road biking, hiking and perhaps fishing with Ernie.

He plans to remain in the Bethesda area, with its access to beaches and mountains and rivers, but acknowledges a yearning for the Pacific Northwest.

Never too keen on photography’s digital turn, he doesn’t expect to be taking a lot of photos in retirement. “To take good pictures, it’s not easy. I worked night and day at it for so long. And besides, everybody has a camera now, with smartphones being so common.”

Retired Communications Director Shure Is Mourned

Jane E. Shure, 71, longtime NIH employee and founding communications director at the National Institute on Aging, passed away in Lexington, Mass., on Apr. 8 of cancer. She will be remembered by her colleagues and the NIH community as an innovator, visionary and mentor.

Shure began her career at NIH in 1967 as an information intern, shortly after graduation from American University with a degree in English literature. She subsequently worked at NIAID as a public information specialist and served as director of the Office of Public Affairs at NICHHD. After NIA was formed in 1974, she came on board as its first director of the Office of Communications and Public Liaison.

“Improving public health is really the bottom line for research,” Shure commented in NIA’s 2001 *Portfolio for Progress*. “Sharing what we have learned, with clinicians and with the public, is an important part of that effort.”

At NIH, Shure earned a reputation for developing innovative communication programs for the public; she won numerous awards for her promotional campaigns, including an Emmy. In 1998, she oversaw the start of NIA’s national outreach for keeping fit after 50, with astronaut and Sen. John Glenn and other federal agency partners. From there, NIA built a public health campaign, now known as Go4Life, based on Shure’s initial vision.

“Jane was an exceptional person, who combined goodness of heart, strength of purpose and a remarkable gift for communicating facts in a way that people could understand,” said NIA director Dr. Richard Hodes. “Jane was a critical part of the National Institute on Aging and its mission to improve health and quality of life as we age. Some of the research carried out to this end focuses on complex molecular pathways, some on specific diseases and some on behaviors and the social fabric of our lives. Jane was remarkably able to understand how to tell these stories in a way that reached people... All of us are better for Jane’s gifts and we miss her.”

Shure retired from NIH in 2004. She then joined the American Chemical Society, where she served as director of communications until her retirement in 2008.

Always active, she pursued wide-ranging interests after retirement, including glass collecting, theater, travel, baseball and service to numerous nonprofits. Shure is survived by her daughter, son, son-in-law, grandson, a legion of close friends and cousins and current and former NIH colleagues.



Jane Shure



Walkers step off in the inaugural 5K event hosted by NIMHD to celebrate National Minority Health Month.

5K Walk/Run Marks National Minority Health Month

BY SHELLY POLLARD

To celebrate National Minority Health Month, the National Institute on Minority Health and Health Disparities held its inaugural Minority Health 5K Walk/Run at NIH on Apr. 12. With more than 400 registered participants and a sunny day, the lawn in front of Bldg. 1 was packed with exercise enthusiasts.

National Minority Health Month, celebrated in April every year, is an effort to raise awareness about health disparities that continue to disproportionately affect racial and ethnic minority populations.

NIMHD director Dr. Eliseo Pérez-Stable helped get the crowd charged up and provided insight about the need to promote minority health awareness. “We need you to be a part of this effort, to start conversations that can change your life and the lives of others,” he said. “It is our responsibility as members of the NIH family to create awareness of minority health disparities and help lead change.”

Also on hand for the occasion was Radm. Peter

Kilmarx, assistant surgeon general and deputy director of the Fogarty International Center. He shared news about the *Surgeon General’s Call to Action on Walking and Walkable Communities* and encouraged attendees to participate in Take the Stairs, a Public Health Service officers’ campaign.

The inaugural 5K walk/run, cosponsored by the Office of Research Services and R&W, helped renew NIH’s commitment to reducing health disparities. With a success in the books, NIMHD hopes to make the 5K an annual event.



The first Minority Health 5K was designed to raise awareness and offer information.



5K participants walk, run and roll for minority health awareness. Information stations offer health tips.

PHOTOS: CHIA-CHI CHARLIE CHANG



NIMHD director Dr. Eliseo Pérez-Stable (above) and FIC deputy director Dr. Peter Kilmarx (below) encourage the assembly.



Warmups and stretches put folks in the mood to move.



An all-IC event. Above, Nichelle Lewis and Mark Sampson show NHLBI colors. Below, four staffers from the NIH Executive Secretariat (from l) Marlyce Green, Michelle Whitfield, Shannon Wooldridge and Lisa Hurlbaeus Marshall pause for a pic.

