

nih record



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When Science, Policy, Politics Mix

Petitti Reviews Screening Mammography Guidelines

By Belle Waring

When a government-supported task force changed its screening mammography guidelines in 2009, Dr. Diana Petitti found herself at the center of a public uproar.

As an epidemiologic expert on women’s health and evidence-based medicine and disease as well as a specialist in biomedical informatics, Petitti was vice chair and spokesperson for the U.S. Preventive Service Task Force’s embattled new recommendations.

She recently visited NIH to talk about her experience in “Screening Mammography: Science, Policy and Politics—The Good, the Bad and the Ugly,” NCI’s annual

SEE MAMMOGRAPHY, PAGE 8



Dr. Diana Petitti borrowed a movie title from Clint Eastwood for her recent NIH talk.

A Special Force Firefighters of NIH Exceed the Norm

By Belle Waring



Master Firefighter Allen James in “Tower 751”

When most people see a towering inferno, they run away from it.

First responders run towards it.

On a recent Saturday morning, the NIH campus was vivid with lights and sirens, first responders in tactical dress and simulated victims. Law enforcement and emergency response teams were doing drills and testing the new mass notification system, soon to be deployed by floor, by building or even campus-wide. The goal is to spread the word quickly—about incoming tornadoes, for example. The system is still in test mode.

If you’ve visited the Transportation Services

SEE FIREFIGHTERS, PAGE 6

Historian Researches Popularity of ‘Racy’ Medical Book

By Dana Steinberg

For 250 years, a popular British medical book went through various incarnations and remained a bestseller, curiously alternating between being considered a basic science book and a raunchy volume. The book, *Aristotle’s Masterpiece*, first published in London in 1684, is an early work about sex and reproduction that continued to be published and sold in England and America through the 1930s.



Prof. Mary Fissell

“If your great grandmother—or great great great-grandmother—lived in the Anglo-American world and had a book on sex tucked up in her sock drawer, very likely this was it,” said Mary Fissell, a professor in the department of the history of medicine at Johns Hop-

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NIH...Turning Discovery Into Health

briefs

'Adventures in Biology' Seeks Speakers

Adventures in Biology, a series of evening lectures at NIH for high school students, will begin its fourth season this October and is seeking volunteer speakers from the NIH community. The program explores selected topics in biology that are not covered in the usual high school curriculum and that are chosen by the speakers. The goal of AIB is not just to present science facts, but to introduce students to the process, drama and excitement of scientific discovery. AIB is administered as a 4H program and is not sponsored by NIH, although NIH supports its educational goals. The program will take place on campus on Wednesday evenings, 6-7:30, from October through March.

Last year's AIB sessions included talks on the Human Genome Project, human evolution, dog genes, how we hear, fruit fly development and aging. Speakers included volunteers from NIH, the Food and Drug Administration and the Smithsonian Institution. Students went on field trips to the Smithsonian and to an industrial biopharmaceutical plant.

Interested in volunteering? Contact Dr. Juhong Liu (juhong.liu@fda.hhs.gov) or Dr. Ed Max (edward.max@fda.hhs.gov) to learn more about topics planned for the course and the format for the lectures. Students interested in attending the program should contact Daniel Liu at dll14049@gmail.com.

NIGMS To Host Symposium on Modeling Disease Spread, Sept. 23

NIGMS will host a symposium, "Modeling for Science and Policy," on Monday, Sept. 23 to mark the 10th anniversary of its Models of Infectious Disease Agent Study (MIDAS), a collaborative network of scientists who use computational, statistical and mathematical models to understand infectious disease dynamics. The free event is open to all and will take place in Lister Hill Auditorium, Bldg. 38A. You can also watch the symposium remotely (live or later) via NIH Videocast at <http://videocast.nih.gov>.

The program will feature short talks by MIDAS researchers on modeling for scientific understanding, preparedness planning and health policy decision-making. Among diseases to be discussed are flu, Middle East respiratory syndrome, drug-resistant TB and MRSA. For details and to register, visit <http://meetings.nigms.nih.gov/index.cfm?event=home&ID=17117>.



OMB Director Pays Call on NIH

On Aug. 26, Sylvia Mathews Burwell (r), director of the Office of Management and Budget, visited NIH, getting a tour of the Clinical Center and the Children's Inn at NIH. Present during her CC visit were (from l) Mary Fischietto, OMB program examiner; NIH director Dr. Francis Collins; Ellen Murray, HHS assistant secretary for financial resources; and NINDS director Dr. Story Landis.

PHOTO: ERNIE BRANSON

Grad Student Research Conference Set, Oct. 6-8

The National Graduate Student Research Conference (NGSRC) is scheduled for Oct. 6-8 in conjunction with NIH Research Festival. Conference events will be held at the Clinical Center's newly renovated Student/Faculty Academic Center as well as at Natcher Conference Center. A total of 90 graduate students from across the U.S. will come to campus for this NIH-sponsored scientific meeting. These future leaders will have the opportunity to share their own research and learn about scientific advances being made in the NIH Intramural Research Program. NIH investigators will have the opportunity to recruit conference participants to join their research groups as postdoctoral fellows. Conference attendees will be selected competitively from an applicant pool of more than 500.

The NGSRC agenda includes career/professional development workshops, a panel of former NIH trainees discussing their career trajectories and NIH Research Festival poster sessions that give conference participants the opportunity to present and discuss their graduate research. NIH investigators and current postdoctoral fellows are encouraged to visit the posters to discuss potential collaborations and new research directions and learn first-hand about novel techniques and approaches that could enhance their investigations. For more information visit https://www.training.nih.gov/events/recurring/nih_national_graduate_student_research_festival.

Nationals Pitchers Strikeout Batters, Childhood Illnesses

By Sarah Krosnick

Most baseball games begin with the classic “play ball” exclamation. But at Washington Nationals games, “and raise some money” should be tacked on to the end of the expression.

The Nationals baseball team has joined forces with Washington Area Toyota Dealers to raise funds for the Children’s Inn at NIH through the “K’s for Kids” program. For each strikeout made by a Nationals pitcher, the dealers donate \$37 to the inn. The donation increment of \$37 was selected as a nod to famed Nationals pitcher Stephen Strasburg’s jersey number.

Meredith Daly, media relations manager at the inn, recalls that representatives of the Toyota dealers pitched the K’s for Kids program prior to the 2012 baseball season “with a proposal to support children through baseball strikeouts—helping to strikeout serious illness.” Jim Coleman, one of the representatives, explained that the local Toyota dealers were initially involved with the Nationals and Strasburg, but hoped to expand the program. After looking for a local charity to benefit for the 2012 baseball season, he found “there is nothing better than raising money and awareness for the Children’s Inn at NIH.”

A successful K’s for Kids program during the 2012 season led to a continued partnership for 2013. The 2012 season featured a combined 1,325 strikeouts by Nationals pitchers, amounting to a \$50,000 donation to the inn.

The Merck Foundation Co., which has been an ardent inn supporter since helping to build the structure, provided a matching grant opportunity for any inn donors through Aug. 20. The Toyota dealers responded by sending a portion of the K’s for Kids check—\$40,000—to the inn so that the donation could be doubled through the matching grant. A Sept. 16 check presentation is scheduled at the Nats game against this season’s top rival, the Atlanta Braves. In addition to monetary donations, Washington Area Toyota Dealers provide 25 tickets for inn families to attend Nationals games and enjoy dinner. Coleman said a game last season in which NIH associates and inn residents were recognized on the field with Strasburg was “a great event.”

Inn CEO Kathy Russell said, “Nats games are a terrific outing for our families who need a break from the stress of tests and treatments.” Daly added, “The goal of the program is not only to financially support the inn, which it has [done]

tremendously, but also to give families a chance to get away, to help them forget about the real reasons they come to the NIH—to give kids a chance to be kids and have fun at a ballgame.”

Regardless of the number in the win column or whether they win the World Series this season, the Nationals are still winners in the NIH community by stepping up to the plate for the Children’s Inn. As Daly quipped, “Even when the Nats lose, the inn wins!”

NIDDK’s Yang To Give Roberts Lecture, Sept. 17

Dr. Wei Yang, section chief in NIDDK’s Laboratory of Molecular Biology, will give the fall seminar in the Anita B. Roberts Lecture Series: Distinguished Women Scientists at NIH. Her talk, “Seeing Is Believing: Functional Biology at Atomic Resolution,” will be held on Tuesday, Sept. 17 at 1 p.m. in Lipsett Amphitheater, Bldg. 10. The series is sponsored by the NIH women scientist advisors committee and Office of Research on Women’s Health and highlights outstanding research achievements of women scientists in the Intramural Research Program.



Yang’s research centers around mismatch repair, a process that corrects replication errors; translesion DNA synthesis, which completes DNA replication when normal polymerases are stalled by damaged bases; and V(D)J recombination. She is the author of more than 80 articles and 3 book chapters and was recently elected to the National Academy of Sciences.

The seminar series is dedicated to the memory of Roberts, chief of NCI’s Laboratory of Cell Regulation and Carcinogenesis from 1995 to 2006, honoring her as an exceptional mentor and scientist.

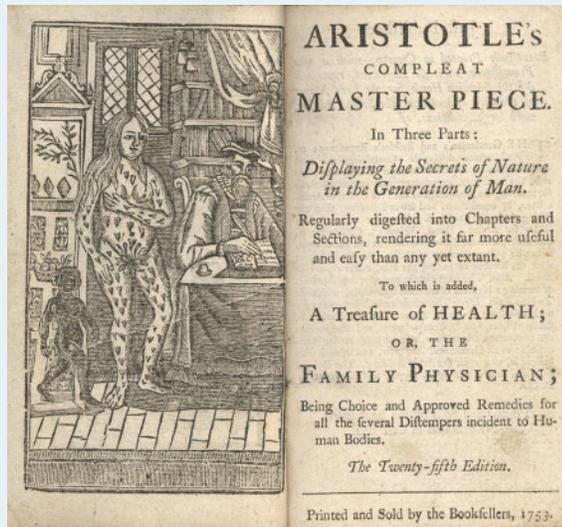
The lecture is open to all and will be followed by a question-and-answer session. Sign language interpreters will be provided upon request. Those who need reasonable accommodation to participate should call Margaret McBurney at (301) 496-1921 and/or the Federal Relay, 1-800-877-8339, 5 days before the lecture.

NINR’s McCloskey Named an AAN Fellow

Dr. Donna Jo McCloskey, a program director in NINR’s Office of Extramural Programs, was recently selected as an American Academy of Nursing (AAN) fellow. AAN fellows are nurse leaders who have made significant contributions to nursing and health care. McCloskey oversees the NINR centers program and the institutional training awards program. During her 28 years at NIH, she has also held positions at the Clinical Center and the National Center for Research Resources. Her research on improving venous access devices and related thrombotic complications is published in national as well as international journals. Recently, she convened a team of representatives from NIH, CDC, other federal agencies and NIH-grantee institutions to publish the 2nd edition of the HHS publication Principles of Community Engagement. McCloskey received a B.S. in nursing from Marymount University and an M.A. in research design and interpretation and a Ph.D. in nursing from George Mason University. She is the recipient of several awards, including a Clinical Center Nursing Research Award, an NIH Distinguished Nurse Award, an Alumni Achievement Award from Marymount University and an NIH Director’s Award. The 2013 class of fellows will be inducted during the academy’s annual meeting in October.



At left, Fissell chats with Michael North, head of the rare books and early manuscripts section, History of Medicine Division, NLM. At right, a 1753 edition of the perennially popular Aristotle's Masterpiece



LECTURE PHOTOS: ERNIE BRANSON

'RACY' BOOK

CONTINUED FROM PAGE 1

kins University. Speaking at an NLM History of Medicine lecture, she is writing a social and cultural history of the book.

More or less a midwifery guide, *Aristotle's Masterpiece* provided midwives and mothers information about conception, pregnancy, childbirth and baby care. Unusual for this genre, said Fissell, the book also offered advice on sex, both to men and women, and included several illustrations and stories of "monster babies."

Even after publishers stopped printing the racier versions, in the late 1850s, "The book nevertheless retained its identity as a titillating read, and became increasingly problematic as both England and America started to police what became called 'obscene works.'"

Aristotle's Masterpiece had numerous publishers and printers. By the middle of the 18th century, there were more editions of it than of all other popular books on reproduction combined. But the book was not actually written by Aristotle. The author remains unknown. Fissell said the title paid tribute to Aristotle's reputation as a sex expert and an authority on reproduction in 17th century England.

The advice and information, relatively accurate for its time, represented vernacular, everyday knowledge that was pieced together, much like the book itself. The *Masterpiece* was a patchwork of older texts. Interestingly, over the more than two centuries that the book was republished, the text remained largely the same, said Fissell, despite scientific advances, changes in gender roles and ideas about sexuality and an evolving understanding of reproduction and childbirth.

By 1850, four different versions existed of the basic text. In 19th century England, the most common was version three, the raciest of the bunch, which included a discussion of the anat-

omy of the genitals and an erotic poem, said Fissell. During that time period, in America, version two was most prevalent, which began with a discussion of marriage and omitted the erotic poem. The different versions may help explain differing perceptions of whether it served a medical or prurient purpose.

The *Masterpiece* appealed to various audiences. One man admitted he read the book "while a mere schoolboy, and describes thumbing through illustrated anatomical books on secondhand bookstalls, looking for clues about sex and sexuality, until the booksellers shooed him away," said Fissell. Indeed, some booksellers wound up in court, having to defend themselves for selling radical works, among them *Aristotle's Masterpiece*.

The book's popularity in the mid-19th century can be attributed partly to the growth of the urban centers of the sex trade in London and New York, said Fissell. More provocative illustrations get added to later versions. "So the *Masterpiece* was repackaged as a racy read for young men," said Fissell. They were reading it on the sly. "But in the 1840s, such male readers no longer have to borrow their mother's copy of the book; it has been remade for them."

Even after publishers stopped printing the racier versions, in the late 1850s, "The book nevertheless retained its identity as a titillating read, and became increasingly problematic as both England and America started to police what became called 'obscene works,'" Fissell said.

Aristotle's Masterpiece got repackaged and republished many times during its long run. "The book's cultural identity as a guide to sexual and bodily knowledge for both men and women endures across centuries," said Fissell. "I think the book's plasticity—its openness to constant reshaping—helps to account for its extraordinarily long life." ●



After a basement flood, Linda Brown (c) found a wealth of sunken—or at least partially submerged—treasures shown at right after rescue by the Office of NIH History.



History Office Urges Retirees to Consider Preserving Items

Whether or not you think about it, every second you are making history. Every piece of paper you have written on or every piece of lab equipment you have used in an experiment has shaped your presence today—and NIH's as well. Michele Lyons, curator at the Office of NIH History and Stetten Museum, emphasizes that what is often recycled or disposed of when an NIH worker retires is actually of historical significance.

"It takes everyone to make NIH work and we can all contribute to NIH's history," she says. "For example, photos of people at work or play at NIH." To counter unwitting disposal of historical items, Lyons has begun a program to collect and safeguard NIH-related items donated by employees.

Lyons's project came to life when long-time NIH Medical Arts authority Linda Brown lost stored paper items due to a flood in her basement. Brown decided to donate the remainder of her surviving NIH-related memorabilia, amassed over a career of more than 40 years, to the Office of NIH History for safekeeping. An artist herself, she donated a wealth of graphic art created mostly in-house, including brochures, invitations to events, meeting and symposium notices, consensus reports, annual reports, telephone books and fliers.

Lyons hopes that preserving NIH documents will benefit current and future historians both medically and artistically. She imagines that medical historians will be able to track knowledge and innovations over time, changing perspectives on medicine and societal-based public health trends. As for art historians, she thinks they'll enjoy evaluating changing art mediums and graphic design styles.

Lyons believes the public will appreciate the collection as well: "The art is just beautiful and visually stunning!"

Lyons appeals to all NIH'ers to consider donating items for three additional reasons: to preserve and protect history; to comply with the law (the material, she says, "is technically federal property, so legally you should not take things home or throw them away without consulting [the Office of NIH History] and your records manager"); and to honor posterity—"If you don't save your history, the historians of the future won't know about you." History is assessed almost exclusively through evidence, she said, cautioning that scientific papers comprise only a small percentage of evidence.

While it may seem easier, and greener, to scan a document for the Office of NIH History and then recycle it, Lyons prefers to retain the physical document. She explains, "Digital platforms become obsolete so quickly—there is no guarantee that anyone 10 years from now, much less 150 years from now, will be able to access a digital-only collection...Paper lasts."

In addition, the threat of cyberattack or solar flare renders digital files less reliable than physical copies. Above all, Lyons regards examining tangible copies as a "totally different experience" from examining digital files. "Looking at an image online is a pale imitation of holding an actual object."

Lyons asks that employees contact her either at (301) 496-6610 or lyonsm@od.nih.gov to discuss items before donating them to the Office of NIH History, as some objects may be better placed at the National Library of Medicine or the National Archives. 📍

Journal Honors NIDDK's Minton

Dr. Allen Minton, senior investigator at NIDDK's Laboratory of Biochemistry and Genetics, was recently featured in a special issue of *Biophysical Reviews* to honor his 70th birthday and pay tribute to his career. The issue recognized his achievements as "one of the most innovative biophysical scientists of the last 50 years."

Minton first came to NIDDK in 1970, when it was known as the National Institute of Arthritis and Metabolic Diseases. During the late 1970s and early 1980s, he and his coworkers pioneered the concept of macromolecular crowding, which describes how the presence of a high concentration of macromolecules in a particular medium influences the way each species of macromolecule behaves in that medium. Much of his research over the years, including what he learned from interactions between pharmacologically active ligands and their cellular receptors, has set the foundation for drug developments.

"I first decided to pursue science hoping to build on the ideas of others before me and perhaps come up with a few good ideas of my own," he said. "Over the course of my career at NIDDK, I have been lucky to work in a stable, nurturing environment filled with talented researchers. It has been humbling for *Biophysical Reviews* to honor me in this way."—**Krysten Carrera**





FIREFIGHTERS

CONTINUED FROM PAGE 1

Above, from 1:
Capt. Ricky Blair with the explosion containment unit dubbed “the 8-ball”

The NIH Fire Department is housed in Bldg. 51 in the northwest corner of the Bethesda campus.

Below:
Dials and gauges on the back of a pumper truck help firefighters battle flames.

PHOTOS: BELLE WARING



Office—our parking office—then you’ve probably noticed NIH police officers in the suite. Yet you may not know that NIH also has its own Fire Department housed in the northwest corner of campus.

“A lot of folks look at us the way Hollywood does,” says Jonathan Mattingly, who has been with the Fire Department for 21 years and has served for 5 years as fire chief of the Division of Fire and Rescue Services (DFRS). His role is distinct from that of the NIH fire marshal, who manages programs for prevention—smoke detectors and other essentials—but not response.

“Our staff,” he continues, “has to do a lot more than what you see in the movies.”

Start with volume. DFRS, part of the Office of Research Services, responds to 3,600 calls for service annually—averaging 10 per day. Around 60 percent of those calls are on campus. The rest happen outside the fence, thanks to a mutual aid agreement with Montgomery County Fire & Rescue Service and Walter Reed National Military Medical Center. It’s a no-cost exchange of resources needed for larger scale events. We back each other up.

And that’s a great thing. On a given day, our little city inside the fence has up to 20,000 employees, with many visitors, in 75 buildings over 300 acres. Then there’s the hospital in the 870,000-square-foot Clinical Research Center, with 240 inpatient beds and 82 day-hospital stations. Not to mention more than 6,000 scientists in the labs, some using chemical solvents like xylene, which can be both flammable and toxic.

This brings us to what’s special about NIH firefighters. “We do a lot of extra things,” says Mattingly.

For instance, in the case of a chemical spill,

they work with the researchers to tamp down the impact quickly and safely so that an experiment can proceed without disturbing the outcome.

“A community-based fire department might just shut it down,” he continues. “But we interact with the researchers to support their mission. You wouldn’t get that hand-in-hand support outside of NIH.”

If you smell smoke or a chemical odor, call 911 to reach the NIH emergency communications center, which does triage.

“Now we can add earthquake to the list,” says Mattingly, recalling the 5.8 magnitude temblor of Aug. 23, 2011. The list goes “from the nothing to the everything”: a false alarm; someone not feeling well; or a building collapse.

With a staff of 28 firefighters, plus 3 folks in supporting roles, DFRS can respond as needed via ladder truck, a smaller fire engine, an ambulance, a hazmat unit, a basic life support unit and an explosion containment unit dubbed “the 8-ball.”

DFRS staff also inspects and marks thousands of fire extinguishers across campus. They work with the Clinical Center’s code team and with the Office of Research Facilities to understand building lay-



Tower 751 has a retractable ladder for reaching blazes on the upper stories of structures.



NIH fire engine sports a patriotic look. Firefighters here average some 10 calls per day.

outs and any changing configurations, including confined spaces such as steam tunnel vaults.

“We also need to know the number of folks in those buildings and how many have disabilities,” the chief adds.

All firefighters must have basic life support training as EMTs, plus proficiency in hazmat techniques. As “firefighters,” everyone drills and cross-trains. As part of safety education, they do outreach with the kids in NIH day care centers. And they are trained to deal with an active shooter.

Alas, there’s no on-the-job dog, no firehouse Dalmatian. Still, the vehicles are the coolest on campus. The big pumper has a 500-horsepower diesel engine. In the cab is a video recorder used for training. Staff takes care of the equipment and does minor mechanical work (adjusting brakes, troubleshooting), jobbing out major repairs.

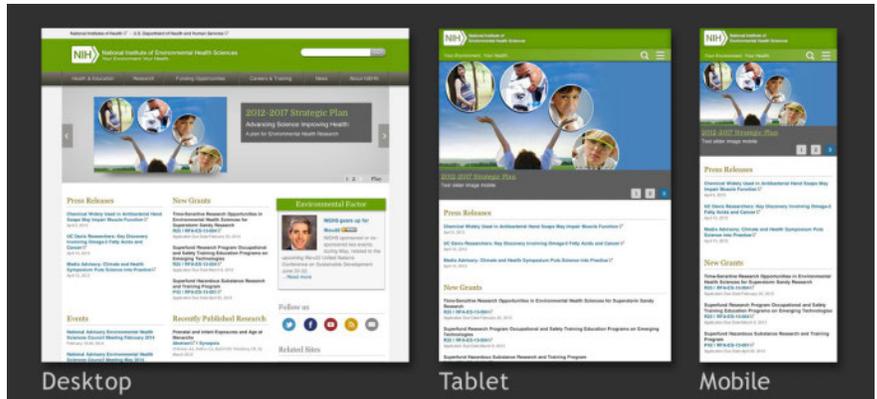
“Once we had a strange odor in the lab and called,” notes NHLBI’s Dr. Lena Diaw. “To our big surprise, the fire department came in full force and they nailed the problem, which was happening outside of the building. It was very impressive.”

We may take our first responders for granted—until we’re stuck in the elevator or we smell smoke. But consider that in 2011, FEMA counted 450,000 fires in the U.S. (both residential and non-residential), with over 2,500 deaths, 1,500 injuries and a loss of \$9 billion.

That same year, on-duty firefighters suffered over 80 fatalities. In 2012, that number jumped to over 100, says Mattingly.

He and his team know the risks, which makes training so crucial. He has established a firefighter safety and training program that sets the standard for other federal fire departments in the region.

“The fact that NIH changes requires us to change and meet those challenges,” he says. “We are the community’s fire department.”



With the NIEHS responsive web site capability, the landscape changes, but the message comes across in its entirety. Sizes shown above range from a 1024-pixel wide desktop monitor screen (l) to a 244-pixel wide cell phone display (r).

GRAPHIC: JOE POCCIA

NIEHS Launches Web Site Redesigned for Mobile Devices

Like it or not, mobile devices are taking over world communication and organizations that want to get their messages out are having to adapt. Mobile industry estimates suggest that, in the not too distant future, nearly everyone in the world will communicate through cell phones, tablets and other mobile devices.

NIEHS took a big step forward recently by launching a redesigned public web site at www.niehs.nih.gov that is easily viewed and navigated on a broad variety of mobile devices such as smartphones and tablets. This new responsive web design gives the institute a distinct advantage in its efforts to reach the billions of people worldwide who experience the web on a small screen—and may not use or even have access to a desktop computer.

“Our responsive web site will help us meet the environmental health needs of a changing world,” said NIEHS Communications Director Christine Flowers. “We’re one of the first organizations of our kind to address this communications challenge.” While people everywhere are going mobile, she added, the growth is greatest in the developing countries where NIEHS global environmental health research is especially relevant.

Flowers credits her team, including NIEHS web manager Cheryl Thompson, digital information specialist Joe Poccia and information technology specialist Sharon Hite for their leadership and technical expertise in completing the challenging project.

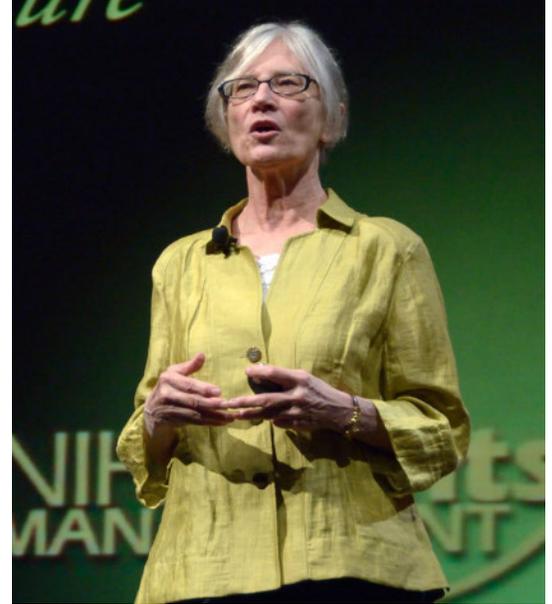
To experience how much a responsive web site changes the landscape for visitors to NIEHS public web pages, it’s helpful to see how the pages appear on different devices. While the content remains the same, whether it’s accessed on a 27-inch desktop screen or 2.44-inch wide mobile display, the arrangement changes automatically for optimal viewing.

Instead of simply shrinking a web page to fit a screen—much the way wide-screen films are truncated to fit the standard television screen—the NIEHS responsive web site is capable of reformatting the page for mobile devices, to retain virtually all the information seen on a desktop monitor.

According to Thompson, the majority of the public web site is now available in responsive format; the remaining public pages, such as the *Environmental Factor* newsletter and Kids’ Pages, are in development.—Eddy Ball

MAMMOGRAPHY

CONTINUED FROM PAGE 1



Right:

Petitti cautioned, “It’s almost impossible to communicate in a politicized environment.”

PHOTOS: BILL BRANSON

Advances in Cancer Prevention Lecture in Masur Auditorium.

“This is the really controversial part of the recommendations,” she said, “that the decision to start screening before the age of 50 should be an individualized decision, taking into account preferences and the context.”

Reversing its previous guidelines released in 2002, the task force said that, based on current research:

- ❑ Women in their 40s should not routinely get mammograms unless they have a high genetic risk.
- ❑ Instead, women 40 to 49 should consult their physician about when to start screening.
- ❑ Women 50 to 74 should get a mammogram every 2 years.
- ❑ The panel made no recommendations for women 75 and over.

Petitti stressed that the recommendation against routine screening to begin *automatically* at age 40 was widely misinterpreted. The task force gave routine mammograms for women ages 40 to 49 a C rating, which meant they would not automatically be covered by insurance, including Medicare. But the panel did not say that women in this cohort should never be screened.

Their findings drew on more than 2,500 studies and 9 randomized clinical trials involving more than 600,000 women. Petitti defended the guidelines as “good science...In making science-based recommendations about age and interval,” she continued, “in fact there are no trials that randomize women to one-or-another screening interval or to one-or-another age to start screening. In fact, such trials would be extremely difficult to do and they haven’t been done.”

Mammography, a test to detect breast cancer, decreases mortality across all age groups. Around 35 million women get mammograms annually at a total cost of \$5 billion. But the procedure is not without harms.

“The decision about what should or shouldn’t be recommended,” Petitti said, “is inherently a tradeoff of those benefits and harms and involves judgment.”

Harms include radiation exposure, pain, adverse responses to false positive mammograms, overdiagnosis, the need for additional imaging and biopsies when women have had a positive screening mammogram.

“We may not have agreement about how to weigh the *consequences* of those tradeoffs,” she said.

“Now this gets translated into policy, and policy is a course of action; and in medicine and health, policy often refers to what insurance companies or Medicare or Medicaid will cover.”

The task force findings, published in November 2009, ran into the fierce headwind of congressional debate over the Affordable Care Act.

“I have to tell you that I was utterly unprepared to be the spokesperson for a topic this controversial,” Petitti said. “I really knew the data, I really knew the models, I went through all sorts of press training...”

But complex, highly numeric issues are difficult to communicate. Petitti wasn’t ready for the news van driving up to her house while she was still in her pajamas. Someone even tried to have her fired from her job at Arizona State University. It was like being thrown into the fire, she said.

“One of the most important facts that was lost in the discussion,” she stressed, “is the degree to which different modelers’ strategies and assumptions came up with the same overall conclusion about the tradeoffs of risks and benefits comparing an earlier—versus the later—starting age and a frequent—versus less frequent—screening interval.”

Meanwhile the ACA, which became law in March 2010, contained a specific repudiation of the task force’s new guidelines:

“...the current recommendations of the United States Preventive Service Task Force regarding breast cancer screening, mammography and prevention shall be considered the most current other than those issued in or around November 2009,” according to the statute.

Result: For women over 40, routine screenings every 1 to 2 years must be included in coverage plans without a copayment or co-insurance. The section of the law that deals with Medicare contains similar wording.

“We have really good science,” Petitti insisted. “I think we have really bad policy...I don’t think that a linkage of a specific recommendation of a specific group [like the task force]—where the group can change, its procedures can change—to automatic coverage for all kinds of insurance is good policy.”

Moreover, in her view, policies based on data, unless it’s the “most current data,” are unwise. Data can change relatively fast; legislation is not as nimble.

“My own conclusions and observations are that there’s a lot of good science about mammography, and that good science has the potential to inform good policy,” she said. Yet “it’s almost impossible to communicate in a politicized environment.”

During the discussion, a breast surgeon from Vietnam observed that breast cancers there are being found in “a much younger age group.”

“I think the decision about when to be screened,” Petitti replied, “has to take into account the background incidence of breast cancer. One of the questions that has come up in other forums is whether or not African-American women should be screened earlier... Are they a special group? And it may be that in your country, there are special epidemiological circumstances that would warrant a different recommendation.”



NIDA Honors Addiction Science Awardees

The 2013 winners of NIDA’s Addiction Science Awards, part of the Intel International Science and Engineering Fair, presented their projects to NIDA director Dr. Nora Volkow (third from l) and other NIDA scientists recently and afterwards toured the NIH campus. They include (from l) Gili Risak (honorable mention); Zarin Ibnat Rahman (first place for “The At-Risk Maturing Brain: Effects of Stress Paradigms on Mood, Memory and Cognition in Adolescents and the Role of the Prefrontal Cortex”); Emory Morris Payne and Zohaib Majaz Moonis (second place, “The Effect of Ethanol on Beta Cell Development in Zebrafish”); and Alaina Nicole Sonksen (third place, “Determining the Behavioral and Physiological Effects of Pentadone-Based Bath Salts on *Drosophila melanogaster*”).

New Technology Recognizes Words via Brain Activity Patterns

By Rebecca Lazeration

NIH grantees have taken the first step towards teaching computers to read a person’s mind. Dr. Tom Mitchell and Dr. Marcel Just have been programming computers to interpret images of a person’s brain activity after the person hears a word spoken. In some cases, the computers can actually discern the word a person has heard, based solely on their analysis of the listener’s brain activity patterns.



Dr. Marcel Just (l) and Dr. Tom Mitchell

“This accomplishment will help us break new ground in our understanding of human language,” said Dr. Brett Miller, NICHD health scientist administrator. “There are many potential applications for this technology. If we can understand how the brain processes language, we can understand—and eventually treat—a variety of disorders in which people have problems understanding others or with expressing themselves.” Funding for the project has been provided by NICHD, NIMH and the National Science Foundation.

Mitchell designs programs that teach the computer to link images of brain activity to words or phrases that trigger the brain activity. The computer creates this link by associating the patterns found in the brain activity with the word that those patterns represent.

“I study machine learning, which is the study of step-by-step procedures instructing a computer to recognize the patterns in large amounts of data,” Mitchell explained.

During a typical session, Mitchell and Just will present a volunteer with 60 different words, with each word presented multiple times in random order throughout the session. The computer then charts the images against the spoken words. Based on these images, the computer creates a mathematical sequence by which it can identify the word from the brain activity patterns associated with it.

The researchers then test what the computer has learned by showing it images of brain activity patterns to see if it can identify the words associated with those patterns. Many times the computer can correctly identify a word based only on the brain activity patterns—not just from the images of the person who took part in the initial scanning session, but also from the scans of other people who heard the same word. Moreover, the brain activity patterns remain the same whether a person hears a word, is shown the printed word, or even a picture of what the word represents.

So far, efforts are most successful at recognizing concrete nouns—such as “house” or “hammer.” In fact, the computer can match concrete nouns to their corresponding activity patterns 90 percent of the time. The computer is also successful at recognizing words that represent feelings, such as “fear” or “love.” However, the researchers have not been successful in getting the computer to recognize words that describe complex concepts, like “democracy” or “justice.” These and other abstract terms fail to evoke consistent brain activity from person to person.

Eventually, Mitchell hopes to refine the technology so that it can be used to diagnose—and perhaps help treat—a number of different speech and language disorders. For example, computers might recognize people with dyslexia (reading disability) based on their patterns of brain activity and refer them for appropriate treatment. Similarly, they might monitor the brain activity of stroke patients to determine if they’re responding to therapy to overcome a speech impairment and substitute another therapy if the original treatment wasn’t helping.

Researchers Find Essential Brain Circuit in Visual Development

A study in mice reveals an elegant circuit within the developing visual system that helps dictate how the eyes connect to the brain. The research, funded by NIH, has implications for treating amblyopia, a vision disorder that occurs when the brain ignores one eye in favor of the other.

Amblyopia is the most common cause of visual impairment in childhood and can occur whenever there is a misalignment between what the two eyes see—for example, if one eye is clouded by a cataract or if the eyes are positioned at different angles. The brain at first has a slight preference for the more functional eye, and over time—as that eye continues to send the brain useful information—the brain’s preference for that eye gets stronger at the expense of the other eye.

Patching the strong eye can help correct amblyopia. But if the condition isn’t caught and corrected during childhood, visual impairment in the weaker eye is likely to persist into adulthood.

“Our study identifies a mechanism for visual development in the young brain and shows that it’s possible to turn on the same mechanism in the adult brain, thus offering hope for treating older children and adults with amblyopia,” said Dr. Joshua Trachtenberg, associate professor of neurobiology at David Geffen School of Medicine, University of California, Los Angeles. The study was published in *Nature*.

Single Gene Change Increases Mouse Lifespan By 20 Percent

By lowering the expression of a single gene, researchers at NIH have extended the average lifespan of a group of mice by about 20 percent—the equivalent of raising the average human lifespan by 16 years, from 79 to 95. The research team targeted a gene called mTOR, which is involved in metabolism and energy balance, and may be connected with the increased lifespan associated with caloric restriction.

A detailed study of these mice revealed that gene-influenced lifespan extension did not affect every tissue and organ the same way. For example, the mice retained better memory and balance as they aged, but their bones deteriorated more quickly than normal.

This study appeared in the Aug. 29 edition of *Cell Reports*.

“While the high extension in lifespan is noteworthy, this study reinforces an important facet of aging; it is not uniform,” said lead researcher Dr. Toreen Finkel of the National Heart, Lung, and Blood Institute. “Rather, similar to circadian rhythms, an animal might have several organ-specific aging clocks that generally work together to govern the aging of the whole organism.”

Finkel, who heads NHLBI’s Laboratory of Molecular Biology, noted that these results may help guide therapies for aging-related diseases that target specific organs, such as Alzheimer’s. However, further studies in these mice as well as human cells are needed to identify exactly how aging in these different tissues is connected at the molecular level.

Investigational Oral Regimen for Hepatitis C Shows Promise

In a study of an all-oral drug regimen, a majority of volunteers with liver damage due to hepatitis C virus (HCV) infection were cured following a 6-month course of therapy that combined an experimental drug, sofosbuvir, with the licensed antiviral drug ribavirin. The results showed that the regimen was highly effective in clearing the virus and well tolerated in a group of patients who historically have had unfavorable prognoses.

Scientists from NIAID and the Clinical Center led the phase II trial. The findings appeared in the Aug. 28 issue of the *Journal of the American Medical Association*.

More than 3 million Americans have chronic HCV infection, a condition that is a major cause of cirrhosis (liver tissue scarring) and liver cancer and a leading reason for liver transplantation. Deaths from HCV-related liver disease number about 15,000 every year. Standard treatment for HCV can last up to a year and usually involves weekly injections of pegylated interferon-alpha given with the oral drug ribavirin and an HCV protease inhibitor. Side effects from this treatment can be severe, notably from interferon-alpha, and can include depression, flu-like symptoms and anemia.

“There is a pressing need for hepatitis C virus treatments that are less burdensome to the patient, have fewer side effects and take less time to complete. Building on previous work, this trial provides compelling evidence that interferon-free regimens can be safe and effective,” said NIAID director and study co-author Dr. Anthony Fauci.



A study in mice reveals an elegant circuit within the developing visual system that helps dictate how the eyes connect to the brain. The research has implications for treating amblyopia, a vision disorder that occurs when the brain ignores one eye in favor of the other.



milestones



Van Nevel, Former NCI Communications Chief, Mourned

By James Mathews

J. Paul Van Nevel, former associate director for cancer communications at NCI, died on Aug. 4 from complications related to progressive supranuclear palsy. He was 75 years old.

Van Nevel joined NCI in 1973, bringing with him considerable experience from his time as director of public relations at the Johns Hopkins Medical Institutions and earlier as director of public information at the University of Wisconsin Medical Center.

His arrival at NCI coincided with implementation of the National Cancer Act of 1971, which included mandates to promote and disseminate information about cancer research to the public. By the time he retired in 1999, after 26 years of federal service, Van Nevel had helped equip NCI with a premier communications operation, leaving behind a legacy of enduring programs and accomplished leaders in the field of communications.

Among the many colleagues he mentored was John Burklow, current NIH associate director for communications and public liaison, who remembers Van Nevel as a thoughtful public servant and source of inspiration. “Paul was a true leader and made a lasting impact not just in cancer communications at NCI, but across the NIH communications landscape,” Burklow said. “He will be deeply missed.”

During his tenure at NCI, Van Nevel cultivated a reputation as a reliable, resourceful manager and innovator. In addition to being one of the charter members of the federal government’s Senior Executive Service, he led many efforts that were considered cutting-edge at the time and that have continued to evolve and thrive to this day.

In 1976, for example, he spearheaded establishment of the Cancer Information Service, a nationwide information and education network that provides Americans with free access to the latest, most accurate cancer information. Before the CIS telephone service was established, the public had no reliable source for information about cancer. Today, CIS has expanded into a robust multichannel contact center that responds to several hundred thou-

sand public inquiries per year using web-based communication tools, including social media.

Van Nevel also helped pioneer the involvement of advocacy groups in program planning. In the 1970s, he invited breast cancer advocates to help develop NCI’s first breast cancer education program. He reached out to diethylstilbestrol advocates for the first DES educational campaign and often engaged cancer patient organizations in the development of NCI’s patient education programs, which were numerous during his tenure. In all these efforts, he ensured that programs included outreach to minority and underserved populations.

In 1988, Van Nevel became founding editor of the news section of the *Journal of the National Cancer Institute*. His work in this area would go on to serve as a model for other federal newsletters and publications at NCI and elsewhere—both in print and online.

In addition to developing NCI’s extensive press relations program, Van Nevel created the Cancer Centers Public Affairs Network, a group that helped mobilize the cancer center community to get cancer information to the American public more quickly and more consistently. He also championed a number of widely regarded public health promotion campaigns that centered on tobacco cessation, nutrition and early detection. Among them was NCI’s collaboration with the U.S. Postal Service, which in 1996 issued 100 million breast cancer awareness stamps as part of a wider informational campaign about breast cancer detection.

Over his final decade with NCI, Van Nevel oversaw the institute’s transition into the digital communications age. He aggressively pursued NCI’s web presence throughout the 1990s and helped adapt the institute’s communications resources to the emerging medium.

In 1999, Van Nevel received the University of Wisconsin’s Award for Distinguished Service to Journalism and Mass Communication and was selected by then President Bill Clinton for the Presidential Rank of Meritorious Executive.

Van Nevel is survived by Lois, his wife of 51 years, his daughters Catherine and Kari, seven grandchildren and eight brothers and sisters and their families. 🕒



NIAMS Holds Roundtable on Role of Inflammation in OA

NIH grantees, clinicians and patients recently met with NIAMS leadership and staff to discuss how findings from basic, translational and clinical osteoarthritis (OA) research can be combined with recent advances in inflammation research to enhance understanding of the early processes involved in the initiation and onset of disease. The discussion prompted possible avenues for interventions to prevent or delay OA development. Part of the institute’s scientific planning process, the full-day roundtable addressed topics including the impact of inflammation, the evidence for activation of inflammation in the development of OA and the relationship of inflammation to pain and other pathogenic pathways in the disease. The group also discussed how interventions during the initial injury of a joint and the ensuing healing process might influence the later development of OA. Participants included NIAMS deputy director Dr. Robert Carter (front, fourth from r) and staff, including Drs. Joan McGowan (front, third from l), Bernadette Tyree (front, fourth from l) and Gayle Lester (front row, third from r).

Clearing Hurdles to Stem Cell Therapies For Eye Diseases

By Dustin Hays

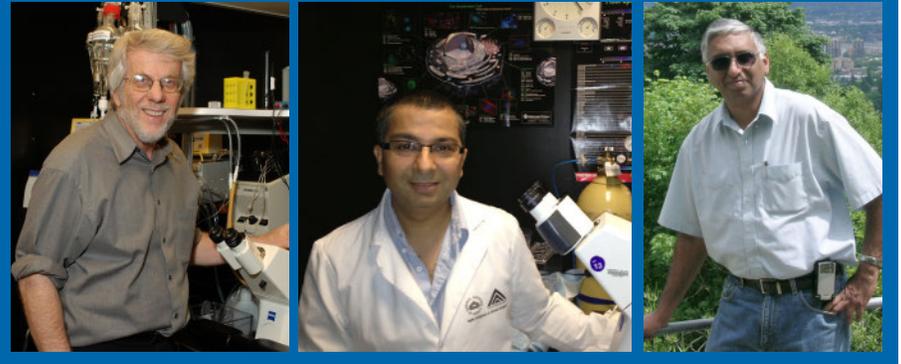
The National Eye Institute and the NIH Center for Regenerative Medicine convened an international group of scientists and clinicians recently to chart a path to clinical trials for stem cell therapies for degenerative eye diseases. “Working Together Towards a Cell-Based Investigational New Drug” was the third in a series of stem cell meetings that NEI began in 2009.

Stem cells have the potential to differentiate into a variety of mature cell types and can be obtained from both fetal and adult tissues. Recently, intense interest has centered on induced pluripotent stem (iPS) cells, which are made by reprogramming mature cells, such as skin or blood cells, into a developmentally immature state. They can then be coaxed to mature into other cell types. The use of iPS cells provides a theoretically unlimited supply of human cells to study disease and test new therapies. A major goal of stem cell research is to generate transplantable cells and tissues for disease treatment.

“We are at an inflection point historically in terms of opportunities to apply truly novel approaches to diseases that have previously vexed us,” said NIH director Dr. Francis Collins. “And particularly so to eye diseases because of the many characteristics that make the eye so appealing.” The eye is considered well-suited to stem cell therapy because it is easily accessible, less prone to immune rejection of transplanted cells and tissues and its function is easy to test.

Leaders from several research groups with plans for clinical trials of stem cell-based therapies for retinal diseases attended the meeting. Among them were Dr. Masayo Takahashi, RIKEN Center for Developmental Biology, Japan; Dr. Peter Coffey, University College London; Dr. Mark Humayun, University of Southern California; Dr. Dennis Clegg, University of California, Santa Barbara; Drs. Sally Temple and Jeffrey Stern, New York Neural Stem Cell Institute; and Dr. Eyal Banin, Hadassah-Hebrew University Medical Center, Israel. The meeting featured roundtable discussions about regulatory requirements to initiate clinical trials, ethical considerations and licensing and manufacturing of stem cell-related technology.

Dr. Sheldon Miller, director of NEI’s intramural research program, and Stadtman investigator Dr. Kapil Bharti, also of NEI, have developed protocols for the generation of retinal pigment epithelium (RPE) from iPS cells. The RPE is a



Dr. Sheldon Miller (l), Dr. Kapil Bharti (c) and Dr. Mahendra Rao are positioning NIH as a leader in the development of stem cell therapeutics for eye diseases.

single layer of cells in the back of the eye that provides metabolic support to the photoreceptors, which are light-stimulated nerve cells that transmit visual information to the brain. The RPE has been implicated in several eye diseases such as age-related macular degeneration, the most frequent cause of vision loss in Americans over age 65. Miller and Bharti grow the RPE cells on a fabric-like matrix called a scaffold, which enables them to produce RPE tissue in flat sheets for transplantation into the back of the eye. And they have developed physiological assays to authenticate these RPE tissues before and after transplantation into animal models.

Meeting organizers Miller, Bharti and NIH CRM director Dr. Mahendra Rao are positioning NIH as a leader in the development of stem cell therapeutics for eye diseases. In collaboration with the Clinical Center cell processing section, headed by Dr. David Stroncek, and private-sector firms, they hope to help build an “alpha” clinic at NIH with the capacity to manufacture clinical-grade iPS cells, conduct preclinical work and perform stem cell trials. The alpha stem cell clinic concept was conceived by Dr. Ellen Feigal and colleagues at the California Institute for Regenerative Medicine.

“Such a clinic would be able to recruit the right patients, create clinical-grade iPS cell banks and tissues, conduct animal testing, develop a drug master file and assist with preparing submissions to the FDA for investigatory new drug applications,” said Bharti. By providing necessary infrastructure, he said, such a clinic would help accelerate stem cell therapies. 📍

APAO Donates to Children’s Inn at NIH

The NIH Asian and Pacific Islander American Organization (APAO) recently donated \$500 from the proceeds of its Ethnic Food Fair to the Children’s Inn at NIH. Each year, APAO organizes this event in May on the patio of Bldg. 31 with food, performances and activities to celebrate Asian Pacific Islander American Heritage Month. Shown at the gift presentation are (from l) Laura Wong, APAO secretary; Mary Zhang; Lauren Stabert, representing the inn; Donna Wells; Shioko Kimura; Xinzhi Zhang, APAO president; and Chuan-Ming Li. The inn provides “a place like home” to more than 1,500 children and their families each year who participate in research at NIH.

