

'PANDEMIC IN PROGRESS'

Zika Virus Re-Emerges as More Serious Global Threat

BY CARLA GARNETT

With apologies to Ben Franklin: Nothing is certain in this world, except death and taxes...and outbreaks.

NIAID director Dr. Anthony Fauci confirmed that sentiment Mar. 18 in Masur Auditorium, quoting an article he wrote in 2008 about emerging infections (and recalled a year or so ago about Ebola): "This is a perpetual challenge that we have to be prepared for because it will come again. It may not come again in this degree of magnitude for who knows how long, but you can be absolutely sure it will come again."

It has come again, although not yet—and with luck and preparation, not ever—in Ebola magnitude. This time it is the Zika virus.

"The bad news is that we have Zika; the good news is that Zika is a flavivirus and we have a lot of experience with flaviviruses," said Fauci. "We've made vaccines against flaviviruses."

In a lecture titled "Zika Virus: A Pandemic in Progress," he told a capacity crowd about the virus's background, the current outbreak in the Caribbean and Latin America, implications for Zika and the United States, and the role of research and development—diagnostics, vaccines and therapeutics.

First identified in 1947 in monkeys in the Zika forest in Uganda, Africa, and recognized in 1952 in Nigeria as a virus that can infect humans, Zika re-emerged in 2007 at outbreak levels in Micronesia.

In recent years, the virus has spread to

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'Lab Week' a hit at White House, NIH. See p. 6.

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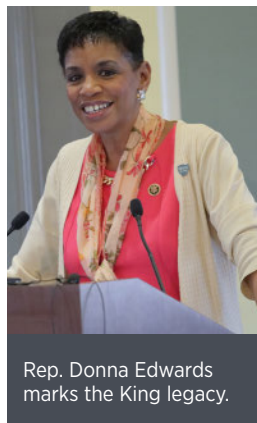
'NOT IMPOSSIBLE WORK'

Edwards Celebrates MLK Legacy, Diversity at NIH

BY CARLA GARNETT

Congresswoman Donna F. Edwards (D-MD) is too young to have marched in the Civil Rights Movement more than a half century ago, but she says she's at the perfect age to acknowledge and appreciate the benefits gained in that era.

"I'm kind of in that in-between generation," she said during her Mar. 8 keynote in Wilson Hall. "It wasn't my generation that was out on the street demanding civil rights



Rep. Donna Edwards marks the King legacy.

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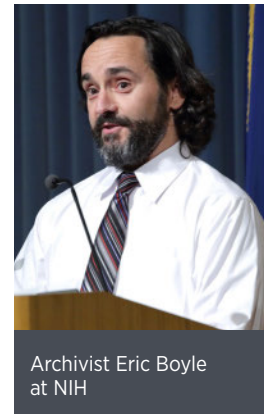
ALTERNATIVE MEDICINE

NIH's Unconventional Journey Toward Integrative Health

BY DANA TALESNIK

What's in a name? At the center of a decades-long debate, alternative medicine has been embroiled at the nexus of science, medicine and politics. The term alternative medicine itself is a loaded one, with passionate advocates and skeptics each fueling the feud.

We tend to fear the unknown. So, not surprisingly, alternative medical treatments—from homeopathy and herbal



Archivist Eric Boyle at NIH

SEE ALTERNATIVE, PAGE 4

Author Wakeman Speaks at DDM Seminar, Apr. 14

The Deputy Director for Management (DDM) announces the third DDM seminar of the 2016 series "Management and Science: Partnering for Excellence" featuring Cy Wakeman, a *New York Times* bestselling author, international keynote speaker and consultant. She will discuss her revolutionary approach to "Reality Based Leadership," which tells leaders to "ditch the drama, restore sanity to the workplace and turn excuses into results." Come hear her provocative approach on Thursday, Apr. 14 from 11 a.m. to 12:30 p.m. in Masur Auditorium, Bldg. 10.



Videocasting and sign language will be provided. Individuals who need reasonable accommodation to attend should call (301) 496-6211 or the Federal Relay Service at 1-800-877-8339.

For more information about the series, visit www.ddmseries.od.nih.gov or call (301) 496-3271.

THE HUMAN PLACENTA PROJECT

<http://www.nichd.nih.gov/hpp>



Human Placenta Project To Meet

On Apr. 14-15, NIH will host its third annual meeting on the Human Placenta Project (HPP) at Natcher Conference Center. The HPP, a collaborative research effort to better understand the role of the placenta in health and disease, supports development of novel technologies to enable real-time assessment of placental structure and function throughout pregnancy. The meeting will attract a broad range of scientists and clinicians, including experts in placental biology and obstetrics as well as creative thinkers in biotechnology, imaging, data science and other arenas. For more information and to register, visit <http://bit.ly/HPPmtg2016>.

1st Community-Wide Exhibit of NIH Administrative Strategic Goals, Apr. 19

Join your colleagues on Tuesday, Apr. 19 from 11:30 a.m. to 1:30 p.m. in the FAES Terrace in Bldg. 10 for the first-ever NIH-wide exhibit of administrative strategic goals. Trans-NIH teams will showcase accomplishments, upcoming milestones and benefits from their work in support

of the NIH Administrative Strategic Plan. All NIH staff are welcome.

The NIH Administrative Strategic Plan sets direction for admin priorities in key focus areas over a 3-year period. Developed jointly by executive officers and Office of Management senior leaders, the current plan spans the 2014-2017 period. For a list of goals, objectives and Initiatives, visit www.od.nih.gov/OSPA/StrategicPlan/SitePages/ASP.aspx.

The exhibit is hosted by the NIH Office of Strategic Planning and Management Operations. For more information, contact Martha Randazzo at (240) 743-7511, Dr. Rachel Dexter at (301) 480-0220 or Evans Aine at (301) 594-2301.

Postbaccalaureate Poster Day Set, Apr. 20 at Natcher

Postbac Poster Day is scheduled for Wednesday, Apr. 20 at the Natcher Conference Center from 10 a.m. to 3:30 p.m. The keynote talk begins at noon, followed by presentation of Postbac Distinguished Mentoring Award(s). Poster session I will take place from 10 a.m. to noon and poster session II is from 1:30 to 3:30 p.m.

Poster Day gives postbacs the chance to share research they have been conducting at NIH and develop scientific communication and networking skills. Investigators, staff scientists and scientific administrators can contribute to the event by visiting posters and engaging authors in discussion. For more information, visit https://www.training.nih.gov/postbac_poster_day.

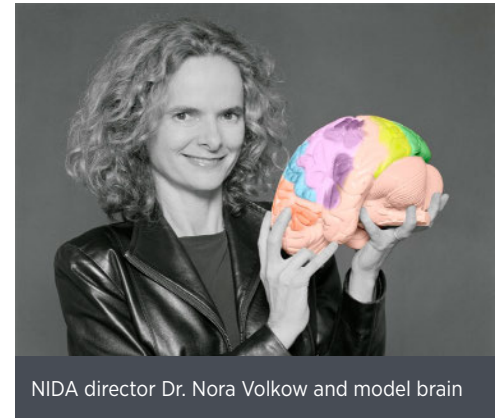
Pfizer's Centers for Therapeutic Innovation Hold Apr. 14 Seminar for Intramural Researchers

The National Center for Advancing Translational Sciences will host a seminar on Apr. 14, 2 to 4 p.m., for NIH intramural researchers interested in collaboration opportunities supported through Pfizer's Centers for Therapeutic Innovation program. The event will take place in Bldg. 40, Rm. 1201/1203 and includes a presentation by Pfizer CTI NIH representative Dr. Nader Halim. To register, send an email to Lili Portilla, NCATS director of strategic alliances, at NIH-PfizerCTI@mail.nih.gov.

The program pairs leading researchers with Pfizer resources to pursue scientific and medical advances through joint therapeutic development. The CTI model is the first NIH-wide biologics initiative with a pharmaceutical partner that NCATS coordinates on behalf of all NIH intramural researchers. Goals include identifying biologic compounds with activity in a pathway or target of interest to an NIH intramural researcher and to Pfizer and together moving the compounds into the clinic to test them.

In addition to the Apr. 14 seminar, Halim will offer office hours from 10 a.m. to 4 p.m. on Apr. 26, May 19 and June 2 in Bldg. 31, Rm. 3B13 to answer questions. The Pfizer CTI pre-proposal portal opens

on May 2 with the first call for proposals due June 17. For more information about the program, visit <https://ncats.nih.gov/cti>. For details about the call for proposals, visit <https://ncats.nih.gov/cti/proposals>.



NIDA director Dr. Nora Volkow and model brain

NIDA Hosts Brain Derby During Brain Awareness Week

The National Institute on Drug Abuse took part in the 12th annual Brain Awareness Week by hosting "NIDA Brain Derby" on Mar. 19 at the National Museum of Health and Medicine, Walter Reed Army Medical Center. The interactive quiz game tested students' knowledge about the brain, neuroscience and the neurobiology of drug use. Students learned basic brain anatomy and function, as well as how different drugs can affect the brain and alter its normal activity. Brain Awareness Week is a global campaign to increase public awareness of the progress and benefits of brain research. Additionally, in correlation with Brain Awareness Week, NIDA launched a series of Brain Reward Circuit videos. The new animated videos detail how the brain responds to the use of different drugs, including cocaine, methamphetamine and marijuana.

NIH Career Symposium Set, May 6

The NIH Office of Intramural Training & Education invites all NIH graduate students and postdoctoral trainees, both basic scientists and clinicians, to participate in the 9th NIH Career Symposium on Friday, May 6 at the Natcher Conference Center from 8:30 a.m. to 5 p.m. The symposium provides an opportunity for fellows and graduate students to learn about scientific career options and to explore factors that lead to career success. The all-day program will include more than 20 breakout sessions highlighting career opportunities available to biomedical scientists.

Panel sessions cover academic, government, industry and non-profit career paths. More than 80 speakers will provide insights into their careers: what their current job entails, its pluses and minuses and how they got there.

For more information and registration visit www.training.nih.gov.

Inaugural 'Women in Leadership Workshop' Convenes

BY KEISHA D. BERKLEY

Recently, 23 high-performing GS 13-SES (and equivalent) female leaders from 15 institutes and centers participated in a new workshop offered at the NIH Training Center, "Women in Leadership: Strategies for Success." The multi-day program addressed decisions and questions many women face as they negotiate the leadership ladder.

The first day involved exploring leadership styles, understanding how leaders behave during stressful situations and improving personal awareness and communication. A few weeks later, participants took part in a 90-minute webinar on "Effectively Branding and Leveraging Your LinkedIn Profile," in which they received a step-by-step tutorial on how to create/enhance their profiles. Given the sheer volume of LinkedIn users (approximately 400 million), displaying a strong, professional profile is becoming increasingly important for demonstrating experience and skills to establish credibility.

The second full-day session focused on giving and receiving feedback and an interactive exercise on presentation skills. This combination of self-awareness and skills development provided an abundance of tools that are immediately transferable to the workplace.

The program concluded with a special roundtable forum in which panelists and participants exchanged leadership stories and engaged in conversation about gender, mentoring, self-awareness, leadership presence and more. The panelists were Debra Chew, director, Office of Equity, Diversity and Inclusion; Dr. Maureen Gormley, chief operating officer, Clinical Center; Barbara McGarey, NIH deputy associate general counsel for public health, HHS Office of General Counsel; and Dr. Maryland Pao, NIMH clinical director and deputy scientific director.

Overwhelmingly, workshop participants valued their experience in the program and shared their insights about it.

"The panel discussion and the training




Women in Leadership panelists include (from l) Dr. Maryland Pao, Dr. Maureen Gormley, Debra Chew and Barbara McGarey.

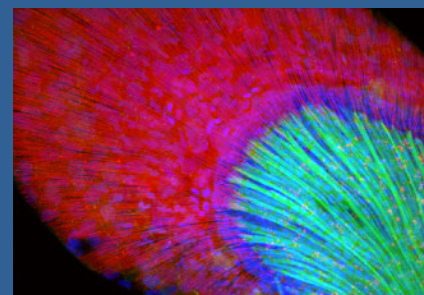
sessions were outstanding," noted Martha Randazzo, management analyst in the NIH Office of Strategic Planning & Management Operations. "I feel privileged to have participated in this insightful and valuable training opportunity."

Capt. Antoinette Jones, CC patient representative and panel moderator, said, "What emerged during this session exceeded my expectations. The panelists generously shared the interplay between leadership and gender and it fostered the free flow of tips, lessons, thought-provoking ideas and unique perspectives that remind me of the power of dialogue. I dare say each person—including the panelists—left with a greater sense of connectedness, understanding and hope about what is possible around their own leadership than when they arrived."

Another participant commented, "One of the best, if not the best, leadership courses I've taken at NIH/HHS or elsewhere! I think all women at NIH should be offered the opportunity to take this course."

The NIH Training Center offers this new workshop (NIHTC 4504) and encourages more women throughout NIH to experience the program.

If you are interested in participating, sessions are available this month and in June and August. Visit <https://trainingcenter.nih.gov/ShowDetails.aspx?cid=NIHTC4504> for details and to register. 



ON THE COVER: *Developing zebrafish fin*

IMAGE: JESSICA PLAVICKI, UNIVERSITY OF WISCONSIN

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NIH National Institutes of Health
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Alternative

CONTINUED FROM PAGE 1

medicine to massage and chiropractic care—were long considered quackery. But such treatments were helping a growing number of people, piquing the interest of some senators. To explore the potential of alternative medicine, congressional funding helped launch the Office of Alternative Medicine at NIH 25 years ago. Since then, great progress has been made in a relatively short time.

Recounting the history of alternative medicine at NIH, Eric Boyle, chief archivist at the National Museum of Health and Medicine, spoke at an NLM History of Medicine lecture titled “In the Belly of the Beast” recently in Lister Hill Auditorium.

“I’d come across a number of practitioners and advocates who had persistently warned there were certain dangers in alternative medicine being swallowed whole by the behemoth NIH,” said Boyle, who started his career as an intern in NLM’s History of Medicine manuscripts division. “And this idea wasn’t terribly surprising, given the fact that alternative medicine had been historically marginalized as unorthodox by many in the medical mainstream and given the fact that the NIH was one of



What’s in a name? Boyle tracked NCCIH’s current title from OSUMP, to OAM, to NCCAM. He’s chief archivist at the National Museum of Health and Medicine, which is located on the grounds of the Walter Reed annex in Silver Spring, Md.

PHOTOS: ERNIE BRANSON

projects were going unfunded at a time when research dollars were scant, said Boyle. They questioned whether these alternative therapies could be proven safe and effective. Meanwhile, advocates wanted these treatments to gain broader acceptance but

incarnation, complementary and integrative health.

Back in the early 1990s, a Harvard study revealed that one-third of U.S. adults used at least one alternative therapy. By 2002, 75 percent of American adults had tried some form of alternative medicine.

Attempting to explain the rising popularity of alternative medicine, a 1998 Stanford Center for Research in Disease and Prevention report found that some patients were dissatisfied with costly, ineffective conventional treatments, said Boyle. But mainly, the study suggested, patients found alternative therapies to be more aligned with their worldviews, values and philosophies toward health. Interestingly, the survey found a large percentage of patients satisfied with their conventional care and making use of alternative therapies to supplement their current care.

A 1997 survey abandoned the term unconventional for alternative. Said Boyle, “This change reflected a transformation in the acceptance of therapies previously given more dubious labels and indicated that, for the most part, the medical profession by this point in time no longer uniformly characterized these practices as deviant, marginal, fraudulent or of little consequence, as it had for much of the 20th century.”

★ ★ ★

“I’d come across a number of practitioners and advocates who had persistently warned there were certain dangers in alternative medicine being swallowed whole by the behemoth NIH.”

-ERIC BOYLE

★ ★ ★

the nation’s foremost biomedical research institutions and arguably the center of medical orthodoxy.”

In 1991, the Senate appropriations committee—noting that many routine medical procedures such as cancer radiation therapy started out as unconventional—granted NIH a \$2 million budget to create the Office of the Study of Unconventional Medical Practices (OSUMP), the first government-sponsored organization of its kind.

Almost immediately, skeptics worried that important conventional medicine

wondered how best to test alternative medical treatments in the scientific arena.

“At the same time, the very name of the new office reflected the lingering stigma associated with what the media most commonly referred to as alternative medicine,” said Boyle.

While a rose by any other name might still smell as sweet to advocates, perhaps calling it something other than unconventional would give the field more credibility and clarity. Over time, the name would evolve from unconventional to alternative to complementary and alternative (CAM) to its present

Discussions to abolish the term “unconventional” began back in 1992 at a meeting of HHS representatives, policy-makers, scientists, doctors and academics in Chantilly, Va. Participants also concluded that alternative medicine could indeed be measured by scientific methodology. That year, NIH’s OSUMP became OAM, the Office of Alternative Medicine.

In 1998, OAM would become NCCAM—the National Center for Complementary and Alternative Medicine—which, said Boyle, “arguably reflected a broader effort to diffuse the historically antagonistic relationship with mainstream medicine and the connotation of the term alternative medicine itself.” Using the term complementary also suggested these are not methods of last resort, but rather plausible treatments where others may have failed. Furthermore, alternative medicine was complementary, an extension of primary care, often used in conjunction with—not instead of—conventional methods.

A series of conferences and meetings throughout the 1990s helped refine the definition and place of alternative medicine at NIH. At one working group meeting in 1995, analytical procedures were established to evaluate therapeutic efficacy and conduct clinical research on alternative medicine. The panel said alternative methods must endure the same degree of scientific scrutiny as conventional therapies, noted Boyle.

That sentiment was echoed in a 1995 report published in the *International Journal of Technology Assessment in Health Care*, in which a panel of experts insisted randomized controlled research trials should underpin alternative medicine research.

In 2014, NCCAM changed its name once again, dropping “alternative”—to become the National Center for Complementary and Integrative Health—thus reflecting an evolving philosophy that allows patients to become more active participants in their own health and wellness, said Boyle.

“The history of alternative medicine and the current place of complementary and integrative health at NIH,” said Boyle, “each imparts a different vision of the work involved and its place in the fields of medical research and health care past, present and future.” **R**

MAY 5

Nolan To Deliver NINR Director’s Lecture



Dr. Marie Nolan will present the second of this year’s four NINR Director’s Lectures on Thursday, May 5 from 1 to 2 p.m. in Lipsett Amphitheater, Bldg. 10. In her talk, “Reframing Shared Decision-Making at the End of Life,” Nolan will describe her program of research on patient and family decision-making in the face of critical illness. Her end-of-life research has revealed that instead of the autonomous decision-making model prevalent in clinical practice and health care policy, most critically ill patients prefer shared decision-making with their family and physician. Moreover, these preferences remain stable over time, even as health declines significantly.

Nolan is professor and executive vice dean at Johns Hopkins School of Nursing. She also previously directed the Ph.D. program and is the Johns Hopkins director of the first nursing doctoral program in China, a collaboration between Peking Union Medical College and JHSON funded by the China Medical Board of New York. She is also past-president of the International Network for Doctoral Education in Nursing. Nolan holds a joint faculty appointment in the Johns Hopkins Berman Institute of Bioethics and has served on NIH advisory panels regarding end-of-life care research.

The NINR Director’s Lecture Series is designed to bring the nation’s top nurse scientists to NIH to share their work and interests with a trans-disciplinary audience. The event is free and open to the public. For more information and to register, visit www.ninr.nih.gov/directorslecture.

APR. 26

Bourne To Give Next ‘Mind the Gap’ Seminar



Dr. Philip Bourne, NIH associate director for data science and founding editor-in-chief of *PLOS Computational Biology*, will present on the topic “Big Data and the Promise and Pitfalls When Applied to Disease Prevention and Promoting Better Health” at the next Medicine: Mind the Gap seminar. The event is scheduled for Tuesday, Apr. 26 from 1 to 2 p.m. via NIH Videocast, <http://videocast.nih.gov/>.

“Big Data” is an overused term, but it does speak to a break from the past in the amount and complexity of data being gathered and analyzed, as well as in the methods applied to that data. How disruptive will Big Data be in the long run to biomedical

research and health care? Bourne will address this question in light of the Big Data to Knowledge (BD2K) initiative and other trans-NIH data science programs.

Bourne will accept questions before and during his presentation via email at prevention@mail.nih.gov and on Twitter with #NIHMTG.

Register for the event at <https://prevention.nih.gov/programs-events/medicine-mind-the-gap>.



LEFT: NIBIB's Dr. Henry Eden demonstrates how infrared imaging reveals thermal differences. He provides ice chips for the students to trace patterns on their forearms. The patterns are invisible to the naked eye, but visible in vibrant colors on a monitor connected via computer to an infrared camera. RIGHT: NINDS's Dr. Michelle Jones-London explains the contents of a kit for constructing an edible neuron, while NINDS neurosurgeon Dr. Edjah Nduom (r) prepares to describe brain surgery. PHOTOS: RAYMOND MACDOUGALL

STUDENTS, RESEARCHERS FACE-TO-FACE

NIH Scientists Spread Science Excitement During Lab Week

BY SHANNON E. GARNETT AND RAYMOND MACDOUGALL

Imagine spending the day hobnobbing with White House staff, astronauts, engineers and neuroscientists. Then imagine that they all gathered together with the sole purpose of getting you interested in and excited about science. If you can imagine that, then you know what it feels like to be one of the students who attended "White House Day at the Lab," the kickoff to National Week at the Labs.

Elementary and middle school children from Baltimore and Washington, D.C., assembled at the White House Feb. 29 for a science, technology, engineering and math (STEM) event coordinated by the My Brother's Keeper (MBK) task force and the White House Council on Women and Girls (CWG).

At the opening session, students listened to presentations by federal scientists, engineers and lab professionals from different STEM fields. Presenters shared not only their science but also their career journeys—explaining how they developed and explored their interest in science.

Students and scientists enjoyed informal chats during a lunch-time mentoring/networking session. "The student engagement was amazing," said Dr. Michelle Jones-London, director of diversity training and workforce development at NINDS. "We know how important role modeling is to encourage

student recruitment and sharing our own personal stories as scientists of color is always a powerful image for students to see early and view viable paths for their own journeys."

After lunch, the students engaged in demonstrations and hands-on experiments at various science stations. Jones-London and NINDS neurosurgeon Dr. Edjah Nduom helped the students create edible neurons, view an actual brain surgery and learn how the brain sends signals to groups of muscles using electricity by measuring the activity with electromyograms.

"The edible neuron was a big hit with a lot of the kids," said Nduom. "However, my favorite part was seeing the reactions of the kids to the brain tumor resection video. The reactions varied—some turned away (but peeked through their partially covered eyes), others just stood there with their mouths open, and yet others asked question after question about what was going on and the condition and well-being of the patient."

Smiles flashed across the faces of elementary and middle school students as other-worldly colors reflected their appearance on a computer monitor connected to an infrared camera. The youngsters could readily appreciate from the demonstration that different degrees of warmth emanated from their skin and translated to different colors on the monitor.

Dr. Alexander Gorbach, chief of the infrared imaging and thermometry unit at the National Institute of Biomedical Imaging and

Bioengineering, operated the infrared camera and Dr. Henry Eden, NIBIB deputy scientific director, explained some of the principles of heat radiation, absorption and conduction.

Students drew invisible patterns on their forearms with ice cubes that the infrared camera revealed in bold colors. The camera outlined heat emanating from the students' hands, even from inside an opaque plastic bag. Their warm breath resembled fiery swirls of dragon's breath on the monitor. The demonstration gave the students an up-close and intriguing encounter with science.

"We've shared this demo for several years at the NIH Take Your Child to Work Day, and it has been fun for all," Eden said. "We were pleased to be able to present it for children attending this event in its first year at the White House."

Nationwide, 50-plus labs across nearly 20 states participated in National Week at the Labs, encouraging students to experience science and to pursue the possibilities of science and research careers.

On Mar. 4, NIH held its own Week at the Labs/STEM experience at the Porter Neuroscience Research Center. Girl Scouts from area troops participated in the half-day program, which was organized by Dr. Rita Devine, NINDS assistant director for science administration, in coordination with MBK and CWG.

Scouts arrived clad in badge-loaded uniforms and were greeted by both NIH extramural and intramural staff, including Dr. Roland Owens, associate director of NIH's Office of Intramural Research, and Nduom.

Nduom, who recently joined NINDS as a staff clinician in the Surgical Neurology Branch, was instrumental in getting NIH to participate in Week at the Labs at both sites. He first experienced NIH during his residency, when he completed a clinical and research fellowship with the Surgical Neurology Branch, 2007-2012.

"The collaborative environment and unsurpassed resources made a real impression on me," said Nduom. "I want to do everything I can to make sure that children and



LEFT: A special highlight of the tour was a surprise visit from NINDS director Dr. Walter Koroshetz (l), who stopped by to greet the students and emphasize the excitement of neuroscience. PHOTO: SHANNON GARNETT

RIGHT: At the White House, Nduom uses electromyograms to teach students how the brain sends signals to groups of muscles using electricity. PHOTO: CENTER FOR THE ADVANCEMENT OF SCIENCE IN SPACE



Students react as an infrared camera reveals heat radiating from their skin, also shown on the laptop monitor (foreground). Eden (r) is pleased with students' response.

PHOTO: RAYMOND MACDOUGALL

the general public know what a fantastic resource they have at NIH. Our mission of enhancing health for all people is a vital one, and it is always great to show people the amazing things that we get to do here."

After donning lab coats, the Girl Scouts were ready to explore the labs. Devine led the scouts on a tour to meet three diverse scientists: Dr. Zayd Khaliq, principal investigator in NINDS's cellular neurophysiology unit; Dr. LaTesa Hughes, clinical veterinarian in the NINDS animal care and health section; and Dr. Mario Penzo, principal investigator in the neurobiology of affective memory unit, National Institute of Mental Health.

Khaliq's presentation, "Feed Me Sugar," focused on the part of the brain that gets activated when you see or eat cake. He discussed how electrophysiology techniques are used to answer his research questions and taught the scouts how to create brain slices, prepare slides and view them under a microscope.

Hughes spoke about how lab animals are cared for at NIH and helped the students identify different animals and determine why they may be necessary for research.

In Penzo's lab, the girls learned how neurons interact with each other to form memories and viewed mouse optogenetics videos.

"Events like this are important and necessary for students to see the opportunities within STEM and for our specific interests in neuroscience," said Jones-London. "To make progress in curing neurological disease and disorders, we need the brightest minds and creative hands from all groups—that means you must plant the seeds of possibility now so that this next generation of talent can see itself in this biomedical enterprise and know that there are opportunities available."

National Week at the Labs coincided with the culmination of Black History Month and the start of Women's History Month. The NIH demonstrations presented at the White House will again be offered when NIBIB and NINDS participate in NIH Take Your Child to Work Day on Apr. 28. **R**

Mindfulness Meditation Offers Relief for Low-Back Pain

Mindfulness based stress reduction (MBSR) and cognitive-behavioral therapy (CBT) may prove more effective than usual treatment in alleviating chronic low-back pain, according to a new study funded by NCCIH.

Researchers from the Group Health Cooperative, Seattle, and the University of Washington conducted a study, published in the *Journal of the American Medical Association*, in which 342 participants ages 20 to 70 used one of the two mind and body approaches or sought usual care for 1 year. At 26 and 52 weeks, participants using MBSR and CBT had greater improvement in function and back pain compared to the group that remained in standard care. Though pain intensity and some mental health measures improved in both groups, those using CBT did not see improvement beyond 26 weeks. Those using MBSR, however, continued to see improvement at 52 weeks, leading researchers to conclude MBSR may be an effective treatment for chronic low-back pain.

MBSR brings together elements of mindfulness meditation and yoga, whereas CBT is a form of psychotherapy that trains individuals to modify specific thoughts and behaviors. For the study, participants in the group using MBSR and the group using CBT attended a 2-hour group session on their respective approach each week for 8 weeks and supplemented their treatment with workbooks and CDs for practice at home. The study was led by Dr. Daniel Cherkin at the Group Health Research Institute, Seattle.

"It is vital that we identify effective non-pharmacological treatment options for 25 million people who suffer from daily pain in the United States," said NCCIH director Dr. Josephine Briggs. "The results from this research affirm that non-drug/non-opioid therapies, such as meditation, can help manage chronic low-back pain. Physicians and their patients can use this information to inform treatment decisions."

Experimental Dengue Vaccine Protects All Recipients in Virus Challenge Study

A clinical trial in which volunteers were infected with dengue virus 6 months after receiving either an experimental dengue vaccine developed by NIH scientists or a placebo injection yielded starkly contrasting results. All 21 volunteers who received the vaccine, TV003, were protected from infection, while all 20 placebo recipients developed infection. The study, published in *Science Translational Medicine*, underscores the importance of human challenge studies, in which volunteers are exposed to disease-causing pathogens under carefully controlled conditions.

"The findings from this trial are very encouraging to those of us who have spent many years working on vaccine candidates to protect against dengue, a disease that is a significant burden in much of the world and is now endemic in Puerto Rico," said Dr. Stephen Whitehead of NIAID. "In fact, these results informed the recent decision by officials at Brazil's Butantan Institute to advance the TV003 vaccine into a large phase 3 efficacy trial."

Dengue fever, prevalent throughout the tropics and subtropics, is caused by any of four related dengue viruses—called serotypes—that are spread by *Aedes* mosquitoes, the same mosquitoes that spread Zika virus. Most of the estimated 390 million people who are infected with dengue virus each year develop either no symptoms or a mild illness. However, some people develop serious or life-threatening illness and large outbreaks lead millions to seek care, severely straining health care infrastructure in endemic countries.



NCCIH-funded researchers recently found that mindfulness meditation may be an effective treatment for chronic low-back pain.



A female *Aedes* mosquito, which spreads dengue virus

IMAGE: NIAID

Zika

CONTINUED FROM PAGE 1

South America, Central America and the Caribbean, bringing with it a still-unproven but almost-certain newly identified risk to pregnant women and their fetuses.

“This is a perpetual challenge of emerging and re-emerging diseases,” Fauci pointed out. “Every day, every week and every month we learn more and more about how this most unusual situation is evolving.”

Familiar Territory for Scientists

Unlike the situation more than 30 years ago, when we knew almost nothing about another quickly developing pandemic—HIV/AIDS (and have yet to develop a vaccine against, Fauci noted), scientists have a head start on combatting Zika.

A single-stranded, enveloped RNA virus, Zika belongs to the *Flaviviridae* family and flavivirus genus. Related diseases include dengue fever, yellow fever and West Nile virus.

Zika is transmitted to humans primarily by two varieties of *Aedes* mosquitoes: *africanus*, which spread the virus in jungle regions, and *aegypti*, which are the most likely culprit in the epidemic’s urban environments.

The first Zika outbreak, in 2007 on the island of Yap in Micronesia, affected more than 70 percent of the people. Zika traveled then to French Polynesia in 2013, and moved steadily east along the southern hemisphere, mainly in hot, humid regions where mosquito populations thrive.

In 2015, Zika showed up in Brazil in a major way. As of mid-March 2016, there were 37 countries/territories with active Zika virus transmission.

Different from Ebola, a Zika diagnosis is not considered life-threatening, Fauci said.

In fact, “symptomatically, it is not a big problem,” he said. “Four of 5 people infected do not have symptoms [fever, rash, myalgia, arthralgia, conjunctivitis]...It is a disease that comes and goes. People get better. There is almost no mortality.”

There is no Zika-specific therapy. Instead doctors prescribe supportive treatment—fluids, rest, acetaminophen. One complication in treatment is that current tests do not distinguish between Zika and the other flaviviruses. Fauci said that’s important because taking NSAIDs or aspirin increases



Familiar sight. Fauci briefs a capacity venue on the topic of Zika infection, as he did for Ebola and HIV.

PHOTOS: BILL BRANSON

the risk of bleeding in patients with dengue. Zika generally runs its course in about a week.

“This would have been nobody’s real problem,” Fauci explained, “because generally it is a disease that is not as serious as dengue. Dengue can make you really sick and can kill you under certain circumstances. Zika almost never kills anybody the way we thought of it in general.”

Uncharted Ground

But in this latest outbreak, Zika began distinguishing itself from previous go-rounds.

“[In Brazil in 2015] we started to notice something very unusual—an uptick that was really more than an uptick—an explosion of microcephaly cases in pregnant women’s fetuses who are infected during pregnancy,” Fauci explained. Microcephaly is a congenital condition in which an individual’s head is unusually small due to abnormal development of the brain.

In the 5 years before 2015, Brazil saw no more than 175 cases of microcephaly per year; in 2015, the country reported more than 5,100 confirmed or suspected microcephaly diagnoses.

In addition, Fauci said, doctors reported “serious ocular involvement of Zika virus congenital infection.” Then scientists documented arthrogryposis—a distinctive, abnormal curling in the legs and arms—in children born to Zika-infected mothers.

Fauci stressed that investigators want more evidence to determine cause and effect conclusively, but most scientists already are convinced.

“Cohort studies and case control studies will be the way to definitively show that Zika virus is causing the microcephaly and

other fetal abnormalities being reported,”

Fauci noted, citing a *New England Journal of Medicine* cohort study of 88 pregnant women in Rio de Janeiro. Of those 88, 72 tested positive for ZIKV in blood, urine or both. Fetal abnormalities by ultrasound were seen in 29 percent of Zika-infected women and in none of the 16 pregnant women not infected with Zika virus.

Although not a large group study, “this is starting to be compelling evidence,” Fauci pointed out. “CDC is doing a case control study. We [NIAID and NICHD] are doing multiple cohort and case control studies. We are going to get the definitive answer and I think we all know what the definitive answer is going to be, but we want to prove it scientifically.”

Other unexplained situations have cropped up in this pandemic: 42 patients in French Polynesia were diagnosed with Guillain-Barré syndrome associated with Zika virus infection; a 15-year-old girl in Guadeloupe, French West Indies, was reported to have Zika-associated acute myelitis; an 81-year-old man in France who had been on a cruise in the Pacific tested positive for Zika and later died of meningoencephalitis.

Here, Now and in the Future

Moving closer to home, Fauci addressed Zika in the U.S., noting that health officials in this country are particularly “attentive and there is some concern that we are prepared for things that have happened in the past that are an indication of what may happen in the future.”

Two types of cases might occur here:
■ imported cases (About 40 million

people a year travel to and from the U.S. and infected outbreak regions)

■ local spread (*Aedes aegypti* mosquitoes, which do exist in the U.S., especially in the southeastern part of the nation, bite recent travelers and then bite people who never left the U.S.)

“The critical issue is, what is the sustainability of that local spread,” said Fauci, describing *aegypti* as “a bad news mosquito” that CDC director Dr. Tom Frieden calls “the cockroach of mosquitoes, because...indoor, outdoor, they bite during the day. They bite during the night. It can breed in a cupful of water.”

Aedes albopictus mosquitoes, which are far more prevalent in the U.S., are also a possibility for spreading Zika. “Certainly *aegypti* are not the only mosquitoes that can transmit this. We know about the *africanus* in Africa, but we don’t know the efficiency of the *albopictus*. We hope Zika does not adapt itself well to *albopictus*.”

Yet another unknown Zika variable worries health officials.

“Here is something that has really compounded the difficulty we are facing,” Fauci said. “Not only is this the first infection—to our knowledge—that is mosquito-borne that can cause a congenital abnormality, but sexual transmission is also an unusual situation.”

Although first reported in 2008, demonstration of Zika in semen was confirmed a month ago in Dallas. Six cases of sexual transmission of Zika virus have been documented in the U.S. as of mid-March. Investigators do not know how long the virus survives in semen and can be transmitted after an individual recovers from an acute infection. So far, scientists have documented as long as 62 days, but investigators do not have enough experience with Zika to know for certain.

In addition to mosquito bites and sexual contact with men (So far, “there is no evidence that Zika is sequestered in the genital area” of women, Fauci noted in response to a question), blood transfusions also can transmit the virus.

In terms of research under way, Fauci said investigators are close to developing improved diagnostics for Zika, using the framework already developed for other flaviviruses.

In addition, by employing a platform previously designed for West Nile virus,

scientists have several concepts for a Zika vaccine, including one that is “shovel-ready.” NIAID is likely to start a phase I clinical trial with one candidate vaccine by September 2016, and to advance to a larger efficacy trial potentially by early 2017.

In the meantime, Fauci said, mosquito avoidance is essential, with biomedical research also actively investigating several novel ways of vector control. In addition, both the CDC and FDA have issued guidelines for travelers, particularly pregnant women and their partners, guidelines for avoidance of sexual transmission and

recommendations for blood donation/storage organizations.

Concluding the lecture, Fauci said, “I want to emphasize something that’s very challenging but also very exciting with infectious diseases: When I ended the talk on Ebola in this auditorium at this podium a year or so ago, I said, ‘We still have this challenge of Ebola, but this is not the end. There always will be another challenge.’ This proves that [statement] is true.”

View the entire presentation, including Q&As, online at <https://videocast.nih.gov/summary.asp?Live=18734&bhcp=1>. **R**



At the lecture are APAAO officers and members (from l) Bethanie Wang, Grace Ji, Phuong-Tu Le, Dr. Rina Das, guest speaker Dr. Grace Ma, APAAO president Dr. Francisco Sy, Laura Wong and Jimmy Do.

Temple’s Ma Addresses Health Disparities

Dr. Grace X. Ma spoke on “Health Disparity Research in Diverse Asian American Populations: Present and Future” at an NIH seminar recently co-sponsored by the NIH Asian and Pacific Islander American Organization (APAAO) and the National Institute on Minority Health and Health Disparities. Ma is associate dean for health disparities, founding director of the Center for Asian Health, Laura H. Carnell professor of public health and professor in clinical sciences at Lewis Katz School of Medicine, Temple University.

She discussed the driving force for Asian health disparity research, health disparities confronting Asian Americans, highlights from disparity research at the Temple Center for Asian Health and research opportunities for reducing health disparities among Asian Americans and other underrepresented populations.

Ma talked about the high rates of stomach, liver and cervical cancer among Asian Americans. She noted that more than half of Asian Americans diagnosed with diabetes did not know they had the disease and that they are more likely to develop type-2 diabetes despite having lower body weight (BMI).

Asian Americans ages 20-24 had the highest suicide rate. Ma emphasized the importance of

culturally tailored interventions in areas such as mental health and minority health research. Her research projects were supported by NIMHD and NCI.

Ma described some of the projects at Temple. About a hundred attendees learned about community-based participatory research principles and how such a model has been effective in community and clinical settings.

One interesting example is the Philadelphia Healthy Chinese Take-Out Initiative, in which the center collaborated with several groups. The project’s goal was to reduce sodium at the area’s more than 300 Chinese take-out restaurants and improve the health of customers, who are predominantly from African-American and Latino-American communities in which hypertension is especially widespread.

Ma described how a New York professional chef taught the restaurant chefs healthy ingredient alternatives in free classes. These restaurants received certificates of participation and marketing materials. In blind taste-test sessions, people not only liked the dishes but many did not notice the reduced salt. Key to the program’s success, Ma emphasized, was community engagement and especially work with African-American pastors, who took an active part in health education with their congregations.

Edwards

CONTINUED FROM PAGE 1

and social justice and voting rights, but I'm of an age where I can remember. I have vivid recollections of listening to Dr. Martin Luther King."

In an MLK Day salute sponsored by NIH's chapter of Blacks in Government and postponed from January due to snow, Edwards shared her thoughts on the civil rights leader, his legacy and the responsibilities of the world's current citizens.

"If Dr. King were fast-forwarded, I think he would be asking our generation what our call to action is," Edwards said. "We have the benefit of standing on very solid shoulders—some of those shoulders unnamed and unmentioned...What I want to know is, who gets to stand on our shoulders? Will our shoulders be broad enough and sturdy enough?"

Edwards talked about Mary Jenny Phillips, whose name probably isn't in any history textbook. She's one of the thousands of "unmentioned" ancestors who lent her shoulders and hard work to the effort.



"I've never really viewed civil rights as a moment in time. The fight for civil rights and social justice is an ongoing fight."

-CONGRESSWOMAN DONNA EDWARDS



Born in 1900 on a farm in Yanceyville, N.C., Phillips—African-American and female—didn't get to cast a ballot freely until she was well past 60 years old, when the Voting Rights Act of 1965 was signed into law.

"Here in 2016, her granddaughter is the first black woman to be elected to the U.S. House of Representatives from the state of Maryland," said Edwards, noting that her rescheduled remarks actually include a whole quarter-year's worth of recognition—King Day in January, Black History Month in February and Women's History Month in March. "I think about my grandmother's lifetime and we *have* come a long way. Do we have a lot of work to do? We absolutely do—in every single venue, in every single space. But my grandmother's life tells me it's not impossible work."

Edwards pointed out the unique contributions NIH makes to the nation and the world.

"Thanks so much for all of the work that you do here at the NIH," she said. "Thank you for your service. We here in Maryland have a large percentage of residents who are [active duty and retired] military, but

what often goes untold is what's done in our civilian services in the various agencies.

"But for the important research that goes on here at NIH," she continued, "we would not be nearly where we are in terms of preventing disease, curing illness and treating patients. So, I really do value the work you do. We know it's not easy to be in government service these days. We have a long recent history—30 years or so—of slashing and burning government work. You here at NIH know closer than anyone that the work you're doing is important in people's lives."

Applauding the broad reach of the Civil Rights Movement in the nation in general and at individual U.S. institutions, Edwards identified the reason for the country's momentous gains.

"We began to value diversity," she said.

"Not just because we wanted a whole bunch of different people around, but because we know that when we have diverse workplaces, when we have diverse government, when we have diverse corporations, [then] that contributes to better decision-making. Because you've got different ideas around the table. We know that has been true here at NIH."

She reflected on how establishing NIH components to address minority health, health disparities and women's health "changed the thinking about the way we need to look at scientific, medical research and whose voices need to be included at the table, whose presence needed to be in treatment protocols and how we needed to engage in different treatment protocols based on issues of race, ethnicity and class. These were new ideas that came to NIH because we




Greeting the congresswoman (c) are Darlene Young (l), national president of Blacks in Government, and NHGRI's Gayle Gwyn, president, NIH chapter, BIG, which hosted the MLK program.

PHOTOS: ERNIE BRANSON

started to identify diversity as a value."

Edwards concluded by issuing a challenge. "We have a special responsibility for this upcoming generation," she said. "We have an obligation to our children to do right by them."

If King were still alive, she continued, "he might remind us not to be so scornful and disparaging of young people. Because in every generation when there's been a great movement in this country, it's always been led by young people. Young people have always shown us the way. [At the age he was while leading the protests] Dr. King could be my child...He was a young man."

Calling herself a "country girl at heart" as the third generation in her family to grow up in rural North Carolina, Edwards said, "One of the things I learned was that in a lot of ways we're not all that different. We share the same concerns and values—making sure that our children have a good education and that they do better than we did. Building on the modern Civil Rights Movement, we've had an opportunity to realize those dreams for ourselves and our children. Are we where we need to be? Absolutely not. But I've never really viewed civil rights as a moment in time. The fight for civil rights and social justice is an ongoing fight. It's not something that has a beginning and an end. It's a continuation. Every single year of our history—all 240 years of our nation's history—we've gotten better at identifying the gaps in our response to people who are different than us. Sometimes those gaps were about understanding people differently because of their religion. Sometimes it's ethnicity. Sometimes it's race. And sometimes it's just differences in points of view. All of those are ways we've built on the great modern struggle for civil rights that's been so exemplified in Dr. King and in his legacy." 

Champoux Heads New CSR Review Group

Dr. Maribeth Champoux has been named new chief of the biobehavioral and behavioral processes integrated review group at the Center for Scientific Review.

“Dr. Champoux’s dynamic combination of biobehavioral expertise and interpersonal skills make her a wonderful fit for this important position,” said CSR director Dr. Richard Nakamura. He noted that she “excelled as the scientific review officer for the CSR biobehavioral mechanisms of emotion, stress and health study section and in her many contributions to CSR and NIH.”

Champoux will oversee seven standing study sections and numerous special emphasis panels that review a broad range of NIH grant applications to fund research on biobehavioral and behavioral processes across the lifespan. While BBBP is focused on behavior, it also covers related central, autonomic, neuroendocrine, immune, neural, hormonal, motor and genetic issues.

Champoux earned her Ph.D. in psychology from the University of Wisconsin and did postdoctoral training in the department of psychiatry and behavioral sciences, Stanford University School of Medicine. She then joined the Laboratory of Comparative Ethology at the National Institute of Child Health and Human Development. Champoux still maintains a research affiliation there. Her research focuses on the effects of genes and environment on temperament, behavioral development, endocrine, immune and neurotransmitter outcomes and parenting in squirrel monkeys and rhesus monkeys.



Dr. Maribeth Champoux

Birkle-Dreer, Chief of NCCIH Scientific Review, Mourned

BY ANITA MCRAE-WILLIAMS

Dr. Dale Birkle-Dreer, chief of the Office of Scientific Review at the National Center for Complementary and Integrative Health, passed away at home on Mar. 12 after a brief illness.

Described by colleagues at NCCIH as a kind, compassionate, resourceful, supportive manager, Birkle-Dreer loved NIH; her passion for doing outstanding work was well known throughout NIH. She treated everyone with respect and was humble about her own accomplishments, said a



Dr. Dale Birkle-Dreer

colleague, adding, “Her scientific knowledge extended beyond her fields of pharmacology and neuroscience. She was able to contribute intellectually to most any area of science. Wisdom was another of her attributes. Staff would often seek her advice on scientific, administrative and other matters.”

“Dale brought an incredible wealth of knowledge and expertise to the scientific review office,” said Dr. Marty Goldrosen, director of NCCIH’s Division of Extramural Activities and Birkle-Dreer’s supervisor. “She made an imprint on nearly every major program and policy at the center, and her impact on peer review went beyond her immediate office—having served as cochair of the review policy committee for the last year and a half.”

Birkle-Dreer’s NIH career spanned 15 years. She began as a scientific review officer in 2001 at NCCIH (then NCCAM) in the Office of Scientific Review. In 2009, she was appointed OSR chief, responsible for peer review of all grant applications assigned to NCCIH and overseeing the activities of scientists and technical support personnel within OSR.

Prior to joining NIH, Birkle-Dreer was a professor in the department of pharmacology and toxicology at West Virginia University. She spent 6 years in New Orleans in a postdoctoral position at Louisiana State University before accepting the position in 1988 at WVU, where she achieved full professor status.

Birkle-Dreer had a unique ability to train individuals as bench scientists as well as science administrators. At WVU, she was a mentor to two postdoctoral fellows, four Ph.D. candidates and a master’s student. At NIH, she formally mentored several scientific review officers who worked in OSR and informally mentored all staff who were new to science administration.

Birkle-Dreer received her bachelor’s degree in general sciences from Bridgewater College in Bridgewater, Va., and earned her doctorate in pharmacology from the Medical College of Virginia-Virginia Commonwealth University.

Her scientific expertise focused on the impact of the physical and psychological environment on brain structure and function, the

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“Dale...made an imprint on nearly every major program and policy at the center, and her impact on peer review went beyond her immediate office.”

—DR. MARTY GOLDROSEN

• • •

effects of drugs on the brain and cardiovascular system, biochemical responses to environmental insults and mechanisms for adaptation. She authored more than 40 research papers and 8 book chapters and scientific reviews.

She is survived by husband Duane Dreer, stepson Jacob Dreer, sister Karen Barnhart of Wheeling, W.Va., brother Kent Birkle and his wife Rene of Covington, La., a niece and nephew and many friends. [R](#)

'TACO' TARGETS AMD

Clegg Discusses Stem Cell Therapies for Eye Disease

BY DUSTIN HAYS

Dr. Dennis Clegg recently visited NIH and gave a summary of his efforts with the California Project to Cure Blindness to develop a stem cell-based therapy for age-related macular degeneration (AMD), a major cause of blindness in the U.S. His talk was the second installment in the National Eye Institute Audacious Goals Initiative Seminar Series in Neuroregeneration.

“We hope this will be the next pillar of medicine—using cells to treat disease,” said Clegg, a professor at the University of California, Santa Barbara, department of molecular, cellular and developmental biology.

The eye is the ideal organ for pursuing stem cell therapies, said Clegg. Existing imaging and surgical techniques make the eye more accessible than other organs. Measuring the eye’s function is straightforward. And a relatively small number of cells are needed to treat eye disorders.



“We hope this will be the next pillar of medicine—using cells to treat disease.”

—DR. DENNIS CLEGG



The project is using stem cells to make replacement retinal pigment epithelium (RPE), the layer of tissue in the back of the eye that supports the function of rod and cone photoreceptors. The photoreceptors react to light, launching nerve signals that cascade through the retina before converging at the optic nerve and dispersing throughout the brain.

AMD attacks the RPE, causing dysfunction of the photoreceptors. Without a healthy RPE, the photoreceptors eventually die, resulting in vision loss. The project recently gained FDA approval to begin implanting tiny sheets of stem cell-derived RPE into AMD patients’ retinas. The hope is that the healthy RPE implant will rescue surviving photoreceptors, thus preserving vision.

Clegg addressed challenges in launching

the clinical trial.

First was selecting the best approach to making RPE cells. Clegg’s group chose to start with human embryonic stem cell lines and then learned how to efficiently convert them into highly pure, authentic RPE cells. Their process—from stem cells to mature RPE cells—takes about 6 months. The cells are then frozen until needed.

The second challenge was devising a method to deliver the cells to the appropriate place in the retina. The RPE cells are seeded onto biostable scaffolds, encouraging correct orientation of the cells (RPE cells have a top and a bottom). The team designed retractable forceps that roll the implant—about the size of the Lincoln Memorial on the back of a penny—into a taco shape and pulls it into a hollow needle.

The surgeon then temporarily detaches the retina and injects the RPE “taco” into the appropriate spot where it unfurls, flattening out as the retina re-attaches.

Design of the scaffold also addressed the third major challenge: keeping the cells alive. “Putting healthy cells on a diseased retina may be like putting cells on Mars,” said Clegg. So the scientists built the scaffold to mimic Bruch’s membrane, the tissue next to the RPE, using an ultrathin polymer called parylene coated with the protein vitronectin. According to Clegg, the design enhances the diffusion of nutrients across the RPE.

When it comes time to treat patients, frozen RPE cells will be thawed, cultured on the scaffold and shipped to the point of care—a process that takes 30 days.

With major funding from the California



Dr. Dennis Clegg (l) was welcomed by NEI director Dr. Paul Sieving.

Institute for Regenerative Medicine, the project includes collaborators from UCSB, University of Southern California, University College London, Caltech and the City of Hope. Clegg’s startup company, Regenerative Patch Technologies, is sponsoring the clinical trial.

Clegg’s project is just one in a competitive field of about 10 research groups attempting to regenerate RPE, starting from a variety of cell sources.

In 2011, researchers led by Robert Lanza became the first to inject stem cell-derived RPE cells into an AMD patient. More recently, the London Project to Cure Blindness has implanted two patients with RPE derived from embryonic stem cells on a polyester scaffold to treat the wet form of AMD.

In 2014, Japanese researchers led by Masayo Takahashi became the first to treat the wet form of AMD—a severe type of AMD that afflicts retinal blood vessels—by implanting scaffold-less sheets of RPE derived from induced pluripotent stem (iPS) cells. Such cells are made by reprogramming adult cells to a naive state. Stadtman Investigator Kapil Bharti and colleagues in the NEI intramural research program are using iPS cell-derived RPE cells seeded onto scaffolds. Other groups are starting with umbilical cord stem cells or adult stem cells.

“The field reminds me of the current presidential campaign,” said Clegg. “There are a lot of different approaches. We don’t know which one will succeed eventually, but it’s worth it to go out and try.” 