

NIH-Lasker Scholars

Exploring Inflammation

BY LAURA STEPHENSON CARTER

NEHAL MEHTA AND JESSICA GILL recently joined NIH as the first two NIH-Lasker Clinical Research Scholars, a joint initiative of NIH and the Albert and Mary Lasker Foundation that will nurture the next generation of clinician-scientists.

Mehta, who has the distinction of being the inaugural Lasker scholar, came from the University of Pennsylvania (Philadelphia) and now heads NHLBI's new Inflammation and Cardiometabolic Diseases laboratory. He aims to better understand how inflammation influences insulin resistance, atherosclerosis, and heart disease.

Gill, a Lasker Scholar in NINR, is also studying inflammation, but her focus is on how it affects posttraumatic stress disorder and traumatic brain injury and how the crosstalk between the immune system and the brain can compromise health. She trained at NINR and was most recently at George Mason University (Fairfax, Va.).

The Lasker program selects talented early-stage researchers to do independent clinical and translational research for five to seven years at NIH's Bethesda campus. After completing their initial tenure, they will have the opportunity to remain at NIH as tenured investigators or join the faculty of an extramural research institution where they can receive up to five more years of NIH financial support (up to \$500,000 a year).

The following is a lightly-edited version of interviews with Mehta and Gill.

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The Stadtman Legacy

Trans-NIH Recruiting Effort Brings in Nine Investigators

BY MONIKA DESHPANDE, NCI

NIH WELCOMES THE 2010-2011 class of Earl Stadtman Investigators, named for the legendary biochemist who worked at NIH for 50 years. Stadtman mentored and inspired countless researchers including two who went on to become Nobel laureates—Michael Brown and Stanley Prusiner—and others who were later elected to the National Academy of Sciences. The Stadtman program, launched in 2009, a year after his death, aims to attract outstanding scientists whose research areas are not restricted to the interests of particular institutes but span the biomedical fields.

Ordinarily, searches for intramural scientists are conducted by individual institutes and centers (ICs).

The Stadtman program, however, is a combined recruiting effort whereby the ICs share the cost as well as provide review committee members. The recruits' proposed projects must be innovative, represent a broad range of scientific expertise, and have the potential to yield high-impact results. The Stadtman investigators are offered competitive salaries, research space, resources, supported positions, an operating budget, and access to cutting-edge technologies.

In 2009, more than 800 people applied and eight were hired (see March-April 2011 *NIH Catalyst* at http://www.nih.gov/catalyst/2011/11.04.01/catalyst_v19i2.pdf). In 2010-2011,

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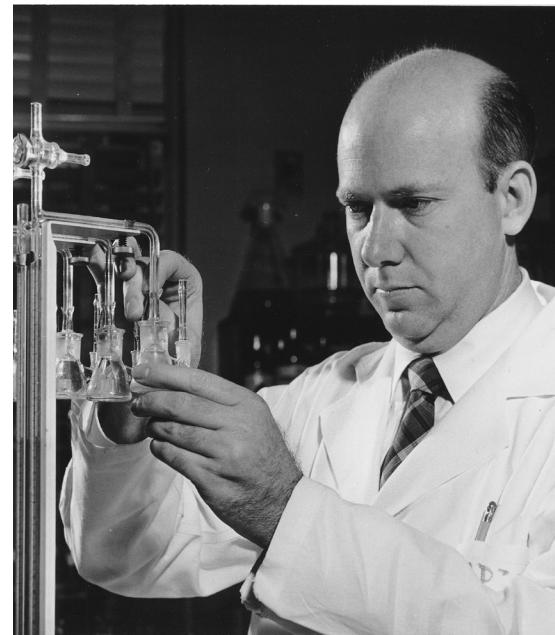
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OFFICE OF NIH HISTORY

The NIH-wide recruiting program for intramural scientists was named for legendary NIH investigator Earl Stadtman (shown above in 1952) who died in 2008.



Stadtman: A Rose by Any Other Name

BY MICHAEL GOTTESMAN, DDIR

EARL STADTMAN, RENOWNED NIH BIO-chemist and mentor to two Nobel laureates and many elected members of the National Academy of Sciences, loved to cultivate his gardens. He was a serious horticulturist who had an azalea named after him—the yellow Stadtman azalea (*Rhododendron 'Stadtman'*). He also mulched, pruned, watered, and fertilized the intellects of two generations of students and fellows who remember with gratitude “the Stadtman way” of doing rigorous, creative research.

So who better to become the namesake of our trans-NIH program to recruit some of the best, brightest, and most diverse early-career scientists as tenure-track investigators? Elsewhere in this issue of the *Catalyst* (page 1) there is an article describing the program, which started in 2009, and introduces the second year’s outstanding recruits, known as Stadtman investigators. I thought I would provide the backstory to this successful program.

Since I became DDIR in 1993, it has been my dream to do trans-NIH searches for tenure-track investigators, in contrast to the individual programmatic searches that occur in the institutes and centers. It would be a great way to cast a wider net for the next generation of scientific leadership at NIH. But the idea didn’t attract any champions.

Four years ago, at a retreat of the NIH scientific directors (SDs), NHLBI SD Bob Balaban ran a session on recruitment and made a compelling case for trans-NIH undifferentiated searches to increase the talent pool. He had been doing such undifferentiated searches in NHLBI for a

few years and noticed a big increase in the number and diversity of applicants. Bob and NHLBI Deputy SD Michelle Bennett became the needed champions for the Stadtman program and volunteered their time and experience to get it off the ground.

Subsequently, several deputy SDs—Juan Rivera (NIAMS), Kathy Carbone (NIDCR), Karyl Barron (NIAID), and Michael Krause (NIDDK), recently promoted to SD—have done an incredible job of organizing this search process; Paul Liu, NHGRI deputy SD, is our leader-in-waiting.

From my office, Roland Owens has been manning the rudder and providing fuel for this mission. I must also mention the dedicated work of our search committees (20 at last count) that evaluate the candidates and make recommendations to the SDs. Our scientific faculty has embraced this process with enthusiasm; it is, after all, an opportunity to recruit prized colleagues into fields that might not be at the top of the list of programmatic requirements.

In addition to engaging our entire research faculty in these searches, the Stadtman program is an excellent way to broaden the talent pool applying for NIH jobs. When we are not looking for specialists, the number of applicants increases dramatically (averaging over 600 per year), and so does the diversity of the applicant pool. If we bring in enough candidates to interview (80 per year plus other highly qualified candidates whom interested SDs might want to interview), we find that some nontraditional choices (those without publications in single-name journals) turn out to be spectacular scientists.

Each year the NIH Deputy Director, Larry Tabak, and I remind search committees to explore all avenues in looking for talent. The result has been recruitment of a more diverse group of scientists.

Finally, the Stadtman searches save money on ads and allow efficiencies that result from recruiting 10 people at once rather than one at a time during the year.

Should we insist that all tenure-track searches be part of the broader, trans-NIH Stadtman search process? There are some downsides to this approach including the problem of finding individuals with specific skills who might not apply to a general search and the difficulty of recruiting people when they do not know whether a job is available or in what institute they are likely to be working. One solution will be initiated in the coming year: We will include many of our programmatic searches in the listings when the Stadtman search is announced. Thus, we will attract not only undifferentiated scientists but also those with specific research interests for whom there is a good match.

One disappointment has been the failure to recruit M.D., D.M.D., nurse-Ph.D., and D.V.M. scientists through the Stadtman process. The NIH-Lasker Clinical Research Scholars Program was started to meet this need at a trans-NIH level, and so far it has recruited two clinician-scientists (see page 1). We are looking for a way to encourage more applicants to this program as well.

As always, your comments and ideas are welcomed. And, if time permits, take a Stadtman Investigator or a Lasker Scholar to lunch! ●

Reconnecting with NIH Alumni

Staying in Touch With Fellows from Japan

BY GEORGE MARTIN, NIDCR

A RECENT TRIP TO JAPAN LEFT ME APPRECIATING the rich experience that fellowships in the NIH intramural program provide for scientists from other countries and those of us who work with them. In particular, it got me thinking about the many Japanese fellows we hosted in the NIDR (now NIDCR) Laboratory of Developmental Biology and Anomalies (now the Laboratory of Cell and Developmental Biology).

The lab hosted our first Japanese fellow, **Shigeto Abe**, in 1976 (through 1980). He was recommended to us by Professor Yutaka Nagai (Tokyo University, Tokyo), a pioneer

in collagen and collagenase research. Shigeto had conducted his Ph.D. studies on the regulation of collagenase activity and studied its involvement in inflammatory joint disease.

At NIH, we were studying proteins produced by the mouse Engelbreth-Holm-Swarm (EHS) tumor, including collagen 4, laminin, and perlecan. **Lance Liotta**, then a member of the NCI Laboratory of Pathology, was working in our lab trying to clarify the mechanisms by which certain tumor cells degraded and invaded through basement membranes, a classic sign of malignancy. Shigeto joined the project (he and Lance shared a 200-square-foot research room), and they were able to show that collagenase (now known as MMP1) did not degrade collagen 4 and that malignant tumor cells produced a protease (now known as MMP2), which did.

On his return to Japan, Shigeto joined the Medical Corps of the Japanese Army, in which he rose to the rank of major general before retiring. Over the years, he has recommended Japanese fellows to us and us

to them, including his own son (**Yoshifura Abe**) who did a fellowship at NIDDK with former NIDCR fellow **Jeffrey Kopp** two years ago.

Shigeto now heads up a medical clinic near Fukushima, Japan. I had the pleasure recently of visiting Shigeto and his family in Japan and meeting with some former NIDCR fellows. I was pleased, but not surprised, to find they had become leaders in research and medicine, including professors, heads of hospitals, presidents of university centers, department chairs, and high officials in Japanese pharmaceutical companies.

I think their success can be attributed in part to their solid training and hard work and in part to their experience living, collaborating, and socializing with the other 200-plus Japanese fellows while at the NIH. When their “class” returned to Japan, they knew many other researchers who would rise to the top of their fields. There are more than 2,000 members in the Japanese Society for the Promotion of Science U.S. Alumni Association. The organization even provides supports for U.S. citizens for short-term or long-term work in Japan. Kyoto, anybody? ●



Shigeto Abe



The Japanese researchers who came to NIDCR were ready to join in lab activities whether they were research, soccer, or golf. Martin's lab team (they called themselves the Ninjas) competed in the 1984 NIH relay race (left to right): George Martin; NIDCR fellows from Japan—Isao Ebihara, Kimitoshi Kohno, Yoshiki Sakurai; and postdoctoral fellow Kurt Doege who is now at Louisiana State University Health Sciences Center. Shigeto Abe would have run had he still been at NIH.

NIH ABBREVIATIONS

- CBER:** Center for Biologics Evaluation and Research, FDA
- CC:** NIH Clinical Center
- CCR:** Center for Cancer Research, NCI
- CDC:** Centers for Disease Control and Prevention
- CIT:** Center for Information Technology
- DCEG:** Division of Cancer Epidemiology and Genetics, NCI
- DOE:** Department of Energy
- FAES:** Foundation for Advanced Education in the Sciences
- FelCom:** Fellows Committee
- FDA:** Food and Drug Administration
- FNL:** Frederick National Laboratory
- IRP:** Intramural Research Program
- HHS:** U.S. Department of Health and Human Services
- NCATS:** National Center for Advancing Translational Sciences
- NCCAM:** National Center for Complementary and Alternative Medicine
- NCBI:** National Center for Biotechnology Information
- NCI:** National Cancer Institute
- NEI:** National Eye Institute
- NHGRI:** National Human Genome Research Institute
- NHLBI:** National Heart, Lung, and Blood Institute
- NIA:** National Institute on Aging
- NIAAA:** National Institute on Alcohol Abuse and Alcoholism
- NIAID:** National Institute of Allergy and Infectious Diseases
- NIAMS:** National Institute of Arthritis and Musculoskeletal and Skin Diseases
- NIBIB:** National Institute of Biomedical Imaging and Bioengineering
- NICHHD:** Eunice Kennedy Shriver National Institute of Child Health and Human Development
- NIDA:** National Institute on Drug Abuse
- NIDCD:** National Institute on Deafness and Other Communication Disorders
- NIDCR:** National Institute of Dental and Craniofacial Research
- NIDDK:** National Institute of Diabetes and Digestive and Kidney Diseases
- NIEHS:** National Institute of Environmental Health Sciences
- NIGMS:** National Institute of General Medical Sciences
- NIMH:** National Institute of Mental Health
- NIMHD:** National Institute on Minority Health and Health Disparities
- NINDS:** National Institute of Neurological Disorders and Stroke
- NINR:** National Institute of Nursing Research
- NLM:** National Library of Medicine
- OD:** Office of the Director
- OITE:** Office of Intramural Training and Education
- OIR:** Office of Intramural Research
- ORS:** Office of Research Services
- ORWH:** Office of Research on Women's Health
- OTT:** Office of Technology Transfer



SPECIAL ESSAY

Goldilocks and Science Writing

BY HEATHER DOLAN, SPECIAL TO THE NIH CATALYST

DESPITE MY CHILDHOOD ASPIRATIONS

to become a writer, I arrived at the NIH with a B.S. in chemical engineering. A reluctant scientist at best, I struggled to fit into the research scene as a post-baccalaureate trainee. Fortunately, I transitioned midyear from bench work to interning with the *NIH Catalyst*. At last, I was able to use my technical background to do something I truly enjoy—writing.

With biomedicine as my subject matter, I hit the ground running. My first assignment was to cover prominent yeast geneticist David Botstein's talk for the Wednesday Afternoon Lecture Series. I had successfully written technical papers during my undergraduate years at Carnegie Mellon University (Pittsburgh), but the Botstein piece was a different beast. How was I going to accurately describe his theory that connected yeast genetics to human cancer without making the reader's head spin? Being a science writer is much like being on the receiving end of a

Goldilocks analysis—not too much technical information, but not too little, either. Accuracy is key, but too many details can chase the reader away.

Sometimes, though, the details can be tougher to explain than the big picture. NICHD neuroscientists Christopher McBain and Kenneth Pelkey contributed to a discovery, published in the March 2012 issue of *Cell*, about memory formation in the hippocampus. Pelkey and McBain had performed work to confirm that mice being experimented on by a lab at the Massachusetts Institute of Technology (MIT; Cambridge, Mass.) were neurologically modified. But their work was just one piece of a bigger story. I became so concerned with getting to the point and tying all of the pieces together that I forgot to tell the whole story. I was also so worried about not explaining the science accurately that I shortchanged the reader on concepts integral to McBain's and Pelkey's aspect of the research. Luckily, the *Catalyst* managing editor helped me shape the story

so it was both factually correct and easy to read (<http://irp.nih.gov/catalyst/v20i4/something-old-something-new>).

Science writing isn't a journalism cake-walk. The topics covered are massive and wildly variable: One week you're covering a story on stem cell advances in retinal diseases, while another week you're investigating electrical brain stimulation. You come out of interviews wondering what in the world the entorhinal cortex is (part of the brain involved in memory formation). You suffer writer's block because you're not sure whether what you just wrote even makes sense to you. But at the end of the day, it's all worth it because you get to bring science from the bench to, not only the bedside, but also the tableside. ●

Heather Dolan interned for the *NIH Catalyst* January through July 2012, and then she left NIH to take an engineering job in Ohio. But her work continues to appear in the *Catalyst*. (See page 5 for her story on NIH volunteers who read scientific textbooks for the blind.)

THE SIG BEAT



NEWS FROM AND ABOUT THE NIH SCIENTIFIC INTEREST GROUPS

Translational Perspectives

BY CYNTHIA DAVIES-VENN, CC

To bring promising research into the clinic, scientists and clinicians need to share ideas between the bench and bedside. The Translational Research Scientific Interest Group (TRIG) provides a unique opportunity to accomplish this goal.

TRIG's October 2012 meeting featured NIDDK senior investigator Robert A. Star, M.D. The director of NIDDK's Division of Kidney, Urologic, and Hematologic Diseases, Star spoke about new methods for studying

sepsis-related acute kidney injury (AKI). AKI is most common among elderly patients, particularly those in intensive care units, and is often caused by sepsis. Two-thirds of patients with sepsis-related AKI become immune-suppressed and are susceptible to infections. Star developed a new mouse model of kidney injury that closely models human disease and determined that AKI can stimulate inflammatory cytokines, which can accelerate sepsis. Blocking these immune pathways has improved patient survival and may significantly improve the efficacy of therapeutic drugs targeting this disease.

TRIG meets the second Thursday of the month, 1:00–2:00 p.m., for seminars and forums focusing on translational science. Meetings bring in investigators from many NIH institutes and centers. Recent sessions have covered a wide range of topics including cancer, malaria, diabetes, obesity, and inflammatory disease research; drug development; and public-private partnerships as resources for conducting translational research. To join the TRIG LISTSERV and view future events, visit <http://sigs.nih.gov/trig> or contact TRIG chair, Minkyung (Min) Song at songm@mail.nih.gov.

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An Eye for an Ear

NIH Volunteers Open World of Science to Reading-Impaired Students

BY HEATHER DOLAN, SPECIAL TO THE NIH CATALYST

EVER DREAM OF BECOMING A RECORD-ing artist? If so, there's a studio in Building 31 that could use your voice. It's the NIH satellite of Learning Ally, a nonprofit organization that converts books into audio recordings for reading-disabled students of all ages.

Learning Ally, formerly Reading for the Blind and Dyslexic (RFB&D), records books for K-12, college, and graduate students who cannot read standard print due to blindness, visual impairment, or dyslexia or other learning disabilities. Some 6,000 volunteers in 19 production studios across the nation are responsible for reading 70,000-plus books and making them accessible to more than 300,000 Learning Ally members.

Although Learning Ally provides audio versions of all book genres, ranging from novels to math textbooks, volunteers at the NIH satellite record science and medical textbooks for high school, college, and graduate students. The satellite was started in 2000 in response to an urgent need for volunteers capable of reading science, mathematics, medical, and technology texts. Learning Ally, then RFB&D, used the NIH radio-news recording studio for six hours each week.

By 2001, the NIH Office of Equal Opportunity had provided Learning Ally with its current space on the B4 level of Building 31. So far, more than 30 college-level textbooks on microbiology, biochemistry, human anatomy, genetics, and medical physiology have been recorded at the NIH studio. On average, there are 25 volunteers who each record at the studio for a minimum of one hour a week.

"It's a great way to pass on your knowledge and expertise as a scientist to someone who's growing into a scientist,"

said Learning Ally production manager Kathryn Sparks, who trains new volunteers.

Scientist Emeritus **Henry Metzger**, former scientific director of the National Institute of Arthritis and Musculoskeletal and Skin Diseases, has been a Learning Ally volunteer for 10 years. "It's [a not] very demanding way of doing something very helpful to people," he said.

Metzger has also been a member of the Washington, D.C., Chapter of Learning Ally's board of directors for the past nine years and has been impressed by the students who have been recognized at Learning Ally's annual national awards ceremonies. "That is an inspiring experience—to see how people who are either blind or severely reading-disabled have been able to not only get through college and in one case medical school, but [also] have really achieved a tremendous amount," said Metzger. "And they are so grateful."

One of the awardees, Henry Wedler, is pursuing a Ph.D. in organic chemistry at the University of California, Davis (Davis, Calif.). Born blind, Wedler has used Learning Ally since he was 10. "I can assure you that without accessible textbooks, and certainly without Learning Ally, I would not have made it to graduate school," he said in a recent interview with Learning Ally (<https://www.learningally.org/southern-california-art-auction-day>).

Ashley Griswold, a research assistant at Suburban Hospital (Bethesda, Md.) and a volunteer in the NINDS, relied on Learning Ally to get through her undergraduate and graduate science classes. She received a B.S. in neuroscience and chemistry at Boston College (Chestnut Hill, Mass.) in 2011 and a master's in



KATHRYN SPARKS, LEARNING ALLY

NICHD mathematical statistician **Jennifer Kwan** is one of many NIH volunteers who record scientific textbooks for Learning Ally.

neuroscience at Georgetown University (Washington D.C.) in 2012.

A book Griswold requested—Guyton and Hall's *Textbook of Medical Physiology*—was assigned to the NIH satellite. The pronunciation and variety of voices represented by NIH volunteers stood out to Griswold, who has listened to books read at other satellites. "There's a 10 times better chance of getting it right with someone who has a science background than someone else who's just kind-of guessing," she said. Griswold, who is planning to attend medical school, hopes NIH will continue to accrue Learning Ally volunteers.

To become a volunteer reader for Learning Ally at NIH, contact Katherine Sparks at ksparks@Learningally.org or 202-244-8990. To learn more about Learning Ally, visit <http://www.learningally.org>.

Lasker Scholars

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NICHOLAS ZAGORSKI, NHLBI



NIH's first two Lasker Clinical Research Scholars, Nehal Mehta (left) and Jessica Gill.

NEHAL MEHTA, M.D., M.S.C.E., NHLBI

Lasker Clinical Research Scholar, Section of Inflammation and Cardiometabolic Diseases, Cardiovascular and Pulmonary Branch

Education: George Washington University, Washington, D.C. (B.A. and M.D.); University of Pennsylvania, Philadelphia (M.S.C.E. in genetic epidemiology)

Training: Residency in internal medicine and fellowship in cardiovascular medicine, Hospital of the University of Pennsylvania; postdoctoral fellowship in lipoprotein biology and genetic epidemiology, University of Pennsylvania

Before coming to NIH: Adjunct assistant professor at the Perelman School of Medicine, University of Pennsylvania; attending cardiologist and director of Inflammatory Risk, Preventive Cardiology, at the Hospital of the University of Pennsylvania

Outside interests: Spending time with wife and their three-year-old daughter; cooking; skiing; surfing

How did you get interested in your field?

I have always been interested in understanding “Why?” In particular, I am fascinated by blood-vessel physiology, fluid dynamics, and electromechanical coupling and have wondered about the link between obesity

(associated with chronic inflammation) and cardiovascular and cardiometabolic diseases. We did a study in which we induced inflammation in healthy people by giving them a low-dose bacterial endotoxin. We made the striking first-in-human observation that a single dose of endotoxin turned fat tissue dysfunctional and led to insulin resistance (*Diabetes* **59**:172–81, 2010).

Later, we wanted to use a chronic inflammatory disease such as psoriasis—which causes skin irritation and inflammation—as a model to better understand the association of inflammation with metabolic and vascular diseases.

How is psoriasis connected to heart disease?

In 2009, I embarked on large epidemiological studies that confirmed the association between psoriasis and heart disease (*Eur Heart J* **31**:1000–6, 2010). I then helped develop the first national clinic for psoriasis patients to understand their risk for cardiometabolic diseases. Surprisingly, a large percentage of my young patients had high cholesterol, obesity, and pre-diabetes. With my nuclear cardiology background, I performed a pilot study using fluorodeoxyglucose positron emission tomography-computed tomography (FDG-PET/CT) to scan patients for internal inflammation.

What did you find?

Our study was one of the first to show that psoriasis is a whole body disease. The FDG-PET/CT scan revealed that, in psoriasis patients, there’s not only inflammation in the skin, but also in the blood vessels, joints,

and liver. This finding was in young patients without risk factors for these diseases, which further supported the fact that inflammation may predispose one to cardiometabolic diseases. (*Arch Dermatol* **147**:1031–1039, 2011)

What's the research you are doing at NIH?

My proposal for the Lasker was to pose a critical question that everyone asks in the field: “Is inflammation causal in heart disease or is it simply a byproduct of confounding processes?” With psoriasis as a model, we are conducting the first longitudinal study using multiple imaging techniques (PET/CT, PET/MRI and CT angiography) and metabolic diseases markers in multiple tissues (skin, blood, fat) to understand the effect of anti-inflammatory treatments on vascular diseases. We hope to determine whether modulating inflammation matters.

What made you decide to come to NIH?

What better place to continue high-level clinical translational research than the world’s largest and best clinical research center? The environment is collaborative, and enriched in resources, and the amount of support you get as a clinical investigator is unparalleled. I can recruit patients and establish the world’s first laboratory of inflammation and cardiometabolic diseases to study these processes. This opportunity also enabled me to continue my collaboration with Penn and to still see my patients.

Is there anything you can look back on now and realize it was significant?

In my cardiology fellowship, I was told to focus, focus, focus, but I did not. By not focusing, I was able to link internal medicine, dermatology, radiology, cardiology, and epidemiology. You cannot answer “Why?” without exercising all of these disciplines. Now, however, is the right time to focus—on the mechanisms of inflammation.



Would you like to tell us anything else?

To be successful as a translational physician-scientist, you need to marry your clinical work to your research. I love caring for my patients. Each encounter teaches me, stimulates more scientific questions, and also provides tissues. My present environment is perfect for building my clinical program and sustaining high-level science in my lab.

JESSICA GILL, R.N., P.M.H.N.P., PH.D., NINR

Lasker Clinical Research Scholar, NINR

Education: Linfield College, McMinnville, Ore. (B.S. in nursing); Oregon Health and Science University, Portland (M.S. in psychiatric/mental health nursing); Johns Hopkins University School of Nursing and School of Public Health, Baltimore (Ph.D.)

Training: Postdoctoral in NINR/NIMH

Before coming to NIH: Assistant professor, School of Nursing and Krasnow Institute for Advanced Studies at George Mason University (Fairfax, Va.)

Outside interests: Spending time with husband and their three young children; hiking; skiing; camping

How did you get interested in your field?

When I was an undergrad I did an externship at a domestic violence shelter and encountered women who had escaped from their abusive environments but felt sick all the time and weren't sleeping well. I thought that something was going on with violence and their health. Back then I didn't know much about posttraumatic stress disorder (PTSD) as it wasn't a dominant diagnosis.

What was your work before now?

I am interested in linking immunology with psychiatric disorders and trying to understand how those mechanisms would impact somebody's health. My dissertation research reported high rates of PTSD in

urban health-care seeking women and that a PTSD diagnosis was associated with perceived health declines, as well as with higher concentrations of inflammatory markers and dysregulation of endocrine functioning. During my postdoctoral fellowship at NIH, I found alterations in the functioning of the immune and endocrine systems in PTSD and depression. Later, as a clinical investigator at NINR and at George Mason, I gained a better understanding of the biological mechanisms of PTSD. (*J Am Psychiatr Nurses Assoc* 17:404–416, 2011; *Trauma Violence Abuse* 12:115–126, 2011)

What is your research at NIH?

I'll be working as part of a Department of Defense-funded collaborative project with NINDS's Center for Neuroscience in Regenerative Medicine and the Uniformed Services University (Bethesda, Md.) We'll collect epigenetic biomarkers—such as endocrine proteins that play a role in inflammation—from patients who have been hospitalized for a traumatic event. We'll examine the biological and neurological factors linked to the risk for PTSD onset and the influence of traumatic brain injuries (TBIs). TBIs can increase the risk for PTSD. We'll follow patients during their immediate recoveries and for years afterwards to better understand the risk and resiliency factors related to these outcomes.

I will also be working with Walter Reed National Military Medical Center (Bethesda, Md.) to treat insomnia that develops following a TBI. We will be administering a growth hormone as a one-time stimulus to see if it promotes sleep in service members who have TBI and insomnia.

What made you decide to return to NIH?

It seemed like a wonderful opportunity especially with the collaboration with the Department of Defense. And I couldn't turn

down the chance to come back to NIH and have more of a leadership role. At NIH, I can expand my research—such as adding advanced imaging to my study—more quickly than if I was somewhere else.

What is most exciting about your work?

Now, if somebody comes into an emergency department we have no way to identify who's at risk for PTSD. Typically physical injuries are treated, but we don't do anything about psychological therapy. So the first step is to see if we can get a biomarker that predicts who's going to be more at risk for neurological deficits as well as PTSD.

Is there anything you can look back on now and realize it was significant?

When I was working on my predoc, I wanted to focus on one system—immunology. But a mentor said I needed to take a more comprehensive approach. She encouraged me to look at the endocrine system, too. Now I'm more known for my work in endocrinology than immunology. It's the integration between these two systems that's helped me to understand the work better.

Is there anything else you'd like to tell us?

You have to be passionate about your work. That passion is the only thing that keeps you motivated and focused. Being at NIH gives me the flexibility to do the type of science that I want to do. ●

To learn more about the Lasker Clinical Research Scholars Program go to <http://irp.nih.gov/careers/trans-nih-scientific-recruitments/lasker-clinical-research-scholars-program>; or <http://www.nih.gov/science/laskerscholar/index.html>; or contact Charles Dearolf (LaskerScholar@nih.gov or 301-402-1225).



Intramural Research Briefs

NIDCD: LET YOUR BRAIN BE FREE TO FOLLOW THE BEAT

NIDCD researchers are gaining insights into the creative process by using functional magnetic resonance imaging to study the brain activity of rappers when they are “freestyle”—spontaneously improvising lyrics in real time. The findings reveal that this form of vocal improvisation is associated with a unique functional reallocation of brain activity in the prefrontal cortex. The researchers propose a novel neural network that appears to be intimately involved in improvisatory and creative endeavors. The scientists scanned the brains of 12 freestyle rappers while they performed two tasks using an identical eight-bar music track. In the first task, they improvised rhyming lyrics and rhythmic patterns guided only by the beat; in the second task, they performed a well-rehearsed set of lyrics. During freestyle rapping, there was increased brain activity in the medial prefrontal cortex, a brain region responsible for motivation of thought and action, but decreased activity in dorso-lateral prefrontal regions that normally play a supervisory or monitoring role. The findings also suggest that that improvisation engages a brain network that links motivation, language, mood, and action. Further studies could offer more insights into the creative process. (NIH authors: S. Liu, H.M. Chow, Y. Xu, M.G. Erkkinen, K.E. Swett, M.W. Eagle, D.A. Rizik-Baer, and A.R. Braun; *Scientific Reports* 2:834, 2012)

NIDDK: MODEST DIET AND EXERCISE CAN SUSTAIN WEIGHT LOSS

Exercise and healthy eating reduce body fat and preserve muscle in adults better than diet alone, according to an NIDDK study that analyzed data from 11 participants in the reality television program “The Biggest Loser.” The program shows obese adults losing large amounts of weight over several months. The researchers measured body fat, total energy expenditure, and resting metabolic rate three times: at the start of the program, at week 6,

and at week 30, which was at least 17 weeks after participants returned home. Participation in the program led to an average weight loss of 128 pounds, with about 82 percent of that coming from body fat and the rest from lean tissue such as muscle. Using a mathematical computer model of human metabolism, the researchers calculated the diet and exercise changes underlying the observed body weight loss. Diet alone was calculated to be responsible for more weight loss than exercise, with 65 percent of the weight loss consisting of body fat and 35 percent consisting of lean mass like muscle. In contrast, the model calculated that exercise alone resulted in participants losing only fat and no muscle. The findings also suggest that the participants could sustain their weight loss and avoid weight regain by adopting more moderate lifestyle changes—like 20 minutes of daily vigorous exercise and a 20 percent calorie restriction—than those demonstrated on the television program. (NIDDK author: K.D. Hall; *Obesity* DOI:10.1002/oby.20065)

NIEHS: BACTERIAL PROTEIN IN HOUSE DUST TRIGGERS ASTHMA

Household dust typically contains many allergens including those derived from dust mites, cockroaches, and animal dander. A bacterial protein called flagellin in the dust may worsen allergic responses to indoor allergens, according to research conducted by NIEHS and Duke University (Durham, N.C.) scientists. The finding is the first to document the presence of flagellin in house dust, bolstering the link between allergic asthma and the environment. After inhaling house dust, mice that were able to respond to flagellin displayed all of the common symptoms of allergic asthma, including more mucus production, airway obstruction, and airway inflammation. However, mice lacking a gene that detects the presence of flagellin had weaker symptoms. In addition to the mouse study, the research team also determined that people with asthma have

higher concentrations of antibodies against flagellin in their blood than do non-asthmatic people. Reducing the amount of flagellated bacteria by cleaning might help to reduce the incidence of allergic asthma, but more studies are necessary to confirm the observations. (NIEHS authors: R.H. Wilson, S. Maruoka, G.S. Whitehead, J.F. Foley, G.P. Flake, M.L. Sever, D.C. Zeldin, S. Garantziotis, H. Nakano, and D.N. Cook; *Nature Med* 18:1705–1711, 2012)

NCI: LEISURE-TIME PHYSICAL ACTIVITY EXTENDS LIFE EXPECTANCY

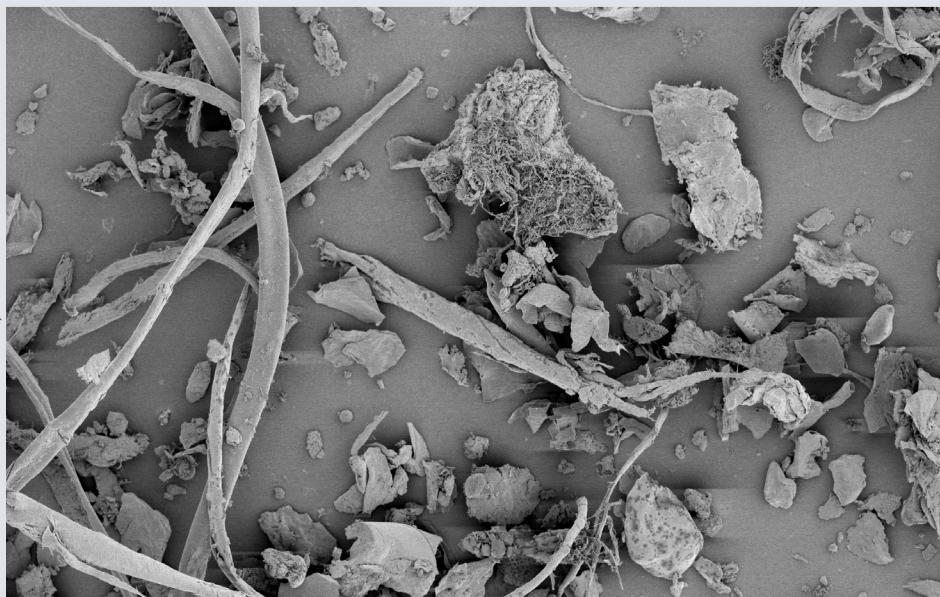
The U.S. Department of Health and Human Services recommends that adults ages 18 to 64 engage in regular, weekly aerobic physical activity for 2.5 hours at moderate intensity or 1.25 hours at vigorous intensity. Recent scientific findings suggest that such leisure-time physical activity is associated with longer life expectancy. Recently, NCI researchers led a study that examined data from 650,000 adults, mostly age 40 and older, who took part in one of six population-based studies that were designed to evaluate various aspects of cancer risk. After accounting for other factors that could affect life expectancy, the researchers found that life expectancy was 3.4 years longer for people who reported they got the recommended level of physical activity. People who reported leisure-time physical activity at twice the recommended level gained 4.2 years of life. The researchers even saw a benefit at low levels of activity in people who got half the recommended amount of physical activity—they added 1.8 years to their life. (NCI authors: S.C. Moore, A.V. Patel, C.E. Matthews, A.B. de Gonzalez, Y. Park, H.A. Katki, M.S. Linet, and P. Hartge; *PLoS Med* 9:1–14, 2012).

NICHD: BENEFITS OF HPV VACCINATION IN HIV-INFECTED WOMEN

NICHD researchers and colleagues found that women infected with the human immunodeficiency virus (HIV) may benefit from the human papilloma virus (HPV) vaccine even if they've



ROCKY MOUNTAIN LABORATORIES, NIAID



Scanning electron micrograph of house dust, which can contain allergens such as hair, pollen, insect fecal matter, and animal dander. NIEHS scientists documented a protein in dust that can worsen allergic responses to indoor allergens.

already been exposed to HPV. HPV is the most common sexually transmitted infection worldwide, and high-risk forms can cause cancer, including cancer of the cervix. The Centers for Disease Control and Prevention recommend vaccination against HPV for girls ages 11 to 26. For those who haven't been exposed to HPV, the vaccine can protect against four types of the virus: HPV-16 and HPV-18, which cause 70 percent of cervical cancers; HPV-6 and HPV-11, which cause 90 percent of genital warts. But the researchers found that even for HIV-positive women who test positive for one type of HPV, the vaccine may effectively prevent infection with other, especially high-risk, variants that can cause cancer. (NICHD authors: B.G. Kapogiannis and C. Worrell; *J Acquir Immune Defic Syndr* 61:390–399, 2012)

NIAID: WHITE-NOSE SYNDROME IN BATS MAY PROVIDE CLUES TO HUMAN HEALTH

Studies on lab animals result in gains in human health. But here's a case in which insight into a human disease might help animals . . . and humans. The mysterious white-nose syndrome (WNS) has decimated eastern North American bat populations. The condition, named for a distinctive fungal growth around the muzzles and on the wings of hibernating bats, has killed

at least five million bats since it was first discovered in a cave in central New York in 2006. According to a hypothesis proposed by NIAID and U.S. Geological Survey scientists, these bats might have immune reconstitution inflammatory syndrome (IRIS). IRIS was first described in HIV-AIDS patients about 20 years ago (<http://www.ncbi.nlm.nih.gov/pubmed/1472334>). As the immune system begins to recover as a result of antiretroviral drug therapy, it might react to a previously acquired infection with an overwhelming inflammatory response resulting in severe and potentially fatal inflammation and tissue damage in the infected areas. Whereas HIV-AIDS suppresses the immune system in humans, hibernation has the same effect on bats, allowing the fungal infection to spread. If the bats survive the infection through winter, they often face intense inflammation at the sites of infection when they awake and their immune system kicks in. The inflammation can be fatal. The scientists say there is evidence that the reaction seen in bats is IRIS. If so, this would be the first time the syndrome has been seen beyond humans. This new insight into the immune response, if verified, could ultimately help both humans and bats. (NIAID authors: D. Barber and J.N. Mandl; *Virulence* 3:583–588, 2012)

OFFICE OF TECHNOLOGY TRANSFER

TREATMENT FOR RARE MUSCLE DISEASE

Investigators from NHGRI and the National Center for Advancing Translational Sciences' (NCATS) Therapeutics for Rare and Neglected Diseases (TRND) program have launched a clinical trial at the NIH Clinical Center to evaluate the drug candidate DEX-M74 (an amino sugar) as a treatment for a rare degenerative muscle disease, hereditary inclusion body myopathy (HIBM). IBM, which is caused by mutations in an enzyme that catalyzes the first two steps of sialic acid synthesis, has no approved therapy. The clinical study is being conducted as part of a collaboration of the laboratories of Marjan Huizing (NHGRI) and William Gahl (NHGRI), the NCATS TRND program, and New Zealand Pharmaceuticals Limited, which received an exclusive license from the NIH Office of Technology Transfer for the development of DEX-M74. The underlying technology, which is a new use for a previously known compound, was discovered by Huizing, Gahl, Eirini Manoli, and Riki Klootwijk.

MUTING WORKPLACE NOISE

A team at the NIAID Office of Research Operations (ORO), led by Judit Quasney, invented the sound-attenuation canopy (SAC) to address the workplace problem of ambient noise. The SAC traps and mutes noise transmitted through the open space of a common suspended ceiling system. The Office of Technology Transfer and the NIAID Office of Technology Development collaborated with ORO to transfer this technology to a well-established manufacturer of architectural systems. The SAC improves working conditions and productivity, acts as a fire retardant and debris barrier, and increases energy efficiency. The SAC has been installed in one NIAID building, and plans are in the works to fabricate and install it in NIAID's new office building on Fishers Lane (Rockville, Md.).

**RESEARCH BRIEFS COMPILED BY TANIA LOMBO,
NIH CATALYST EDITORIAL INTERN.**

Stadtman Investigators

CONTINUED FROM PAGE 1

fewer people applied. Still, out of 563 applicants, nine exceptionally qualified scientists were hired into the Stadtman program. The following is a synopsis of who they are and why they are excited to be at NIH.

Immunologist **Daniel Barber** had his first taste of NIH before he ever started working on his Ph.D. at Emory University (Atlanta). He was a predoctoral fellow in the lab of NIAID scientist Ronald Schwartz. After completing his degree—and making the significant discovery that blocking the programmed cell death protein-1 (PD-1) pathway could boost T-cell function and enhance control of an established viral infection—Barber returned to NIAID in 2006 as a research fellow in Alan Sher's lab. There, he explored the role of PD-1 in *Mycobacterium tuberculosis* infection and on the mechanisms of the immune reconstitution inflammatory syndrome, observed in patients recovering from immunodeficiency. In 2012, he was hired as an Earl Stadtman investigator and chief of the T Lymphocyte Biology Unit in NIAID's Laboratory of Parasitic Diseases, where he'll be continuing the work he started in Sher's lab.

"I knew that [NIH] is a place where I can thrive," he said of his decision to apply to the Stadtman program. "The NIAID intramural program has fantastic high-containment laboratory resources that I need to develop a strong research program in the immunology of *M. tuberculosis* infection."

What do aerospace engineering, genetics, and neuroscience have in common? They're all interests of NHLBI Stadtman investigator **Susan Harbison**, who graduated with a B.S. in aerospace engineering and a Ph.D. in genetics from North Carolina State University (Raleigh) and did postdoctoral research in neuroscience at the University of Pennsylvania (Philadelphia) and in genetics at N.C. State. "I've always

been interested in how things work, from understanding how aircraft fly to solving the mystery of why we sleep," said Harbison. "When I was a child I used to take small appliances apart [until] my father started bringing broken machines home for me to play with."

Before joining NHLBI's Laboratory of Systems Genetics, she was a postdoctoral research scholar at N.C. State. There she was applying high-throughput genomic technologies to study sleep in fruit flies, which share many characteristics relevant to sleep in mammals. At NIH, her "goal is to understand the purpose of sleep and derive computational models describing how gene networks influence sleep."

She was attracted to NIH because it "has a talented group of scientists doing groundbreaking research on a diverse array of research questions," she said. "Scientists [in] different disciplines are free to share ideas and collaborate, leading to exceptional possibilities for research."

"I knew that coming to the NIH would allow me to focus on my science in an environment with tremendous colleagues and resources," said **Bobby Hogg**, in NHLBI's Laboratory of Ribonucleoprotein Biochemistry. With a geologist for a father, Hogg grew up with science as a part of daily life. He earned his Ph.D. in molecular and cell biology at the University of California, Berkeley, and used novel biochemical approaches to study ribonucleoprotein complexes that contain noncoding RNAs. During his postdoctoral training at Columbia University (New York), he found that the regulator of nonsense transcripts-1 protein (Upf1), important in the nonsense-mediated messenger RNA (mRNA) decay pathway, selected specific RNAs for degradation by sensing the length of certain untranslated regions. At NIH he is continuing to work on the mechanisms of nonsense-mediated

mRNA decay to see how the pathway targets certain mRNAs for degradation while leaving most mRNAs untouched.

"I have always been fascinated by Old-World scientists and thinkers who, endowed [with] curiosity, [the] power of observation, and [the] humble devices available at their time, discovered the most important principles," said **Jadranka Loncarek** in the NCI/Frederick National Laboratory of Cancer Research's Laboratory of Protein Dynamics and Signaling. "Imagine what more [we] could uncover with the technologies available nowadays."

Loncarek was drawn to NIH partly because she wanted access to such technologies—she combines state-of-the-art molecular biochemical methods with sophisticated microscopy and laser-microsurgery techniques to investigate cellular processes—as well as the opportunity to interact with hundreds of scientists from different disciplines. She obtained her Ph.D. in cell and molecular biology from the University of Zagreb (Zagreb, Croatia) and did a postdoctoral fellowship at the New York State Department of Health's Wadsworth Center (Albany, N.Y.), where she examined the mechanisms of cell division. Since her arrival at NIH in 2011, she has been studying the maintenance of centrosomes in proliferating cells. "Centrosomes and their internal organizers—the centrioles—are pivotal for proper development, optimal function of various organs, and genomic stability," she explained. "There are numerous disorders related to anomalous centrosomes, and almost every type of cancer has too many of them."

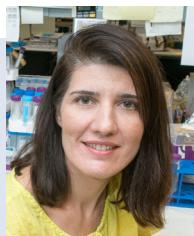
Wei Lu, a Stadtman investigator in NINDS's Synapse and Neural Circuit Research Unit, uses genetic tools, electrophysiology, molecular biology, and behavioral assays to decipher the brain's molecular

and systems-level synaptic mechanisms. While earning a Ph.D. in neuroscience and physiology from New York University School of Medicine (New York), he focused on the biochemical characterization of neuronal glutamate receptors and their interacting proteins. Then he did postdoctoral training in neuroscience at the University of California, San Francisco (UCSF). At UCSF, he combined electrophysiological and single-cell genetic approaches to study excitatory synaptic transmission in rodents. Lu, who was attracted to NIH because of its reputation as “a premier research institute with a long history of excellence in many fields of biomedical research,” attributes his early interest in science to the influence of his parents, who were both science teachers.

Bioinformatician **Zhiyong Lu** is developing computational methods and tools for text-mining research (analyzing natural language data) of biomedical text such as that in journal articles. His research group at the National Center for Biotechnology Information (NCBI) applies text-mining research to improve biomedical literature retrieval and Web access to consumer health information, assist in the curation of biological databases, and predict new uses of existing drugs. He completed a Ph.D. in bioinformatics at the University of Colorado School of Medicine (Denver), before joining NCBI in 2007 as a staff scientist. He became an associate investigator in 2009 and was hired as a Stadtman investigator in 2011. “Working at NCBI gives me unique opportunities to develop and apply my research in text

mining to real-world problems and contribute to improved information access for biomedical scientists and online health consumers worldwide,” he said. His recent research has been integrated into and widely used in PubMed and other NCBI databases. Lu also co-organizes international scientific conferences and workshops such as BioCreative, an international community-wide effort for evaluating text mining and information-extraction systems applied to the biomedical domain.

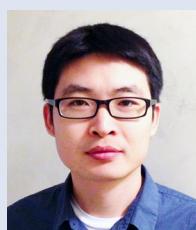
Philip Shaw, who heads NHGRI’s Section on Neurobehavioral Clinical Research, uses tools from neuroscience, behavioral science, and social science to explore the clinical course of attention-deficit hyperactivity disorder (ADHD).



BILL BRANSON



Earl Stadtman (above in 1990s) would have loved to mentor the Stadtman investigators who have recently joined NIH. Clockwise from right: Jeff Zhu (NIAID), Philip Shaw (NIMH/NHGRI), Zhiyong Lu (NCBI), Wei Lu (NINDS), Jadranka Loncarek (NCI), Bobby Hogg (NHLBI), Susan Harbison (NHLBI), Daniel Barber (NIAID), and Nihal Altan-Bonnet (NHLBI).





Stadtman Investigators

CONTINUED FROM PAGE 11

He obtained his Ph.D. in psychological medicine from the University of London and trained at several hospitals in London and one in Sydney, Australia, before coming to NIH in 2004 as a clinical research fellow (he later served as a staff clinician) in NIMH's Child Psychiatry Branch. In 2011, he became an Earl Stadtman investigator in NHGRI's Social and Behavioral Research Branch. His research has shown that, in children with ADHD, the subtle differences in the brain cortex and in the trajectories of brain development might explain why some children with ADHD outgrow their problems. He hopes that understanding this recovery process will lead to novel treatments as well as to the development of tools that will predict the clinical outcome of children with ADHD.

"This research requires us to follow children for many years, and the intramural program is ideal for this type of longitudinal study," he said. "I want to look at how . . . environmental and genetic factors act together to determine brain development in children." Shaw is also a member of the Consulting and Liaison Psychiatry Service to the Clinical Center.

Jinfang "Jeff" Zhu first came to NIH in 1998 as a visiting fellow in NIAID after earning a Ph.D. in biochemistry and molecular biology from the Shanghai Institute of Biochemistry in China. From the beginning he was determined to have his own lab at NIH. He became a staff scientist in 2002, and even when opportunities to become a principal investigator at NIH were limited, he kept turning down invitations to be considered for faculty positions at universities. "I firmly believed that I should remain at NIH and that I would do better science as a staff scientist . . . than as a principal investigator at a university at this early stage of my career," he said. His determination—he calls it stubbornness—paid off when he was

selected as an Earl Stadtman investigator in 2011.

During his Ph.D. training, Zhu worked on signal-transduction pathways in T cells triggered by the important cytokine, interleukin-2 (IL-2). Today, in NIAID's Laboratory of Immunology, he is studying the diversity and plasticity of T helper cells that are regulated by transcriptional regulatory networks. He is also investigating the functions of key transcription factors in dendritic cells, innate lymphoid cells, and B cells to gain insights into immune responses.

"I always wanted to be a detective," said **Nihal Altan-Bonnet**, an assistant professor and interdisciplinary researcher in biological sciences at Rutgers University (Newark, N.J.), who will be joining NHLBI's Cell Biology Center in July 2013. By high school, however, she realized that detective skills could help "solve the puzzles in nature" as well as crimes. She completed her Ph.D. in cellular biophysics at Rockefeller University (New York) and then trained with Jennifer Lippincott-Schwartz in NICHD. She went on to Rutgers, where she studied molecular blueprints of host-cell membranes used for viral replication and identified key lipid components that may be potential therapeutic targets. At NHLBI, she will continue to use her sleuthing skills to identify the molecular signatures of membranes that viruses use for replication as well as unlock the mysteries of how cells work in general.

"One of the attractions of NIH is that it will allow an interdisciplinary researcher like myself the resources to try out new ideas or test a risky hypothesis," she said. ●

For more information on Earl Stadtman, visit <http://history.nih.gov/exhibits/stadtman/>. For information on the application process, visit <http://irp.nih.gov/careers/trans-nih-scientific-recruitments/earl-stadtman-tenure-track-investigator-recruitment-2012>.



CONTINUED FROM PAGE 4

New SIG: Proteostasis

BY ANDRAS OROSZ, NIAAA

Proteostasis (protein homeostasis) is essential for cell health, viability, adaptation to environmental challenges, and ultimately life. Derailed proteostasis leads to protein misfolding and aggregation that underlie many human disorders including cancer, neurodegenerative diseases, diabetes, cystic fibrosis, alcoholic liver disease, cataracts, cardiomyopathy, immune problems, aging, and other chronic maladies. The proteostasis network (PN) regulates cellular processes to support protein health. Deciphering the principal rules of the PN is critically important for understanding human health and disease.

The new Proteostasis Scientific Interest Group (PSIG) provides a forum to facilitate communication, and collaboration among NIH intramural and outside researchers who are working on different aspects of the PN. Planned activities include an inaugural meeting in March 2013 and bimonthly seminars by leaders in the field. For more information about the PSIG, contact Andras Orosz at OROSZA@mail.nih.gov; check the Web site at <http://sigs.nih.gov/proteostasis>; or join the LISTSERV at proteostatis@list.nih.gov.

What is a SIG?

NIH inter-institute Scientific Interest Groups (SIGs) are assemblies of scientists with common research interests. These groups are divided into seven broad, process-oriented parent groups, or faculties, and more than 30 smaller, more focused groups centered on particular research models, subjects, or techniques. The latter groups are initiated and run by scientists in the Intramural and Extramural Research Programs at NIH.

The complete list of Scientific Interest Groups (SIGs), a.k.a. NIH Inter-institute Interest Groups, is at <http://www.nih.gov/sigs>.

Let There Be Light

Sea Creatures Providing Clues on the Evolution of Vision

BY JEANNINE MJOSETH, NHGRI

WILLIAM BROWNE, UNIVERSITY OF MIAMI



Comb jellies, like this *Mnemiopsis leidyi*, may have evolved more than 500 million years ago, but today they are providing clues to NHGRI scientists as to how sight developed in other creatures, including humans.

BIOLUMINESCENT SEA CREATURES

that emit and detect light are providing clues to the evolution of sight and may, in time, shed light on our understanding of eye diseases. Research published in a recent issue of *BMC Biology* has pinpointed the genes involved in making and sensing light in this organism.

Comb jellies, also known as ctenophores, evolved more than 500 million years ago. They're among the earliest metazoans, a group that comprises all multicellular animals. At a maximum length of five inches, they have the distinction of being the largest animals to use cilia for locomotion. Ctenophores are found in all oceans of the world and have recently invaded the Black, Caspian and Baltic Seas, where they are considered pests because they consume fish larvae. The subject of this study was a comb jelly called *Mnemiopsis leidyi* that lives off the Eastern seaboard from Maine to Florida.

The study was performed by **Andy Baxevanis** and his group in the Genome Technology Branch of NHGRI. They based their findings on the whole genome of *Mnemiopsis*

leidyi, which the group recently sequenced, assembled and annotated. Baxevanis and his team will soon publish a study analyzing the organism's genome, the first bioluminescent animal and the first ctenophore species for which there is a whole genome sequence.

"Comb jellies are quite beautiful," said **Christine E. Schnitzler**, the paper's first author and a postdoctoral fellow in Baxevanis's group. "When light reflects off their cilia, it creates a rainbow of colors. But that's not the same as bioluminescence, which you can only see in the dark."

Comb jellies' ability to generate light comes from genes that produce photoproteins. Two types of chemicals involved in light production, called luciferin and luciferase, are bound together in a photoprotein. This molecule can be triggered to produce light when calcium is added to the system. Photoproteins emit flashes of very bright light for a fraction of a second.

While the researchers expected to find photoproteins in comb jellies, they didn't expect to find 10 different photoproteins that were clustered into two groups in the

genome. The researchers think that having multiple photoprotein genes allows the animal to produce larger amounts of photoprotein and emit more light quickly.

"These protoproteins were tandemly arrayed," Schnitzler said. "This is fascinating for an evolutionary biologist because it means that these photoproteins somehow evolved as a group."

The scientists found that light-emitting photoproteins were located in the same cells as opsin genes, the most primitive type of light detector in animals. All animals use opsins to catch photons of light, and finding a functional opsin in a ctenophore indicates that they have been preserved throughout animal evolution.

The co-localization of the opsin genes and the photoproteins may confer an advantage to the animal: it might be a feedback mechanism that allows the comb jelly to maintain the right amount of bioluminescence or it may enhance reproductive or defensive capabilities, Schnitzler suggested.

Opsins are also located near the apical sensory organ, opposite the mouth. An apical sensory organ contains large sensory cilia that help it maintain proper vertical orientation or change swimming direction.

Baxevanis sees a broader context for using comparative genomic approaches focused on the early animals such as comb jellies. "To get a handle on the evolution of vision, we first need to understand the evolution of protein families like the photoproteins and the opsins," he said. "These organisms may also help us figure out at what point in time a particular disease-associated gene emerged."

NHGRI authors: C.E. Schnitzler, M. Park, J. Gupta, S.Y. Brooks, R.W. Blakesley, and A.D. Baxevanis; *BMC Biol* 10:107, 2012



Reuben Andres (died on September 23, 2012, at age 89) was NIA's first clinical director. He is known for the invention of the glucose-insulin clamp technique, a method that remains the gold standard in the study of glucose and insulin homeostasis, and for his original and fundamental observations on the hormonal abnormalities in diabetes.

Earl M. August (died on November 21, 2012, at age 54) was a senior scientist in NCI's developmental therapeutics program (1990–1994).

Michael Balcom (died on September 10, 2012, at age 24) was one of the most trusted engineers in the Automation and Compound Management section in the NCATS Division of Pre-clinical Innovation.

William G. Banfield II (died on January 13, 2012, at age 91), a pioneer researcher in electron microscopy at NCI's Laboratory of Pathology, retired in 1980 after a 26-year career at NIH. He was one of the first scientists to obtain images, in mice, of the tumor-causing polyoma virus. He helped develop the scanning electron microscope as well as the electron probe, a device that can identify small amounts of elements such as sodium, lead, and mercury in tissues and cells.

Bobbi Bennett (died on April 18, 2012, at age 70) was a science writer at NIH.

Albert Gilson Brown (died on January 28, 2012, at age 80) retired in 2004 after eight years as executive director of the Children's Inn, a residential facility for families of children who are patients at NIH.

Raymond F. Chen (died on November 14, 2012, at age 79) was a physician and NHLBI scientist (1963–1993) whose work helped advance the development of fluorescein angiograms of kidneys, retinas, and other organs.

Yuan-Who (Richard) Chen (died on October 1, 2012, at age 57), who joined the biostatistics group in NIDDK's Office of the Director in 2009, provided biostatistical support to both the extramural and the intramural programs.

Nancy Boucot Cummings (died on March 27, 2012, at age 85) was the former director of NIDDK's Division of Kidney, Urologic, and Hematologic Diseases—and the institute's first female division head.

Lavora Clark Dash (died on April 21, 2012, at age 44) had a reputation as one of the best phlebotomists in the Clinical Center's Department of Transfusion Medicine, which collects blood donations for patients as well as for intramural researchers.

Barry Davis (died on July 3, 2012, at age 65) joined NIH in 1999 as the director of NIDCD's taste and smell program. His research interests included the anatomical, physiological, and biochemical similarities and differences among brain structures involved in the processing of taste and smell.

Vernice Ferguson (died on December 8, 2012, at age 84) was the chief nurse at the Clinical Center (1972–1980) and went on to become the chief nurse at the Department of Veterans Affairs.

Henriette P.D. Fredrickson (died on January 22, 2012, at age 87) was the wife of Donald S. Fredrickson, who served as NIH director from 1975 to 1981 and died in 2002.

William I. "Bill" Gay (died on October 11, 2012, at age 86), who retired in 1988 after 34 years of involvement with animal issues at NIH, was director of the Division of Research Resources' Animal Resources Program and later served as president of the NIH Alumni Association.

Juliet Guroff (died on August 24, 2012, at age 80) was a psychiatric researcher who specialized in family genetics studies at NIMH.

William A. Hagins (died on June 6, 2012, at age 83), chief of the Section of Membrane Biophysics in NIDDK's Laboratory of Chemical Physics, retired in 2007. In the 1960s, Hagins and his group showed how the eye transforms images in the retina to produce the sensation of vision.

Edward Handelsman (died on March 5, 2012, at age 49) was chief of the Maternal, Adolescent and Pediatric Research Branch in NIAID's Division of AIDS. Before joining NIAID in 2006, Handelsman worked as a pediatrician specializing in caring for children and adolescents infected with human immunodeficiency virus (HIV). His most important achievement at NIAID was his work on the Children with HIV Early Antiretroviral study, which in 2007 found that the risk of death for HIV-infected infants treated with antiretroviral therapy (ART) immediately after diagnosis was significantly lower than that for babies who did not begin treatment until they showed signs of illness or of a weakened immune system. Based on this finding, the World Health Organization revised its treatment guidelines the following year to recommend that ART begin immediately after HIV diagnosis in HIV-infected children, regardless of their health status.

Edgar E. Hanna, Jr. (died on December 1, 2012, at age 79) was a senior microbiologist and scientific review administrator in NICHD and section chief in NICHD's Laboratory of Developmental and Molecular Immunity (1983–1990). He retired in 1999.

Robert S. Ledley (died on July 24, 2012, at age 86) was a dentist turned biomedical researcher who invented the first computed tomography scanner capable of producing cross-sectional images of any part of the human body. In 1957, the National Academy of Sciences-National Research Council hired him to conduct a national survey of current and potential computer use in biology and medicine in the United States. His resulting article, published in *Science* in 1959, helped shape NIH's first major effort to encourage biomedical researchers to use computers.

Annabel G. Liebelt (died on Sept. 10, 2012, at age 86) started her career in NCI's Pathology Department as a summer student before getting her Ph.D. in microscopic anatomy. She went on to have a distinguished academic



career in the field of animal cancer research and returned to NCI as an expert and guest researcher. Her leadership of the Kirschbaum Memorial Mouse Colony contributed to its national and international recognition as a resource for rodent cancer research.

Cedric W. Long (died on May 3, 2012, at age 75), assistant director of NCI's Division of Extramural Activities, was an intramural researcher who investigated factors controlling the expression of leukemia and sarcoma viruses and how they relate to cell growth and malignant transformation of tissues.

Charles U. Lowe (died on February 9, 2012, at age 90) was a former associate director of special projects at NICHD and played a leading role in the clinical trials that tested vaccines later approved for the prevention of pertussis and typhoid fever. A distinguished research scientist, pediatrician, and administrator, Lowe joined NICHD in 1968 as scientific director and led the institute's intramural research effort, focusing on nutrition and developmental disorders.

Teresa Isabel Mercado (died on March 11, 2012, at age 90) was a researcher in NIAID's Laboratory of Parasitic Diseases for about 30 years beginning in the 1950s. She studied Chagas disease, a potentially life-threatening illness spread by insects and found mainly in Latin America.

Gaetano F. Molinari (died on December 14, 2012, at age 76) was head of stroke research in NINDS (1972–1975) before becoming neurology department chairman at George Washington University (1976–1991).

Gregory T. O'Conor (died on August 22, 2012, at age 88), a pathologist, began a 25-year career at NCI, in 1960, in cancer research, clinical medicine, and teaching. He was director of NCI's Division of Cancer Cause and Prevention and associate director of International Affairs.

Nicholas M. Papadopoulos (died on July 11, 2012, at age 88) retired as chief of clinical chemistry at NIH in 1992. His research

included chemistry pertaining to such conditions as systemic autoimmune disorders, autoimmune peripheral neuropathies, multiple sclerosis, and AIDS.

Earl S. Pollack (died on June 11, 2012, at age 89) was a biostatistician who spent decades working at the NIH, becoming chief of biometry at the NCI by the 1980s.

David B. Scott (died on June 8, 2012, at age 93) served as director of the National Institute of Dental Research (NIDR)—renamed the National Institute of Dental and Craniofacial Research in 1998—from 1976 until his retirement in 1981. An internationally recognized expert on calcified and mineralized tissues, he was among the first to use electron microscopy to study the structure of tooth enamel and dentin as well as sodium fluoride's action on enamel. He also became one of the nation's first few recognized authorities on dental forensics. Scott joined the Public Health Service (PHS) in 1944 and worked in NIH's dental research section and then NIDR when it was established in 1948. He was chief of NIDR's Laboratory of Histology and Pathology from 1956 to 1965 before retiring from PHS to serve on the dental and medical school faculties of Case Western Reserve University (Cleveland, Ohio) and later as dean of the School of Dentistry. In 1976, he returned to NIDR as director, resuming active duty with the PHS and becoming a rear admiral and an assistant surgeon general. Scott held the post until the end of 1981, when he retired a second time.

Toni Shippenberg (died June 25, 2012, at age 55) was one of NIH's experts on opiate and psychostimulant research and chief of NIDA's Integrative Neuroscience Research Branch. Her research focused on the contribution of endogenous opioid peptide systems to the restructuring of brain circuits that occurs during drug use, fostering relapse and addiction; and the identification of effective, non-opioid targets for the treatment of persistent pain.

Audrey L. Stone (died on August 7, 2012, at age 85) was a biochemist who worked as a senior researcher for more than 50 years at the NICHD. She studied glycobiology and worked on the development of carbohydrate-based HIV and malaria vaccines.

Carol Sullivan (died on March 1, 2012, at age 74) was a medical journal indexer for the National Library of Medicine for 30 years.

Celia Tabor (died on December 2, 2012, at age 94), a pioneering female scientist in NIDDK and an expert on the biosynthesis of polyamines, was a constant presence at NIH for 50 years (1952–2005). She worked closely with her husband, Herbert Tabor, who survives her.

Henry de Forest Webster (died on November 16, 2012, at age 84) came to NIH in 1969 after teaching for 10 years at Harvard University (Cambridge, Mass.) and the University of Miami (Coral Gables, Fla.). He was made chief of NINDS's Section on Cellular Neuropathology and later became chief of the Laboratory of Experimental Neuropathology. His work advanced knowledge of multiple sclerosis and the development of potential means of treating it. He was also a pioneer in using the electron microscopic to study normal and diseased cells of the nervous system.

Nancy Weissman (died on September 27, 2012, at age 65) was a clinical social worker who retired in 2006 from NCI. Her work included helping families at high risk of cancer cope with psychological issues.

Janice Hauft Weymouth (died on January 2, 2012, at age 63) was executive director of NIH's Safra Lodge (2004–2007), a place of respite for families and loved ones of adult patients who are receiving care at the NIH Clinical Center. She began working at NIH in 1970, and from 1983 until 2000 she helped manage the Clinical Center space and facilities.

THESE 2012 OBITUARIES REPRESENT PEOPLE WHO WERE INVOLVED IN THE NIH INTRAMURAL RESEARCH PROGRAM DURING THEIR CAREERS.



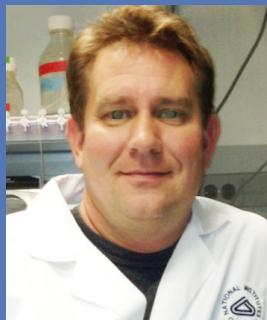
Recently Tenured



JAMES M. ANDERSON, NHLBI



JEFFREY C. GILDERSLEEVE, NCI



DAX HOFFMAN, NICHD



LEPING LI, NIEHS



DEBORAH MERKE, CC

JAMES M. ANDERSON, M.D., PH.D., NHLBI

Senior Investigator, Cell Biology and Physiology Center

Education: Yale University, New Haven, Conn. (B.S. in biology); Harvard University, Cambridge, Mass. (Ph.D. in biology); Harvard Medical School, Boston (M.D.)

Training: Residency in internal medicine and postdoctoral training in Departments of Biology and Internal Medicine at Yale

Before NIH: Professor and chair of Department of Cell and Molecular Physiology, University of North Carolina, Chapel Hill; professor of internal medicine and cell biology, Yale

Came to NIH: In September 2010

Selected professional activities: NIH Deputy Director for Program Coordination, Planning, and Strategic Initiatives

Outside interests: Cycling; swimming; reading; cooking

Research interests: Since the late 1980s, my research has focused on the cell biology and physiology of epithelial tight junctions, the cell-membrane contacts that seal tissue spaces. Tight junctions prevent material from leaking between epithelial and endothelial cells and have biological, medical, and pharmacological importance. Before coming to NIH, I identified and characterized the function of several of the first known tight-junction proteins. My team and our collaborators identified the PDZ domain—a common interaction domain

in tight-junction proteins—and defined its ligand-binding specificity.

Our group also demonstrated that claudins, the key family of tight-junction sealing proteins, create charge- and size-selective pores through the tight junction to allow tissue-specific ion permeability. Our insights helped explain the selective transport properties of junctions in different epithelia and how the barrier is altered in diseases, including several variants caused by genetic mutations. We have expanded our study to a systems biology characterization of the functional networks and pathways—operating at tight junctions—that control cell polarity, signaling, and the cytoskeleton.

JEFFREY C. GILDERSLEEVE, PH.D., NCI-CCR

Senior Investigator; Head, Chemical Glycobiology Section, Chemical Biology Lab, Frederick National Lab

Education: University of California at San Diego (B.S. in biology); Princeton University, Princeton, N.J. (Ph.D. in organic chemistry)

Training: Postdoctoral training at The Scripps Research Institute (La Jolla, Calif.)

Came to NIH: In 2003

Selected professional activities: Co-chair, Gordon Research Conference on Carbohydrates (2015)

Outside interests: Spending time with wife and four children; playing and coaching soccer

Research interests: Immune responses to carbohydrates that are found on the surfaces of cells and viruses are often critical for protection against pathogens or other causes of diseases. The responses can be a crucial component of immunity induced by vaccines. Our group uses chemical approaches and glycan microarray technology to study immune responses to carbohydrates on cancer cells, cancer vaccines, and the human immunodeficiency virus.

Our projects are shedding new light on how cancer vaccines work and are uncovering new biomarkers that will improve cancer treatment decisions. For example, we are studying immune responses induced by PROSTVAC-VF, a cancer vaccine for the treatment of advanced prostate cancer.

We have found that the vaccine, which is in phase 3 clinical trials, induces certain serum anti-carbohydrate antibody responses that correlate with overall survival. In addition, we have identified pre-vaccination antibody populations that also correlate with survival, and we are developing them as biomarkers that may predict which patients are likely to benefit from PROSTVAC-VF therapy. Our projects are highly collaborative and are focused on translating basic research from the bench to the clinic.

**DAX HOFFMAN, PH.D., NICHD**

Senior Investigator; Head, Section on Molecular Neurophysiology and Biophysics

Education: University of Minnesota, Minneapolis (B.S. in genetics); Baylor College of Medicine, Houston (Ph.D. in neuroscience)

Training: Postdoctoral fellowship at the Max Planck Institute for Medical Research (Heidelberg, Germany)

Came to NIH: In June 2002

Selected professional activities: Associate editor for the *Journal of Neuroscience*; editorial board for *Brain Research Bulletin*

Outside interests: Toting his three sons around to various sporting events

Research interests: With billions of neurons each firing hundreds of times per second, the complexity of the brain is stunning. We study the workings of a single central neuron—the pyramidal neuron from the CA1 region of the hippocampus, which is important for learning and memory and affected in Alzheimer disease and epilepsy. Each pyramidal neuron receives tens of thousands of inputs onto its dendrites. Dendrites contain an abundance of ion channels that are involved in receiving, transforming, and relaying neuronal information.

We have found that Kv4.2, a potassium channel subunit, is highly expressed in the dendritic regions of CA1 neurons and plays a pivotal role in information processing. We are investigating the mechanisms of activity-dependent Kv4.2 regulation and its effect on information storage and neuronal development. In addition we are studying the role of dendritic voltage-gated channels in central nervous system disorders including autism-spectrum disorder and Alzheimer disease.

If you have been recently tenured, the *NIH Catalyst* will be contacting you soon about including you on these pages.

LEPING LI, PH.D., NIEHS

Senior Investigator, Biostatistics Branch

Education: Fudan University, People's Republic of China (B.S. in medicinal chemistry); University of North Carolina at Chapel Hill (Ph.D. in medicinal chemistry)

Training: Postdoctoral fellowship in the Department of Chemistry at the University of North Carolina at Chapel Hill

Came to NIH: In 1995 for training at NIEHS; in 2003 appointed tenure-track investigator in NIEHS's Biostatistics Branch

Selected professional activities: Serves on the editorial boards of the Indian Society of Agricultural Statistics and the *Journal of Biometrics and Biostatistics*; reviewer for several scientific journals

Outside interests: Hiking; traveling; reading; spending time with family and friends

Research Interests: My group has focused on developing computational and statistical methods for identifying transcription factors and their co-regulatory factor binding sites in DNA sequences. We have developed methods and publicly available tools for discovering de novo DNA sequence motifs (short, recurring patterns in DNA that have a biological function) and for identifying motifs using prior motif information.

We are also interested in comparing messenger RNA (mRNA) sequence abundance between two experimental conditions. Recently, we developed a computational and statistical method as well as a software tool for comparative analyses of mRNA-sequence data. This software allows users to identify genes in which mRNA expression levels were significantly altered.

Our work is important because researchers need to understand the mechanisms that regulate gene expression. Due to recent advances in sequencing technologies such as chromatin

immunoprecipitation followed by sequencing, computational biology has increasingly become an integral part of experimental biology. The huge amount of data generated from these studies presents both opportunities and challenges.

DEBORAH MERKE, M.D., CC

Senior investigator; Chief, Pediatric Consult Service

Education: University of Massachusetts, Amherst (B.S. in interdisciplinary studies); Columbia University School of Public Health, New York (M.S. in biostatistics); State University of New York at Buffalo (M.D.)

Training: Pediatric residency at the Children's Hospital of Philadelphia; fellowship in pediatric endocrinology at NICHD

Came to NIH: In July 1994 for training; in 1997 joined NICHD; in 1999 appointed chief of the Clinical Center's Pediatric Services

Selected professional activities: Member, Pediatric Endocrinology Subboard of The American Board of Pediatrics; authors questions for the Pediatric Endocrinology Board Examination

Outside interests: Spending time with her two daughters; doing photography; traveling; cross-country skiing

Research interests: My team has made significant contributions to the study of congenital adrenal hyperplasia (CAH), a group of inherited disorders of the adrenal glands. The two adrenal glands, one atop each kidney, make the hormones cortisol and aldosterone. But people with CAH fail to grow and develop normally because they lack an enzyme to make these hormones and their adrenal glands produce excess androgen. Classic CAH, the most severe form of the disorder, is usually detected shortly after birth or in

CONTINUED ON PAGE 18

Recently Tenured

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early childhood and can be life threatening. Patients continue to have hormonal imbalances throughout life; may have an early rapid growth spurt but be short as adults; experience anxiety and depression; and may be infertile.

The milder form, nonclassic CAH, causes a variety of symptoms including the premature development of body hair, early puberty, and infertility. We discovered that patients with CAH have an adrenaline deficiency and smaller-than-normal amygdalas (the part of the brain that regulates emotion).

We also identified problems with hydrocortisone suspension, the common medication once used to treat CAH. Our studies led to a product recall in the 1990s. Today, we are conducting the largest ever natural-history study of CAH, with more than 250 patients enrolled, and hope to broaden our understanding of the disease process. Our team is also collaborating with NIMH to explore the psychological aspects of hormone imbalances and with NIA to look at other genes that may influence the severity of CAH symptoms. Central to our work is the study of new treatments, including a long-term trial testing an antiandrogen and aromatase inhibitor to block excess hormones and a study of a newly developed form of hydrocortisone that mimics circadian cortisol secretion.

THE NIH CATALYST IS ALWAYS LOOKING FOR STORY IDEAS. IF YOU KNOW OF SOME INTERESTING RESEARCH GOING ON OR HAVE OTHER SUGGESTIONS FOR ARTICLES, PLEASE LET US KNOW. WE ALSO WELCOME SUBMISSIONS FOR OUR COMMENTARY PAGE (OP-ED TYPE ESSAYS) AND FOR OUR BACK PAGE (LABORATORY CONFESSIONS OR PHOTOGRAPHS). TO CONTACT US, E-MAIL CATALYST@NIH.GOV OR CALL 301-402-1449 OR FAX 301-402-4303. DEADLINE FOR THE MARCH-APRIL 2013 ISSUE IS FEBRUARY 1, BUT YOU CAN SUBMIT IDEAS ANY TIME.

Helping Native Americans

NIDDK Research Clinic in Arizona Aims to Lessen Health Disparities

BY AMY F. REITER, NIDDK



ON A DUSTY ROAD JUST SOUTH OF Phoenix, a small one-story building has completed its first year open for research. The building sits on the Avenida del Yaqui in Guadalupe, a town made up primarily of Yaqui Indians and Hispanic Americans. The Yaqui who first settled in the town were from Sonora, Mexico; descendants have preserved many elements of their culture, including elaborate Easter and Lent ceremonies with dancing, costumes, music, and masks.

The facility, called the NIH Research Clinic, opened in summer 2011 with the goal of helping to understand and lessen health disparities in obesity, type 2 diabetes, and complications of diabetes including blindness, amputations, and kidney failure in Native Americans. NIDDK researchers from the intramural Phoenix Epidemiology and Clinical Research Branch (PECRB) hope that participation in clinical research by people from Guadalupe and surrounding communities will help make this goal achievable.

"Guadalupe is very accessible for members of the Yaqui tribe as well as for other Native Americans living in the greater Phoenix area," said Jennifer Weil, a physician at the PECRB. "We know

that the burden of type 2 diabetes is great in that community as well as in other Native American communities in and near Phoenix."

The close-knit community may enable better research. "We are conducting the Family Investigation of Nephropathy in Diabetes (FIND) to determine genetic factors that contribute to diabetic kidney disease," said PECRB physician Robert Nelson. "In this protocol, we try to see many members of each family. The Guadalupe research clinic has enabled us to get to know whole households."

The facility may soon begin adding studies. "We would like to expand our research there to other protocols, including our longitudinal study of obesity, impaired glucose regulation, type 2 diabetes, and complications of diabetes," said PECRB investigator Bill Knowler. "We hope to get to know more members of the Guadalupe community as they come in to participate in our studies."

The clinic's "studies are [also] open to all Native Americans in both of our current research clinic locations, Guadalupe and ... the NIH building on the grounds of the Phoenix Indian Medical Center," said PECRB's Jeff Curtis. ●

For more information on the clinic or PECRB research, go to <http://www2.niddk.nih.gov/NIDDKLabs/AllLabs/Branches/PhoenixEpidemiologyandClinicalResearchBranch.htm>.



AAAS WEBINAR: "BETWEEN THOUGHT AND THERAPY: TRANSLATING NEUROBIOLOGY RESEARCH INTO TREATMENTS"

Taping: Feb. 5, 2013, 11:45 a.m.-1:00 p.m.

(No one admitted after 11:50 a.m.)

Wilson Hall (Building One)

Broadcast: Feb. 13, 2013, noon-1:00 p.m.

All are welcome to attend the taping of the second *Science/American Association for the Advancement of Science* Webinar. Last year's Webinar attracted AAAS's largest audience, with more than 2,500 registered participants. This year's panelists—NEI's Anand Swaroop (age-related macular degeneration), NHGRI's Ellen Sidransky (Gaucher's disease), and NIMH's Carlos Zarate (depression)—will share their translational research experiences of applying basic research at the bedside; discuss the best environments for conducting translational research; provide advice on working in new experimental systems such as stem cells; and answer questions submitted by the audience. To register for the broadcast, go to <http://webinar.sciencemag.org>.

GOOGLE AND BING SEARCH TIPS

Wednesday, February 6

10:00 a.m.-noon

Masur Auditorium (Building 10)

Dan Russell from Google and Duane Forrester from Bing will present Web searching tips including search methods to target exactly what you seek and techniques to find things you didn't think could be found. The event will be videotcast (<http://videocast.nih.gov>).

WEDNESDAY AFTERNOON LECTURE SERIES

Wednesdays, 3:00-4:00 p.m.

Masur Auditorium (Building 10)

Stay abreast of the latest research with WALS. Hear from top investigators in biomedical and behavioral research. For information and schedule, visit <http://wals.od.nih.gov> or contact Jackie Roberts at (robertsjm@mail.nih.gov or 301-594-6747). The March 13 WALS will feature Rita Dove, former U.S. Poet Laureate.

CLINICAL CENTER GRAND ROUNDS

Wednesdays, 12:00-1:00 p.m.

Lipsett Amphitheater (Building 10)

Videocast live and archived (<http://videocast.nih.gov>). For information and a schedule, go to <http://clinicalcenter.nih.gov/about/news/grcurrent.html> or call 301-496-2563.

"THE GLOBAL BURDEN OF DISEASE 2010

STUDY: WHAT DOES IT MEAN FOR THE NIH AND GLOBAL HEALTH RESEARCH?"

Thursday, Jan. 17, 2013, 11 a.m.-12:30 p.m.

Natcher Auditorium (Building 45)

The Fogarty International Center presents Christopher Murray (University of Washington), senior author of the "Global Burden of Disease Study 2010," published in *The Lancet* on December 14, 2012. The study is a systematic, scientific effort to quantify deaths and disability due to diseases, injuries, and risk factors by age, sex, and geography with a look at these trends over time. For decision makers, health-sector leaders, researchers, and informed citizens, this approach provides an opportunity to see the big picture; to compare diseases, injuries, and risk factors; and to grasp the most important contributors to health loss. Read the *Lancet* article at <http://www.thelancet.com/themed/global-burden-of-disease>. The event will be videotcast live and archived (<http://videocast.nih.gov>).

NINDS GRAND ROUNDS

Tuesdays, 10:30 a.m.-12:00 p.m.

Lipsett Amphitheater (Building 10)

January 29: Richard Roda, "Case Presentation: Spasticity In A Young Woman"; Craig Blackstone, "Common Cellular Pathogenic Themes For The Hereditary Spastic Paraplegias And Polyneuropathies"

February 5: Alexander Ksendzovsky, "Case Presentation: TBD"; Philip A. Starr (University of California at San Francisco), "Cortical Synchronization In Movement Disorders: Insights From Intraoperative Electrocorticography"

For information contact Wanda Haddaway (haddawayw@ninds.nih.gov or 301-496-4393).

GLOBAL HEALTH: FROM JOHN SNOW TO GENOME SCIENCE

Wednesday, January 30, 2013

11:00 a.m.-12:00 p.m.

Masur Auditorium, Clinical Center (Bldg. 10)

Presenters: NIH Director Francis Collins; Sir Mark Walport (Director, The Wellcome Trust and the United Kingdom's next chief scientific adviser.) Event will be videotcast live on the Web and archived (<http://videocast.nih.gov>). Sponsored by FIC. For more information contact Ann Puderbaugh (ann.puderbaugh@nih.gov or 301-496-2075).

GENOME SEMINARS

Thursdays, 11:00 a.m.-12:00 p.m.

Lipsett Amphitheater (Building 10)

NHGRI's Division of Intramural Research sponsors a biweekly seminar series that is open to the entire NIH community and covers a broad range of topics in genetics and genomics. Seminar dates: January 10 & 24; February 7 & 21; March 7; April 4. For information visit <http://www.genome.gov/10000480> or contact Lisa Poe (Poel@mail.nih.gov or 301-451-8078).

POSTDOCTORAL RESEARCH ASSOCIATE (PRAT) PROGRAM

Application Deadline: February 27

The longstanding NIGMS PRAT Program funds research in one of NIH's or FDA's laboratories. The program was initiated to address a national need for well-trained pharmacologists and continues to train fellows in emerging research areas. For the next three years (2013-2015), these areas are quantitative and systems pharmacology (QSP) and computational biology. The theme of the postdoctoral research project proposed by a PRAT candidate may be in a variety of subject areas, but the focus of the research conducted during the PRAT fellowship should fall within the definition of QSP and/or computational biology. For more information or application materials, visit <http://www.nigms.nih.gov/Training/PRAT.htm> or contact the PRAT program assistant (301-594-3583 or prat@nigms.nih.gov).

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Also, we welcome “letters to
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your reactions to anything on
the *Catalyst* pages.



Wes Hickman in
NIAID's Laboratory of Molecular
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took the prize-
winning photo
(above, right).

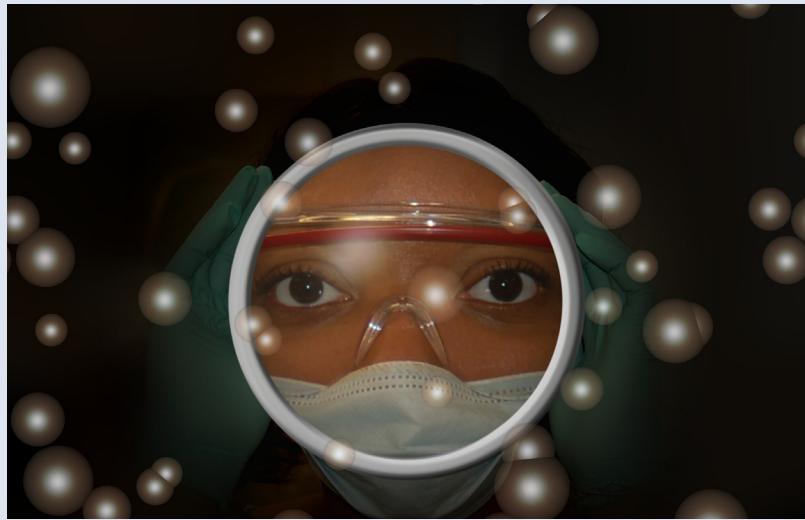
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PHOTOGRAPHIC MOMENT

Safety First



WES HICKMAN, NIAID

Wes Hickman (NIAID) won first place in the second annual “In Focus Safe Workplaces for All” photography contest for this surrealistic vision of a masked, goggled, gloved, and lab-coated colleague (Towanda Carroll) who is protected in a world of biological and chemical surroundings. Sponsored by the Division of Occupational Health and Safety in the Office of Research Services, the contest challenged anyone with a passion for photography to use their imagination and creativity to capture an image of workplace safety and health and share it with the NIH community.

HAVE A LATE-NIGHT LABORATORY CONFESSION OR A SPECTACULAR PHOTOGRAPH TO SHARE?
SEND IT TO US AT CATALYST@NIH.GOV AND WE JUST MIGHT PRINT IT.

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