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July 2006

NIEHS Spotlight

Science Notebook

Did You Know?

NIEHS Spotlight

NIH Director Speaks on Budget Concerns

By Jerry Phelps

Elias Zerhouni, NIH Director

Elias Zerhouni, Director of the National Institutes of Health addressed the National Advisory Environmental Health Sciences Council and NIEHS staff on June 1. Zerhouni's remarks, delivered through a videoconference, focused mainly on the proposed FY07 budget for NIH and NIEHS. He described several events, including the federal and trade deficits, increased spending for homeland security and defense, Hurricane Katrina, and preparations for pandemic flu, that have created a "Perfect Storm" resulting in budget cuts for NIH.

Zerhouni also addressed several "myths" regarding NIH priorities and their affects on the overall budget. One concern is that the NIH leadership is putting more emphasis on applied research versus basic research. Zerhouni pointed out that the distribution of funding for basic and applied research has been relatively unchanged over the past several years. He also addressed a perception that NIH is moving towards more targeted research programs by showing that spending for investigator initiated research grant proposals has actually increased from 91 percent in 1995 to 93 percent in 2005. Zerhouni addressed concerns about funding for the NIH Roadmap Initiative and it's potential drain on the overall NIH budget, by pointing out that the entire FY 2005 budget for Roadmap was $28.8 million or only 1.2 percent of the NIH budget. He defended this program as being the only way to "incubate and encourage high risk research" and said the program's goal is to increase synergy across all of NIH.

Referring to management of the NIH budget in the post-doubling budget period, Zerhouni drew the analogy of biomedical research as being like a marathon. He said "You cannot give a marathon runner twice as much water in the first half of the race and nothing in the second." Next, he highlighted several "Strategies for the Future" including continued funding emphasis for investigator initiated research projects and programs to support new investigators such as the new K99/R00 research grant that transitions post-doctoral fellows into their first research grant. Zerhouni also expressed his desire that the biomedical research community convey a unified message about the positive impacts of NIH-supported research at regional and national levels.

Zerhouni closed his prepared remarks by praising NIEHS for its leadership in the Genes and Environment Initiative, which NIEHS is undertaking with the National Human Genome Research Institute. Zerhouni also recognized how NIEHS improved the health of the nation. He specifically mentioned the role NIEHS-funded research has played on identifying particulate air pollution as a risk factor for heart disease morbidity and mortality and the Institute's contribution to the Inner City Asthma Study. Zerhouni said that NIH is transforming medicine through discovery and that the agency will continue to play a major role in changing the Nation's health care delivery system so that it becomes more "predictive, personalized, preemptive, and participatory."

Click on http://www.niehs.nih.gov/od/council/video/home.htm to view the videocast of Zerhouni's presentation.

Juliette Bell named Provost and Vice Chancellor at Fayetteville State University

By Jerry Phelps

Juliet Bell (photograph courtesy of FSU)

Former NIEHS postdoctoral fellow Juliette Bell, is the new Provost and Vice Chancellor for Academic Affairs at Fayetteville State University (FSU). Bell joined the faculty of FSU as an associate professor in 1992 after two years in the NIEHS Laboratory of Molecular Genetics. Bell was later named the Director of the Biomedical Research Program and in 2004 was appointed interim dean of the College of Basic and Applied Sciences. FSU Chancellor T.J. Bryan described Bell as a "renowned scholar and a highly qualified administrator."

Bell has been involved in many activities at FSU. She led FSU in developing programs in biotechnology, forensic science, and nursing. In addition to a variety of teaching awards, she has earned national awards including the National Association for Educational Opportunity in Higher Education Research Excellence Award. She was honored as one of ten African-American Life Scientists in an exhibition at the Chicago Museum of Science and Industry. In 2004 she received the Millennium Award for Excellence in Teaching from the White House Initiative on Historically Black Colleges and Universities.

Bell has garnered over $6 million in grants for biomedical research at FSU. Her research focus is DNA synthesis and mutagenesis. She is an active member of several national organizations striving to promote minority participation in science and research and has served on various NIH committees.

Tom Kunkel was Bell's supervisor and mentor during her tenure at NIEHS. Kunkel said "Juliette has gone on to be a highly successful minority scientist who is having a really significant impact at the national level. I am very proud of her."

Hermon Wins Honorable Mention for Poster Presentation

By Jerry Phelps

Tonia Hermon, a Ph.D. candidate in the NIEHS Laboratory of Experimental Pathology, set the bar high when she won an Honorable Mention for her very first scientific presentation. Under the mentorship of Dr. Darlene Dixon, Hermon prepared a poster titled, "Phospo-Serine-118 Estrogen Receptor Alpha (ERα) is Highly Expressed in Human Uterine Leiomyomas Compared to Myometrial Tissue," which was displayed on April 5 at the 2006 Global Challenges, Local Solutions Research Expo in Norfolk, Va. The event was co-sponsored by Eastern Virginia Medical School (EVMS), Norfolk State University (NSU) and Old Dominion University (ODU).

Hermon has a special interest in uterine leiomyomas also known as fibroids. Her mother and two of her aunts had partial or full hysterectomies because of this painful condition, which strikes African-American women much more frequently than others. She said the personal connection keeps her more focused on her research

and gives it more importance. Hermon's research seeks to elucidate how the estrogen receptor and growth factor signaling pathways interact to promote fibroid growth. Results of the studies presented in the poster show higher levels of the phosphorylated estrogen receptor and mitogen activated protein kinase, a key component of the interaction between the pathways, in leiomyomas compared to normal myometrial tissue.

Dixon shares Hermon's enthusiasm and said, "I'm very proud of Tonia and her accomplishments. Having her work recognized at this meeting out of over 100 participants brings great honor to Tonia and our lab. Tonia's enthusiasm for research and learning is contagious. She's a very positive influence in our lab and I'm very pleased to serve as her mentor."

Tonia Hermon with her award winning poster and citation.

Hermon is enrolled at EVMS in the Department of Physiological Sciences through a joint program with ODU. Finished with her course work, she hopes to complete her dissertation and graduate in 2007. At this point she plans to pursue a research career in government, academia, or the private sector, although if the opportunity is presented, she said she would "jump at the chance to stay at NIEHS to continue working on fibroid research" and that "Dr. Dixon is the perfect person to train me to be a scientist."

Postdocs Focus on their Futures at the 9th Annual NIEHS/NTA Career Fair

By Jennifer Perry

The NIEHS/NTA Career Fair, held April 28 at the Sigma Xi Center in Research Triangle Park, gathered approximately 280 people to learn about science careers and to network with professionals from academic, clinical research, and industrial environments. For one day, graduate students and postdoctoral fellows stepped out of the laboratories, replaced their lab coats with business attire, and focused on their future careers. Participants from the NIEHS, EPA, and local universities began their day with a lecture on the job application process by Michael Ranney from the University of California at Berkley, Graduate School of Education. Ranney presented his personal journey through the job application process (he applied for nearly 100 faculty positions before taking his current post) and addressed the audience's questions about CVs and cover letters. Rachel Robinson, a fellow in the NIEHS Laboratory of Neurobiology, said she enjoyed Ranney's interaction with participants during the lecture while learning skills required for searching and applying for positions.

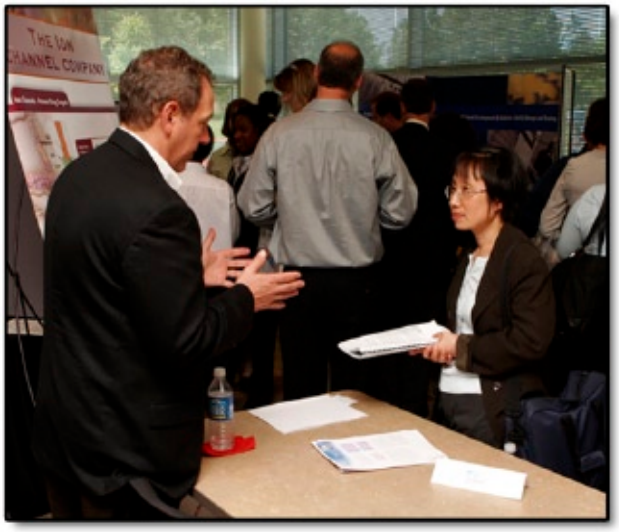
Following the lecture, question and answer panel sessions convened to discuss scientific careers. The sessions represented careers in science communications, tenure track and non-tenure track academia, science entrepreneurs, clinical research, and industry. Panelists described their individual career paths and gave advice for success. Bjorn Bauer, a fourth-year postdoctoral fellow in the NIEHS Laboratory of Pharmacology and Chemistry, said that he appreciated the honesty of the tenure-track faculty members as they shared their personal experiences. He left the career fair with a better understanding of the administrative and management skills he will need when he begins a career in academia.

A lunch break and a networking reception provided time for participants to seek employment and conduct informational interviews with at least 15 companies, including event sponsors Merck and Applied Biosystems. In addition, local professional organizations centered on career development were present at the event. Representatives from organizations, such as the North Carolina Council for Entrepreneurial Development and the Research Triangle Park Chapter of the American Chemical Society Younger Chemists Committee, met with participants and shared their upcoming activities.

Gerd Heimlich, a Career Fair Committee member, said his positive experiences meeting panel members and company representatives at a previous career fair motivated him to volunteer for the organization of the event. He gained a different perspective while choosing topics for panel sessions and developed more contacts as he invited panel members and companies to the career fair. The NIEHS Trainees Assembly (NTA) and the Office of Fellows Career Development at NIEHS plan the annual fair to encourage career exploration among trainees and to help them foster relationships with human resource directors and scientists at biotech companies. Deborah Swope, director of the Office of Fellows' Career Development, said "The annual NIEHS/NTA Career Fair organized by NIEHS trainees provides a key training opportunity for our fellows and their local colleagues to learn about the wide array of career options open to them as biomedical scientists. The fair also gives fellows the chance to develop career networks that can open the doors to their future career paths."

The 2007 career fair is tentatively scheduled for April. Trainees are invited to suggest panel topics, panel members and company representatives in addition to joining the planning committee. Contact Monica Horvath, Chair of the 2006 Career Fair, at horvathm@niehs.nih.gov for more information.

Michael Ranney joins the audience during his lecture, "Scientist: Promote Yourself."
(Photographs by Steve McCaw of Image Associates)



Yu-Ying He (right), a research fellow at NIEHS, visits the company exhibits and talks with Doug Krafte(left), a representative from Icagen.

2006 Health and Fitness Week Activities

By Jerry Phelps

NIEHS celebrated its annual Health and Fitness Week May 22-25 with an expanded array of activities thanks to a dedicated planning committee and group of volunteers. New events included an in-line skate party and a golf outing. Returning favorites included the Rogathon five-kilometer run and one-mile walk, a table tennis tournament, basketball shootout and 3 on 3 tournament, jump rope and Hula Hoop competitions, and Frisbee and football tosses. Representatives of health insurance and wellness organizations also exhibited in the Mall.

The planning committee included Diane Crawford of the Administrative Services and Analysis Branch, and Vivi Shropshire, Chris Hunt, Bill Fitzgerald, and Scott Merkle of the Health and Safety Branch. Results and pictures of the various events are below.

Lorie Boyd of the Comparative Medicine Branch and Terry Wells, a contractor with Johnson Controls, enjoyed a fun and beautiful day for golf at The Crossings. (All photographs by Steve McCaw of Image Associates)

3 on 3 Basketball Tournament

First Place – Defending Champions Gordon Caviness, A.G. Carrington, and Eric Potts

Second Place – Markese Leathers, Anthony Lockhart, and Joe Hunter

(Left to right) Gordon Caviness, A.G. Carrington, and Eric Potts winners of the 3 on 3 basketball tournament.

5-kilometer Rogathon Road Race

Men's Winner—Defending Champion Liam O'Fallon in a time of 18:01

Women's Winner—Brooke Baker in 21:50.

Liam O'Fallon and Brooke Baker

Basketball Shootout—Women's Champions

Rebecca Klein—1st Place

Jackie Locklear—2nd Place

Vivi Shropshire—3rd Place

(Left to right) Vivi Shropshire, Becky Klein, and Jackie Locklear

Basketball Shootout—Men's Champions

Jordan Holmes—1st Place

Anthony Lockhart—2nd Place

Gordon Caviness—3rd Place

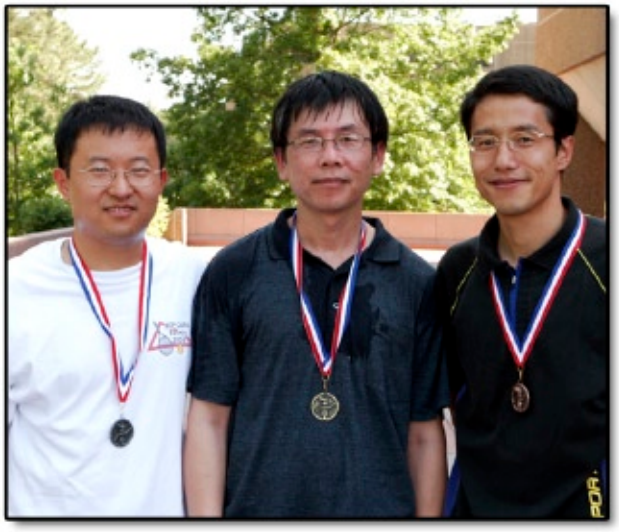
(Left to right) Anthony Lockhart, Jordan Holmes, and Gordon Caviness

Table Tennis Tournament

Jeff Chou—1st Place

Jianying Li—2nd Place

Junhui Sun—3rd Place



(Left to right) Jianying Li, Jeff Chou, and Junhui Sun

Football Throw—Distance and Accuracy

Mike Pentimone—Tied for 1st Place

Sikander Lalani—Tied for 1st Place

Eric Potts—3rd Place

(Left to right) Mike Pentimone, Sikander Lalani,and Eric Potts

Chip Hughes (or is that Rod BrindAmour) dreams of Stanley Cup glory.

Nori Nakamura on her way to winning both the Musical Jump Rope and Most Jumps competitions.

NIEHS Celebrates the First Anniversary of the Disability Advocacy Committee

By Alicia Moore

Gary Morin, Program Analyst and Section 508 Coordinator for the National Institutes of Health, Office of Equal Opportunity & Diversity Management, Division of Policy, Evaluation, and Training.
(Photograph by Steve McCaw of Image Associates)

May 2006 marked the first anniversary of the Disability Advocacy Committee (DAC) and a year of remarkable accomplishments in disability education and accessibility at the NIEHS. The DAC is an independent resource with a mission to serve as an advocate for NIEHS employees and visitors with disabilities. The DAC acts as a facilitator and liaison to the NIEHS Director, through the Office of Equal Opportunity and Diversity Management (OEODM) and the NIEHS Diversity Council.

Recently, the Department of Health and Human Services mandated that all Federal employees complete training of Section 508 of the Rehabilitation Act of 1973. Section 508 became effective on June 21, 2001 to ensure that individuals with disabilities have increased access to electronic and information technology (EIT). This law requires that when Federal agencies develop, procure, maintain, or use EIT, they ensure that it is accessible to individuals with disabilities.

Section 508 training is composed of two sessions. Stage I is an online introduction to the requirements of EIT accessibility. Stage II is a classroom briefing focusing on procurement and accountability for ensuring that all EIT is accessible. Stage I completion is a requirement for all Federal employees, Stage I & II for all managers and supervisors. Gary M. Morin, Program Analyst and Section 508 Coordinator for the National Institutes of Health, Office of Equal Opportunity & Diversity Management, Division of Policy, Evaluation, and Training, presented the Stage II training session to NIEHS on May 1, 2006.

Luncheon hosted by DAC members [Left to Right]: JJ Bell-Nichols, Clyde Hasty, Cindy Innes, Alicia Moore, Tina Jones, Virginia "Ginny" Ivanoff, Gerard Roman, Gary Morin, Dona McNeill, Diane Breckenridge and Kathy Odenwald.

The training helped managers and supervisors understand their responsibilities under Section 508 and levels of accountability. This training session also helped managerial staff to understand how to conduct or coordinate compliance reviews to ensure that NIEHS functions and activities are in compliance with Section 508 and provide or participate with the NIH procurement and information staffs to assure compliance. Lastly, the Stage II training explained the differences between Section 504, regarding reasonable accommodations, and Section 508.

The DAC honored Morin by hosting an informal luncheon in the NIEHS Executive Conference Room. Members were glad that they were able to bring awareness of this accessibility act to the NIEHS community. Furthermore, the emphasis of training being mandatory would hopefully help all employees to implement this important requirement. Currently, the DAC consists of 14 volunteer members including ad hoc representatives from the OEODM Office, Office of Research Facilities, and Health and Safety Branch. Employees wishing to participate with the DAC may contact Alicia Moore, Chair, J.J. Bell-Nichols, Vice-Chair, or Cindy Innes, Secretary, of the DAC.

Science Notebook

STEERing Students into the Environmental Health Sciences

By Jerry Phelps

Mike Humble of the Cellular, Organs and Systems Pathobiology Branch in DERT presented a new program for concept clearance at the June 1 meeting of the National Advisory Environmental Health Sciences Council. STEER, which stands for Short Term Educational Experiences for Research in the environmental health sciences, will provide biomedical research opportunities for talented high school and undergraduate college students. The Program, which was developed by Humble along with Carol Shreffler and Pat Mastin, is designed to contribute to Goal VI of the NIEHS Strategic Plan to "recruit and train the next generation of environmental health scientists."

Applications will be accepted from universities and research organizations from across the country. Each award is expected to support 4-8 participants who will spend 8-12 weeks working in intensive laboratory settings on

projects they will help to design and carryout. The new program will also include seminars or other formats of informational exchange so that student participants will learn about the breadth of environmental health science research. All students will have mentors to guide their research projects and to encourage the participants to consider the environmental health sciences as a career path.

The concept received kudos from the Council and was approved. Humble is now well into the process of writing the Request for Applications that will announce the program and provide necessary information to potential applicants. Humble expects to receive the first applications in the fall of 2006.

Young Investigator Wins Award

By Jerry Phelps

Andrea Bordelais (photo courtesy of UNC Wilmington)

Andrea Bourdelais of the University of North Carolina Wilmington won the Jack L. Beal award for the best paper by a young investigator in the *Journal of Natural Products* in 2005. The paper entitled "A New Polyether Ladder Compound Produced by the Dinoflagellate *Karenia brevis*" describes a compound called brevenal. The compound has generated a great deal of interest because of its unique action as an antagonist to the family of neurotoxins known as the brevetoxins. Brevenal also may be useful as a treatment for mucociliary disorders such as cystic fibrosis. It has been shown to increase mucociliary transport in sheep.

Named in honor of a former distinguished editor of the journal, the Beal award is given to investigators within twelve years of receiving their Ph.D. The award is made by the Foundation Board of the American Society of Pharmacognosy and includes a prize of $1,000, a commemorative plaque, and travel reimbursement to attend the Society's meeting in Washington, D.C. August 5-9. Pharmacognosy is the study of the physical, chemical, biochemical and biological properties of drugs as well as the search for new drugs from natural sources.

Bourdelais is a research Associate Professor at UNCW. She is the lab director in NIEHS grantee Dan Baden's lab and also a group leader in the Marine Biotechnology Program at the Center for Marine Science. Her research interests include isolating and identifying new toxins from *Karenia brevis* which may aid in understanding the human health impact of Florida red tides and isolating novel natural products from culturable marine organisms that may have therapeutic potential.

Former NIEHS Post-Doc Heping Cao Featured in *Medical News Today*

By Jerry Phelps

Research debuted at the 2006 Experimental Biology Meeting in April described the cardiovascular benefits of cinnamon and cloves in diabetics. A study conducted by Heping Cao and presented at the meeting was highlighted in the on-line publication *Medical News Today*. Cao, once a post-doctoral fellow in the NIEHS Laboratory of Neurobiology and now at the Beltsville Human Nutrition Research Center, conducts research on the biochemical basis of the insulin-like effects of cinnamon. The results of his study, conducted in collaboration with Perry Blackshear, show that cinnamon increases the production of three proteins involved in insulin signaling, glucose transport, and inflammatory responses. Cao said, "The study provides new evidence for cinnamon's beneficial effects in enhancing the action of insulin and suggests anti-inflammatory properties for antioxidants found in cinnamon."

Heping Cao former NIEHS post-doctoral fellow. (Photo Courtesy of Heping Cao)

The good news is that the spice has beneficial effects, even at low doses. Other studies presented at the meeting suggest as little as ¼ to ½ teaspoon of cinnamon twice a day is enough to significantly decrease risk factors for diabetes and cardiovascular disease.

DERT Papers of the Month

By Jerry Phelps

Estrogenic Compound in Plastic Linked to Prostate Cancer

Bisphenol A, a common chemical found in many types of plastic, permanently alters genes and leads to prostate cancer according to a new study published in the June 1 edition of *Cancer Research*. These results represent the first evidence that early exposure to low doses of environmental estrogens during prostate development in the male fetus may result in prostate cancer later in life.

A research team led by Gail Prins, an NIEHS grantee, exposed pregnant female rats to low doses of either estrogen or bisphenol A during the development period corresponding to the second and third trimesters of human pregnancy. They found that this early exposure predisposed the male offspring to precancerous lesions of the prostate gland later in life.

The researchers determined that the early estrogenic exposures caused these effects through a process known as epigenetic reprogramming. Epigenetics is the study of heritable changes in gene function that occur without a change or mutation in the DNA sequence. They found that methylation of the gene coding for the enzyme phosphodiesterase 4 permanently altered its expression in prostate tissue. Normally, this gene is expressed at very low levels in adult mammals, but after early exposure to the estrogenic compounds, the animals continued

to have high levels of expression of the gene in their prostate glands throughout their lives. In additional studies using cell cultures, high levels of gene expression were also found in prostate cancer cell lines.

The authors point out that application of these findings to human prostate cancer requires additional studies. However, since the methylation of the gene can be found before any disease has occurred, it may be useful as an early biomarker and provide a means for the early identification of men at risk for prostate cancer.

Citation: Ho SM, Tang WY, Belmonte de Frausto J, Prins GS. Developmental exposure to estradiol and bisphenol A increases susceptibility to prostate carcinogenesis and epigenetically regulates phosphodiesterase type 4 variant 4. Cancer Res. 2006 Jun 1;66(11):5624-32.

Oral Contraceptives Affect Asthma and Wheeze

Oral contraceptive used by young women may influence the occurrence of asthma and wheezing, according to research from the University of Southern California Keck School of Medicine. Oral contraceptive use was associated with about an 80 percent reduction in wheezing, in women with a history of asthma; however, in women without asthma, oral contraceptive use was associated with a 75 percent increase in the prevalence of wheeze.

Previous research by this group and others showed that sex steroid hormones may play a role in asthma. To expand on this body of research, this NIEHS-supported team conducted an epidemiologic study in a population of 905 women aged 13-28. The results were variable depending on the whether women had a history of asthma.

The age at which girls reach puberty has been declining in the same time period that asthma prevalence has been increasing. The authors conclude that "sex hormones may play an important role in asthma occurrence." Oral contraceptive use and asthma are common among young women; therefore, these findings are likely to have public health implications. The authors also suggest that clinicians may want to inform young women about the potential effects of oral contraceptive use on asthma-related respiratory symptoms.

Citation: Salam MT, Wenten M, Gilliland FD. Endogenous and exogenous sex steroid hormones and asthma and wheeze in young women. J Allergy Clin Immunol. 2006 May;117(5):1001-7.

Toll-like Receptor 4 Reduces Chronic Airway Inflammation

NIEHS scientists and colleagues at Duke University report progress in understanding the complex relationship between asthma and air-way inflammation associated with exposure to endotoxin. This research was published in the May 15 edition of the *Journal of Immunology*. The research model employed in their study will be useful in further understanding the regulation of allergic airway inflammation and "should facilitate the development of novel therapies to treat asthma by augmenting natural regulatory mechanisms."

Endotoxin, also known as lipopolysaccharide, is a component of the cell walls of gram-negative bacteria and is commonly found in household dust. Exposure to endotoxin has been shown to exacerbate asthma; however, exposure early in life has also been shown to be protective against the development of asthma. The latter finding is a component of a controversial theory known as the "hygiene hypothesis," which states that an excessively clean environment in early childhood may predispose some people towards asthma, allergies and autoimmune diseases.

The researchers exposed normal mice and mice lacking the gene for the toll-like receptor 4 (*tlr4*) to the chicken egg protein albumin containing small amounts of endotoxin and studied allergic responses. Results showed similar responses for both kinds of mice after short-term exposures. However, the *tlr4*-deficient mice showed much stronger pulmonary allergic responses compared with the normal mice when the allergic challenges lasted for greater than one week.

These findings demonstrate that *tlr4* signaling is necessary to regulate inflammatory responses to ongoing allergic challenges. The investigators conclude that their work supports previous epidemiologic findings that "low doses of endotoxin, particularly in childhood, protect against developing asthma later in life.

Citation: Hollingsworth JW, Whitehead GS, Lin KL, Nakano H, Gunn MD, Schwartz DA, Cook DN. TLR4 signaling attenuates ongoing allergic inflammation. J Immunol. 2006 May 15;176(10):5856-62.

Quality of Sperm Declines as Men Age

New research suggests that as men age they may have more difficulty fathering children. Like women, the study also suggests that some men who wait to become fathers are slightly more at risk for passing on certain rare diseases.

Obstetricians and gynecologists have long known that as women age they have more trouble conceiving, their risk of miscarriage increases, as does the risk of having children with Down Syndrome or other genetic defects. This study suggests that men too have a "biological clock," but one that causes a more gradual change in fertility. Both men and women have postponed parenthood in the past several decades. Fatherhood for men aged 35-49 has increased 40 percent while there has been a decline in births involving men under age 30.

The authors caution that their findings are preliminary and are based on a small number of tests in a small population of men. The study enlisted 97 men ages 22-80 and was funded by NIEHS. This research team previously reported that as men age, their sperm counts decline and their sperm become less active. Increased age of the men was not associated with the same genetic defects seen in older women. For instance there was no increased risk of fathering a child with Down Syndrome, but some older fathers did have an increased risk of having children with dwarfism and according to the published results, "a small fraction of men are at increased risk for transmitting multiple genetic and chromosomal defects.

Citation: Wyrobek AJ, Eskenazi B, Young S, Arnheim N, Tiemann-Boege I, Jabs EW, Glaser RL, Pearson FS, Evenson D. Advancing age has differential effects on DNA damage, chromatin integrity, gene mutations, and aneuploidies in sperm. Proc Natl Acad Sci U S A. 2006 Jun 9.

DIR Papers of the Month

By Jerry Phelps

Gene Polymorphism Associated with Coronary Heart Disease Risk

Scientists in the Laboratory of Respiratory Biology at NIEHS discovered a polymorphism for the gene coding for the enzyme soluble epoxide hydrolase that is associated with an increased risk of heart disease in Caucasians. These findings suggest that the gene, *EPHX2* may be a cardiovascular disease susceptibility gene. Darryl Zeldin and colleagues at NIEHS along with NIEHS grantee Bruce Hammock at the University of California Davis and other researchers at UNC and Baylor published these findings in the May 15 edition of *Human Molecular Genetics*.

Ten polymorphisms for *EPHX2* have been found to date. The research team analyzed the DNA of 2,065 participants in The Atherosclerosis Risk in Communities Study (ARIC). In Caucasian subjects, one polymorphism, *K55R*, was significantly more common among people with coronary heart disease than in healthy adults. No significant associations were observed between the polymorphism and coronary heart disease in African-Americans.

Soluble epoxide hydrolase is found in the smooth muscle tissue of the veins and arteries. It regulates endothelial cell function and metabolizes a group of compounds known as epoxyeicosatrienoic acids (EETs). EETs are known to have anti-inflammatory effects and to be potent vascular dilators.

The ARIC, which began in 1987, is a prospective epidemiologic study conducted in four U.S. communities, and is designed to investigate atherosclerosis and variations in cardiovascular risk factors, medical care and disease by race, gender, location, and date. The four communities are Jackson, MS; Forsyth County, NC; suburban Minneapolis, MN; and Washington County, MD.

Citation: Lee CR, North KE, Bray MS, Fornage M, Seubert JM, Newman JW, Hammock BD, Couper DJ, Heiss G, Zeldin DC. Genetic variation in soluble epoxide hydrolase (EPHX2) and risk of coronary heart disease: The Atherosclerosis Risk in Communities (ARIC) study. Hum Mol Genet. 2006 May 15;15(10):1640-9.

Calpain 11 Gene is Expressed in the Mouse Testis

Mitch Eddy in the Laboratory of Reproductive and Developmental Toxicology and colleagues at Tel-Aviv University cloned the gene for a calcium-dependent thiol protease known as calpain 11 and determined that its expression is specific to the testis. The team also determined that the gene is located on chromosome 17 in mice. These discoveries were reported in the June edition of the journal *Molecular Reproduction and Development*. Calpains are a family of proteases involved in the intracellular processing of proteins.

The findings that calpain 11 is expressed during spermatogenesis and is located in sperm cells suggest that it is integral to the regulation of calcium dependent signal transduction events during meiosis, and the proper functioning of sperm cells.

Citation: Ben-Aharon I, Brown PR, Shalgi R, Eddy EM. Calpain 11 is unique to mouse spermatogenic cells. Mol Reprod Dev. 2006 Jun;73(6):767-73.

Residential Radon Exposure and Lung Cancer Risk

An epidemiologic study conducted in Connecticut, Utah and southern Idaho did not detect an increased risk of lung cancer associated with residential radon exposure at the low levels of exposure found in study homes. Studies of uranium miners have consistently shown that radon is a significant risk factor for lung cancer. Results of individual studies of residential exposure have been inconsistent, but collectively such studies find a small risk associated with radon exposure that is consistent with what would be predicted based on extrapolation from studies of miners.

The current study examined 1,474 lung cancer cases in people 40-79 years of age. Residential histories and data on known lung cancer risk factors were compiled for both cancer cases and the control group, which consisted of over 1,800 people. Radon was measured in current and past residences. Levels were lower than expected; however, the levels in Utah and southern Idaho were about twice that of Connecticut homes. The authors conclude that "overall, there was little association between time-weighted average radon exposures 5-25 years prior to diagnosis/interview and lung cancer risk." Results from this study were combined with those from other North American studies of residential exposure and together results do show that residential radon exposure increases lung cancer risk.

Citation: Sandler DP, Weinberg CR, Shore DL, Archer VE, Stone MB, Lyon JL, Rothney-Kozlak L, Shepherd M, Stolwijk JA. Indoor radon and lung cancer risk in Connecticut and Utah. J Toxicol Environ Health A. 2006 Apr;69(7):633-54.

Krewski D, Lubin JH, Zielinski JM, Alavanja M, Catalan V, Field W, Klotz JB, Letourneau EG, Lynch CF, Lyon JL, Sandler DP, Schoenberg JB, Steck DJ, Stolwijk JA, Weinberg CR, Wilcox HB. A combined analysis of North American case-control studies of residential radon and lung cancer. J Tox Env Health Part A 2006;69:533-597.

Did You Know?

Shirley Isenhour Retires after 32 Years of Government Service

By Jerry Phelps

June 2 marked the end of Shirley Isenhour's long career as a dedicated public servant. Isenhour began her federal employment as an Electrical Accounting Machine Operator in the payroll section at the Cherry Point Marine Base during her summer vacations while attending school at St. Andrews College in Laurinburg, N.C. Her career included positions with the Veterans Administration, United States Geological Survey, EPA and NIEHS. Isenhour was recruited to NIEHS by a long-time friend and NIEHS employee, Sharon McClung who retired in 2002 leaving a secretarial position open in the Office of the Deputy Director. Isenhour got the job and served in that capacity for four years.

Shirley Isenhour opens a gift during her retirement party on June 2.
(Photograph by Steve McCaw of Image Associates)

Although Isenhour retired June 2, she continued to work for a two more weeks to help train her replacement and to ensure Deputy Director Sam Wilson wouldn't be without secretarial support. At the retirement party hosted by her friends in the Office of the Director, Wilson spoke of Isenhour's "critical contributions" and dedication. Referring to her two-week fill-in, Wilson quipped, "Have a great retirement, and I'll see you on Monday."

Isenhour and her husband Bill Turner plan to travel and stay involved in community organizations. First on their list of places to visit is Sedona, Ariz. once named the Most Beautiful Place in America in USA Weekend's Annual Travel Report. Isenhour and Turner met on a mission trip to Haiti organized by their church, St. Andrews Presbyterian in Raleigh. Isenhour sings in the choir at St. Andrews and plans to become more active in church affairs. Turner was recently elected president of the North Raleigh Lion's Club and Isenhour plans to assist him in his duties in the coming year. She also plans to spend more time on her hobbies including making beautiful stained glass crafts. Her one indulgence in retirement will be to sleep late.

Isenhour said she will miss the friends she made at NIEHS and based on the outpouring of good wishes at her party, she will be missed as well.

NIEHS Staff win 2005 Secretary's Award for Distinguished Service

Sixteen members of the NIEHS family were presented with the Health and Human Service' Secretary's Award for Distinguished Service as part of a group award "for dedicated support to the health and safety of victims of Hurricanes Katrina and Rita along the Gulf Coast." The NIEHS recipients were: Samuel Arbes, Beth Anderson, Gwen Collman, Allen Dearry, Diane Forsythe, Richard Freed, Mary Grant, Joseph Hughes, Angie Sanders, Stella Sieber, William Stokes, William Suk, Claudia Thompson, Brenda Weis, Samuel Wilson, and Mary Wolfe. The award ceremony was held at the Department's headquarters in the Hubert H. Humphrey building in Washington, D.C. on June 29. David Schwartz, NIEHS director, nominated the group for their efforts in a host of activities including setting up a field hospital in Mississippi, creating a geographic information service to assess exposure and infrastructure damage and assist with emergency response and cleanup, providing veterinary care for displaced animals, serving as members of public health teams for environmental health assessments, and many others. Congratulations to all the awardees.

Former Pathology Intern Thanks NIEHS for Research Opportunity

Lyn Miller Wancket, a recent graduate of the University of Illinois College of Veterinary Medicine, was featured in the June edition of the Newsletter for the American College of Veterinary Pathologists (ACVP). Wancket spent six-weeks at NIEHS during her final year of veterinary school. In a brief story, Wacket described her experiences at NIEHS and the opportunity she had to use *in vivo* magnetic resonance microscopy to detect and monitor the growth of diethyl-nitrosamine-induced liver tumors in mice. During her internship, she worked with Bob Maronpot in the Laboratory of Experimental Pathology. She thanked both NIEHS and the ACVP for supporting her efforts and said "my time in North Carolina was by far my favorite senior year rotation." In June, Wancket entered Ohio State University to pursue a graduate degree and to begin a residency program in anatomical pathology. To read the entire story, click the link below and scroll down to page 13.

http://www.acvp.org/news/newsletter/june2006.pdf

NIEHS Science Education Committee has Volunteer Opportunities

The NIEHS Science Education Committee (SEC) recently launched a web page to inform NIEHS employees of the committee's activities and available opportunities for science education outreach at the Institute and in the Triangle's communities. The page contains a list of volunteer activities designed to engage young people and to increase their awareness of and interest in environmental health sciences. Activities include NIEHS tours, classroom visits, the Summers of Discovery Program, Science Fair Judging, and more.

Staff interested in volunteering for any of these activities or to be a part of the SEC, should fill out the brief volunteer form at http://www.niehs.nih.gov/science-education/committee/volunteer.htm . This form will allow the SEC to meet the needs of visitors and schools in the local area.

To learn more about the SEC and to access a list of resources, please take a few moments to visit the Science Education Committee webpage at http://www.niehs.nih.gov/science-education/committee/resources.htm.

Upcoming Events

The NIEHS Equal Employment Office will offer Spanish classes starting later this summer. Contact Ginny Ivanoff at 1-3675 for more information.

July 5--"Oral bacteria, allergic disease and the hygiene hypothesis."
Speaker: Samuel J. Arbes, DDS, Ph.D.
11:00 AM – 12:30 PM
Rall Building—Rodbell B

July 10-12--A representative of the NIH Office of the Ombudsman will visit NIEHS for confidential meetings geared towards helping employees work through difficult situations and assist in identifying options for addressing concerns. Please call Kevin Jessar at (301) 594-9550 to schedule an appointment.

July 12—"Blame it on your parents: genome variation, environment, risk and you."
Speaker: Douglas Bell, PhD
11:00 AM - 12:30 PM
Rall_Bldg-Rodbell B

July 18—NIH Webcast—The Management of Eating Disorders
2:00-4:00 PM
For more information, http://www.mchcom.com/liveWebcastDetail.asp?leid=253

July 19—"Using microarrays to look for biomarkers of injury or disease in your RNA."
Speaker: Richard S Paules, PhD
11:00 AM - 12:30 PM
Rall_Bldg-Rodbell B

July 26—Summers of Discovery Program Poster Session:
First Group 9-10:30 AM, Second Group 10:30 AM – 12 Noon
Summers of Discovery Interns presenting posters of their work
Rall_Bldg-Mall

July 26—Class: Introduction to Health and Safety at NIEHS
1:00 PM - 5:00 PM
Rall_Bldg-Rodbell A

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