

Report to the National Advisory Environmental Health Sciences Council Director, NIEHS

9-10 September 2014

Director's Message

New NIEHS-Funded Centers

Center for Urban Responses to Environmental Stressors. A new grant from NIEHS will allow researchers to study how exposures to stressors that are prevalent in the urban industrialized environment impact human health in Detroit and beyond. The grant, awarded to Wayne State University, is one of 21 Environmental Health Sciences Core Centers funded by NIEHS. The new Center for Urban Responses to Environmental Stressors (CURES) includes collaborators at Henry Ford Health System, the University of Michigan, and Michigan State University, as well as community organizations. CURES places special emphasis on understanding how environmental exposures, during life windows of heightened susceptibility, can adversely affect health, particularly in vulnerable persons, such as children and adults of low socioeconomic status, older adults, first responders, and refugees. The center emphasizes broad interactions with the public, as well as leaders of advocacy, community, and government organizations dealing with the environment and health. CURES is co-led by Wayne State faculty members Melissa Runge-Morris, M.D., director of the Institute of Environmental Health Sciences (IEHS) and professor of oncology, and Bengt Arnetz, M.D., Ph.D., M.P.H., M.Sc.Epi., deputy director of IEHS and professor of family medicine and public health sciences.

Center for Translational Environmental Health Research. NIEHS has designated the Center for Translational Environmental Health Research (CTEHR) in Texas as the newest National Center of Excellence in Environmental Health Science. CTEHR is a collaboration of Texas A&M University, Baylor College of Medicine, and the University of Houston. This center, which becomes the 21st NIEHS core center, will serve as the cornerstone for integrated environmental health research, translation of research advances into practice, and community outreach and engagement aimed at improving human health. The research base of the new center will focus on five thematic areas impacting human environmental health: early life exposures, chronic disease, metabolism, emerging technologies, and the microbiome. The center will be led by longtime NIEHS grantee, Cheryl Walker, Ph.D.

NTP Updates

Concept Clearances

NTP received the go-ahead from its Board of Scientific Counselors on June 17-18 to pursue six research concepts on:

- Bisphenol S – derivative chemical being used to replace BPA
- Triclocarbon – antibacterial used in soaps – look at developmental and reproductive outcomes
- C9 alkylbenzenes – found in crude, used for gasoline blending - reproductive, developmental, neurotoxic, and carcinogenic potential
- Xylenes – used in solvents, paints, coatings - toxicity and carcinogenicity
- Health questionnaires - EPA collaboration to assess the accuracy of questionnaires used in epidemiological studies to gain exposure information about personal care products
- Atherosclerosis - a systematic review of literature and the development of an adverse outcome pathway for inflammation related to this disease

Report on Carcinogens –NAS Review

Committees were convened by the National Academy of Sciences (NAS) to review the listings in the Report on Carcinogens of formaldehyde and styrene. Their findings are summarized by the NTP:

Formaldehyde: The committee conducted both a peer review of the NTP's formaldehyde assessment and an independent assessment. The NAS committee agreed with the conclusions reached by the National Toxicology Program in the 12th Report on Carcinogens released in June 2011 listing formaldehyde as *known to be a human carcinogen*. The committee found there to be sufficient evidence of carcinogenicity in humans that indicates a causal relationship between exposure to formaldehyde and human cancer. The NTP will continue to apply the same high standards of review to all substances evaluated for listings in the Report on Carcinogens.

Styrene: We appreciate the efforts of the committee convened by the National Academy of Sciences (NAS) to review the styrene listing in the Report on Carcinogens. The NAS committee agreed with the conclusions reached by the National Toxicology Program in the 12th Report on Carcinogens released in June 2011 listing styrene as *reasonably anticipated to be a human carcinogen*. The committee found the evidence presented by the NTP for its listing decision as compelling and appropriate. The NTP uses a rigorous scientific review process in reaching all of its science-based conclusions. The NTP will continue to apply the same high standards of review to all substances evaluated for listings in the Report on Carcinogens.

NTP Response to WV Chemical Spill. In January 2014, approximately 10,000 gallons of

chemicals used to process coal spilled from a storage tank into the Elk River in West Virginia. The Elk River is a municipal water source that serves about 300,000 people in the Charleston area. The NTP received a nomination from the Centers for Disease Control and Prevention/Agency for Toxic Substances and Disease Registry to conduct additional toxicity studies on the predominant chemicals known to be involved in the spill. In response, a partnership was formed to conduct additional research to understand, more clearly, any potential long-term effects of these chemicals. NTP plans to conduct a series of short-term toxicity studies. Because of public concern for the safety of pregnant women who may have been exposed to the chemicals, the first priority will be to use a variety of toxicological models to look at potential developmental outcomes in animals. NTP will also look conduct toxicogenomic studies to look for more subtle biological changes that may occur during short-term exposures. Results of the NTP efforts are expected within a year.

Community Engagement on Environmental Justice

Salish Kootenai College and Tribal Environmental Summit. NIEHS was a convener of a Tribal Health Summit on June 23 at Salish Kootenai College (SKC) in Pablo, Montana. Founded in 2006, Salish Kootenai offers a four-year Bachelor of Science degree in molecular biology, the first among tribal colleges nationwide, as well as a degree in environmental sciences. The event brought together Native American scientists and NIEHS-funded collaborators to share how they have addressed environmental health disparities on tribal lands. Scientists from more than a dozen tribes participated in the summit, in which common themes emerged around the types of contaminants affecting tribal communities nationwide (for example, contamination of groundwater and traditional foods from extraction activities such as mercury in fish), the need for community engagement in research, and the importance of locally developed and delivered communication of findings. Dr. Doug Stevens, Director, Department of Life Sciences, SKC co-organized the Summit and is the recipient of a Native American Research Center for Health (NARCH) grant funded by NIGMS. NIEHS will be funding the environmental health science research projects to be conducted under the auspices of the Center.

Alaska Community Forums. Over a five-day period, Dr. Linda Birnbaum, NIEHS Director, participated in twelve community meetings on public health and the environment in Savoonga, Nome, Chickaloon, and Anchorage, Alaska. During the visit, Dr. Birnbaum met with native tribal leaders, village elders, women's talking circle, local officials, community organizations, health care providers, village traditional councils, researchers, students and public health officials. There was widespread enthusiasm for the meetings and discussions, especially in St Lawrence Island, as it was the first time an NIH institute director had come to learn about their issues and concerns. The trip was organized by Executive Director Pam Miller and Environmental Health and Justice Program director (and NAEHS Council member) Viola Waghiyi, at the Alaska Community Action on Toxics.

In Nome, Dr. Birnbaum met with Gay Sheffield, a marine mammal biologist from the Alaska

Sea Grant Advisory Program, to talk about environmental contaminations in the region, wildlife issues, health disparities, and testing traditional foods for contamination. She also interacted with leadership and health care providers at Norton Sound Health Corporation, a health care provider for St. Lawrence Island and Norton Sound communities. These meetings resulted in the CEO of Norton Sound Health Corporation agreeing to Dr. Birnbaum's suggestion to send evaluation teams to St. Lawrence Island to evaluate the community.

Dr. Birnbaum spoke with faculty and students at the University of Alaska and with tribal health officials in Anchorage. Discussions were held with leadership from the Alaska Tribal Health Consortium, Alaska Community Action on Toxics, and Chickaloon Village Traditional Council. Dr. Birnbaum also made site visits to historic and proposed coal mining sites and the Ya Ne Dah Ah tribal school. These interactions highlighted concerns about the destruction of tribal fishing streams and hunting grounds, and about pancreatic and bladder cancer occurrences, metallic-smelling ponds and underground fires in the coal mining regions.

Distinguished Visitors to NIEHS

Professor Dr. Her Royal Highness Chulabhorn Mahidol. NIEHS welcomed a special delegation of public health scientists and leaders from Thailand July 11, led by Professor Dr. Her Royal Highness Princess Chulabhorn Mahidol, founder and president of the Chulabhorn Research Institute (CRI), the Chulabhorn Graduate Institute, and the Chulabhorn Cancer Center. The Princess and her colleagues met with NIEHS leadership and staff in discussions about training opportunities and NIH International Postdoctoral Programs. The meeting included presentations by Birnbaum and Princess Chulabhorn, as well as ones by NIEHS and NTP scientists on a range of environmental public health topics of special interest in Thailand including traffic-related air pollution, hazardous electronic waste, children's health, and clean water.

Dr. David Murray. On August 20, David Murray, Ph.D., Director of the NIH Office of Disease Prevention (ODP), visited NIEHS. Dr. Murray joined NIH in 2012 and has made strong efforts to enhance the methodologies by which prevention research is characterized, assessed, reviewed, and disseminated. While at NIEHS, Murray gave a presentation on the efforts of the ODP, which, among other things, has responsibility for the Tobacco Regulatory Science Program, a joint NIH-FDA research funding program. He also outlined the new ODP Strategic Plan, released in January, and progress on its implementation.

NIEHS/NTP Staff Updates

NIEHS Clinical Director. Janet E. Hall, M.D., MMSc joins NIEHS in October as the new NIEHS Clinical Director. Dr. Hall comes to NIEHS from Harvard University where she was Professor of Medicine and served as Associate Chief of the Reproductive Endocrine Unit at Massachusetts General Hospital. Dr. Hall received her M.D. in 1981 from McMaster

University, completed her residency in Internal Medicine at McMaster University and an Endocrinology fellowship at Massachusetts General Hospital. She is an internationally recognized physician-scientist who studies human reproductive physiology and pathophysiology with a view to translating this information to benefit women with reproductive disorders. She has had significant experience helping investigators across disciplines to design translational studies. Dr. Hall is the Past-President of the Endocrine Society, which has over 17,000 members worldwide. She also has served on numerous NIH Special Emphasis Panels and numerous Editorial Boards.

Editor in Chief of EHP. Hugh Tilson, Ph.D., retired from government service at the end of July. A search is currently underway for a new editor for the NIEHS's journal. Jane Schroeder, Ph.D., who is Science Editor for the journal, will function as the Acting Editor in Chief in the interim. Under Tilson's leadership, the journal achieved its highest impact factor of 7.26. *EHP* is now the internationally third-ranked journal in Public, Environmental, and Occupational Health, the fourth-ranked journal in Toxicology, and the fifth-ranked journal in Environmental Sciences.

Legislative and Budget Report

Appropriations

	FY 2012 Appropriation	FY2013 Enacted Level*	FY 2014 Appropriation	FY 2015 President's Request	FY 2015 House Action	FY 2015 Senate Action
NIEHS	\$ 685,570,818	\$ 649,788,725	\$ 665,439,000	\$ 665,080,000		\$ 673,453,000 ^a
NIH	\$30,623,259,131	\$29,098,665,708	\$29,926,104,000	\$30,126,104,000		\$30,459,181,000 ^a
Common Fund	\$ 544,930,000	\$ 516,488,518	\$ 533,039,000	\$ 583,039,000		\$ 564,039,000 ^a
Superfund	\$ 78,927,514	\$ 74,808,039	\$ 77,349,000	\$ 77,349,000	\$ 77,349,000 ^b	\$ 77,349,000 ^c
NIEHS/DOE Training	\$ 10,000,000	\$ 9,230,000	\$ 10,000,000		\$ 10,000,000 ^d	^d

* FY 2013 includes across-the-board rescission and sequestration reductions.

^a Senate Appropriations Labor, HHS, Education and Related Agencies Subcommittee reported bill.

^b House Appropriations Committee Report.

^c Senate Appropriations Interior and Environment Subcommittee draft bill.

^d Amount was included in report language passed by the House; amount was not specified by the Senate.

Appropriations. At this point, it is likely that the Congress will keep the federal agencies working with a continuing resolution covering 1 Oct 2014 to 15 Dec 2014. Senator Mikulski, Senate Appropriations chairman, still expresses hope that the Congress will be able to mark up and put together an omnibus composed of all 12 appropriations bills during the lame duck session.

The Senate Subcommittee on Labor, HHS marked up their bill with an increase for NIH of \$605 million, including \$60 million for the BRAIN initiative and \$100 million for NIA. In addition, the Subcommittee summary states regarding the Public Health Service Evaluation Transfer: The Committee has heard growing concern over the impact on NIH of the transfer required by the Public Health Service Act and implemented by the annual Labor, HHS bill. This bill reforms the transfer to ensure that in FY 2015 no funds leave NIH via this transfer. See attached table for details.

Prospects for a Senate Interior, Environment bill were dim for most of the month, but on the last day of July Senators Jack Reed (D-RI) and Lisa Murkowski (R-AK) released a draft bill. Markup is unlikely. The House Appropriations Committee reported their bill earlier in July. Both fund the NIEHS Superfund programs at the President' Request for FY 2015 of \$77,349,000—the same as the FY 2014 appropriation.

On 10 July 2014, the House passed its Energy and Water appropriations bill. The accompanying House Report includes a directive telling DoE to provide \$10,000,000 for worker health and safety training. The Senate Subcommittee has approved their bill; its report directs DoE to provide for the Worker Education and Training Program; it does not state an amount.

On 27 June 2014, Dr. Birnbaum provided a 30-minute briefing to Senate Labor, HHS Appropriations clerks, Adrienne Hallett (Democratic staff) and Laura Friedel (Republican staff). Specific items covered included major priorities, new initiatives, goals, challenges, NTP, Tox21, breast cancer, flame retardants, and the BP oil spill.

On 28 July 2014, Dr. Birnbaum gave a talk entitled “Silent Dangers: the Impact of the Environment on Women’s Health” at a forum sponsored by Representative Nita Lowey, Ranking Member of the House Appropriations Committee, in Westchester County, New York. The audience included a dozen Westchester mayors, state Assembly members, town council members and village trustees.

House Oversight Hearing on Autism. At a House Oversight and Government Reform Subcommittee on Government Operations hearing on autism research on 20 May 2014, Tom Insel vigorously defended NIH and other federal agencies against charges in a GAO report that 84 percent of 1200 research projects on autism were at risk for being duplicative. Insel said that the goal is to increase duplication. “We need more people working on the same problems and, to the extent possible, using exactly the same techniques to see if we get the same answers.”

Representative Gerald Connolly, Ranking Democrat, strongly criticized GAO for making the charge regarding duplication. He said, “That’s a pretty explosive charge, whether you want to admit it or not, that plays right into the narrative in this body that taxpayer dollars are

just constantly being wasted.” “When you say that, GAO, you risk legitimate scientific research that can affect people’s lives. And that’s a very heavy burden when you come here and assert what you assert based on virtually nothing.”

Representative Bill Posey (R-FL) who is not a member of the Committee also participated in the hearing. He focused his questions on the transparency of studies on the prevalence of autism and vaccines and his concern about inadequate funding for research focused on environmental components.

Manchin Meeting on Freedom Industries Spill in West Virginia. Senator Joe Manchin invited Tom Frieden (CDC), John Bucher (NTP), and health officials from West Virginia to come to his office to discuss the next steps for alleviating public concern about exposure to the chemicals (4-methylcyclohexanemethanol, dipropylene glycol phenyl ether, and propylene glycol phenyl ether) from the Freedom Industries spill in the Elk River in January 2014. At the meeting, Dr. Bucher described several studies that were under consideration by the NTP.

Bills

H.R. 4012. On 24 June 2014, the House Committee on Science, Space, and Technology reported H.R. 4012, the Secret Science Reform Act of 2014, which requires EPA to base its regulations on data that is public. According to Committee Chairman Lamar Smith (R-TX), “The EPA’s regulatory process is both hidden and flawed. It hides the data and then handpicks scientists to review it. The American people foot the bill for the EPA’s billion dollar regulations and they have the right to see the underlying data. If the EPA has nothing to hide, and if their data really justifies their regulations, why not make the information public? Data sharing is becoming increasingly common across scientific disciplines. The legislation requires that EPA science be available for validation and replication. Americans impacted by EPA regulations have a right to see the data and determine for themselves if the agency’s actions are based on sound science or a partisan agenda. This bill ensures transparency and accountability.” The Secret Science Reform Act does not require any disclosure of confidential information. It would only prohibit EPA’s use of secret science. At a hearing on the bill last November, EPA and Harvard’s refusal to give personal medical data from the Six Cities Studies to members and staff of the House Committees was once again an issue.

S. 2572/H.R. 5033. On July 9, 2014, Senator Edward Markey (D-MA) introduced S. 2572 and Representative Lois Capps (D-CA) introduced H.R. 5033, the Ban Poisonous Additives Act of 2014. The bills would remove BPA from food packaging, encourage the development of safer alternatives, and ensure a thorough safety review of all substances currently used in food and beverage containers. They also would require the FDA to examine the effects of BPA on workers who may have been disproportionately exposed to BPA during the manufacturing process.

H.R. 5056. On 14 July 2014, the House passed by voice vote the Research and Development Efficiency Act sponsored by Representative Larry Bucshon (R-IN). The bill directs the OSTP Director to establish a working group under authority of National Science and Technology Council to review federal regulations affecting research and research universities and make recommendations on how to 1) eliminate duplicative federal regulations and reporting requirements and 2) minimize the regulatory burden on United States institutions of higher education performing federally funded research while maintaining accountability for federal tax dollars. The bill directs the working group to take into account input and recommendations from non-federal stakeholders ensuring effectiveness, efficiency, and accountability in the performance of scientific research. The bill would also require the OSTP director to report within one year of enactment and annually thereafter for three years to Senate Commerce, Justice, and Science and House Science Committees on what steps have been taken to carry out the recommendations.

S. 2658. On 24 July 2014, Senator Tom Harkin (D-IA) introduced S. 2658, the Accelerating Biomedical Research Act. The bill raises the cap on discretionary spending to allow for an increase in funding for NIH in FY 2015 – FY 2021 without taking the money away from other federal programs. NIH funding would increase by 10 percent in FY 2015 and FY 2016 and five percent for FY 2017 through FY 2021.

H.R. 4631. The Congress has passed and the President has signed a five-year reauthorization for autism research, education, early detection, intervention, and surveillance programs, and for the interagency coordinating committee. In addition, the Autism Collaboration, Accountability, Research, Education, and Support Act of 2014 or the Autism CARES Act requires the HHS Secretary to designate an official to oversee national autism spectrum disorder (ASD) research, services, and support activities. It directs the official to implement such activities taking into account the strategic plan developed by the Interagency Autism Coordinating Committee and to ensure that duplication of activities by federal agencies is minimized. It includes support for regional centers of excellence in ASD and other developmental disabilities. It revises responsibilities of the Interagency Committee concerning:

- inclusion of school- and community-based interventions in the Committee summary of advances,
- monitoring of ASD research and federal services and support activities,
- recommendations to the Director of the National Institutes of Health regarding the strategic plan,
- recommendations regarding the process by which public feedback can be better integrated into ASD decisions,
- strategic plan updates and recommendations to minimize duplication, and
- reports to the President and Congress.

It revises Interagency Committee membership requirements to specify additional federal agencies that might be represented and to modify the non-federal membership. It adds a requirement for a report to Congress concerning young adults with ASD and the challenges

related to the transition from existing school-based services to those available during adulthood. It authorizes \$190,000,000 for each of FY 2015 - FY2019 for the programs described above.

Science Advances

One NIEHS (NIEHS authors' groups in parens)

- **Lung tumors in mice induced by "whole-life" inorganic arsenic exposure at human-relevant doses.** Waalkes MP (NTP), Qu W (NTP), Tokar EJ (NTP), Kissling GE (DIR), Dixon D (NTP). *Archives of toxicology*. 2014. [Epub 2014/07/10]
<http://www.ncbi.nlm.nih.gov/pubmed/25005685>
- **Gene Expression of Mesothelioma in Vinylidene Chloride-exposed F344/N Rats Reveal Immune Dysfunction, Tissue Damage, and Inflammation Pathways.** Blackshear PE, Pandiri AR (NTP), Nagai H (DIR), Bhusari S (DIR), Hong HH (NTP), Ton TV (NTP), Clayton NP (NTP), Wyde M (NTP), Shockley KR (DIR), Peddada SD (DIR), Gerrish KE (DIR), Sills RC (NTP), Hoenerhoff MJ (DIR). *Toxicol Pathol*. 2014 Jun 23.
<http://www.ncbi.nlm.nih.gov/pubmed/24958746>
- **Estrogenic and anti-estrogenic activity of off-the-shelf hair and skin care products.** Myers SL (DIR), CZ Yang, GD Bittner, KL Witt (NTP), RR Tice (NTP) and DD Baird (DIR). *J Expo Sci Environ Epidemiol* (2014). [Epub]
<http://dx.doi.org/10.1038/jes.2014.32>

DNTP

- **Systematic Review and Evidence Integration for Literature-Based Environmental Health Science Assessments.** Rooney AA (NTP), Boyles AL (NTP), Wolfe MS (NTP), Bucher JR (NTP), and Thayer KA (NTP). *Environmental health perspectives*. 2014. [Epub 2014/04/24]
<http://www.ncbi.nlm.nih.gov/pubmed/24755067>
- **Regulatory Forum Opinion Piece: New Testing Paradigms for Reproductive and Developmental Toxicity-The NTP Modified One Generation Study and OECD 443.** Foster PM (NTP). *Toxicologic pathology*. 2014. [Epub 2014/05/28]
<http://www.ncbi.nlm.nih.gov/pubmed/24862797>

DIR

- **ADAM19 and HTR4 variants and pulmonary function cohorts for heart and aging research in genomic epidemiology (charge) consortium targeted sequencing study.** London SJ (DIR), W Gao, SA Gharib, DB Hancock (DIR), JB Wilk, JS House (DIR), RA Gibbs, DM Muzny, T Lumley, N Franceschini, KE North, BM Psaty, CL Kovar, J Coresh, Y Zhou, SR Heckbert, JA Brody and AC Morrison. *Circulation: Cardiovascular Genetics* (2014) v. 7 (3): pp. 350-358.
<http://dx.doi.org/10.1161/CIRCGENETICS.113.000066>
- **Breast Cancer Risk after Occupational Solvent Exposure: the Influence of Timing and**

Setting. Ekenga CC (DIR), CG Parks (DIR), AA D'Aloisio (DIR), LA DeRoo (DIR) and DP Sandler (DIR). *Cancer Res.* (2014) v. 74 (11): pp. 3076-3083.

<http://dx.doi.org/10.1158/0008-5472.can-13-2430>

- **Identification of DNA Methylation Changes in Newborns Related to Maternal Smoking during Pregnancy.** Markunas CA (DIR), Xu Z (DIR), Harlid S (DIR), Wade PA (DIR), Lie RT, Taylor JA (DIR), Wilcox AJ (DIR). *Environ Health Perspect.* 2014 Jun 6. [Epub ahead of print] <http://ehp.niehs.nih.gov/1307892/>
- **Blood lead concentrations and children's behavioral and emotional problems: A Cohort Study.** Liu J, Liu X, Wang W, McCauley L, Pinto-Martin J, Wang Y, Li L, Yan C, Rogan WJ (DIR). *JAMA Pediatr.* 2014 Aug 1;168(8):737-45. <http://dx.doi.org/10.1001/jamapediatrics.2014.332>
- **INO80 facilitates pluripotency gene activation in embryonic stem cell self-renewal, reprogramming, and blastocyst development.** Wang L (DIR), Du Y (DIR), Ward JM (DIR), Shimbo T (DIR), Lackford B, Zheng X, Miao YL, Zhou B, Han L, Fargo DC, Jothi R, Williams CJ, Wade PA, Hu G. *Cell Stem Cell* 2014 May 1; 14(5):575-591. <http://www.sciencedirect.com/science/article/pii/S1934590914000642>
- **Role of polymerase beta in complementing aprataxin deficiency during abasic-site base excision repair.** Caglayan M (DIR), Batra VK (DIR), Sassa A (DIR), Prasad R (DIR), Wilson SH (DIR). *Nat Struct Mol Biol* 2014 May; 21(5):497-499. <http://www.nature.com/nsmb/journal/v21/n5/full/nsmb.2818.html>
- **Association between serum 25-hydroxyvitamin D and ovarian reserve in premenopausal women.** Jukic, AM (DIR), Steiner, AZ and Baird, DD (DIR). *Menopause* (2014) Aug 4. [ePub]. <http://dx.doi.org/10.1097/gme.0000000000000312>

DERT

- **Prenatal exposure to organophosphate pesticides and reciprocal social behavior in childhood.** Furlong MA, Engel SM, Barr DB, Wolff MS. *Environ Int.* 2014 Sep;70:125-31. <http://www.sciencedirect.com/science/article/pii/S0160412014001548>
- **Prenatal Polybrominated Diphenyl Ether Exposures and Neurodevelopment in U.S. Children through 5 Years of Age: The HOME Study.** Chen A, Yolton K, Rauch SA, Webster GM, Hornung R, Sjödin A, Dietrich KN, Lanphear BP. *Environ Health Perspect.* 2014 Aug;122(8):856-62. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4123029/pdf/ehp.1307562.pdf>
- **Counseling patients on preventing prenatal environmental exposures--a mixed-methods study of obstetricians.** Stotland NE, Sutton P, Trowbridge J, Atchley DS, Conry J, Trasande L, Gerbert B, Charlesworth A, Woodruff TJ. *PLoS One.* 2014 Jun 25;9(6):e98771. <http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0098771>

- **Neurodevelopmental Disorders and Prenatal Residential Proximity to Agricultural Pesticides: The CHARGE Study.** Shelton JF, Geraghty EM, Tancredi DJ, Delwiche LD, Schmidt RJ, Ritz B, Hansen RL, Hertz-Picciotto I. *Environ Health Perspect.* 2014 Jun 23.
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- **The genetics of Mexico recapitulates Native American substructure and affects biomedical traits.** Moreno-Estrada A, Gignoux CR, Fernández-López JC, Zakharia F, Sikora M, Contreras AV, Acuña-Alonzo V, Sandoval K, Eng C, Romero-Hidalgo S, Ortiz-Tello P, Robles V, Kenny EE, Nuño-Arana I, Barquera-Lozano R, Macín-Pérez G, Granados-Arriola J, Huntsman S, Galanter JM, Via M, Ford JG, Chapela R, Rodríguez-Cintron W, Rodríguez-Santana JR, Romieu I, Sienna-Monge JJ, del Rio Navarro B, London SJ (DIR), Ruiz-Linares A, Garcia-Herrera R, Estrada K, Hidalgo-Miranda A, Jimenez-Sanchez G, Carnevale A, Soberón X, Canizales-Quinteros S, Rangel-Villalobos H, Silva-Zolezzi I, Burchard EG, Bustamante CD. *Science.* 2014 Jun 13;344(6189):1280-5.
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<http://www.ncbi.nlm.nih.gov/pubmed/24923805>

NIEHS News and Highlights

NIEHS Science into Innovation. Products of small business startups spun out of NIEHS-funded basic research were recently recognized for innovation. The products, including an eco-friendly cleanup chemical, a mercury-sensing device, and pathogen-detection technology, promise to enhance public health by providing lower-cost and safer approaches to cleaning and detection of contaminants.

- Raina Maier, Ph.D., director of the UA Superfund Research Program (SRP), and her colleagues were recently honored with a UA Catapult Award, for their work developing microbially produced surfactants, or biosurfactants, which they are patenting and commercializing through a startup chemical company, [GlycoSurf](#).

- Former UC Berkeley SRP trainees Jay James, Ph.D., and Jeffrey Crosby, Ph.D., won first place in the energy and cleantech category at the 2014 UC Berkeley Startup Competition April 24, for their patented technology, [Picoyune](#), to detect mercury contamination in the environment.
- UC Davis SRP researcher Ian Kennedy, Ph.D., and postdoctoral trainee Sudheendra Lakshmana, Ph.D., founded [SonanuTech](#), an innovative technology that offers a range of public health possibilities for detecting pathogens in foods, infections in humans, markers of cancer, and DNA. The technology was selected to be part of the Davis Roots mentoring program.

SRP–EPA Course on Passive Sampling Devices. Heather Henry, Ph.D., health scientist administrator in the NIEHS Hazardous Substances Research Branch, and Matthew Lambert of the EPA Office of Superfund Remediation and Technology Innovation (OSRTI), recently co-organized a course designed to combine technical research with practical implementation steps to make sure devices for hazardous site assessment and cleanup get into the hands of end users. The course, presented at the 23rd National Association of Remedial Project Managers (NARPM) Training Program June 16-20, brought technology developers together with EPA passive sampling experts, and included case studies from EPA remedial project managers (RPMs), who are early adopters of some of the innovative technologies.

Tox21 Human Relevant Results. Using *in vitro* and *in silico* testing in primary human cell systems, scientists in the EPA ToxCast program, a part of the Tox21 federal consortium on high throughput screening, reported bioactivity profiles for 776 unique environmental and industrial chemicals, including pesticides, food additives, and pharmaceuticals, with potential for human exposure. Pharmaceuticals and pesticides were the most active chemicals, while fragrances and colorants, used in cosmetics and as food additives, proved to be the least active. Only eight percent of the chemicals were uniformly inactive. The research, published in the May issue of *Nature Biotechnology*, demonstrates that such HTP methods may provide a viable alternative to animal testing.

Agricultural Health Study (AHS) Website. The AHS was begun 1993, before the Internet was widely used. A collaborative effort between NIEHS, the National Cancer Institute (NCI), National Institute of Occupational Safety and Health, and U.S. Environmental Protection Agency, the AHS looks at how agricultural, lifestyle, and genetic factors affect the health of farming populations. More than 89,000 farmers and their spouses in Iowa and North Carolina have been involved in AHS since its inception. The website of the AHS was recently redesigned for easier navigation and to be responsive to the user's platform, whether mobile or desktop. The new design was intended to promote use of study findings, assist potential collaborators, and energize participation.

Past Meetings and Events

NIEHS staff and grantees travelled to Cluj-Napoca, Romania, May 25-29, for the **Central and Eastern European Conference on Health and the Environment** (CEECH), to open new lines of communication and address issues related to the environment and human health. The conference brought together a diverse panel of scientists to address emerging issues in environmental health science. They presented advances in environmental sciences, engineering, technology, and health sciences, within broad themes of the environment, environmental health, and military conflicts.

Eight years and 42 awards later at the 2014 **Outstanding New Environmental Scientist (ONES)** awardee symposium July 1-2 at NIEHS, there was even more reason to celebrate the success of this innovative effort to provide an unprecedented level of support for extraordinary early stage investigators with exciting ideas in the field of environmental health sciences. The ONES program is well on its way to being heralded as a best practice for NIH institutes and centers (ICs): in 2009, the National Institute of Mental Health modeled its own very successful Biobehavioral Research Awards for Innovative New Scientists (BRAINS) program directly after the ONES.

NIEHS played a key role at a July 10 event in Washington, D.C., convened by the subcommittee on climate change of the President's Task Force on Children's Environmental Health Risks and Safety Risks to Children. Speakers at the meeting, ***Expert Consultation on the Effects of Climate Change on Children's Health***, included NIEHS and NTP Director Linda Birnbaum, Ph.D.; NIEHS Senior Advisor for Public Health John Balbus, M.D.; and several NIEHS grantees. Kimberly Thigpen Tart, J.D., NIEHS program analyst in the Office of Policy, Planning, and Evaluation and co-chair of the subcommittee, organized the event. Several priority research needs were raised, including the need to better understand interactions between climate change, nutritional value of foods, and children's health; and more knowledge of the mechanisms by which high temperatures and flooding can lead to adverse reproductive outcomes.

The NIEHS-supported NRC Standing Committee on Emerging Science for Environmental Health Decision Making, held a meeting on ***The Potential of the Tissue Chip for Environmental Health Studies*** on July 21-22 in Washington, DC. Human tissue chips are touted as offering a more human-representative alternative to animal models, while overcoming limitations associated with in vitro systems— but concerns remain about the limitations of these emerging model systems. This meeting examined the state of development and use of these chips, also termed “biological platforms,” and explored the promises and limitations of their use in environmental health research and regulatory contexts.

NIEHS sponsored a ***Symposium on Assessing Exposures and Health Effects Related to Indoor Biomass Fuel Burning*** on August 18 at the Institute. The burning of solid fuels (e.g.,

wood, charcoal, dung, coal) for cooking and heat results in a significant global health burden with over 4 million premature deaths per year attributed to indoor air pollution from inefficient use of solid fuels. Progress on this important public health challenge requires a concerted cross-disciplinary effort involving exposure scientists, toxicologists, epidemiologists, engineers, and public policy experts. This symposium, organized by Cynthia Rider, Ph.D., in the Division of the NTP, brought together researchers working in the area of indoor biomass fuel burning emissions and health effects to discuss the latest science, policy, and future directions.

NIEHS staff participated in the International Society for Environmental Epidemiology (ISEE) annual meeting titled, ***From Local to Global: Advancing Science for Policy in Environmental Health***, on August 24-28 in Seattle, WA. The International Society for Children's Health and the Environment held a satellite retreat meeting prior to ISEE on August 19-25 at Whidbey Island, Washington State, titled ***The Future of Children's Environmental Health***. Gwen Collman, Ph.D., Director of the NIEHS Division of Extramural Research and Training participated in this meeting.

Upcoming Meetings and Events

- PEPH Annual Meeting, *Communication Research in Environmental Health Sciences – Environmental Health Literacy*, RTP(NIEHS), September 22-24
- Prenatal Programming and Toxicology Workshop-IV (PPTox-IV), *Environmental Stressors in Disease and Implications for Human Health*, Boston, October 26-29
- Metabolomics Grantees meeting, RTP, October 26
- NIEHS-NINDS Parkinson's Disease Conference, NIEHS, November 3
- NRC Emerging Science for Environmental Health Decision Making, *Modeling the Health Risks of Climate Change*, Washington, DC, November 3-4
- Research Triangle Environmental Health Collaborative, *Exposure Science in 21st Century: Role of Citizens and Communities*, RTP, November 4-5
- Institute of Medicine Roundtable on Environmental Health Research, Science & Medicine, *Environmental Impacts on Obesity*, Washington, DC, November 10-11
- Superfund Research Program Annual Meeting, San Jose, CA, November 12-14
- American Public Health Association, New Orleans, November 14-19
- Breast Cancer and the Environment Research Program (BCERP) Scientific Conference, San Francisco, November 18-22

Awards and Recognition

NIEHS Awardees

- Linda Birnbaum, Ph.D., DABT, was awarded an honorary degree, Doctor of Philosophy Honoris Causa, from Ben Gurion University of the Negev in Beer-Sheva, Israel on May 20.
- Linda Birnbaum, Ph.D., DABT, was honored by the U.S. Public Health Service (USPHS) in Washington, D.C. on June 10.

- Walter Rogan, Ph.D., will be awarded the Zena Stein and Mervyn Susser Award for Lifetime Achievement and significant and lasting contributions in maternal and child health epidemiology at the 2014 CityMatCH Leadership and Maternal Child Health Epidemiology Conference on September 18 in Phoenix, AZ.
- Diana Cruz-Topete, Ph.D., received a 2014 Future Leaders Advancing Research in Endocrinology Internship from the Endocrine Society
- Seventeen NIEHS trainees joined the elite group of young scientists honored by an NIH Fellows Award for Research Excellence (FARE) on June 13:
 - Margaret Adgent, Ph.D.
 - Georgia Alexander, Ph.D.
 - Qing Cheng, Ph.D.
 - Senthilkumar Cinghu, Ph.D.
 - Quaker Harmon, M.D., Ph.D.
 - Mallikarjuna Metukuri, Ph.D.
 - Thuy-Ai Nguyen, Ph.D.
 - Barbara Nicol, Ph.D.
 - Andrew Oldfield, Ph.D.
 - Matthew Quinn, Ph.D.
 - Sivapriya Ramamoorthy, Ph.D.
 - Deirdre Robinson
 - Natacha Steinckwich-Besancon, Ph.D.
 - Percy Tumbale, Ph.D.
 - Erica Ungewitter, Ph.D.
 - Qingshan Wang, M.D.
 - Pengyi Yang, Ph.D.

- Amanda Conway, Ph.D., an NIEHS Intramural Research Training Award (IRTA) fellow, was selected for a Postdoctoral Research Associate Program fellowship from the National Institute of General Medical Sciences that begins October 1 and provides three years of funding to study the developmental regulation of a gene that plays a role in cancer.
- Fourteen NIEHS and NTP employees were among recipients of National Institutes of Health Director's Awards in Bethesda, MD, on June 12. The employees were recognized for their outstanding contributions to trans-NIH initiatives:
 - DREAM Toxicogenetics Challenge
 - Raymond Tice, Ph.D.
 - Richard Woychik, Ph.D.
 - Allen Dearry, Ph.D.
 - Rebecca Boyles
 - Kristine Witt
 - Tox21 Team
 - Linda Birnbaum, Ph.D.
 - John Bucher, Ph.D.
 - Michael DeVito, Ph.D.
 - Jennifer Fostel, Ph.D.
 - Jui-Hua Hsieh, Ph.D.
 - Keith Shockley, Ph.D.
 - Raymond Tice, Ph.D.
 - Suramya Waidyanatha, Ph.D.
 - Kristine Witt
 - Remote Support Working Group
 - Jack Field
 - Geroscience Summit Organizing Committee
 - Xiaoling Li, Ph.D.
- NIEHS statistical geneticist Dmitri Zaykin, Ph.D., was awarded tenure on April 7. Dr. Zaykin works to uncover relationships between genetic variation and phenotypic traits using statistical methodology.
- Thomas Kunkel, Ph.D., will be inducted into the American Academy of Arts and Sciences at a ceremony in Cambridge, MA, on October 10-11.
- The Green and Fit Retrofit Team, led by Debra Del Corral and Amanda Thompson of the NIEHS Office of Management, and Joseph Seufert III of the NIH Office of Research Facilities, won the Sustainable Design and Facilities Award, given in recognition of exceptional efforts toward sustainability. Their work on a recent renovation at NIEHS cut overall construction costs by 30-40 percent and saved at least \$160,000 by other efficiencies ultimately attracting the attention of HHS and the Green Champions Awards.

- Caitlin McDonough, Ph.D., and Jessica Boni, Ph.D., both current Intramural Research Training Award (IRTA) fellows at NIEHS, won Outstanding Poster awards May 1 at the 2014 Postbac Poster Day at the NIH main campus in Bethesda, MD.
- NIEHS postdoctoral fellows Kin Chan, Ph.D., and Bret Freudenthal, Ph.D., became the latest winners of an NIH Pathway to Independence Award, designed to facilitate a timely transition from a mentored, postdoctoral research position to a stable, independent research position.

NIEHS-related Awardees

- Young-Shin Kim, Ph.D., an NIEHS grantee, received a prestigious Presidential Early Career Award for Scientists and Engineers (PECASE) on April 14 for her groundbreaking autism research and commitment to community service.
- Pui-Ling Chan, Ph.D., a former NIEHS/NTP trainee, was recognized by Southern Illinois University Edwardsville for her research on her research on the blood-brain barrier response to drugs and environmental chemicals. She received the 2014 Vaughnie Lindsay New Investigator Award.