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

19-20 February 2014

Director's Message

Strategic Planning Implementation. The NIEHS leadership (Director, Deputy Director, Executive Officer, Scientific Director, Clinical Director, and Directors of DERT and DNTP) met frequently over the past 12 months for in-depth discussions of proposed implementation plans submitted by implementation discussion teams comprising scientists and staff from across all divisions of the Institute. Plans were submitted for each of eight priority topic areas: Epigenetics, the Exposome, Stem Cells, Inflammation, Predictive Toxicology and Disease, Global Environmental Health, Scientific Data and Knowledge Management, and Website and Social Media. A set of 28 activities were identified as highest priority, including establishing an epigenetics core function for the intramural and NTP divisions; organizing IT governance and strengthening science IT; conducting workshops in five of the topic areas (exposome, inflammation, stem cells, predictive toxicology and disease, and scientific data and knowledge management); redesigning the DNTP website; and establishing the WHO-NIEHS Collaborating Centre. Some of these activities are already moving ahead, and the others will soon follow. In addition to these cross-divisional activities, our Divisions are also moving ahead with their implementation planning. We are going to be initiating a mechanism to track progress of these implementation activities.

NIEHS-WHO Collaborating Center Designation and Launch. In September, the NIEHS received official designation as the World Health Organization (WHO)-NIEHS Collaborating Center on Environmental Health. This new collaborating center is the most recent phase in the evolution of the long-standing collaborative partnership between NIEHS and WHO. It is the result of several years of efforts by many NIEHS staff, led by Dr. John Balbus, Senior Advisor for Public Health, and the NIEHS Global Environmental Health Working Group. The Collaborating Center will focus on the areas of children's environmental health, climate change, cookstoves, e-waste, and developmental origins of health and disease. The new center will be officially launched at an event at NIEHS on February 20, attended by Dr. Maria Neira, Director of WHO's Public Health and Environment Division, Dr. Luis Galvao and Dr. Agnes Soares from the Pan-American Health Organization, and area academic leaders. The NAEHS Council is especially invited to attend.

NIH Disaster Research Response Initiative. On January 10, NIEHS staff including Aubrey Miller, Joseph "Chip" Hughes, Stavros Garantziotis, and Les Reinlib, with NLM colleague Stacey Arnesen, briefed an interagency audience at NIH on the new NIH Disaster Research Response (DR2) Project. DR2 is a pilot project aimed at creating an environmental health disaster research system through platforms of ready-to-go research data collection tools and a network of specially trained research responders. This project was developed and will be administered by the NIEHS and NLM. NIEHS will build on our extensive program capabilities, research networks, and field experiences in leading this pilot. NLM will support the organization, management, and public interface of developed tools & communications.

In addition to tools, other goals include:
Environmental Health Science (EHS) Disaster Research Response Network

- NIEHS intramural/extramural researchers, Centers, grantees, and academic partners
- Researchers & end-users actively engaged in the ongoing development of the DR2 system
- Trained 'research responders' across the U.S. who are familiar with using the data collection tool platforms, protocols, and can deploy in the event of a disaster
- Network of subject matter and information experts that can be called upon for assistance

Coordination & Integration with Disaster Response & Recovery Infrastructure

- Multi-stakeholder engagement and information sharing
- Training exercises for research responders and partners
- Disaster Research Response discussions and workshops
- Facilitate State and local environmental health research response capabilities regardless of federal disaster declarations or federal response efforts

Tabletop Disaster Response Exercise. Concurrent with the NIEHS Environmental Health Sciences Center Director's meeting April 7-9 in Los Angeles, CA, Institute staff of the Worker Education and Training Program will participate in a tabletop disaster response exercise with local health officials, emergency responders, resource managers, and others.

Public Health and Land Planning. Also concurrent with the Center directors meeting, on April 9 the Institute and the UCLA COEC will host a meeting that will bring together public health experts with land use and planning experts to discuss health implications of transit and Smart Growth issues in the area. Coordination of this meeting is being led by Andrea Hricko, COEC director and a long-time researcher on the health effects on people, especially children, of living in the Port of Los Angeles transit corridors.

Research Agenda on Genetics of Birth Defects. On January 22, NIEHS Director Linda Birnbaum participated in an all-day meeting to discuss development of an interdisciplinary research agenda for investigating the genetics of birth defects. The National Institute of Child Health and Human Development coordinated the NIH-sponsored meeting. Next steps include developing a white paper to help frame the research needs and a research agenda.

NIEHS/NTP Staff Updates. I'm pleased to share with you several updates to our NIEHS staff. In the Division of the National Toxicology Program (DNTP), Dr. Warren Casey has been appointed Director of the National Interagency Center for the Evaluation of Alternative Testing Methods. Dr. Michelle Hooth has been named chief of the NTP Program Operations Branch. Both had been serving in acting roles in these positions. Dr. Alfonso Latoni has been named Chief of the DERT Scientific Review Branch. Dr. Latoni comes to NIEHS following an 11-year career as a scientific review officer at the National Institute of Aging. He earned his Ph.D. from Boston College in sociology, with a focus on social economy and social policy. In addition, we recently graduated our third class from the NIEHS Leadership Development Program. This is an intensive, year long training of up and coming leaders from across all of the divisions of the Institute, and part of succession efforts to ensure that the NIEHS maintains good leadership by encouraging the professional growth of our staff.

Legislative and Budget Report

Appropriations

On 10 December 2014, Senator Patti Murray (D-WA) and Representative Paul Ryan (R-WI) announced their budget deal, which provides relief from the threat of a shutdown until 1 October 2015.

- The total budget for all discretionary spending for FY 2014 will be $1.012 trillion compared to the total for FY 2013 of $ 988 billion. Discretionary defense programs would receive $520,464,000,000; discretionary domestic programs, $491,773,000,000.
- The total budget for discretionary spending for FY 2015 will be $1.014 trillion with $521,272,000,000 for defense and $492,356,000,000 for domestic discretionary programs.

The Report accompanying the FY 2014 Labor, HHS appropriation includes a long list of provisions related to NIH. Some are listed at the end of this report. The report accompanying the Interior, Environment appropriation, for the second time, asks NIEHS to explore the feasibility of incorporating a nominal fee to recoup costs associated with the NIEHS Superfund Worker training Program and to report to Congress on its findings and recommendations.

	FY 2012 Appropriation	FY2013 Enacted Level**	FY 2014 President's Request	FY 2014 Appropriation
NIH	**$30,623,259,131**	**$29,098,665,708**	**$31,093,776,000**	**$29,926,104,000**
Common Fund	**$ 544,930,000**	**$ 516,488,518**	**$ 572,948,000**	**$ 533,039,000**
NIEHS	**$ 685,570,818**	**$ 649,788,725**	**$ 691,348,000**	**$ 665,439,000**
Superfund*	**$ 78,927,514**	**$ 74,808,039**	**$ 79,411,000**	**$ 77,349,000**
NIEHS/DOE Training	**$ 10,000,000**	**$ 9,230,000**		

Environmental Science

Six Cities Data. On 14 November 2013, the House Science, Space, and Technology Committee chaired by Lamar Smith (R-TX) held a hearing on Strengthening Transparency and Accountability

within EPA. Republican members raised the issue of data from the Six Cities Study. The legislation that Smith plans to introduce will "stop EPA from basing regulations on undisclosed and unverified information" will be very problematic. In July, EPA agreed to provide the health research data used to justify some of its most sweeping clean air regulations in exchange for cancellation of a filibuster against the confirmation of Gina McCarthy as EPA administrator. Harvard, the owner of the Six Cities data, has written a letter to EPA saying, "Large long-term epidemiological studies, like the air pollution research in question, rely on the participation of thousands of human participants. Without assurances that their private medical and other identifying information will be protected people would not agree to be part of such studies. In this case, Harvard researchers promised to ensure confidentiality not just to the participants themselves, but also to federal and state agencies."

President's Climate Action Plan. On 16 January 2014, the Senate Environment and Public Works Committee, Chaired by Senator Barbara Boxer (D-CA), held a hearing to review federal programs that are part of the President's Climate Action Plan. The hearing centered on key actions related to the Plan, including EPA's new and existing source performance standards for power plants, GSA's initiative to cut greenhouse gas emissions from government agencies by 50 percent in 2013, and Fish and Wildlife's efforts to protect land and wildlife from sea level rise and climate change.

Briefings

On 12 Sep 2013, John Balbus, NIEHS Senior Advisor for Public Health, participated in a Congressional briefing on **climate change** sponsored by the American Lung Association and hosted by Representative Lois Capps (D-CA).

On 19 Sep 2013, Linda Birnbaum and the actress Fran Drescher participated in two Congressional briefings. The first, on **women's cancer**, was sponsored by the Heinz Center Breast Cancer Initiative, Congressional Families for the Prevention of Cancer, and Executive Women in Government. The second event, hosted by Representative Ted Deutch (D-FL), focused on **environmental exposures and cancer**. Birnbaum talked about NIEHS research results related to cancer.

On 30 Oct 2013, Senator Kirsten Gillibrand hosted a briefing on "**Protecting Children's Health for a Lifetime: How the Environment Influences Health and Development.**" Sponsors included the Friends of NIEHS, American Academy of Pediatrics, Children's Environmental Health Network, Society for Occupational and Environmental Health, and Trust for America's Health. The briefing was part of the celebration of the 15th anniversary of the NIEHS/EPA Children's Environmental Health Centers. Linda Birnbaum provided an overview of center research and accomplishments. Grantees Gregory Diette, Johns Hopkins; Brenda Eskenazi, UC Berkeley; and Frederica Perera, Columbia; described research and accomplishments at their centers.

Bills

On 23 Oct 2013, Representative James Lankford (R-OK) introduced HR 3316, the **Grant Reform and New Transparency Act**. It requires posting grant award information for each competitive federal grant on a web site. Specifically, it would require posting the executed grant agreement, a copy of the proposal, award decision documentation and rankings, justification for deviating from rankings, and disclosure of information on peer-reviewers. In addition, the bill would require posting of grant performance at the completion of the project.

On 18 November 2013, the House passed HR 2061, the **Digital Accountability Act**, by a vote of 388-1. Section 9 of the bill contains provisions that would place multiple restrictions on federal travel and conferences. The bill has been referred to the Senate Committee on Homeland Security and Government Affairs.

Report Accompanying the FY 2014 Labor, HHS Appropriation: Major Features Affecting NIH

- **Total Funding.** The National Institutes of Health (NIH) FY2014 funding level is $30.15 billion, $1 billion over FY2013 post-sequester number (program level), providing about three percent more for most ICs. This total includes funding for the NIEHS Superfund Programs, mandatory budget authority for Type I diabetes, and PHS Evaluation funds allocated to the National Library of Medicine.
- **ICs.** The increases are generally distributed proportionately among NIH Institutes and Centers (ICs). Programs and offices within OD receive increases proportional to the overall increase, unless otherwise specified.
- **Priority-setting Review.** The NIH Director is directed to conduct an NIH-wide review of how the priority-setting process affects program goals and the overall NIH research portfolio, and that of each IC.
- **Scientifically Based Strategic Planning**. The National Institutes of Health Reform Act of 2006 included a provision that requires the NIH Director to ensure implementation of scientifically based strategic planning. The bill directs the NIH Director to provide a report on NIH actions to ensure that the requirement for scientifically based NIH-wide strategic planning is fully implemented.
- **Consolidated Communications Activities**. The NIH Director is expected to develop an NIH- wide process to reduce duplication, consolidate and improve efficiencies, improve coordination of messages, and generally reduce costs in this area.
- **Improved Coordination and Dissemination of Research**. NIH is directed to work with other HHS operating divisions to establish a more systematic means of disseminating research results.
- **Alzheimer's disease.** The bill provides a $100 million increase over the FY2013 funding level for Alzheimer's disease research at the National Institute of Aging.
- **IDeA.** $273,325,000 is allocated for the Institutional Development Awards (IDeA), an increase of $11.7 million.
- **NCATS.** Funding has been added to NCATS to reflect movement of the Drug Repurposing, BriDGs, and Molecular Libraries programs from the Common Fund to NCATS. There is statutory language that "at least $474,746,000" be used for the Clinical and Translational Science Awards Program (CTSA) within NCATS.
- **NCS.** $165,000,000 shall be for the National Children's Study (NCS), except that not later than July 15, 2014, the Director shall estimate the amount needed for the NCS during FY2014, and any funds in excess of the estimated need shall be transferred to and merged with the accounts for the various Institutes and Centers in proportion to their shares of total NIH appropriations made by this Act.
- **BRAIN Initiative**. The bill provides support to the BRAIN Initiative, a multi-agency effort that also involves the National Science Foundation, the Defense Advanced Research Projects Agency and several private sector partners. The National Institute of Neurological Disorders and Stroke and the National Institute of Mental Health are expected to collaborate with the other ICs.
- **Travel and Conference Spending.** The bill continues conference and travel restrictions government-wide, unchanged from the previous Act.

- **Institute & Center Office of Director Costs**. The NIH is expected to provide, in the FY2015 and future budget requests, a table that lists the total funding provided to the Director's Office of each IC and the NIH Director, that breaks out the cost of travel, personnel, and performance bonuses by IC.
- **STEM Programs**. The NIH is directed to continue funding these programs in FY2014 and sufficient funding is provided within OD to include the Office of Science Education. The NIH shall continue these programs based on the same policies that existed at the start of FY2013. The agreement does not support NIH's proposed new educational programs.
- **Research Centers in Minority Institutions Program (RCMI)**. The NIH is expected to continue to support RCMI at no less than the FY2013 level.
- **Extramural-Intramural.** NIH is expected to ensure that the proportion of resources shifted out of the extramural program to intramural, outside of the recognized fixed costs, are based on specific scientific criteria and include advanced consultation with the extramural community.
- **Additional Scrutiny on Extramural Investigators.** The NIH has announced plans to impose an additional level of scrutiny on extramural principal investigators with grants of $1,500,000 or more. The NIH is directed to ensure that this policy, and any other new measures which are intended to improve oversight and accountability for extramural researchers, should apply equally to intramural researchers as well.
- **Administrative Burden Reduction Workgroup.** The Director of NIH should establish a workgroup including universities, not-for-profits, and institutes receiving support from NIH, to track and measure administrative burden on entities participating in NIH-supported activities and develop a plan to reduce such administrative burden as practicable.
- **Stipends.** NIH is directed to provide inflationary increases to research training stipends that are not below the federal pay policy.
- **Pathways to Independence Program.** All ICs are expected to support the Pathways to Independence Program, which provides new investigators with mentored grants that later convert into independent research project grants.
- **RPGs.** NIH is expected to support as many scientifically meritorious new and competing research project grants as possible, at a reasonable award level.
- **Big Data.** The NIH Director shall provide a report on Core Techniques and Technologies for Advancing Big Data that describes the policies, procedures, and processes in place to safeguard all the biomedical data, tools, analysis, and other similar forms of data accessible through the Big Data initiative. The report should detail how NIH plans to ensure that this data is not used for any other purpose than biomedical research.
- **Dental Materials Research.** The U.N. Environmental Programme International Negotiating Committee's treaty on mercury calls for the reduction in the use of dental amalgam containing mercury. The NIH Director is expected to make the development of alternative dental restorative materials a high priority.

New Language in General Provisions:

Public Access (Sec. 527)— Each Federal agency, or in the case of an agency with multiple bureaus, each bureau (or operating division) funded under this Act that has research and development expenditures in excess of $100,000,000 per year shall develop a Federal research public access policy that provides for—(1) the submission to the agency, agency bureau, or designated entity acting on behalf of the agency a machine-readable version of the author's final peer-reviewed manuscripts that have been accepted for publication in peer-reviewed journals describing research supported, in whole or in part, from funding by

the Federal Government; (2) free online public access to such final peer- reviewed manuscripts or published versions not later than 12 months after the official date of publication; and (3) compliance with all relevant copyright laws.

Science Advances

One NIEHS (NIEHS authors' groups in parens)*:*

- ***Mimicking of estradiol binding by flame retardants and their metabolites: a crystallographic analysis.*** *Gosavi RA (DIR), Knudsen GA, Birnbaum LS (OD), Pedersen LC (DIR). Environ Health Perspect. 2013 Oct;121(10):1194-9. doi: 10.1289/ehp.1306902. Epub 2013 Aug 13.*

  http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3801471/

- ***Urogenital epithelial cells as simple markers of estrogen response in infants: methods and applications*** *Adgent, MA, (DIR) Flake, GP (NTP), Umbach, DM (DIR), Stallings, VA, Bernbaum, JC and Rogan, WJ (DIR). [Journal Article] PLoS One (2013) v. 8 (10): pp. e77061.* http://dx.doi.org/10.1371/journal.pone.0077061

DNTP:

- ***Report on the international workshop on alternatives to the murine histamine sensitization test (HIST) for acellular pertussis vaccines: State of the science and the path forward*** *Isbrucker R, Arciniega J, McFarland R, Chapsal JM, Xing D, Bache C, Nelson S, Costanzo A, Hoonakker M, Castiaux A, Halder M, Casey W (NTP), Johnson N, Jones B, Doelling V, Sprankle C, Rinckel L, Stokes W (NTP). [Journal article] Biologicals (2014) [InPress]* http://dx.doi.org/10.1016/j.biologicals.2013.11.011

- ***Methylarsonous acid causes oxidative DNA damage in cells independent of the ability to biomethylate inorganic arsenic*** *Tokar EJ, C Kojima and MP Waalkes [Journal article] Arch. Toxicol. (2013 Oct 5) [ePub]* http://dx.doi.org/10.1007/s00204-013-1141-2

DIR

- ***Global DNA methylation and one-carbon metabolism gene polymorphisms and the risk of breast cancer in the Sister Study*** *Deroo LA, SC Bolick, Z Xu, DM Umbach, D Shore, CR Weinberg, DP Sandler and JA Taylor [Journal article] Carcinogenesis (2013 Nov 23) [ePub]* http://dx.doi.org/10.1093/carcin/bgt342

- ***Admixture Mapping of Prostate Cancer in African Americans Participating in the North Carolina-Louisiana Prostate Cancer Project (PCaP)*** *Bensen, JT, Xu, ZL, McKeigue, PM, Smith, GJ, Fontham, ETH, Mohler, JL and Taylor, JA* [Journal Article] *Prostate* (2014) v. 74 (1): pp. 1-9 http://dx.doi.org/10.1002/pros.22722

- ***A polymorphic p53 response element in KIT ligand influences cancer risk and has undergone natural selection*** *Zeron-Medina, J, Wang, X, Repapi, E, Campbell, MR, Su, D, Castro-Giner, F, Davies, B, Peterse, EFP, Sacilotto, N, Walker, GJ, Terzian, T, Tomlinson, IP,*

Box, NF, Meinshausen, N, De Val, S, Bell, DA and Bond, GL [Journal Article] Cell (2013) v. 155 (2): pp. 410-422
http://dx.doi.org/10.1016/j.cell.2013.09.017

- ***The Sister Chromatid Cohesion Pathway Suppresses Multiple Chromosome Gain and Chromosome Amplification*** *Covo, S, Puccia, CM, Argueso, JL, Gordenin, DA and Resnick, MA [Journal Article] Genetics (2013) [ePub]*
http://dx.doi.org/10.1534/genetics.113.159202

- ***Essential role of stress hormone signaling in cardiomyocytes for the prevention of heart disease*** *Oakley RH (DIR), R Ren (DIR), D Cruz-Topete (DIR), GS Bird (DIR), PH Myers (DIR), MC Boyle (NTP), MD Schneider, MS Willis and JA Cidlowski (DIR) [Journal Article] Proc. Natl. Acad. Sci. U. S. A. (2013) v. 110 (42): pp. 17035-40*
http://dx.doi.org/10.1073/pnas.1302546110

DERT:

- ***Ancestral dichlorodiphenyltrichloroethane (DDT) exposure promotes epigenetic transgenerational inheritance of obesity.*** *Skinner MK, Manikkam M, Tracey R, Guerrero-Bosagna C, Haque M, Nilsson EE BMC Med 2013 Oct 23;11:228. doi: 10.1186/1741-7015-11-228.*
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3853586/

- ***Analysis of immune-related loci identifies 48 new susceptibility variants for multiple sclerosis.*** *International Multiple Sclerosis Genetics Consortium (IMSGC), Beecham AH, Patsopoulos NA, Xifara DK, Davis MF, Kemppinen A, Cotsapas C, Shah TS, Spencer C, Booth D, Goris A, Oturai A, Saarela J, Fontaine B, Hemmer B, Martin C, Zipp F, D'Alfonso S, Martinelli-Boneschi F, Taylor B, Harbo HF, Kockum I, Hillert J, Olsson T, Ban M, Oksenberg JR, Hintzen R, Barcellos LF; Wellcome Trust Case Control Consortium 2 (WTCCC2); International IBD Genetics Consortium (IIBDGC), Agliardi C, Alfredsson L, Alizadeh M, Anderson C, Andrews R, Søndergaard HB, Baker A, Band G, Baranzini SE, Barizzone N, Barrett J, Bellenguez C, Bergamaschi L, Bernardinelli L, Berthele A, Biberacher V, Binder TM, Blackburn H, Bomfim IL, Brambilla P, Broadley S, Brochet B, Brundin L, Buck D, Butzkueven H, Caillier SJ, Camu W, Carpentier W, Cavalla P, Celius EG, Coman I, Comi G, Corrado L, Cosemans L, Cournu-Rebeix I, Cree BA, Cusi D, Damotte V, Defer G, Delgado SR, Deloukas P, di Sapio A, Dilthey AT, Donnelly P, Dubois B, Duddy M, Edkins S, Elovaara I, Esposito F, Evangelou N, Fiddes B, Field J, Franke A, Freeman C, Frohlich IY, Galimberti D, Gieger C, Gourraud PA, Graetz C, Graham A, Grummel V, Guaschino C, Hadjixenofontos A, Hakonarson H, Halfpenny C, Hall G, Hall P, Hamsten A, Harley J, Harrower T, Hawkins C, Hellenthal G, Hillier C, Hobart J, Hoshi M, Hunt SE, Jagodic M, Jelčić I, Jochim A, Kendall B, Kermode A, Kilpatrick T, Koivisto K, Konidari I, Korn T, Kronsbein H, Langford C, Larsson M, Lathrop M, Lebrun-Frenay C, Lechner-Scott J, Lee MH, Leone MA, Leppä V, Liberatore G, Lie BA, Lill CM, Lindén M, Link J, Luessi F, Lycke J, Macciardi F, Männistö S, Manrique CP, Martin R, Martinelli V, Mason D, Mazibrada G, McCabe C, Mero IL, Mescheriakova J, Moutsianas L, Myhr KM, Nagels G, Nicholas R, Nilsson P, Piehl F, Pirinen M, Price SE, Quach H, Reunanen M, Robberecht W, Robertson NP, Rodegher M, Rog D, Salvetti M, Schnetz-Boutaud NC, Sellebjerg F, Selter RC, Schaefer C, Shaunak S, Shen L, Shields S, Siffrin V, Slee M, Sorensen PS, Sorosina M, Sospedra M, Spurkland A, Strange A, Sundqvist E, Thijs V, Thorpe J, Ticca A, Tienari P, van Duijn C, Visser EM, Vucic S, Westerlind H, Wiley JS, Wilkins A, Wilson JF, Winkelmann J, Zajicek J, Zindler E,*

Haines JL, Pericak-Vance MA, Ivinson AJ, Stewart G, Hafler D, Hauser SL, Compston A, McVean G, De Jager P, Sawcer SJ, McCauley JL. Nat Genet. 2013 Nov;45(11):1353-60. doi: 10.1038/ng.2770. Epub 2013 Sep 29. http://dx.doi.org/10.1038/ng.2770

- ***Prenatal exposure to urban air nanoparticles in mice causes altered neuronal differentiation and depression-like responses.*** *Davis DA, Bortolato M, Godar SC, Sander TK, Iwata N, Pakbin P, Shih JC, Berhane K, McConnell R, Sioutas C, Finch CE, Morgan TE. PLoS One. 2013 May 29;8(5):e64128. doi: 10.1371/journal.pone.0064128. Print 2013.* http://dx.doi.org/10.1371/journal.pone.0064128

- ***Prenatal exposure to air pollution, maternal psychological distress, and child behavior.*** *Perera FP, Wang S, Rauh V, Zhou H, Stigter L, Camann D, Jedrychowski W, Mroz E, Majewska R. Pediatrics. 2013 Nov;132(5):e1284-94. doi: 10.1542/peds.2012-3844. Epub 2013 Oct 7.* http://pediatrics.aappublications.org/content/132/5/e1284.long

- ***Maternal engineered nanomaterial exposure and fetal microvascular function: does the Barker hypothesis apply?*** *Stapleton PA, Minarchick VC, Yi J, Engels K, McBride CR, Nurkiewicz TR. Am J Obstet Gynecol. 2013 Sep;209(3):227.e1-11. doi: 10.1016/j.ajog.2013.04.036. Epub 2013 Apr 30.* http://www.sciencedirect.com/science/article/pii/S0002937813004705

- ***Temporal comparison of PBDEs, OH-PBDEs, PCBs, and OH-PCBs in the serum of second trimester pregnant women recruited from San Francisco General Hospital, California.*** *Zota AR, Linderholm L, Park JS, Petreas M, Guo T, Privalsky ML, Zoeller RT, Woodruff TJ. Environ Sci Technol. 2013 Oct 15;47(20):11776-84. doi: 10.1021/es402204y. Epub 2013 Sep 25.* http://pubs.acs.org/doi/abs/10.1021/es402204y

- ***Interplay between polymorphisms and methylation in the H19/IGF2 gene region may contribute to obesity in Mexican-American children*** *M. A. Hernández-Valero, J. Rother, I. Gorlov, M. Frazier and O. Gorlova [Journal Article] Journal of Developmental Origins of Health and Disease (2013) v. 4 (6): pp. 499-506* http://dx.doi.org/10.1017/s204017441300041x

- ***Co-benefits of mitigating global greenhouse gas emissions for future air quality and human health*** *West, JJ, Smith, SJ, Silva, RA, Naik, V, Zhang, YQ, Adelman, Z, Fry, MM, Anenberg, S, Horowitz, LW and Lamarque, JF [Journal Article] Nat. Clim. Chang. (2013) v. 3 (10): pp. 885-889* http://dx.doi.org/10.1038/nclimate2009

NIEHS News and Highlights

Data Management and Technology

Comparative Toxicogenomics Database. Funded in part by NIEHS, scientists at the pharmaceutical corporation Pfizer Inc. and academic researchers affiliated with the Comparative Toxicogenomics Database (CTD) have integrated information about the toxicity of more than 1,200 pharmaceuticals into this publicly available research resource. The database provides chemical-gene-disease

information and associated functional and pathway data. The Pfizer collaboration specifically added data for chemicals that may be involved in cardiovascular, neurological, kidney, and liver disorders. Molecular toxicologist Carolyn Mattingly, Ph.D., associate professor at North Carolina State University and lead researcher on the study has been directing the development of the CTD with NIEHS support since 2001. According to Mattingly, this is the only database out there that connects mechanisms of chemical action to potential impacts on human health.

Chemical Screening Data. On December 17, the U.S. Environmental Protection Agency (EPA) released new chemical screening information on 1,800 chemicals found in industrial and consumer products, food additives, and drugs. These data were gathered through the NTP-led, interagency Tox21 collaboration.

NTP Nonneoplastic Lesions Atlas. As we know, nonneoplastic diseases are a major cause of morbidity and mortality in humans, and many of these are thought to have environmental causes. The NTP Nonneoplastic Lesion Atlas (NNLA) has just been launched online at http://ntp.niehs.nih.gov/nnl/index.htm. This resource, developed by an NTP team led by Mark Cesta, Ph.D., provides diagnostic guidelines for standardizing the terminology of microscopic nonneoplastic lesions in rats and mice to improve the understanding of nonneoplastic lesions and their relevance to human environmental diseases. The NNLA is intended as a dynamic document that will be updated periodically to reflect evolving scientific consensus.

NIEHS-NCATS-UNC DREAM Toxicogenetics Challenge Winners.
An innovative crowd-sourced computational challenge, the DREAM Toxicogenetics Challenge was launched June 11. DREAM stands for Dialogue for Reverse Engineering Assessments and Methods, and is a joint effort of Sage Bionetworks, NIEHS, the University of North Carolina at Chapel Hill, and the NIH National Center for Advancing Translational Sciences. The goal of the three-month challenge was to find better ways to predict the toxicity of chemicals, and to increase understanding of how a person's individual genetics can influence cytotoxic response of exposure to widely used chemicals using a specific set of genomic and cytotoxicity data. The DREAM challenge included two subchallenges. Subchallenge 1 involved using the supplied data to accurately predict individual responses to compound exposure, based on genomic information. Subchallenge 2 called for development of a model to accurately predict how a particular population would respond to certain types of chemicals. Teams from the same institution, the Quantitative Biomedical Research Center (QBRC) at the University of Texas Southwestern Medical Center, were named best performer in both of the subchallenges. Results of the challenge will be published in *Nature Biotechnology*.

IOM Roundtable Meeting on EH Data Sharing. A March 19 IOM Roundtable on Environmental Health Sciences, Research, and Medicine will focus on "Principles and Best Practices for Sharing Data from Environmental Health Research." This workshop will provide a concise summary of recent history of drivers around data sharing and the current status of federal actions within legislative, administrative, and judicial systems, and highlight the dynamics of how data-sharing changes dramatically depending on the type of study and data involved. The Roundtable is collaborating with the NRC Committee on Science, Technology, and Law (CSTL) to develop this workshop. Registration for the workshop is at http://www.iom.edu/Activities/Environment/EnvironmentalHealthRT.aspx, and the meeting will be webcast as well.

Meetings and Events

On September 24, members of the Interagency Coordinating Committee on the Validation of Alternative Methods (ICCVAM) presented a new vision and direction to their external advisors, the **Scientific Advisory Committee on Alternative Toxicological Methods (SACATM).** The interagency agenda will now be driven by the partner regulatory agencies, rather than directed by NIEHS. Plans include setting immediate priorities, improving communications with stakeholders and the public, and exploring new paradigms to validate and use alternative toxicological methods.

More than 250 researchers, trainees, and administrators from across the nation gathered October 15-17 in Baton Rouge, LA, for the **Superfund Research Program (SRP) Annual Meeting.** Louisiana State University provided a forum for discussing new research, technology, communication, and community engagement in critical areas related to the SRP mission. Scientific sessions focused on halogenated pollutants; emerging contaminants and pollutant mixtures; developmental and other human health effects; and arsenic and heavy metals.

NIEHS scientists and staff helped organize and participated in the **Research Triangle Park Environmental Health Collaborative Climate and Health Summit**, held in Raleigh, October 29-30. The workshop brought together area government officials, scientists, advocates, policy makers, and other parties interested in discussing what the particular effects of climate change will be for North Carolina and how the state might apply lessons learned at the regional and federal level to address them.

More than 1,000 scientists gathered at the **Gulf of Mexico Oil Spill and Ecosystem Science Conference** in Mobile, AL, on January to share what they've learned so far about the 2010 Deepwater Horizon oil spill and its effects on the environment and communities. The event was sponsored by BP's Gulf of Mexico Research Initiative (GoMRI), along with 13 other organizations, including NIEHS, and was the first public presentation of research findings. Messages from the meeting included that: that emergency response plans should allow research efforts to begin on day one of a disaster. Second, researchers should collect as much data about the people as they do about the biophysical environment. And third, response and research must address the human dimension, including health, economic, and social stressors.

2013 marked the 15th anniversary of the **Children's Environmental Health and Disease Prevention Research Centers**, which are jointly funded by NIEHS and EPA. At the celebration and annual meeting in Washington DC, October 29-30, more than a dozen sessions and presentations included remarks from more than 40 experts. Topics included food safety, air pollution, chemicals in consumer products, brain function, and a variety of disease areas. Continued and enhanced collaboration and communication were also strong messages of the meeting.

Despite significant travel restrictions on federal scientists that affected the number who could attend the **American Public Health Association** annual meeting **in** Boston, November 2-6, NIEHS still contributed significantly to a variety of sessions. Staff from programs such as PEPH and WETP showed how these programs line up well with the meeting theme "Think Global, Act Local."

On November 7th and 8th, the NIEHS-supported **IOM Roundtable on Environmental Health Sciences, Research, and Medicine** held a workshop in Washington, DC, to discuss approaches

related to identifying and reducing potential environmental public health risks to new and existing industrial chemicals present in society. Industrial chemicals include chemicals used in industrial processes or commercial products, not including those found in food, pesticides, or pharmaceuticals. Through presentations and discussions, the workshop examined successes and areas for improvement within current regulatory programs for assessing industrial chemical safety, frameworks for chemical prioritization to inform targeted testing and risk management strategies, concepts of sustainability and green chemistry that support the design and use of safer alternatives, and efforts to reduce the risk of chemicals in our society.

The 10th anniversary of the **Breast Cancer and the Environment Research Program** (BCERP) was celebrated at the November 7-8 annual meeting in Madison, WI, featuring a keynote address by NIEHS Director Emeritus Ken Olden, Ph.D., and a concluding session talk by NIEHS and NTP Director Linda Birnbaum, Ph.D. Olden focused on the original vision for BCERP and Birnbaum looked ahead, building on program accomplishments to advance toward a 21st century agenda.

The **Genetics and Environmental Mutagenesis Society** annual meeting was held November 14 in RTP with support from NIEHS. The meeting was organized around the theme "Exploiting the DNA damage response to prevent and cure cancer." Speakers from Duke, UNC, and Wake Forest University discussed advances in DNA repair, the bioavailability of chemotherapeutics, and the role of the circadian clock in environmental carcinogenesis

Upcoming Meetings and Events

- Global Environmental & Occupational Health Network Meeting, February 25-26, NIH Bethesda, MD
- NIEHS Arsenic Workshop, March 3-4, Research Triangle Park,
- Society of Toxicology, March 23-27, Phoenix, AZ
- Virtual Forum on Autism and the Environment, April 22, online
- CLARITY-BPA Grantee Meeting, May, NIEHS

Awards and Recognition

NIEHS Awardees:

- Linda Birnbaum, PhD, was honored at the American Public Health Association meeting in October with the 2013 Homer N. Calver Award. The award, given in honor of Calver, an environmental scientist and APHA leader, recognizes exemplary environmental health leadership. Birnbaum's accompanying lecture was titled, "When Environmental Chemicals Act Like Uncontrolled Medicine."
- Industrial hygienist Sharon Beard was honored by the American Public Health Association with the 2013 Lorin Kerr Award for her 19 years of leadership in the Worker Education and Training Program, particularly of the highly regarded Minority Worker Training Program. Since 1995, this program has trained more than 10,000 minority workers in environmental remediation and related fields.
- The Pacific Basin Consortium for Environment and Health (PBC) selected Superfund Research Program Director William Suk, Ph.D., to receive its inaugural Chairman's Award. The award, presented at the 15th International Conference of the PBC September 24-27

in Honolulu, recognized Suk's contribution to reshaping the PBC to focus more on global environmental health, with particular emphasis on children's health.

- Two NIEHS scientists recently were granted tenure by the NIH Central Tenure Committee. Honglei Chen, M.D., Ph.D., is head of the Aging and Neuroepidemiology Group in the Epidemiology Branch. Michael Fessler, M.D., is lead researcher in the Clinical Investigation of Host Defense Group in the Laboratory of Respiratory Biology.
- At the Institute's 11th Annual Science Day on November 7, Dale Sandler, Ph.D., principal investigator and chief of the Epidemiology Branch, was named Mentor of the Year. Steven Roberts, Ph.D., an Intramural Research Training Award fellow in the Chromosome Stability Group, was named Fellow of the Year.
- Former NTP geneticist Jack Bishop, Ph.D., who retired in 2012 after 40 years of federal service, has been named by the Environmental Mutagenesis and Genomics Society as the winner of its 2013 Alexander Hollaender Award, which recognizes outstanding contributions in the application of the principles and techniques of environmental mutagenesis to the protection of human health.

NIEHS-related Awardees:

- Louisiana State University chemist and Superfund Research Program Center Director Barry Dellinger, Ph.D., has been awarded the 2014 American Chemical Society Award for Creative Advances in Environmental Science and Technology for his pioneering research on the sources, origin, and environmental chemistry of combustion-generated polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans.
- John Froines, Ph.D., associate director of the NIEHS-funded Southern California Environmental Health Sciences Center, received the 2013 Ramazzini Award given by the Collegium Ramazzini. The award honors Italian physician and University of Modena Professor Bernardino Ramazzini (1633-1714), who authored one of the seminal works of occupational medicine, De Morbis Artificum Diatriba (Diseases of Workers).
- The NIEHS Superfund Research Program (SRP) has selected Corin Hammond, a doctoral student at the University of Arizona, as the 16th recipient of the annual Karen Wetterhahn Memorial Award. The award, which recognizes outstanding SRP graduates and postdoctoral researchers, acknowledges Hammond for her research contributions to stabilize metals in mining waste sites, and to reverse the damage in nearby soils.

News from Building 1

Data Reproducibility

In a January 30 commentary in *Nature*, NIH Director Dr. Francis Collins and Principal Deputy Director Dr. Lawrence Tabak laid out an initiative for NIH to restore the self-correcting, or checks and balances nature of preclinical research, which many believe is currently failing. Collins and Tabak cited a number of reasons for problems with the system: poor training of researchers in experimental design; withholding by scientists of research details to maintain a competitive edge; increased emphasis on making provocative statements rather than presenting technical details; publications that do not report basic elements of experimental design; overvaluation of publications in high profile journals; and lack of publication of negative findings. The authors said that preclinical work, particularly that involving animal models, seems to be the most susceptible to these types of concerns.

To address the issue of data reproducibility, NIH efforts include:

- Developing a training module on enhancing reproducibility and transparency of research findings, with an emphasis on good experimental design that will be incorporated into the mandatory training on responsible conduct of research for NIH intramural postdoctoral fellows later this year.
- Informed by this pilot, final materials will be posted on the NIH website by the end of this year for broad dissemination, adoption or adaptation, on the basis of local institutional needs.
- NIH ICs are testing the use of a checklist to ensure a more systematic evaluation of grant applications.
- Completing a current pilot to assess the value of assigning at least one reviewer on each panel the specific task of evaluating the 'scientific premise' of the application: the key publications on which the application is based.

NIH leadership will decide by the fourth quarter of this year which approaches to adopt agency-wide, which should remain specific to Institutes and Centers, and which to abandon. For more, see the commentary at NIH *Nature* **505,** 612–613 (30 January 2014) doi:10.1038/505612a.