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

8-9 September 2015

Legislative and Budget Report

Appropriations

	FY 2014 Appropriation	FY 2015 Omnibus	FY 2016 Presidents	FY 2016 House Appr	FY 2016 Senate Appr
NIEHS	**$ 665,439,000**	**$ 667,333,000**[a/]	**$ 681,782,000**	**$ 675,783,000**	**$ 695,900,000**
NIH (LHHS)	**$29,853,513,000**	**$30,084,000,000**	**$31,084,000,000**	**$31,184,000,000**	**$32,084,000,000**
Common Fund	**$ 533,039,000**	**$ 545,639,000**[b/]	**$ 545,639,000**[b/]	**$ 688,239,000**[b/]	**$ 556,677,000**[b/]
Superfund	**$ 77,349,000**	**$ 77,349,000**	**$ 77,349,000**	**$ 77,349,000**	**$ 77,349,000**
NIEHS/DOE Training	**$ 10,000,000**	**$ 10,000,000**		**$ 10,000,000**	

Bill: House Labor, HHS, ED & Related Agencies
Status: Appropriations Committee reported on 24 June 2015

Bill: Senate Labor, HHS, ED & Related Agencies
Status: Appropriations Committee reported on 25 June 2015

Bill: House Interior, Environment & Related Agencies
Status: Appropriations Committee reported on 25 June 2015

Bill: Senate Interior, Environment & Related Agencies
Status: Appropriations Committee reported on 18 June 2015

Bill: House Energy & Water
Status: Passed House (240-177) on 1 May 2015

Bill: Senate Energy & Water
Status: Appropriations Committee reported on 18 June 2015

On 24 June 2015, the House Appropriations Committee chaired by Hal Rogers (R-KY) reported its Labor, HHS, ED & Related Agencies bill. It provides a total of $31.2 billion for the NIH; $1.1 billion above the FY 2015 enacted level and $100 million above the President's Request. It includes $165 million to support children's health research related to the National Children's Study, $480.6 million for Clinical and Translational Sciences Awards, and $311.8 million for Institutional Development Awards (IDeA).

The bill also provides increases for several targeted research initiatives: $300 million for Alzheimer's disease, $100 million for antibiotic resistance, and $95 million for BRAIN, and the full request of $200 million for the new Precision Medicine Initiative (PMI). A table showing the current status of the FY 2016 appropriations is attached.

The House bill appropriates $675,783,000 for NIEHS for FY 2016, a 1.24 % increase over FY 2015. Report language states the NIEHS mission, the responsibilities for NTP, and the Committee's expectation that NIEHS will coordinate through other HHS agencies to share new scientific information and ensure it reaches the community and providers through various other HHS outreach programs. Similar language was included for all Institutes.

One day later, the Senate Appropriations Committee, chaired by Thad Cochran (R-MS), reported its FY 2016 Labor, HHS, ED & Related Agencies bill by a party line vote of 16-14. It provides $32,084,000,000 for NIH, an increase of $2 billion over FY 2015. It includes:

- $200 million for Precision Medicine;
- $350 million increase for the National Institute on Aging, the lead Institute researching Alzheimer's disease;
- $135 million, an increase of $70 million, for the BRAIN Initiative to map the human brain;
- $461 million, an increase of $100 million, to Combat Antibiotic Resistance;
- $300 million, an increase of $26.7 million, for the Institutional Development Award; and
- Increases to every Institute and Center to continue investments in innovative research that will advance fundamental knowledge and speed the development of new therapies, diagnostics, and preventive measures.

The Senate bill provides $ 695,900,000 for NIEHS. Its Report urges NIEHS to continue its collaborations with NICHD and NIMH to fund new opportunities for ASD research and to enhance its support for research on ASD, including experimental and observational research, on potential environmental risk factors that may play a role in the initiation or promotion of ASD at any life stage. With respect to regressive autism, NIEHS is encouraged to focus research on the susceptibility of subpopulations to environmental risk factors and consider approaches to the mitigation of environmental risks associated with ASD. In addition, the Committee encourages NIEHS to consider study of the impact healthy

housing has on reducing environmental exposures that lead to health risks like asthma and lead poisoning.

On 16 June 2015, the House Appropriations Committee reported the FY 2016 Interior, Environment, & Related Agencies bill with a mark of $77,349,000 for NIEHS; the Senate Committee followed on 18 June 2015 with the same mark. This means no increase in funding for the NIEHS Superfund Research and Worker Training Programs since FY 2014.
Although both the House and the Senate Appropriations Committees were on track to finish all 12 bills by mid-July, Senate Democrats vowed to vote against every bill until a new budget deal is negotiated to raise the cap on discretionary funding. A turbulent September lies ahead when the Congress returns from the August recess.

The House began debate on the Interior, Environment & Related Agencies bill on 25 June 2015 but recessed for the Fourth of July break before finishing dozens of amendments approved by the Rules Committee for consideration on the Floor. Expect a Continuing Resolution to give negotiators time to work out a deal on caps for discretionary spending, the debt limit, and FY 2016 funding. Some conservatives are determined to eliminate funding for Planned Parenthood in a must-pass bill. At a closed-door meeting on 22 July 2015, Appropriations Chairman Hal Rogers and his 12 Subcommittee Chairmen met to discuss next steps. The House increased the 302(b) allocation for the Labor, HHS Subcommittee by $1.48 billion for program integrity funding. An increase for that account may ease the pressure to find funding for other programs including NIH.

On 1 May 2015, the House passed the Energy & Water Appropriations bill with a vote of 240 to 177. The Report asks DOE to fund the NIEHS/DOE Worker Training Program at $10,000,000. The Senate Energy & Water Appropriations Subcommittee approved their bill by a voice vote on 19 May 2015. Their Report asks DOE to fund the worker training program, but it does not state an amount.

NIH Funding
Senator Elizabeth Warren (D-MA), Representative Elijah Cummings (D-MD), and Newt Gingrich teamed up at a forum on Capitol Hill to highlight the importance of scientific research. Warren and Cummings invited Gingrich to explain to members of Congress why it's time for another increase in the NIH budget. Gingrich said, "To allow funding to languish at a time of historic opportunity when you could be saving lives and saving money takes a special kind of stupidity that is reserved for this city."

At a Senate Commerce, Science, and Transportation Committee hearing on "Unlocking the Cures for America's Most Deadly Diseases", Senator Ted Cruz (R-TX) said the United States is often "penny wise and pound foolish, paying billions and trillions on the back end" to deal with the consequences of diseases rather than paying on the front end to develop cures.

NAS Panel on Academic Research
On 22 July 2015, Senator Lamar Alexander (R-TN and Chairman of Senate HELP) told the Panel that he hopes to change the rules for academic research supported by the federal government in a Senate bill to speed up medical advances. He asked the Panel for recommendations by the end of the summer. Alexander wants to hear the Panel's views on rules affecting the entire scope of federally supported

research, but a major driver is to accelerate research on cures and treatments for disease. If the Panel gives him recommendations in priority order, he will ask his staff to draft them into law.

Bills

HR 6. On 10 July 2016, the House passed the 21st Century Cures Act (344-77). The Act is the product of the so-called "21st Century Cures" initiative, launched last year by Energy & Commerce Chairman Fred Upton (R-MI) and Representative Diana DeGette (D-CO). Lawmakers from both parties expressed support for the effort, with Democrats praising the bill's funding for the National Institutes of Health. Representative Joe Barton (former Committee Chairman, R-TX) pressed for language to begin curtailing indirect costs at the NIH, while Representatives Renee Ellmers (R-NC) and G.K. Butterfield (D-NC) expressed concern with the disposable medical technology provisions. DeGette pushed for additional resources for the Food and Drug Administration, stating, "We can find all the wonderful cures that we can at the NIH, but if we can't get that approval process going to get those into the clinic then we might as well not have the advances." Frank Pallone (Ranking Member of the full Committee and D-NJ) supported the bill. In January, Pallone withdrew support over a lack of language authorizing increased funding for NIH. The Senate is expected to consider its bill next year.

HR 2576. On 23 June 2015, the House passed (398-1) the TSCA Modernization Act of 2015. Many people see this bill, which is more limited in scope than the Senate bill as a possible vehicle for a compromise. Representative Shimkus (R-IL) is more likely to negotiate a compromise than Senator Inhofe (R-OK). The standard for regulation is unreasonable risk of injury to human health or the environment. States can regulate a chemical until EPA makes a final decision, then federal preemption holds.

Ken Cook, president of the Environmental Working Group, had this to say, "The proposal being considered this week in the House falls short of what is needed to redress decades of neglect under a weak federal policy that resulted in a legacy of malfeasance by the chemical industry." The effort to reform chemical safety rules has drawn support from industry groups. The American Chemistry Council sent a letter of support for the bill to Chairman Shimkus and Ranking Member Tonko. According to Cal Dooley, ACC president and CEO, "The draft provides for a strong and cohesive federal system while maintaining a role for states in the protection of their citizens and environment, and it provides [the U.S. EPA] the additional resources necessary to evaluate risks."

S 282. On 6 May 2015, the Senate Committee on Homeland Security and Governmental Affairs reported the Taxpayers Right-to-Know Act. S 282 requires OMB to include on a website an inventory that identifies each program of the federal government. The website must include detailed information on: 1) any activity that is commonly referred to as a program; 2) any activity specifically created by law, or referenced in law, as a program; 3) each program that has an application process; 4) each program for which financial awards are made on a competitive basis; and 5) any activity identified as program activity in a budget request. In addition the legislation would require each program administered by a federal agency and described on the website include the number of people served by or benefiting from the program, the number of federal employees and contract staff involved, and links to review of the program including those by the GAO and IG. The bill defines a program to be

included in the inventory on the website as "each program of the Federal Government for which there is more than $1,000,000 in annual budget authority…. And any activity referenced in law as a program after June 30, 2018."

HR 1119. On 19 May 2015, the House passed under suspension of the rules H.R. 1119, the Research and Development Efficiency Act. It expresses the sense of the Congress that high and increasing administrative burdens and costs in Federal research administration, particularly in the higher education sector where most federally sponsored research is performed, are eroding funds available to carry out basic scientific research. The bill would require the Director of OSTP to establish a working group under the authority of the National Science and Technology Council. The working group must take into account input and recommendations from non-federal stakeholders, including federally funded and non-federally funded researchers, institutions of higher education, scientific disciplinary societies and associations, nonprofit funded research and development centers, and others with a stake in the performance of scientific research. In addition, the bill would require the OSTP director to report to the House Committee on Science, Space and Technology and the Senate Committee on Commerce, Science, and Transportation on what steps have been taken to carry out the recommendations of the working group.

S 697. The Frank R Lautenberg Chemical Safety for the 21st Century Act was placed on the Senate Legislative Calendar on 17 June 2015. The following day Senator Inhofe (R-OK and Chairman of the Senate Environment & Public Works Committee) filed a written report. Minority views were also filed. Just before the August recess Senator McConnell stated that TSCA reform could come up for a vote during the fall.

S 725. The Alan Reinstein and Trevor Schaefer Toxic Chemical Protection Act introduced by Senator Barbara Boxer to amend TSCA asks the EPA Administrator to coordinate with the HHS Secretary on awarding grants to individuals or groups that may be affected by a reported community-based disease cluster.

HR 3293. On 29 July 2015, Representative Lamar Smith (R-TX & Chairman of House Science, Space, & Technology) introduced a bill that requires NSF to tell the public why every award is "in the national interest." It lists seven criteria: enhancing the economy, improving the scientific workforce, advancement of the well-being of the American public, increased public scientific literacy and public engagement with science and technology, fostering partnerships with industry and academia, support for national defense, and promotion of the progress of science for the US. NSF Director France Córdova has said that the agency is already engaged in an effort to increase transparency. Program managers are working with PIs to make sure the abstracts and titles of every grant convey the value of the research being funded.

S 779. The Senate Committee on Homeland Security and Government Affairs approved a revised version of the Fair Access to Science & Technology Research Act which requires all federal agencies sponsoring research expenditure over $100,000,000 per year to develop a public access policy. Free online access to publications in peer-reviewed journals must be provided after an embargo not to

exceed one year for any work funded in whole or in part by these agencies. Exemptions are allowed for classified research or work from which the authors earn a royalty.

HR 912. John Yarmouth (D-KY) with cosponsor Louise Slaughter (D-NY) introduced the Appalachian Communities Health Emergency Act or the ACHE Act to place a moratorium on permitting for mountaintop removal coal mining until health studies are conducted. It asks NIEHS to conduct or support comprehensive studies on the health impacts, if any, of mountaintop removal coal mining on individuals in surrounding communities.

HR 1275. The Climate Change Health Protection and Promotion Act introduced by Lois Capps (D-CA) requires the HHS Secretary to revise the national strategic action plan by 2017 and every four years thereafter. The action plan must include information on the following health related items:

- The status of critical environmental health parameters and related human health impacts
- The impacts of climate change on public health
- Advances in the development of strategies for preparing for and responding to the impacts of climate change on public health

Science Advances

One NIEHS (NIEHS authors' groups in parens)

- ***Timing of Environmental Exposures as a Critical Element in Breast Cancer Risk.*** *Fenton SE (NTP) and LS Birnbaum (OD). J. Clin. Endocrinol. Metab.* (2015) v. pp. jc20152848
  http://dx.doi.org/10.1210/jc.2015-2848
  SP Goal 2

- ***Pharmacokinetics of bisphenol A in humans following a single oral administration.*** *Thayer KA (NTP), DR Doerge, D Hunt (DIR), SH Schurman (DIR), NC Twaddle, MI Churchwell, S Garantziotis (DIR), GE Kissling (DIR), MR Easterling, JR Bucher (NTP) and LS Birnbaum (OD). Environ Int* (2015) v. 83 pp. 107-115
  http://dx.doi.org/10.1016/j.envint.2015.06.008
  SP Goal 3

DNTP

- ***Cell-Based High-Throughput Screening for Aromatase Inhibitors in the Tox21 10K Library.*** *Chen S, JH Hsieh (NTP), R Huang, S Sakamuru, LY Hsin, M Xia, KR Shockley (DIR), S Auerbach (NTP), N Kanaya, H Lu, D Svoboda (NTP), KL Witt (NTP), BA Merrick (NTP), CT Teng (NTP) and RR Tice (NTP) . Toxicol. Sci.* (2015) [InPress]
  http://dx.doi.org/10.1093/toxsci/kfv141
  SP Goal 1

- ***Kras, egfr, and tp53 mutations in b6c3f1/n mouse and f344/ntac rat alveolar/bronchiolar carcinomas resulting from chronic inhalation exposure to cobalt metal.*** *Hong, HH (DNTP), Hoenerhoff, MJ (DNTP), Ton, TV (DNTP), Herbert, RA (DNTP), Kissling, GE (DIR), Hooth, MJ (DNTP), Behl, M (DNTP), Witt, KL (DNTP), Smith-Roe, SL (DNTP), Sills, RC (DNTP), Pandiri, AR (DNTP). Toxicol Pathol.* 2015. 2015/06/11
  http://dx.doi.org/10.1177/0192623315581192
  SP Goal 1

- ***A data analysis pipeline accounting for artifacts in tox21 quantitative high-throughput screening assays.*** *Hsieh, JH (DNTP), Sedykh, A, Huang, R, Xia, M, Tice, RR (DNTP). J Biomol Screen.* 2015. 2015/04/24
  http://dx.doi.org/10.1177/1087057115581317
  SP Goal 1

DIR

- ***Regulator of G-protein signaling 2 (RGS2) suppresses premature calcium release in mouse eggs.*** *Bernhardt, ML (DIR), Lowther, KM, Padilla-Banks, E (DIR), McDonough, CE(DIR), Lee, KN, Evsikov, AV, Uliasz, TF, Chidiac, P, Williams, CJ (DIR) and Mehlmann, LM. Development* (2015) [ePub]
  http://dx.doi.org/10.1242/dev.121707
  SP Goal 1

- ***POLG2 Disease Variants: Analyses Reveal a Dominant Negative Heterodimer, Altered Mitochondrial Localization, and Impaired Respiratory Capacity.*** *Young MJ (DIR), MM Humble (DIR), KL DeBalsi (DIR), KY Sun (DIR) and WC Copeland (DIR). Hum. Mol. Genet.* (2015) [InPress]
  http://dx.doi.org/10.1093/hmg/ddv240
  SP Goal 1, 9

- ***p53 amplifies Toll-like receptor 5 response in human primary and cancer cells through interaction with multiple signal transduction pathways.*** *Shatz M (DIR), I Shats, D Menendez (DIR) and MA Resnick (DIR). Oncotarget* (2015) v. 6 (19): pp. 16963-80.
  http://www.impactjournals.com/oncotarget/index.php?journal=oncotarget&page=article&op=view&path[]=4435
  SP Goal 1

- ***Pesticide use and risk of end-stage renal disease among licensed pesticide applicators in the Agricultural Health Study.*** *Lebov JF, LS Engel, D Richardson, SL Hogan, JA Hoppin and DP Sandler (DIR). Occup. Environ. Med.* (2015) [ePub]
  http://dx.doi.org/10.1136/oemed-2014-102615
  SP Goal 3, 6

- ***MiRNA-mediated regulation of the SWI/SNF chromatin remodeling complex controls***

pluripotency and endodermal differentiation in human ES cells. *Wade SL (DIR), LF Langer (DIR), JM Ward (DIR) and TK Archer (DIR). Stem Cells* (2015) [In Press]
http://dx.doi.org/10.1002/stem.2084
SP Goal 1

DERT

- ***Hybrid periportal hepatocytes regenerate the injured liver without giving rise to cancer.*** Font-Burgada J, Shalapour S, Ramaswamy S, Hsueh B, Rossell D, Umemura A, Taniguchi K, Nakagawa H, Valasek MA, Ye L, Kopp JL, Sander M, Carter H, Deisseroth K, Verma IM, Karin M. 2015. Cell 162(4):766-779.
  http://www.ncbi.nlm.nih.gov/pubmed/26276631
  SP Goal 1

- ***Activation of Human Peroxisome Proliferator-Activated Nuclear Receptors (PPARγ1) by Semi-Volatile Compounds (SVOCs) and Chemical Mixtures in Indoor Dust.*** *Fang M, Webster TF, Stapleton HM. Environ. Sci. Technol.*, Publication Date (Web): July 14, 2015
  http://www.ncbi.nlm.nih.gov/pubmed/26172262
  SP Goal 4

- ***Developmental exposure to 50 parts-per-billion arsenic influences histone modifications and associated epigenetic machinery in a region- and sex-specific manner in the adult mouse brain.*** *Tyler CR, Hafez AK, Solomon ER, Allan AM*. Toxicol Appl Pharmacol. 2015 Jul 17;288(1):40-51. [Epub ahead of print]
  http://www.ncbi.nlm.nih.gov/pubmed/26193056
  SP Goal 1, 2

- ***Cognitive deficits at age 22 years associated with prenatal exposure to methylmercury.*** *Debes F, Weihe P, Grandjean P.* Cortex. 2015 Jun 4. [Epub ahead of print]
  http://www.ncbi.nlm.nih.gov/pubmed/26109549
  SP Goal 2

- ***Lead Exposure during Early Human Development and DNA Methylation of Imprinted Gene Regulatory Elements in Adulthood.*** *Li Y, Xie C, Murphy SK, Skaar D, Nye M, Vidal AC, Cecil KM, Dietrich KN, Puga A, Jirtle RL, Hoyo C.* Environ Health Perspect. 2015 Jun 26. [Epub ahead of print]
  http://www.ncbi.nlm.nih.gov/pubmed/26115033
  SP Goal 2, 6

- ***Overweight and Obesity Prevalence Among School-Aged Nunavik Inuit Children According to Three Body Mass Index Classification Systems.*** *Medehouenou TC, Ayotte P, St-Jean A, Meziou S, Roy C, Muckle G, Lucas M.* J Adolesc Health. 2015 Jul;57(1):31-6.
  http://www.ncbi.nlm.nih.gov/pubmed/26095406

SP Goal 6

- ***Indoor Particulate Matter Concentration, Water Boiling Time, and Fuel Use of Selected Alternative Cookstoves in a Home-Like Setting in Rural Nepal.*** *Ojo KD, Soneja SI, Scrafford CG, Khatry SK, LeClerq SC, Checkley W, Katz J, Breysse PN, Tielsch JM*. Int J Environ Res Public Health. 2015 Jul 7;12(7):7558-81.
  http://www.ncbi.nlm.nih.gov/pubmed/?term=Ojo+KD
  SP Goal 6

- ***PCR based determination of mitochondrial DNA copy number in multiple species.*** *Rooney, JP, Ryde, IT, Sanders, LH, Howlett, EH, Colton, MD, Germ, KE, Mayer, GD, Greenamyre, JT and Meyer, JN. Methods Mol. Biol.* (2015) v. 1241 pp. 23-38
  http://dx.doi.org/10.1007/978-1-4939-1875-1_3
  SP Goal 1, 9

- ***Promotion of BRCA2-Dependent Homologous Recombination by DSS1 via RPA Targeting and DNA Mimicry.*** *Zhao W, Vaithiyalingam S, San Filippo J, Maranon DG, Jimenez-Sainz J, Fontenay GV, Kwon Y, Leung SG, Lu L, Jensen RB, Chazin WJ, Wiese C, Sung P*. Mol Cell. 2015 Jul 16;59(2):176-87. Epub 2015 Jul 2.
  http://www.ncbi.nlm.nih.gov/pubmed/?term=Zhao+W+AND+Chazin+WJ
  SP Goal 1

NIEHS News and Highlights

NIH Strategic Plan

In response to a request from the Congress, NIH is developing a 5-year NIH-wide Strategic Plan to advance its mission to support research in pursuit of fundamental knowledge about the nature and behavior of living systems, and the application of that knowledge to extend healthy life and reduce illness and disability. Senior leadership and staff from all 27 Institutes, Centers, and Offices (ICOs) are contributing to the proposed direction and content of the Strategic Plan, with input from the Advisory Committee to the Director, NIH. The goal of this larger NIH-wide strategic plan is not to outline the myriad of important research opportunities for specific disease applications (as that is covered in the strategic plans from each of the ICOs, which will be referenced appropriately), but to highlight major trans-NIH themes. The Strategic Plan is due to the Congress in late December 2015.

The framework below identifies crosscutting areas of research exemplifying the breadth of ICOs' priorities and aims to outline a set of unifying principles to guide NIH in pursuit of its mission.

Areas of Opportunity that Apply Across Biomedicine

- ***Promote Fundamental Science***
  - Basic science is the foundation for progress
  - Consequences of basic science discoveries are often unpredictable
  - Leaps in technology often catalyze major scientific advances
- ***Improve Health Preservation and Disease Prevention***
  - Importance of studying healthy individuals
  - Advances in early diagnosis/detection

    - Evidence-based interventions to eliminate health disparities
- ***Advance Treatments and Cures***
    - Unprecedented opportunities on the basis of molecular knowledge
    - Breakdown of traditional disease boundaries
    - Breakthroughs need partnerships and often come from unexpected directions

General

New Core Centers. NIEHS has funded two new environmental health science core research centers: at North Carolina State University (NC State) and the University of California, Davis (UC Davis). These new centers join the 20 others currently funded. The NC State Center for Human Health and the Environment will collaborate with researchers at the East Carolina University Brody School of Medicine, North Carolina Central University, North Carolina Department of Health and Human Services, and Research Triangle Institute NIH Eastern Regional Comprehensive Metabolomics Resource Core. Leveraging the technical expertise of CHHE and its partners, the center will focus on how environmental stressors interact with biomolecular signaling pathways, the genome, and the epigenome. Robert Smart, PhD will be the center's director. The UC Davis center comprises a team of scientists from 19 departments, across four schools and colleges, and will be directed by Irva Hertz-Piccioto, PhD. The center will focus on exposures such as particles and volatile organic compounds in ambient air, pollutants in drinking water and food, and household or personal care products.

Special Visitor. On July 10, NIEHS hosted Gary Gibbons, M.D., director of the National Heart, Lung, and Blood Institute (NHLBI), outlined his vision for the future of precision medicine. The model he described is based on an approach of integrating new tools and smart technology, analyzing large data sets, and networking. It would incorporate recognizable elements of personalized medicine with new research to redefine what Gibbons called clumped diseases, such as asthma and other lung diseases, to achieve more clearly targeted and effective interventions.

EHP Editor in Chief. Sally Perreault Darney, Ph.D., has accepted the position of Editor-in-Chief with *Environmental Health Perspectives* (EHP). Her first day was August 24. As Editor-in-Chief, Sally will provide leadership and scientific vision to *EHP*, and help shape the future direction of the journal. Sally received her PhD in 1980 from the University of Hawaii Medical School and completed a Postdoctoral Fellow at The Johns Hopkins University School of Public Health before joining the US Environmental Protection Agency's Office of Research and Development (ORD) in 1984. During her career with EPA she has accrued extensive experience in environmental research and research management, organizational governance, and publication of scholarly journals. As a bench scientist she has published extensively in reproductive toxicology, environmental epidemiology, and children's health, and contributed to EPA test and risk assessment guidelines. As a program director she had broad influence on strategic planning for ORD's intramural and extramural research priorities in chemical safety, sustainable communities, children's health, and health disparities. At present, Sally co-leads a large research project focused on assessing health disparities in vulnerable groups and providing healthy environments for children. Her editorial experience includes four years as Associate Editor for Biology of Reproduction, and five years as Editor-in-Chief of the *Journal of Andrology* along with service on several editorial boards and as peer reviewer for numerous journals in the reproductive and environmental sciences. Sally is a Past-President of the Society for the Study of Reproduction and the American Society of Andrology whereby she has participated in the selection of editors and publication

companies for the respective society journals.

New Tenured Senior Investigator. Francesco (Franco) deMayo, M.S., Ph.D., is an NIH tenured scientist who has been recruited to NIEHS to assume the position of Deputy Chief of the Reproductive and Developmental Biology Laboratory in the NIEHS Division of Intramural Research. Dr. DeMayo brings critical expertise in the area of reproductive biology, in particular in pregnancy-associated diseases and dysfunctions. As a reproductive endocrinologist, he has broader expertise with interests in both the male and female systems, from both developmental and adult perspectives. Dr. DeMayo's research is highly relevant to the NIEHS mission – specifically, in defining how environmental exposure can affect female fertility at various stages of pregnancy but also identifying susceptible cellular signaling pathways. He has been a tenured Professor in the Molecular and Cellular Biology Department at Baylor College of Medicine since 2002 where he served as the Director of the Center for Reproductive Biological Research, Associate Director for the Center of Reproductive Medicine, and Director of the Genetic Engineered Mouse Core. He also was a Professor in the Department of Pediatrics. Dr. DeMayo has published 239 primary peer-reviewed manuscripts, and is a highly regarded expert in his field.

Training

Tammy Collins, Ph.D., has become the new Director of the Office of Fellows' Career Development. Dr. Collins previously served in this role as a contractor. Several of the ongoing training initiatives here at NIEHS are a result of her efforts and teamwork. A native of North Carolina, Dr. Collins received her B.S. in chemistry from Appalachian State University, and the Ph.D. in biochemistry from Duke University in 2008. She did postdoctoral research for two years in the laboratory of TS Hsieh at Duke, and then joined NIEHS as a postdoctoral fellow in the research group of Dr. Bill Copeland, Chief, Genome Integrity and Structural Biology Laboratory.

The NIEHS Scholars Connect Program (NSCP) welcomed five new recruits June 8 to its weeklong boot camp and orientation. Classroom sessions and hands-on training in scientific method and laboratory procedures marked the start of the fourth round of a yearlong immersion into scientific research experience for students at local universities and historically black universities and colleges. The program is part of an institute-wide effort towards meeting the NIEHS strategic plan goal of increasing diversity among scientists in the environmental health sciences.

Nine North Carolina public school teachers joined NIEHS this summer for the two-week Science, Teachers, and Research Summer (STaRS) Institute, during which they took part in hands-on laboratory research, science talks, facility tours, and discussion sessions. Presented in cooperation with North Carolina New Schools (NCNS), the professional development opportunity aims to enhance high school science teachers' understanding of basic biomedical research. The teachers created lesson plans and classroom projects based on what they learned and presented them on the last day, demonstrating how they will translate their experiences into practice.

The NIEHS Worker Training Program has launched an innovative program focused on raising awareness among workers of the hazards of future infectious disease outbreaks, ranging from influenza and Ebola

hemorrhagic fever to newly emerging biological threats. The approach targets workers beyond direct health care providers, to train others who might be affected by an infectious disease outbreak, from lab techs and janitors, to garbage handlers, first responders, and morticians. The program, which is covered through dedicated funding for Ebola, is more comprehensive than the immediate, single-disaster responses that were mounted following hurricanes Katrina and Sandy, the World Trade Center attack, and the Gulf oil spill. The training is planned for multiple sites across the country.

A new study gives high marks to worker health and safety training and takes a rare look at how mid-level managers value NIEHS-funded programs. The research, led by University of California, Los Angeles researchers Kevin Riley, Ph.D., and Linda Delp, Ph.D., focused on the perceptions of managers involved in meeting the Occupational Safety and Health Administration (OSHA) standards for Hazardous Waste Operations and Emergency Response (HAZWOPER) activities. The study, published in the July issue of the *American Journal of Industrial Medicine*, is an analysis of responses from 109 operations and safety managers across the country regarding what motivates them to send their employees to the training, and what they value most about the programs. Protecting employees from hazards rated highest followed closely by regulatory compliance. However, the study indicated that even with mandates and training offered on-site at no cost to employers, managers are often reluctant to give workers release time to participate.

Past Meetings and Events

The **Prenatal Programming and Toxicity (PPTOX)** meeting held in October 2014 resulted in a special collection of articles in *Endocrinology*. The collection can be accessed at http://press.endocrine.org/endo/pptox/iv. The site also features a podcast discussion of the state of the science of DOHaD with NIEHS Grantee Dr. Philippe Grandjean, organizer of the 2014 PPTOX meeting, and Dr. Andrea Gore, Editor-in-Chief of *Endocrinology*. **SP Goals: 1, 2, 3, 4**

The **Interagency Coordinating Committee on the Validation of Alternative Methods** (ICCVAM), which coordinates the activities of member federal agencies to replace, reduce, or refine animal use, held a public forum at NIH on May 27 to discuss subjects such as transparency in industry's reporting of animal use, training for regulators on available non-animal methods and strategies, and communication with the public on the science behind non-animal methods. Stakeholders commented on a request by ICCVAM for suggestions on how to track progress in this area, training and education opportunities for both potential users of new test methods and regulators evaluating test submissions, and concerns about how to assure the public that non-animal methods adequately protect public health, among others. **SP Goals: 7, 9.**

On June 8-9, the NIEHS hosted a **Climate Justice Conference**, titled "Responding to Emerging Health Effects." The event was organized by the HHS Environmental Justice Working Group and NIEHS staff, and attracted more than 150 participants both in-person and online including government and community representatives. The goals of the meeting were to engage community input on how to address the effects of climate change on vulnerable populations and to showcase Federal activities in

the area including the development of new data and decision-making tools to help communities become more resilient. **SP Goals: 2, 5, 6, 10, 11**

A June 18-19 workshop **Elucidating Environmental Dimensions of Neurological Disorders and Diseases: Understanding New Tools from Federal Chemical Testing Programs**, was organized by the Environmental Defense Fund (EDF) in partnership with NIEHS, NTP, and the U.S. Environmental Protection Agency (EPA), and hosted by UC-Davis. Presenters, including Dr. Birnbaum, described HTS assays in detail and lessons learned by researchers thus far. Some attendees also participated in what organizers described as genius bars, where they received step-by-step instructions on accessing Tox21 tools. **SP Goals: 1, 3**

Dr. Birnbaum presented and participated in the **Targeting Environmental and Neurodevelopmental Risks (TENDR)** workshop, held in Washington, DC on June 23-24. Project TENDR, led by NIEHS grantee Irva Hertz-Piccioto, Ph.D., was recently launched with the overarching goal to reduce the incidence of childhood conditions of autism spectrum disorder, intellectual disability, attention deficits, hyperactivity and other learning and neurodevelopmental disabilities. Dr. Birnbaum presented a broad overview of NIEHS efforts in these areas and children's health generally. **SP Goals: 1,2, 3**

According to a 2010 study by the Centers for Disease Control and Prevention, more than 11 million people live within 500 feet of a major U.S. highway. More than 300 people participated in a **Virtual Forum on Near-Roadway Air Pollution**, hosted online by NIEHS on July 10. A panel of experts including Joel Kaufman, M.D., from the University of Washington, Toby Lewis, M.D., from the University of Michigan, Rob McConnell, Ph.D., from the University of Southern California, and Veronica Vieira, Ph.D., from the University of California, Irvine, as well as NIEHS Director Linda Birnbaum, Ph.D., and DERT Director, Gwen Collman, Ph.D., answered questions related to the health hazards of living, working, and playing near roadways. Also discussed were changes in policy and behaviors that are leading to cleaner air including land use plans that reduce exposure to these pollutants, using filters in homes, schools, and workplaces, and increased use of fuel-efficient vehicles, carpooling, and biking. **SP Goals: 5, 8, 10, 11**

Epidemiologists, biostatisticians, toxicologists, and exposure scientists came together at NIEHS on July 13-14 to evaluate new statistical methods for studying exposures to mixtures of chemicals in the environment. Danielle Carlin, Ph.D. from the Superfund Research Program, organized the workshop, **Epidemiological Analysis of Exposure to Chemical Mixtures**. Participants were invited to analyze three epidemiological data sets prior to the meeting and submit abstracts describing their approaches and results. More than 30 abstracts were submitted and displayed in the poster session. The committee selected 20 of them for workshop presentations. **SP Goals: 3, 4, 7**

On July 15-16, EPA and NIEHS co-hosted a meeting in Research Triangle Park, **Strengthening the Scientific Basis for Chemical Safety Assessments.** Attendees identified high priority topic areas for reducing uncertainty and improving human health risk assessments for chemicals including accounting for exposures during critical developmental windows, capturing variability in population susceptibility, translating experimental animal findings to humans, and appreciating cumulative exposures, and characterized specific research that EPA and NIEHS can invest in to improve our scientific

understanding for these topic areas and suggestions for ways to translate the existing and future scientific research into improved approaches to assessing chemical risks to public health. Dr. Birnbaum and many other NIEHS and NTP staff, as well as grantees participated. **SP Goals 1, 2, 3, 4**

Shortly after Hurricane Sandy, the HHS Office of the Assistant Secretary for Preparedness and Response; the Centers for Disease Control and Prevention; and the National Institute for Environmental Health Sciences funded a series of two-year research grants that examine long-term recovery of health systems and communities in areas of the country hard hit by the storm. On August 10-11, these groups held a conference, **Translating Research Into Practice**, to share the research outcomes and products of these grants, and to discuss next steps **SP Goals: 5, 8, 9, 10**

Upcoming Meetings and Events

- WHO Collaborating Centres on Environmental and Occupational Health meeting, Montreal, September 9-11
- NIH Research Festival, NIH, September 16-18
- NRC Emerging Science for Environmental Health Decisions Committee, Interindividual Variability: New Ways to Study and Implications for Decision-Making, Washington, DC, September 30-October 1
- *2nd* International Workshop on Obesity and Environmental Contaminants, Sweden, October 6-10
- International Society of Exposure Sciences, Nevada, October 18-22
- EPA-NIEHS Children's Environmental Health Centers meeting, Washington, DC, October 28-30
- Research Triangle Environmental Health Collaborative Water Summit, RTP, October 26-27
- American Public Health Association annual meeting, Chicago, October 31-November 4
- Children's Health Exposure Analysis Resource (CHEAR) grantee meeting, NIEHS, November 2-3
- Congress of Toxicology in Developing Countries, Brazil, November 7-10
- Workshop on The Value of Tribal Ecological Knowledge for the Environmental Health Sciences, NIH, December 3-4
- IOM Roundtable on Environmental Health Sciences, Research and Medicine, Megacities, Washington, DC, December 7-8

Awards and Recognition

NIEHS Awardees

- NTP Deputy Division Director for Science Nigel Walker, Ph.D., was honored June 4 with the 2015 Herbert E. Stokinger Award from the American Conference of Governmental Industrial Hygienists. The award recognizes individuals whose leadership and dedication have provided significant advancement to the fields of environmental toxicology and industrial toxicology.
- NIEHS epidemiologist Allen Wilcox, M.D., Ph.D., was named 2015 Mentor of the Year by the Society for Pediatric and Perinatal Epidemiologic Research. The award is given to candidates who serve as role models by demonstrating great communication skills, motivating their mentees to excel, and displaying high standards of scientific performance and integrity. The Raleigh News & Observer also recognized Wilcox's award in naming him "Tarheel of the Week" on August 1.

- Ronald Mason, Ph.D., head of the NIEHS Free Radical Metabolism Group, was awarded the 2015 Discovery Award from the Society for Free Radical Biology and Medicine, which recognizes recent significant advancements in the field of redox research. Mason was recognized in part for his innovative work in immuno-spin trapping, a highly sensitive method for detecting free radicals, which is applicable to both medicine and redox biology.
- Sixteen NIEHS trainees were winners of the National Institutes of Health (NIH) Fellows Award for Research Excellence (FARE) for fiscal year 2016. To participate in the competition, trainees must report on recent first-author data collected while at NIEHS. Judges evaluate abstracts on the basis of scientific merit, originality, experimental design, and overall quality and presentation.

Grantees/Others

- NIEHS Small Business Innovative Research (SBIR) grantees Loretta Mayer, Ph.D., and Cheryl Dyer, Ph.D., were recognized June 15 with one of the highest honors from the U.S. Small Business Administration (SBA), a Tibbetts Award. The two are founders of the company SenesTech, and were recognized for developing a sustainable and humane bait technology that delivers a liquid that disrupts fertility in both male and female rodents, causing significant reductions in urban rodent populations. The bait uses a combination of 4-vinylcyclohexene diepoxide (VCD) and triptolide, a natural product isolated from plants.
- Seven exceptional NIEHS-funded Superfund Research Program (SRP) trainees received a 2015 K.C. Donnelly Externship Award Supplement to enrich their research in environmental health science:
    - Kate Buckman, Ph.D. of the Dartmouth College Superfund Research Program will evaluate using killifish to link mercury exposure to ecologically relevant outcomes.
    - Marvic Carmona de Jesus, a graduate student at the University of Puerto Rico in Mayaguez, which is part of the Northeastern University SRP Center, will use passive sampling devices to detect, monitor, and quantify contaminants in water.
    - Lisandra Santiago Delgado, a graduate student, Oklahoma State University SRP Center, will work on thermally remediating Superfund soils contaminated with PAHs.
    - Erika Fritsch, Ph.D., from the UC-Davis SRP Center will use the bioinformatics expertise she develops to help to establish fish as models for RyR toxic endpoints.
    - Zhilin Guo, a graduate student at the University of Arizona SRP Center, will work toward solving current research problems related to plume persistence.
    - Miao li, a graduate student at the University of Iowa SRP Center, will learn methods to identify protein targets for PCB metabolites, to help reveal mechanisms involved in the toxicity of airborne PCBs.
    - Lauren Redfern, a graduate student in the Duke University SRP Center, will work to determine what biogeochemical influences enhance gene transfer between bacterial species to result in increased degradation rates.

- Four NIEHS-funded small businesses were among the 35 National Institutes of Health (NIH) grantees selected to exhibit in the Biotechnology Industry Organization (BIO) Innovation Zone at the BIO

International Convention held June 15-18 in Philadelphia. The convention attracts about 15,000 biotech leaders from 65 countries, covering a wide spectrum of life science innovations.

  - Giner, Inc. specializes in the development of proton exchange membrane-based electrochemical technologies
  - Trevigen, Inc. focuses on a high-throughput platform to measure DNA damage and repair
  - TF Health Corp. is developing a monitor to measure volatile organic compounds
  - Microvi Biotechnologies is developing a process to remove the carcinogen 1,4-dioxane from drinking water

- Jennifer Panlilio , a Ph.D. student in the WHOI/MIT Graduate program in Oceanography and Oceanographic Engineering who is supported by a Diversity Supplement award to the Woods Hole Oceanographic Institute's Center for Oceans and Human Health, won an award for best poster at the recent Gordon Research Conference. Her research focuses on the harmful algal bloom (HAB) toxin domoic acid and the potential for DA exposure to alter cell fate in the nervous system, leading to permanent changes in structure and function, and prolonged cognitive deficits.