

Report to the National Advisory Environmental Health Sciences Council

Director, NIEHS
September 15, 2020

Appropriations Overview

	FY2019 Enacted	FY2020 Enacted	2021 President's Request	2021 House Mark	House vs. 2020 Enacted
NIEHS (L-HHS)	\$74,707,000	\$802,598,000	\$730,147,000	\$809,501,000	\$6,903,000
FY 2021 House Emergency Funding - NIEHS (Title VI)				\$51,648,000	\$51,648,000
Total NIEHS with Title VI		\$802,598,000		\$861,149,000	\$58,551,000
NIHS a/	\$39,084,000,000	\$41,459,000,000	\$ 38,693,631,000	\$41,959,000,000	\$500,000,000
Common Fund b/	\$619,166,000	\$639,111,000	\$596,467,000	\$644,499,000	\$5,388,000
Superfund	\$79,000,000	\$81,000,000	\$73,688,000	\$83,000,000	\$2,000,000
NIEHS/DOE Training c/	\$10,000,000	\$10,000,000			
COVID-19 Supplemental 5-Year Funds 2020-2024		\$10,000,000			

a/ Includes Mandatory Type 1 Diabetes Research and Superfund.

b/ Includes addition of \$12.6 million for the Gabriella Miller Kids First Act pediatric research initiative.

c/ Excludes \$60 million "All of US" funding which the committee moved to the NIH Office of the Director.

d/ Appropriations Committee report language supporting the transfer of funds from the U.S. Department of Energy's Defense Environmental Cleanup account to NIEHS for the NIEHS/DOE Nuclear Worker Training Program.

Legislative Update

Legislation

FY2021 Appropriations from Congress—Bill Text and Committee Report Language

As of this writing, the House of Representatives has passed 10 of the 12 annual appropriations bills for Fiscal Year 2021, which begins on October 1, 2020. The House has done so in the form of two "minibus" packages. The first package includes the Interior and Environment appropriations bill, which proposes a \$2 million increase for the NIEHS Superfund Research Program and the Worker Training Program (WTP) for a total of \$83 million. The House Appropriations Committee included accompanying report language encouraging the proposed \$2 million increase to be allocated by NIEHS to the WTP "in a manner that best supports communities' capacity to respond to pandemics and disasters."

The second package includes both the Energy and Water Development appropriations bill and the Labor-HHS-Education appropriations bill. That package proposes a \$58.551 million increase for NIEHS in FY2021 that would bring the total budget for the Institute appropriated by the Labor-HHS-Education appropriations bill to \$861.149 million. Additionally, an amendment offered by Rep. Eric Swalwell of California to the Energy and Water Development appropriations bill was adopted during floor debate that supports the annual transfer of \$10 million from the U.S. Department of Energy (DOE) to NIEHS for the NIEHS/DOE Nuclear Worker Training Program.

To date, the Senate Appropriations Committee has not unveiled, marked up, or reported out any of its versions of the 12 annual appropriations bills. It is increasingly likely a Continuing Resolution (CR) will be enacted by October 1, 2020, to continue government operations into FY2021 at or near the FY2020 enacted levels.

Additionally, of note is report language addressed to NIEHS or otherwise relating to environmental health found in the reports adopted by the House Committee on Appropriations that accompany the Interior and Environment appropriations bill and the Labor-HHS-Education appropriations bill. This relevant committee report language is excerpted below and is subject to reconciliation with the Senate as part of possible negotiations to produce a final bill before the end of the current Congress.

Excerpts from House Committee Report accompanying the Department of the Interior, Environment, and Related Agencies Appropriations Bill, 2021, H.Rept. 116-448, July 14, 2020:

“PFAS Research.—The Committee remains concerned about the significant knowledge gaps needed to respond to this class of emerging contaminants. The Committee encourages continued funding for research with academic institutions that will help identify and quantify exposure risks and pathways; develop and utilize environmental forensic techniques; and create predictive computer model simulations and pilot-scale field projects to expedite future remediation efforts.”

“Risk Communication.—The Committee is acutely aware of the significant need for effective risk communications methods, particularly as part of broader strategies to reduce exposures and to mitigate risks to public health and the environment. The Committee strongly supports the Superfund Research Program’s ongoing work in this area and urges NIEHS to develop communications toolkits that utilize the most effective strategies for targeting and educating communities of environmental risks. The Committee believes that communications toolkits should be tailored to account for differences in regional, cultural, educational, linguistic, and other demographic factors that can impact the effectiveness of risk communications.”

Excerpts from House Committee Report accompanying the Departments of Labor, Health and Human Services, and Education, and Related Agencies Appropriations Bill, 2021, H.Rept. 116-450, July 15, 2020:

“NIEHS, Harmful Algal Blooms Human Health Effects Research.—The Committee recognizes the value of the NIEHS mission and the NIEHS-NSF jointly-funded Oceans and Human Health Program as a means to increase scientific knowledge about short-term and long-term human health effects associated with acute and chronic exposures to toxins produced by harmful algal blooms (HABs). The Committee recognizes the increasing relevance of this scientific research to communities directly affected by HABs, including in Florida, where one of the longest documented HABs in the State’s history occurred from late 2017 through early 2019. The Committee encourages NIEHS to continue investing in this research area

using its competitive, peer-reviewed grantmaking processes. In particular, the Committee notes growing scientific interest in further investigating respiratory irritation and illness associated with inhalation of aerosolized HAB toxins and neurotoxic shellfish poisoning arising from ingestion of contaminated seafood. The Committee commends NIEHS for its collaborations with other agencies, including the National Science Foundation (NSF), National Oceanic and Atmospheric Administration (NOAA), Environmental Protection Agency (EPA), and CDC, to advance research about HABs and translate key research findings for clinical and public health benefits.”

“NIEHS, Polyfluoroalkyl Substances (PFAS) Research.—The Committee appreciates NIEHS's support for research into understanding the toxic properties of PFAS chemicals and the potential adverse health effects of PFAS exposure. Research to date has revealed an association between PFAS exposures and adverse health outcomes, including the potential for effects on children's cognitive and behavioral development, immune system dysfunction, endocrine disruption, obesity, diabetes, and cancer. More research is necessary to fully understand the impact of PFAS exposure on health. The Committee strongly encourages NIEHS to continue to support research on human exposure to PFAS chemicals.”

“NIH Office of the Director, Animal Use in Research.—The Committee is aware that in September 2019, GAO issued a report entitled “Animal Use in Research: Federal Agencies Should Assess and Report on Their Efforts to Develop and Promote Alternatives.” The Committee understands that this report found that the Interagency Coordinating Committee on the Validation of Alternative Methods (ICCVAM) and its member agencies have not routinely developed or reported metrics to demonstrate how their efforts to encourage the use of alternative methods affect animal use in research. The Committee acknowledges NIEHS for having helped establish a workgroup of ICCVAM member agencies to identify potential quantitative and qualitative metrics that could provide data for comprehensively assessing progress of agencies toward reducing, refining, and replacing animal use in research. The Committee is aware that the Environmental Protection Agency (EPA) has committed to eliminate its requests for, and funding of, whole and live animal studies by 2035. The Committee therefore directs this workgroup to actively collaborate with EPA to determine where replacement alternatives to animal testing are lacking, to ensure any gaps in currently available methods to replace animal testing are filled before 2035. The Committee directs that interagency workgroup to report its findings to the Committee by 2022 and use these metrics to assess progress in using alternative methods at EPA, and other agencies that are part of ICCVAM, in ICCVAM’s required biennial report to be issued in 2024.” NOTE: See update on this matter at the end of this report—the section heading is titled “U.S. Government Accountability Office (GAO) Report and Recommendation: ICCVAM Metrics Workgroup and ICCVAM Biennial Progress Reports.”

“NIH Office of the Director, Gene-Environment Interactions in Neurodegenerative Disorders in Diverse Populations of African Americans and Latinos.—In the context of NIH's robust neurological disease research portfolio, the Committee commends the leadership of NIH in advancing the relevant objectives of the 21st Century Cures Act and the BRAIN Initiative. The Committee is concerned and recognizes the need to better understand the interactions between genetics and environmental factors, in particular with regard to elderly and diverse populations of African Americans and Latinos. The Committee encourages NIH to accelerate collaborative research across relevant Institutes and Centers and the research community to address the goal of determining the role of the interaction between environmental exposures to toxic chemicals, other environmental stressors, and genetics and their impact on neurodegenerative disorders in diverse populations of African Americans and Latinos, to allow for earlier diagnosis and subsequent treatment to arrest the progression of these devastating neurodegenerative disorders.”

COVID-19 Emergency Supplemental Appropriations from Congress

To date, Congress has enacted in a phased approach four legislative packages to respond to the COVID-19 pandemic. The following information summarizes these four laws as they relate to NIH, scientific research, and environmental health broadly. In sum, in three of the four laws enacted to date Congress has made emergency supplemental appropriations to NIH totaling \$3.587 billion for various COVID-19-related research and response activities—including for vaccine and treatment research, diagnostics and testing research, and worker-based training to prevent and reduce exposure of hospital employees, emergency first responders, and other workers who are at risk of exposure to coronavirus through their work duties. Seven of NIH's 27 Institutes and Centers receive direct supplemental appropriations in one or more of these three laws in addition to the NIH Office of the Director (OD) and the NIH Common Fund administered by OD. These seven Institutes and Centers are: NIAID, NIBIB, NCI, NHLBI, NCATS, NLM and NIEHS. As of this writing, the House of Representatives has passed a fifth legislative package that proposes to make an additional \$4.721 billion in supplemental appropriations to NIH and the Senate Majority Leader has proposed a competing version that would make an additional \$15.5 billion in supplemental appropriations to NIH. Identical legislation must be passed by both the House and Senate before it can become law. A summary of the four COVID-19 response packages that have become law to date follows.

Phase 1: H.R. 6074, *Coronavirus Preparedness and Response Supplemental Appropriations Act*, U.S. Public Law 116-123, Enacted on March 6, 2020. Total: \$8.3 billion.

- Includes \$836 million for NIH available through FY2024 to prevent, prepare for, and respond to coronavirus divided as follows:
 - \$826 million for NIAID; and
 - \$10 million for NIEHS Worker Training Program (see related information above under the “House Appropriations Subcmte. Hearing on FY2021 NIH Budget Request, Mar. 4, 2020” heading for details about this appropriation).

Phase 2: H.R. 6201, *Families First Coronavirus Response Act*, U.S. Public Law 116-127, Enacted on March 18, 2020. Total: \$100 billion.

- No funds were appropriated to NIH under this law.

Phase 3: H.R. 748, *Coronavirus Aid, Relief, and Economic Security (CARES) Act*, U.S. Public Law 116-136, Enacted on March 27, 2020. Total: \$2 trillion.

- Includes \$945.4 million for NIH available through FY2024 to prevent, prepare for, and respond to coronavirus divided as follows:
 - \$706 million for NIAID;
 - \$103.4 million for NHLBI;
 - \$60 million for NIBIB;
 - \$36 million for NCATS;
 - \$30 million for Office of the Director (OD) Common Fund; and
 - \$10 million for NLM.

- \$75 million for the National Science Foundation (NSF) Research and Related Activities Account available through FY2021 to prevent, prepare for, and respond to coronavirus including to fund research grants and other necessary expenses.

- \$60 million for the National Aeronautics and Space Administration (NASA) Safety, Security and Mission Services Account to remain available through FY2021 to prevent, prepare for, and respond to coronavirus.
- \$6 million for the National Institute of Standards and Technology (NIST) Scientific and Technical Research and Services Account to remain available through FY2021 to prevent, prepare for, and respond to coronavirus by supporting continuity of operations, including measurement science to support viral testing and biomanufacturing.
- \$2.25 million for EPA Science and Technology Account available through FY2021 to prevent, prepare for, and respond to coronavirus, \$1.5 million of which is “for research on methods to reduce the risks from environmental transmission of coronavirus via contaminated surfaces or materials.”
- Section 3832 extends the Special Diabetes Program for Type I Diabetes administered by NIH through November 30, 2020. The Program was previously scheduled to expire on May 22, 2020.

Phase 3.5: H.R. 266, *Paycheck Protection Program and Health Care Enhancement Act*, U.S. Public Law 116-139, Enacted on April 24, 2020. Total: \$484 billion.

- Includes \$1.806 billion for NIH to remain available until expended divided as follows:
 - \$1 billion for OD to support a whole-of-NIH approach to testing research and development (see related information above under the “Senate HELP Committee Hearing on COVID-19 Testing Technology, May 7, 2020” heading about the NIH Rapid Acceleration of Diagnostics (RADx) initiative launched as a result of this appropriation);
 - \$500 million for NIBIB for point of care and other rapid testing research and development; and
 - \$306 million for NCI for serological testing development.

In addition to the four legislative packages that have become law to date and as mentioned above, the House of Representatives passed a fifth legislative COVID-19 response package totaling approximately \$3 trillion on May 15, 2020. On July 27, 2020, the leadership of the Senate Majority proposed an alternative version totaling approximately \$1 trillion. Both the competing House and Senate versions for a fifth legislative COVID-19 response package are summarized directly below. As of this writing, no agreement on a compromise version of these competing proposals between the leaders of the House and Senate with the White House has been reached. Discussions toward finding common ground have occurred in stages in recent weeks. There is a possibility that an agreement could emerge later this month—that is, in September—and be coupled with a Continuing Resolution (CR) to continue government operations at or close to the Fiscal Year 2020 funded levels into the first quarter of Fiscal Year 2021, which begins on October 1, 2020.

Phase 4 House-passed bill: H.R. 6800, *Health and Economic Recovery Omnibus Emergency Solutions (HEROES) Act*, Passed by the House of Representatives by a vote of 208-199 on May 15, 2020.

- Proposes \$4.721 billion for NIH, available through FY2024, to prevent, prepare for, and respond to coronavirus divided as follows:
 - \$4.021 billion for OD with transfer authority to the Institutes and Centers,
 - \$3 billion of which is for “offsetting the costs related to reductions in lab productivity resulting from the coronavirus pandemic or public health measures related to the coronavirus pandemic;” and

- \$1.021 billion of which is “to support additional scientific research or the programs and platforms that support research.”
 - \$500 million for NIAID; and
 - \$200 million for the National Institute of Mental Health (NIMH).

The section-by-section bill summary released by the House Appropriations Committee upon House passage of this bill describes the purpose of the proposed NIH funding as follows: “to expand COVID-19-related research on the NIH campus and at academic institutions across the country and to support the shutdown and startup costs of biomedical research laboratories nationwide.”

- Section 10612 extends availability of FY2020 appropriated funds to NIH into FY2021.
- Section 10613 extends the obligation period for FY2015 appropriated funds to NIH through FY2021

Phase 4 Senate Majority-proposed bill: The *Help, Economic, Assistance, Liability Protection, and Schools (HEALS) Act*, released by the Senate Majority Leader on July 27, 2020—to include S. 4320, *Coronavirus Response Additional Supplemental Appropriations Act, 2020*, as introduced by Sen. Richard C. Shelby, Chairman of the Senate Committee on Appropriations, on July 27, 2020.

- Proposes \$15.5 billion for NIH, divided as follows:
 - \$12.91 billion for the NIH Office of the Director:
 - \$10.1 billion to reopen NIH-funded research laboratories and reconstitute lost research;
 - \$1.33 billion for COVID-19 specific research to smaller Institutes and Centers at the direction of the NIH Director;
 - \$1.24 billion for the ACTIV public-private partnership to prioritize and speed the development of treatments and vaccines; and
 - \$240 million to provide resources targeted young researchers who need additional research time as post-doctoral candidates because of lost research/training due to COVID-19.
 - \$1.22 billion for NCATS;
 - \$480.56 million for NIAID;
 - \$290 million for NHLBI;
 - \$200 million for NIDDK;
 - \$200 million for NIMH;
 - \$172.68 million for NICHD; and
 - \$64.33 million for NIMHD.
- Section 817 of S. 4320 extends the obligation period for FY2015 appropriated funds to NIH through FY2021.

U.S. Government Accountability Office (GAO) Report and Recommendation

ICCVAM Metrics Workgroup and ICCVAM Biennial Progress Reports

On September 24, 2019, the U.S. Government Accountability Office (GAO), the non-partisan, independent auditing and investigative arm of Congress, publicly released its report entitled, “*Animal Use in Research: Federal Agencies Should Assess and Report on Their Efforts to Develop and Promote Alternatives.*” In this report, which was requested by multiple members of Congress, the GAO

recommends the NIEHS Director: (1) facilitate the establishment or designation of a workgroup of representatives of the Interagency Coordinating Committee on the Validation of Alternative Methods (ICCVAM) member agencies to develop metrics that the agencies could use to assess the progress they have individually or collectively made toward reducing, refining, or replacing animal use in safety testing for chemicals and medical products, and (2) incorporate those metrics into the Committee's biennial progress reports that NIEHS prepares and publishes on behalf the Committee. For background, in December 2000, through enactment of the *ICCVAM Authorization Act of 2000* (P.L. 106-545), Congress established ICCVAM as a "permanent interagency coordinating committee" of NIEHS under its National Toxicology Program (NTP) Interagency Center for the Evaluation of Alternative Toxicological Methods (NICEATM)—an NTP Division office focused on the development and evaluation of alternatives to animal use for chemical safety testing. Currently, ICCVAM, with NIEHS leadership and administrative support, coordinates the efforts in this space of 16 different Federal agencies. On March 31, 2020, the HHS Office of the Assistant Secretary for Legislation (ASL) transmitted to the GAO a formal update prepared by NIEHS on the implementation of this recommendation. That written update informed the GAO that ICCVAM member agencies in November 2019 agreed to form a workgroup comprised of individuals within their respective agencies who are best suited to developing agency-specific metrics. The ICCVAM Metrics Workgroup held its first meeting in February 2020 and is meeting virtually on a semimonthly basis. Its work is consistent with the ICCVAM Strategic Roadmap released in January 2018. On July 16, 2020, NTP published the most recent ICCVAM biennial progress report which covers calendar years 2018 and 2019. This most recent report contains information specific to certain agency metrics. The GAO considers the recent formation of the workgroup as implementing the first part of its recommendation, and reportedly considers the recent publication of the 2018-2019 ICCVAM biennial progress report with certain metrics information as satisfying the second part of its recommendation. As of this writing, the GAO is in the process of formally closing its recommendations to NIEHS made in the September 2019 report.

Theme 1: Advancing Environmental Health Sciences

Science Advances

Borrel A [DIR], Auerbach SS [DNTP], Houck KA, Kleinstreuer NC [DNTP]. Tox21BodyMap: a webtool to map chemical effects on the human body. *Nucleic Acids Res.* 2020;48(W1):W472-W476. doi:10.1093/nar/gkaa433
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7319561/>

Gambini A [DIR], Stein P [DIR], Savy V [DIR], Grow EJ, Papas BN [DIR], Zhang Y [DIR], Kenan AC [DIR], Padilla-Banks E [DIR], Cairns BR, Williams CJ [DIR]. Developmentally Programmed Tankyrase Activity Upregulates β -Catenin and Licenses Progression of Embryonic Genome Activation. *Dev Cell.* 2020;53(5):545-560.e7. doi:10.1016/j.devcel.2020.04.018
<https://doi.org/10.1016/j.devcel.2020.04.018>

Liu J, Dou X, Chen C, Chen C, Liu C, Xu MM, Zhao S, Gao Y, Han D, He C. N6-methyladenosine of chromosome-associated regulatory RNA regulates chromatin state and transcription. *Science.* 2020;367(6477):580-586. doi:10.1126/science.aay6018
<https://science.sciencemag.org/content/367/6477/580.long>

Theme Two: Promoting Translation – Data to Knowledge to Action

COVID-19 Updates

The [National Institutes of Health \(NIH\) Public Health Emergency and Disaster Research Response \(DR2\)](#) program, led by NIEHS in collaboration with the National Library of Medicine (NLM), has been cultivating a new collection of resources and tools for epidemiologists, clinicians, and other scientists studying COVID-19. Initiated in April, the new publicly available DR2 COVID-19 data collection tool and protocol repository now includes over 80 data collection tools/instruments. The DR2 Program has also partnered with the NIH funded PhenX Toolkit to make the COVID-19 instruments more readily accessible, as well as to encourage the research community to use established consensus measures available from the PhenX repository. DR2 has been continuously working to improve the catchment of new surveys and protocols through an online intake form, and to improve end-user experience to access and compare surveys by topic areas of interest. NIH Notifications of Special Interest encourage scientists to select COVID-19 survey items and protocols from these repositories minimize the proliferation of “one-off” survey items, encourage comparisons across samples, and facilitate data integration and collaboration. Additionally, recipients of awards under the cited notices are strongly encouraged to submit their COVID-19 specific instruments for inclusion into to the DR2 and PhenX COVID-19 efforts. Additional information can be found in the *Environmental Factor*: <https://factor.niehs.nih.gov/2020/5/science-highlights/protocols/index.htm>.

NIH Rapid Acceleration of Diagnostics (RADx) Award:

- Douglas Bell, Ph.D.: “Hyperplexed sample barcoded screening for SARS-CoV-2 by Next Generation Sequencing”

NIH Intramural Targeted Anti-COVID-19 (ITAC) Program Awards:

<i>Principal Investigator(s)</i>	<i>Project</i>
Mario Borgnia, Ph.D. and Bill Copeland, Ph.D.	Epitope dynamics of native SARS-CoV-2 S protein by cryo-electron tomography
Michael Fessler, M.D.	Investigation of 25-hydroxycholesterol as a therapeutic for COVID-19
Steve Kleeberger, Ph.D.	Genetic susceptibility to severe respiratory disease induced by SARS-CoV2
Alison Motsinger-Reif, Ph.D.	The COVID-19 Pandemic Vulnerability Index
Joseph Rodriguez, Ph.D.	Epigenetic and environmental factors of ACE2 and TMPRSS2 co-expression
Natalie Shaw, M.D.	Epigenetic control of ACE2 by the chromatin remodeler, SMCHD1
Robin Stanley, Ph.D.	Structural and Functional Characterization of SARS-CoV-2 Nsp15
Marcos Morgan, Ph.D.	Role of RNA Modifications in Coronavirus Replication (funded by NIEHS)
Stavros Garantziotis, M.D.	Harnessing the Extracellular Matrix to Treat COVID-19-Induced ARDS (funded by NIEHS)

Past Events

GEH Climate, Environment and Health Seminar Series

The Global Environmental Health (GEH) Climate, Environment, and Health seminar series kicked off its first lecture in the series on May 6 with a talk entitled *“How Climate Changes Health and Why You Should Care”* with Dr. John Balbus with over 400 attendees tuning in virtually. The series of seminars are for NIEHS staff and the broader NIEHS stakeholder community, and will focus on climate science, how changes in the global climate affect health through a variety of environmental pathways, and promising research approaches to better understand how the changes we see in climate impact health now and in the future. Additional seminars in the series were held on June 10, with Dr. Jason West presenting *“Understanding Global Climate Change and How It Affects Air Quality and Human Health,”* and August 12, with Dr. Edward Maibach presenting *“Starting and Scaling Effective Climate Change Conversations: Why Health Matters.”* Future seminar will discuss climate justice as well as other topics. Archived videos can be found here: <https://www.niehs.nih.gov/research/programs/geh/webinars/index.cfm>.

ESEHD Integrating the Science of Aging and Environmental Health Research

Exposures a person receives at any age affect how they age, and aging influences the body’s response to substances in the environment. Both aging and disease processes affect the body at multiple levels, from cellular — think chronic inflammation — on up to the whole organism, as when a person becomes disabled. These interrelationships — and the research needed to clarify them — were the top concerns of experts at a June 9-10 virtual workshop sponsored by the National Academies of Science, Engineering, and Mathematics (NASEM). Several discussions during the two-day event grappled with evaluating exposures to chemical mixtures and interdependent effects of their components. Videos of each session, as well as agenda and other materials are available on the workshop webpage

NIEHS Global Environmental Health Day 2020

The fourth annual NIEHS Global Environmental Health Day (GEH Day) attracted more than 1,000 registrants from around the world. The July 1 virtual event doubled as that month’s NIEHS Global Environmental Health Program webinar on climate, environment, and health. Howard Frumkin, M.D., Dr.P.H., professor emeritus at the University of Washington, opened his keynote talk with a nod to the twin crises in climate and public health. Kristie Ebi, Ph.D., from the University of Washington, gave the second keynote address, emphasizing the importance of collaborating with health departments at local and national levels when preparing for and managing the health risks of climate change. Several NIEHS grant recipients spoke about connections between climate change and human health outcomes. The meeting also served as a platform for the debut of the updated NIEHS [Climate Change and Human Health Literature Portal](#).

23rd Annual NIEHS Biomedical Career Symposium

The 23rd Annual NIEHS Biomedical Career Symposium drew more than 370 people from around the country July 24. Due to COVID-19, the meeting was held online. Leaders from NIEHS, the National Institutes of Health (NIH), higher education, and industry gave attendees insights into the job market, how to successfully interview, managing conflict at work, transitioning to academia, and more. Fellows signed up for one-on-one virtual sessions with professionals who offered constructive feedback on their curricula vitae and resumes. Dahea You, Pharm.D., Ph.D., and Mimi Huang, Ph.D., both fellows in the Division of the National Toxicology Program at NIEHS, served as event co-chairs. They collaborated with people across the institute and fellows at the U.S. Environmental Protection Agency (EPA).

ESEHD Workshop on Predicting Human Health Effects from Environmental Exposures: Applying Translatable and Accessible Biomarkers of Effect

Biomarkers of effect are measurable changes that can be used as indicators of illness or disease. There is potential to use these biomarkers to measure health effects due to environmental exposures. The purpose of this virtual workshop was to bring together experts to discuss emerging tools, technologies, and methodologies to advance the development of biomarkers of effect, ranging from laboratory-based research to population-level studies. Scientific presentations were prerecorded and released in advance of the workshop in order to maximize panel discussion. Dr. Rick Woychik provided the introduction while many NIEHS scientists and grantees served on the organizing committees and participated as panelists. The workshop, which took place August 12-13, was sponsored by the National Academies of Science, Engineering, and Mathematics (NASEM).

Upcoming Events

Environmental Mutagenesis & Genomics Society Virtual Annual Meeting, Virtual, September 12-16

Kenneth Olden Annual Distinguished Lecture, Virtual, September 21

Fall 2020 WTP Awardee Meeting and Workshop, Virtual, September 22-24

NIH Early-Onset Colorectal Cancer (EO-CRC) Think Tank, Virtual, September 24-25

PFAS in Our World: What We Know and What We Can Do, Virtual, October 13-14

Powering Research Through Innovative Methods for Mixtures in Epidemiology (PRIME) Program Meeting, Virtual, October 14

APHA 2020 Annual Meeting and Expo, Virtual, October 24-28

NIEHS Science Days, Virtual, November 5-6

2020 Triangle Global Health Virtual Annual Conference, Virtual, December 3

Theme Three: Enhancing EHS Through Stewardship and Support

Staff Updates:

Rick Woychik, Ph.D. has been appointed as the Director of NIEHS on [date]. Dr. Woychik initially joined NIEHS in 2010 as Deputy Director and subsequently served as Acting Director following Dr. Birnbaum's retirement in October 2019.

Jason Watts, M.D., Ph.D. has joined NIEHS as a tenure-track NIH Stadtman Investigator in the Epigenetics and Stem Cell Biology Laboratory. He has been selected into the 2020 cohort of the NIH Distinguished Scholars Program.

April Bennett, formerly the Program Manager for the DR2 Program in ODB, is now the Legislative Liaison in ODB

Emily Jay, Staff Assistant joined ODB in July and comes from NICHD

Awards and Recognition

NIEHS scientist **Michael Fessler, M.D.**, has been awarded a 2020 National Institutes of Health (NIH) **Director's Challenge Innovation Award** for his proposal to advance and standardize metabolomics and lipidomics methods across the NIH Intramural Research Program (IRP), or in-house researchers.

Environmental Factor Editor-in-Chief **Kelly Lenox** was honored with a **2020 Blue Pencil and Gold Screen Award** from the National Association of Government Communicators (NAGC). Lenox won second place in the Writer's Portfolio category for a series of newsletter articles that highlight environmental health. This NAGC award is the third in four years for the Environmental Factor.

NIEHS scientific excellence across the career spectrum was recognized June 16 with the **2020 awards from the Society for Birth Defects Research and Prevention (BDRP)**. The honors were presented at the group's annual meeting June 25–July 2.

- **Bevin Blake, Ph.D.**, who recently joined the National Toxicology Program (NTP) Interagency Center for the Evaluation of Alternative Toxicological Methods (NICEATM):
 - **Marie Taubeneck Award** — Recognizes scholarship of a student or postdoctoral fellow working in the field of teratology — the study of abnormalities in physiological development — and their service to BDRP. Includes cash prize.
 - **Edward W. Carney Trainee Award**, first place — Supports her attendance at the 2021 BDRP meeting.
- **Linda Birnbaum, Ph.D.**, NIEHS scientist emeritus, was honored as the **Josef Warkany Lecturer**, which recognizes significant, career-long contributions to birth defects research. Her June 25 conference talk on persistent organic pollutants (POPs) was titled "POPs: A Plethora of Developmental Effects."
- Former NIEHS grant recipient **Elaine Faustman, Ph.D.**, won the **Narsingh Agnish Fellowship**, which is awarded to a long-standing member of BDRP who has made a major contribution to education in the field of teratology or a related discipline.

K99/R00 Award:

Yesenia Rodriguez, Ph.D. was awarded a K99/R00 grant from NIEHS and will be mentored by Dr. Sam Wilson in GISBL.

2020 NIH Director's Awards:

- **Katherine Hamilton** - *For exemplary initiative, creativity, leadership, and dedication in founding and developing the first postbaccalaureate program at NIEHS*
- **Humphrey Hung-Chang Yao** - *For exemplary scientific discovery and dedication to mentoring NIEHS trainees*
- **Breast Cancer and Environment Research Program (BCERP) Team** - *For excellence in the management of the trans-NIH collaborative initiative on breast cancer and environmental factors*

Team members include: Janice Allen, Linda Bass, Bryann Benton, Abee Boyles, Jennifer Collins, Gwen Collman, Lisa Edwards, Barbara Gittleman, Alfonso Latoni, Elizabeth Maull, Kindra Morrison, Aaron Nicholas, Leslie Reinlib, Thaddeus Schug, Claudia Thompson, James Williams, Tram Kim Lam (NCI), Gary Ellison (NCI), Armen Ghazarian (NCI), Ron Johnson (NCI), Gila Neta (NCI), Neeraja Sathyamoorthy (NCI), and Deborah Winn (NCI)

2020 NIEHS Director's Awards

- **Merit Awards**

- **Sheena Scruggs** (OD) – for exemplary collaboration in offering three unprecedented global outreach events
- Freedom of Information Act Program Team (OD) – for exemplary professionalism and dedication in administering the FOIA program eliminating a multi-year backlog of actions (Team Members: **Sherena Jackson, Tony Livingston, Regina Stabile, Angela Tew**)
- Retirement Planning Committee (OD) – for exemplary performance managing retirement activities for former NIEHS Director, Dr. Linda Birnbaum (Team Members: **Jed Bullock, Allison Eason, Christine Flowers, Kay Hudd, Mary Jacobson, Richard Kwok, Spencer Smith**)
- **Matt Stout** (NTP) – for leadership in contracts and portfolio managements in the Division of the National Toxicology Program
- **Rachel Frawley** (NTP) – for exemplary collaboration with colleagues on multidisciplinary projects
- NTP Interaction for Continued Excellence (NICE) Team (NTP) – for exemplary efforts enhancing communication and camaraderie within the Division of the National Toxicology Program (Team Members: **Mamta Behl, Chad Blystone, Michelle Cora, Stephanie Holmgren, Chris McPherson, Suril Mehta, Stephanie Smith-Roe, Matt Stout, Kyla Taylor**)
- **Terry Blankenship** (DIR) – for leadership and outstanding contributions to the NIEHS research animal care and use program
- **Katherine Hamilton** (DIR) – for exemplary and initiative leadership in the first postbaccalaureate program at NIEHS
- **Stephanie London** (DIR) – for the creation and outstanding leadership of the Pregnancy and Childhood Epigenetics consortium
- **Lee Ann McCray** (DIR) – for the exemplary efficiency and professionalism in clerical support of the Immunity, Inflammation and Disease Laboratory
- **Humphrey Hung-Chang Yao** (DIR) – for exemplary scientific discovery and dedication to mentoring NIEHS trainees
- Clinical Research Unit (CRU) (DIR) – for implementing new processes that substantially increase the efficiency of CRU operations (Team Members: **Lisa Barber, Kim Burnett-Hoke, Becky Church, Kim Downey, Anna Drude, Margaret George, Chris Lee, Chris McGee, Alex Njunge, Xiomara White, Breana Beery [C], Audrey Brown [C], Nicole Edwards [C], Kathy Hampton [C], Imke Kirste[C], Bona Purse [C], Gladys Ruby Gonzalez [C], Cynthia Smith [C], Catherine Wild [C]**)
- Biostatistics and Bioinformatics Short Course Team (DIR) – for leadership in executing the Biostatistics and Bioinformatics Short Courses (Team Members: **Adam Burkholder, Sara Grimm, Kai Kang, Jian-Liang Li, Yuanyuan Li, Katie O'Brien, Min Shi, Keith Shockley, Zongli Xu, Shanshan Zhao, Brian Bennett [C], Les Klimczak[C], Erin Knight [C] Jianying Li [C], Brian Papas [C], Tom Randall, [C] James Ward [C], Nora Weston [C], Xiaojiang Xu [C]**)
- Scientific High-Performance Computing Cluster Team (DIR) – for exemplary initiative in the design and deployment of the scientific high-performance computing cluster (Team Members: **Frank Day, John Grovenstein, Chris Stone, Greg Stamper [C]**)

- Breast Cancer and Environment Research Program (BCERP) Team (DERT) – for excellence in the management of the trans-NIH collaborative initiative on breast cancer and environmental factors [Team Members: **Janice Allen, Linda Bass, Bryann Benton, Abee Boyles, Jennifer Collins, Gwen Collman, Lisa Edwards, Barbara Gittleman, Alfonso Latoni, Elizabeth Maull, Kindra Morrison, Aaron Nicholas, Leslie Reinlib, Thaddeus Schug, Claudia Thompson, James Williams, Tram Kim Lam (NCI), Gary Ellison (NCI), Armen Ghazarian (NCI), Ron Johnson (NCI), Gila Neta (NCI), Neeraja Sathyamoorthy (NCI), Deborah Winn (NCI)**]
- Human Health Exposure Analysis Resource (HHEAR) Team (DERT) – for design and implementation of the Human Health Exposure Analysis Resource (HHEAR) program (Team members: **David Balshaw, Linda Bass, Jennifer Collins, Yuxia Cui, Chris Duncan, Kimberly Gray, Michelle Heacock, Bonnie Joubert, Alfonso Latoni, Kindra Morrison, Varsha Shukla, Claudia Thompson, James Williams, Kristi Pettibone, Leroy Worth**)
- **Deborah Jones** (DERT) – for exceptional support of the peer review process of grant applications submitted in response to the Superfund P42 RFA
- Information Technology Contracts Team (Cross-Divisional) – for outstanding execution of the NIEHS service desk and infrastructure technology services (NSITES II) and the Grants Application Development Support III (GADS3) contracts (Team Members: **Bernard Brown, Wei Chen, Troy Deaton, Christie Drew, Bryan Duran, David Fargo, Christopher Fisher, Melissa Gentry, Matt Jordan, Beth Lauderdale, Jay Nicholson, Roy Reter, Elizabeth Ruben, Dan Rich, Bernie Salter, Troy Simpson, Mike Tyson**)
- Health and Safety Training Tool Team (Cross-Divisional) – for outstanding initiative in the development of a novel training tool to mitigate risks to worker safety and research operations (Team Members: **Bill Fitzgerald, Andy Hodgson, Steve Novak, Paul Poliachik (NIH/ORF), Cheryl Thompson, Tina Berger [C], Stephanie Bishop [C], Claus Jensen [C], Nancy Smith [C]**)
- Offsite Meeting Team (Cross-Divisional) – for outstanding coordination of offsite meeting logistics during the Rodbell Auditorium renovation (Team Members: **Treva Bunch, Matthew Burr, Rhonda Carroll, Beth Kuhanek, Roy Reter, Tanya Shields, Amanda Thompson, Cheryl Thompson, Nathan Coletta [C], Charles Lipford [C]**)
- **Peer Awards**
 - **June Dunnick** (NTP) – for exemplifying the NTP program’s mission to advance research in protection of public health
 - **Jennifer Evans** (OD) – for leadership during the transshare (vanpool) program transition
 - **Gail Kestner** (DIR) – for professionalism in the administration of the Clinical Research Branch
 - **Crystal Littlefield** (OM) – for outstanding effort and assistance in helping her peers
 - **Georgia Roberts** (NTP) – for exemplary leadership and support to DNTP peers that spans multiple branches and levels of staff
 - **Kristen Ryan** (NTP) – for helping peers and making DNTP a more engaging place to work
 - **Arrash Yazdani** (OM) – for going above and beyond to promote a safe workplace for the NIEHS staff

2021 NIH FARE Awards The Fellows Award for Research Excellence recognizes the outstanding scientific research performed by intramural postdoctoral fellows. NIEHS fellows performed particularly well this year, with our institute ranking 4th highest among all the NIH Institutes. This speaks to the high quality of research performed by our exceptional fellows. Each awardee will receive a \$1,500 travel award.

- **Alicia Chi, Ph.D.**
Mentor: Francesco DeMayo, Ph.D.
WNK1 regulates embryo implantation in mice through the phosphatase PP2A
- **Nicholas Dietrich, Ph.D.**
Mentor: Trevor Archer, Ph.D.
The HSA domain of BRG1 is critical for BRG1-dependent gene expression changes and the interaction of BRG1 with multiple BAF and non-canonical BAF complex members
- **Alexander C. Foo, Ph.D.**
Mentor: Geoff Mueller, Ph.D.
The mosquito protein AZ1 has both cytolytic and antiviral properties
- **Ming Ji, Ph.D.**
Mentor: Xiaoling Li, Ph.D.
High-methionine intake inhibits tumor progression in immunocompetent mice
- **Jacob Kresovich, Ph.D.**
Mentor: Jack Taylor, M.D., Ph.D.
mBCRM: A methylation-based risk model for breast cancer
- **Katelyn Lavrach, Ph.D.**
Mentor: Stephen Ferguson, Ph.D.
Evaluating the toxicological screening utility of 3D spheroid primary human hepatocyte cultures
- **Kaitlyn G. Lawrence, Ph.D.**
Mentor: Dale Sandler, Ph.D.
Neighborhood deprivation and epigenetic age acceleration
- **Xingyao Li, Ph.D.**
Mentor: Stephen Shears, Ph.D.
New model cell lines provide insight into the molecular mechanisms underlying ectopic calcification
- **Wan-Chi Lin, Ph.D.**
Mentor: Michael Fessler, M.D.
The role of epithelial membrane protein 2 in regulation of pulmonary fibrosis and tissue remodeling
- **Christopher Mazzone, Ph.D.**
Mentor: Guohong Cui, M.D., Ph.D.
High fat diets tune hypothalamic and mesolimbic feeding circuits to calorically dense foods
- **Prashant Rai, Ph.D.**
Mentor: Michael Fessler, M.D.
Chronic type I interferon disrupts tissue macrophage homeostasis and induces bacterial susceptibility
- **Saniya Rattan, Ph.D.**
Mentor: Humphrey Yao, Ph.D.
Somatic cell lineage specification by Notch signaling in fetal mouse ovaries

- **Yosuke Sakamachi, Ph.D.**
Mentor: Stavros Garantziotis, M.D.
TLR5 protects against pulmonary fibrosis by preventing dysbiosis
- **Chitragda Srivastava, Ph.D.**
Mentor: Anton Jetten, Ph.D.
GLIS3: A critical player in polycystic kidney disease
- **Barrett M. Welch, Ph.D., M.P.H.**
Mentor: Kelly Ferguson, Ph.D., M.P.H.
Moving toward understanding specific pathways of inflammation in pregnancy: prenatal exposure to consumer product chemicals and changes in plasma eicosanoids
- **Dahea You, Pharm.D., Ph.D.**
Mentor: Alison Harrill, Ph.D.
Population variability in neurotoxicity outcomes modeled in vitro with diversity outbred neural progenitor cells
- **Jingheng Zhou, Ph.D.**
Mentor: Guohong Cui, M.D., Ph.D.
Dopamine neuron challenge test for early detection of Parkinson's disease

By funding people and not projects, the **Outstanding New Environmental Health Science (ONES)** award and **Revolutionizing Innovative, Visionary Environmental Health Research (RIVER)** award differ from the traditional approach of funding studies with specific aims outlined in the application and instead fund promising scientists. ONES is geared towards researchers at formative stages of their careers. RIVER focuses on mid-career and established researchers.

- ONES awardee **Andres Cardenas, Ph.D.**, from the University of California, Berkeley, studies the extent to which exposures to neurotoxic mixtures just before and after birth, as well as key prenatal nutrients, can jointly influence brain development in childhood.
- With his ONES award, **Shobhan Gaddameedhi, Ph.D.**, from Washington State University, will study the interplay of rotating shift work, circadian disruption, DNA repair, and increased risk of skin cancer.
- **Salik Hussain, Ph.D.**, ONES awardee from West Virginia University and former NIEHS postdoctoral fellow, uses a single exposure to better understand how lungs respond to air pollution, while comparing responses to a mixture of air pollution compounds.
- **Amy Padula, Ph.D.**, from the University of California, San Francisco, will use her ONES award to study how mothers' exposures to wildfire and intentional biomass burning during pregnancy may affect whether her baby is born prematurely.
- ONES awardee **Jessica Plavicki, Ph.D.**, from Brown University, wants to understand how toxicant exposures may disrupt the development of a type of brain cell that is necessary for learning, memory, information processing, and behavior.
- **Mary Rice, M.D.**, from Harvard University, received a ONES award for her research on how high-efficiency particulate air (HEPA) filters, which remove air pollution particles from indoor air, may improve symptoms of chronic obstructive pulmonary disease.
- **Dana Dolinoy, Ph.D.**, from the University of Michigan, will use her RIVER award to identify changes in DNA, noncoding RNA, and gene expression after exposure to metals or plasticizers.
- RIVER awardee **Joann Sweasy, Ph.D.**, from the University of Arizona, researches the connection between DNA repair and the development of lupus, an autoimmune disease.

- **Bennett Van Houten, Ph.D.**, from the University of Pittsburgh, received a RIVER award to use groundbreaking technologies to understand how common forms of DNA damage are detected and repaired in a living cell.
- **Yinsheng Wang, Ph.D.**, from the University of California, Riverside, will study how alkylated DNA lesions affect DNA stability with his RIVER award. Alkylation, a type of damage that creates lesions in DNA, can alter gene expression and ultimately lead to disease.
- **Donna Zhang, Ph.D.**, from the University of Arizona, received a RIVER award to further study development of arsenic-related diseases — such as lung cancer and Type II diabetes. She hopes to identify new pharmaceuticals to treat arsenic-related health effects.

Eleven outstanding trainees in the NIEHS Superfund Research Program (SRP) have won **K.C. Donnelly Externship Award Supplements**. The annual awards allow trainees to work side-by-side with experts at an outside institution to learn new methods and techniques to enrich their research.

- **Ahlam Abuawad**, a doctoral student at Columbia University, will travel to the SRP Center at Dartmouth College. She will expand her research focused on arsenic and metabolic outcomes by examining links between early life arsenic exposure and diabetes during pregnancy.
- **Juliana Agudelo** is a doctoral student at the University of Rhode Island. During her externship at the U.S. Environmental Protection Agency (EPA) Office of Research and Development in North Carolina, she will use advanced methods to measure per- and polyfluoroalkyl substances (PFAS) and protein changes in human liver samples.
- **Jogen Atone**, a doctoral candidate at the University of California (UC), Davis, studies mice to determine how pesticide exposures affect the brain. During his externship at the University of Washington SRP Center, he will learn cell isolation techniques and how to conduct behavioral tests in mice that will advance his research.
- **Jessica Ewald** is a doctoral student at the University of Iowa. At the Duke University SRP Center she will determine the biological, chemical, and physical factors that promote or limit the ability of microbes to break down polychlorinated biphenyls (PCBs) in the environment.
- **Jamie Kelly, Ph.D.**, a postdoctoral researcher at the Massachusetts Institute of Technology SRP Center, will work with mentors at the National Oceanographic and Atmospheric Administration and EPA. During his externship, he will expand a mathematical model he developed to better predict the movement of polycyclic aromatic hydrocarbons (PAHs) in the atmosphere.
- **Katlyn McGraw** is a doctoral candidate at the University of Louisville. For her externship at the Columbia University SRP Center she will learn novel statistical approaches to assess how exposure to a mixture of air pollutants affects heart health.
- **Yvonne Rericha**, a doctoral student at Oregon State University, will work with mentors at the Brown University SRP Center. Through her externship, she will use zebrafish and advanced imaging techniques to examine how PFAS exposures affect the development and integrity of blood vessels in the brain.
- **Anna Robuck** is a doctoral student at University of Rhode Island. At the EPA Office of Research and Development in North Carolina, she will use nontargeted and total fluorine methods to measure PFAS in environmental samples from the Delaware River Estuary and estimate the total PFAS in the system. These methods provide a more complete characterization of PFAS compared with targeted methods, which measure only a small subset of the thousands of known PFAS chemicals.

- **Maya Spaur** is a first-year doctoral candidate at Columbia University. At the U.S. Geological Survey New England Water Science Center in New Hampshire she will develop geochemical models to estimate the relationship between arsenic in groundwater and public water supplies in the U.S. She will also examine how arsenic in drinking water relates to urinary arsenic levels using data from the National Health and Nutrition Examination Survey.
- **Paige Varner**, a doctoral student at Duke University, will work with mentors at the Oak Ridge National Laboratory in Tennessee. She will use high-throughput methods to identify the conditions that promote the expression and transfer of genes that enable bacteria to break down PAHs in the environment.
- **Hao Wang, Ph.D.**, is a postdoctoral trainee at the University of Washington. At the UC Davis SRP Center, he will learn advanced methods to examine the role of lipid metabolism as a potential mechanism of cadmium toxicity in the adult brain.

Spotlight on NIEHS: Diversity, Equity, and Inclusion

Recent events, such as health disparities made more visible by the ongoing coronavirus pandemic and the death of George Floyd at the hands of the Minneapolis police, have brought issues of racial justice to the forefront at NIEHS. As the Director of NIEHS, I would like to reaffirm NIEHS's commitment to foster a culture of diversity, equity, inclusion, and respect for one another. Workforce diversity, along with research and outreach on health disparities will continue to be among top priorities for the institute. Identifying systemic racism at NIEHS and identifying actions for change is a high priority, with the focus on 4 areas:

- training and education,
- science of racism and environmental health disparities,
- workplace diversity at all levels, and
- culture and inclusion

Training and Education

NIEHS will be providing new training opportunities for staff on topics such as bystander response to racism, inherent bias, and racial equity to NIEHS staff throughout the coming year. All members of the senior leadership team are required to take bystander training, as well as additional DEI trainings that will be offered in the near future. NIEHS Employee Services will provide continued support for DEI-related training for staff at all levels.

Science of Racism and Environmental Health Disparities

Theme 2 of the of the NIEHS 2018-2023 Strategic Plan addresses environmental health disparities and environmental justice. NIEHS has taken several approaches to elucidate environmental exposures that work in concert with other social determinants of health. For example, the Partnerships for Environmental Public Health Program (PEPH) promotes partnerships among scientists, community members, educators, public health officials, and policymakers to increase the impact of environmental public health research at all levels. In addition, NIEHS collaborates with the National Institute of Minority Health Disparities and the National Institute of Child Health and Development to fund the Centers of Excellence in Environmental Health Disparities Research.

In response to a recommendation from an all-hands meeting, NIEHS is launching a new lecture series to honor former NIEHS Kenneth Olden, Ph.D. The Kenneth J. Olden Lecture Series is a new annual event

that will recognize and celebrate outstanding scientists from underrepresented groups who work in environmental health sciences and environmental justice. Dr. Olden served as the third director of NIEHS and second director of the NTP from 1991 to 2005. The lecture series will serve as a tribute to his life and career. Dr. Trevor Archer, head of the NIEHS Epigenetics and Stem Cell Biology Laboratory, is chairing the speaker selection committee for the lecture series. Dr. Olden will provide the inaugural lecture on September 21, 2020. The lecture will be available to watch via live webcast.

In addition to the Olden Lecture Series, the NIEHS Office of Science, Education and Diversity (OSED) coordinates the NIEHS Diversity Speaker Series (DSS), which is designed to highlight the NIH Equity, Diversity, and Inclusion (EDI) special emphasis portfolios during the traditional months of heritage and awareness recognition. Local speakers are invited from neighboring colleges, universities, and organizations to share their stories, research, and experiences.

The Institute is working to create a trans-NIEHS strategic plan faculty on Environmental Health Disparities to synergize efforts among the Divisions. Funding will be provided by the Office of the Director. In addition, DERT is developing ideas to reduce the funding gap and provide more in-depth support to diversity candidates and fellows.

Workplace Diversity

Theme 3 of the NIEHS 2018-2023 Strategic Plan highlights the institute's commitment to greater workforce diversity. "NIEHS is committed to promoting a diverse EHS workforce by ensuring widespread opportunity and inclusion in our recruitment and training programs," the plan states. Of note is our active participation in The Society for Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS) and the Annual Biomedical Research Conference for Minority Students (ABRCMS). OSED represents NIEHS each year at the SACNAS Annual National Diversity in STEM conference in October, and the ABRCMS in November; and partners with about 14 other ICs on "NIH Row" in the exhibit hall. Several NSCP participants have received travel awards to present posters at both conferences. Dr. Erica Reid, director of OSED, regularly participates as a poster session (social and behavioral science) judge.

An ongoing example of the institute's goal to increase diversity in environmental health science is the [NIEHS Scholars Connect Program](#) (NSCP). The NSCP provides a unique opportunity for local undergraduate students in STEM fields to receive hands-on training in biomedical research at NIEHS, as well as professional and personal development. Students must be enrolled at academic institutions in the local commuting area. OSED, which oversees the NSCP, has a renewed focus on historically black colleges and universities (HBCUs), called HBCU-Connect.

OSED also coordinates the NC Women of Color Research Network (NC WoCRN), which is a product of the NIH Working Group on Women in Biomedical Careers. North Carolina is the second regional chapter, established in 2014. The mission of the NC WoCRN is to promote career advancement by broadening participation of women researchers and scientists of color, establishing collaborations and partnerships, multi-level mentoring, outreach, and professional networking.

Culture and Inclusion

Each division has held meetings to discuss DEI issues. All-Hands meetings featuring speaker panels have encouraged open dialogue and provided insight into lived experiences. In addition to several mini-retreats, discussion of DEI topics has also become a regular part of the Senior Leadership staff meetings.

The institute is striving to be a more supportive environment for all staff and to focus on welcoming, belonging, and respect. Staff can make suggestions via the director's anonymous suggestion box or by directly emailing any member of senior staff. The regional chapter of Blacks in Government and the local chapter of the American Federation of Government Employees (AFGE) are sharing ideas and areas for improvement. NIEHS intends to include all voices and ideas in its strategic planning activities in DEI and to create opportunities for all interested staff to engage in implementation efforts in order to make change truly sustainable.

Moving forward, the institute will continue the conversation with a recurring column in the *Environmental Factor*, covering topics such as trainees' experiences, equity in grant awards, health disparities, school outreach efforts, and more. *The Connection*, an internal news blog provided by the NIEHS Office of Management, will run a monthly column called *Continuing the DEI Conversation*. An updated DEI website is currently in development and will be available soon.