Report to the National Advisory Environmental Health Sciences Council
Director, NIEHS and NTP
September 13, 2022

Congressional Appropriations

	FY 2021 Enacted	FY 2022 Appropriation	FY 2023 President's Request[d/]	2023 House Mark	Δ Between FY 2022 and FY 2023 House Mark	2023 Senate Mark	Δ Between FY 2022 and FY 2023 Senate Mark
NIEHS (L-HHS)	$ 814,675,000	$ 842,169,000	$ 932,056,000	$ 878,750,000	$ 36,581,000	$ 918,276,000	$ 76,107,000
NIH [a/]	$ 42,935,500,000	$ 45,177,990,000	$ 62,502,703,000	$ 47,678,485,000	$ 2,500,495,000	$ 48,178,485,000	$ 3,000,495,000
Common Fund [b/]	$ 648,539,000	$ 670,001,000	$ 658,539,000	$ 690,751,000	$ 20,750,000	$ 720,001,000	$ 50,000,000
Superfund	$ 81,500,000	$ 82,540,000	$ 83,035,000	$ 83,035,000	$ 495,000	$ 83,035,000	$ 495,000
NIEHS/DOE Training [c/]	$ 10,000,000	$ 10,000,000					

a/ Includes NIH Discretionary BA plus 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/ 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.
d/ Please note the FY23 President's Budget Request was based off FY22 CR Appropriations and not Enacted.

LEGISLATIVE REPORT:
117th CONGRESS (2021-2022):
FY2023 APPROPRIATIONS:

House FY2023 Appropriations:

On June 29, 2022, the House Appropriations Committee marked up the FY2023 Interior, Environment and related Agencies bill and passed it out of Committee by a vote of 32 to 24. The bill matched the President's FY23 Request for the NIEHS Superfund Related Activities at $83, 035,000, an increase of $495,000 the FY 2022 Enacted level. The report language included praise for the NIEHS Worker Training program and their efforts in working in hazardous environments and responding to pandemics, disasters, and emergency situations. The report language also commended efforts by SRP in Risk Communications and encourages SRP to continue its efforts in this area. (See language below)

On June 30, 2022, the House Appropriations committee marked up the FY23 Labor-HHS bill and report language, and by a vote of 32-24, the House FY23 Labor-HHS Appropriations bill passed out of the House Appropriations Committee and advanced to the House floor. The FY23 Labor-HHS bill has NIEHS at a mark of $ 878,750,000, an increase of $36,581,000 from the FY22 Enacted level. The report language allocates $10 million for Climate Change and Health research for NIEHS and has specific language for NIEHS on Harmful Algal Blooms, Indoor Amplified Microbial Growth Research, and Parkinson's Disease. (See language below)

Additionally, the House FY23 Labor-HHS bill includes $47.5 billion for NIH, which is an increase of $2.5 billion from FY22 enacted budget and includes an across-the-board increase of 3.2 percent

for NIH Institutes and Centers to support the biomedical research workforce and expand promising research. The bill also includes $2.75 billion for ARPA-H to remain available until Sept. 20, 2025.

On July 20, 2022, the House voted on and passed a 6- bill Minibus that contained the FY23 Interior and Environment and FY23 Energy (contains NIEHS/DOE Hazardous Waste Worker Training program funding transfer report language) bills. The Minibus passed the House by a vote of 220-207. The House FY23 Labor-HHS bill is currently awaiting a vote on the House floor, and it is not clear when they will be taking up the bill as of this writing.

NIEHS portion in House Labor-HHS Bill Language (pg. 68):

"NATIONAL INSTITUTE OF ENVIRONMENTAL HEALTH SCIENCES

For carrying out section 301 and title IV of the PHS Act with respect to environmental health sciences, $878,750,000."

NIEHS Labor-HHS FY23 House Report Language (pg. 123-124)

"NATIONAL INSTITUTE OF ENVIRONMENTAL HEALTH SCIENCES (NIEHS)
Appropriation, fiscal year 2022 ..... $842,169,000
Budget request, fiscal year 2023 932,056,000
Committee Recommendation 878,750,000
Change from enacted level ..... +36,581,000
Change from budget request ..... -53,306,000
Mission. —NIEHS's mission is to discover how the environment affects people in order to promote healthier lives.

The Committee includes an additional $10,000,000 for NIEHS to support and coordinate research on the rise in and exacerbation of a wide range of health conditions related to the environment, which may include infectious disease, injury and trauma, and chronic conditions such as asthma, mental health, and health disparities. Such research may include evaluation of both preventive and intervention strategies for such conditions.

Harmful Algal Blooms (HABs) Human Health Effects Research. — Harmful algal blooms are occurring with increasing frequency and severity across the country. While we know of the temporary physical discomfort caused by the toxic bacteria, we do not know if exposure presents a long-term threat to human health. The Committee supports NIEHS research to determine the impact of red tide and other HABs on human health. The Committee commends NIEHS for its collaborations with other agencies, including NSF, NOAA, EPA, and CDC, to advance such research and translate key research findings for clinical and public health benefits.

Indoor Amplified Microbial Growth Research. —The Committee believes that a more robust and focused NIH commitment to research relating to mold and amplified microbial growth in damp and water-damaged buildings would yield significant advancements of knowledge and insight regarding how fungi, mycotoxins, actinobacteria, and endotoxins within indoor environments affect public health. The Committee encourages NIH to expedite planned and ongoing studies

already nominated and established through the National Toxicology Program (NTP). The Committee also urges the Director of NIEHS, in coordination with the Division of the National Toxicology Program (DNTP), as well as the NTP, to prioritize new research and explore the causal links to the potential neurotoxic, immunosuppressive, immunoreactive, nephrotoxic, carcinogenic, and inflammatory responses due to inhalation of indoor amplified microbial growth in damp and water-damaged indoor environments. The Committee encourages NIH to improve applied research, communication and education, and coordination with other Federal, State, and local health and environmental agencies regarding mold and microbial growth in damp and water-damaged indoor environments.

Parkinson's Disease. —Research suggests that Parkinson's disease (PD) is caused by a combination of genetic and environmental factors. Agricultural exposure to pesticides, including herbicides, has been associated with an increased risk of developing the disease, yet other exposures common to soldiers, firefighters, first responders, and others, such as burn pits, insecticides, solvents, and heavy metals, need to be explored or should be considered. The Committee urges NIEHS to expand its research and collaborate with appropriate partners to understand the effects of these chemicals on PD development and progression. Research should include fundamental approaches to identify other environmental triggers and to understand the expression of PD traits that result from the interplay of genes and environment to advance the development of individualized precision environmental health strategies to prevent and treat PD. The Committee requests an update on these activities in the fiscal year 2024 Congressional Justification."

Superfund related Programs House FY23 Interior and Environment bill language (pg. 134):

"NATIONAL INSTITUTES OF HEALTH

NATIONAL INSTITUTE OF ENVIRONMENTAL HEALTH SCIENCES

For necessary expenses for the National Institute of Environmental Health Sciences in carrying out activities set forth in section 311(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S.C. 9660(a)) and section 126(g) of the Superfund Amendments and Reauthorization Act of 1986, $83,035,000."

NIEHS Superfund related programs House FY23 Interior and Environment report language (Pg. 129-130):

"NATIONAL INSTITUTES OF HEALTH

NATIONAL INSTITUTE OF ENVIRONMENTAL HEALTH SCIENCES

The National Institute of Environmental Health Sciences (NIEHS), an agency within the National Institutes of Health, was authorized in section 311(a) of the Comprehensive Environmental

Response, Compensation, and Liability Act of 1980 (CERCLA) and in section 126(g) of the Superfund Amendments and Reauthorization Act of 1986 to conduct certain research and worker training

activities associated with the Nation's Hazardous Substance Superfund program.

Appropriation enacted, 2022 ..... $82,540,000

Budget estimate, 2023 83,035,000

Recommended, 2023 83,035,000

Comparison:

Appropriation, 2022 ..... +495,000

Budget estimate, 2023 0

The Committee recommends $83,035,000 for the National Institute of Environmental Health Sciences, as requested and $495,000 above the enacted level. The Committee continues to strongly support the Worker Training Program, which trains workers to safely work in hazardous environments and respond in emergency situations. NIEHS is encouraged to continue its work supporting communities' capacity to respond to pandemics and disasters.

Risk Communications. —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 continue to develop communications toolkits that utilize the most effective strategies for targeting and educating communities of environmental risks. The Committee believes that such 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."

House FY23 Energy Report Language contains the DOE transfer for WTP (pg. 168):

"Within available funds, $10,000,000 is provided to fund the hazardous waste worker training program."

Senate FY2023 Appropriations:

On July 28, 2022, Senate Appropriations Chairman Leahy released the Chairman's mark of the 12 Senate Appropriations bills. The FY2023 Senate Labor-HHS bill provides $918, 276, 000 for NIEHS, which is $76,107,000 above the FY22 enacted level for NIEHS. This includes an additional $50 million for Climate Change and Health. The Senate Explanatory statement also included specific language for NIEHS on Environmental Exposures and Cancer in Fire Fighters, and the Interagency Coordinating Committee on the Validation of Alternative Methods (ICCVAM) GAO recommendations. (See language below)

The FY23 Labor-HHS bill provides $48 billion for the National Institutes of Health (NIH), an increase of $2 billion spread across every Institute and Center to advance science and speed the development of new therapies, diagnostics, and preventive measures, including $1 billion for the recently created Advanced Research Projects Agency for Health (ARPA-H).

The Senate FY23 Interior and Environment bill matched the President's Request for the NIEHS Superfund Related Activities at $83, 035,000, an increase of $495,000 the FY 2022 Enacted level. The Senate Explanatory Statement provides $2 million in base funds for research for PFAS and other contaminants of emerging concern, as well as instructs that not less than $1,750,000 to support risk reduction for Native Americans to hazardous metals mixtures from abandoned uranium mine waste. The language also commended the work of the NIEHS Worker Training Program. (See language below)

Since the release of the Senate FY23 bills, there has not been a markup scheduled for the 12 bills as of this writing.

NIEHS portion in the Senate Labor-HHS Bill Language (pg. 74):

"NATIONAL INSTITUTE OF ENVIRONMENTAL HEALTH SCIENCES
For carrying out section 301 and title IV of the PHS Act with respect to environmental health sciences, $918,276,000."

NIEHS Labor-HHS FY23 Senate Explanatory Statement (Pg. 123):

"NATIONAL INSTITUTE OF ENVIRONMENTAL HEALTH SCIENCES

Appropriations, 2022 ..... $842,169,000

Budget estimate, 2023 932,076,000

Committee recommendation 918,276,000

The Committee recommendation includes $918,276,000 for the National Institute of Environmental Health Sciences [NIEHS].

Environmental Exposures and Cancer in Fire Fighters. —The Committee is aware that fire fighters have increased rates of cancer diagnoses and death relative to the general population. Fire fighters are exposed to a complex mix of known and possible cancer-causing chemicals through breathing hazardous substances and absorbing them through their skin. Despite an understanding of the risks associated with fire fighter environmental exposures, there has been no large-scale, systematic examination of the mechanisms by which the environmental exposures experienced by these frontline responders can cause cancer. The Committee recognizes the work NIH and CDC/NIOSH have performed to better understand the cancer risks firefighters may experience and encourages these agencies to continue conducting this research, including efforts measuring environmental exposures in firefighters and determining the mechanisms by which these exposures lead to increased cancer incidence, morbidity, and mortality. The Committee also encourages NIH to continue to support research to improve health equity among firefighters, including through inclusion of participants across race, ethnicity, gender, and workplace environment groups to evaluate potential differences in exposures and risk.

Environment-related Health Conditions. —The Committee has included an increase of $50,000,000 to expand NIEHS' efforts to support and coordinate research on the rise in and exacerbation of a wide range of health conditions related to the environment, which may

include infectious disease, injury and trauma, chronic conditions such as asthma, mental health, and health disparities. Such research may include evaluation of both preventive and intervention strategies for such conditions.

Interagency Coordinating Committee on the Validation of Alternative Methods [ICCVAM]. —The Committee is aware that GAO recommended that NIEHS should (1) facilitate the establishment of a workgroup of ICCVAM member agencies to develop metrics that member agencies could use to assess the progress made toward reducing, refining, or replacing animal use in testing and (2) incorporate those metrics into the committee's biennial progress reports. The Committee urges ICCVAM to provide an update on progress made, including publication of the Biennial Report with information on individual agency metrics."

Superfund related Programs Senate FY23 Interior and Environment bill language (pg. 135):

"NATIONAL INSTITUTES OF HEALTH
NATIONAL INSTITUTE OF ENVIRONMENTAL HEALTH SCIENCES
For necessary expenses for the National Institute of Environmental Health Sciences in carrying out activities set forth in section 311(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S.C. 9660(a)) and section 126(g) of the Superfund Amendments and Reauthorization Act of 1986, $83,035,000."

Superfund related Programs Interior and Environment Senate FY23 Explanatory Statement (Pg. 127):

"NATIONAL INSTITUTES OF HEALTH
NATIONAL INSTITUTE OF ENVIRONMENTAL HEALTH SCIENCES
The National Institute of Environmental Health Sciences [NIEHS], an agency within the National Institutes of Health, was authorized in section 311(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (Public Law 115–141), to conduct multidisciplinary research and
training activities associated with the Nation's Hazardous Substance
Superfund program. Section 126(g) of the Superfund Amendments and Reauthorization Act of 1986 (Public Law 99–499) authorizes the National Institute of Environmental Health Sciences to conduct training and education of workers who are or may be engaged in activities related to hazardous waste removal or containment or emergency response.
Appropriations, 2022 ..... $82,540,000
Budget estimate, 2023 83,035,000
Committee recommendation 83,035,000

The bill provides $83,035,000 for the operations of the National Institute of Environmental Health Sciences account, $495,000 above the enacted level and equal to the budget request. The Committee continues the $2,000,000 provided in fiscal year 2022 as base funds in fiscal year 2023 to further the Institute's work on PFAS and other contaminants of emerging concern. The Institute both leads and supports significant research on PFAS that will result in better remediation outcomes. Further, of the funds provided, not less than $1,750,000 shall be to support risk reduction for Native Americans to hazardous metals mixtures from abandoned uranium mine waste. The Committee appreciates the contributions of the Worker Training Program [WTP] and encourages the Institute to prioritize resources and support for this program."

LEGISLATION:

H.R. 5585 Advanced Research Project Agency – Health Act

On June 22, 2022, the House passed H.R. 5585, the Advanced Research Project Agency – Health Act, introduced by Congresswoman Eshoo (D-CA), which authorizes the establishment of ARPA-H within the Department of Health and Human Services. The bill also: 1) outlines ARPA-H's goals, which include fostering the development of new breakthroughs to accelerate innovations in health and medicine, promote high-risk, high-reward innovation, and revolution diagnosis, mitigation, prevention, and treatment of disease through transformative health technologies; 2) requires the Director of ARPA-H to be appointed by the President and report to the Secretary; and 3) limits the administrative expenses for ARPA-H to 15% of the total available funds. The bill now heads to the Senate for consideration.

H.R. 7289, the Federal PFAS Research Evaluation Act

On July 26, 2022, the House passed H.R. 7289, the Federal PFAS Research Evaluation Act. The bill requires the Environmental Protection Agency, in consultation with the National Institutes of Health, the National Science Foundation, Defense Department, and other relevant Federal agencies, to work with the National Academies to identify research and development needs in order to identify, categorize evaluate, and address PFAS exposure and toxicity. The bill now proceeds to the Senate to be considered.

Preparing for the 2024-2028 NIEHS Strategic Plan

The current NIEHS Strategic Plan, published in 2018, extends through calendar 2023. NIEHS has just begun laying the groundwork on a new plan, by defining the process we intend to use to update our planning and to identify goals to take us over the next five years. The new plan period will be 2024-2028.

To begin the process, NIEHS will be looking for input from the EHS community, including and especially from our Advisory Council. Dr. Sheila Newton, NIEHS planning officer and Deputy Director of the new NIEHS office of Strategic Coordination, Planning, and Evaluation, will make a presentation describing the process and timeline NIEHS plans to use for the development of its next Strategic Plan.

The NIEHS Division of Translational Toxicology

As of September 1, 2022, the name of the NIEHS Division of the National Toxicology Program (DNTP) has been changed to the NIEHS **Division of Translational Toxicology (DTT).** This name change culminates several months of deliberations among division staff and leadership regarding their future identity and "brand," as they continue to fulfill their enduring mission "to improve public health through data and knowledge development that are translatable, predictive, and timely." The **Division of Translational Toxicology** is a name that more clearly describes the division's work and makes clear that they are taking on research to address contemporary public health challenges and developing new approaches that increase our ability to predict human hazards and protect U.S. populations from unintended harm due to environmental exposures. As a division, DTT will focus on producing data, capabilities, methods, and products that are more efficient, cost-effective, human health-relevant, and less dependent on animal studies. As in the past, much of DTT's work will continue to support the multi-agency U.S.

National Toxicology Program (NTP), but we will do this as a contributing partner rather than as a proprietor.

Five Emerging Opportunities for Researchers

- **Precision Environmental Health** (PEH) is all about moving beyond the population-level to better understand how exposures affect individual health and disease susceptibility. PEH is a systems approach that integrates data from many sources, including environmental analyses. A precision environmental health approach requires analyzing genome and epigenome profiles; measuring exposures across the lifespan, collectively called the exposome; and incorporating powerful data science tools. Like precision medicine – which can be summarized as getting the right drug to the right patient to treat disease most effectively – the goal of PEH is to understand individual risk and prevent, rather than treat, disease.

  Implementing PEH will require collaboration across the biomedical research community. A series of six virtual workshops, Accelerating Precision Environmental Health: Demonstrating the Value of the Exposome, were held over the summer to address the challenges and opportunities related to tools, technologies, and methodologies; biologic responses and impact on health and disease; the future of clinical and prevention trials, cohorts, and epidemiology; social and societal impacts; and data infrastructure and data analytics. An in-person summit is being planned for the fall.

- **Climate Change and Health** is a high priority for the federal government, which can be seen by the President's Budget request for fiscal year 2023 including $100M to NIEHS for climate change and health research. NIEHS is working closely with researchers, communities, and decisions-makers to support research and develop strategies to help people and communities prepare for potential health impacts of climate change, while also protecting health and the environment for future generations.

  In addition, NIEHS is leading the NIH Climate Change and Health Initiative. The NIH Climate Change and Health Initiative is an urgent, cross-cutting effort to reduce health threats from climate change across the lifespan and build health resilience in individuals, communities, and nations around the world, especially among those at the highest risk including low-income groups, the elderly, indigenous peoples, occupational groups, children and pregnant women, and persons with disabilities or chronic medical conditions. Seven NIH Institutes and Centers are involved in the initiative, which is led by an executive committee, chaired by the NIEHS director. More information on the NIH Climate Change and Health Initiative, including funding and career opportunities, can be found at https://www.nih.gov/climateandhealth.

- **Predictive Translational Toxicology:** NIEHS works to develop and apply improved test methods and models of toxicity that can be used to predict cancer risk and other adverse health outcomes resulting from environmental exposures. Some of these activities support the interagency National Toxicology Program (NTP), which is headquartered administratively at the NIEHS in the Division of Translational Toxicology (DTT), formerly the Division of the NTP (DNTP).

  The DTT conducts research that produces data, capabilities, and knowledge in support of the government's efforts to protect U.S. populations from unintended harm due to environmental

exposures. It has a primary goal of developing approaches that increase our ability to predict human hazards that are more efficient, cost-effective, translationally relevant, and less dependent on animal studies. It also aims to develop approaches that will support the development of safer industrial and consumer products in the first instance.

The DTT has a broad portfolio of research focused on contemporary public health challenges including developing approaches to assess the hazards of complex real-world mixtures of chemicals, modeling non-chemical stressors that are the source of health disparities in underserved communities, developing class-based approaches to evaluating broad sets of chemicals like flame retardants and PFAS chemicals, evaluating evolving environmental exposures related to climate change and searching for early biomarkers of health effects in service men and women with unique service-related exposures. This research is supported by developing new and innovative approaches to literature-based and integrative informatics, high throughput and computational modeling, applying and building confidence in more complex in vitro systems, enhancing our physiological monitoring of animals and even exploring how to model the effect of environmental exposures on important pre-existing diseases like early onset colon carcinoma and cardiovascular disease. DTT research is team-based, programmatic and collaborative engaging governmental, private, and commercial stakeholders. The products of the DTT not only inform regulatory and policy decision-makers but the approaches provide novel scientific tools to the broader toxicology and biomedical research communities.

- **Environmental Justice and Health Disparities** will be a main topic during the June 2022 NAEHSC meeting. NIEHS has a long history of supporting research on EJ/HD and recognizes there is more work to be done to address these issues. NIEHS has established a working group that is dedicated to fulfilling NIEHS priorities related to environmental racism, environmental health disparities, and environmental justice. The group aims to:
    - Bring together researchers from many disciplines to study environmental racism, EHDs, and EJ.
    - Understand the role of social determinants of health in health and exposure disparities
    - Promote translational opportunities for EHD-EJ prevention/intervention.
    - Raise the profile of EHD and EJ research across NIEHS and NIH.

- **Computational Biology and Data Science** are increasingly foundational to environmental health and biomedical research, joining experimental and theoretical methods as essential to scientific discovery. These methods include the development of innovative data science and data-driven approaches, including artificial intelligence and machine learning methods and approaches; integration of increasingly large and complex data types from diverse platforms; application of advanced analytics; continued development of uniform data standards, common data elements, and curation methods, as well as development of multiscale mathematical and knowledge-based models of biological processes. The broad use of big data frameworks and Findable, Accessible, Interoperable, Reusable, and Computable (FAIR+) principles will continue to facilitate these developments. Continued coordination with expert partners and engagement with Computational and Data Science communities will help environmental health sciences capitalize on new discoveries and approaches.

Staff Updates

J'Ingrid Mathis was selected as the NIEHS Associate Director for Management/Executive Officer effective July 17, 2022. Ms. Mathis has served as the Chief of Administrative and Research Services at NIEHS since 2018, overseeing business and administrative services for NIEHS's two intramural research divisions. She holds an M.S. in Social Work from Columbia University and a B.A. in Psychology from Yale University and has over 20 years of experience in administrative management leadership. Ms. Mathis previously served in senior management capacities across federal and academic research settings including the U.S. Environmental Protection Agency (EPA), the University of North Carolina Injury Prevention Research Center, and the U.S. Department of Health and Human Services' Administration for Children and Families.

Tammy Collins, Ph.D., Director of the Office of Fellows Career Development (OFCD) is departing NIEHS to direct programs at a nonprofit foundation. Her last day at NIEHS was September 5.

Mary Diaz Santana, Ph.D. an NIH Independent Research Scholar, started as a new Principal Investigator in the Biostatistics and Computational Biology Branch in August 2022.

Francisco (Alex) Montiel Ishino, Ph.D. an NIH Independent Research Scholar, joined as a new Principal Investigator in the Epidemiology Branch in August 2022.

Awards and Recognition

Anant Parekh, D. Phil., (Signal Transduction Laboratory Chief) was awarded the **Annual Review Prize**, the premier international award given by the Physiological Society in recognition of transformative and high-impact research.

Dondrae Coble. D.V.M. (Comparative Medicine Branch Chief) and **Jesse Cushman, Ph.D.** (Neurobiology Laboratory) received the **NIH Director's Challenge Innovation Award** to fund a collaborative project "Machine vision-enabled behavioral tracking for cross-species extrapolation" involving scientists from NIBIB and NIDDK.

Jacob Gordon, an NIH OxCam predoctoral fellow in the Stanley group (STL) received the **2022 Gregory Paul Lenardo Basic Science Award** from the International Biomedical Research Alliance. The Gregory Paul Lenardo Basic Science Award was endowed by NIH Oxford-Cambridge Scholars Program Co-Founder, Dr. Michael Lenardo, in loving memory of his brother. First awarded in 2016, this annual award recognizes discoveries of fundamental cellular, molecular, or genetic processes using model systems that advance scientific understanding of biological processes in higher organisms.

Gordon Smilnak, a Medical Student Research Fellow in the London group (Epidemiology Branch), who is completing medical school at Northwestern University was selected into the **ATS Student Scholars Program** administered by the American Thoracic Society.

2023 NIEHS FARE Awards:
NIEHS fellows received 21 FARE awards for FY2023. NIEHS ranked second (behind only NCI) of all ICs at NIH in total number awards.

FARE Winner	*Mentor*	*Lab/Branch*	*Project*
Ziyue Wang, Ph.D	Alison Motsinger-Reif, Ph.D	Biostatistics and Computational Biology Branch	A Novel Normalization Method for Microbiome Sequencing Count Data
Justin Collier, Pharm.D., Ph.D.	Anton Jetten, Ph.D.	Immunity, Inflammation & Disease Laboratory	PKM2 Is a Major Contributing Factor in GLIS3KO-Induced Polycystic Kidney Metabolic Reprogramming
Jasmine Mack, M.P.H., M.S.	Alison Motsinger-Reif, Ph.D	Biostatistics and Computational Biology Branch	A Multi-Ethnic Genome-Wide Association Study Identifies Novel Candidate Loci Near the RARB And LRP1B Genes Associated with Gestational Hypertension in the Personalized Environment and Genes (PEGS) Cohort
Ankit Gupta, Ph.D.	Marcos Morgan, Ph.D.	Reproductive & Developmental Biology Laboratory	TUT4 and TUT7 Uridylate the RNA of the Mouse Coronavirus MHV and Facilitate Its Replication
Dana Al-Hasan, Ph.D.	Chandra Jackson, Ph.D., M.S.	Epidemiology Branch	Racial and Economic Residential Segregation and Dementia Incidence
Virginia Savy, Ph.D.	Carmen Williams, M.D., Ph.D.	Reproductive & Developmental Biology Laboratory	The Butterfly Effect: Abnormal Calcium Signaling at Fertilization has a Long-Term Impact on Offspring Weight
Ru Pin Chi, Ph.D.	Marcos Morgan, Ph.D.	Reproductive & Developmental Biology Laboratory	WNK1 is Indispensable for Spermatogenesis and Male Fertility Via Regulating Translation
Wan-Ning Li, Ph.D.	Francesco DeMayo, Ph.D.	Reproductive & Developmental Biology Laboratory	The Role of Serum Response Factor in Regulating Hormonal Responsiveness in Female Reproduction
Christine Langton, Ph.D.	Donna Baird, Ph.D.	Epidemiology Branch	Soy-Based Infant Formula Feeding and Uterine Fibroid Development in a Prospective Ultrasound Study of African-American Women
Danielle Stevens, Ph.D.	Kelly Ferguson, Ph.D., M.P.H.	Epidemiology Branch	Early Pregnancy Phthalate and Phthalate Alternative Metabolites in Relation to Fetal Cardiac Development
Symielle Gaston Harrison, Ph.D., M.P.H.	Chandra Jackson, Ph.D., M.S.	Epidemiology Branch	Racial/Ethnic Differences in Associations of Traumatic Childhood Experiences with Both Metabolic Syndrome Prevalence and Type 2 Diabetes Risk
Mandy Goldberg, Ph.D., M.P.H.	Dale Sandler, Ph.D.	Epidemiology Branch	Beauty Product Use During Puberty and Breast Cancer Risk in U.S. Women
Dillon Lloyd, B.S.	Alison Motsinger-Reif, Ph.D	Biostatistics and Computational Biology Branch	Type 2 Diabetes Risk Prediction in a Multi-Ethnic Cohort Supports the Potential of Polyexposure Risk Scores
Adriana Alexander, Ph.D.	Humphrey Yao, Ph.D.	Reproductive & Developmental	Sex-Specific Regulatory Networks Prime Primordial Germ Cell Fate Commitment

		Biology Laboratory	
Chitrangda Srivastava, Ph.D.	Anton Jetten, Ph.D.	Immunity, Inflammation & Disease Laboratory	Loss of JAZF1 Modulates High-Fat Diet-Induced Gut Microbial Dysbiosis and Protects Against Nonalcoholic Fatty Liver Disease
Tanushree Mukherjee, Ph.D.	Anton Jetten, Ph.D.	Immunity, Inflammation & Disease Laboratory	Glis3 Protects Against Deregulated Osteogenesis
MyeongJin Yi, Ph.D.	Francesco DeMayo, Ph.D.	Reproductive & Developmental Biology Laboratory	Vitamin D Regulates Uterine Stromal Cell Differentiation *in Vitro* and *in Vivo*.
Jacob Gordon, B.S.	Robin Stanley, Ph.D.	Signal Transduction Laboratory	Cryo-EM Structure Of The Human PELP1-WDR18 Complex Reveals Insights into the ER-PELP1 Signaling Axis
Ananda Ayyappan Jaguva Vasudevan, Ph.D.	Scott Williams, Ph.D.	Genomic Integrity & Structural Biology Laboratory	Biochemical and Structural Analysis of ZATT/ZNF451
Amanda Riccio, Ph.D.	William Copeland, Ph.D.	Genomic Integrity & Structural Biology Laboratory	Structural Insight and Characterization of Human Twinkle Helicase in Mitochondrial Disease
Laura Kammel, Ph.D.	Joseph Rodriguez, Ph.D.	Epigenetics & Stem Cell Biology Laboratory	Whole Organ Immuno-Smfish Enables Spatial Gene Expression Analysis in Single Cells Within a Complex 3D Environment
Xiukun Wang, Ph.D.	Guang Hu, Ph.D.	Epigenetics & Stem Cell Biology Laboratory	The Histone H3.3 Chaperone HIRA Facilitates the Recruitment of the Nurd Complex to Promote the Exit From the Pluripotent State in Mouse Embryonic Stem Cells

NSCP Summer 2022 Poster Winners

- ***Best Poster Presentation: Tied***
    - **Shivani Ayyagari** (North Carolina State University), Mentored by Sue Fenton - *Evaluation of the Causal Relationship Between PFAS and Lactation Impairment* - Shivani Ayyagari Vesna Chappel, Veronica Robinson, Suzanne Fenton
    - **Thusna Gardiyehewa** (North Carolina State University), Mentored by Vandy Stober and Stavros Garantziotis - *Investigation Into the Effect of Hyaluronan on Ozone-Induced Injury of Bronchial Epithelial Cells* - Thusna S. Gardiyehewa, Vandy P. Stober, Stavros Garantziotis]

- ***Honorable Mention Poster Presentation***
    - **Charles Coleman** (North Carolina A & T University), Mentored by Lalith Perera - *Mechanism of Incoming dNTP Binding to the Active Site of DNA Polymerase Mu* - Charles Coleman, Lalith Perera

2022 Summer Internship Program Poster Winners:

- **Undergraduate Winners:**
    - **1st Place: Sunggun Lee- DNTP: NICEATM**
      "Applying Deep Learning Toxicity Models Across the Chemical Universe"
      Sunggun Lee, Ting Li, Zhichao Liu, Weida Tong, Kamel Mansouri and Nicole Kleinstreuer
    - **2nd Place (tie): Isabella Gándara- DIR: ESCBL**
      "Using single-cell RNA sequencing analysis to identify cell clusters of interest in BRG1 - knockdown neural progenitor cells"
      Isabella Gandara, Jackson Hoffman, and Trevor Archer
    - **2nd Place (tie): Lauren Garcia- DNTP: MTB**
      "Uterine Fibroid Myocyte Life Cycle Phase Formation in Fibroid Spheroids using 3D Co-cultures of Human Uterine Leiomyoma Cells and Myofibroblasts"
      Lauren Garcia, Lysandra Castro, Jingli Liu, Linda Yu, and Darlene Dixon
    - **3rd Place: Samuel Eliasen- DIR: NL**
      "Silencing Dopamine Neurons During Sleep Presents a Novel Treatment for Parkinson's Disease"
      Samuel Eliasen, Chengbo Meng, Guohong Cui
- **Graduate Winners:**
    - **1st Place: Anna Kremer- DERT: SRP**
      "An Analysis of Superfund Research Program P42 Grant Recipient Data Management and Sharing Plans"
      Anna K. Kremer, Michelle L. Heacock, Sara M. Amolegbe, Heather F. Henry, Danielle J. Carlin, Brittany A. Trottier, William A. Suk
    - **2nd Place (tie): Sam Neally- DIR: EB**
      "Neighborhood deprivation and mental health indicators among Gulf Coast residents"
      Sam J. Neally, Kaitlyn Lawrence, Lawrence Engel, Emily Werder, Braxton Jackson II, Dale P. Sandler
    - **2nd Place (tie): Kimi Van Wickle- DIR: EB**
      "Gestational Weight Gain and Phthalate Exposure"
      Kimi Van Wickle, Danielle R Stevens, Elena Sinkovskaya, Ann Przybylska, Alfred Abuhamad, George Saade, Kelly K Ferguson
    - **3rd Place: Ashley Phoenix- DIR: NL**
      "Potential dysregulation of CA2 neuronal development in a murine model of Rett syndrome"
      Ashley Phoenix, Georgia Alexander, Serena Dudek

2022 Summer Internship Program Communication Challenge Winners:

- **1st Place: Ashley Phoenix,** Neurobiology Laboratory (Dudek)
- **2nd Place: Sharonda Lovett,** Epidemiology Branch (Sandler)
- **3rd Place: Kiran Kelly-Rajan,** Mechanistic Toxicology Branch (Harry)

Upcoming Events

- **Target II Meeting:** *September 7-9*
- **Children's Environmental Health Research Translational Centers Grantee meeting:** *Sept 8-9*
- **Accelerating Precision Environmental Health: Demonstrating the Value of the Exposome**: *September 15-16*
- **NIEHS Clustering and Classification Virtual Workshop:** *October 3-4*
- **2022 Worker Training Program Fall Awardee Meeting & Workshop**: *October 18-21*
- **Human Health Exposure Analysis Resource (HHEAR):** *December 12-13*
- **Superfund Research Program 2022 Annual Meeting**: *December 14-16*

DERT Director Recruitment

The top candidates for the DERT Director vacancy were referred from a NIH-led search committee to the NIEHS Director in late August 2022. Two of the referred candidates will be spending 1.5 days at NIEHS to interview with Dr. Woychik, meet with Institute leaders, and deliver a NIEHS all-hands seminar on their qualifications and vision for DERT. Once a selection is made by the NIEHS Director, the appointment approval process will begin at NIH and HHS. Thank you to David Balshaw, Ph.D. for his continued leadership as the Acting DERT Director

Division of Translational Toxicology (DTT) Scientific Director Recruitment

Dr. Brian Berridge, D.V.M., Ph.D. announced he will be leaving his position as the Scientific Director of the DTT in January 2023. NIEHS is currently recruiting for an Interim/Acting Scientific Director of the DTT. The recruitment will be internal to all Senior Investigators and Senior Scientists at the NIH. A competitive detail provides opportunity to a diverse set of candidates throughout the NIH for senior-level leadership experience. The detail position to start in November 2022 and run until the permanent position is filled.

The recruitment effort for the permanent Scientific Director of DTT has begun and will be targeting the international senior scientist community. The application announcement for the DTT Scientific Director is expected to be open for 60 days, November 2022-January 2023. A senior-level NIH led search committee will provide top candidate referrals to the NIEHS Director at the conclusion of their activities (anticipated by April 2023). Candidate interviews, seminars, and meetings with NIEHS staff will be conducted, and once a selection is made by the NIEHS Director, the appointment approval process will begin at NIH and HHS.