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ENVIRONMENTAL HEALTH SCIENCES

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EPIDEMIOLOGY

Fall 2022 Newsletter

Table of Contents

Current Trainees.....2
Training Program Graduates.....8
Conference Presentations.....10
Awards.....11
Media Features.....11
Publications.....12

Contacts

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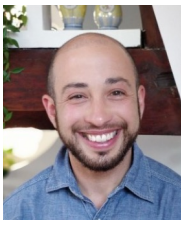
For more information on the program, please visit the website:
https://www.publichealth.columbia.edu/research/niehs-t32-combined-training-program

Current Trainees - Postdoctoral

EHS

Emma Amissah is a public health physician. She earned her medical degree from the University of Ghana Medical School, her MPH from the Rollins School of Public Health, Emory University, and her doctorate from the University of Auckland in New Zealand. Her doctoral dissertation, "Early life nutrition and long-term health outcomes," assessed the effects of early-life nutritional interventions on later developmental, cardiometabolic, growth, and feeding outcomes in infants and animals. She served the United Nations Mission in Haiti soon after the 2010 earthquake and the UNDP/UNV in Trinidad and Tobago. Her research interests lie broadly in understanding the mechanisms relating early life exposures to later adverse health and designing appropriate mitigating interventions and policies. At Columbia, she will explore the epigenetic and microbiome mechanisms linking early life environmental exposures (phthalates, disinfectants) to later health.



Ilan Cerna-Turoff received his PhD in Epidemiology and Public Health from London School of Hygiene and Tropical Medicine. He has over a decade of experience in child protection and health, with a focus on low- and middle-income countries, marginalized groups, and humanitarian settings. Ilan received a Fulbright Research Grant and Haruv Student Research Award for his past work. His doctoral research applied quantitative methods in analyzing violence in low resource settings and causal approaches in measuring the relationship between natural hazards and violence against children. Ilan's current research investigates longitudinal exposure to natural hazards, subjective wellbeing, and violence in childhood. His work combines traditional statistical methods and machine learning. He has an interest in ecological exposures, health, and applied statistical methods.

Christian Dye received his PhD from the University of Hawai'i at Mānoa in Molecular Biosciences and Bioengineering. His doctoral research focused on identifying epigenetic signatures in leukocyte subpopulations across a spectrum of diseases, including insulin resistance, diabetes, and dementia, and various populations, including Native Hawaiians, Japanese Americans, and HIV infected communities. He joined the Baccarelli lab, where his research focuses on utilizing epigenetic information, such as DNA methylation and non-coding RNAs, to identify potentially mechanistic biomarkers that may explain the relationship between environmental exposures and cardiometabolic disease risk in underrepresented communities, including American Indians. Christian plans to develop inclusive community-based research that utilizes epigenetic information to examine the relationship between community-level health and individual cardiometabolic health in underrepresented communities, such as Native Hawaiians and other indigenous peoples.

Current Trainees - Postdoctoral

EHS

Katlyn McGraw graduated from the University of Louisville with a PhD in EHS. Katlyn's research focuses on exposure to underregulated pollutants and their contribution to heart disease, in particular metals, volatile organic compounds, and benzene. Before beginning her graduate career, she worked as a bench chemist in hazardous waste recycling and radiopharmaceuticals; and as a clinical research associate at Norton Healthcare. In 2018, Katlyn was invited to intern with the Environmental Defense Fund in Houston, Texas to study benzene pollution after Hurricane Harvey, and last year she was awarded the KC Donnelly award to collaborate with the Columbia University Superfund Program to assess mixtures of environmental pollutants. Her award led to her current postdoctoral fellowship. Katlyn is a proponent of actionable research to impact policy. In her free time, she is an avid reader, cyclist, and active member of the LGBTQ+ community.

Epidemiology

Mariah DeSerisy completed her PhD in Clinical Psychology at Fordham University in 2021. She graduated from Trinity University in Texas in 2014 where she double majored in Neuroscience and Psychology. After graduation, she joined the Mental Health Interventions and Technology (MINT) Team at Florida International University as a Research Coordinator. In graduate school, Mariah focused on understanding behavioral, cognitive, and neurobiological risk and resilience factors for emotion dysregulation (irritability and anxiety) in children and adolescents. Clinically, Mariah specializes in providing evidence-based treatments for children and families struggling with severe emotion dysregulation, trauma, and high-risk behaviors (e.g., suicidality, substance use, non-suicidal self-injury). Mariah's current research interests include intelligence in typical development, the impact of environmental and social exposures on risk for childhood psychopathology, and neurobiological correlates of irritability and anxiety.

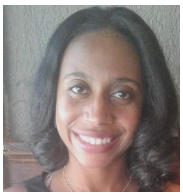
Gabriella Meltzer received her PhD in public health from NYU School of Global Public Health in 2022, where she was primarily affiliated with the Center for Public Health Disaster Science. Her dissertation examined the adverse consequences of child and adolescent exposure to the Deepwater Horizon oil spill in the context of cumulative environmental and family stress. Prior to her doctoral studies, Gabriella received her bachelor's degree in Health and Societies from the University of Pennsylvania and was a global health research associate at the Council on Foreign Relations. Under the advisement of Drs. Pam Factor-Litvak and Joan Casey, she will continue to research how community-level environmental exposures create and exacerbate health disparities at critical and sensitive periods of the life course.

Current Trainees - Predoctoral

5th year trainees – EHS

Jenni Shearston received a BA in English from Regis University and an MPH in Epidemiology from NYU. She is mentored by Drs. Markus Hilpert and Marianthi-Anna Kioumourtzoglou. Jenni focuses on evaluating the impact of stay-at-home orders implemented in response to the coronavirus pandemic, including assessing changes in traffic, traffic-related air pollution and cardiovascular hospitalizations as a result of these events.

5th year trainees – Epidemiology



Autumn Clemons entered the program with an MS in Epidemiology. She is working under Dr. Pam Factor-Litvak and her current research focuses on evaluating the impact of socio-environment (e.g., phthalate and psychosocial stress exposures) on adverse pregnancy outcomes in an ethnically diverse nulliparous pregnancy cohort in the United States.

4th year trainees – EHS

Maggie Li is working under Drs. Marianthi-Anna Kioumourtzoglou and Ana Navas-Acien. She received her BS in Conservation and Resource Studies and BA in Geography at UC Berkeley. Her current research focuses on quantifying air pollution exposure and health impacts in American Indian communities. Her primary research area centers on applying data science and statistical methods to quantify air pollution exposure and health impacts in marginalized communities through an interdisciplinary, environmental justice-focused framework.

Sarah McLarnan is under the mentorship of Drs. Brandon Pearson and Julie Herbstman. She entered the program with a Bachelors in Environmental Studies and Biology and MPH in EHS. Her current research focuses on integrating a mouse embryo model and birth cohort for study of the effects of prenatal PAH exposure on mitochondrial function.

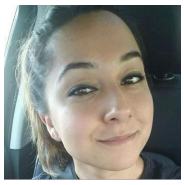
Maya Spaur entered the program with a MS in Environmental Health & Engineering, and a certificate in Risk Sciences & Public Policy. She is working under the mentorship of Drs. Ana Navas-Acien and Annie Nigra. In summer 2020, Maya received the NIEHS Superfund Research Program KC Donnelly Externship Award. This award supported her externship with Dr. Melissa Lombard and Joseph Ayotte at the US Geological Survey New England Water Science Center, where she studied arsenic exposure in public water supplies and private wells and evaluated the effectiveness of federal regulations, with a focus on vulnerable populations.

Current Trainees - Predoctoral

4th year trainees – Epidemiology

Shabnaz Siddiq received her MSc in Epidemiology from the University of Ottawa. Her current research focuses on endocrine disrupting chemicals specifically phthalates and their effects on maternal and fetal outcomes. Her research area focuses on prenatal environmental exposures and their relationship to adverse pregnancy outcomes. Currently, she is identifying predictors of phthalate metabolite exposures among a diverse group of nulliparous women with singleton pregnancy across the United States.

3rd year trainees – EHS



Tanya Butt entered with a Bachelor's in Neuroscience and Psychology and a MPH. She is working under the mentorship of Drs. Diane Re and Marianthi-Anna Kioumourtzoglou. Her research interests include characterizing the contribution of environmental exposures associated with amyotrophic lateral sclerosis (ALS). Recently, she worked on an analysis of long-term air pollution exposure and ALS risk, using mandatory patient registries from Massachusetts and Denmark.

Vivian Do is working with Drs. Joan Casey and Marianthi-Anna Kioumourtzoglou. Her research interests lie at the intersection of climate change and environmental justice, with a specific focus on power outage exposure, heat vulnerability, natural disaster events, and air pollution. Previously, she researched air pollution methods on a Fulbright at Hong Kong University and conducted program evaluations at the NYC Department of Health and Mental Hygiene.

Nina Flores completed her BS in Computational Biology from the University of Texas at Austin. Her research focus is on environmental justice and health disparities in the context of climate change. She has contributed to a range of projects, including one aiming to understand the disparities in power outage exposures and health impacts, and one assessing the relationship between indoor exposures and asthma disparities in New York City. She plans to continue this work under the mentorship of Drs. Matthew Perzanowski and Joan Casey.

Emma Gorin received an MSPH in Global Disease Epidemiology and Control from Johns Hopkins University, where her research included investigating sanitation availability in northern India and mobility among female sex workers in Guinea-Bissau. She also spent a semester in Cameroon working on implementation research and programming for key populations at risk for HIV. Emma's current research interests include infectious disease dynamics, emerging infections, antimicrobial resistant pathogens, and SARS-CoV-2.

Current Trainees - Predoctoral

3rd year trainees – EHS

Wil Lieberman-Cribbin entered the program with a BA in Physics and Geography and an MPH and is working under the mentorship of Drs. Ana Navas-Acien and Allison Kupsco. His current research focuses on epigenetic biomarkers of lead exposure and cardiovascular disease in the Strong Heart Study, as well as investigating the relationship between Selenium status and DNA methylation in the Strong Heart Study.

Marisa Sobel entered the Program with a BA in Chemistry and Studio Art and an MPH in EHS. Her research interest is in molecular epidemiology focusing on metals exposures and health outcomes. She successfully passed her qualifying exams in June of 2022 and completed her first teaching fellowship with the Capstone course (Critical Thinking and Analysis in EHS) in the Spring of 2022 and assisted one (Environmental Mixtures) of the SHARP summer 2022 workshops.

3rd year trainees – Epidemiology

Gloria Graf completed a BS in Policy Analysis and Management from Cornell University and an MPH in Epidemiology from Columbia. Her research examines the life course sequelae of social and environmental exposures, with a recent focus on the social determinants of biological aging. Gloria's research training will focus on the measurement and operationalization of environmental exposures, particularly as they relate to aging outcomes and aging health equity.

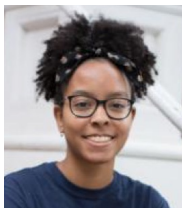
Sneha Kannoth has an MPH in Epidemiology from the Yale School of Public Health, and a BS in Neuroscience from Carnegie Mellon University. Her research interests include examining the environmental determinants of communicable and non-communicable health outcomes among older adults, in addition to assessing the efficacy and implementation of non-pharmaceutical public health interventions.

2nd year trainees – EHS

Tess Bloomquist entered with a Bachelor's in Neuroscience and a Master's in Toxicology. Her research interests surround environmental epidemiology and biomarkers of human population studies. Tess is currently conducting work on how chemicals found in consumer products impact the health of mothers and children. She has worked with Dr. Allison Kupsco on generating mitochondrial DNA copy number measures within the Columbia Children's Center for Environmental Health cohort and plans to examine the impact of prenatal exposures to phthalates on this proxy of cellular stress.

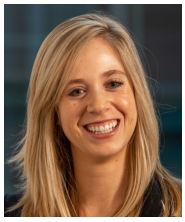
Current Trainees - Predoctoral

2nd year trainees – EHS



Jocelyn Dicent received a BS in Chemistry from Yale University. At Yale, her research primarily focused on organic synthesis. She also spent time conducting bioengineering research using C. elegans and microfluidic devices. Her research interests include neurotoxicology, biomonitoring, and using animal models to explore the outcomes of toxins or toxicants on health. Her current research involves conducting miRNA extractions and exposomics on brain tissue samples from veterans and non-veterans who developed ALS and from those who did not develop ALS as part of a collaboration between Drs. Gary Miller's and Diane Re's labs.

Catherine Lucey received a BA in Biochemistry and, after graduation, worked as a next-generation sequencing technician in the lab of Dr. Junhyong Kim at the University of Pennsylvania. Catherine is interested how a mechanistic understanding of adverse health effects can inform large-scale environmental risk assessment and hopes to focus on reproductive and developmental endpoints. Her recent work with Dr. Brandon Pearson involved developing methods to isolate individual blastomeres from 8-cell stage mouse embryos. With Dr. Kathrin Schilling she is working with arsenic and selenium metallomics.



Danielle Medgyesi received a MS in Environmental and Occupational Health from the University of Iowa. She was a research analyst at the National Cancer Institute for several years. Danielle has an interest in exposure assessment and GIS methods. Her research topics include air pollution, drinking water quality and risk of cancer, as well as household air pollution and WASH in developing nations. She has worked with Dr. Darby Jack on a project characterizing maternal and child exposure to fine particulate matter within households and the community, near roadways and by surrounding building density in Kintampo, Ghana. She is also involved in a project evaluating the association between arsenic in drinking water and risk of cancer and cardiovascular disease outcomes in California with Drs. Tiffany Sanchez and Ana Navas-Acien.

Brittany Shea received a master's degree from Harvard University and bachelor's degree from Boston University. Previously, she was the Project Director for the Global Consortium on Climate and Health Education, based at the Mailman School. Her current interests are in conducting research on the health impacts of climate change, climate-health mitigation and adaptation strategies, and environmental justice.

Current Trainees - Predoctoral

2nd year trainees – Epidemiology

Stephen Uong received a MPH in Epidemiology at Emory University and studied Public Health and Microbiology as an undergraduate at The University of Texas at Austin. He is interested in spatial epidemiology and studying the impacts of the built environment and urban planning policies on health inequities. His past research included projects related to spatial epidemiology, neighborhoods and health, air pollution, cancer patient care management, and machine learning. Prior to joining the doctoral program, Stephen worked as a Consulting Data Analyst at the Kaiser Permanente Northern California Division of Research on various research projects related to health services, immigrant health, and air pollution.

Nadav Sprague is under the mentorship of Drs. Charles Branas and Pam Factor-Litvak. His research area focuses on environmental health and education disparities, mainly focusing on greenspace and climate change.

Training Program Graduates

Predoctoral trainees

Brennan Baker completed his PhD working under the mentorship of Drs. Andrea Baccarelli and Brandon Pearson. In July, Brennan successfully defended his dissertation, entitled "Prenatal acetaminophen exposure as a risk factor for Attention Deficit Hyperactivity Disorder (ADHD): underlying mechanisms in humans and mice." One chapter of this dissertation was recently published with Brennan as the first author: 'Association of Prenatal Acetaminophen Exposure Measured in Meconium With Adverse Birth Outcomes in a Canadian Birth Cohort' in Frontiers in Pediatrics. Brennan is also the first author on a manuscript based on another chapter which is currently under review at Neurobiology of Disease. The paper is titled 'Sex-Specific Neurobehavioral and Prefrontal Cortex Gene Expression Alterations Following Developmental Acetaminophen Exposure in Mice.' Brennan is starting a postdoctoral fellowship at the University of Washington in September 2022, where he will study associations of prenatal exposures with the placental transcriptome and child disease.

Training Program Graduates

Predoctoral trainees

Tory Lynch completed her PhD in Environmental Health Sciences in the Climate and Health Program in August 2022. Her thesis, “Quantifying the effect of extreme and seasonal floods on waterborne disease in the US,” examined the association between flooding and 10 waterborne pathogens with a particular focus on Legionnaires' disease. A primary component of this work was to characterize the different flood types that occur throughout the US (e.g. floods related to cyclonic storms, river floods, flash floods, etc.) by using a range of meteorological variables to define flooding. Her work found that hospitalizations for specific pathogens were positively associated with distinct flood-indicator variables. She also studied the effect of tropical cyclonic storms on cases of waterborne diseases in the Eastern US. Tory will continue her training under Dr. Jeffrey Shaman as a Postdoctoral Research Scientist.

Postdoctoral trainees

Faith Anderson received extensive training in toxicology research. She aimed to determine neurologic disease-associated outcomes in C. elegans (P0) exposed to the persistent, organochlorine pesticide dichlorodiphenyltrichloroethane (DDT) and whether these alterations persisted in subsequent generations (F1-F5). Although she did not find evidence of transgenerational effects, she determined that DDT exposure in P0 resulted in reduced egg-laying behavior, a phenotype potentially suggestive of deficits in monoaminergic signaling. These findings were included in a recent publication by the Miller lab (Kalia et al., PNAS Nexus, 2022). Alongside these in vivo studies, she evaluated vesicular dynamics in response to neurotoxicants in vitro. Specifically, she optimized an in vitro system using HEK293 cells expressing human DAT and VMAT2 confirming previous findings that VMAT2 expression confers resistance to 1-methyl-4-phenylpyridinium (MPP+). Within this system, she found that expression of the novel synaptic vesicle glycoprotein 2C (SV2C) further conferred protection against MPP+-elicited cellular death. These studies will be included in publication currently in preparation by the Miller lab.

During this time, she took part in the virtual course Toxicology in Drug Discovery and Development offered by faculty at Rutgers University in collaboration with Bristol-Myers Squibb. Additionally, she wrote a first-author book chapter with a second-author review article underway on the topic of the exposome and sex-specific medicine. Further, she mentored an undergraduate student who obtained a highly-competitive position in the Buck Institute Summer Scholars Program. She will be continuing my research career as a Senior Scientist, Neuroimmunology at Merck in Boston, MA.

Conference Presentations

Predoctoral trainees

Maggie Li gave an oral presentation, titled 'Air Pollution in American Indian vs. Non-American Indian Communities, 2000–2018' at the National Tribal Forum on Air Quality in May 2022.

Gloria Graf presented a poster, titled 'Biological Aging in Maltreated Children Followed up into Middle Adulthood' at the New York City Epidemiology Forum in May 2022.

Postdoctoral trainees

Mariah DeSerisy presented three posters at the Society for Biological Psychiatry Annual Meeting in New Orleans, Louisiana in April 2022.

- 'Influences of Socioeconomic Status and Education on Intelligence Across 5 Multinational Sites'
- 'Brain-Predicted Aging Associates with Socioeconomic Status and Behavior in Childhood and Adolescence'
- 'Neuropsychological Profiles and Risk for Psychiatric Diagnoses in Individuals With Non-Verbal Learning Disability'

Mariah DeSerisy presented a paper on 'Adapting Evidence Based Interventions for Individuals with Learning Disabilities' at the Boys Town National Conference in Boys Town, NE in June 2022.

Ilan Cerna-Turoff gave a poster presentation at the American Causal Inference Conference in May 2022, titled 'An applied approach to unobserved bias: full matching with an instrumental variable.

Awards

Predoctoral trainees

Maggie Li was awarded a NIEHS F31, titled 'Particulate air pollution and effects on cardiovascular health in American Indian communities.' The aim is to characterize fine particulate matter air pollution concentrations in American Indian communities and associations between fine particulate matter exposure and incident cardiovascular disease in the Strong Heart Study.

Sarah McLarnan successfully applied to the TRANSFORM TL1 Precision Medicine Training Program at the Irving Institute for Clinical and Translational Research with her proposal, titled 'Gestational Exposure to Polycyclic Aromatic Hydrocarbons and Mitochondrial Damage: Implications for Neurodevelopment.' The aim is to investigate the role of mitochondrial function as a mechanism of prenatal PAH neurodevelopmental toxicity.

Sarah McLarnan received an award from the Air Pollution Educational and Research Grant Program ($25,000) funded by the Mid-Atlantic State Section Air and Waste Management Association. for her project, titled 'Gestational Exposure to Polycyclic Aromatic Hydrocarbons and Mitochondrial Damage: Implications for Neurodevelopment.'

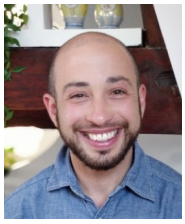
Maya Spaur was awarded a NIEHS F31, titled 'Drinking water arsenic and uranium: associations with urinary biomarkers and diabetes across the United States.' The specific aims are to determine the nationwide contribution of water arsenic to total inorganic As exposure, and water uranium to total uranium exposure, and to determine the association between drinking water arsenic and uranium exposure and diabetes risk in diverse populations.

Postdoctoral trainees

Ilan Cerna-Turoff received a travel award to attend the American Causal Inference Conference at UC Berkeley.

Media Features

Dr. Ilan Cerna-Turoff, postdoctoral fellow, was featured in a Lancet podcast, NPR, and Holland Bloorview for his publication on violence against children with disabilities. The review shows that children with disabilities experience a high burden of all forms of violence, despite advances in awareness and policy in the past 10 years.



Publications

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