

Superfund Research Program e-Posted Notes

January 12, 2018 (Issue 168)

HEADLINES

All of Us Wants Your Ideas!

Are you interested in helping researchers understand more about why people get sick or stay healthy? If so, NIH is looking for your ideas to help make its [All of Us Research Program](#) the best resource it can be.

All of Us aims to build one of the largest, most diverse datasets of its kind to help speed up research on many different health conditions. NIH hopes that 1 million or more people across the country will join. Participants will share information about their health, habits, and what it's like where they live. By looking for patterns in the data, researchers may learn more about the factors that affect our health. The program will last for many years and will allow researchers to study health over time.

NIH is asking for ideas for questions to add to the [All of Us research protocol](#). The information you provide will be used at the *All of Us* Research Priorities Workshop on March 21–23, 2018, to identify key research priorities and requirements, such as data types and methods for future versions of the *All of Us* protocol. The deadline for submitting your ideas is **February 9, 2018**.

IN THE NEWS

NIEHS SRP News Stories

Take a moment to read about some of our colleagues' latest activities in this month's Environmental Factor, the NIEHS newsletter:

- [Thirty Years of Superfund Research for Innovation and Health](#)
- [Angela Gutierrez Honored with 2017 Wetterhahn Award](#)
- Paper of the Month: [New Tumor-Promoting Pathway for Liver Cancer Discovered](#)

Visit the SRP news page for more stories about the Program:

- [SRP Grantee Takes Cleanup Technology to the Field](#)
- [SRP-Funded Small Business Partners with Water Industry Leader to Commercialize Technology](#)
- [Arsenic Conference Explores Multidisciplinary Approaches to](#)

EMPLOYMENT OPPORTUNITIES

Two Postdoctoral Positions – University of Iowa

The Hans-Joachim Lehmler laboratory at the University of Iowa has two openings for postdoctoral fellows to work on several recently funded collaborative projects investigating the disposition of polychlorinated biphenyls (PCBs) in animal models and humans.

The organic chemistry position involves the synthesis of environmentally relevant polychlorinated biphenyls (PCBs) and their metabolites and requires a strong background in organic synthesis. This position is supported by the Synthesis Core of the Iowa Superfund Research Program. Experience with the quantification of reaction products using gas chromatography and enantioselective separations is desired.

The position in chemical toxicology involves studies of the disposition of PCBs in laboratory animals and humans. The overall goal of these studies is to understand how the route of exposure and metabolism affect the distribution of PCBs and their metabolites into target organs, such as the developing brain. Extensive knowledge and hands-on experience with gas/liquid chromatographic analyses is required.

Protecting Human Health

- [SRP Center Researchers from Northeastern University Featured in Nature News](#)

Voices Unheard: Arizona's Environmental History Project Has a New Website

The Voices Unheard project has recently launched a dedicated [website](#) to better communicate with the public. The goal of the project, developed by University of Arizona SRP Center trainee Denise Moreno Ramírez, is to preserve the life stories of individuals who work and live near Superfund sites by using oral history. The project is currently partnering with communities near two Superfund sites: the Tucson International Airport Area and the Iron King Mine - Humboldt Smelter.

Participants and the public can use the website to see the progress in each community. The website also highlights Voices Unheard's local events and research communication materials.

Margaret Karagas Quoted in New York Times Article on Arsenic in Baby Food

A recent [article](#) in The New York Times highlighted concerns that although the levels of arsenic in infant rice cereals have dropped slightly in recent years, those cereals still contain six times more inorganic arsenic, on average, than infant cereals made with other grains, like barley or oatmeal. In the article, Dartmouth SRP Center researcher Margaret Karagas describes how there is no known benefit to arsenic exposure and likely no safe level. Dartmouth SRP researchers uncovered higher arsenic concentrations in infant rice cereals, a finding published in a [2012 paper](#).

TAMU SRP Researchers Featured in JAMA News Article

A recent [Medical News & Perspectives article](#) published in the Journal of the American Medical Association discusses the health effects of hazardous materials released during Hurricane Harvey and features statements by Ivan Rusyn and Jennifer Horney of the Texas A&M SRP Center. The article focuses on efforts to determine the health consequences of chemical exposures that some of the 6.5 million Houston-area residents experienced.

Heiger-Bernays and Aschengrau Highlighted in BU Annual Publication

Boston University (BU) SRP Center researchers Wendy Heiger-Bernays and Ann Aschengrau were among the faculty featured in the BU School of Public Health (SPH) [This Year 2017](#) publication.

A feature, beginning on page 12, highlights work led by Heiger-Bernays to identify the source of airborne PCBs in neighborhoods surrounding the New Bedford Harbor. According to collaborative research between the BU and University of Iowa SRP Centers, sediment contaminated with PCBs from the bottom of New Bedford Harbor is the number one source of airborne PCBs.

The start date is negotiable but ideally would be in early 2018. To apply, please send a current CV and the name and contact information for 3 references to Hans-Joachim Lehmler (hans-joachim-lehmler@uiowa.edu).

Environmental Risk Assessor/Epidemiologist – Virginia Tech

Virginia Tech's Department of Population Health Sciences seeks to attract a tenured or tenure-track faculty member in the area of environmental health. Priority will be given to applications at the Assistant Professor rank.

The position is part of a robust and diverse cluster of faculty contributing to transdisciplinary research, teaching, and/or outreach initiatives that align with their "Global Systems Science Destination Area." This initiative is focused on transdisciplinary solutions to critical social problems stemming from human activity and environmental change. Visit the [Global Systems Science page](#) for more information.

This position will be based on the main campus of Virginia Tech, a land-grant university in Blacksburg, Virginia, situated in the scenic New River Valley. For more information on the position and to apply, visit the [job posting](#).

Tenure Track Faculty Position – University of Rochester

The Department of Environmental Medicine at the University of Rochester School of Medicine and Dentistry invites applications for an Assistant or Associate Professor in the tenure track. The Department is especially interested in candidates with a passion for biomedical research focusing on how the environment shapes health and influences disease. Applicants interested in studying the

On page 38, the publication describes a study led Aschengrau, which found that Cape Cod residents who were exposed prenatally to both their mothers' alcohol use and PCE-contaminated drinking water had higher risks of using multiple illicit drugs as teenagers.

Summary Fact Sheets on Mercury Now Available

The Dartmouth SRP Center has developed fact sheets summarizing four papers written to describe the current state of mercury science as part of the [13th International Conference on Mercury as a Global Pollutant](#). The fact sheets originally were used to inform delegates of the Conference of the Parties of the Minamata Convention on Mercury (COP-1) about the latest mercury science, as well as gaps in knowledge. The fact sheets focus on:

- [Mercury policy](#)
- [Mercury emissions in air](#)
- [Altered landscapes related to mercury](#)
- [Mercury in water and health](#)

TRAINEE SPOTLIGHT

Kim Identifies Metabolism-Disrupting Chemicals

Stephanie Kim is an SRP trainee at Boston University (BU) under the guidance of Jennifer Schlezinger. She is investigating various Superfund chemicals and their potential to activate fat-forming pathways and enhance weight gain.



Her group and others have shown a growing number of environmental pollutants that activate fat-forming pathways by activating the nuclear receptor peroxisome proliferator-activated receptor γ (PPAR γ). However, there are still questions regarding how the activation of PPAR γ enhances adiposity and leads to metabolic disease.

Kim and her colleagues, in collaboration with BU SRP Center Bioinformatics Core leader Stefano Monti, are using a cost-effective, high density gene expression profiling method called 3' digital gene expression (available at the MIT Broad Institute) to extensively understand the biological changes in metabolic homeostasis that result from chemical exposures. They also are prioritizing emerging Superfund toxicants for further study based on their gene expression patterns.

As part of the BU SRP Center's Trainee Blog, Kim wrote an [article](#) about using EPA's computational toxicology (CompTox)

fundamental mechanisms of toxicity, developmental origins of health and disease, and/or environmental effects on stem/progenitor cells are particularly encouraged to apply. The Department is home to an outstanding interdepartmental NIEHS P30 Core Center and the Rochester Toxicology Training Program, as well as two clinical programs in occupational medicine. Applicants must have a Ph.D. or M.D. degree, a track record of research accomplishments, and demonstrated interest in tackling significant topics relevant to environmental health and toxicology using state-of-the-art approaches. Visit the [University of Rochester Job Opportunities website](#) for more information and to apply.

Research Scientist Position in Environmental Health – Northeastern University

A position is open for a Senior Research Scientist in environmental health to conduct and support research for centers that study exposure to environmental contamination in Puerto Rico and its contribution to adverse birth outcomes and early child development. The Senior Research Scientist will work closely with scientists from different disciplines across multiple institutions to collect and analyze large and complex environmental/biological datasets. He/she will perform basic or applied research on critical or difficult problems involving the development of new theories or methodologies. For more information and to apply, see the [job announcement](#).

Postdoctoral Research Associate – Northeastern University

The SRP Center at Northeastern University has an open Postdoctoral Research Associate position, which will require an experienced research scientist or engineer with a focus on

database for chemical screening. In her own work, Kim and other researchers in Schlezinger's lab are applying the use of digital gene expression (DGE), an efficient and cost-effective RNA-seq method, to screen various environmental chemicals and to evaluate their potential disruptions in biological activities related to metabolic disease. This DGE method will allow them to screen many chemicals at once and characterize the patterns of gene expression variation and molecular pathways regulation by the different chemicals. The data on the gene patterns and biological processes can potentially be integrated into the CompTox Dashboard.

In 2017, Kim was one of the two environmental science and engineering winners at the SRP Annual Meeting trainee poster competition. She also received second place in the 2016 SRP Annual Meeting poster competition.

When she is not in the lab, Kim volunteers with the Burlington Medical Reserve Corps in Massachusetts, assisting their public health efforts and disaster preparation. She also loves traveling to new places with her husband and sister and spending time outdoors, hiking, mountain biking, and skiing.

HOT PUBLICATION

PCB126 Exposure Increases Risk for Peripheral Vascular Diseases in a Liver Injury Mouse Model

There is new evidence of a link between a compromised liver, PCB-mediated hepatic inflammation, and vascular inflammatory markers, according to a recent [paper](#) from the University of Kentucky SRP Center. According to the authors, their findings suggest that environmental pollutants can promote crosstalk between different organ systems, leading to inflammatory disease pathologies.

The study investigated the effects of PCB126 on vascular inflammation linked to hepatic dysfunction using a liver injury mouse model. Mice fed a methionine-choline deficient (MCD) diet and subsequently exposed to PCB126 manifested lower body fat mass, increased liver to body weight ratio, and alterations in hepatic gene expression related to lipid and carbohydrate metabolism, implicating metabolic disturbances. PCB126 induced steatosis irrespective of the diet type, but only the MCD + PCB126 group exhibited steatohepatitis and fibrosis. Furthermore, PCB126 exposure in MCD-fed mice led to increased plasma inflammatory markers, suggesting inflammation of the peripheral vasculature that is characteristic of atherosclerosis.

CALL FOR ABSTRACTS

International Conference on One Medicine One Science

The [3rd International Conference on One Medicine One Science](#)

environmental health and engineering, specifically on one or more of the following: health informatics, geospatial informatics, environmental epidemiology, and environmental modeling. This individual will work closely with scientists from different disciplines across multiple institutions to analyze large and complex environmental/biological datasets. Primary responsibility is ensuring that the research is complete. The appointment generally does not extend beyond two years.

The candidate must have a Ph.D. or equivalent in environmental health, computer science, epidemiology, statistics, geology, biomedical or other related quantitative fields. He/she should have advanced knowledge of modeling, analysis tools, and statistical packages. Previous experience in proposal development is strongly preferred. The ability to communicate and collaborate with a geographically dispersed group is essential. For more information, see the [job announcement](#).

CURRENT RESEARCH BRIEF

[Research Brief 277: Using Saliva to Understand Exposures and Monitor Health](#) (Stephen Rappaport, University of California, Berkeley)

Past [Research Briefs](#) are available on the SRP website. To receive the monthly Research Briefs or to submit ideas, email Michelle Heacock (heacockm@niehs.nih.gov).

SRP EVENTS

Celebrating 30 Years of Science for a Safer World
UC Berkeley Superfund Research Program Update Meeting
January 30, 2017

(iCOMOS) will be held in Minneapolis, Minnesota, April 29 - May 2, 2018. iCOMOS will explore new ways to solve pressing health issues, facilitate interdisciplinary collaborations, and promote science's role in influencing public policy at the interface of humans, animals, and the environment. The conference will feature NIEHS Director Linda Birnbaum, as well as presentations by SRP Health Scientist Administrator Heather Henry, grantee Jose Cordero, and former trainee Nishad Jayasundara.

[Poster abstracts](#) are being accepted and must be submitted no later than **January 30, 2018**. If you plan to submit or have already submitted an abstract, please notify Heather Henry (henryh@niehs.nih.gov), who is on the planning committee and will be looking out for SRP-submitted abstracts.

2018 Toxicology and Risk Assessment Conference

The [2018 Toxicology and Risk Assessment Conference \(TRAC\)](#), which will be held April 23-26 in Cincinnati, Ohio, will focus on topics in risk assessment principles and practice. The conference provides attendees with an overview of current research, methodological, and practice issues that are the focus of risk assessment efforts in various federal agencies, academic institutions, industry, and other organizations. The theme for TRAC 2018 is "Models, Methods, and Emerging Concerns."

TRAC will feature a poster session with a trainee poster competition. The poster abstract deadline is **March 12, 2018**.

FUNDING OPPORTUNITIES

Summer Research Experiences for Students and Science Teachers

For NIEHS-funded principal investigators with R01, R21, R15, R35, R37, or P01 awards, funds are available for [administrative supplements to support summer research experiences](#) in environmental health science for high school students, college undergraduates, master's degree candidates, medical students, secondary school science teachers, and science professors from Academic Research Enhancement Award (AREA) grant eligible institutions. Administrative supplements must support work within the scope of the original project. Applications are due **January 31, 2018**.

Five Star and Urban Waters Restoration Grant Program

The National Fish and Wildlife Foundation (NFWF) and the Wildlife Habitat Council (WHC), in cooperation with the U.S. Environmental Protection Agency (EPA), U.S. Forest Service (USFS), U.S. Fish and Wildlife Service (USFWS), FedEx, and Southern Company, are pleased to solicit applications for the [2018 Five Star and Urban Waters Restoration program](#).

The grant program seeks to develop community capacity to sustain local natural resources for future generations by providing

Berkeley, California

[Website](#)

Society of Toxicology 57th Annual Meeting and ToxExpo

March 11 - 15, 2018

San Antonio, Texas

[Website](#)

Understanding the Combined Effects of Environmental Chemical and Non-Chemical Stressors: Atherosclerosis as a Model

April 3 - 4, 2018

Research Triangle Park, North Carolina

[Website](#)

2018 Toxicology and Risk Assessment Conference

April 23 - 26, 2018

Cincinnati, Ohio

[Website](#)

International Conference on One Medicine One Science

April 29 - May 2, 2018

Minneapolis, Minnesota

[Website](#)

Central and Eastern European Conference on Health and the Environment (CEECH)

June 10 - 14, 2018

Krakow, Poland

[Website](#)

GET UPDATES FROM OTHER SRP GRANTEES

To see the latest SRP grantee publications, visit the [SRP publications page](#).

Visit the [SRP Materials for Grantees page](#) for helpful information, such as SRP administrative supplements information, SRP best practices, guidelines for NIEHS logo use, and the Data Collection Form.

See the [SRP Science Digest](#) to read more about recent SRP research highlights and activities.

The [SRP Events page](#) contains

modest financial assistance to diverse local partnerships focused on improving water quality, watersheds, and the species and habitats they support. Projects include a variety of ecological improvements along with targeted community outreach, education, and stewardship. Proposals are due **January 31, 2018**.

BD2K-LINCS Summer Research Training Program

Applications are being accepted for the Big Data to Knowledge Library of Integrated Network-Based Cellular Signatures (BD2K-LINCS) Data Coordination and Integration Center (DCIC) [2018 Summer Research Training Program in Biomedical Big Data Science](#), a research intensive ten-week training program for undergraduate and graduate students. The [BD2K-LINCS DCIC](#) supports data science research focused on developing methods that further extract knowledge from [LINCS data](#) by integrating those data with other relevant resources.

[Applications](#) are due **February 1, 2018**.

EPA Student Design Competition Focuses on People, Prosperity, and the Planet

The U.S. Environmental Protection Agency (EPA) announces the release of the [15th Annual P3 Awards: A National Student Design Competition Focusing on People, Prosperity, and the Planet \(P3\)](#) Phase I Request for Applications (RFA). This collegiate design competition promotes the use of scientific and engineering principles in creating innovative projects to address challenges and develop real-world solutions. This RFA is seeking applications in the areas of air quality, clean and safe water, land revitalization, and safer chemicals in the marketplace.

The P3 program is a two-phase team competition. For the first phase, interdisciplinary student teams submit proposals to compete for \$15,000 grants for project ideas addressing environmental solutions. Recipients use the funding to research and develop their design projects during the academic year. In the spring, teams compete for P3 Phase II grant funding of up to \$75,000 to implement their projects in a real-world setting. Applications for the first phase are open until **February 7, 2018**.

EPA Office of Environmental Justice Collaborative Problem-Solving Grant

The [Environmental Justice Collaborative Problem-Solving \(EJCPS\) Cooperative Agreement Program](#) provides funding to support community-based organizations in their efforts to collaborate and partner with local stakeholder groups (e.g., local businesses and industry, local government, medical providers, and academia) as they develop and implement solutions that address environmental and/or public health issues for underserved communities.

Eligible projects must demonstrate use of the Environmental

information about upcoming meetings, seminars, and webinars.

The SRP website also has [Search Tools](#) to help you learn more about projects funded by the Program.

JOIN THE @SRP_NIEHS KNOWLEDGE NETWORK ON TWITTER

NIEHS uses Twitter, a popular social media tool, for information sharing through tweets. Many SRP Centers also have accounts, and it would be great if all participated! Follow us [@SRP_NIEHS](#) to instantly hear news about the Program, noteworthy publications, events, and job opportunities for trainees.

CONTACT INFORMATION

Need to get in touch with an NIEHS SRP staff member? Check out our [Contact Staff](#) page.

Justice Collaborative Problem-Solving Model to support their efforts during the project period. Applications are due **February 16, 2018**.

DATA SCIENCE AND DATA SHARING

On Meta- and Mega-Analyses for Gene–Environment Interactions

A recent [paper](#) from University of Pennsylvania SRP Center researchers and colleagues provides valuable insights in understanding the differences between mega- and meta-analyses in the practice of combining a small number of studies to identify gene-by-environment ($G \times E$) interactions.

$G \times E$ interactions are important in explaining missing heritability and understanding the causation of complex diseases, but a single, moderately sized study often has limited statistical power to detect such interactions. With the increasing need for integrating data and reporting results from multiple collaborative studies or sites, debate over the choice between mega- versus meta-analysis continues. In principle, data from different sites can be integrated at the individual level into a “mega” dataset, which can be fit by a joint “mega-analysis.” Alternatively, analyses can be done at each site, and results across sites can be combined through a “meta-analysis” procedure without integrating individual-level data across sites.

In this paper, the researchers conducted empirical and simulation studies, using data from a $G \times E$ study of lung cancer, to compare the mega- and meta-analyses in four commonly used $G \times E$ analyses under the scenario that the number of studies is small and sample sizes of individual studies are relatively large. The researchers compared the two data-integration approaches in the context of fixed effect models and random effects models separately. They observed that both approaches yield inflated errors when the number of studies is small, but the inflation of random-effects meta-analysis is smaller than that of the random-effects mega-analysis in their analyses of $G \times E$ interactions. This suggests that the random-effects meta-analysis is better than random-effects mega-analysis when the number of studies is small.

Assessing Health Risks from Multiple Environmental Stressors: Moving from $G \times E$ to $I \times E$

A recent [review article](#) from the UC Berkeley SRP Center proposes the use of an intrinsic (I) by extrinsic (E) ($I \times E$) concept to incorporate the multi-factorial and dynamic nature of health and disease. Intrinsic vulnerability or resilience emanates from a variety of both fixed and shifting biological factors, including genetic traits, while extrinsic factors comprise all biologically relevant external stressors encountered across the lifespan.

The proposed $I \times E$ concept highlights the role for broader study design to identify extrinsic and intrinsic factors amenable to

interventions at the individual and population levels to enhance resilience, reduce vulnerability, and improve health. Quantitative data on I × E interactive effects should generate a better understanding of the variability in human response to environmental factors. According to the authors, this approach provides a unified, conceptual basis for integrating results from multiple areas of research, including genomics, G × E, developmental origins of health and disease, and the exposome.

