National Institute of Environmental Health Sciences

Superfund Research Program

e-Posted Notes

November 6, 2020 (Issue 202)

HEADLINES

SRP Annual Meeting Now Virtual

The 2020 SRP Annual Meeting, hosted by the Texas A&M University SRP Center, will be held virtually **December 14 -15**. The final agenda has been posted. Please visit the SRP Annual Meeting website for additional information.

Save the Date: SRP Data Science Mini-Workshop and Virtual Technology Fair

On **December 16**, SRP will hold two satellite meetings:

1. **Data Science and Data Sharing Mini-workshop** – If you are involved in an SRP data supplement or Data Management and Analysis Core, we encourage you to save the date. Stay tuned for more information on the mini-workshop.
2. **Virtual Technology Fair** – In lieu of an in-person technology fair at the Annual Meeting, SRP will host a Virtual Technology Fair to showcase environmental remediation and detection technologies being developed by NIEHS Small Business Innovative Research (SBIR) grantees. All SRP Annual Meeting attendees are invited to join. There will be a separate registration for this free event. Please contact Heather Henry if you have any questions: heather.henry@nih.gov.

Registration Now Open: Progress in Research Webinars

The fall SRP Progress in Research webinar series highlights promising research from SRP centers awarded grants in 2020. These awards were made as part of the Multiproject Center Grant (P42) solicitation RFA-ES-18-002. In each session, grantees will describe their research projects, accomplishments, and next steps. Join us for the last two sessions in this four-part series:

- **Session III** will feature scientists from the SRP centers at Northeastern University and University of Alabama Birmingham discussing their research involving vulnerable populations. The session will be held **November 9 from 2:00 - 3:30 p.m. ET.**
- **Session IV** will feature scientists from the SRP centers at North Carolina State University, University of Iowa, and Louisiana State University discussing their research on

EMPLOYMENT OPPORTUNITIES

Silent Spring Institute Seeks Study Coordinator

The Silent Spring Institute is hiring a study coordinator for a new study of health effects associated with PFAS exposures from drinking water in two communities in Massachusetts. The study coordinator will work under the supervision of the study principal investigators and project collaborators and will be responsible for setting up the infrastructure and implementing the research plan. This is an exciting opportunity to contribute to a major public health study that will advance our understanding of PFAS health effects. More information about this position and how to apply is available on the Silent Spring website.

CURRENT RESEARCH BRIEF

SRP Research Brief 311: Edible Sorbents May Protect Against Metal Toxicity (Timothy Phillips, Texas A&M University)

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).

Video summaries of the SRP Research Briefs are available on the NIEHS Social Media Shorts

emerging exposures. The session will be held **November 19**

If you missed the last two sessions, the archives are now available! You can go back and listen to webinars for Session I, Metals, and Session II, Legacy and Emerging Contaminants.

NIH Issues New Policy for Data Management and Sharing

NIH released the Final NIH Policy for Data Management and Sharing, which required NIH-funded researchers to prospectively submit a plan outlining how scientific data will be managed and shared. This policy reinforces NIH's commitment to make biomedical research findings broadly available and reflects the agency's view that responsible data management and sharing advances science and benefits the public.

NIH will continue to engage the community to support the change and implementation of this new Policy. This replaces the 2003 Data Sharing Policy and will take effect January 25, 2023.

For more information, please read the NIH Director's statement by Francis Collins as well as an "Under the Poliscope" blog by Carrie D. Wolinetz.

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:

- Small business commercializes technology with new grant: SRP-funded small business Microvi Biotechnologies, Inc. received a new kind of grant to further enhance and commercialize their technology for converting hazardous compounds in water into less harmful substances.
- Extramural Paper of the Month: New framework helps researchers return results to participants: A new publication, funded in part by SRP, presents a framework and recommendations to help environmental health researchers return research results to participants. This has implications to improve environmental health education and communication.

Tilton and Rohlman Highlight Impacts of Wildfire Smoke on Human Health

Oregon State University (OSU) SRP Center researchers Susan Tilton and Diana Rohlman were featured in an OSU news article about their work on the impact of wildfire smoke on human health. Their recent publication on classifying polycyclic aromatic hydrocarbons (PAHs) was highlighted. Led by Tilton, the team has developed a method that could potentially predict the cancer-causing potential of PAHs released into the air during wildfires

YouTube page.

EVENTS

SRP Progress in Research Webinar Session III: Vulnerable Populations
November 9, 2020
2-3:30 p.m. ET

Sixth Computational Approaches for Cancer Workshop
November 15, 2020
Virtual Conference

RDA 6th Plenary Meeting
November 9-12, 2020
Virtual Conference

SC20
November 9-19, 2020
Virtual Conference

NIH Applicant Assistant Program Informational Webinar
November 12, 2020
2-3:30 p.m. ET

VI Uruguayan Congress of Clinical and Environmental Toxicology – I International Convention on the Environment and Child Health
November 18-20, 2020
Virtual Conference

SRP Progress in Research Webinar Session IV: Emerging Exposures
November 19, 2020
2:00-4:00 p.m. ET

2020 SRP Annual Meeting
December 14-15, 2020
Virtual Conference

Virtual Technology Fair: NIEHS Environmental Remediation and Monitoring Tool Grantee Showcase
December 16, 2020
12:30-4:30 p.m. ET

SRP Data Science Mini-Workshop
December 16, 2020
Virtual Workshop

FLUOROS 2021 Symposium
Sponsored by the University of Rhode Island SRP Center
October 3-6, 2021

and fossil fuel combustion.

MIT Trainee Interviewed for Pulsar Podcast

Massachusetts Institute of Technology (MIT) SRP Center trainee Jessica Beard was featured in the Pulsar Podcast from the Boston Museum of Science for her SRP research. Beard is working with MIT SRP Center project leader Timothy Swager to develop a sensor for a newly recognized contaminant in drinking water, N-Nitrosodimethylamine (NDMA). Beard explained in the interview that the sensor would be used by scientists working to clean up NDMA-contaminated Superfund sites.

SRP Researchers Write Op-Ed on PFAS

University of Rhode Island SRP Center grantee Rainer Lohmann and trainee Anna Robuck co-authored an op-ed for The Hill about per- and polyfluoroalkyl (PFAS) in wildlife. A recent study by their group looked for 36 new and already banned types of PFAS in juvenile seabirds from three U.S. east coast habitats near and far from human sources of these chemicals. Lohmann and Robuck note that understanding PFAS in wildlife and ecosystems translates to a better understanding of human PFAS exposure.

TRAINEE SPOTLIGHT

McNulty Studies Mechanisms Involved in Cancer

Former University of California (UC) San Diego SRP Center postdoctoral trainee Reggie McNulty recently landed his dream job as an associate professor at UC Irvine in the department of molecular biology and biochemistry.

McNulty completed his postdoctoral research under the guidance of UC San Diego SRP Center project leader Michael Karin, where he studied how exposure to chemicals found at Superfund sites affect NLRP3 inflammasome activation. NLRP3 inflammasome is a protein that regulates the expression of immune cells that repair tissues after injury. NLRP3 is over-activated by environmental chemicals, which could result in diseases like cancer.

In a recent publication , McNulty and team showed in a study in mice that over activation of immune cells by excessive fructose, a sweetener ubiquitous in the American diet, could result in non-alcoholic fatty liver disease in mice.

During his time at UC San Diego, McNulty received an SRP Research Supplement to Promote Diversity in Health-Related Research to study the connections between oxidized mitochondrial DNA and activation of the NLRP3 inflammasome.

He was also awarded a NIH K22 Career Transition Award, which

Providence, Rhode Island

11th Conference on Metal Toxicity and Carcinogenesis
October 17-20, 2021
Montreal, Canada

SETAC 8th World Congress
September 4-8, 2022
Singapore

GET UPDATES FROM OTHER SRP GRANTEES

To see the latest SRP grantee publications, visit the SRP Grantee 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 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.

provided him resources to transition to an independent research career. He says this award helped him lay the foundation for future research as a principal investigator.

Today, McNulty has his own lab at UC Irvine, where he investigates the three-dimensional structure of proteins involved in human inflammation and cancer. The shape of a protein is directly related to its ability to carry out functions in the body. McNulty aims to understand the processes that result in human diseases by studying how the shape of a protein changes when in contact with chemicals and cancer cells. He hopes this work will inform the design treatments for diseases like cancer.

Outside of the lab, McNulty enjoys jogging and reading books about the history of humankind. He is passionate about mentoring students in the sciences and hopes to join a formal mentoring network soon.

HOT PUBLICATION

Mercury Filtration Process Yields Promising Industrial Applications

University of Kentucky SRP Center researchers demonstrated a process involving three different membranes to effectively remove trace amounts of mercury from wastewater. The procedure consists of a preliminary pre-filtration step followed by ultrafiltration and thiol adsorption.

Thiol groups are compounds that form strong bonds with heavy metals such as mercury, lead, or cadmium, making them practical for removing metals from wastewater.

In a previous study, the team established the efficacy of the third filtration step, thiol membrane adsorption. They confirmed that thiol membrane pores soak up contaminants like heavy metals as water flows through. The current study builds on this discovery by adding two additional filtration steps.

The pre-filtration membrane removes large particulates that could potentially foul or damage membranes in the second and third steps. The ultrafiltration step removes any particles that would interfere with the thiol membrane through additional size exclusion. The third step sends water through the thiol membrane to adsorb dissolved mercury.

The researchers found that three steps are necessary because carryover of particulates can cause significant flux reductions by fouling membrane surfaces and clogging membrane pores. They also found that the adsorption efficiency of the thiol membrane is around 97%, confirming these membranes are effective at removing dissolved mercury from wastewater.

The researchers also developed mathematical models to predict membrane performance over a wide range of conditions. According to the authors, these results show promising potential

for industrial application and commercialization of thiol-functionalized membranes.

AWARD WINNERS

Harrison Receives Award from the Oregon Native American Chamber

Oregon State University SRP trainee Sydelle Harrison received the Oregon Native American Chamber 2020 Student Academic Achievement Award. The purpose of this scholarship is to support and empower American Indian and Alaskan Native students to provide transformational change to their community. Harrison's research aims to address public health gaps at the tribal level in the Pacific Northwest.

Brown and Schaider Recognized by ISES for Outstanding Publication

Phil Brown, from the Northeastern University SRP, and Laurel Schaider, from the University of Rhode Island SRP, were both authors on a publication that received the International Society of Exposure Science (ISES) 2020 Award for the Best Journal of Exposure Science and Environmental Epidemiology Paper for the year 2019. Their publication highlights the need to enforce standards to protect human health from exposure to per- and polyfluoroalkyl substances through contaminated water.

University of Kentucky SRP Wins Research Impact Award

University of Kentucky (UK) SRP project leader Dawn Brewer and Director Bernhard Hennig received the Research/Extension Impact Award from the UK College of Agriculture, Food, and Environment during a September celebration event. The award recognizes programs that have effectively communicated and integrated research into public outreach efforts. Brewer and Hennig were selected for their work with the UK SRP Center Community Engagement Core.

Kay Awarded Second Place for Presentation at EMGS Annual Meeting

While a MIT SRP postdoctoral fellow, Jennifer Kay was awarded second place in the New Investigators category for her presentation at the Environmental Mutagenesis and Genomics Society (EMGS) Annual Meeting in September. Her presentation was titled "Evaluating DNA Repair Gene-Environment with Exposure to N-nitrosodimethylamine." Kay, who was mentored by MIT SRP Center Director Bevin Engelward, recently moved to a new position as a research scientist with Silent Spring Institute.

Kaminski Receives 2020 SOT Merit Award

Michigan State University SRP Center Director Norbert Kaminski received the 2020 Society of Toxicology (SOT) Merit Award. The

award honors outstanding toxicologists who have made highly influential contributions to the field throughout their career. Kaminski was recognized for his research in the areas of immunopharmacology and immunotoxicology and his service as a mentor to numerous scholars.

Small Business Grantee Wins Award in the Artisanal Mining Grand Challenge

James Jay, CEO of NIEHS-funded small business grantee Picoyune, recently won the Gold-level award in the Artisanal Mining Grand Challenge. Picoyune was recognized for applying their SRP-funded portable mercury monitor for artisanal scale gold mining.

FUNDING OPPORTUNITIES

NIH Applicant Assistant Program

NIH has initiated an Applicant Assistance Program (AAP) for current and future entrepreneurs developing innovative technology ideas who would like assistance in developing a competitive small business grant application to NIH. NIH is particularly interested in applications from socially/economically disadvantaged small businesses, women-owned small business, and small businesses located in under-represented states. Technologies must be aligned with topic areas of NIH Institutes/Centers, including NIEHS. The application process opens **November 12** and applications are due **December 10, 2020 at 5:00 p.m. ET.** through the AAP Application Portal.

An informational webinar will be held **November 12, 2:00 - 3:30 p.m. ET**. To register please see the webinar page. Note: this AAP cycle supports applications for the April 5, 2021 SBIR submission date.

NIEHS Releases Request for Applications for SRP Multiproject Center Grants

NIEHS released the latest request for applications for the SRP Multiproject Center Grants, RFA-ES-20-014. SRP Center grants will support problem-based, solution-oriented research centers that consist of multiple, integrated projects. Projects will represent both the biomedical and environmental science and engineering disciplines; as well as cores tasked with administrative (which includes research translation), data management and analysis, community engagement, research experience and training coordination, and research support functions. Letters of intent are due **January 15, 2021** and applications are due **February 15, 2021**. For more information, refer to the Multiproject Center Grant Funding Opportunities page. A recorded archive of the October 1 Funding Opportunities webinar is available.

NIH Opportunities to Support COVID-19 Research

Notice of Special Interest (NOSI): NIEHS Support for

Understanding the Impact of Environmental Exposures on COVID-19 for mission-relevant research to understand the impact of environmental exposures on COVID-19 and its causative agent, SARS-CoV-2. The next due date is **December 1**, with subsequent due dates at the beginning of each month until May 3, 2021.

Community Interventions to Address the Consequences of the COVID-19 Pandemic among Health Disparity and Vulnerable Populations (R01- Clinical Trial Optional) encourages research with NIH-designated health disparity populations and other vulnerable groups on community interventions to address the adverse effects of SARS-CoV-2 and COVID-19. Applications are due **December 1**.

MOSAIC K99/R00 Program

NIEHS has signed on to the Maximizing Opportunities for Scientific and Academic Independent Careers (MOSIAC) program announcement led by the National Institute of General Medical Sciences. This is a K99/R00 program for postdoctoral fellows and trainees from diverse backgrounds. The program is part of NIH's efforts to enhance diversity within the academic biomedical research workforce and is designed to facilitate the transition of promising postdoctoral researchers from diverse backgrounds. In addition to the K99/R00 award, MOSAIC scholars will be part of organized scientific cohorts and will be expected to participate in mentoring, networking, and professional development activities coordinated by MOSAIC Institutionally-Focused Research Education Award to Promote Diversity (UE5) grantees. Applications are due **February 12, 2021**.

Virtual Consortium for Translational/Transdisciplinary Environmental Research (ViCTER) (R01 Clinical Trial Optional)

The purpose of the updated ViCTER program is to foster and promote early-stage transdisciplinary collaborations and translational research efforts among fundamental, clinical, and population-based researchers in the environmental health field. The newly established collaborative teams will come together to investigate potential links between human health and one or more environmental stressors. The ViCTER program is intended to support innovative high-risk, high-reward cross-disciplinary and/or translational research projects that are more difficult to achieve in a typical R01 application. Collaboration among investigators at different institutions through a virtual consortium arrangement are encouraged. See the Funding Opportunity Announcement (RFA-ES-18-007) for more information or contact Heather Henry: heather.henry@nih.gov. Applications are due **December 1**.

Environmental Influences on Aging: Effects of Extreme Weather and Disaster Events

Two complementary funding opportunities aim to clarify the behavioral, biological, epigenetic, genetic, neurological, and

socioecological processes that affect the aging process:

- Effects of Extreme Weather and Disaster Events on Aging Processes (R01 Clinical Trial Not Allowed) supports research exploring the impacts of extreme weather and disaster events on the basic biology of aging. Applications are due **November 9**.
- Effects of Extreme Weather and Disaster Events on Aging Populations (R01 Clinical Trial Optional) supports research to advance our understanding of the impact of extreme weather and disaster events in aging human populations. Applications are due **November 9**.

The goal of these companion funding opportunities is to improve the health and well-being of older adults via increased knowledge about extreme weather and disaster preparedness, response, and recovery.

Research to Action: Assessing and Addressing Community Exposures to Environmental Contaminants (R01 Clinical Trial Optional)

This funding opportunity encourages multidisciplinary projects to investigate the potential health risks of environmental exposures of concern to a community and to implement an environmental public health action plan based on research findings. Projects supported under this program are expected to use community-engaged research methods to not only conduct research but also to translate research findings into public health action. The Research to Action program is part of the NIEHS Partnerships for Environmental Public Health network. Visit the Research to Action Currently Funded Grantees webpage for a sense of the types of projects supported through the program. Applications are due **December 4**.

Biomedical Knowledgebase (U24 – Clinical Trials Not Allowed)

The Biomedical Knowledgebase (U24 – Clinical Trials Not Allowed) funding opportunity supports biomedical knowledgebases with the primary function to extract, accumulate, organize, annotate, and link growing bodies of information related to core datasets. Support for data curation should include efficient and effective methods that scale to the needs of the community and include semi-automated methods. Support for software and tool development must be limited to that which provides essential functions or significantly increases the efficiency of operation of the knowledgebase. Applications that have a significant focus on software or tool development are not appropriate for this activity. The next application due date is **January 25, 2021.**

Biomedical Data Repository (U24 – Clinical Trials Not Allowed)

The Biomedical Data Repository (U24 – Clinical Trials Not Allowed) funding opportunity is designed to support biomedical

data repositories with the primary function to ingest, archive, preserve, manage, distribute, and make accessible the data related to a particular system or systems. Support for data curation must be limited to that which improves the efficiency and accessibility of data ingestion, management, and use and reuse by the user communities. Support for software and tool development must be limited to that which provides essential functions or significantly increases the efficiency of operation of the repository. Applications that have a significant focus on software and tool development are not appropriate for this activity. The next application due date is **January 25, 2021.**

INTERAGENCY NEWS

The National Academies of Sciences, Engineering and Medicine PFAS Workshop

The National Academies of Sciences, Engineering, and Medicine hosted a virtual workshop on October 26-27, 2020 titled Federal Government Human Health PFAS Research. The focus of the workshop was to address the state of ongoing research regarding human exposure to PFAS, experimental studies, and to identify research and data gaps. Several SRP researchers participated in the workshop, including Jamie Dewitt from the North Carolina State University SRP Center, David Savitz from the Brown University SRP Center, Laurel Schaider from the University of Rhode Island SRP Center, and Thomas Webster from Boston University SRP Center.

DATA SCIENCE AND DATA SHARING

CyVerse Fall 2020 Webinar Series

The CyVerse Fall 2020 webinar series started September 11 and will continue every other Friday through December 4. The webinars are run by data science experts and aim to help scientists use CyVerse's computational resources for their research goals.

In the next session, which will be held **November 20, 1:00 – 1:30 p.m. ET**, presenters will share insights on open source tools to process phenotypic data. To register please see the webinar page.

If you missed the previous sessions you can access the webinar archive on the Seminar Series YouTube Channel.

CyVerse is a platform maintained at the University of Arizona consisting of cyberinfrastructure tools designed to handle large datasets and complex analyses. Their mission is to provide tools to enable data-driven life sciences research. The platform is used by the University of Arizona SRP Data Management and Analysis Core, led by Aikseng Ooi and Nirav Merchant.

Learning materials and tools can be accessed through CyVerse Learning Center.

University of Iowa Shares PCB Dataset

SRP researchers at the University of Iowa recently published a study measuring 205 polychlorinated biphenyl (PCB) chemicals in 26 food items and shared the full data set including associated metadata in the University's Institutional Repository, Iowa Research Online. This publicly available dataset will be a good resource for anyone conducting a cumulative exposure analysis for PCBs.

Risks and Rewards of Reusing Publicly Available Datasets

A recently published article reviews the potential of reusing publicly available sequence datasets and the associated challenges, limitations, and risks. The authors provide specific examples of successful reuse of open source data from different disciplines to highlight how data reuse could benefit the scientific community.

New Study: Using Data Science to Predict the Health Impacts of Contaminants

A new study shows the potential of advanced data analytics and visualization to predict how chemical contaminants affect the human body. According to the authors, understanding these findings could help avoid undesirable health outcomes during environmental emergencies.

International FAIR Convergence Symposium

The International FAIR Convergence Symposium will now take place as a fully virtual event from **November 27 - December 4**. The International FAIR Convergence Symposium will provide a forum for advancing international and cross-domain convergence around FAIR. The event will bring together a global data community with an interest in combining data across domains for a host of research issues – including major global challenges, such as those relating to the Sustainable Development Goals or the COVID-19 pandemic. Outcomes will directly link to the CODATA Decadal Programme, "Data for the Planet: Making Data Work for Cross-Domain Grand Challenges," and the GO FAIR Initiative.

Participation is open to all researchers and data experts, particularly those with an interest in participating in the CODATA Decadal Programme and in the GO FAIR community.

SC20

The International Conference for High Performance Computing, Networking, Storage, and Analysis (SC20) will be a fully virtual conference held from **November 9 - 19**. The conference is designed to share best practices in areas such as algorithms, applications, architectures and networks, clouds and distributed computing, machine learning, system software, and state of the

practice in large-scale deployment and integration. It will also cover data analytics, visualization, and storage.

Computational Approaches for Cancer Workshop

The National Cancer Institute Center for Biomedical Informatics and Information Technology and SC20 have announced the Sixth Computational Approaches for Cancer Workshop. The workshop is designed to bring together clinicians, cancer biologists, mathematicians, data scientists, computational scientists, engineers, developers, thought leaders, and anyone else interested in advancing computation to use in cancer care and research.

A special emphasis for the workshop is the role of high-performance computing and artificial intelligence to address research challenges when data are limited by availability, variability, and size. The workshop will be held in conjunction with SC20 on **November 13**.

Research Data Alliance 16th Plenary Meeting

The 16th Plenary meeting of the Research Data Alliance (RDA) will take place **November 9-12**. With the theme "Knowledge Ecology," the event is co-organized by CONARE Costa Rica, RDA United States, and Research Data Canada. The virtual plenary meeting will provide attendees the opportunity to remotely attend plenary sessions, participate in multiple breakout sessions, attend poster sessions, and collaborate with attendees.

PHOTO OF THE MONTH

Scientist, Allyson Lutz, in the laboratory of SRP-funded small business Microvi Biotechnologies Inc, working to improve their water treatment technology. (Photo courtesy of Microvi Biotechnologies Inc.)