

## Meeting Reports

### **Superfund Research Program (SRP) Annual Meeting October 21-24, 2013 Raleigh North Carolina**

The SRP celebrated its 25<sup>th</sup> anniversary this year! To commemorate the milestone, the Program hosted an Anniversary Meeting where it showcased the Program's current contributions, and provided a forum to discuss future directions by identifying emerging technologies and their applications to understanding and mitigating the risks of hazardous waste sites.

SRP Director, Bill Suk and Linda Birnbaum opened the event. Welcome addresses were also delivered by Chris Portier, Director of ATSDR and Lisa Felt, Deputy Assistant Administrator OSWER/EPA and were reflective of the strong interagency relationship between the SRP, ATSDR and EPA. The Keynote Address, given by Philip Landrigan, of Mount Sinai focused on hazardous wastes and vulnerable populations. John Groopman, of Johns Hopkins, delivered a Special Presentation that discussed the emergence of chronic diseases in the global world and the future of public health. The final day of the meeting featured a special symposium, "Novel Interdisciplinary Approaches to Complex Exposures". This symposium featured several speakers who lead the field in characterizing and modeling exposures, and integration of complex exposures and response. The overarching theme of the 25<sup>th</sup> anniversary of the SRP Annual meeting was to highlight how the SRP advances transdisciplinary approaches to understand the disease-exposure paradigm and consider emerging areas of study. Four scientific sessions organized research presentations into these themes: interdisciplinary collaborations, risk assessment, and remediation, research to inform the community, and research on a global scale.

Nearly 350 researchers, trainees, and administrators from SRP Research Centers, Research Translation Cores and Community Engagement Cores participated in the event. The poster session capped off the first day, where over 125 SRP trainees presented their work – six of these were acknowledged with special awards in the biomedical and non-biomedical categories. Another SRP tradition is the Karen Wetterhahn Memorial Award, which Gwen Collman, the DERT Division Director presented to Nicki Baker, for her work at the University of Kentucky on the role of PCBs in glucose homeostasis. Following that Tim Philips, of Texas A&M University, introduced each of the three 2011 KC Donnelly Awardee Presentations (Celys Irizarry, University of Puerto Rico; Alvine Mehinto, University of Florida; and Xianai Wu, University of Iowa). Philips also recognized the 2012 KC Donnelly Awardees (Steven O'Connell, Oregon State University; Vanessa De La Rosa, University of California, Berkeley; and Sabine Vorrink, University of Iowa).

The importance that the SRP places on its trainees was prevalent throughout the meeting. As such, trainees delivered plenary research presentations, served as session chairs and participated in panel discussions. They also served on the steering committee and in many other aspects of meeting planning.

Ancillary groups also took this opportunity to meet. The SRP trainees had several special formal and informal gatherings to meet and network. EPA Superfund and Technology Liaisons met with SRP staff and SRP grantees to discuss how basic research can be translated and utilized in hazardous waste sites. The SRP Center Administrators held a full 2-day session where they had opportunities to meet with DERT staff members. The Research Translation and Community engagement Cores spent Wednesday afternoon in a special training session focused on communicating science with journalists.

This year's annual grantee meeting was successful in highlighting the success of the SRP Program as a function of its unique transdisciplinary approach to research. The meeting provided an opportunity for SRP grantees to recognize and appreciate the accomplishments made by the Program, to learn of each other's science, and to discuss future research opportunities to advance the goals of the SRP.

## **Special Symposium - Novel Interdisciplinary Approaches to Complex Exposures**

**October 24, 2012**

**Marriot City Center, Raleigh, NC**

### ***Introduction***

As part of the 25<sup>th</sup> Anniversary of the SRP Program Annual Meeting, a Special Symposium, "Novel Interdisciplinary Approaches to Complex Exposures" was designed to discuss emerging frontier exposure science and its relevance to both human and environmental health. The objective of the Symposium was to make comprehensive connections between environmental exposures and the biological pathways affected by these exposures, to improve human health and protect the environment. To address this objective, the day was divided into four scientific sessions: What is the Exposome, Novel Tools for Exposure Measurement, How are Complex Exposures Modeled and What Disease Outcomes/Burdens Result from Complex Exposures. Twelve speakers who represent the cutting edge of their respective fields gave presentations that included their insights towards establishing a new interdisciplinary framework to tackle the difficult questions related to the exposure-disease paradigm.

### ***Meeting Highlights***

One of the main messages of the day was the need to think of exposure as a multi-scale problem that considers all levels of biological organization, ranging from the ecological to the subcellular environment. This theme led to a discussion of the importance for the continued development and refinement of exposure measurement tools, capable of measuring exposures in the environment and at the point of contact in real space and time. Also emphasized was the critical need for development of unique biomarkers in biological samples that can measure and distinguish between initial exposures, to determine the extent of exposure, and the downstream effects (biological response), for use in diagnosis of disease. To understand the risks of exposure we need to be able to integrate all of these factors and exposure measurements across the levels of biological organization, in real space in time. Presenters also stressed that since exposures are multifactorial in nature, where they can interact with extrinsic and intrinsic factors including diet, infectious agents, stress and genetics, these factors must all be considered in order to make the appropriate connections between environmental exposures and disease.

Another important topic that emerged during the symposium involved the capacity and ability of being able to extract meaningful and appropriate connections between exposures and disease endpoints from the wealth of complex and multidimensional exposure data. Analytic approaches were discussed that included concerns of over-fitting data as a consequence of numerous variables that result from 'omics studies. The importance of cross-validation of data to ensure predicted models that result from high throughput *in vitro* testing was non-biased and translatable to *in vivo* studies was emphasized.

Computational approaches used for effective tackling of exposure science were also brought forth. Systems biology was discussed as a tractable computational method that can be used to help predict the biological response by an organism to a hazardous agent as it is based on the inclusion of the multitude

of interactions that naturally occur amongst all the systems in an entire organism. This technique could be useful towards developing a more informed understanding of the environmental repercussions of hazardous exposures and could aid in the development of more efficient remediation strategies.

### ***Recommendations/Outcomes***

As a result of this symposium, there was significant support for conducting exposome-type research to gain a more informed understanding of the contributions of environmental hazards to both human and environmental health. There was support for leveraging existing consortia and studies as an initial step towards implementing the exposome. It was agreed that development of exposure measurement tools and biomarker development is necessary for the identification of disease causing exposures (s) is required for disease etiology and prevention. Participants also recognized that vast amounts of data collected from exposure studies require appropriate data analysis and statistical rigor. Through bringing together all these experts during this Special Symposium the goal of gaining some understanding into the needs, limitations and the current state of exposure sciences that is necessary for exposome research as it relates to human and environmental health was accomplished.

### **Breast Cancer and the Environment Research Program (BCERP) 9<sup>th</sup> Annual Meeting on Extended Environmental Exposures San Francisco, California November 13 - 16, 2012**

The Breast Cancer and the Environment Research Program (BCERP) conducted its 9<sup>th</sup> Annual Meeting on Extended Environmental Exposures, November 13 - 16, 2012, in San Francisco. Drs. Les Reinlib, Caroline Dilworth, and Symma Finn, along with NCI colleagues, Drs. Gary Ellison and Neeraja Sathyamoorthy, were members of the organizing committees and oversaw the meeting activities, including the internal Business Meetings. Among their many duties at the meetings, Dr. Dilworth led discussions concerning the Puberty Epidemiological Study, Dr. Finn and Mr. Liam O'Fallon worked with Community Engagement and Communication / Community Partners (COTC/CP) teams, and Dr. Reinlib worked with the laboratory scientists and epidemiologists of the Windows of Susceptibility Program. Dr. Claudia Thompson provided thoughtful insights into NIEHS goals and potential strategies.

The Business Meetings of the approximately eighty BCERP members began with sub-committees sharing their latest findings, as well as discussing strategies for answering complex questions that span the lifetime spectrum Windows of Susceptibility that could potentially influence breast cancer risk. The Puberty Study (epidemiological investigation of female development) briefly considered potential steps for continuation of the study cohorts after the current phase of the program is complete. The COTC/CP considered the soon-to-be-released Communications Toolkit. At the Joint Session the BCERP teams were presented with an overview of the International Breast Cancer and Nutrition Program (IBCN) by Meghan McDonough. The IBCN is an emerging effort centered at Purdue University that is attempting to draw together researchers, study populations, and resources from around the globe to determine the potential influence of diet, lifestyle, and genomics on breast cancer risk. The IBCN would appear to have goals complementary to the BCERP in many ways. The Joint Discussions were initiated with brief, but stirring, updates from the Puberty Study as well as select data from epidemiological and laboratory - based studies in the BCERP Windows of Susceptibility Program. Dr. Reinlib then led members to explore optimal ways for cross-program collaborative studies. Such collaborations may be necessary to resolve some of the observations in the Puberty Study, as well as to provide guidance for animal model experimentation leading to insights on the environmental origins of breast cancer.

This year's Business Meeting also featured a set of communications workshops, "Distilling Your Message," facilitated by The Center for Communicating Science at Stony Brook University. The programs were designed to promote cross – disciplinary understanding and language skills as the basis for improved interactions and product design.

Dr. Reinlib made welcoming remarks at the Public Scientific Sessions – centered on the Windows of Susceptibility concept - that attracted over 200 scientists, trainees, and advocates, largely from the Bay Area. NIEHS Director, Dr. Linda Birnbaum, presented the Keynote Address including a rousing description of the new NIEHS Strategic Plan. Dr. Birnbaum also spoke informally with survivors and advocates at a well-received breakfast meeting. Another highlight of the Public Scientific Sessions was the discussion by Arlene Blum of the Green Science Policy Institute of her thirty year research program and crusade to promote evidence – based public policy towards flame retardants. Her speech was followed by California State Senator Mark Leno, who discussed his experiences in promoting consumer-friendly laws and in combating "junk science" in public policy. The overall feedback to date from participants indicates that the meeting was of an extremely high level of quality and relevance to breast cancer and the environment.

### **Extreme Weather, Climate, and Health: Putting Science into Practice**

**January 30-31, 2013**

**The Hubert H. Humphrey Building**

**Washington, D.C.**

Key to protecting public health in the face of climate change is building a community of researchers and public health practitioners who can analyze the complex data related to climate and health, translate the research findings for decision makers, and apply the information to improve public health outcomes. In a first step towards fostering such collaboration, the NIH and CDC recently held a joint grantee meeting to bring together both research and public health practitioners funded under our current climate change and human health programs to share latest advances and discuss strategies for linking science to practice. This momentous occasion marked the first time NIH and CDC have formally brought together our grantees working in this area. The overall goal of the meeting was to provide meeting participants with opportunities to learn from each other, identify and engage in dialogue around common issues, and build new relationships for future collaborations.

The meeting was structured around six panel sessions that began with several short presentations followed by a larger discussion with the entire audience. Panel session topics included: 1) Latest research advances, 2) How science can best aid public health planning and response, 3) Surveillance data and indicators for public health solutions, 4) Addressing vulnerable populations, 5) Critical partnerships and consortia, and 6) Translating science and practice for decision makers. While the majority of speakers represented projects currently funded by NIH or CDC, a number of outside speakers were also brought in to present on relevant topics such as environmental justice and communicating findings to decision-makers. Over 125 individuals attended the meeting, representing federal, state and local government agencies, academia institutions, NGOs, community groups and the media.

Several key themes emerged across the various panel sessions:

- A better understanding of the populations most vulnerable to health impacts of climate change remains a key priority for the research and practitioner communities.
- Research and public health practice communities both face data needs and challenges, although there may be some tension between the scope and quality of data required for research versus that needed for influencing decision-makers.
- The precise definition for extreme heat and heat waves remains controversial in that regional differences contribute to how these events are currently defined, there is not enough data to determine whether the definition can be generalized from region to region, and decision-makers seem reluctant to act on data unless it is generated locally.
- Significant gaps remain in our understanding of how to communicate climate-related health risk to vulnerable individuals as well as the behavioral and social factors that influence whether a particular intervention will be effective in a given population.
- Collaboration between researchers and practitioners as well as community involvement in research and/or public health adaptation efforts can help result in more effective public health planning and response.
- Future collaborative meetings should include not only health researchers and public health practitioners, but also members of the climate science community.

NIEHS and CDC are currently working on a meeting report that will summarize meeting presentations, discussions and key themes that emerged. An electronic meeting booklet, which includes project updates from all NIH and CDC grantees, and presentations slides from all of the speakers have been posted on the NIEHS website: [http://tools.niehs.nih.gov/conference/dert\\_climate\\_2012/index.cfm](http://tools.niehs.nih.gov/conference/dert_climate_2012/index.cfm).

### **Upcoming Meetings**

Upcoming Meeting: Environmental Health Sciences Core Centers Meeting  
Seattle, Washington  
April 17 - 20, 2013

The University of Washington Center for Ecogenetics and Environmental Health is hosting the annual NIEHS Environmental Health Sciences Core Centers meeting in 2013. The meeting brings together grantees from ~20 Centers around the country for 3 days of working sessions, science symposia, a public forum, and networking opportunities. It also provides an opportunity for NIEHS leadership and staff to interact face-to-face with center directors, administrators, and outreach professionals.

This year's meeting will also include the first face-to-face meeting of the newly convened, Working Group on Emerging Environmental Issues. The Working Group will finalize its discussions and recommendations concerning hydrofracking. The agenda also features a tour of the Duwamish River Superfund sites providing the opportunity learn more about the challenges facing Puget Sound.

The tentative agenda can be found at <http://depts.washington.edu/ceeh/ccmeeting-2013/agenda.html>.