

Monday Lunch Time Mentors

Northeast SRP Meeting 2018

Woods Hole, MA

- **Akram Alshawabkeh, PhD, PE**

Director, ROUTES; PI/Co-Director, PROTECT and CRECE

George A. Snell Professor of Engineering, Geotechnical and Geoenvironmental Engineering,
Civil and Environmental Engineering

Northeastern University



Akram Alshawabkeh is Director of the Northeastern University SRP (Protect Center). He received his PhD from Louisiana State University and is currently the George A. Snell Professor of Engineering, Civil and Environmental Engineering and Associate Dean for Research at Northeastern. Dr. Alshawabkeh's expertise is in geotechnical and geoenvironmental engineering, soil and groundwater remediation, electrokinetic and electrochemical processes, contaminant fate and transport, water resources, and environmental health. Dr. Alshawabkeh's recent research (PROTECT and CRECE Centers) studies exposure to environmental contamination in Puerto Rico and its contribution to preterm birth (less than 37 completed weeks of gestation) through transdisciplinary, integrated analytical, mechanistic, epidemiology, fate-transport, and remediation studies. He leads the remediation effort and is developing novel solar powered technologies for in situ remediation of contaminated groundwater by electrochemical manipulation of redox condition. He also works to understand mechanisms of fate and transport of chemicals in the environment, specifically in karst aquifers as well as development of models to predict contaminant movements and help understand exposure mechanisms in such systems.

- **Ian Blair, PhD**

A. N. Richards Professor and Vice-Chair of Systems Pharmacology, and Translational

Therapeutics, Director, Penn Superfund Research and Training Program

Perelman School of Medicine

University of Pennsylvania.



Dr. Blair conducted his thesis research in organic chemistry from 1968-1971 under the mentorship of Professor Sir Derek H.R. Barton at Imperial College of Science and Technology in London, UK. While conducting this research, Professor Barton was awarded the 1969 Nobel Prize in Chemistry for his work on conformational analysis. Dr. Blair has held positions at Makerere University in Kampala, Uganda, Adelaide University in South Australia, the Royal Postgraduate Medical School in London, UK, Vanderbilt University in Nashville, and the University of Kanazawa, Japan. He was appointed as the A.N. Richards Professor of Systems Pharmacology and Translational Therapeutics at the University of Pennsylvania in 1997 and Vice-Chair of the Department in 2002. He became Director of the NIEHS-funded Penn Superfund Research and Training Program Center in 2014. Dr. Blair is an expert in the use of mass spectrometric methods for the structural elucidation and quantification of drug metabolites as well endogenous biomolecules such as lipids, proteins, and DNA-adducts. His current research is involved with the development of serum biomarkers for asbestos exposure, mesothelioma and the rare disease Friedreich's ataxia.

- **Celia Chen, PhD**

Research Professor
Department of Biological Sciences
Dartmouth College



Celia Chen is a Project and Research Translation Core Leader of the Dartmouth SRP. She earned her PhD at Dartmouth College where she is now a professor of Biological Sciences. Dr. Chen is an ecotoxicologist whose research over the last 15 years has focused on the fate and effects of metal contaminants in aquatic food webs both in freshwater and estuarine ecosystems. She has studied the bioavailability and bioaccumulation of mercury and other metals (arsenic, cadmium, lead, zinc) in benthic and pelagic invertebrates and trophic transfer to fish. She has conducted metal bioavailability studies in the laboratory using freshwater and estuarine crustaceans and fish, and has also investigated metal bioaccumulation and trophic transfer in field studies in lakes and estuaries in the Northeast US. Her research questions focus on the environmental and ecological factors that influence metal uptake, including salinity, natural organic matter, feeding strategy, and food web structure.

- **Bongsup Cho, PhD**

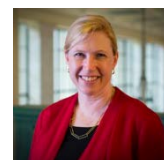
Coordinator INBRE and Professor
College of Pharmacy
University of Rhode Island



Bongsup Cho is the Leader of the Training Core at University of Rhode Island SRP. Dr. Cho received his Ph.D. in Medicinal Chemistry, University of Illinois Medical Center, and subsequently trained at the University of Chicago and the FDA's National Center for Toxicological Research (NCTR). The objective of Dr. Cho's research is to identify, characterize, and understand the structural and conformational aspects of the key molecular players that are involved in adverse outcomes such as adduct structures, polymerases, and repair proteins. His working hypothesis is that aromatic amine lesions exist in equilibrium of certain prototype conformations and that it is their relative population ratios that determine mutational and repair outcomes. To this end his laboratory has been mapping out lesion-induced conformational heterogeneity. They investigate the impact of sequence dependent heterogeneity not only on nucleotide excision repair and mutation, but also their affinities on repair and polymerase proteins. They employ various state-of-the-art spectroscopic, calorimetric, gel- and chip-based technologies to study adduct conformation. Such knowledge is essential for developing strategies for drug discovery, prevention and risk assessment. Dr. Cho is also passionate about using 3D printing and animation technology that would help facilitate students' learning of the molecular mechanisms of drug action.

- **Bevin Engelward, ScD**

Professor of Biological Engineering
Massachusetts Institute of Technology



Bevin Engelward is a Project and Training Core Leader in the MIT SRP. She received her ScD from Yale University and did graduate and postdoctoral training at the Harvard T.H. Chan School of Public Health. Dr. Engelward is currently Professor of Biological Engineering at MIT. Dr. Engelward's research includes studies of the causes of DNA sequence rearrangements based upon the creation of novel technologies for detecting rare sequence changes in vivo. In addition, her laboratory has created novel technology to measure DNA damage in vitro. The major objective of her work is to reveal the underlying mechanisms that drive genomic instability as a basis for contributing to improved global public health.

- **Mark Hahn, PhD**
Senior Scientist
Woods Hole Oceanographic Institution



Mark Hahn is a Project Leader in the Boston University SRP. Dr. Hahn received his PhD at the University of Rochester School of Medicine, and is currently a Senior Scientist at the Woods Hole Oceanographic Institution. The overall objective of research in the Hahn laboratory is to understand the mechanisms by which animals respond to natural toxins and anthropogenic chemicals and other stressors (hypoxia, oxidative stress) in their environment. The work focuses primarily on mechanisms involving intracellular proteins that act as stress-activated transcription factors. Specific interests include 1) mechanisms underlying species differences in sensitivity to chemicals, 2) how sensitivity to chemicals can change after long-term exposure at highly contaminated sites, 3) the evolutionary history of genes controlling chemical sensitivity, and 4) how early life exposure to chemicals can have lasting impacts into adulthood.

- **Robert Hurt, PhD**
Director, Brown Superfund Research Program
Brown University



Robert Hurt is Director of the Brown SRP. Dr. Hurt received his Ph.D. from M.I.T. and, before joining Brown, held positions in the Central Research and Development Division of Bayer AG in Leverkusen, Germany, and at Sandia National Laboratories in Livermore, California. He currently serves as Editor-in-Chief of the materials science and nanotechnology journal CARBON and is on the editorial board of Progress in Energy and Combustion Science. Dr. Hurt is PI on the GAANN training grant "Interdisciplinary Training in the Applications and Implications of Nanotechnology" and was the founding Director of Brown's Institute for Molecular and Nanoscale Innovation. Dr. Hurt's laboratory at Brown focuses on the creation of 3D nanomaterial architectures and new nano-enabled technologies. It also studies the potential adverse effects of emerging 2D nanomaterials on human health and the environment and works to identify safe design rules rooted in fundamental materials chemistry and physics that will enable their successful development and commercialization. The laboratory specializes in work on graphene-based materials, inorganic 2D materials, and metallic nanoparticles, and seeks to understand the complex problems that arise at the interface between synthetic nanomaterials and natural and living systems.

- **Aggie Kane, MD, PhD**
Professor, Department of Pathology and Laboratory Medicine
Brown University



Agnes B. Kane, M.D., Ph.D. is leader of one project and the training core within the Brown University SRP. Dr. Kane is Professor and in the Department of Pathology and Laboratory Medicine at Brown University where she pursues research on fiber toxicology and nanotoxicology with funding from the National Institute of Environmental Health Sciences, US EPA, and NSF. She has studied murine models of asbestos-induced disease and is currently investigating alternatives to animal models for toxicity testing in collaboration with Unilever, Inc. She has served as scientific advisor and invited participant in workshops on fiber toxicology and nanotechnology for NIOSH, US EPA, NAS, IOM, NTP, WHO, and ILO. She is the Director of the Training Program in Environmental Pathology at Brown University, now in its 26th year of funding from the National Institute of Environmental Health Sciences.

- **Rainer Lohmann, PhD**
Professor of Oceanography
Graduate School of Oceanography
University of Rhode Island



Rainer Lohmann is Director and Project leader of the University of Rhode Island SRP. He is a Professor of Oceanography in the Graduate School of Oceanography at URI. Dr. Lohmann received his PhD in Environmental Chemistry from Lancaster University (England). Dr. Lohmann studies organic geochemistry as well as fluxes and gradients of organic pollutants using passive samplers. As part of a NSF-funded project, his laboratory quantifies the importance of atmospheric deposition of black carbon relative to riverine discharges. In research funded by the Hudson River Foundation, they are interested how black carbon affects the bioavailability of organic pollutants in sediments. In the Passaic River – Newark Bay region they quantify the importance of sediments in releasing pollutants back the water and atmosphere and the biomagnification of legacy pollutants in the aquatic foodchain. Dr. Lohmann's laboratory also investigates food-chain dynamics of organic pollutants in the Antarctic, in a collaboration with VIMS. In this NSF-OPP funded project, they contrast the behavior of legacy organochlorine pollutants with emerging brominated flame retardants. In another NSF OPP-funded projects at the other pole, they study the transport and fate of 'old' PCBs and newer contaminants. As part of the URI 'STEEP' (Sources, Transport, Exposure and Effects of PFASs) SRP Center, Dr Lohmann's group works on testing different passive samplers for the presence and fluxes of PFASs in air, water and porewater.

- **Stefano Monti, MS, PhD**
Associate Professor of Medicine and Biostatistics
Department of Medicine
Boston University School of Medicine
Boston University Bioinformatics Program



Dr. Monti is the Leader of the Bioinformatics and Molecular Modeling Research Support Core in the Boston University SRP. He is also an Associate Professor of Medicine and Biostatistics in the Boston University School of Medicine. Dr. Monti received his Ph.D. in Intelligent Systems and Artificial Intelligence from the University of Pittsburgh, and completed his training with a post-doctoral fellowship at the Robotics Institute at Carnegie Mellon. His research centers on the development and application of computational approaches for the study of the molecular mechanisms of tumor initiation and progression and of the role played in it by environmental exposure, with the goals of advancing prevention and care. This multidisciplinary effort relies on the generation, analysis, and integration of high-throughput genomics data, and it is aimed at the identification of novel therapeutic targets and the development of diagnostic and prognostic markers.

- **Ana Navas-Acien, MD, MPH, PhD**
Professor, Environmental Health Sciences
Mailman School of Public Health, Columbia University



Ana Navas-Acien is a co-investigator on three projects of within the Columbia University SRP. Dr. Navas-Acien is a physician-epidemiologist with a specialty in Preventive Medicine and Public Health (Hospital La Paz, Madrid '01) and a PhD in Epidemiology (Johns Hopkins University '05). Her research investigates the long-term health effects of widespread environmental exposures (arsenic and other metals, tobacco smoke, e-cigarettes, air pollution), their interactions with genetic and epigenetic variants, and effective interventions for reducing involuntary environmental exposures. For more than 10 years she has been working on environment-related research in population-based cohort studies such as the Strong Heart Study, a study of cardiovascular disease and its risk factors in American Indian communities, and the Multi-Ethnic Study of Atherosclerosis (MESA), a study of cardiovascular, metabolic and lung disease in urban

settings across the US. Both in the US and internationally, she conducts research to evaluate exposure to tobacco smoke including emerging public health challenges such as waterpipe smoking and e-cigarettes. Her research goals are to contribute to the reduction of environmental health disparities in underserved and disproportionately exposed populations.

- **Trevor Penning, PhD**

Thelma Brown and Henry Charles Professor of Pharmacology
Professor of Biochemistry and Biophysics, OB/GYN
Perelman School of Medicine
University of Pennsylvania



Trevor Penning is the Leader of the Training Core within the University of Pennsylvania SRP. He received his PhD from Southampton University, UK and is currently The Thelma Brown and Henry Charles Professor of Pharmacology, and Professor of Biochemistry and Biophysics, and OB/GYN at the University of Pennsylvania Perelman School of Medicine. Dr. Penning is internationally recognized for his research on steroid hormone enzymology and mechanisms by which polycyclic aromatic hydrocarbons (PAHs) cause cancer. He has published more than 250 peer reviewed articles. He is a member of The Johns Hopkins Society of Scholars, a Fellow of the American Chemical Society, and recipient of the National Postdoctoral Association Distinguished Service Award. He is currently Senior Editor of Cancer Research in Population and Prevention Science.

- **Madeleine Scammell, DSc**

Associate Professor of Environmental Health
Boston University School of Public Health



Dr. Scammell is the Leader of the Community Engagement Core of the Boston University SRP. She is an Associate Professor of Environmental Health at Boston University School of Public Health and a JPB Environmental Health Fellow at Harvard School of Public Health. Dr. Scammell received her DSc in Environmental Health from the Boston University School of Public Health. Her expertise is in the area of community-driven and community-based participatory research and includes the use of qualitative methods in the area of environmental health and epidemiologic studies. Dr. Scammell is Principal Investigator a recently funded longitudinal study of agricultural workers in El Salvador (an NIEHS/NIH Outstanding New Environmental Scientist award), and a co-investigator on a study of occupational risk factors of kidney disease in both El Salvador and Nicaragua. These efforts are focused on identifying and preventing exposures that may contribute to the epidemic of chronic kidney disease in Central America known as Mesoamerican Nephropathy (MeN). She also leads a study examining health care claims and electronic medical records examining incidence, prevalence and risk factors of chronic kidney disease in the US. Additionally, Dr. Scammell leads the Community Engagement Cores of two research centers: The Boston University Superfund Research Center (funded by NIEHS/NIH), and the Center for Research on Social and Environmental Stressors in Housing across the Lifecourse (joint center between Boston University and Harvard-Chan School of Public Health funded by NIMHD/NIH and EPA). In this capacity her work includes developing mechanisms to support long-and short-term research relationships between community groups and scientists, and responding to community requests for scientific assistance.

- **Bruce Stanton, PhD**

Professor of Microbiology and Immunology, Andrew C. Vail Memorial Professorship
Director of the Lung Biology Center, Director of the Center for Environmental Health Sciences
Dartmouth College



Bruce Stanton is Director of the Dartmouth Superfund Program. He received his PhD from Yale University and is currently the Andrew C. Vail Professor of Microbiology and Immunology Geisel School of Medicine at Dartmouth. Dr. Stanton's scientific interests include the cellular and molecular mechanisms underlying genetic diseases and how environmental toxins, including arsenic, affect disease progression and outcome. His laboratory has shown that environmentally relevant levels of arsenic suppress the ability of the innate immune system to clear bacterial and viral lung infections. His laboratory utilizes a number of experimental approaches to study the toxic effects of arsenic, including RNASeq and advanced bioinformatics approaches. He is the Director of the Lung Biology Center Bioinformatics Core, and the Director of a one-week intensive course "Applied Bioinformatics", a hands-on course for advanced graduate students, post-doctoral trainees, and researchers at all levels interested in incorporating bioinformatics into their research (<https://mdibl.org/course/applied-bioinformatics-2018/>).

- **Kathleen Vandiver, MA, MEd, PhD**

Director, Community Outreach and Education Core
Center for Environmental Health Sciences
Massachusetts Institute of Technology



Kathleen M. Vandiver is the director of the Community Engagement Core for the Center for Environmental Health Sciences (CEHS) at MIT. Recently she became the Community Engagement Core leader for the Superfund Research Program (SRP) as well. Her formal training uniquely suits her for outreach and engagement activities working alongside university researchers: a PhD from the Tufts Medical School, (now the Sackler Graduate School of Biomedical Sciences) provides a strong human health background with lab bench research skills, and an Master's Degree from the Harvard Graduate School of Education provides professional training in the art of communicating science. This dual training path has been augmented by 16 years of community experience working with children and parents in the context of teaching middle school science at a public school. The MIT SRP and CEHS Centers serve both rural and urban environmental justice communities. The rural communities include five tribes in northern Maine. Closer to Boston, we assist communities living in Malden, Medford and Everett adjacent to the Malden River, an impaired waterway with an industrial legacy. Improving the public's understanding of the effect of the environment on human health is one of Vandiver's passions. She received a lifetime achievement award from Massachusetts Association for Science Teachers in 2011.