Global Environmental Health Day

September 15, 2017

Global Community Empowerment Through Community-Engaged Research
Global Community Empowerment
Through Community-Engaged Research (CEnR)

Friday, September 15, 2017 • 9:00 a.m. – 5:00 p.m.
NIEHS Building 101, Rodbell Auditorium

9:00 – 9:30 a.m. Opening Welcome: John Balbus, NIEHS
9:30 – 10:20 a.m. Keynote
Secretary Sujata Saunik, Principal Secretary, Department of Financial Reforms, Government of Maharashtra

10:20 – 11:10 a.m. Panel: Community-Engaged Research – Local and Global
Moderator – Claire Neal, Triangle Global Health Consortium
• Keith Martin, Consortium of Universities in Global Health
• Symma Finn, NIEHS
• Jim Herrington, University of North Carolina at Chapel Hill

11:10 – 11:30 a.m. Break

11:30 – 12:20 p.m. Panel: Citizen Science Around the Globe
Moderator – Liam O’Fallon, NIEHS
• Ronald Williams, Environmental Protection Agency
• Russanne Low, Institute for Global Environmental Strategies
• Gabriel Filippelli, Indiana University-Perdue University Indianapolis

12:20 – 1:30 p.m. Networking Lunch
1:30 – 2:30 p.m. Video Session: Highlighting CEnR and/or Citizen Science Projects
2:30 – 4:00 p.m. Poster and Voices From the Field Session
4:00 Closing
GEH Day 2017

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Bio Sketches

John M. Balbus, National Institute of Environmental Health Sciences
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John M. Balbus, M.D., M.P.H., is the Senior Advisor for Public Health to the Director of the National Institute of Environmental Health Sciences, where he directs the NIEHS-WHO Collaborating Centre for Environmental Health Sciences. He serves as HHS principal to the U.S. Global Change Research Program and also co-chairs working groups on Climate Change and Human Health for the US Global Change Research Program and for the National Institutes of Health. Balbus has served as a lead author on health for the past two US National Climate Assessments and a Review Editor for the 5th Assessment Report of the Intergovernmental Panel on Climate Change (IPCC). He is co-author of the HHS guide document “Primary Protection: Enhancing Health Care Resilience for a Changing Climate.” Before joining NIEHS, Dr. Balbus was Chief Health Scientist for the non-governmental organization Environmental Defense Fund for seven years. He was also on the faculty of The George Washington University Schools of Medicine and Public Health and Health Services, where he was founding Director of the Center for Risk Science and Public Health and Acting Chairman of the Department of Environmental and Occupational Health. Dr. Balbus received his A.B. degree in Biochemistry from Harvard University, his M.D. from the University of Pennsylvania, and his M.P.H. from the Johns Hopkins School of Public Health.

Gabriel Filippelli, Indiana University-Purdue University Indianapolis
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Dr. Gabriel Filippelli is a Professor of Earth Sciences and Directs the Center for Urban Health at Indiana University-Purdue University Indianapolis. His research is aimed at understanding how urban infrastructures impact environmental health, and resultant human exposures to beneficial and harmful environmental components. One research focus has been on characterizing distribution, transport, and exposure of lead and other heavy metals in urban environments, relying strongly on citizen-science and community-engaged research to both understand the science and to motivate community action on environmental health. He publishes widely in scientific journals and informal venues, and is the Editor-in-Chief of the AGU journal GeoHealth.

Symma Finn, National Institute of Environmental Health Sciences
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Symma Finn, PhD, has been a scientific research administrator since 1984 working in academia, for a rare genetic disease organization, and more recently, at the National Institutes of Health. She joined the NIEHS Division of Extramural Research and Training in December 2011 after
concluding an American Association for the Advancement of Science (AAAS) Policy Fellowship in the NIH Office of Science Policy/Office of Biotechnology Activities. Dr. Finn administers community-engaged and social scientific research and develops new areas of interest in communications and environmental health literacy. She serves as Program Director for the NIH-EPA Centers of Excellence for Health Disparities Research, oversees communications research, outreach and community dissemination activities for the Breast Cancer and the Environment Research Program, and is involved in the Partnerships for Environmental Public Health, and in other programs that deal with health disparities and the interplay between environmental and social stressors, environmental justice and bioethics. Dr. Finn serves as the NIEHS point of contact for Tribal research and serves on a number of related NIH and trans-federal committees and working groups related to Traditional Ecological Knowledge, environmental justice and social scientific research. She received her PhD in medical anthropology from the University of Florida in 2008 for her work on quantifying empowerment in a rare genetic disease community. She has a MA in environmental anthropology/marine science from the University of Miami for her work on the anthropological aspects of ecosystem management, and an undergraduate degree in communications from Adelphi University.

James (Jim) Herrington, University of North Carolina at Chapel Hill
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Dr. Herrington has over 30 years of experience in global public health. In December 2014, he was appointed Executive Director of the Gillings Global Gateway™ and Professor of the Practice in the Department of Health Behavior, Gillings School of Global Public Health, at the University of North Carolina at Chapel Hill. Prior to UNC, Dr. Herrington served for 10 years at the National Institutes of Health as the Director, Division of International Relations, Fogarty International Center, where he developed new and strategic partnerships between US scientists and researchers abroad to advance translational research and training in the biomedical and behavioral sciences. Previous to NIH, Dr. Herrington worked for the Centers for Disease Control and Prevention, the International Planned Parenthood Federation, and the University of North Carolina at Chapel Hill School of Medicine. Dr. Herrington’s career has focused primarily on Africa and the Caribbean, with long term assignments in Côte d’Ivoire, Haiti, Nigeria, and Senegal. Dr. Herrington holds a PhD in environmental health and epidemiology from Colorado State University, a MPH from the University of North Carolina at Chapel Hill, and a BS from Texas A&M University. His research interests include behavioral epidemiology, risk perceptions and health behavior, vector-borne and immunizable infectious diseases, malaria, falsified and substandard medicines, and the communication of science and technology. Dr. Herrington serves as an anonymous reviewer for the American Journal of Tropical Medicine and Hygiene, American Journal of Preventive Medicine, American Journal of Public Health, Health Behavior and Education, PLoS Medicine, PLoS ONE, and Science, and has authored several articles in
peer-reviewed journals. His secondary languages include French and Wolof. Dr. Herrington is from Oklahoma and a member of the Chickasaw Nation.

**Russanne (Rusty) Low, Institute for Global Environmental Strategies**  
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Rusty Low is Senior Earth Scientist for Education and Outreach at the Institute for Global Environmental Strategies, Arlington, Va., and PI of the Mosquito Challenge Community Campaign, a project associated with USAID’s Combatting Zika and Future Grand Threats Challenge. She serves on NASA’s GLOBE Observer (GO) development team creating the GO App that enables anyone, anywhere to participate in the collection, analysis and reporting of environmental data. Rusty is lead scientist for the GO Mosquito Habitat Mapper and is currently piloting the deployment and use of the app with school kids in 7 cities in Brazil and Peru.

**Keith Martin, Consortium of Universities for Global Health**  
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Dr. Martin is a physician who, since September 2012, has served as the founding Executive Director of the Consortium of Universities for Global Health (CUGH). Between 1993-2011, Dr. Martin served as a Member of Parliament in Canada’s House of Commons. Dr. Martin is based in Washington, DC, which is the home of CUGH’s Secretariat.

**Claire Neal, Triangle Global Health Consortium**  
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Claire Neal, DrPH is the executive director of the Triangle Global Health Consortium, a non-profit member organization representing some of the best and brightest in global health. Members include major pharmaceutical companies such as GlaxoSmithKline; leading global health development organizations including founding members RTI International, FHI360 and IntraHealth; and major academic institutions, such as Duke University, NC State University, and UNC Chapel Hill. Dr. Neal has over 15 years of experience in in the development and delivery of innovative health programs. For over a decade, she worked at the LIVESTRONG Foundation improving the lives of people with cancer. Most recently Dr. Neal was the Vice President of Global Strategy where she provided the leadership and vision for LIVESTRONG’s global work. She received her Doctor of Public Health (DrPH) at the UNC Gillings School of Global Public Health and her MPH from Tulane’s School of Public Health and Tropical Medicine. Dr. Neal also studied Primary Health Care Management at the ASEAN Institute of Health and Development in Thailand. She has a BA in Psychosocial Aspects of Health and Health Care Systems from Duke University. Claire served in the Peace Corps in Mali. She was selected as an Independent Sector American Express NGen Fellow in 2011.
Mr. O’Fallon joined the Division of Extramural Research and Training in 1999, he has been actively involved in research programs at the National Institute of Environmental Health Sciences that support community participation in research. O’Fallon leads the Partnerships for Environmental Public Health program at NIEHS, which fosters interactions among projects from different NIEHS-funded programs with a focus on community engagement and a commitment to public health action. He directs the Community Outreach and Engagement Cores that are a part of the network of Environmental Health Science Core Centers across the country, as well as the Community Outreach and Translation Cores that are a part of the Centers for Children’s Environmental Health Program. O’Fallon is particularly interested in communication research in the context of environmental public health and health disparities. He is also a member of the HHS Environmental Justice working group. Before coming to NIEHS, Mr. O’Fallon worked at the U.S. Department of Health and Human Services, in the Office of International and Refugee Health where he coordinated an interagency, binational working group addressing environmental health issues along the U.S.-Mexico Border. Mr. O’Fallon received his Master’s degree in Latin American Studies, specializing in medical anthropology and international health, from Tulane University in 1997. His research interests include communication research in the context of environmental public health and health disparities. O’Fallon wants to develop a better understanding of how environmental health messages are communicated and acted upon by the intended audience. His areas of specialty include: community-engaged research, environmental justice, environmental health disparities, environmental health literacy, and Partnerships for Environmental Public Health.

Ms. Sujata Saunik is the Principal Secretary to the Government of Maharashtra, heading the Department of Financial Reforms since December 3rd, 2016. As head of Financial Reforms in Maharashtra, she is highly involved in key strategic interests of the state such as determining monetary policy on state-sponsored guarantees, state fiscal health enhancement through buy-back/switching of government securities, and state risk management and minimizing debt exposure through adherence to Fiscal Responsibility and Budget Management Act (FRBM). She leads state projects on designing governing architectures and policy frameworks for effective, transparent and seamless disbursement of funds and tracking expenditures against department-specific outcome indicators, enabling higher fiscal efficacy. Her efforts directly impact the state’s income and the government’s ability to fund several key infrastructure and social sector projects across the state. She also monitors expenditures of various departments,
including overseeing their spend-reports, such as Agriculture, Irrigation, Industry, Energy, Finance etc. and decides on policy matters for fund raising through loans and bonds, managing assets and liabilities, and cases of funds, cash and investments of dissolved assets. In her past role with the Department of Health, Government of Maharashtra, she demonstrated exemplary skills as an able administrator with sensitivity to the public health issues more specific to adolescents, women and children from the deprived and excluded population. She initiated the special campaign on Right to women hood and Right to Mother-Hood through health networks and the media. It was followed by a special campaign on Child survival growth and development. Regular technical updating and discussions on the newer approaches to programming for adolescent, women and children has been part of the review resulting in the field functionaries and technical teams to provide the best quality services. Nutrition, especially the issue of stunting, is now at the core of the health agenda. The first ever comprehensive policy on Maternal and Infant and Young Child Nutrition is being led by the Public Health Department under her leadership. Her leadership led to the special initiative-Kayapalat-Transforming Primary Health care-reaching the last mile. Prior to this she served four years as Advisor and Joint Secretary, National Disaster Management Authority, Ministry of Home Affairs, Govt. of India handling a range of responsibilities- office administration of the authority including setting the agenda for high level meetings with the Prime Minister and Chairman of the Authority and the Advisory Board. Handled the training and international deployment and participation of the National Disaster Response Force (NDRF), including United Nations International Search and Rescue Group (INSAARAG) and Organization for the Prevention of Chemical Weapons (OPCW) exercises in Agra and Tunis. Subsequently moved to the Plan and Policy division in May 2011 and worked on the preparation of state and district disaster management plans, capacity building and training of key stakeholders She was on deputation to the United Nations mission in Kosovo from 2000-2005. Worked as Municipal Administrator of the second largest town in Kosovo-Prizren, heading an international team of officers from various countries to help in the reconstruction and rehabilitation efforts in this war-torn province of ex- Yugoslavia. During this assignment, implemented large number of projects for construction of housing and public infrastructure like schools, hospitals, water and sanitation works, markets and community buildings in two municipalities of Kosovo- Prizren and Obilic. She was also on deputation to the UN mission in Cambodia for one year from June, 1992 to July 1993 to help in voter registration and conduct of the first democratic elections in Cambodia [Kampuchea], South East Asia. Her experience in handling the hard core emergency both at National level and at international level brings in high level skill sets for responding with sensitivity and alertness to the Public Health programming in the state. Ms. Sujata Saunik belongs to the 1987 batch of Indian Administrative Service from Maharashtra cadre. She completed her early schooling, college and university from Chandigarh and was also awarded gold medal as she topped Punjab University in her Masters in History.
Ron Williams, U.S. Environmental Protection Agency
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Ron Williams is an Air Climate and Energy (ACE) Project Leader with the US Environmental Protection Agency’s Office of Research and Development. This work involves leading a team of chemists, engineers, exposure scientists, and other researchers in the area of advanced environmental monitoring techniques. Having more than 38 years of experience in conducting environmental research, he is a recognized expert in the area of human exposure monitoring and has been responsible for designing, executing and summarizing some of the US EPA’s largest human observational panel studies. His current research focuses on developing and evaluating emerging sensor technology and determining its applicability for meeting a wide variety of air quality monitoring needs.
Title: Climate Change and resulting floods: Using social capital to strengthen community resilience among Eastwick Philadelphia a known floodplain

Presenter: Natasha Bagwe, MD, Thomas Jefferson University; Physicians for Social Responsibility; Philadelphia PA

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Abstract: Climate change continues to exacerbate the frequency and intensity of natural disasters such as extreme weather events and the resulting flooding. Vulnerable and older communities are at greater risk, due to limited knowledge and access to resources about how to cope with such events. Persistent flooding from human induced climate change in Mid-Atlantic region will impact these 100 -year and possibly 500- year, storm events making them more intense and frequent than expected. The purpose of this study was to examine the ways to strengthen community resilience by building social capital: bonding, bridging and linkages to services at local, regional and national level. The Eastwick Disaster Impact Survey was administered to the low-income older African-American members living in Eastwick, Philadelphia to identify their attitudes, beliefs, and perceptions threats regarding the severity of flooding specific to their area. Additional questions were included in the survey to address the immediate barriers and gaps in emergency preparedness including utilizing the current resources like accessing floodplain maps, ability to interpret them or lack of training to evacuate immediately in moment of crisis by developing effective communication at all levels of the governance from local to federal through trust and reciprocity. These surveys provided a snap-shot of the current state of services available within this community, suggested community specific interventions by incorporating culturally competent evidence-based information to build more resilient communities. Confounding factors such as socioeconomic strata, employment and health comorbidities may have influenced the results of this study.
**POSTER #2 | Voices from the Field**

**Title:** Key Factors Affecting Children's Health India: Results from NFHS-4 study

**Voices from the Field Title:** What are Key Factors Affecting Children's Health in India?

**Presenter:** Dr. Sujit Ghosh, North Carolina State University, Raleigh

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**Abstract:** The National Family Health Survey (NFHS) is a large-scale, multi-round survey conducted primarily by the International Institute for Population Sciences (IIPS) based on representative state level sample of households throughout India. The most recent NFHS-4 provides district level information on several essential data on health and family welfare which can subsequently be used for policy and programme purposes by identifying emerging health and family welfare issues. In our study we use data from all 640 districts in India with the goal of identifying some of key factors affecting the children health. In particular, using multiple linear regression models, we explore the variability in proportions of stunting, wasting underweight, anaemia and diarrhoea in children (under the age of 5 years) across states. We also examined the associations of these health outcomes with a host of determinants of health which represent parental factors, household factors, child susceptibility status, morbidity status, access to care, and mortality. Among many other interesting findings, we have observed that the prevalence of underweight, stunting and wasting for children (under 5 years of age) have statistically significant negative association with percentage of children in the age group of 6-23 months receiving adequate diet, percentage of households with improved sanitation, literacy rate of women in the household and access to clean cooking fuel. For instance, a multiple linear regression model (with an adjusted R-square of 77%), suggests that adjusting for state level variations, if we were to keep other considered factors unchanged, just a 10% increase in children (aged 6-23 years) receiving adequate diet is likely to decrease the prevalence of underweight by 1.3% at district level. Similarly, another multiple regression model (with an adjusted R-square of almost 70%) indicates that an increase of 10% literacy rate in women is likely to decrease the prevalence of stunting by about 2.4%. Many other interesting and key findings are reported using charts and tables. It is imperative for the ministries and responsible departments to liaison, partner and take joint responsibility of transforming health outcomes for India. Based on some of the key factors identified in our study that adversely affect children’s health in India, policies are programmes to improve community level facilities are urgently required for swifter transition and transformation.
POSTER #3 | Voices from the Field

Title: A Capacity Building Approach for Community-Engaged Environmental Health Research: Best Practices from Latin America

Voices from the Field Title: Community-Based Solid Waste Management: Lessons from the Peru Trash Free Waters Program

Presenter: Natasha Sadoff, Battelle

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Abstract: Community-engaged research in global environmental health requires an approach balanced in contextual nuance, technical strength, and public or stakeholder participation. Battelle has been working at this complex nexus for over a decade, assisting governmental agencies around the world collaborate with local partners to build capacity for improved environmental health management and governance. For NASA, we worked closely with partners in El Salvador and Costa Rica to ensure that air quality management brought multiple stakeholders to the table, including universities, national government (including ministries of environment, health, transportation, economy, and others), and community groups. As a joint USAID- and NASA-funded opportunity, the program also allowed for the joining of unique, interdisciplinary perspectives in science and international development. For EPA, we worked with local non-profit organizations (NGOs), the private sector, local and national government, and international partners in Peru to identify pilot projects that could establish or improve more effective community-based solid waste management programs that incorporated women and the Afro-Peruvian community. The end result, a pilot project led by an NGO with ties to the Afro-Peruvian community, laid the foundations for improved coordination with USAID and marginalized populations going forward. These and other examples demonstrate the importance of multi-sectoral partnerships, grounded in local engagement, in addressing environmental health challenges in an equitable and sustainable way. In this poster and lightening talk, we will share best practices and lessons learned from these diverse experiences coordinating community engagement efforts that promote research that is reflective of local needs. Additionally, we will touch upon challenges faced in supporting a research model that emphasizes capacity building over more traditional technical assistance approach. The benefit of this approach is that while technical exchange is often a hand-off of information, a capacity building approach better identifies underlying community needs, engages partners and other key stakeholders, and maintains communication in pursuit of long-term, sustainable improvements in environmental health.
Title: The Utah PRISMS Ecosystem: An Infrastructure for Global Exposomic Research

Voices from the Field Title: The Utah PRISMS Ecosystem: An Infrastructure for Global Exposomic Research

Presenter: Ram Gouripeddi, University of Utah

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Other authors: Facelli, Julio, University of Utah, Sward, Katherine, University of Utah, for the Utah PRISMS Team, University of Utah

Abstract: Understanding effects of the modern environment on health requires generation of a complete picture of contributing environmental exposures and socio-economic factors. Such an exposome requires integration of data from wearable and stationary sensors, environmental monitors, physiology, medication use and other clinical data, person-reported and computational models. In addition, such an integration would need to have a high spatial-temporal resolution for correlating times and location of exposures to occurrences of conditions and their severities. This would require filling any gaps in the measured data with modeled data along with characterization of any uncertainties. The Utah PRISMS (Pediatric Research Using Integrated Sensor Monitoring Systems) Ecosystem is a comprehensive, standards-based, open-source informatics platform aligned with the goals of modern environmental health research supporting meaningful integration of sensor and biomedical data. The Utah PRISMS Ecosystem consists of: 1. Data acquisition pipeline: hardware and software tools, wireless networking, and protocols to support easy system deployment, robust sensor data collection in the study environment, and feedback to study participants. 2. Participant facing tools: collect and annotate various patient reported and activity data, as well as inform the participants on their current clinical and environmental status. 3. Computational modeling: Generate completed spatio-temporal data in the absence of measurements as well as for recognition of activity signatures from sensor measurements. 4. Central big data federation/integration platform: Standards-based, open-access infrastructure that integrates sensor data and computationally modeled data with biomedical information along with characterizing uncertainties associated with using these data. 5. Researcher facing platforms: Includes tools and processes for researchers undertaking exposomic studies for a variety of experimental designs. We envision this ecosystem to support different types of global environmental health studies covering a broad range of exposures. The platform supports integration of sensor measurements from community and government institutions (e.g. PurpleAir, OpenAQ, OpenStreetMaps), as well as provides tools for individuals in community to report on various activities. This platform will support performance of community-engaged global exposomic research both at population and personnel levels.
Title: Citizen Science in Chronic Kidney Disease Affected Regions in Rural Sri Lanka
Presenter: Nishad Jayasundara, School of Marine Sciences, University of Maine
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Abstract: Adverse health impacts of environmental pollution are particularly prevalent in economically disadvantaged regions with limited environmental regulations and enforcement. In these disease contexts, mitigation remains particularly challenging due to a number of factors including scarcity of resources for chemical composition analyses and limited engagement of affected communities. Chronic kidney disease of unknown etiology (CKDu) is an example of a globally relevant critical environmental health concern. In Sri Lanka, CKDu is a major epidemic affecting 15% of adults in the dry-zone (Anuradhapura and Pollonnaruwa districts) of the country. This disease is highly prevalent among rural farming communities and is attributed to the presence of heavy metals, pesticides, and certain minerals in water, amongst other risk factors. However, despite years of research efforts, precise factors underlying this disease remain unknown and it has become an emerging concern in several other regions of the country. In parallel to our ongoing research activities in this region through the Duke Global Health Institute, we have taken several steps to develop a citizen science movement in CKDu affected areas. For these efforts, we have established and partnered with THEME Institute, a local non-profit organization. The overall goal of the project is to empower rural Sri Lankan youth to generate a broader discussion on the impact of pollution on their local ecosystem and aquatic resources. More specifically, via a series of interactive sessions targeting 10th grade students in collaboration with the local schools, our project will impart skills to monitor water quality using simple test kits and conductivity meters, and will establish a low-cost network of solar-powered Raspberry Pi computers to record and share information. Through this we aim to 1) educate school children and by extension their families about CKDu and the role of environmental health in human disease contexts 2) develop a framework to provide regional and localized testing centers for water-quality measurements for the public 3) generate a long-term time-series dataset for water quality of lakes and drinking water wells in the affected regions.
Title: Black-White Disparities in Short Sleep Duration across Work Environments in the United States

Presenter: Symielle Gaston, PhD, MPH, Epidemiology Branch, National Institute of Environmental Health Sciences, National Institutes of Health, Department of Health and Human Services, Research Triangle Park, NC, USA

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Abstract: Suboptimal sleep, an essential human need that is influenced by modifiable social and environmental factors, is associated with increased morbidity like cardiometabolic dysfunction and premature mortality. Poor sleep is also associated with occupational injuries and loss of work-related productivity. In the United States, short sleep (<7 hours/day) has been shown to vary by occupation and industry of employment, but few studies have investigated potential racial/ethnic and socioeconomic disparities. By using nationally representative data of US adult short sleepers (n = 41,088) in the National Health Interview Survey from 2004 to 2011, we estimated prevalence ratios for short sleep in blacks compared with whites across employment industry categories. Participants’ mean age was 47 years; 50% were women and 13% were black. Blacks were more likely to report short sleep duration than whites (37% vs. 28%), and the black-white disparity was widest among those who held professional occupations. Adjusted short sleep duration was more prevalent in blacks than whites in six industry categories: finance/information/real estate (prevalence ratio (PR)=1.44; 95% confidence interval: 1.30, 1.59); professional/administrative/management (PR=1.30; 1.18, 1.44); educational services (PR=1.39; 1.25, 1.54); public administration/arts/other services (PR = 1.30; 1.21, 1.41); health care/social assistance (PR=1.23; 1.14, 1.32); and manufacturing/construction (PR=1.14; 1.07, 1.20). Short sleep generally increased with increasing professional responsibility within a given industry among blacks but decreased with increasing professional roles among whites. These novel findings have underscored the need to identify the social and environmental factors that contribute to these disparities, and we are in the process of employing a multidisciplinary, mixed methods approach to identify explanations from ethnically and geographically diverse communities in the United States. Several patterns/themes have emerged from among 46 focus group participants, to date. For instance, black participants’ sleep was affected by stress from race-based microaggressions that “goes on everywhere,” the “need to work twice as hard to get half as far,” and a “struggle to get the same opportunities.” White women reported gender-based discrimination. Our preliminary results underscore the need for research as solutions to disparities in the work-sleep relationship can be found in the affected communities.