

Gulf War and Health, Volume 11: Generational Health Effects of Serving in the Gulf War

Committee

Kenneth S. Ramos

Chair

Kenneth S. Ramos, M.D., Ph.D., PharmB. (NAM), is Associate Vice President for Precision Health Sciences, Interim Dean of the University of Arizona College of Medicine, Executive Director of the Center for Applied Genetics and Genomic Medicine, and Professor of Medicine at University of Arizona Health Sciences. Dr. Ramos is a leading expert in the study of the molecular mechanisms of environmental injury and genetic and epigenetic determinants of environmental disease. A major focus of his research is the study of mammalian retroelements and endogenous retroviral-like sequences and their role in human pathogenesis. He completed undergraduate studies in pharmaceutical sciences at the University of Puerto Rico, a Ph.D. degree in biochemical pharmacology at the University of Texas at Austin and undergraduate and graduate medical studies with a focus on internal medicine and pulmonary medicine at the University of Louisville. Dr. Ramos is the 2008-2009 president of the Society of Toxicology and has served on numerous National Academies committees including the committees responsible for the Veterans and Agent Orange: Update 1996 and Update 1998 reports, and chaired the 2016 Update report. He has also served as a member of the National Research Council's (NRC's) Committee on Application of Toxicogenomics Technologies to Predictive Toxicology, the Committee on Emerging Issues and Data on Environmental Contaminants, and the Committee on Application of Genomic Signatures: A Workshop. He is currently serving on the Roundtable on Public Interfaces of Life Sciences and is co-chair of the Committee on Sustainable Infrastructures for Public Communication of the Life Sciences: A Workshop. Dr. Ramos was designated Associate of the National Academy of Sciences in 2008 and elected to the National Academy of Medicine in 2015.

Tracy L. Bale

Member

Tracy L. Bale, Ph.D., is professor of neuroscience in psychiatry at the Perelman School of Medicine at the University of Pennsylvania. She also holds an appointment in the School of Veterinary Medicine at the university. Dr. Bale's research interests focus on developing mouse models of stress sensitivity related to neurodevelopmental and neuropsychiatric disease. Her laboratory uses genetic and prenatal manipulations to elucidate mechanisms contributing to disease predisposition. Her approaches include genetic mouse models for behavioral analyses including stress, anxiety, depression, and gene expression and epigenetic identification that range from fetal antecedents in programming of long-term disease risk to genetic targeting of cell type specific knockout mice. Dr. Bale's laboratory has initiated multiple lines of investigation that will provide insight into the timing and sex specificity of early life events promoting disease susceptibility, the maturation of central pathways during key periods of development, and the epigenetic mechanisms involved in long-term effects following stress exposure. Dr. Bale received her Ph.D. in pharmacology/neurobiology from the University of Washington, and completed her postdoctoral training at the Salk Institute in La Jolla, CA.

John R. Balmes

Member

John R. Balmes, M.D., is a professor of medicine in the division of occupational and environmental medicine at the University of California, San Francisco and also a professor of environmental health sciences at the University of California, Berkeley. Dr. Balmes studies the respiratory health effects of various air pollutants. He has a particular interest in occupational respiratory disease. He has investigated the acute effects of inhalation exposures to ambient air pollutants in his human exposure laboratory at San Francisco General Hospital and the chronic effects of such exposures in epidemiological studies with collaborators at the University of California, San Francisco and the University of California, Berkeley. Dr. Balmes also is investigating genetic determinants of responses to air pollutants and has been the Physician Member of the California Air Resources Board since 2008. He was a member of the IOM Committee on the Long-term Health Effects of Exposure to Burn Pits in Iraq and Afghanistan, and the Committee on the Review of the Department of Labor's Site Exposure Matrix (SEM) Database. Dr. Balmes received his M.D. from the Mount Sinai School of Medicine.

Brenda Eskenazi

Member

Brenda Eskenazi, Ph.D., is professor of epidemiology at the University of California at Berkeley School of Public Health. She is also director of the Children's Center for Environmental Health, and is chair of Community Health and Human Development. Her research interests are in the effects of environmental exposures (such as pesticides, lead, solvents, dioxin, and tobacco smoke) on reproductive, perinatal, and children's health, as well as the reproductive and development effects of environmental toxicants on fetal and child health and reproductive health in men and women, and reproductive and pediatric epidemiology. Dr. Eskenazi was a member of the IOM's Board on Children, Youth and Families, and served on the NRC Committee to Review California's Risk Assessment Process for Pesticides. She received her M.A. in psychology from Queens College and her Ph.D. in neuropsychology from the City University of New York.

Elaine M. Faustman

Member

Elaine M. Faustman, Ph.D., is Professor in Environmental and Occupational Health Sciences in the School of Public Health at the University of Washington. She is Director of the Institute for Risk Analysis and Risk Communication, the Center for Child Environmental Health Risks Research, and the Pacific Northwest Center for Human Health and Ocean Studies. Dr. Faustman is a developmental and reproductive toxicologist with an interest in biological monitoring and modeling. Her published research is on children's environmental health, in vitro toxicology, and the effect of pesticides, drugs, and food additives and contaminants on children's health. Her current research focuses on the neurodevelopmental toxicity of metals and pesticides, gene expression analyses as early biomarkers of effect, and mechanisms of methylmercury-induced developmental toxicity. Dr. Faustman was chair for the NAS report on Developmental Toxicology and has previously served as a member of the NRC's Committee on Toxicology and other NRC committees. She received her Ph.D. in toxicology from Michigan State University.

Mari Golub

Member

Mari Golub, Ph.D., is adjunct professor emerita with the Department of Environmental Toxicology at the University of California Davis. Her research focuses on developmental neurotoxicity with an emphasis on behavioral assessment of brain function. She uses mouse and non-human primates to study the influence of nutrition, drugs and chemicals on brain development. She also conducts risk assessments for the California Environmental Protection Agency. Dr. Golub recently retired from the California Office of Environmental Health Hazard Assessment at CalEPA where she performed risk assessments in the area of developmental and reproductive toxicology. She received her Ph.D. from the University of Michigan.

Rafael A. Irizarry

Member

Rafael A. Irizarry, Ph.D., is professor of biostatistics in the Department of Biostatistics and Computational Biology at the Dana Farber Cancer Institute at Harvard University. Dr. Irizarry's research interests focus on applied statistics, epigenetics, cancer genomics, and high-throughput technology. He was a member of the NRC Planning Committee on Training Students to Extract Value from Big Data: A Workshop. Dr. Irizarry received his Ph.D. in statistics from the University of California, Berkeley.

Tamarra James-Todd

Member

Tamarra James-Todd, Ph.D., M.P.H., is the Mark and Catherine Winkler Assistant Professor of Environmental Reproductive and Perinatal Epidemiology at Harvard T.H. Chan School of Public Health, Associate Epidemiologist at Brigham and Women's Hospital, and an Instructor in Medicine at Harvard Medical School. She is an epidemiologist with a research expertise in reproductive and developmental outcomes following exposure to environmental risk factors. She has conducted epidemiologic research on perinatal and reproductive health outcomes in Kuwait (the TRACER study) and has assessed the impact of environmental endocrine disruptors on women's reproductive outcomes. Dr. James-Todd has also examined the impact of in utero exposures and long-term chronic disease risk. She received her Ph.D. in epidemiology from Columbia University and M.P.H. in International Health from Boston University School of Public Health.

Stephen A. Krawetz

Member

Stephen A. Krawetz, Ph.D., is the Charlotte B. Failing Professor of Fetal Therapy and Diagnosis, Associate Director of the C.S. Mott Center for Human Growth and Development in the Department of Obstetrics and Gynecology and Center for Molecular Medicine and Genetics, Wayne State University School of Medicine, Detroit, Michigan. He is the founding Editor-in-Chief of Systems Biology in Reproductive Medicine. He received his Ph.D. in Biochemistry from the University of Toronto and then trained as an AHFMR postdoctoral fellow with Gordon Dixon at The University of Calgary. He has published over 200 manuscripts detailing the regulation of gene expression by chromatin structure emphasizing human spermatogenesis and its application to personalized medicine. Over the last two decades, his group established that the fitness of the paternal contribution reflects the relative diversity of sperm RNAs that continually responds to the environment. They showed that at fertilization the spermatozoon delivers a cadre of unique RNAs to the oocyte. These RNAs may provide an essential component to early paternal genome reprogramming acting as genetic and epigenetic impactors of the fetal onset of adult disease. They provide a personalized timestamp of the physical and reproductive health of Dad, providing the opportunity to develop a personalized blueprint promoting the birth and healthy life of his children.

Linda A. McCauley

Member

Linda A. McCauley, Ph.D., FAAN, RN (NAM), is professor and dean of Emory University's Nell Hodgson Woodruff School of Nursing. Dr. McCauley has special expertise in the design of epidemiological investigations of environmental hazards and is nationally recognized for her expertise in occupational and environmental health nursing. She is a national leader in the area of research on environmental exposures such as pesticide exposures among minority communities. Her work aims to identify culturally appropriate interventions to decrease the impact of environmental and occupational health hazards in vulnerable populations, including workers and young children. Dr. McCauley was previously the associate dean for Research and the Nightingale Professor in Nursing at the University of Pennsylvania School of Nursing. She received a bachelor of nursing degree from the University of North Carolina, a masters in nursing from Emory, and a doctorate degree in environmental health and epidemiology from the University of Cincinnati. She became a Member of the Institute of Medicine in 2008 (now the National Academy of Medicine) and has served on numerous NAM committees including for the Update 2006 and Update 2008 in the Veterans and Agent Orange series. She is currently a member of the National Academies Board on Population Health and Public Health Practice.

Jacob D. McDonald

Member

Jacob D. McDonald, Ph.D., is a Senior Scientist, and Vice President of Applied Sciences at Lovelace Respiratory Research Institute. He serves as Chief Science Officer for Lovelace Biomedical, the commercial services arm of Lovelace. Dr. McDonald's core expertise is in toxicology (emphasis in respiratory), analytical chemistry and risk assessment. Dr. McDonald previously served on the National Research Council's Committee to Review the Army's Enhanced Particulate Matter Surveillance Project Report and the IOM Committee on the Long-term Health Effects of Exposure to Burn Pits in Iraq and Afghanistan, and the Acute Exposure Guidelines Levels for Selected Chemicals. He earned a Ph.D. in environmental chemistry and toxicology from the University of Nevada.

Dylan Small

Member

Dylan Small, Ph.D., is professor in the department of statistics at the Wharton School at the University of Pennsylvania. His research interests include causal inference, the design and analysis of experiments and observational studies for comparing treatments, longitudinal data, measurement error, and applications of statistics to public health, medicine, and public policy. He is editor of the journal *Observational Studies*. Recently, he was a member of the NRC Panel on Research Methodologies and Statistical Approaches to Understanding Driver Fatigue Factors in Motor Carrier Safety and Driver Health. Dr. Small received his Ph.D. in statistics from Stanford University.

Jacquetta Trasler

Member

Jacquetta Trasler, M.D., Ph.D., is a James McGill Professor in Pediatrics, Human Genetics and Pharmacology and Therapeutics at McGill University and a Senior Scientist at the Research Institute of the McGill University Health Centre (RI-MUHC). Dr. Trasler has mentored a number of trainees and served as Director of Pediatric Research at the RI-MUHC (2008-2015) and the McGill University M.D./Ph.D. Program (1999-2007). Her research interests focus on epigenetics and the molecular and developmental regulation of gene expression in the germline and early embryo. More specifically she studies DNA methylation and genomic imprinting and the molecular and cellular targets for drug effects on germ cells and embryos. Ongoing studies include effects of drugs, diet (folate) and assisted reproductive technologies on the epigenome of germ cells and embryos and the implications for transgenerational passage of epigenetic defects.

Cheryl L. Walker

Member

Cheryl Lyn Walker, Ph.D., is Director of the Center for Precision Environmental Health at Baylor College of Medicine, where she holds the Alkek Presidential Chair and is a Professor in the Departments of Molecular & Cell Biology and Medicine. She also directs the NIEHS Center for Translational Environmental Health Research, and serves on the Board of Scientific Advisors for the National Cancer Institute. Dr. Walker is an international leader in environmental carcinogenesis and the elucidation of molecular mechanisms of disease. Her studies on the role of the epigenome in gene-environment interactions have yielded significant insights into mechanisms by which early life exposures influence health and disease across the life course. Her work has also led to the discovery of new tumor suppressor functions in the cell, and a dual role for the cell's epigenetic machinery in regulating both chromatin and the cytoskeleton. She has been recognized with the Dallas-Ft. Worth Living Legend Faculty Achievement Award in Basic Research from MD Anderson Cancer Center, the Cozarrelli Prize from the National Academy of Sciences, the 2015 Outstanding Distinguished Scientist Award from Sigma Xi and the 2016 Leading Edge in Basic Research Award from the Society of Toxicology. Dr. Walker is a fellow of the Academy of Toxicological Sciences and the AAAS, and in 2016 was elected to National Academy of Medicine. She is a past-President the Society of Toxicology, past-President of Women in Cancer Research of the AACR, and has participate on committee for the Institute of Medicine and National Research Council. Dr. Walker earned her Ph.D. in 1984 in Cell Biology from the University of Texas Southwestern Medical School, with additional post-doctoral training as a Staff Fellow at National Institute of Environmental Health Sciences.

Carol S. Wood

Member

Carol S. Wood, Ph.D., is a staff scientist in the Environmental Sciences Division of Oak Ridge National Laboratory. She has more than 2219 years of experience as a toxicologist with extensive work in risk assessment for inhalation/pulmonary effects and the oral toxicity of heavy metals and pesticides. She has worked on Acute Exposure Guideline Levels and Provisional Advisory Levels, in which health-based exposure levels are developed for priority toxic chemicals. These projects often use toxicokinetic data and physiologically-based pharmacokinetic models for extrapolation from animals to humans. She serves on the Board of Directors for the American Board of Toxicology. At the request of U.S. EPA, she wrote the guidance document “Standard Evaluation Procedure for Developmental Neurotoxicity Studies” and reviewed numerous submissions of testing and positive control neurotoxicity data. Her research experience and interests include models of developmental, reproductive, and neurotoxic outcomes from environmental contaminants. Dr. Wood has served on the IOM Committee on the Review of Clinical Guidance for the Care of Health Conditions Identified by the Camp Lejeune Legislation and the NRC Committee on Spacecraft Exposure Guidelines. She earned a Ph.D. in toxicology from Oregon State University in 1993 with emphasis in developmental and reproductive toxicology.

Robert O. Wright

Member

Robert O. Wright, M.D. M.P.H., is Professor of Environmental Medicine and Ethel H. Wise Chairman, Department of Environmental Medicine and Public Health, Mount Sinai School of Medicine at the Icahn School of Medicine at Mount Sinai. His research interests focus on effect modifiers of metal toxicity, including gene-environment interactions and the role of toxic stress in neurodevelopment and fetal growth. The role of epigenetic biomarkers in reproductive health is a particular interest. He founded the Programming Research in Obesity, Growth, Environment and Social Stressors in 2006 in Mexico City. Dr Wright is a Pediatrician with clinical fellowship training in Emergency Medicine and Medical Toxicology. He also completed research fellowships in Environmental Epidemiology and Genetic Epidemiology. He is the Director of the Lautenberg Laboratory for Environmental Health Sciences at Mount Sinai as well as the Mount Sinai CHEAR (Child Health Exposure Analysis Resource) lab hub. He has served as a member of the NRC Committee on Inorganic Arsenic and the Committee on the Superfund Site Assessment and Remediation in the Coeur d'Alene River Basin. Dr. Wright received his M.D. from the University of Michigan, completed his pediatrics residency at Northwestern University and received his M.P.H. in epidemiology and biostatistics from the Harvard School of Public Health.