



National Toxicology Program
U.S. Department of Health and Human Services

Shift Work at Night, Artificial Light at Night, and Circadian Disruption Workshop

Participant Biographies

David E. Blask, PhD, MD

Dr. David E. Blask is currently Professor of Structural & Cellular Biology, Tulane Univ. School of Medicine, where is also the Head of the Laboratory of Chrono-Neuroendocrine Oncology and Associate Director of the Tulane Center for Circadian Biology. He is also a member of the Tulane Cancer Center and the Louisiana Cancer Research Consortium.

Dr. Blask earned his BS degree at Utica College of Syracuse University. He earned a PhD in Anatomy/Neurophysiology from University of Rochester, School of Medicine, and his MD from the University of Texas Health Sciences Center at San Antonio Medical School. Dr. Nelson then completed a postdoctoral fellowship at the University of Texas Health Science Center at San Antonio Department of Anatomy.

For over 30 years, Dr. Blask's research has focused on the circadian control and therapeutics of cancer by melatonin as well as the consequences of the circadian disruption of melatonin production by light at night on cancer growth progression, signaling/metabolism and resistance to therapy. He has authored or co-authored over 300 publications including over 100 original, peer-reviewed journal articles and 70 invited book chapters, reviews and monographs. His research has been supported by funding from the National Cancer Institute, National Institute of Child Health and Human Development, National Institute of Environmental Health Sciences, National Center for Complementary and Alternative Medicine, The Edwin Pauley Foundation and the National Leiomyosarcoma Foundation. He currently serves on the editorial boards of the *Journal of Pineal Research* and *Integrative Cancer Therapies*, and he is a consultant for the photobiology group of the International Dark-Sky Association. Dr. Blask has also served as a member of the working group on shift work for the International Agency for Cancer Research of the World Health Organization. Blask's laboratory in collaboration with George C. Brainard, PhD and his group, were the first to discover and establish the nocturnal circadian melatonin signal as the first soluble circadian anti-cancer signal in human subjects. They also were the first to demonstrate that human exposure to polychromatic light at night induces circadian disruption/suppression of the melatonin signal that results in the stimulation of human cancer growth progression and metabolism. Blask has been the recipient of a number of awards recognizing his research accomplishments including, most recently, the prestigious Aaron B. Lerner (discoverer of melatonin) Pioneer Medal for Outstanding and Sustained Contributions to Melatonin Research. In recent years, his research on light at night and cancer has been featured in several documentary films including: 1) the award-winning and Emmy-nominated documentary film "*The City Dark*" which has been aired on the PBS documentary series P.O.V.; 2) "*Lights Out*" which has been aired on the CBC science documentary series "The Nature of Things" narrated by David Suzuki; and 3) "*Cancer and Human Evolution*" which was aired by the Japanese Broadcasting Corp. (NHK) in their award-winning NHK science series, "The Origin of Diseases 2."

Andrew Coogan, Ph.D.

Dr. Andrew N. Coogan is a professor in the Department of Psychology at the National University of Ireland, Maynooth. He is the director of the Chronobiology and Sleep Research Laboratory at Maynooth University, as well as being Head of the Department of Psychology at Maynooth.

Dr. Coogan earned his BA degree with Honors from Trinity College, Dublin, Ireland. He earned a PhD in Neuroscience from University College Dublin, Department of Physiology. He then completed a postdoctoral fellowship at the School of Biological Sciences, University of Manchester.

Dr. Coogan's particular research interest is in how circadian clocks influence health and wellbeing. In particular, work in the Coogan group focuses on circadian dysfunction (such as in shift work or in light-at-night exposure), inflammation and behavioural responses to such disruptions. His PhD work examined the links between the immune system and the processes thought to underpin memory formation. After completion of his PhD he was a post-doctoral research associate at the University of Manchester for five years prior to taking up a faculty position at the School of Medicine, Swansea University, where he spent another five years prior to joining Maynooth University in 2008. At Maynooth he teaches biological psychology, research methodology and statistics and advanced modules on sleep and circadian rhythms and comparative psychology on the undergraduate degree programme in psychology, as well as supervising undergraduate research projects and MSc/PhD research students. Dr. Coogan has published 51 peer-reviewed papers in neuroscience to date in international journals, is currently the Secretary of Neuroscience Ireland, and has been an invited speaker at a number of international conferences and symposia.

Mariana G. Figueiro, PhD

Dr. Mariana G. Figueiro is Light and Health Program Director at the Lighting Research Center (LRC) and Professor at Rensselaer Polytechnic Institute.

Dr. Figueiro earned her BS degree in Architecture and Urbanism from the Federal University of Minas Gerais, Brazil, her MS degree in lighting from Rensselaer Polytechnic Institute, and her PhD in Multidisciplinary Science from Rensselaer Polytechnic Institute.

Dr. Figueiro conducts research on the effect of light on human health, circadian photobiology, and lighting for older adults. Her master's and PhD dissertation research focused on the human circadian response to light. Figueiro is the recipient of the 2007 NYSTAR James D. Watson Award, the 2008 Office of Naval Research Young Investigator Award, and the 2010 Rensselaer James M. Tien '66 Early Career Award. In 2013 she was elected Fellow of the Illuminating Engineering Society. She is the author of more than 70 scientific articles in her field of research, along with the AARP-sponsored publication, *Lighting the Way: a Key to Independence*, which provides guidelines for the design of lighting to meet the needs of older adults. One of her papers was chosen for *Best of Sleep Medicine 2011: An Annual Collection of Scientific Literature*. Her research is regularly featured in national media including *The New York Times*, *The Wall Street Journal*, *Scientific American*, *The Economist*, and NPR.

Michael Gorman, PhD

Dr. Michael Gorman has been a Professor of Psychology at the University of California, San Diego since 1998. He currently serves on the executive board of the Center for Circadian Biology, an Organized Research Unit at UCSD.

Dr. Gorman earned his AB degree in Behavioral Science from the University of Chicago, his BA degree in Physiology and Psychology from Oxford University, and his PhD in Biological Psychology from the University of California, Berkeley. He then completed post-doctoral training in Biopsychology at the University of Michigan.

With funding from NSF, NIH and ONR, Dr. Gorman has investigated the formal and neural mechanisms by which rodent circadian systems adapt to simulated natural lighting environments (e.g., seasonal changes in photoperiod), to artificial conditions that may model jet-lag and shiftwork, and to exotic conditions with the potential to discover new modes of circadian flexibility. His research interests include the mechanisms by which seasonal physiology and behavior in rodents are regulated by pineal melatonin secretion; reprogramming of the circadian clock in Syrian hamsters by altered light:dark cycles; effects of dim nocturnal illumination on circadian clocks in rodents; and effects of alcohol on circadian clock processes. Dr. Gorman has published over 50 journal articles on these and related topics of research, primarily in animal models.

Janet E. Hall, MD

Dr. Janet Hall is a Senior Investigator at the National Institute of Environmental Health Sciences. She recently moved from Massachusetts General Hospital where she was Associate Chief of the Reproductive Endocrine Unit in the Department of Medicine and Professor of Medicine at Harvard Medical School. She retains a position as as Clinical Associate at Massachusetts General Hospital.

Dr. Hall earned her BA/BPE, MSc, and MD degrees at McMaster University.

Dr. Hall is an internationally known clinician and clinical investigator. She has shared her expertise in the management of reproductive endocrine disorders in women in numerous national and international courses and clinical publications. Her research has focused on the neuroendocrine control of reproduction and its disorders. Included in this work are studies of circadian and sleep-related dynamics that occur in normal reproductive aged women and studies of sleep during puberty and in adolescents. She has made unique contributions to our understanding of the neuroendocrine underpinnings of hypothalamic amenorrhea, PCOS and premature ovarian insufficiency, the genotype/phenotype relationships in women with congenital GnRH deficiency, and the hormonal changes that occur with menopause and aging and their effects on brain function. Dr. Hall was elected to the Association of American Physicians in recognition of her contributions to both the science and academics of medicine and is a recipient of the A. Clifford Barger Excellence in Mentoring Award from Harvard Medical School. She was an Associate Editor of the *Journal of Endocrinology and Metabolism* from 2000-2004 and 2009-2010, is currently Associate Editor for *Endocrine Reviews*, and is Past President of both Women in Endocrinology (2006-2008) and the Endocrine Society (2011-2012). She has published more than 100 original articles, as well as numerous proceedings of meetings, reviews, chapters, and editorials.

Johnni Hansen, PhD

Dr. Johnni Hansen is head of the research program on occupational cancer at the Institute of Cancer Epidemiology of the Danish Cancer Society in Copenhagen, Denmark.

Dr. Hansen earned his MSc degree in Pharmaceutical Sciences from Copenhagen University and his PhD degree in Occupational Epidemiology from the Danish Technical University. He then completed postdoctoral training in Cancer Epidemiology at the Institute of Cancer Epidemiology, Copenhagen.

Dr. Hansen has served as a PI or co-Investigator on several Danish, Nordic, EU and NIHES-funded grants. He has a broad background in epidemiology, including linkage of big data. Since 2000, he has been responsible for the occupational epidemiological research at the Danish Cancer Society, where his research focuses on environmental exposures in broad sense and risk of chronic diseases and includes in particular ALS, Parkinson's Disease and cancer. He has worked intensively for decades with register linkages based on unique nationwide information on individuals. He has successfully administered several research projects (e.g. staffing, research protections, budget), collaborated with other researchers, and produced several peer-reviewed publications from each project. Further, during the last 10 years he has been in the scientific committee of five international conferences, given over 150 invited talks, including over 50 internationally. His main interests during the last 15 years have been in studying night shiftwork, circadian rhythms, and in particular cancer risks. Dr. Hansen has published over 100 journal articles, including more than 20 on research related to cancer and either light or shiftwork.

Randy J. Nelson, PhD

Dr. Randy J. Nelson is Professor and Chair of the Department of Neuroscience at The Ohio State University Medical Center. He holds the Dr. John D. and E. Olive Brumbaugh Chair in Brain Research and Teaching and directs the OSU Neuroscience Research Institute, as well as the University Behavioral Phenotyping Core.

Dr. Nelson earned his AB degree at the University of California at Berkeley. He earned a PhD in Psychology in 1983, as well as a second PhD in Endocrinology in 1984 from Berkeley, the first to earn two PhDs simultaneously in the United States. Dr. Nelson then completed a postdoctoral fellowship at the University of Texas, Austin.

Dr. Nelson served on the faculty at Johns Hopkins from 1986-2000 when he moved to Ohio State. He has published > 400 scientific articles and several books describing studies in biological rhythms, behavioral neuroendocrinology, stress, immune function, and aggressive behavior. His work has been continuously funded since 1984. He has been elected to Fellow status in several scientific associations including the American Association for the Advancement of Science, American Psychological Association, Association for Psychological Science, and the Animal Behavior Society. Nelson has served on many federal grant panels and currently serves on the editorial boards of five scientific journals. Dr. Nelson currently serves as the associate editor for *Hormones and Behavior*, as well as the *Journal of Experimental Zoology A*. He was awarded the *Distinguished Scholar Award* at OSU in 2006, as well as the *University Distinguished Lecturer*, and the *OSU Alumni Award for Distinguished Teaching* in 2009. In 2012, he was appointed as the inaugural *Distinguished Professor of the College of Medicine*, and in 2013 the Board of Trustees conferred the title of *Distinguished University Professor* upon him.

Satchidananda (Satchin) Panda, PhD

Dr. Satchin Panda is an Associate Professor at the Salk Institute for Biological Studies in La Jolla, California.

Dr. Panda earned his BSc in Genetics at Orissa University of Agriculture and Technology, his MSc in Biotechnology at Tamilnadu Agricultural University, and his PhD in Molecular Biology at the Scripps Research Institute. He then completed postdoctoral research in Genomics and Neuroscience at the Genomics Institute of the Novartis Research Foundation.

Dr. Panda's research focuses on circadian biology with specific expertise and training in non-image forming (NIF) visual responses including photoentrainment of the circadian clock in mammals. His research interests include the genome-wide circadian gene response pattern with tissue-specific expression; the effect of ambient light to entrain the circadian clock in rodents and humans; the identification of key components of the circadian clock in plants, insects, and mammals; and the effect of eating pattern on diurnal gene expression. His team was one among the labs that discovered a dominant role of melanopsin in circadian photoentrainment. In the subsequent years, they have demonstrated the role of rod, cone, and melanopsin in clock entrainment, tested the molecular signaling pathway melanopsin uses, and developed tools and techniques to understand the cellular and molecular mechanisms of melanopsin function. They have also identified novel melanopsin antagonist – the first non-retinoid antagonist of any opsin protein, identified transcription factor necessary for mRGC function, identified ancestral melanopsin in fish and identified light-induced and circadian gene expression in the SCN, which subsequently led to the identification of mechanisms that coordinate cell-cell interaction and light signal input to the SCN in adapting the circadian clock to ambient lighting condition. Dr. Panda has published more than 60 scientific articles on research related to circadian biology. In 2014, he received the Julie Martin Mid-Career Award in Aging Research.

Michael H. Smolensky, Ph.D.

Dr. Michael H. Smolensky was Professor of Environmental Physiology, Division of Environmental and Occupational Health Sciences, The University of Texas-Houston School of Public Health, and currently Research Fellow, Foundation A. de Rothschild in Paris, France; Adjunct Professor of Biomedical Engineering, The University of Texas-Austin and at The University of Texas Health Science Center-Houston, Visiting Professor at the School of Nursing and Sleep Medicine Fellows Program Consultant at the School of Medicine.

Dr. Smolensky earned his BS degree in Zoology, his MS degree in physiology, and his PhD degree in Physiology from the University of Illinois. His training and expertise are multidisciplinary – chronobiology (biological rhythms) and environmental and medical sciences.

Dr. Smolensky is a leader in the field of clinical chronobiology. He founded and directed for 10 years the Memorial-Hermann Clinical Center for Chronobiology and Chronotherapeutics -- the first polyclinic to incorporate biological rhythm methods to diagnose and treat disease -- in association with The University of Texas School of Medicine-Houston. He co-founded and for 30 years co-edited *Chronobiology International*, and co-founded and now directs the American Association of Medical Chronobiology and Chronotherapeutics. He has organized numerous international conferences on medical chronobiology, chronopharmacology (biological rhythms and medications), and chronotherapeutics (optimizing medications by timing to biological rhythms).

Dr. Smolensky is the author or co-author of more than 350 scientific and clinical journal articles and book chapters, five books, and several continuing education monographs on medical chronobiology, chronopharmacology, chronotherapeutics, or environmental (air, water, and light pollution and shift work) health. He is co-author with Lynne Lamberg of the popular book, *The Body Clock Guide to Better Health*. His current research efforts are chronobiology and chronotherapy of hypertension, heart disease, pulmonary, and sleep disorders plus health concerns of shift work and artificial light at night. He has been consultant or advisor to pharmaceutical and biomedical instrumentation companies plus state and US Government agencies, including Agency for Healthcare Research and Quality, Food and Drug Administration, National Aeronautical Space Administration, and National Institutes of Health Sleep Disorders Research Advisory Board.

Richard G. Stevens, PhD

Dr. Richard G. Stevens is a professor in the Department of Community Medicine at the University of Connecticut Health Center, Farmington.

Dr. Stevens earned his BS degree in Genetics at the University of California, Berkeley and this PhD degree in Epidemiology at the University of Washington, Seattle.

Dr. Stevens identified the potential link between disruption of circadian rhythms by the use of electric lights over 25 years ago. Dr. Stevens has been working for a long time trying to help figure out why people get cancer. A perplexing challenge, which Stevens began to engage in the late 1970s, is the confounding mystery of why breast cancer risk rises so dramatically as societies industrialize. He proposed in 1987 a radical new theory that use of electric lighting, resulting in lighted nights, might produce "circadian disruption" causing changes in the hormones relevant to breast cancer risk. Accumulating evidence has generally supported the idea, and it has received wide scientific and public attention. For example, his work has been featured on the covers of the popular weekly Science News (October 17, 1998) and the scientific journal Cancer Research (July 15, 1996). He has published more than 15 papers on the epidemiology and genetic basis for the link between light at night and cancer in the last 5 years out of well over 100 papers.

Fred W. Turek, PhD

Dr. Fred W. Turek is Charles E. & Emma H. Morrison Professor of Biology, Northwestern University and Director, Center for Sleep & Circadian Biology.

Dr. Turek earned his BS degree in Biology and his PhD in Biological Sciences from Stanford University. He then completed a two-year postdoctoral fellowship at the University of Texas.

Research in the Turek laboratory is focused on the study of sleep and circadian rhythms, with special interest in identifying genes that regulate sleep and circadian rhythms. Ongoing work on sleep and circadian rhythms includes an investigation of: (1) the neurochemical, molecular, and cellular events involved in the entrainment, generation and expression of circadian rhythms arising from a central biological clock located in the suprachiasmatic nucleus (SCN) of the hypothalamus, (2) the genetics of the circadian clock system and the molecular genetic mechanisms underlying the sleep-wake cycle, (3) the feedback effects of the sleep-wake cycle on the circadian clock regulating the timing of that cycle, (4) the effects of advanced age on the expression of behavioral and endocrine rhythms, and on the expression of circadian clock genes, (5) the links between sleep, circadian rhythms and energy metabolism, (6) the role of melatonin in modulating sleep and circadian rhythms, (7) the role of disrupted circadian rhythms on peripheral and central disease/disorders, including Parkinson's Disease, and (8) the effects of stress, circadian dysregulation and sleep loss/fragmentation on the intestinal microbiota, including studies of twin men and mice on the International Space Station. Dr. Turek is the author of over 350 articles on sleep and circadian rhythms.

In addition to their work on rodents, the Turek laboratory has established extensive collaborations with clinical researchers. Studies in humans are aimed at shifting the human clock in an attempt to alleviate mental and physical problems that are associated with disorders in circadian timekeeping, particularly in the elderly and in shift-workers, including crews on towboats on inland waterways. In addition, the laboratory is using both pharmacological and non-pharmacological approaches to determine if we can reverse the effects of aging on the circadian clock system in both rodents and humans. Their sleep, circadian and metabolic studies are focused on how disruption in these interactions can lead to obesity, diabetes CVD, gastrointestinal and neurodegenerative disorders.

Roel Vermeulen, PhD

Dr. Roel Vermeulen is an Associate Professor Environmental Epidemiology Division of the Institute for Risk Assessment Sciences at Utrecht University in the Netherlands, and Adjunct Professor in molecular epidemiology at the University Medical Centre at the same university.

Dr. Vermeulen earned his Master's degree in Environmental Sciences with majors in occupational and environmental health, epidemiology, and occupational hygiene at Wageningen Agricultural University and his Doctorate from Utrecht University.

Dr. Vermeulen's research focuses on occupational and environmental risk factors for cancer, asthma and neurological diseases. He uses novel molecular and statistical approaches to assist in exposure assessment for epidemiological research and risk assessment. He has an extensive international portfolio of research projects in the field of chemical exposures in the workplace. He is currently involved in studies on the health effect of asbestos, benzene, diesel, dioxins, electromagnetic fields, formaldehyde, nanomaterials, PAHs, PCBs, pesticides, perfluorinated compounds and trichloroethylene. Dr. Vermeulen is a member of the Dutch Health Council, has served on multiple international committees and editorial boards, is an Associate Editor of the *Annals of Occupational Hygiene* and *Frontiers in Cancer Epidemiology and Prevention*, consults for national and international funding organization and scientific projects, and lectured at multiple national and international scientific meetings. He is currently participating as a co-investigator in the Nightingale study (<http://www.nightingale-studie.nl/>), a prospective cohort study on shift work and breast cancer risk among nurses. He has also served as a member of the IARC Working Group on Shiftwork in 2009. He has co-authored over 225 peer-reviewed papers.