

UNIVERSITY OF PENNSYLVANIA – PERELMAN SCHOOL OF MEDICINE  
Curriculum Vitae

Date 2 October 2016

**David F. Dinges, Ph.D.**

Office Address: Director, Unit for Experimental Psychiatry  
Chief, Division of Sleep and Chronobiology  
Vice Chair for Faculty Affairs and Professional Development  
Department of Psychiatry  
University of Pennsylvania School of Medicine  
1013 Blockley Hall  
423 Guardian Drive  
Philadelphia, PA 19104-6021  
e-mail: [dinges@mail.med.upenn.edu](mailto:dinges@mail.med.upenn.edu)

Education:  
1993 M.A. University of Pennsylvania (Honorary)  
1974-76 Ph.D. Saint Louis University (Physiological Psychology)  
1972-75 Central Institute for the Deaf at Washington University in Saint Louis  
1971-74 M.S. Saint Louis University (Physiological Psychology)  
1967-71 A.B. Benedictine College, Honors (Psychology)

Postgraduate Training and Fellowship Appointments:  
1977-79 Postdoctoral Fellow, Unit for Experimental Psychiatry, The Institute of Pennsylvania Hospital and University of Pennsylvania, Philadelphia, PA  
1975-77 Research Psychologist, Neurology and Human Development, The Children's Hospital National Medical Center and The George Washington University Medical School, Washington, DC

Military Service: None

Faculty Appointments:  
1998- Professor of Psychology in Psychiatry (tenure), University of Pennsylvania School of Medicine.  
1993-98 Associate Professor of Psychology in Psychiatry (tenure), University of Pennsylvania School of Medicine.  
1986-93 Clinical Associate Professor of Psychology, Department of Psychiatry, University of Pennsylvania School of Medicine  
1980-86 Clinical Assistant Professor of Psychology, Department of Psychiatry, University of Pennsylvania School of Medicine  
1977-80 Instructor of Psychology, Department of Psychiatry, University of Pennsylvania School of Medicine  
1975-77 Research Instructor, Department of Child Health and Development, The George Washington University School of Medicine  
1975-77 Assistant Professorial Lecturer, Department of Psychology, The George Washington University  
1999- Adjunct Professor, School of Biomedical Engineering, Science and Health Systems, Drexel University

University, School of Medicine, Hospital, Institute, Center, Department Administrative Appointments:

- 2016-17 Member, Committee to Review the Department of Pathology and Laboratory Medicine, University of Pennsylvania Perelman School of Medicine
- 2010- Vice Chair for Faculty Affairs and Professional Development, Department of Psychiatry, University of Pennsylvania Perelman School of Medicine
- 2006-14 Chair, Translation Research Center (TRC) Advisory Committee, Hospital of the University of Pennsylvania School of Medicine
- 2006-14 Member, Budget Subcommittee, Clinical Translation Research Center (CTRC), Hospital of the University of Pennsylvania School of Medicine
- 2002- Member and Senior Vice Chair (2014), Committee on Appointments and Promotions, University of Pennsylvania Perelman School of Medicine
- 2002-06 Chair, General Clinical Research Center Advisory Committee, Hospital of the University of Pennsylvania.
- 1996- Chief, Division of Sleep and Chronobiology, Department of Psychiatry, University of Pennsylvania School of Medicine.
- 1996-97 Acting Chairman, Center for Neurobiology and Behavior Steering Committee, Department of Psychiatry.
- 1995- Associate Director, Center for Sleep and Circadian Neurobiology, University of Pennsylvania School of Medicine.
- 1995- Director, Unit for Experimental Psychiatry, University of Pennsylvania School of Medicine.
- 1992- 97 Associate Director, SCOR in Cardiopulmonary Disorders during Sleep, University of Pennsylvania School of Medicine.
- 1991-05 Executive Board, Center for Sleep and Circadian Neurobiology, University of Pennsylvania School of Medicine.
- 1987-90 Executive Board, Eleanor Dana Center for Clinical Sleep Research, University of Pennsylvania School of Medicine.
- 1982-95 Co-Director, Unit for Experimental Psychiatry, The Institute of Pennsylvania Hospital and University of Pennsylvania School of Medicine.

PENN Institutes, Centers, Graduate Groups:

- 2011- Senior Fellow, Center for Health Behavior Research
- 2009- Core Member, Penn Genomics Frontiers Institute
- 2009- Member, Penn Comprehensive Neuroscience Center
- 2008- Affiliated Member, Center for Cognitive Neuroscience
- 2007- Member, Center for Functional Neuroimaging
- 2006- Member, Institute for Translational Medicine and Therapeutics
- 1996- Faculty Member, Biological Basis of Behavior Program
- 1995- Member, Graduate Group, Department of Psychology
- 1991- Associate Director and Member, Center for Sleep and Respiratory Neurobiology
- 1988- Member, David Mahoney Institute of Neurological Sciences

Academic Committees at the University of Pennsylvania and Affiliated Hospitals:

- 2016-17 Member, Leadership Transition Team, Department of Psychiatry, University of Pennsylvania Perelman School of Medicine
- 2014- Senior Vice Chair, Committee on Appointments and Promotions (PSOM COAP), University of Pennsylvania Perelman School of Medicine
- 2006-14 Member, Budget Subcommittee, Clinical Translation Research Center (CTRC), Hospital of the University of Pennsylvania School of Medicine

- 2006-11 Chair, Translation Research Center (TRC) Advisory Committee, Hospital of the University of Pennsylvania School of Medicine
- 2006-09 Chair, Special Research Investigation Committee, Office of Research Compliance and Integrity, University of Pennsylvania School of Medicine
- 2005-06 Member, Committee to Review the Department of Neuroscience
- 2005-06 Manager, ASYSIR Publication Conflict, Department of Psychiatry, University of Pennsylvania School of Medicine
- 2002-06 Chair, Advisory Committee, General Clinical Research Center, University of Pennsylvania School of Medicine
- 2002-06 Member, Committee on Appointments and Promotions (PSOM COAP), University of Pennsylvania School of Medicine
- 2002-04 Task Force, Stellar Program in Neuroscience and Society, University of Pennsylvania
- 2001-06 Member, Faculty Advisor Committee, Office of Human Research, University of Pennsylvania School of Medicine
- 1999-00 Member, Faculty Committee to Review Tenure Track, School of Medicine
- 1999-02 Member, Advisory Committee, General Clinical Research Center, School of Medicine, University of Pennsylvania
- 1998-03 Member, Dean's Academic Review Committee, University of Pennsylvania School of Medicine
- 1997-98 Member, Committee to Review the Department of Neuroscience
- 1996-98 Chair, Department of Defense (DOD) Consortium Initiative for the Provost, University of Pennsylvania
- 1996-97 Member, Medical School Evaluation Committee, Educational Data Base
- 1995-00 Member, Advisory Committee of The Mahoney Institute of Neurological Sciences
- 1995-98 Member, Research Committee Department of Psychiatry
- 1993-95 Member, Task Force on Clinical Neuroscience Track, Department of Psychiatry
- 1992-95 Member, Psychiatry Department Faculty Forum Steering Committee
- 1991-92 Member, Committee for Tools and Techniques for Future Research
- 1988-91 Member, Continuing Education Committee, Department of Psychiatry
- 1988-89 Chair, Chronobiology Task Force, Department of Psychiatry
- 1986-88 Member, Clinical Neuropsychiatric Diagnostic Unit Implementation Committee, Department of Psychiatry
- 1985-92 Member, Research Committee, Department of Psychiatry
- 1984-86 Member, Computer Committee, Department of Psychiatry

Specialty Certification: None

Licensure: None

**Awards, Honors and Membership in Honorary Societies:**

- 2016 *Pioneer Award*, National Space Biomedical Research Institute (NSBRI)
- 2000-17 *Scientific Team Leader*, Neurobehavioral and Psychosocial Factors, National Space Biomedical Research Institute (NSBRI)
- 2015 *Distinguished Service Award* for Editorship of SLEEP, American Academy of Sleep Medicine and the Sleep Research Society.

- 2015 ***NASA Group Achievement Award***, Report on Sex and Gender
- 2013 ***Overseas Fellow***, International Association of Traffic and Safety Sciences
- 2010 ***Elected Member***, International Academy of Astronautics
- 2010 ***Elected Member***, John Morgan Society, University of Pennsylvania
- 2009 ***Raymond F. Longacre Award***, for Outstanding Accomplishment in the Psychological and Psychiatric Aspects of Aerospace Medicine, Aerospace Medical Association
- 2009 ***Mary A. Carskadon Outstanding Educator Award***, (U.S.) Sleep Research Society
- 2009 ***Member***, Center for Space Medicine, Baylor College of Medicine
- 2008 ***Laurence R. Young Space Biomedical Research Award***, for Contributions to Human Performance in Space
- 2007 ***NASA Distinguished Public Service Medal*** (“highest honor NASA awards to a non-Government employee; granted to individuals whose distinguished accomplishments contributed substantially to the NASA mission”)
- 2007 ***1<sup>st</sup> Place Computational Modeling Prize*** for “Understanding Decrements in Knowledge Access Resulting from Increased Fatigue,” The Cognitive Science Society
- 2006 ***Award for Distinguished Scientific Contributions by Alumnae***, Department of Psychology, Saint Louis University
- 2004 ***First Decade of Behavior Research Award***, American Psychological Association
- 2004 39<sup>th</sup> Annual Armstrong Lecture, Aerospace Medical Association
- 2004 ***William C. Dement Academic Achievement Award***, American Academy of Sleep Medicine
- 2003 ***William E. Collins Award***, Aerospace Human Factors Association
- 2001 ***Senator Mark O. Hatfield Public Policy Award***, American Academy of Sleep Medicine
- 2000 ***Professor of the Year***, Biological Basis of Behavior Society, University of Pennsylvania
- 2000 ***NASA TIGR Aviation Safety Award***, Fatigue Countermeasures Project Team
- 1999 ***Dean’s Award for Excellence in Basic Science Teaching***, University of Pennsylvania School of Medicine
- 1996 ***Excellence in Teaching Award***, Class of 1999 School of Medicine, University of Pennsylvania
- 1996 ***Honorary Medal***, Swedish Physicians Society
- 1993 ***NASA Group Achievement Award***, Fatigue Countermeasures Group for providing excellent scientific products that enhance aviation safety
- 1992 ***NASA Ames Honor Award***, Fatigue Countermeasures Group
- 1990 ***Sealy Prize for Sleep Research***, Sealy Research and Development Center
- 1985 ***The Roy M. Dorcus Award***, Society for Clinical and Experimental Hypnosis

1984 *Nathan Lewis Hatfield Lecture Award*, The College of Physicians of Philadelphia

**Memberships and Leadership in Professional and Scientific Societies:**

**International Organizations:**

International Society for Chronobiology (Member)  
 International Society for NeuroImmunoModulation (Member)  
 International Commission on Illumination (Member, Div. 6 Photobiology)  
***President, World Sleep Federation (2003-2007; Past President 2008-2011)***

**National Organizations:**

***Academy of Behavioral Medicine Research (Fellow)***  
 Aerospace Medical Association (Member)  
 (Member, Life Sciences and Biomedical Engineering Branch)  
 American Academy of Sleep Medicine  
 (Chair, Government Affairs & Public Policy Committee, 1990-92)  
***(Member, Board of Directors, 1994-96)***  
 (Member, Strategic Planning Group, 2000-02)  
 (Member, American Sleep Medicine Foundation, 2001-03)  
 (Chair, Resident Work Hours Task Force, 2006-07)  
 American Academy of Dental Sleep Medicine (Honorary Member Award)  
 American Association for the Advancement of Science (Member)  
***American Physiological Society (Fellow)***  
***American Psychological Association (Fellow), Division of Behavioral Neuroscience***  
 American Sleep Apnea Association  
***Association for Psychological Science (Fellow)***  
 Associated Professional Sleep Societies  
 (Member, Committee on Catastrophes, Sleep & Public Policy, 1986)  
 (Member, Governmental Affairs & Public Policy Committee, 1986-89)  
 (Member, Scientific Program Committee, 1996-00)  
 (Member, Joint Operations Committee, 2000-03)  
 European Sleep Research Society (Member)  
 Human Factors and Ergonomics Society (Member)  
 National Sleep Foundation  
***(Member, Board of Directors, 1990-95)***  
***(Chair, Government Affairs & Public Policy, 1993-95)***  
 Neuroethics Society (Member)  
 New York Academy of Sciences (Member)  
 Psychonomic Society (Member)  
 Sleep Research Society (USA)  
***(Member-at-large, Executive Board, 1987-90)***  
 (Member, Nominations Committee, 1989-91)  
 (Member, Ad Hoc Committee on Sleep Leadership, 1990-92)  
 (Member, Executive Committee of Board of Directors, 1996-99)  
 (Head, Sleep and Behavior Section, 1995-99)  
***(President-Elect, 2000-01)***  
***(President, 2001-02)***  
***(Past-President, 2002-03)***  
 (Member, Research Committee, 2003-04)

(Awards Committee, 2010-2012)  
 (Government Affairs Committee, 2010- )  
 Society for Clinical and Experimental Hypnosis (Fellow)  
 (Member, Research Committee, 1988-90)  
 (Member, Constitution Committee, 1985-87)  
 (Chair, Scientific Program - 1987)  
 (Member, Presidential Planning Committee, 1987-89)  
 Society for Light Treatment & Biological Rhythms (Member)  
 Society for Neuroscience (Member)  
 Society for Research on Biological Rhythms (Member)

### **Service for National Scientific Review and Advisory Committees:**

#### **Institute of Medicine (IOM) and National Research Council (NRC) Committees of The National Academies:**

**Member** and writing contributor (2014-16), Commercial Motor Vehicle Driver Fatigue, Long-Term Health, and Highway Safety: Research Needs. Panel on Research Methodologies and Statistical Approaches to Understanding Driver Fatigue Factors in Motor Carrier Safety and Driver Health, Committee on National Statistics and Board on Human-Systems Integration, Division of Behavioral and Social Sciences and Education, and Transportation Research Board. The National Academies.

**Member** and writing contributor (2010-11), The Effects of Commuting on Pilot Fatigue (2011), Committee on the Effects of Commuting on Pilot Fatigue, Board on Human-Systems Integration, Division of Behavioral and Social Sciences and Education, Warden T. Oster C. (Eds.), *National Research Council, National Academies*, Washington, DC.

**Member** (2008), Experts Meeting on Organization of Decadal Study in Microgravity Research, *The National Academies*, Washington, DC.

**Member** and writing contributor (2007-09), Resident Duty Hours: Enhancing Sleep, Supervision, and Safety (2009). Committee on Optimizing Graduate Medical Trainee (Resident) Hours and Work Schedules to Improve Patient Safety, Ulmer, C., Wolman DM, Johns, MME (Editors), *Institute of Medicine of the National Academies*, The National Academies Press, Washington, DC.

**Member** (1993-96), CHABA Working Group on Assessment of Community Response to High Energy Implosive Sounds, Committee on Hearing, Bioacoustics and Biomechanics, *National Research Council, National Academy of Sciences*, Washington, DC.

Primary Committee Consultant, Writing Contributor (2006-08), Use of Dietary Supplements by Military Personnel. (2008). Committee on Dietary Supplement Use by Military Personnel, Food and Nutrition Board. MRC Greenwood & M Oria (Editors), *Institute of Medicine of the National Academies*, The National Academies Press. Washington, DC.

Presenter, Reviewer (2012), Workshop on Evaluating the Scientific Merit of Directed Research Proposals, Committee on the Review of NASA Human Research Program's Scientific Merit Assessment Processes, Pawelczyk, C. (Chair), Letter Report, *Institute of Medicine of the National Academies*, Washington, DC.

Presenter, Reviewer (2008), Emerging Cognitive Neuroscience and Related Technologies. Committee on Military and Intelligence Methodology for Emergent Neurophysiological

and Cognitive/Neural Science Research in the Next Two Decades, Division of Engineering and Physical Sciences, *National Research Council of the National Academies*, The National Academies Press, Washington, DC.

Presenter, Consultant, Writing Contributor (2005-06), Committee on the Public Health Significance of Sleep Deprivation and Disorders. Sleep Disorders and Sleep Deprivation: An Unmet Public Health Problem (2006). Committee on Sleep Medicine and Research, Board on Health Science Policy. HR Colen & BM Altevogt (Editors). *Institute of Medicine of the National Academies*, The National Academies Press, Washington DC.

Presenter (2003), Board on Neuroscience and Behavioral Health, *Institute of Medicine of the National Academies*, Washington, DC

Reviewer (2001), Committee on Caffeine for Sustainment of Mental Task Performance: Formulations for Military Operations. Committee on Military Nutrition Research, Food and Nutrition Board, *Institute of Medicine of the National Academies*, The National Academies Press, Washington, DC

Presenter (1995), Committee on Military Nutrition Research, Committee on Military Nutrition Research, Food and Nutrition Board, *Institute of Medicine of the National Academies*, Washington, DC.

#### **National Council on Radiation Protection and Measurements (NCRP)**

Member (2016), Committee on Space Radiation Effects on CNS & Cognitive Functions

#### **Scientific Reviewer for the following Federal Agencies**

##### **National Aeronautics and Space Administration**

NASA Johnson Space Center, Behavior & Performance Integrated Product Team, 2001-03

NASA Analog Environment Working Group, 2008-10

NASA-NSBRI Critical Path Control Panel, 2000-03

NASA Space Station Human Research Facility Science Working Group, Johnson Space Center, member 1995-97

National Aeronautics and Space Administration, Aviation Operations Branch, 1989-97

##### **National Science Foundation**

National Science Foundation, ad hoc reviewer 1989-

##### **National Institutes of Health**

NIH, Chair, 08 ZNR1 REV-M (12) PANEL: Special Emphasis Panel, Scientific Review Group 2012

NIH Director's Pioneer Award Program review by Office of Science and Technology, 2010

NIH, ZRG1 IFCN-E special committee, 2009-10

NIH NIMH Conti Center ad hoc review committee, 2007

NIH, National Institute of Nursing Research, Council Member, 2005-09

NIH Center for Scientific Review Special Emphasis Panel ZRG1 IFCN-H-02(S), 2004-06

NIH NIMH Conti Center review committee, 2000-02

NIH, SBIR review committees, various institutes, 2000-02

NIH, Behavioral and Biobehavioral Processes (BBBP-2) reviewer 1999-01

NIH, National Heart, Lung, and Blood Institute, Working Group on Problem Sleepiness Report for Primary Care Physicians, National Center on Sleep Disorders Research, chair 1996-97

NIH, National Institute of Mental Health, Special Emphasis Panel, chair, 1996-97  
 NIH, National Heart, Lung, and Blood Institute, Working Group on Problem Sleepiness, National Center on Sleep Disorders Research, chair 1995-97  
 NIH, National Institute of Mental Health, Clinical Neuroscience and Biological Psychopathology Research Review Committee, member 1992-95  
 NIH, National Institute of Mental Health, Mental Health, AIDS and Immunology Review Committee; Psychobiological, Biological, and Neurosciences Subcommittee, ad hoc member 1993  
 NIH, National Institute of Mental Health, Bio-Psychology Review Committee, ad hoc member 1993  
 NIH, Special Review Committee, NASA-Neurolab, Commission on Behavioral and Social Sciences and Education, chair 1994  
 NIH, National Institute of Mental Health Division of Extramural Activities, special reviewer 1990-  
 NIH, Bio-Psychology Study Section, ad hoc reviewer 1989-98  
 NIH, National Institute of Mental Health, Psychopathology & Clinical Biology Research Review Committee, special reviewer 1989-91  
 NIH, National Institute on Aging, ad hoc reviewer 1989-  
 NIH, Clinical Research Centers Review Committee, ad hoc reviewer 1989-  
 NIH, National Institute on Drug Abuse, ad hoc reviewer 1989-  
 NIH, National Institute of Nursing Research, reviewer 1989-  
 NIH, National Institute of Mental Health, Behavioral Science Track Award for Rapid Transition, ad hoc reviewer 1989  
 NIH, National Institute of Mental Health, Psychosocial & Biobehavioral Treatments Subcommittee, ad hoc member 1988-90

**Advisory and Monitoring Boards for Federally Funded Projects to Academic Institutions:**

2005-10 Data Safety Monitoring Board for NIH (NHLBI) funded APPLES Trial  
 2010- Scientific Advisory Board, NASA funded PEGASUS project

**Advisory Consultations with the following U.S. agencies (1980-2016):**

Accreditation Council of Graduate Medical Education (ACGME)  
 Defense Advanced Research Projects Agency (DARPA)  
 Federal Aviation Administration, U.S. Department of Transportation  
 Federal Motor Carrier Safety Administration, U.S. Department of Transportation  
 Federal Rail Administration, U.S. Department of Transportation  
 Food and Drug Administration  
 National Aeronautics and Space Administration (NASA)  
 National Highway Traffic Safety Administration, U.S. Department of Transportation  
 National Institutes of Health (NIH)  
 National Transportation Safety Board (and NTSB Academy)  
 Nuclear Regulatory Commission  
 Office of Technology Assessment  
 Office of Naval Research, U.S. Navy  
 U.S. Air Force  
 U.S. Anti-Doping Agency  
 U.S. Attorney General's Office  
 U.S. Coast Guard  
 U.S. Department of Justice



U.S. Government Accounting Office

**U.S. Nuclear Regulatory Commission**

Testimony on review of science for new power plant work schedules, Nuclear Regulatory Commission public hearing, 8 February, 2011.

**Veterans Administration**

Veterans Administration, ad hoc reviewer 1989-

**International Scientific Review Committees:**

The Israel Science Foundation, ad hoc member 1996-97  
New Zealand Health Research Trust, ad hoc member 1996-  
Australian Research Council, ad hoc reviewer 1989-  
Medical Research Council of Canada, ad hoc reviewer 1989-  
Wellcome Trust, UK, ad hoc reviewer 2000-  
Swedish Council for Working Life and Social Research ad hoc review committee, 2001-  
Finnish Academy of Science ad hoc reviewer, 2010-  
Japan Space Exploration Agency (JAXA), ad hoc reviewer, 2012-

**Advisory Consultations with Non-Federal and Private Organization:**

Accreditation Council for General Medical Education (ACGME)  
Air Transport Association  
American Academy of Sleep Medicine  
American Association of Medical Colleges (AAMC)  
American College of Surgeons (ACS)  
American Trucking Association  
Applied Physics Laboratory, Johns Hopkins University  
Commonwealth of Pennsylvania  
European Union, Sleep Apnea and Driving Regulations  
European Union Sensation Project  
Flight Safety Foundation  
ILSI North America  
Swedish Medical Society  
Transportation Workers Union  
Transport Canada

**Scientific Advisory Boards—Industry:**

Mars, Inc. (Mars Nutrition Research Council, 2004-07)  
(Mars Scientific Advisory Council Executive Committee, 2009-16)  
(External Chair, Biomedical Pod, 2008-12)  
(External Advisor, Mars Symbio Science, 2012-14)  
Eli Lilly, Inc. (Scientific Advisor, 2009)  
Sanofi-Aventis (Scientific Advisor, 2008-09)  
Procter & Gamble, Inc. (Scientific Advisor, 2007)  
Arena Pharmaceuticals (Scientific Advisory Board, 2007)  
Novartis (Sleep Advisory Board, 2007)  
GSK Research & Development, Ltd (Scientific Advisor, 2006-07)

Merck, Inc. (Advisory Group, 2004-07)  
 (Insomnia Advisory Board, 2005-07)  
 (Sleep and EDS Advisory Board, 2006-07)  
 Cephalon, Inc (Scientific Advisory Group, 1999-04; Scientific Advisory Board, 2004-08)  
 Aventis, Inc. (Sleep Expert Global Advisory Board, 2003-04)  
 Pfizer, Inc. (Portfolio Sleep Strategy Advisory Board, 2002-04)  
 (Scientific Advisory Groups, etc. 2004-06)  
 Air Transport Association (Scientific Advisory Board, 2000-02)  
 American Trucking Association Foundation (Medical Advisory Board, 1991-01)  
 False Memory Syndrome Foundation Advisory Board (2014-

### **Editorial Positions:**

2006-15 Editor-in-Chief, SLEEP (Impact Factor > 5)  
 2005-15 Associate Editor, Journal of Clinical Sleep Medicine  
 2003-06 Deputy Editor, SLEEP  
 2002-05 Board of Associate Editors, Aviation, Space and Environmental Medicine  
 2000-06 Editorial Board, Behavioral Sleep Medicine  
 1996-99 Section Editor, Sleep Research Online  
 1994-02 Editorial Board, SLEEP  
 1991-06 Editorial Advisory Board, Journal of Sleep Research  
 Current- Ad hoc reviewer (selected journals out of >50): Science; Nature; Current Biology; Lancet; JAMA; Nature Medicine; Nature Neuroscience; New England Journal of Medicine; Proceedings of the National Academy of Sciences of the United States of America; NeuroImage; Neuropsychopharmacology; American Journal of Physiology; American Journal of Respiratory and Critical Care Medicine; Anesthesiology; Annals of Neurology; Behavioral & Brain Sciences, Brain and Cognition; Depression and Anxiety; Journal of Biological Rhythms; Lancet Neurology; Perspectives in Biology and Medicine; Psychological Bulletin; Psychosomatic Medicine; PLoS Med; PLoS ONE; et al.

### **Major Teaching Responsibilities at the University of Pennsylvania and Affiliated Hospitals:**

**Teaching in School of Medicine (current only):** Faculty, Integrative Neuroscience/ Brain and Behavior Course, Psychiatry Module I, Prof. Dinges lectures (1.25h annually since 1993) on "Sleep and Biological Rhythms" to ~150 First-year Medical Students annually, University of Pennsylvania Perlman School of Medicine.  
 Year 2009 to 2016, N > 700 medical student ratings: M = 4.3/5.0 (lecturer exceeds expectations)

**Teaching in School of Arts and Sciences (current only):** Course Director for BBB 240 "Human Chronobiology and Sleep" in Biological Basis of Behavior (BIBB) Program. Course taught annually each spring semester from 1992 to present; 13 3-hour lectures by Prof. Dinges each semester.

Student ratings of BIBB 340/240—Human Chronobiology and Sleep (1995-2016)

<u># returned / total class</u>	<u>Course (4 = maximum score)</u>	<u>Instructor (4 = maximum score)</u>
1,553/1,873 (83% responded)	3.4 ("excellent" rating)	3.6 ("excellent" rating)

### **Faculty member on funded Training grants (current only):**

Faculty, NIH Training Program / Respiratory Neurobiology and Sleep, Department of Medicine, University of Pennsylvania Perelman School of Medicine.

Faculty, NIH Medical Student Research Training Grant, University of Perelman Pennsylvania School of Medicine.

Faculty, NIH Neuropsychopharmacology Training Program, University of Pennsylvania Perelman School of Medicine.

Faculty, NIH Sleep Medicine Fellowship Training Program, University of Pennsylvania Perelman School of Medicine.

**Post-Doctoral Fellows and Early Career (K award) Researchers Supervised (1995-2016; N=27)**

- 2015-16 Susan Malone, Ph.D., R.N. (Post-doc, University of Pennsylvania School of Nursing)
- 2014-16 Mathew Kayser, M.D., Ph.D. (University of Pennsylvania Perelman School of Medicine)
- 2014-16 Andrea Spaeth, Ph.D. (Post-doc, University of Pennsylvania Perelman School of Medicine)
- 2013-15 Jonathan Mitchell, Ph.D. (Assistant Professor, University of Pennsylvania Perelman School of Medicine)
- 2012-13 Jason Schneiderman, Ph.D. (NASA/Wyle, Johnson Space Center)
- 2011-14 Kristin T. Avis, Ph.D., CBSM (Nurse -- Associate Professor of Pediatrics, Children's Hospital of Alabama)
- 2011-13 Takashi Abe, Ph.D. (Fellow, Japan Space Exploration Agency)
- 2010-12 Marcia Braun, Ph.D. (current position unknown)
- 2009-10 Amy M. Sawyer, Ph.D., R.N. (Assistant Professor of Nursing, Pennsylvania State University)
- 2006-07 Mathias Basner, M.D., M.S, M.Sc. (Assistant Professor, University of Pennsylvania School of Medicine)
- 2006-07 Namni Goel, PhD (Research Associate Professor, University of Pennsylvania School of Medicine)
- 2006-08 Hengyi Rao, Ph.D. (Research Assistant Professor, University of Pennsylvania School of Medicine)
- 2004-05 Siobhan Banks, Ph.D. (Assistant Professor, University of South Australia)
- 2004-05 Jeffrey M. Ellenbogen, MMSc, M.D. (Assistant Professor in Neurology, Johns Hopkins University School of Medicine)
- 2001-02 James Crabbe, Ph.D., (Associate Professor, School of Science & Technology Georgia Gwinnett College)
- 2000-02 Jacqueline Kloss, Ph.D. (Professor, Drexel University College of Medicine)
- 1999-00 Melissa Mallis, Ph.D. (Chief Scientist, Operational and Fatigue Research, Institutes for Behavior Resources, Inc.)
- 1999-00 Scott Doran, Ph.D. (Merck Research Laboratories,)
- 1999-00 Carol Rae Reed, Ph.D., RN, APN BC (Clinical Assistant Professor, Rutgers University)
- 1999-00 Naomi L. Rogers, Ph.D. (Professor, Central Queensland University, Australia)
- 1998-99 Neil Freedman, M.D. (Private practice, Sleep Medicine, Critical Care Medicine)
- 1998-99 Hans Van Dongen, Ph.D. (Research Professor, Washington State University)
- 1997-98 Tony Fernanado, M.D. (senior lecturer in Psychological Medicine at the University of Auckland Faculty of Medical and Health Sciences)
- 1996-98 Sadia Iftikhar, M.D. (Private practice, Internal Medicine)

- 1996-97 Janet Mullington, Ph.D. (Associate Professor of Neurology, Harvard Medical School)  
 1995-98 Deepak Chugh, M.D. (Private practice, Neurology)  
 1995-97 Keith A. Gary, Ph.D. (Director, Program Development, Kansas City Area Life Sciences Institute, Inc)

**Graduate Students Supervised and Graduate Student Committees (1993-2016; N=32)**

- 2016- Xiaopeng Ji, Dissertation Committee, University of Pennsylvania School of Nursing., Philadelphia, PA  
 2014- Olga Tkachenko, Graduate Supervisor, Department of Psychology, University of Pennsylvania, Philadelphia, PA  
 2014- Manuel Spitschan, Dissertation Committee, Department of Psychology, University of Pennsylvania, Philadelphia, PA  
 2013- April Yearwood, DNP Candidate, APRN, CRNA, Assistant Program Chair of the Nurse Anesthesia Program, Union University, Jackson TN.  
 2013- Robin Yuan, Graduate Supervisor, Department of Psychology, University of Pennsylvania, Philadelphia, PA  
 2013- Christine Dubowy, Dissertation Committee, Department of Cellular & Molecular Biology, University of Pennsylvania School of Medicine, Philadelphia, PA  
 2011-13 Toni-Moi Prince, Ph.D., Dissertation Committee, Department of Neuroscience, University of Pennsylvania School of Medicine, Philadelphia, PA  
 2011-14 Andrea Spaeth, Graduate Supervisor, NRSA recipient, Department of Psychology, University of Pennsylvania, Philadelphia, PA  
 2009-14 Anna Rudo-Hutt, Dissertation Committee, UDepartment of Psychology, University of Pennsylvania, Philadelphia, PA  
 2007-10 Julian Lim, Ph.D., Graduate Supervisor, Psychology Department, University of Pennsylvania, Philadelphia, PA (currently Assistant Professor, Neuroscience and Behavioral Disorders Program, National University of Singapore)  
 2006-09 Jared Minkel, Ph.D., Graduate Supervisor, NRSA recipient, Psychology Department, University of Pennsylvania, Philadelphia, PA (currently on faculty at University of Rhode Island)  
 2005-08 Norah Simpson, Ph.D., Graduate Supervisor, NRSA recipient, Psychology Department, University of Pennsylvania, Philadelphia, PA (currently on faculty at Stanford University)  
 2005-08 Daniel Mollicone, Ph.D., Graduate Supervisor, School of Biomedical Engineering, Science and Health Systems, Drexel University, Philadelphia, PA (currently President of Pulsar informatics, Inc.)  
 2005-07 Riju Ray, Ph.D., Dissertation Committee, Department of Pharmacology, University of Pennsylvania School of Medicine, Philadelphia, PA  
 2005-06 Zev Noah Kornfield, Supervisor, School of Medicine, University of Pennsylvania  
 2005-06 Anouk Marsman, Project Supervisor, Graduate Student, Department of Biology, Groningen University, The Netherlands  
 2004-05 Deepa Avinash, Thesis Supervisor, Graduate Student, School of Biomedical Engineering, Science and Health Systems, Drexel University, Philadelphia, PA  
 2002-03 Els Møst, Supervisor, Pre-doctoral Researcher, University of Groningen, Groningen, The Netherlands.  
 2002-03 Tiffini Voss, Supervisor, Medical Student Scholarly Pursuit, University of Pennsylvania

- 2001 Nicole Lamond, Thesis reader, University of South Australia, Adelaide, South Australia.
- 2001-02 Marjolijn Blauuw, Supervisor, Pre-doctoral Researcher, University of Groningen, Groningen, The Netherlands.
- 2001-03 Jillian Dorrian, Supervisor, Pre-Doctoral Fellow, University of South Australia, Adelaide, South Australia.
- 2001-07 Maurice Baynard, Supervisor, Graduate Student, School of Biomedical Engineering, Science and Health Systems, Drexel University, Philadelphia, PA
- 2000-01 Ernest Braxton, Supervisor, Medical Student Scholarly Pursuit, University of Pennsylvania
- 1999-01 Kim McManus, Supervisor, Graduate Student 699, Department of Psychology, University of Pennsylvania
- 1999-02 David Kapfhamer, Ph.D., Dissertation Committee, University of Pennsylvania.
- 1998-05 Nicholas Price, Supervisor, Graduate Student, School of Biomedical Engineering, Science and Health Systems, Drexel University, Philadelphia, PA.
- 1997-98 Lan Nyugen, Supervisor, Pre-Doctoral Student, University of Pennsylvania, School of Medicine.
- 1996-97 Marieke Dijkman, Supervisor, 5th year Medical Student, University of Groningen, The Netherlands.
- 1996-97 Ravi Mariathasan, Supervisor, Graduate Student of Engineering, Drexel University, Philadelphia, PA.
- 1995-97 Megan Jewett, Ph.D., Dissertation Committee, Pre-Doctoral Student of Mathematics, Harvard University, Boston, MA.
- 1995-99 Melissa Mallis, Ph.D., Supervisor, Drexel University, Philadelphia, PA.
- 1993 Janet Mullington, Ph.D., Dissertation Committee, Department of Psychology, Ottawa University, Ottawa, Ontario, Canada. (Currently on faculty at Harvard Medical School)

### **Faculty Mentoring:**

- 2016- Mentor, 2016, Alexander Stahn, PhD, Research Assistant Professor, University of Pennsylvania Perelman School of Medicine.
- 2015- Mentor, 2015, Jianghong Liu, Ph.D., R.N., Assistant Professor, University of Pennsylvania School of Nursing.
- 2014- Mentor, 2014, Heather Schofield, Ph.D., Assistant Professor, Department of Medical Ethics and Health Policy, Perelman School of Medicine, University of Pennsylvania.
- 2010- Mentor, Mathias Basner, M.D., M.S., M.Sc., Assistant Professor, Department of Psychiatry, University of Pennsylvania School of Medicine.
- 2009- Mentor, Hengi Rao, Ph.D., Research Assistant Professor, Department of Neurology, University of Pennsylvania School of Medicine.
- 2008- Mentor, Namni Goel, Ph.D., Research Assistant Professor, Department of Psychiatry, University of Pennsylvania School of Medicine.
- 2007-09 Mentor, Siobhan Banks, Ph.D., Research Assistant Professor, Department of Psychiatry, University of Pennsylvania School of Medicine.
- 2002-16 (>200 M.D. and Ph.D. Perelman Medical School faculty mentored, including >100 faculty in the Department of Psychiatry)
- 1999-01 Mentor, Margaret Rukstalis, M.D., Assistant Professor, Department of Psychiatry, University of Pennsylvania School of Medicine,.

- 1999-01 Mentor, Hans Van Dongen, Ph.D., Assistant Professor, Department of Psychiatry, University of Pennsylvania School of Medicine.
- 1996-97 Mentor, Neena Goel, M.B.B.S., Resident, Crozier Chester Medical Center, Upland, PA.
- 1996-02 Mentor, Martin Szuba, M.D., NIMH K08 award, Assistant Professor, Department of Psychiatry, University of Pennsylvania School of Medicine.
- 1995-97 Preceptor, Deepak Chugh, M.D., Center for Sleep and Respiratory Neurobiology, Hospital of the University of Pennsylvania.
- 1994-96 Preceptor, Patricia Sollars, Ph.D., Department of Psychiatry, University of Pennsylvania School of Medicine.
- 1993-98 Preceptor, Terri E. Weaver, R.N., Ph.D., School of Nursing, University of Pennsylvania School of Medicine.
- 1988-93 Preceptor in sleep research for Richard Ross, M.D., Ph.D., Philadelphia Veterans Administration Hospital, on his VA Career Development Award.
- 1988-93 Expert in research training for William Sonis, M.D., Philadelphia Child Guidance Center, on his NIMH Child and Adolescent Mental Health Academic Award.
- 1989-94 Sleep research expert collaborator for Andrew Winokur, M.D., Ph.D., University of Pennsylvania, on NIMH Research Scientist Award.

**Undergraduate Thesis Supervisor, University of Pennsylvania:**

Honors Thesis Students Mentored: see CV Addendum for extensive list

Independent Study Students Mentored: see CV Addendum for extensive list

**Organizing Roles in Special Scientific Meetings:**

- Member, Organizing Committee, 6<sup>th</sup> Congress of the World Federation of Sleep Research and Sleep Medicine Societies, Kyoto, Japan, October, 2011.
- Member, Organizing Committee, 5<sup>th</sup> Congress of the World Federation of Sleep Research and Sleep Medicine Societies, Cairns, Australia, September 2007.
- Member, Organizing Committee, North American Branch of the International Life Sciences Institute's Workshop on Sleep and Quality of Life, Washington, DC, January 2005.
- Organizer and Chair, "Tailoring Countermeasures to Individual Astronaut Needs: Dealing with Individual Variability and Differential Vulnerability to Health and Behavior Risks in Prolonged Space Flight" National Space Biomedical Research Institute. Philadelphia, PA, October, 2005
- Member, Working Group, "National Sleep Disorders Research Plan National Center for Sleep Disorders Research, NHLBI, NIH, Bethesda, MD, 2003.
- Chair, Organizing Committee, "Sleep Disorders and Adherence to Therapy" Workshop, National Institutes of Health, Bethesda, MD, March 2003.
- Member, Organizing Committee, "Fatigue and Performance Mathematical Modeling Workshop", Seattle, WA, June 2002.
- Chair, Organizing Committee, "Neurobiology of Insomnia" Workshop, National Institutes of Health, Bethesda, MD, September 2001.
- Member, Organizing Committee, "Sleep and Fatigue in Medical Training" Workshop, NIH, AMA, AASM, SRS, AHRQ, Arlington, VA, October 2001.

Co-Organizer, "Inflammation, Cytokines and Neurobehavioral Functions," Workshop sponsored by Schering-Key Pharmaceuticals, Washington, DC, Oct. 2000.

Organizing Committee, "Determinants of Vigilance: Interactions Between the Sleep and Circadian Systems," sponsored by American Physiological Society, Fort Lauderdale, FL, October 1999.

Organizer, "Controversies in Insomnia" Workshop, Philadelphia, PA, April 1998.

Co-Organizer, DOD/Army Workshop, "New Directions in Understanding Sleep Need and Human Vulnerability to Sleep Loss," Raleigh, NC, April 1998.

## **Bibliography:**

### **Research Publications, peer reviewed (N = 211): ISI h index = 61**

211. Spaeth, A.M., **Dinges, D.F.**, Goel, N. Objective measurements of energy balance and sleep architecture are associated in healthy adults. *SLEEP* pii: sp-00253-16. [Epub ahead of print] Sept. 9, 2016. PMID: 27634803.
210. Perlis, M.L., Grandner, M.A., Brown, G.K., Basner, M., Chakravorty, S., Morales, K.H., Gehrman, P.R., Chaudhary, N.S., Thase, M.E., **Dinges, D.F.** Nocturnal wakefulness: Previously unrecognized risk factor for suicide. *Journal of Clinical Psychiatry* 77(6);e726-e733, 2016.
209. Spaeth, A.M., **Dinges, D.F.**, Goel, N. Response to: "Can racial differences in resting metabolic rate be explained by body composition?" *Obesity* 24(6), 1204-1204, 2016.
208. Prasad, B., Usmani, S., Steffen, A.D., Van Dongen, H., Pack, F.M., Strakovsky, I., Staley, B., **Dinges, D.F.**, Maislin, G., Pack, A.I., Weaver, T.E. Short-Term Variability in Apnea-Hypopnea Index During Extended Home Portable Monitoring. *Journal of Clinical Sleep Medicine*, 12(6):855–863, 2016.
207. Creber R Masterson, Pak VM, Varrasse M, **Dinges D.F.**, Wald J, Riegel B. Determinants of behavioral alertness in adults with heart failure. *Journal of Clinical Sleep Medicine*, 12(4):589–596, 2016.
206. Mullington, J.M., Abbott, S.M., Carroll, J.E., Dijk, D-J., **Dinges, D.F.**, Gehrman, P.R., Ginsburg, G.S., Gozal, D., Haack, M., Lim, D.C., Macrea, M., Pack, A.I., Plante, D.T., Teske, J.A., Zee, P. Developing biomarker arrays predicting sleep and circadian-coupled risks to health. *SLEEP* 39(4):727-736, 2016.
205. Spaeth, A.M., **Dinges, D.F.**, Goel, N. Resting metabolic rate varies by race and by sleep duration. *Obesity* 23, 2349–2356, 2015.
204. Liu, J., Liu, X., Pak, V., Pinto-Martin, J., **Dinges, D.F.** Early Blood lead levels and sleep disturbance in later childhood. *SLEEP* 38(12):1869-1874, 2015.
203. Basner, M., Savitt, A., Moore, T.M., Port, A.M., McGuire, S., Ecker, A.J., Nasrini, J., Mollicone, D.J., Mott, C.M., McCann, T., **Dinges, D.F.**, Gur R.C. Development and

- validation of the *Cognition* test battery for spaceflight. *Aerospace Medicine and Human Performance* 86(11):942-952, 2015.
202. Spaeth, A.M., **Dinges, D.F.**, Goel, N. Phenotypic vulnerability of energy balance responses to sleep loss in healthy adults. *Scientific Reports*, Oct. 8, 5, Article Number: 14920, 2015.
201. Lerchl, K., Rakova, N., Dahlmann, A., Rauh, M., Goller, U., Basner, M., **Dinges, D.F.**, Beck, L., Agureev, A., Larina, I., Baranov, V., Morukov, B., Eckardt, K.U., Vassilieva, G., Wabel, P., Vienken, J., Kirsch, K., Johannes, B., Krannich, B., Luft, F.C., Titze, J. Agreement between 24-hour salt ingestion and sodium excretion in a controlled environment. *Hypertension*, 66(4):850-857, 2015.
200. Johannes, B.W., Sitev, A.S., Vinokhodova, A.G., Salnitski, V.P., Savchenko, E.G., Artyukhova, A.E., Bubeev, Y.A., Morukov, B.V., Tafforin, C., Basner, M., **Dinges, D.F.**, Rittweger, J. Wireless monitoring of changes in crew relations during long-duration mission simulation. *PLoS ONE*, Aug. 7, 2015, 10(8):e0134814.
199. Watson, N.F., Badr, M.S., Belenky, G., Bliwise, D.L., Buxton, O.M., Buysse, D., **Dinges, D.F.**, Gangwisch, J., Grandner, M.A., Kushida, C., Malhotra, R.K., Martin, J.L., Patel, S.R., Quan, S.F., Tasali, E. Joint consensus statement of the American Academy of Sleep Medicine and Sleep Research Society on the recommended amount of sleep for a healthy adult: Methodology and discussion. *SLEEP* 38(8):1161–1183, 2015.
198. Basner, M., McGuire, S., Goel, N., Rao, H., **Dinges, D.F.** A new likelihood ratio metric for the psychomotor vigilance test and its sensitivity to sleep loss. *Journal of Sleep Research* 24(6):702-713, 2015.
197. Watson, N.F., Badr, M.S., Belenky, G., Bliwise, D.L., Buxton, O.M., Buysse, D., **Dinges, D.F.**, Gangwisch, J., Grandner, M.A., Kushida, C., Malhotra, R.K., Martin, J.L., Patel, S.R., Quan, S.F., Tasali, E. Recommended amount of sleep for a healthy adult: A joint consensus statement of the American Academy of Sleep Medicine and Sleep Research Society. *SLEEP* 38(6):843–844, 2015.
196. Goel, N., Basner, M., **Dinges, D.F.** Phenotyping of neurobehavioral vulnerability to circadian phase during sleep loss. Chapter 13, *Methods in Enzymology*, Vol. 552:285-308, 2015.
195. Ma, N., **Dinges, D.F.**, Basner, M., Rao H. How acute total sleep loss affects the attending brain: A meta-analysis of neuroimaging studies. *SLEEP*, 38(2):233-240, 2015.
194. Weljie AM, Meer P, Goel M, Sengupta A, Kayser MS, Abel T, Birnbaum MJ, **Dinges DF**, Sehgal AM. Oxalic acid and diacylglycerol 36:3 are cross-species markers of sleep debt. *Proceedings of the National Academies of Sciences of the USA*. 112(8):2569-2574, 2015.
193. Fang, Z., Zhu, S., Hu, S., Ma, N., Shi, H., Goel, M., Detre, J.A., **Dinges, D.F.**, Rao, H., Disruption and recovery of spontaneous brain connectivity and memory following sleep deprivation. *Scientific Reports* 5:Article 8215, 2015, DOI: 10.1038/ srep08215.



192. Spaeth, A.M., Goel, N., **Dinges, D.F.** The cumulative neurobehavioral and physiological effects of chronic caffeine intake: Individual differences and implications for the use of caffeinated energy products. *Nutrition Reviews* 72(s1):34-47, 2014.
191. Basner, M., Spaeth, A., **Dinges, D.F.** Sociodemographic characteristics and waking activities and their role in the timing and duration of sleep. *SLEEP* 37(12):1889-1906, 2014. (Featured on issue cover and accompanied by a commentary by Hale, L. *SLEEP* 37(12):1879-1880, 2014.)
190. Goel, N., Abe, T., Braun, M.E., **Dinges, D.F.** Cognitive workload and sleep restriction interact to influence sleep homeostatic responses. *SLEEP* 37(11):1745-1756, 2014. (Featured on issue cover and accompanied by a commentary by Fisher, S.P., Vyazovskiy, V. *SLEEP* 37(10):1727-1730, 2014.)
189. Goel, N., Bale, T., Epperson, C.N., Kornstein, S.G., Leon, G.R., Palinkas, L.A., Stuster, J., **Dinges, D.F.** Effects of sex and gender on adaptation to spaceflight: behavioral health considerations. *Journal of Women's Health* 23(11):975-986, 2014.
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185. Basner, M., **Dinges, D.F.**, Mollicone, D.J., Savelev, I., Ecker, A.J., Di Antonio, A., Jones, C.W., Hyder, E., Kan, K., Morukov, B.V., Sutton, J.P. Psychological and behavioral changes during confinement in a 520-day simulated interplanetary mission to Mars. *PLoS ONE* 9(3): e93298. doi:10.1371/journal.pone.0093298. Published March 27, 2014.
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- protected nap period in a medicine training program: Sleep, alertness and patient outcomes. *Academic Medicine*, 89(3):452-459, 2014.
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179. Basner, M., Rao, H., Goel, N., **Dinges, D.F.** Sleep deprivation and neurobehavioral dynamics. *Current Opinion in Neurobiology*, 23:854-863, 2013.
178. Goel, N., Basner, M., Rao, H., **Dinges, D.F.** Circadian rhythms, sleep deprivation and human performance. Chronobiology: Biological Timing in Health and Disease. In: *Progress in Molecular Biology and Translational Science* (Martha Gillette, Editor), 119: 155-190, 2013.
177. Spaeth, A.M., **Dinges, D.F.**, Goel, N. Effects of experimental sleep restriction on weight gain, caloric intake and meal timing in healthy adults. *SLEEP* 36(7): 981-990, 2013.
176. Basner, M.\*, **Dinges, D.F.\***, Mollicone, D.J., Ecker, A.J., Jones, C.W., Hyder, E., Di Antonio, A., Savelev, I., Kan, K., Goel, N., Morukov, B.V., Sutton, J.P. Mars 520-d mission simulation reveals protracted crew hypokinesia and alterations of sleep duration and timing. *Proceedings of the National Academies of Sciences of the USA* 110(7):2635-2640, 2013.
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165. Goel, N., **Dinges, D.F.** Behavioral and genetic markers of sleepiness. *Journal of Clinical Sleep Medicine*. 7(5): S19-S21, 2011. PMID: 22003324 PMCID: PMC3190416
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1. **Dinges, D.F.**, Broughton, R.J. (Eds.): *Sleep and Alertness: Chronobiological, Behavioral and Medical Aspects of Napping*. Raven Press, New York, NY, 1989.

### **Alternative Media:**

CME materials on Risks Posed by Sleep Loss in Residency Duty Hours, for Accreditation Slide sets for Council for General Medical Education, and American Association of Medical Colleges

**Inventions/Patents/Copyrights:**

Dinges, D.F., Powell, J.W. Psychomotor Vigilance Test Device (PVT-192), 1990.  
 Dinges, D.F., Powell, J.W. Neurobehavioral Assessment Battery (NAB), 1995.  
 Van Dongen, H.P.A., Powell, J.W., Dinges, D.F. Neurobehavioral Test Battery, 2000.  
 Dinges, D.F. Penn Psychomotor Vigilance Test (PVT) for Windows, 2006.  
 Dinges, D.F., Basner, M., Mollicone, D. PVT-B Self Test, 2007.  
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 Basner, M., Dinges, D.F. Adaptive PVT, 2011.

**Patent for:** Systems and methods for individualized alertness predictions

**Inventors:** Christopher Mott, Daniel Mollicone, Hans Van Dongen, Jen-Kuang Huang, David Dinges

**Patent number:** 8781796

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**Abstract:** Systems and methods are provided for generating individualized predictions of alertness or performance for human subjects. Alertness or performance predictions may be individualized to incorporate a subject's individual traits and/or individual states. These individual traits and/or individual states (or parameters which represent these individual traits and/or individual states) may be represented by random variables in a mathematical model of human alertness. The mathematical model and/or prediction techniques may incorporate effects of the subject's sleep timing, the subject's intake of biologically active agents (e.g. caffeine) and/or the subject's circadian rhythms. The mathematical model and/or prediction techniques may incorporate feedback from the subject's measured alertness and/or performance.

**Penn Docket:** 15-7324

**Disclosure Title:** Biomarkers of sleep debt

**Date Reported:** 6/29/15

**Invention Report No.:** 6463801-14-0121

**Provisional Application No.:** 62/101,047; Filed 01/08/2015

Goel, N., Sehgal, A., Weljie, A., Dinges, D.F.: Biomarkers of Sleep Deprivation. United States Patent Number 62101047, 2015.

**Penn Docket:** Y6276

**Disclosure Title:** Adaptive-duration Psychomotor Vigilance Test (PVT)

**Date Reported:** 05/08/2012

**Invention Report No.:** 6463801-12-0043

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**Federal Grant Support as Principal Investigator (2010-2016 total = \$ 10,979,090)****Current active grants (listed by granting agency)****National Institutes of Health**

Co-Principal Investigator, Sleep and Alertness SubStudy of iCOMPARE (U01 HL125388).  
 This study evaluates the outcomes of alternative duty schedules for internal medicine residents. National Institutes of Health (NHLBI), 2015-2019 (total award: \$1,195,957)

Principal Investigator, Neurobehavioral Effects of Partial Sleep Deprivation (NR004281-up to 18<sup>th</sup> year) National Institutes of Health (NINR), 1998–2015 (total award: \$8,943,833)

**National Aeronautics & Space Administration; National Space Biomedical Research Institute**

Principal Investigator, "Standardized Behavioral Measures for Detecting Behavioral Health Risks during Exploration Missions" (NNX15AK76A), National Space Biomedical Research Institute through NASA Cooperative Agreement NCC 5-98, 2015–18 (total award: \$1,048,076)

Principal Investigator, "Markers of Susceptibility to Neurobehavioral Decrements in Space Flight (NBPF02801), National Space Biomedical Research Institute through NASA Cooperative Agreement NCC 5-98, 2012–16 (total award: \$1,317,766)

Principal Investigator, "Optical Computer Recognition of Stress, Affect and Fatigue During Space Flight" (NBPF03401), National Space Biomedical Research Institute through NASA Cooperative Agreement NCC 5-98, 2014–16 (total award: \$599,084)

Principal Investigator, "PVT SelfTest on ISS" (International Space Station) (HPF00204), NASA grant NNX08AY09G, 2008–16 (total award: \$2,369,083)

Co-Investigator, "Individualized Real-Time Neurocognitive Assessment Toolkit for Spaceflight Fatigue" (NBPF02501), Mathias Basner, P.I., National Space Biomedical Research Institute through NASA Cooperative Agreement NCC 5-98, 2011–15 (total award: \$1,797,717)

Principal Investigator, "Team Leader - Neurobehavioral and Psychosocial Factors" (NBPF02701), National Space Biomedical Research Institute through NASA Cooperative Agreement NCC 5-98, 2012–16 (total award: \$180,000)

Co-Investigator, "Cognitive Performance and Crew Cohesion during Confinement in HERA" (NNX14AH98G), Mathias Basner, P.I., National Space Biomedical Research Institute through NASA Cooperative Agreement NCC 5-98, 2014–16 (total award: \$100,000)

Co-Investigator, "Neurostructural, Cognitive and Physiologic Changes during a 1-Year Antarctic Winter-Over Mission" (NNX14AM81G), Mathias Basner, P.I., National Space Biomedical Research Institute through NASA Cooperative Agreement NCC 5-98, 2014–17 (total award: \$450,000)

**Department of Defense**

Co-Investigator, Phenotypic and Genotypic Markers of Performance Vulnerability to Sleep Loss, (N00014-11-1-0361), Namni Goel, P.I., Office of Naval Research, 2011–16 (total award: \$2,378,154)

**Department of Transportation**

Principal Investigator, "Commercial Motor Vehicle (CMV) Driver Restart Study" (DTMC7514D00011, Order 7003, Federal Motor Carrier Safety Administration, 01/26/15-02/20/16 (total award to Dr. Dinges: \$470,000)

**Previous Research Grant Support (listed by granting agency)**

**National Institutes of Health**

Co-Investigator, Neural Basis for Differential Vulnerability to Sleep Deprivation (HL102119A), Hengyi Rao, P.I., National Institutes of Health (NHLBI), 2010–2015 (total award: \$2,385,249)

Co-Investigator, Individual Differences in Response to Sleep Deprivation (HL70154), Hans Van Dongen, P.I., National Institutes of Health (NHLBI), 2002–06 (total award: \$1,281,563)

Co-Investigator, Individual Differences in Response to Sleep Deprivation, NHLBI 5 R01 HL070154-02, 2002-06 (total award: \$91,625)

Co-Investigator, Staff Nurse Fatigue and Patient Safety, AHRQ 5 R01 HL070154-02, 2001-04

Co-Investigator, Case Control Study of Insomnia in Non-depressed Elderly, NIA, 1998-02

Principal Investigator, Daytime Sleepiness and Alertness on CPAP Therapy for Apnea Cardiopulmonary Disorders, NHLBI as part of SCOR HL42236, 1988-99 (total award: \$617,688)

Principal Investigator, The Psychobiology of Hypnosis in Stress, Pain, and Sleep, NIMH Program Project 5-P01-MH-44193, 1989-93 (total award: \$3,556,328)

Principal Investigator, Studies of Hypnosis and Its Clinical Application, NIMH 5-R01 MH19156, 1983-88 (total award: \$2,417,365)

### **National Aeronautics & Space Administration; National Space Biomedical Research Institute**

Principal Investigator, Objective Monitoring of Crew Neurobehavioral Functions in Mars 520 (NBPF00006), National Space Biomedical Research Institute through NASA Cooperative Agreement NCC 5-98, 2010–13 (total award: \$799,841)

Co-Principal Investigator, Crew Quarters Study: Technical Support for Development and Implementation of Operational Ground Testing Protocol to Optimize Astronaut Sleep Medication Efficacy and Individual Effects NASA grant NNX09AE24G, 2009–13 (total award: \$142,109)

Principal Investigator, Countermeasures for Performance Deficits from Sleep Loss and Workload in Space Flight (HPF01602), National Space Biomedical Research Institute through NASA Cooperative Agreement NCC 5-98, 2008–12 (total award: \$1,799,251)

Principal Investigator, Optical Computer Recognition of Stress, Affect and Fatigue During Space Flight (NBPF01601), National Space Biomedical Research Institute through NASA Cooperative Agreement NCC 5-98, 2008–12 (total award: \$1,799,444)

Principal Investigator, Team Leader - Neurobehavioral and Psychosocial Factors (NBPF 00401), National Space Biomedical Research Institute through NASA Cooperative Agreement NCC 5-98, 2000–12 (total award: \$835,000)

Principal Investigator, Russian Chamber Study-105. National Space Biomedical Research Institute through NASA cooperative agreement NCC 9-58, 2008–10, 2008-09 (total award: \$419,473)

Principal Investigator, Vigilance, Stress and Sleep/Wake Measures in NEEMO 14 – A Simulated Space Environment, National Space Biomedical Research Institute through NASA cooperative agreement NCC 9-58, 2008–09 (total award: \$98,963)



- Principal Investigator, Countermeasures to Neurobehavioral Deficits from Partial Sleep Loss (HPF00204), National Space Biomedical Research Institute through NASA Cooperative Agreement NCC 5-98, 2000–08 (total award: \$2,980,457)
- Principal Investigator, Optical Computer Recognition of Behavioral Stress During Performance (NB00230) National Space Biomedical Research Institute through NASA Cooperative Agreement NCC 5-98, 2001–08 (total award: \$2,806,989)
- Principal Investigator, PVT User Interface Development of a user interface for the PVT SelfTest (PST), National Space Biomedical Research Institute through NASA Cooperative Agreement NCC 5-98, 2007–08 (total award: \$91,625)
- Co-Investigator, Speech Monitoring of Cognitive Deficits and Stress (NBPF00406), National Space Biomedical Research Institute through NASA Cooperative Agreement NCC 5-98, 2004-08 (total award: \$194,787)
- Co-Investigator, Minicog: A Portable and Fast Assessment of Cognitive Functions (NBPF00405), National Space Biomedical Research Institute through NASA Cooperative Agreement NCC 5-98, 2005-07 (total award: \$62,408)
- Principal Investigator, Vigilance, Stress and Sleep/Wake Measures in NEEMO 12 - A Simulated Space Environment. (NB00802) National Space Biomedical Research Institute through NASA Cooperative Agreement NCC 5-98, 2006–07 (total award: \$90,000)
- Principal Investigator, Vigilance, Stress and Sleep/Wake Measures in NEEMO 13 - A Simulated Space Environment. (NB00803) National Space Biomedical Research Institute through NASA Cooperative Agreement NCC 5-98, 2007-08 (total award: \$60,000)
- Principal Investigator, Sleep-Wake Medications in Space Flight: Review of Best Practices, NASA, 2006-07 (total award: \$99,359)
- Principal Investigator, Biomathematical Modeling Software for Astronaut Scheduling, NASA Ames Research Center Cooperative Agreement NCC 2-1394, 2003–07
- Principal Investigator, Readiness to Perform in a Space Analog Environment—NEEMO 9 (NB00802) National Space Biomedical Research Institute through NASA Cooperative Agreement NCC 5-98, 2001–08 (total award: \$99,000)
- Co-Principal Investigator, Predicting Vulnerability to Performance Impairment from Sleep Loss, NASA, 1999-02 (total award: \$442,500)
- Principal Investigator, Countermeasures to Neurobehavioral Deficits from Cumulative Partial Sleep Deprivation During Space Flight, National Space Biomedical Research Institute through NASA Cooperative Agreement NCC 5-98, 1997-00 (total award: \$925,998)
- Principal Investigator, Crew Alertness Management on the Flight Deck: Cognition, Performance, and Rest/Activity Monitoring, NASA NCC-2-1077, 1996-99 (total award: \$680,000)
- Principal Investigator, Development of an Alertness Management Expert System, NASA NCC 2-839, 1993-94 (total award: \$56,519)

**Department of Defense**

Principal Investigator, Effects of Cognitive Task Difficulty on Sleep-Wake Homeostasis (FA9550-05-1-0293), Air Force Office of Scientific Research, 2005-09 (total award: \$1,420,584)

Principal Investigator, Neuroimaging Cognitive Vulnerability to Sleep Deprivation: Effects of Cognitive Task Difficulty on Sleep-Wake Homeostasis (FA9550-05-1-0293), Air Force Office of Scientific Research, 2006-07 (total award: \$59,583)

Principal Investigator, Optimizing performance through sleep-wake homeostasis: Integrating physiological and neurobehavioral data via ambulatory acquisition in laboratory and field environments. (FA9550-05-1-0293), Air Force Office of Scientific Research DURIP, 2006-07 (total award: \$269,487)

Co-Investigator, Individualized Next-Generation Biomathematical Modeling of Fatigue and Performance, H. Van Dongen, P.I., Air Force Office of Scientific Research, 2004-07 (total award: \$182,849)

Principal Investigator, Effects of Sleep Loss and Jet-Lag in Operational Environments, U.S Air Force Office of Scientific Research, 2004-05 (total award: \$36,000)

Center Director and Principal Investigator, PRET Center Homeostatic & Circadian Regulation of Wakefulness During Jet Lag and Sleep Deprivation: Effect of Wake-Promoting Countermeasures, Air Force Office of Scientific Research, F49620-00-1-0266, 2000-05 (total award: \$4,759,156)

Center Director and Principal Investigator, PRET Center Homeostatic & Circadian Regulation of Wakefulness During Jet Lag and Sleep Deprivation: Effect of Wake-Promoting Countermeasures, Air Force Office of Scientific Research, F49620-95-1-0388, 1995-00 (total award: \$3,189,680)

Principal Investigator, Center for Countermeasure Prevention of Human Performance Failure from Biological Vulnerability: Achieving Optimal Capability, U.S Air Force, 1999-01

Principal Investigator, Neurobehavioral Vulnerability to Performance Failure as a Phenotypic Response to Sleep Loss, Department of Army DAAD19-99-1-0120, 1999-01 (total award: \$314,342)

Principal Investigator, Analyses of Pattern of Alertness Related Performance Fluctuations in Men and Women, Office of Naval Research, 1996-97

Principal Investigator, Prophylactic Napping to Sustain Performance in Continuous Operations, Office of Naval Research, N00014-80-C-0380, 1980-86 (total award: \$400,000)

### **Department of Homeland Security (Transportation Security Laboratory)**

Principal Investigator, Prediction of Fatigue and its Effects on Vigilance and Target Detection (FAA #04-G-010) Department of Homeland Security's Transportation Security Laboratory Human Factors Program, 2004-09, (total award: \$853,055)

### **Department of Transportation**

Principal Investigator, Truck Driver Fatigue Management Survey, Federal Motor Carrier Safety Administration and Motor Freight Carrier Association, 2003-05 (total award: \$300,000)

Principal Investigator, Pilot Test of Fatigue Management Technologies, Federal Motor Carrier Safety Administration, 1999-05 (total award: \$454,650)

Principal Investigator, Drowsy Driver Detection and Countermeasures: Driver-Vehicle Interface, National Highway Traffic Safety Administration, 2001-03 (total award: \$440,148)

Principal Investigator, Evaluation of Techniques for Measuring Ocular Psychophysiology as an Index of Fatigue and the Basis for Alertness Management, National Highway Traffic Safety Administration, DTNH22-93-D-07007, 1996-98 (total award: \$615,070)

### **Department of Justice**

Co-Investigator, Use and Effectiveness of Hypnosis and Cognitive Interview for Enhancing Eyewitness Recall, National Institute of Justice, 82-IJ-CX-0052, 1986-89

Co-Investigator, Reliability of Hypnotically Induced Testimony, National Institute of Justice, 82-IJ-CX-0007, 1984-86

### **Foundations**

Principal Investigator, Objective Monitoring of Crew Neurobehavioral Functions in Mars 520 (NBPF00006), Institute for Experimental Psychiatry Research Foundation, 2010–13 (total award: \$100,000)

Principal Investigator, Research on Sleep and Memory, Institute for Experimental Psychiatry Research Foundation, 1980-07

Principal Investigator, Improving the Quality of Life for Children in Pain, Van Ameringen Foundation, 1991-93

Principal Investigator, Psychobiology of Fibromyalgia and its Effective Treatment, Theodora B. Betz Foundation, 1991-92

Principal Investigator, Improving School Attendance and Performance in Children with Pain due to Sickle Cell Disease, Stratford Foundation, Inc., 1990-92

Principal Investigator, Psychobiology of Fibromyalgia Syndrome and its Effective Treatment Catharine D. Sharpe Charitable Trust, 1990-91

Principal Investigator, Improving the Quality of Life for Children with VOC Pain due to Sickle Cell Disease, Hasbro Children's Foundation, 1988-90

Principal Investigator, Improving the Quality of Life for Children in Pain, Van Ameringen Foundation, 1988-89

### **Industry**

Principal Investigator, Merck Phase II-A Protocol MK-0249: Alerting agent for sleep apnea patients, Merck & Co., Inc., 2008-09 (Provided support for cognitive testing in the trial), (total award: \$374,603)

Principal Investigator, Randomized Trial of Modafinil for Shift Work Sleep Disorder (305), Cephalon, Inc., 2001-04 (total award: \$1,118,119)

Principal Investigator, Multisite Investigation of Provigil Treatment for Performance Impairing Sleepiness Associated with Night Shift Work, Cephalon, Inc., 1999-00 (total award: \$122,364)

Principal Investigator, Effect of Flexeril on Pain, Sleep, and Immune Function in Fibromyalgia Syndrome Patients, Merck, Sharp, & Dohme, 1987-88 (total award: \$60,000)

### **Scientific expert in major cases of public interest relative to sleep and performance failure**

**Grounding of the Exxon Valdez (1989):** Civil legal proceedings in Federal Court involving crew work-rest schedule violations of Federal Statutes that contributed to the grounding of the Exxon Valdez on Bligh Reef, March 24, 1989, which caused an environmental catastrophe.

**Crash of American Airlines 1420 (1999):** NTSB investigation of pilot's sleep and performance prior to runway overrun during landing by American Airlines Flight 1420 at Little Rock, Arkansas, June 1, 1999 (9 fatalities).

**Allision of the Staten Island Ferry (2003):** Hearing in Federal Court on pilot's sleep and performance at the time the Staten Island Ferry—en route from Manhattan to Staten Island—allision with a maintenance pier at the Staten Island Ferry terminal on October 15, 2003 (154 fatalities).

**U.S. Anti-Doping Agency (2005):** Adjudication by the U.S. Anti-Doping Agency on the effects of the wake-promoting drug modafinil on performance of U.S. Olympic athletes.

### **Media coverage of scientific research (non-exhaustive list for period from 1990-2016)**

Newspapers (partial list—many have covered Dr. Dinges' research more than once)

New York Times, USA Today, Washington Post, The Philadelphia Inquirer, Wall Street Journal, Financial Times, Chicago Tribune, LA Times, Atlanta Constitution, The Boston Globe, San Francisco Chronicle, Detroit Free Press, Miami Herald, National Post (Canada), St. Louis Post-Dispatch, Houston Chronicle, The Augusta Chronicle, Charlotte Observer, The Dallas Morning News, Fort Worth Star-Telegram, Sydney Morning Herald, Calgary Herald.

Magazines (partial list—many covered Dr. Dinges' research more than once)

New York Times Magazine, Time, Newsweek, Parade, New Yorker, Forbes, Business Week, Discover, Discovery Magazine, US News and World Report, Scientific American, American Health Line, Science News, The Economist, Philadelphia Inquirer Magazine, Clinical Psychiatry News, Neurology Reviews, and Modern Physician, Journal of the American Medical Association, The Lancet Neurology, APS Observer, Health and Medicine Week, Women's Health Weekly, National Geographic, Science News.

Electronic/television media (partial list—many covered Dr. Dinges' research more than once)

National Public Radio, PBS, CNN, BBC Radio and TV, ABC Good Morning America, NBC Today, MSNBC News, United Press International, AScribe Newswire, Newswire Association, Physicians Practice, Allure, The Statesman, American Health Line, World Reporter, UniSci, Brain Connection, IntelliHealth.com, Space.com, Discovery Science Channel, CBS's Sunday Morning, CBS Morning News, NBC10, ABC's 20/20, CBS 60 Minutes, BBC Naked Science, National Geographic Channel, Science News, Congressional Quarterly, BBC World News, CNN Health News.

Most recent television media

Space's Deepest Secrets (TV Series documentary) Inside NASA's Mission to Mars, June 28, 2016

Horizon, (BBC TV Series Documentary) Man on Mars: Mission to the Red Planet, February 10, 2014

60 Minutes (TV Series Documentary) The Wrong Medicine/The Science of Sleep, March 16, 2008

60 Minutes (TV Series Documentary) The Science of Sleep/The Pursuit of Happiness, June 15, 2008

Mars Rising (TV Series Documentary) The Human Factor, October 21, 2007

Mars Rising (TV Series Documentary) Journey to the Red Planet, September 7, 2007

**Lectures by Invitation in last 5 years (2016-2010) (N=129)–see Addendum for earlier invited lectures (2009-1986, N=497)**

- |                   |   |
|-------------------|---|
| June 10, 2016     | “Sleep Deprivation” American Academy of Dental Sleep Medicine 25 <sup>th</sup> Anniversary Meeting, Denver, CO.   |
| June 11, 2016     | “Acute Sleep Loss” SLEEP2016 Annual Meeting, Denver, CO.  |
| June 11, 2016     | “Grant Writing” Trainee Grant Writing Workshop, SLEEP2016 Annual Meeting, Denver, CO.   |
| CMDJune 11, 2016  | “Concluding remarks, Grant Review as Social Darwinism” SLEEP2016 Annual Meeting, Denver, CO.  |
| June 12, 2016     | “Building a Career in Sleep Research” Trainee Workshop, SLEEP2016 Annual Meeting, Denver, CO.   |
| May 17, 2016      | “New mysteries of human sleep deprivation: Phenotypic vulnerability and hysteresis. NIH NHLBI Tenure Track Series, NIH, Bethesda, MD.   |
| February 10, 2016 | “Operational ground testing protocol to optimize astronaut sleep medication efficacy and individual effects” 2016 NASA Human Research Program Investigator’s Workshop Frontiers in Human Space Exploration Research, Galveston, TX. |
| February 10, 2016 | “Standardized behavioral measures toolkit (SBMT): Overview” 2016 NASA Human Research Program Investigator’s Workshop Frontiers in Human Space Exploration Research, Galveston, TX.  |
| February 10, 2016 | “Reaction self-test (RST) from 6-month missions on ISS (PVT on ISS)” 2016 NASA Human Research Program Investigator’s Workshop Frontiers in Human Space Exploration Research, Galveston, TX.   |
| January 23, 2016  | “The Basic Science of sleep and fatigue management” ACGME Task Force  |

on Fatigue Management, Supervision, Professionalism and Patient Safety Meeting, Chicago, IL.

- December 2, 2015 “Issues of Behavioral Performance and Behavioral Health in Space – Detection is Key” Baylor College of Medicine Center for Space Medicine Lecture, Baylor College of Medicine, Houston, TX
- November 4, 2015 “Balancing the Needs for Research and Action” National Highway Traffic Safety Administration’s National Drowsy Driving Summit: Asleep at the Wheel, A Nation of Drowsy Drivers, Washington, D.C.
- August 4, 2015 “Dynamics of Recovery from Chronic Partial Sleep Loss: What Have We Missed?” Distinguished Lecture at the Restorative Effects of Sleep Workshop sponsored by ONR-OASD, Arlington, VA
- June 10, 2015 “Neurobehavioral manifestations of excessive sleepiness?” SLEEP2015 annual meeting, Seattle, WA.
- June 8, 2015 “Neurobehavioral Dynamics of Human Sleep Restriction and Recovery” SLEEP2015 annual meeting, Seattle, WA.
- May 13, 2015 “Food for Thought – Brain Initiatives” Invited panelist at the Future of Food Summit, Washington DC
- April 27, 2015 “Acute and chronic sleep loss: An overview of science, clinic and societal needs” National Heart Lung Blood Institute Workshop on Developing Biomarker Arrays Predicting Sleep and Circadian-Coupled Risks to Health at the NIH campus, Bethesda, MD
- March 9, 2015 “Neurobehavioral dynamics of human sleep restriction and recovery” Invited talk to the Behavioral Neuroscience Group, University of Delaware, Department of Psychological and Brain Sciences, Spring 2015 Seminar Series, Newark, DE
- January 14, 2015 “Reaction Self-Test (RST) results from astronauts on ISS compared to RST assessments from the crew of the 520-Day simulated mission to Mars” 2015 Human Research Program Investigator’s Workshop, Galveston, TX
- January 14, 2015 “Optical Computer Recognition (OCR) of stress, negative affect and fatigue in space flight: Proof-of-Principle” 2015 Human Research Program Investigator’s Workshop, Galveston, TX
- December 3, 2014 “Issues of Behavioral Performance and Behavioral Health in Space – Detection is Key” Baylor College of Medicine Center for Space Medicine Lecture, Baylor College of Medicine, Houston, TX
- November 14, 2014 “What are the neurobehavioral manifestations of sleepiness?” Invited talk at the Usefulness and Limits of Clinical and Biological Tools to Evaluate Excessive Sleepiness Symposium at Stanford University, Palo Alto, CA
- November 6, 2014 “Sleep, Sleep Loss and Waking Neurobehavioral Functions” The McMorris Autism Training Program Seminar Series, the Center for Mental Health Policy and Services Research at the University of Pennsylvania Perelman School of Medicine and the Center for Autism Research at The Children’s Hospital of Philadelphia, Philadelphia, PA

- October 21, 2014 “Introduction and Scope of the Problem” invited talk at the National Transportation Safety Board Public Forum on “Awake, Alert, Alive: Overcoming the Dangers of Drowsy Driving”, Washington DC
- October 10, 2014 “Sleep Deprivation” invited speaker for the 28<sup>th</sup> Annual Meeting of the Society for Pediatric Anesthesia in New Orleans, LA
- September 29, 2014 “Neurobehavioral & neurocognitive effects of sleep loss” invited talk at the National Space Biomedical Research Institute Sleep Workshop, Houston, TX
- September, 17, 2014 “What can we learn from trips to Mars? Sleep, Exercise and Performance” Keynote address at the 2014 American College of Sports Medicine Conference on Integrative Physiology of Exercise, Miami Beach, FL.
- August 18, 2014 “Psychomotor Vigilance Test and comments on other approaches to fatigue detection” GoTo Meeting Presentation for Fatigue Management Research for the Federal Motor Carrier Safety Administration.
- July 25, 2014 “What is the evidence for and against sleep debt” Invited lecture for The Center for Sleep and Respiratory Neurobiology at the University of Pennsylvania Perelman School of Medicine, Philadelphia, PA.
- May 31, 2014 “Sleep Deprivation: We should be studying dynamics” Invited Lecture for the Sleep Research Society Postgraduate Course on "Year in Review 2014", SLEEP2014 annual meeting, Minneapolis, MN.
- May 29, 2014 “Psychomotor vigilance task and competitors” 2<sup>nd</sup> Meeting of the Panel on Research Methodologies & Statistical Approaches to Understanding Driver Fatigue Factors in Motor Carrier Safety and Driver Health, National Research Council, Washington DC.
- May 15, 2014 “Human Performance: Resiliency and Vulnerability to Sleep Loss” Anesthesiology & Critical Care Grand Rounds, Perelman School of Medicine University of Pennsylvania, Philadelphia, PA
- May 6, 2014 “Optical computer recognition to detect fatigue and emotion in space flight” Biomedical Science and Engineering Center 2014 Conference: Collaborative Biomedical Innovations, Oak Ridge, TN
- March 21, 2014 “Sleep, circadian rhythms & sleep disorders” Brain and Behavior Course for the University of Pennsylvania Perelman School of Medicine Medical Students, Philadelphia, PA
- March 12, 2014 “Human performance: Resiliency and vulnerability to sleep loss” Cardiology Grand Rounds, Department of Anesthesiology and Critical Care Medicine, Mount Sinai St. Luke’s, New York City, NY
- February 12, 2014 “Effects of time in mission: ISS astronauts ratings of stress” NASA Human Research Program Investigators’ Workshop, Galveston, TX
- February 12, 2014 “Development and validation of optical computer recognition (OCR) to detect fatigue and emotion in space flight” NASA Human Research Program Investigators’ Workshop, Galveston, TX

- February 11, 2014 “Psychological and behavioral changes during confinement in a 520-day simulated interplanetary mission to Mars” NASA Behavioral Health and Performance Research Element Working Group Meeting, Galveston, TX
- January 9, 2014 “Human aspects in spaceflight” International Academy of Astronautics Space Exploration Conference, Washington, DC
- December 12, 2013 “Machine vision to track risk of human error” Neurosurgery Grand Rounds, Perelman School of Medicine, University of Pennsylvania, Philadelphia, PA
- November 21, 2013 “Sleep and circadian rhythms” National Transportation Board Academy, Ashburn, VA
- November 21, 2013 “Alertness and performance” National Transportation Board Academy, Ashburn, VA
- November 12, 2013 “Sleep, biological timing and behavioral health” Psychopathology Proseminar, Department of Psychology, University of Pennsylvania, Philadelphia, PA
- October 24, 2013 “Human performance: Resilience and vulnerability to sleep loss” Johns Hopkins University Department of Anesthesiology & Critical Care Medicine “Research-sponsored” Grand Rounds, Johns Hopkins University, Baltimore, MD
- October 16, 2013 “Issues of behavioral performance and behavioral health in space – detection is the key” Baylor College of Medicine Center for Space Medicine Lecture, Baylor College of Medicine, Houston, Texas
- October 9, 2013 Webinar presentation of "Spaeth, A.M., Dinges, D.F., Goel, N. Effects of experimental sleep restriction on weight gain, caloric intake and meal timing in healthy adults. Sleep 37(7): 181-190," at the Sleep and Respiratory Neurobiology (SRN) Journal Club, American Thoracic Society
- August 15, 2013 “Energy products in a 24/7 world: Illustrations from the research and possible research gaps” Invited Keynote Speaker at The Use and Biology of Energy Drinks: Current Knowledge and Critical Gaps Meeting at the National Institutes of Health (NIH) Campus, Bethesda, MD
- August 7, 2013 “Fatigue Risks in Space: Neurobehavioral and Physiological Effects of High Cognitive Workload and Chronic Sleep Restriction” NASA Behavioral Health and Performance Annual Meeting, Johnson Space Center, Houston, TX
- August 5, 2013 “Neurobehavioral challenges of space flight” NSBRI OMICS Meeting, Houston, TX
- July 26, 2013 “Sleep on the International Space Station” Sleep Medicine Grand Rounds, University of Pennsylvania Perelman School of Medicine, Philadelphia, PA.
- July 11, 2013 “Monitoring of sleepiness-related fatigue in space flight with optical computer recognition” 19<sup>th</sup> Annual International Academy of Astronautics (IAA) Humans in Space Symposium, Cologne, Germany.
- July 11, 2013 “An objective unobtrusive model-based tracker of facial expressions of emotions in space flight” 19<sup>th</sup> Annual International Academy of Astronautics (IAA) Humans in Space Symposium, Cologne, Germany.



- July 10, 2013 “ISS missions: Elevated workload and reduced sleep duration” 19th Annual International Academy of Astronautics (IAA) Humans in Space Symposium, Cologne, Germany.
- July 23, 2013 “State of the science on sleep research” NINR Fatigue & Sleep Methodologies Boot Camp, Bethesda, MD.
- June 1, 2013 "Sleep Deprivation in Humans: Effects on Brain and Behavior" Invited Lecture for the Sleep Research Society Postgraduate Course on "The Basics of Sleep", SLEEP2013 annual meeting, Baltimore, MD.
- June 1, 2013 " Sleepiness in the Workplace: Risk, Detection & Mitigation " Invited Lecture for the American Academy of Sleep Medicine Postgraduate Course on “State of the Art 2013 for Clinical Practitioners”, SLEEP2013 annual meeting, Baltimore, MD.
- May 30, 2013 "The Cumulative Consequences of Inadequate Sleep" Keynote address at the American Academy of Dental Sleep Medicine, Baltimore, MD.
- May 20, 2013 “God, luck, and the weather (or how I learned to distrust my brain doing science on sleep deprivation)” Reception/dinner talk at the American Thoracic Society International Conference, Philadelphia, PA
- May 7, 2013 “Living on Mars: Biomedical Challenges” Humans 2 Mars Conference, George Washington University, Washington DC
- May 1, 2013 “Planning a trip to Mars” 29th Annual Neuroscience Retreat, Mahoney Institute of Neurological Sciences, Perelman School of Medicine at the University of Pennsylvania, Philadelphia, PA
- February 13, 2013 “ISS Missions: Elevated workload and reduced sleep duration” NASA Human Research Program Investigators’ Workshop, Houston, TX
- February 13, 2013 “MARS 520-Day mission simulation reveals changes in crew activity levels and alterations of sleep-wake patterns”, NASA Human Research Program Investigators’ Workshop, Houston, TX
- February 11, 2013 “Evidence of phenotypic and genotypic differences in neurobehavioral reactions to sleep loss” NSBRI Effects of Long Duration Spaceflight on Brain and Behavior Meeting, Houston, TX
- December 6, 2012 “Neurobehavioral Challenges to Human Exploration of Space” Neurosurgery Grand Rounds for the University of Pennsylvania, Philadelphia, PA
- December 5, 2012 “Sleep: Chief Nourisher in Life’s Feast” Grand Rounds for the University of Medicine & Dentistry of New Jersey, Cherry Hill, NJ
- November 15, 2012 “Sleep and Circadian Rhythms”, National Transportation Board Academy, Ashburn, VA
- November 15, 2012 “Sleep Disorders and Medical Issues”, National Transportation Board Academy, Ashburn, VA
- November 15, 2012 “Alertness and Performance”, National Transportation Board Academy, Ashburn, VA  
 January 5, 2012 “Dynamics of neurobehavioral functions during chronic sleep restriction and recovery: Are there long(er) time constants to sleep-wake homeostasis?” Grand Rounds, Perelman School of Medicine University of Pennsylvania, Philadelphia, PA

- November 8, 2012 “Optimizing neurobehavioral performance: Sleeping for speed and accuracy” Annual Meeting of The National Center for Human Performance, Texas Medical Center, Houston, TX
- November 7, 2012 “Issues of behavioral health in space – Detection is key” Center for Space Medicine Lecture Series Topics in Human Space Exploration and Medicine at Baylor College of Medicine, Houston, TX
- November 7, 2012 “Neurobehavioral findings from Mars 520: Implications for long-duration exploration missions” Mars 520 Briefing at the National Space Biomedical Research Institution, Houston TX.
- November 7, 2012 “Neurobehavioral findings from the Reaction Self-Test on ISS: Implications for long-duration exploration missions” Mars 520 Briefing at the National Space Biomedical Research Institution, Houston TX.
- October 21, 2012 “The time of your life: Sleeping to your internal clock” Forever Young Health and Wellness Event, Philadelphia, PA
- September 20, 2012 “Transportation safety and operator fatigue: Where biology needs technology” International Symposium: International Association of Traffic Safety Sciences (IATSS) 2012 Workshop, Tokyo, Japan
- September 18, 2012 “Preparing for exploration missions: Lessons from Mars 500, and future NASA/NSBRI goals” Japanese Aerospace Exploration Agency (JAXA) Workshop on Human Behavior and Performance in Space Flight”, Tokyo, Japan
- August 13, 2012 “Behavior and Performance” Emerging Opportunities in Space Life Sciences Research Meeting, Johns Hopkins University, Baltimore, MD
- August 9, 2012 “Review of the science of fatigue and its impact on performance” American College of Surgeons Committee to Enhance Peak Performance in Surgery through Recognition and Mitigation of the Impact of Fatigue, Chicago, IL
- August 1, 2012 “The Long Duration Russian Chamber Study (Mars 520)” NASA 2012 Behavioral Health and Performance Working Group, Houston, TX
- July 24, 2012 “The State of the Science of Sleep Research” NIH-NINR Fatigue and Sleep Methodologies Boot Camp, Bethesda, MD
- June 26, 2012 “Behavioral health on the International Space Station” American Astronautical Society, 1<sup>st</sup> Annual ISS Research and Development Conference, Denver, CO
- June 10, 2012 “Sculpting a career in sleep science in the 21<sup>st</sup> century: There is still a great deal to discover” Keynote address for the Trainee Day at the 26<sup>th</sup> Annual Meeting of the Associated Professional Sleep Societies, Boston, MA
- June 10, 2012 “Sleep deprivation: Effects on brain and behavior” Trainee Day at the 26<sup>th</sup> Annual Meeting of the Associated Professional Sleep Societies, Boston, MA
- May 31, 2012 “The link between sleep and many of our nation’s major public health problems and the link between inadequate sleep and safety” Sleep Research Society Congressional Briefing in Washington DC.
- May 23, 2012 “Planning for optimal behavioral health on exploration missions” Space Exploration Conference, Washington DC

- May 18, 2012 “MARS 500” International Space Medicine Summit 2012, James A Baker III Institute for Public Policy, Rice University, Houston., TX
- April 24, 2012 “Neurobehavioral responses during a 520-day simulated Mars mission” Mars 500 International Symposium, Moscow, Russia
- February 20, 2012 “The functional effects of sleep loss: Where biology needs management” Medical Education Grand Rounds, Duke University Hospital, Durham, NC
- February 13, 2012 “Optimizing acquisition of behavioral health data on the crew of IBMP’s 520-Day simulated mission to Mars” NASA Human Research Program Investigator’s Workshop, Houston, TX
- February 2, 2012 “No time to sleep: Neurobehavioral and social consequences of sleep loss from life style” Neuroscience and Society Public lecture Series, University of Pennsylvania, Philadelphia, PA
- January 22, 2012 “How to get the public to wake up to the seriousness of sleep deprivation and its significant safety and health effects in the transportation system: Strategies for communicating and addressing drowsiness” Transportation Research Board 91<sup>st</sup> Annual Meeting, Washington D.C.
- January 10, 2012 “Sleep and circadian rhythms” National Transportation Board Academy, Ashburn, VA
- January 10, 2012 “Alertness and performance” National Transportation Board Academy, Ashburn, VA
- January 10, 2012 “Sleep disorders and medical issues” National Transportation Board Academy, Ashburn, VA
- December 7, 2011 “Issues of behavioral performance and behavioral health in space – detection is key” Center for Space Medicine at the Baylor College of Medicine, Houston, TX
- October 19, 2011 “Neurobehavioral dynamics of sleep restriction and recovery” World Sleep 2011 Congress, Kyoto, Japan
- October 17, 2011 “Sleepiness and safety: Where biology needs technology” World Sleep 2011 Congress, Kyoto, Japan
- October 16, 2011 “How to write a (good) grant” World sleep 2011 Congress, Kyoto, Japan
- September 29, 2011 "Maintaining Human Behavioral Capability: Where Biology Needs Technology" Grand Rounds, Division of Sleep Medicine, Stanford University, Palo Alto, CA
- August 4, 2011 “Mars 500 analog as an example of current analog investigation” NASA Behavioral Health and Performance Working Group, Houston, TX
- July 29, 2011 “Maintaining human behavioral capability: Where biology needs technology” Microsoft Research Group, Redmond, WA
- July 22, 2011 “Human neurobehavioral dynamics relative to sleep-wake schedules” CTSA Summer Intern Seminar Series, Perelman School of Medicine University of Pennsylvania, Philadelphia, PA

- July 21, 2011 “The functional effects of sleep loss: Where biology needs technology” Grand Rounds, Department of Neurology, Perelman School of Medicine University of Pennsylvania, Philadelphia, PA
- July 14, 2011 “The functional effects of sleep loss: Where biology needs technology” Grand Rounds, Department of Anesthesia, Critical Care and Pain Medicine Massachusetts General Hospital, Boston, MA
- June 12, 2011 "Sleepiness and performance decrements in the workplace" SLEEP 2011 25<sup>th</sup> Annual Meeting of the Associated Professional Sleep Societies, Minneapolis, MN
- June 12, 2011 “Grant writing is Social Darwinism” SLEEP 2011 25<sup>th</sup> Annual Meeting of the Associated Professional Sleep Societies, Minneapolis, MN
- May 4, 2011 “Fatigue management, a particularly relevant Capitol Hill topic” American Academy of Sleep Medicine, U.S. House of Representatives, Washington DC
- May 3, 2011 “Human performance in space” Institute for Behavioral Resources Anniversary Conference Celebrating 50 Years of Contributions to Behavioral Science, Johns Hopkins University School of Medicine, and Baltimore, MD
- April 25, 2011 “Dynamics of neurobehavioral functions during chronic sleep restriction and recovery: Are there long(er) time constants to sleep-wake homeostasis?” Stanford University School of Medicine Grand Rounds, Palo Alto, CA
- April 14, 2011 “Fridtjof Nansen – Lessons for human exploration of space” Plenary address, International Academy of Astronautics 18th Humans in Space Symposium, Houston, TX
- April 12, 2011 “Objective Monitoring of Crew Neurobehavioral Functions in IBMP’s 520-Day Mars Simulation” International Academy of Astronautics 18th Humans in Space Symposium, Houston, TX
- March 24, 2011 “Maintaining human behavioral capability: Where biology meets technology” Urology Grand Rounds, Hospital of the University of Pennsylvania, Philadelphia, PA.
- March 18, 2011 “Circadian Rhythms, Sleep and Neurological Sleep Disorders” Medical Student Lecture, Hospital of the University of Pennsylvania, Philadelphia, PA
- February 16, 2011 “Maintaining Human Behavioral Capability: Where Biology Meets Technology” PENN Emergency Medicine Department Grand Rounds, Hospital of the University of Pennsylvania, Philadelphia, PA
- February 8, 2011 Public Testimony on 10 CFR Part 26, Subpart 1 in relation to current fatigue science, Nuclear Regulatory Commission, Rockville, MD
- January 11, 2011 “A Brain in Conflict: Sleep and Circadian Imperatives in a 24/7 World” “Demystifying Medicine 2011” National Institutes of Health, Bethesda, MD
- December 22, 2010 “Sleep, fatigue, circadian rhythms relative to fatigue and cognitive performance” National Research Council, National Academies, Washington DC

- December 7, 2010 “Dynamics of human neurobehavioral functions during chronic sleep restriction and recovery: Critical contributions from sleep duration, slow wave sleep homeostasis, and phenotypic vulnerability” American College of Neuropsychopharmacology, Annual Meeting, Miami Beach, FL
- December 2, 2010 “Maintaining Human Behavioral Capability: Where Biology Meets Technology” Committee on Human-Systems Integration—A Celebration of 30 Years of Human-Systems Integration at the NRC (1980-2010), National Research Council, National Academies, Washington, DC
- November 18, 2010 “The need for sleep and the consequences of not obtaining it” Cultural Encounters meeting, White Horse Village, Media, PA
- November 9, 2010 “Sleep Need and Fatigue Management: Critical Roles for Professionalism and Medical Education” RIME 28th Invited Address, Association of American Medical Colleges, Washington, DC
- October 26, 2010 “Recent experiments about fatigue recovery and recycle” Office of Naval Research, Alexandria, VA
- October 20, 2010 “Issues of Behavioral performance and behavioral health in space – Detection is key” Center for Space Medicine at Baylor College of Medicine, Houston, TX
- September 30, 2010 “The critical role sleep need has in health and safety” National Institute of Nursing Research 25<sup>th</sup> Anniversary Kick off Scientific Symposium, Bethesda, MD
- September 28, 2010 “Sleep, sleep disorders and circadian rhythms” National Transportation Board Academy, Ashburn, VA
- September 28, 2010 “Alertness and performance” National Transportation Board Academy, Ashburn, VA
- September 15, 2010 “IBMP MARS 500 Project: 105-day pilot study & 520-day Mars simulated mission” National Space Biomedical Research Institute Board of Directors Dinner, Houston, TX
- July 20, 2010 “Managing sleep loss and fatigue” Psychiatry Grand Rounds Cooper University Hospital, Camden, NJ
- June 17, 2010 “Sleep (deprivation) research and work hours” Neurosurgery Grand Rounds University of Pennsylvania School of Medicine, Philadelphia, PA
- June 8, 2010 “Are neurobehavioral responses to sleep deprivation true phenotypes?” SLEEP 2010 24<sup>th</sup> Annual Meeting of the Associated Professional Sleep Societies, San Antonio, TX
- June 6, 2010 “Recycling back into sleep restriction: Dose response effects of recovery sleep” SLEEP 2010 24<sup>th</sup> Annual Meeting of the Associated Professional Sleep Societies, San Antonio, TX
- May 11, 2010 “Development of the PVT Self-Test for fatigue management in space: A critical role for analogs” Aerospace Medical Association 81<sup>st</sup> Annual Scientific Meeting, Phoenix, AZ

- March 16, 2010 “Optimizing performance capability: Biomarkers for differential vulnerability to the neurobehavioral effects of sleep loss” Office of Naval Research, Arlington, VA
- February 4, 2010 “A critical role for analogs in the development of the PVT Self Test for fatigue management in space” NASA Human Research Program Investigators’ Workshop, Houston, TX
- January 25, 2010 “Fitness for duty assessments” Accreditation Council for Graduate Medical Education’s Duty Hours Task Force, Chicago, IL

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34. Jones, C.W., Banks, S., Mellet, J., Van Dongen, H.A., Dinges, D.F.: Recovery sleep stage dynamics following chronic sleep restriction. *SLEEP* 31: A135, 2008.
33. Goel, N., Lakhtman, L., Banks, S., Dinges, D.F.: Polysomnographic measures in relation to phenotypic neurobehavioral responses to sleep restriction. *SLEEP* 31: A129, 2008.
32. Goel, N., Lakhtman, L., Banks, S., Dinges, D.F.: Phenotypic neurobehavioral responses to sleep restriction: relationship to cognitive and subjective measures. *SLEEP* 31: A111, 2008.
31. Banks, S., Dinges, D.F.: Relationship between neurobehavioral assessments of cognitive performance and sleepiness after sleep restriction. *SLEEP* 31: A116, 2008.
30. Arroyo, S., Banks, S., Dinges, D.F.: Effect of sleep inertia on objective and subjective tests of sleepiness before and after sleep restriction. *SLEEP* 31: A135, 2008.
29. Wright, K.P., Dinges, D.F., Roth, T, et al.: Influence of circadian timing in shift-work disorder (SWSD). *Annals of Neurology* 62: S82, 2007.
28. Walsh, J.K., Dinges, D.F., Roth, T., et al: Modafinil improves behavioral alertness in shift-work sleep disorder (SWSD). *Annals of Neurology* 62: S81, 2007.
27. Roth, R., Wright, K.P., Schwartx, J.R.L., et al: Modafinil improves wakefulness in patients with chronic shift work sleep disorders (SWSD). *Annals of Neurology* 62: S81, 2007.
26. Krystal, A.D., Dinges, D.F.: Modafinil improves performance requiring sustained attention inpatients with narcolepsy. *Annals of Neurology* 62: S80, 2007.
25. Hirshkowitz, M., Dinges, D.F., Black, J.E.: Modafinil improves behavioral alertness in patients with Obstructive Sleep Apnea (OSA) treated with Nasal Continuous Positive Airway Pressure (nCPAP) with Residual Excessive Sleepiness (ES). *Annals of Neurology* 62: S80, 2007.
24. Arroyo, S., Banks, S., Dinges, D.F.: Maintenance of wakefulness test: Reliability and predictors in normal, healthy subjects. *Sleep* 30 (Abstract Supplement): A342, 2007.
23. Dinges, D.F., Hirshkowitz, M., Sangal, R., et al. Modafinil improves behavioral alertness in patients with obstructive sleep apnea who remain sleepy on nasal continuous positive airway pressure. *Sleep* 30 (Abstract Supplement): A179, 2007.
22. Ye, L., Weaver, T., Pack, A., et al.: Gender differences in treatment response to continuous positive airway pressure in obstructive sleep apnea. *Sleep* 30 (Abstract Supplement): A159-A160, 2007.

21. Van Dongen, H., Mott, C., Huang, J., et al.: Biomathematical fatigue modeling: Individualized prediction of cognitive performance. *Sleep 30 (Abstract Supplement): A149, 2007.*
20. Tucker, A., Dinges, D.F., Van Dongen, H.: Individual differences in sleep physiology and the magnitude of waking neurobehavioral impairment during sleep deprivation. *Sleep 30 (Abstract Supplement): A138-A139, 2007.*
19. Minkel, J., McGlinchey, E., Caruso, H., et al.: Sleep deprivation and stress have additive effects on negative mood states. *Sleep 30 (Abstract Supplement): A135, 2007.*
18. Dinges, D.F., Basner, M., Fomberstein, K., et al.: Effects of sleep deprivation in slow eyelid closures (PERCLOS) during simulated threat detection performance. *Sleep 30 (Abstract Supplement): A134-A135, 2007.*
17. Dinges, D.F., Basner, M., Fomberstein, K., et al.: Effects of fatigue from night work and sleep loss on simulated threat detection performance. *Sleep 30 (Abstract Supplement): A134, 2007.*
16. Mollicone, D., Van Dongen, H., Dinges, D.F.: Digit symbol substitution task performance in a chronic sleep restriction experiment with and without naps. *Sleep 30 (Abstract Supplement): A132, 2007.*
15. Goel, N., Lakhtman, L., Basner, M., et al.: Neurobehavioral and cognitive differences during total versus partial sleep deprivation. *Sleep 30 (Abstract Supplement): A131, 2007.*
14. Goel, N., Lakhtman, L., Basner, M., et al.: Phenotyping neurobehavioral and cognitive responses to partial sleep deprivation. *Sleep 30 (Abstract Supplement): A130-131, 2007.*
13. Grant, D., Dinges, D.F., Van Dongen, H.: The discrepancy between objective performance impairment and subjective sleepiness during sleep deprivation is not solely due to report bias. *Sleep 30 (Abstract Supplement): A126, 2007.*
12. Simpson, N., Arroyo, S., Banks, S., et al.: Effects of inadequate recovery from sleep restriction on the inflammatory marker C-reactive protein. *Sleep 30 (Abstract Supplement): A125, 2007.*
11. Kalra, G., Banks, S., Van Dongen, H., et al. REM expression increases over a 5 –day period of sleep restriction. *Sleep 30 (Abstract Supplement): A124, 2007.*
10. Erickson, J., Banks, S., Dinges, D.F.: WinSCAT test battery is partially sensitive to chronic sleep restriction. *Sleep 30 (Abstract Supplement): A124, 2007.*
9. Avery, N., Banks, S., Dinges, D.F.: Change in psychomotor vigilance test lapses predicts change in digit-span memory performance during sleep restriction. *Sleep 30 (Abstract Supplement): A122, 2007.*
8. Lakhtman, L., Banks, S., Goel, N., et al. Synthetic work performance following five night of sleep restriction. *Sleep 30 (Abstract Supplement): A120, 2007.*
7. Caruso, H., Banks, S., Minkel, J., et al.: Executive functioning following five nights of sleep restriction. *Sleep 30 (Abstract Supplement): A120, 2007.*
6. Avinash, D., Banks, S., Van Dongen, H., et al.: Slow wave dynamics during consecutive weeks of sleep restriction to 4 hours per day. *Sleep 30 (Abstract Supplement): A119, 2007.*

5. Banks, S., Van Dongen, H., Dinges, D.F.: Response to sleep restriction depends upon preexisting sleep debt. *Sleep 30 (Abstract Supplement)*: A119, 2007.
4. Dinges, D.F., Wright, K., Walsh, J., et al.: Modafinil improved the ability to sustain attention and decreased wake state instability in patients with shift work sleep disorder. *Sleep 30 (Abstract Supplement)*: A59-A60, 2007.
3. Schweitzer, P., Czeisler, C., Dinges, D.F., et al.: Individual differences in alertness and performance at night in patients with shiftwork sleep disorder. *Sleep 30 (Abstract Supplement)*: A50-A51, 2007.
2. Bender, A., Tucker, A., Knittle, K., et al.: Slow wave activity in the first nrem episode is a trait marker in addition to a state marker. *Sleep 30 (Abstract Supplement)*: A38, 2007
1. Banks, S., Bergamo, C., Dinges, D.F.: Sleep restriction reduces heart rate variability. *Sleep 30 (Abstract Supplement)*: A31, 2007.

Date: 1 November 2014

## ADDENDUM

### **Other Editorial Activity:**

1985-90	Consulting Editor, <u>Psychophysiology</u>
1986-90	Associate, <u>The Behavioral and Brain Sciences</u>
1986-	Consulting reviewer, <u>Electroencephalography &amp; Clinical Neurophysiology</u>
1986-	Ad hoc reviewer, <u>Journal of Biological Rhythms</u>
1987-89	Editorial Consultant, <u>Journal of Abnormal Psychology</u>
1987-	Editorial Consultant, <u>Journal of Behavioral Medicine</u>
1988-	Consulting reviewer, <u>Journal of Gerontology: Biological Sciences</u>
1989-	Consulting reviewer, <u>Journal of Applied Physiology</u>
1989-	Consulting reviewer, <u>Work &amp; Stress</u>
1989-	Consulting reviewer, <u>Psychological Bulletin</u>
1989-	Consulting reviewer, <u>Biological Psychiatry</u>
1990-91	Consulting reviewer, <u>Psychological Reports</u>
1990-	Consulting reviewer, <u>Journal of the American Medical Association</u>
1990-	Consulting reviewer, <u>Biological Psychology</u>
1991-	Consulting reviewer, <u>Health Psychology</u>
1992-	Ad hoc reviewer, <u>Journal of the American Geriatrics Society</u>
1992-	Ad hoc reviewer, <u>The American Journal of Medicine</u>
1992-	Ad hoc reviewer, <u>Human Performance</u>
1993-	Ad hoc reviewer, <u>Behavior Research Methods, Instruments &amp; Computers</u>
1993-	Ad hoc reviewer, <u>Archives of General Psychiatry</u>
1993-	Ad hoc reviewer, <u>Journal of Psychosomatic Research</u>
1994-	Ad hoc reviewer, <u>Thorax</u>
1995-	Consulting reviewer, <u>Journal of Experimental Psychology: Applied</u>
1995-	Ad hoc reviewer, <u>Journal of Clinical Investigation</u>
1995-	Ad hoc reviewer, <u>Infection and Immunity</u>
1995-	Ad hoc reviewer, <u>American Journal of Physiology</u>

- 1995- Ad hoc reviewer, American Journal of Public Health  
 1996- Ad hoc reviewer, The Journal of Immunology  
 1997- Ad hoc reviewer, Depression and Anxiety  
 1997- Ad hoc reviewer, Scandinavian Journal of Work, Environment and Health  
 1997- Ad hoc reviewer, Intelligent Transportation Society of America

**Previous Major Teaching and Preceptor Responsibilities (includes undergraduates, graduate students, post-docs, and faculty) (1987-2007) (N = 36)**

- 1987-93 Faculty, Veterinary School course on “Sleep” (under direction of Prof. Adrian Morrison) at University of Pennsylvania.
- 1988-93 Preceptor in sleep research for Richard Ross, M.D., Ph.D., Philadelphia Veterans Administration Hospital, on his VA Career Development Award.  
 Expert in research training for William Sonis, M.D., Philadelphia Child Guidance Center, on his NIMH Child and Adolescent Mental Health Academic Award.
- 1989-94 Sleep research expert collaborator for Andrew Winokur, M.D., Ph.D., University of Pennsylvania, on his NIMH Research Scientist Award.
- 1993 Dissertation Committee, Janet Mullington, Ph.D., Department of Psychology, Ottawa University, Ottawa, Ontario, Canada.
- 1994-96 Preceptor, Patricia Sollars, Ph.D., Department of Psychiatry, University of Pennsylvania School of Medicine.
- 1993-98 Preceptor, Terri E. Weaver, R.N., Ph.D., School of Nursing, University of Pennsylvania School of Medicine.
- 1995-97 Dissertation Committee, Megan Jewett, Pre-Doctoral Student of Mathematics, Harvard University, Boston, MA.
- 1995-97 Supervisor, Deepak Chugh, M.D., Fellow, Center for Sleep and Respiratory Neurobiology, Hospital of the University of Pennsylvania.
- 1995-98 Supervisor, Sheelu Samuel, Pre-Med Student, University of Pennsylvania School of Medicine.
- 1995-99 Dissertation Committee, Melissa Mallis, Ph.D., Drexel University, Philadelphia, PA.
- 1996-97 Mentor, Neena Goel, M.B.B.S., Resident, Crozier Chester Medical Center, Upland, PA.
- 1996-97 Supervisor, Marieke Dijkman, 5th year Medical Student, University of Groningen, The Netherlands.
- 1996-97 Supervisor, Ravi Mariathan, Graduate Student of Engineering, Drexel University, Philadelphia, PA.
- 1996-97 Supervisor, Janet Mullington, Ph.D., Post-Doctorate Fellow, Department of Psychiatry, University of Pennsylvania School of Medicine.
- 1996-98 Supervisor, Sadia Iftikhar, M.B.B.S, Post-Doctorate Fellow, Department of Psychiatry, University of Pennsylvania School of Medicine.



- 1996-02 Mentor, Martin Szuba, M.D., NIMH K08 award, Assistant Professor, Department of Psychiatry, University of Pennsylvania School of Medicine.
- 1997-98 Supervisor, Lan Nyugen, Pre-Doctoral Student, University of Pennsylvania School of Medicine.
- 1998-05 Supervisor, Nicholas Price, Graduate Student, School of Biomedical Engineering, Science and Health Systems, Drexel University, Philadelphia, PA.
- 1998-99 Supervisor, Hans Van Dongen, Ph.D., Post-Doctorate Fellow, Department of Psychiatry, University of Pennsylvania School of Medicine.
- 1999-00 Supervisor, Scott Doran, Ph.D., Post-Doctorate Fellow, Department of Psychiatry, University of Pennsylvania School of Medicine.
- 1999-00 Supervisor, Naomi L. Rogers, Ph.D., Post-Doctorate Fellow, Department of Psychiatry, University of Pennsylvania School of Medicine.
- 1999-00 Supervisor, Carole-Rae Reed, Ph.D., Post-doctorate Fellow, Department of Psychiatry, University of Pennsylvania School of Medicine
- 1999-01 Supervisor, Kim McManus, graduate student 699, Department of Psychology, University of Pennsylvania
- 1999-02 Dissertation Committee, David Kapfhamer, Ph.D., University of Pennsylvania.
- 1999-01 Mentor, Margaret Rukstalis, Ph.D., Assistant Professor, Department of Psychiatry, University of Pennsylvania School of Medicine,.
- 1999-01 Mentor, Hans Van Dongen, Ph.D., Assistant Professor, Department of Psychiatry, University of Pennsylvania School of Medicine.
- 2000-01 Supervisor, Ernest Braxton, Medical Student Scholarly Pursuit, University of Pennsylvania
- 2000-01 Supervisor, James B. Crabbe, Ph.D., Post-Doctoral Fellow, Department of Psychiatry, University of Pennsylvania School of Medicine.
- 2001 Thesis reader, Nicole Lamond, University of South Australia, Adelaide, South Australia.
- 2001-02 Supervisor, Marjolijn Blauuw, Pre-doctoral Researcher, University of Groningen, Groningen, The Netherlands.
- 2001-03 Supervisor, Jillian Dorrian, Pre-Doctoral Fellow, University of South Australia, Adelaide, South Australia.
- 2001-07 Supervisor, Maurice Baynard, Graduate Student, School of Biomedical Engineering, Science and Health Systems, Drexel University, Philadelphia, PA
- 2002-03 Supervisor, Els Møst, Pre-doctoral Researcher, University of Groningen, Groningen, The Netherlands.
- 2002-03 Supervisor, Tiffini Voss, Medical Student Scholarly Pursuit, University of Pennsylvania
- 2004-05 Thesis Supervisor, Deepa Avinash, Graduate Student, School of Biomedical Engineering, Science and Health Systems, Drexel University, Philadelphia, PA

- 2005-06 Supervisor, Zev Noah Kornfield, Extra credit project, School of Medicine, University of Pennsylvania
- 2005-06 Project Supervisor, Anouk Marsman, Graduate Student, Department of Biology, Groningen University, The Netherlands
- 2005-07 Dissertation Committee, Riju Ray, Ph.D., Department of Pharmacology, University of Pennsylvania School of Medicine, Philadelphia, PA,

**Undergraduate Thesis Supervisor, University of Pennsylvania:**

Honors Thesis Students mentored (1997-2007) (N = 14):

- 1997-98 Supervisor, Neil Sachs, Undergraduate Honors Thesis, Biological Basis of Behavior Program, University of Pennsylvania.
- 1998-99 Supervisor, Angela Kuo, Undergraduate Honors Thesis, Biological Basis of Behavior Program, University of Pennsylvania.
- 1999-00 Supervisor, Heather McAdam, Undergraduate Honors Thesis, Biological Basis of Behavior Program, University of Pennsylvania.
- 1999-00 Supervisor, Jason Schaechter, Undergraduate Honors Thesis, Biological Basis of Behavior Program, University of Pennsylvania.
- 2000-01 Supervisor, Jennifer Orthmann, Undergraduate Honors Thesis, Biological Basis of Behavior Program, University of Pennsylvania
- 2000-01 Supervisor, Akash Shah, Undergraduate Honors Thesis, Biological Basis of Behavior Program, University of Pennsylvania
- 2001-02 Supervisor, David Greene, Undergraduate Honors Thesis, Engineering Program, University of Pennsylvania
- 2001-02 Supervisor, Anaïs de Brunier, Undergraduate Honors Thesis, Biological Basis of Behavior Program, University of Pennsylvania
- 2001-02 Supervisor, Mariel Focseneanu, Undergraduate Honors Thesis, Biological Basis of Behavior Program, University of Pennsylvania.
- 2003-04 Supervisor, Jill Starzyak, Undergraduate Honors Thesis, Biology Program, University of Pennsylvania
- 2003-04 Supervisor, Ziga Cizman, Undergraduate Honors Thesis, Biological Basis of Behavior Program, University of Pennsylvania
- 2005-06 Supervisor, Jason Lee, Undergraduate Honors Thesis, Psychology Department, University of Pennsylvania
- 2005-06 Supervisor, Puja Saxena, Undergraduate Honors Thesis, Biology Department, University of Pennsylvania
- 2007 Supervisor, Albert Tsai, Undergraduate Honors Thesis, Biology Program, University of Pennsylvania
- 2010 Supervisor, Michael Antzis, Summer Student, Center for Translational Research

**Independent Study Students Mentored (1999-2016) (N = 44):**

- 1994-95 Supervisor, Goeff Ott, Undergraduate Independent Study, Biological Basis of Behavior Program, University of Pennsylvania.
- 1999-99 Supervisor, Janet Fu, Undergraduate Independent Study, Biological Basis of Behavior Program, University of Pennsylvania
- 2000-01 Supervisor, Beth Rapaport, Undergraduate Independent Study, Biological Basis of Behavior Program, University of Pennsylvania
- 2000-01 Supervisor, Sabir Rassiwalla, Undergraduate Independent Study, Engineering Program, University of Pennsylvania
- 2000-01 Supervisor, Michal Atzram, Co-op student, Drexel University
- 2000-01 Supervisor, Allison Caalim, Undergraduate Independent Study, Psychology Program, University of Pennsylvania
- 2000-01 Supervisor, Jennifer Brillante, Undergraduate Independent Study, Biological Basis of Behavior Program, University of Pennsylvania
- 2000-01 Supervisor, Bradley Moore, Undergraduate Independent Study, Biological Basis of Behavior Program, University of Pennsylvania
- 2000-01 Supervisor, Dominique Pichard, Undergraduate Independent Study, Biological Basis of Behavior Program, University of Pennsylvania
- 2000-01 Supervisor, Christine Ryan, Undergraduate Independent Study, Biological Basis of Behavior Program, University of Pennsylvania
- 2001-02 Supervisor, Liang-tso Tung, Undergraduate Independent Study, Psychology Program, University of Pennsylvania
- 2001-02 Supervisor, Kay O'Meara, Undergraduate Independent Study, Biological Basis of Behavior Program, University of Pennsylvania
- 2002 Supervisor, Jeffrey Schoengold, Undergraduate Independent Study, Biological Basis of Behavior Program, University of Pennsylvania
- 2002-03 Supervisor, Brent Palatsky, Undergraduate Independent Study (2 semesters), Psychology Program, University of Pennsylvania
- 2002-03 Supervisor, Clifford Bersamira, Undergraduate Independent Study (2 semesters), Psychology Program, University of Pennsylvania
- 2003 Supervisor, Shweta Antani, Undergraduate Independent Study, Biological Basis of Behavior Program, University of Pennsylvania
- 2004-05 Supervisor, Janna Hoffman, Undergraduate Independent Study, Biological Basis of Behavior Program, University of Pennsylvania
- 2004-05 Supervisor, Nicole Javelly, Undergraduate Independent Study, Biological Basis of Behavior Program, University of Pennsylvania
- 2005-06 Supervisor, Alyssa Zackler, Undergraduate Independent Study, Biological Basis of Behavior Program, University of Pennsylvania
- 2005-06 Supervisor, Thuy Tran, Undergraduate Independent Study, Biological Basis of Behavior Program, University of Pennsylvania

- 2005-06 Supervisor, Christine Shin, Undergraduate Independent Study, Biological Basis of Behavior Program, University of Pennsylvania
- 2005-06 Supervisor, Lichuan Ye, Independent Study, School of Nursing, University of Pennsylvania
- 2005-06 Supervisor, Cara Bergamo, Independent Study, University Scholars Program, University of Pennsylvania
- 2005-06 Supervisor, Ami Patel, Undergraduate Independent Study, Biological Basis of Behavior Program, University of Pennsylvania
- 2006 Supervisor, Cara Bergamo, Undergraduate Penn Scholar, Biological Basis of Behavior Program, University of Pennsylvania
- 2006-07 Supervisor, Adam Bromberg, Undergraduate Independent Study, Biological Basis of Behavior Program, University of Pennsylvania
- 2006-07 Supervisor, Julia Cunningham, Undergraduate Independent Study, Biological Basis of Behavior Program, University of Pennsylvania
- 2006 Supervisor, Adrea Glick, Undergraduate Independent Study, Biological Basis of Behavior Program, University of Pennsylvania
- 2006 Supervisor, Ryan Macht, Undergraduate Independent Study, Biological Basis of Behavior Program, University of Pennsylvania
- 2006 Supervisor, Tejas Patil, Undergraduate Independent Study, Biological Basis of Behavior Program, University of Pennsylvania
- 2006 Supervisor, Susan Sapega, Undergraduate Independent Study, Biological Basis of Behavior Program, University of Pennsylvania
- 2006 Supervisor, Sophia Termini, Undergraduate Independent Study, Biological Basis of Behavior Program, University of Pennsylvania
- 2006-07 Supervisor, Jyothi Vynatheya, Undergraduate Independent Study, Biological Basis of Behavior Program, University of Pennsylvania
- 2007 Supervisor, Adrian Di Antonio, Undergraduate Independent Study, Psychology Program, University of Pennsylvania
- 2007 Supervisor, Albert Tsai, Undergraduate Independent Study, Biology Program, University of Pennsylvania
- 2007 Supervisor, Parisa Bastani, Undergraduate Independent Study, Biology Program, University of Pennsylvania
- 2007 Supervisor, Alex Hirsch, Undergraduate Independent Study, Biology Program, University of Pennsylvania
- 2007 Supervisor, Oo Htaik, Undergraduate Independent Study, Psychology Program, University of Pennsylvania
- 2007 Supervisor, Rachel Kaplan, Undergraduate Independent Study, Biology Program, University of Pennsylvania
- 2007 Supervisor, Samantha Melnick, Undergraduate Independent Study, Biology Program, University of Pennsylvania

- 2007 Supervisor, Neiman Ramjattan, Undergraduate Independent Study, Biology Program, University of Pennsylvania
- 2007 Supervisor, Julia Shin, Undergraduate Independent Study, Biology Program, University of Pennsylvania
- 2007 Supervisor, Leslie Yuan, Undergraduate Independent Study, Biology Program, University of Pennsylvania
- 2016 Supervisor, Christopher Yao, Undergraduate Independent Study for Center of Excellence for Diversity in Health Education and Research, Biology Department, University of Pennsylvania

**Laboratory undergraduate and post-baccalaureate trainees who went on to complete advanced degrees**

<u>Trainee name</u>	<u>Period in laboratory</u>	<u>degree completed</u>
Volger, George	1990-93	PhD
Steinberg, Kim	1991-93	MD
Ott, Geoffrey	1991-94	PhD
Icaza, Edward	1993-94	MD
Lehrer, Jocelyn	1993-94	MD
Winokur, David	1993-94	MD
Dughly, Rascha	1995-97	PhD
Samuel, Sheelu	1995-98	MPH
Dijkman, Marieke	1996-97	MD
Marahasa, Ravi	1996-97	PhD
Nyugen Chaplin, Lam	1997-98	PhD
Martino, Mathew	1996-98	JD
Andersen, Christopher	1999-00	MD
Cerceo, Elizabeth	2000-01	MD
Nosker, Geoffrey	2000-01	MD
McConnell, Kim	2001-02	MD
Blauuw, Marjolijn	2002-02	PhD
Levin, Alicia	2002-02	MD
Jones, Christopher	2002-03	JD
McAdam, Heather	2001-02	MD
Law, Jennifer	2002-03	MD
Flesch, Judd	2002-03	MD
Most, Els	2002-03	PhD
O'Meara, Kay	2002-03	MD
Rider, Robert	2002-04	PhD
O'Connor, Robert	2003-04	PhD
Vitellaro, Kristen	2003-04	MD
Coble, Matthew	2003-05	MA
Stakofsky, Allison	2003-05	MD
Niyogi, Sayani	2003-06	MD
Baffy, Noemi	2004-05	PhD
Gorman, Rachel	2004-05	MD
Connolly, B. James	2005-05	PhD

Razavi, Farid	2005-05	MD
Ruger, Melanie	2005-05	PhD
Fomberstein, Ken	2005-06	MD Currently Neuroanesthesia Fellow, Yale
Marsman, Anouk	2005-06	PhD
McGlinchey, Eleanor	2005-06	PhD
William, Jeff	2005-06	MD
Caruso, Hilary	2005-07	PhD (Nursing)
Avery, Nathan	2006-07	MD
Erickson, John	2006-07	MD
Javelly, Nicole	2006-07	MD
Avinash, Deepa	2006-08	MBA
Kalra, Gurpreet K.	2006-08	currently employed in biomedical research
Lakhtman, Lilia	2006-08	MD
Mellet, Joseph	2007-09	MBA
Muto, Julianne	2007-10	PhD
Frank Fetterolf	2008-10	MD
Oo Htaik	2008-10	MD
Marisa Moreta	2008-11	currently completing MD
Sean McGinley	2009-11	currently completing MD
Eric C. Hyder	2008-2012	currently completing MD in Residency
Arroyo, Sylmarie	2006-2012	currently completing Pharmacy degree
Adrian DiAntonio	2008-2012	currently completing PhD in neuroscience
David Bergamno	2011-2012	currently completing MD
Kris Szalc	2011-2012	currently completing JD degree
Christopher W. Jones	2007-2014	Neuroscience graduate program (Tulane U.)
Rachel Wohl	2013-2014	Social Work graduate program (U PENN)
Michael Trentalange	2014-2015	currently completing MD

### **Lectures by Invitation (1986-2009) (N = 492):**

February 2, 1986	"Human chronobiology: Sleep and alertness determinants" – Harvard Medical School, Department of Physiology and Biophysics, Boston, MA
April 3, 1986	"The sleeping brain and life in the 21st century" – McNeil Science Lecture, McNeil Pharmaceutical, West Point, PA
May 8, 1986	"The nature of napping in healthy adults" – Henry Ford Hospital Sleep Disorders and Research Center, Detroit, MI
June 3, 1986	"Sleep hygiene and behavioral functioning: Behavioral consequences of disturbed sleep" – Academy of Behavioral Medicine Research, Williamsburg, VA
July 13, 1986	"The effects of sleep loss, performance demands, and naps on human functioning" – 21st International Congress of Applied Psychology, Tel Aviv, Israel
Aug 22, 1986	"The biobehavioral benefits of napping early during 54 hours of sustained wakefulness" – 4th Department of Defense HFE SUBTAG on Sustained/Continuous Operations, Walter Reed Army Medical Research Institute, Washington, DC

- May 6, 1987 "Human napping: Controls and consequences of brief sleep and alerting functions" – University of Connecticut, Department of Psychology, Storrs, CT
- June 9, 1987 "The consequences for sleep and human functioning of an expanding rush hour" – Workshop on Assessing Variations in Human Alertness and its Consequences for Transportation Safety, New York, NY
- July 3, 1987 "The expression of sleepiness in mood and behavior: A contextual-dependence hypothesis" – 5th International Congress of Sleep Research, Copenhagen, Denmark
- April 27, 1988 "Sleep cycles: A causal/controllable accident factor" – Annual Joint Meeting of the Institute for Management Science and the Operations Research Society of America, Washington, DC
- May 27, 1988 "The nature of adult human napping" – Commission of the European Communities, Medical and Public Health Research Program, Castello di Gargonza, Tuscany, Italy
- January 4, 1989 "Management of alertness in the cockpit" – Flight Human Factors Research Branch, NASA-Ames Research Center, Moffett Field, CA
- January 21, 1989 "Cognitive performance during the hypnopompic state: Effects of sleep depth" – Arizona Conference on Sleep and Cognition, Tucson, AZ
- March 4, 1989 "Crew fatigue monitoring" – Second Regional Flight Safety Foundation Workshop on Crew Performance Monitoring and Training, Taipei, Taiwan
- March 21, 1989 "The nature of sleepiness: Causes, contexts and consequences" – New York Hospital, Cornell Medical Center, White Plains, NY
- April 15, 1989 "Comparison of the effects of alcohol and sleepiness on performance" – International Symposium on Fatigue, Alcohol and Driving Safety, Santa Monica, CA
- May 17, 1989 "Neuropsychological dysfunction and its evaluation in those with sleep apnea" – American Thoracic Society, Cincinnati, OH
- September 15, 1989 "Fatigue and its effects during flight operations" – Flight Safety Foundation, Arlington, VA
- February 9, 1990 "Are you awake? The psychobiology of sleepiness" – Grand Rounds, Department of Neurology, Thomas Jefferson Medical College, Philadelphia, PA
- February 13, 1990 "Sleep and health—the facts about forty winks" – Pennsylvania Hospital Health Seminar, Philadelphia, PA
- March 13, 1990 "Sleep loss, napping, and performance" – Experimental Cognition Colloquium Series, Department of Psychology, City College of New York, New York, NY
- March 13, 1990 "Clinical and laboratory aspects of sleep and dysfunction" – New York Sleep Circle, New York University Medical Center, New York, NY

- March 22, 1990 "Flight crew fatigue: Underlying causes and operational factors" – First Regional Aviation Safety Conference, Amman, Jordan
- April 5, 1990 "Sleep disorders" – Teaching Conference Series, Harrisburg State Hospital, Harrisburg, PA
- April 17, 1990 "Sleepiness from sleep deprivation, in airline pilots and in sleep apneics" – Sleep Club of Ottawa, University of Ottawa, Ontario, Canada
- April 19, 1990 "Crew rest and sleep deprivation" – 35th Corporate Aviation Safety Seminar, Flight Safety Foundation, Montreal, Quebec, Canada
- May 15, 1990 "Factors that produce and induce the development of fatigue during flight operations" – 61st Annual Scientific Meeting, Aerospace Medical Association, New Orleans, LA
- May 24, 1990 "The human element in transportation" – Annual National Meeting, Women's Transportation Seminar, Washington, DC
- May 30, 1990 "The effects of sleep loss on short duration tasks" – Special Conference on Sleep, Arousal and Performance: Problems and Promises in honor of Robert T. Wilkinson, Cambridge University, Cambridge, England
- August 21, 1990 "Nature of performance impairments in sleep based fatigue" – Aerospace Human Factors Research Division Meeting & Colloquium, NASA Ames Research Center, Moffett Field, CA
- September 25, 1990 "Occupational issues in sleep research and sleep disorders medicine" – Update on Sleep Disorders, American Sleep Disorders Association, Washington, DC
- November 3, 1990 "Human sleep and depression" – Insomnia and Depression Roundtable Discussion, Mead Johnson Pharmaceuticals, Washington, DC
- November 13, 1990 "Fatigue research" – International Conference on Flight Attendant Health, Association of Flight Attendants, Washington, DC
- November 22, 1990 "Nature of subtle fatigue effects in long-haul crews" – 43rd International Air Safety Seminar of Flight Safety Foundation, Rome, Italy
- December 13, 1990 "Sleep and sleep disorders: New advances" – Service of Psychology Meeting, Hall-Mercer Program, Pennsylvania Hospital, Philadelphia, PA
- January 9, 1991 "Issues of fatigue in transportation safety" – Philadelphia Chapter of the Women's Transportation Seminar, Philadelphia, PA
- February 14, 1991 "Sleep disorders update" – Teaching Conference Series, Harrisburg State Hospital, Harrisburg, PA
- March 12, 1991 "A discussion on the relationship between sleep disordered breathing and cognitive function in aging adults" – NIH Symposium on Sleep and Respiration in Aging Adults, Houston, TX
- March 13, 1991 "On the national problem of fatigue and sleepiness" – National Commission on Sleep Disorders Research, Workshop Hearing, Houston, TX



- Apr 29, 1991 "The effects of fatigue and sleep loss on flight crews" – 9th Annual International Conference on Aviation Physiology and Training, Langhorne, PA
- May 17, 1991 "Sleepiness: Occupational causes and consequences" – Special Conference on the Sleep Worker, Portland, OR
- June 2, 1991 "The effects of VOC pain on children and adolescents with sickle cell disease" – Pennsylvania Coalition of Statewide Sickle Cell Agencies Conference, Philadelphia, PA
- June 19, 1991 "Assessment of fatigue on the job"– Annual Meeting of the American Trucking Association, Washington, DC
- August 22, 1991 "Studies of fatigue in aviation" – Human Factors Section of the Boeing Airplane Group, Seattle, WA
- October 10, 1991 "The human factor in transportation accidents"– Women's Transportation Seminar, Washington, DC
- October 22, 1991 "Napping to stay awake: A solution to the driver fatigue problem" – 1991 American Trucking Association Management Conference and Exhibition, Washington, DC
- January 7, 1992 "Preventing catastrophes in the 21st century: The neuropsychology of fatigue" – The Institute of Pennsylvania Hospital, Scientific Session, Philadelphia, PA
- February 27, 1992 "The neuropsychology of sleep loss: Experimental, clinical, occupational outcomes" – Department of Psychiatry, University of Pennsylvania, Research Colloquium, Philadelphia, PA
- February 29, 1992 "Researching discoveries that make a difference" – The Pitcairn Group, Bryn Athyn, PA
- March 17, 1992 "Behavioral medicine in the next century: Avoiding the avoidable" - Pennsylvania Hospital, Medical Staff Meeting, Philadelphia, PA
- March 20, 1992 "The neuropsychology of sleepiness: Detecting impairment" – Grand Rounds Lecture, Department of Psychiatry, University of South Florida School of Medicine, Tampa, F
- March 21, 1992 "Medical and legal implications of sleep disorders" – Special symposium on Sleep Disorders, University Community Hospital, Tampa, FL
- March 28, 1992 "Treatment of pilot fatigue with cockpit naps" – Annual Meeting, Northeast Sleep Society, Philadelphia, PA
- March 30, 1992 "Sleep research seminar on aircraft noise and sleep disturbance" – Department of Transport, Civil Aviation Authority, London, UK
- April 8, 1992 "Behavioral Medicine in the Next Century: Preventing Accidents and Catastrophes" – Board of Managers, Pennsylvania Hospital, Philadelphia, PA
- April 9, 1992 "The nature and consequences of pathological sleepiness" – Pennsylvania Hospital, Department of Neurology, Grand Rounds, Philadelphia, PA

- April 13, 1992 "CPAP—Some controversial data on its use and usefulness" – Mayo Clinic Sleep Disorders Center, Rochester, MN
- April 14, 1992 "Neuropsychology of sleepiness: Preventing catastrophe from the highways to the heavens" – Annual Dinner Lecture, Minnesota Regional Sleep Disorders Center, Minneapolis, MN
- April 14, 1992 "CPAP compliance and the effects of skipping treatment" – Minnesota Regional Sleep Disorders Center, Hennepin County Medical Center, Minneapolis, MN
- April 14, 1992 "Neuropsychology of sleep-based fatigue" – Grand Rounds Lecture, Department of Psychiatry, Mayo Clinic, Rochester, MN
- April 15, 1992 "Industrial accidents and safety – the relationship to sleep disorders" – The Wichita Society of Neuroscience, Wichita, KS
- April 16, 1992 "Sleep, sleep disorders, and safety" – HCA Wesley Medical Center, Wichita, KS
- May 6, 1992 "The nature of performance limiting fatigue from sleep loss and circadian variation" – 10th Annual International Conference on Aviation Physiology and Training, Langhorne, PA
- May 12, 1992 "Sleep and sleep disorders: Relevance to medicine" – Montgomery County Medical Society, Ardmore, PA
- May 22, 1992 "Circadian rhythms" – Pennsylvania Hospital, Department of Neurology, Basic Science Lecture Series, Philadelphia, PA
- May 20, 1992 "Assessing the contribution of fatigue to accidents: Implementing a new approach with the SAFE assessment." – National Transportation Safety Board, Washington, DC
- November 12, 1992 "The effects of sickle cell pain on children" – Grand Rounds at Wilmington Medical Center, Christiana Hospital, Wilmington, DE
- December 5, 1992 "NASA training / education module on fatigue" – Safety Standown at Andrews Air Force Base, Washington, DC
- February 23, 1993 "Coping with fatigue in the glass cockpit" – Canadair, Montreal, Canada
- April 16, 1993 "Vulnerability to false memories: Role of trust, expectation for change, and lowered critical judgment" – Meeting entitled "Memory and reality: Emerging crisis," Valley Forge, PA
- May 12, 1993 "Sleep and sleepiness" – Hospital of the University of Pennsylvania, Department of Neurology, Housestaff Training Neuroscience Series, Philadelphia, PA
- May 15, 1993 "CPAP efficacy" -Annual Meeting of the American Thoracic Society, San Francisco, CA
- June 2, 1993 "The effects of sleep loss on human immune function" – Seminar series for Department of Microbiology and Immunology, Medical College of Pennsylvania, Philadelphia, PA

- June 13, 1993 "Sleep onset mechanisms conference" – American Psychological Association, Ontario-on-the-Lake, Ontario, Canada
- June 30, 1993 "Sleep and circadian rhythms in air transport" – Air Freight Association, Washington, DC
- October 5, 1993 "Strategies for alertness management in flight operations" – 22nd Technical Conference of the International Air Transport Association, Montreal, Quebec, Canada
- October 20, 1993 "The medical basis of fatigue-related accidents: Prevention" – Annual Meeting, The Auxiliary of Pennsylvania Hospital, Philadelphia, PA
- October 25, 1993 "The drive to sleep and the need to wake: Neurobehavioral consequences" – Psychology Department, University of Pennsylvania, Philadelphia, PA
- December 1, 1993 "Countermeasure" – Highway Safety Forum on Fatigue, Sleep Disorders and Traffic Safety, Albany, NY
- December 5, 1993 "Sleep and sleep disorders" – University of Pennsylvania Alumni Club, Lancaster, PA
- January 6, 1994 "NASA multicrew fatigue study" – Air Force's Office of Scientific Research for the Human Chronobiology Workshop, Brooks Air Force Base, San Antonio, TX
- January 19, 1994 "Medical self-hypnosis as an adjunct in the management of organic pain," and "Sickle cell pain" – NIH Workshop on Biobehavioral Pain Research, Rockville, MD
- February 16, 1994 "Sleep and dreams" – University of Pennsylvania Alumni Club, Fort Lauderdale, FL
- February 17, 1994 "A method of probing psychomotor vigilance to determine functional capability" – The New York Academy of Sciences, NY
- February 26, 1994 "Sleep and the public safety: Issues of drowsiness and napping" – Scripps Clinic and Research Foundation for the Accreditation Council for Continuing Medical Education (ACCME), La Jolla, CA
- March 4, 1994 "Shift rotation and fatigue in emergency room staff" – Grand Rounds, St. Christopher's Hospital for Children, Philadelphia, PA
- April 6, 1994 "Sleep and shift work" – Nursing Grand Rounds, Institute of Pennsylvania Hospital, Philadelphia, PA
- May 13, 1994 "Psychoneuroimmunology of sleep deprivation" – Grand Rounds, Temple University, Philadelphia, PA
- May 14, 1994 "Sleep deprivation and human immune function" – Clinical Research Center, Hospital of the University of Pennsylvania, Philadelphia, PA
- June 28, 1994 "Sleep deprivation and lifestyle: Magnitude of the problem, signs, symptoms, diagnosis," "Fatigue/Shift Work; 24-hr Operations; Human Performance" – Strategy Development Workshop on Sleep Education, National Center on Sleep Disorders Research, National Heart, Lung, and Blood Institute, Washington, DC

- July 8, 1994 "The effects of sleep loss, fatigue, and night shift on performance and work" – Intermountain Sleep Disorder Center at LDS Hospital, Salt Lake City, UT
- September 8, 1994 "Accidents, sleepiness and work hours – A review" – International Symposium on Work Hours, Sleepiness and Accidents, Karolinska Institute, Stockholm, Sweden
- September 20, 1994 "OSAS and Sleepiness" – 98th annual meeting of the American Academy of Otolaryngology - Head and Neck Surgery Foundation, San Diego, CA
- October 3, 1994 "Behavior consequences of sleep apnea," State-of-the-art presentation - Fourth World Congress on Sleep Apnea, San Francisco, CA
- October 16, 1994 "Accidents, sleepiness and work hours – A review" – 1994 American Trucking Association (ATA) Management Conference and Exhibition Board of Directors Meeting, San Diego, CA
- October 19, 1994 "Coping with sickle cell pain: A novel program at the Institute of Pennsylvania Hospital" – The Auxiliary of Pennsylvania Hospital, Philadelphia, PA
- October 26, 1994 "On the unwitting induction of confabulation" – Grand Rounds, Department of Psychiatry & Human Behavior of Jefferson Medical College, Philadelphia, PA
- October 28, 1994 "Sleep and immune function: New insights" – Grand Rounds, Department of Psychiatry, Temple University, Philadelphia, PA
- November 29, 1994 "Sleep and dreams" – Medical Grand Rounds, Methodist Hospital, Philadelphia, PA
- December 1, 1994 "Memory confabulation and psychotherapy" – Grand Rounds, Department of Psychiatry, University of Pennsylvania Medical School, Philadelphia, PA
- December 7, 1994 "Sleepiness and performance: programmed brain failure" – National Forum on Sleepiness and Crashes, National Sleep Foundation, Washington, DC
- January 6, 1995 "Sleep deprivation experiments" – General Clinical Research Center, Hospital of the University of Pennsylvania, Philadelphia, PA
- March 22, 1995 "Recovered memories and confabulation" – Grand Rounds, VA Medical Center, Philadelphia, PA
- April 28, 1995 "Sleep Loss and immune function" – Thomas Bond Society, Pennsylvania Hospital, Philadelphia, PA
- March 9, 1995 "Sleepiness and highway safety" – New Jersey State Safety Council Highway Safety Conference, Jamesburg, NJ
- March 23, 1995 "Neurobehavioral outcomes: subjective alertness and performance" – Conference on Outcomes Research and Sleep Apnea, American Thoracic Society (ATA) and American Sleep Disorders Association (ASDA), Chicago, IL

- May 20, 1995 "Mechanisms underlying sleepiness" – Postgraduate course "PG9 - Pathophysiological Basis of Obstructive Sleep Apnea and Its Consequences" prior to the American Thoracic Society (ATA)/American Lung Association (ALA) International Conference, Seattle, WA
- May 23, 1995 "New Techniques for Laboratory Measurement of Alertness in Relation to Sleep and Circadian Rhythms" – Food and Nutrition Board's Committee on Military Nutrition Research, Institute of Medicine, National Academy of Sciences, Washington, DC
- October 18, 1995 "Neurobehavioral Consequences of Sleep Loss and Irregular Work Hours" – Psychology Department Colloquium, Brown University, Providence, RI
- November 1-2, 1995 "Performance Effects of Fatigue" – The National Transportation Safety Board and NASA Ames Research Center Conference: Managing Fatigue in Transportation: Promoting Safety and Productivity, Tysons Corner, VA
- November 1-2, 1995 "Napping Strategies" – The National Transportation Safety Board and NASA Ames Research Center Conference: Managing Fatigue in Transportation: Promoting Safety and Productivity, Tysons Corner, VA
- November 2, 1995 "Technology / Scheduling Approaches" – The National Transportation Safety Board and NASA Ames Research Center Conference: Managing Fatigue in Transportation: Promoting Safety and Productivity, Tysons Corner, VA
- November 13, 1995 "Sleepiness, Driving Performance and Implications" – 1995 Society of Automotive Engineers International Truck & Bus Meeting & Exposition, US Department of Transportation, Federal Highway Administration, Winston-Salem, NC
- December 19, 1995 "Neurobehavioral causes and consequences of disturbed sleep and biological rhythms" – Grand Rounds, The Institute of Pennsylvania Hospital, Philadelphia, PA.
- February 16, 1996 "Pathologic Basis of Sleepiness" – Continuing Medical Education (CME) program: Advances in Diagnosis and Treatment of Sleep Apnea and Snoring, Orlando, FL
- March 1, 1996 "The Role of Behavior in Sleepiness" – *Sleepy Person III* conference, Center for Narcolepsy Research (M/C 802), Chicago, IL
- March 15, 1996 "Sleep and Health" – Fourth International Congress of Behavioral Medicine, Washington, DC
- March 29, 1996 "New Science on an Old Mystery: Sleep and its interactions with waking functions" – National Science Teachers' Association, St. Louis, MO
- March 31, 1996 "Neurobehavioral Effects of Arousals" – Fourth NIH Meeting on Respiration and Sleep, Charlottesville, VA
- April 11, 1996 "Regulation of human neurobehavioral functions by sleep and the circadian pacemaker" – Thirteenth Annual Neuroscience Retreat, University of Pennsylvania School of Medicine, Philadelphia, PA

- April 25, 1996 “Fatigue Research and Physiology” – Flight Safety Foundation’s 41st Annual Corporate Aviation Safety Seminar, Lake Buena Vista, FL
- May 8, 1996 “Napping Strategies in Fatigue Management” – Annual Meeting, Aerospace Medical Association, Atlanta, GA
- May 10, 1996 “Sleepiness, Its Relationship to Accidents, and the Potential Countermeasures” – Fifth Meeting of the Society for Research on Biological Rhythms, Jacksonville, FL
- May 26, 1996 “Practical Consequences of New Developments in Circadian Biology” – Continuing Medical Education (CME) program: Practical Advances in Disorders of Sleep and Body Rhythms, sponsored by CME, Inc., San Francisco, CA
- May 28, 1996 “Current Research and Future Directions - Overview” – National Sleep Foundation’s International Forum on Sleeplessness and Crashes ‘96, Washington, DC
- May 29, 1996 “Federal and private initiatives in the evaluation and management of sleepiness-related fatigue in transportation” – 10<sup>th</sup> Annual Meeting of the Associated Professional Sleep Societies, Washington, DC
- May 30, 1996 “100 years since Patrick and Gilbert: Advances in science on the neurobehavioral effects of human sleep deprivation” – 10<sup>th</sup> Annual Meeting of the Associated Professional Sleep Societies, Washington, DC
- June 3, 1996 “Biomedical Basis of Fatigue and Loss of Alertness in Human Operations” – American Public Transit Association, Atlanta, GA
- June 9, 1996 “Physiological Correlates of Sleep Deprivation” – Third Clintec International Horizons Conference, Amsterdam, The Netherlands
- June 16, 1996 “Effects of Melatonin on Human Sleep and Performance” – 13th Congress of the European Sleep Research Society, Brussels, Belgium
- July 31, 1996 “Sleep Deprivation” – National Sleep Medicine Course (CME), American Sleep Disorders Association, Leesburg, VA
- September 17, 1996 “Fatigue-reduction Strategies for Aviation, Maritime, Railway, and Trucking Operations” – Flight Safety Foundation, Paris, France
- September 20, 1996 “Work Accidents and Fatigue: An Occupational Health Issue” – 25th International Congress on Occupational Health, Stockholm, Sweden
- October 8, 1996 “Sleep Loss: Effects on Performance and Countermeasures” – American Petroleum Institute and U.S. Coast Guard, Washington, DC
- November 16, 1996 “Functional Impact of Sleep Deprivation” – Harvard Medical School (CME), Brigham and Women’s Hospital, Boston, MA
- February 14, 1997 “Sleepiness and Driving” – Continuing Medical Education (CME) program: Advances in Diagnosis and Treatment of Sleep Apnea and Snoring, Orlando, FL

- February 14, 1997 “CPAP: An effective treatment for sleep apnea/snoring?” – Continuing Medical Education (CME) program: Advances in Diagnosis and Treatment of Sleep Apnea and Snoring, Orlando, FL
- March 21, 1997 “Sleepiness: A Modern Hazard; Etiology and Assessment” – Annual Cherry Blossom Conference, American Academy of Otolaryngology-Head and Neck Surgery Foundation, Inc., Arlington, VA
- March 21, 1997 “Effects of Sleepiness on Society” – Annual Cherry Blossom Conference, American Academy of Otolaryngology-Head and Neck Surgery Foundation, Inc., Arlington, VA
- April 17, 1997 “The Effects of Sleep Duration and Cumulative Sleep Loss on Hypovigilance: Individual Sensitivity” – 3<sup>rd</sup> International Meeting on Sleep Disorders, Bordeaux, France
- May 7, 1997 “Jet Lag and Sleep Deprivation” – Basic Research in the National Defense: University Contributions to Defense Readiness and Technology, Washington, DC
- May 15, 1997 “Cumulative Effects of Fatigue on Performance: Operational Relevance” – 68<sup>th</sup> Annual Scientific Meeting, Aerospace Medical Association, Chicago, IL
- May 23, 1997 “Neurobehavioral and Neuroimmune Effects of Severe Total Sleep Deprivation” – 9th Annual Convention, American Psychological Society, Washington, DC
- August 2, 1997 “Sleep Deprivation” – National Sleep Medicine Course (CME), American Sleep Disorders Association, Leesburg, VA
- September 18, 1997 “Homeostatic and Circadian Regulation of Wakefulness During Jet Lag and Sleep Deprivation: Effect of Wake-Promoting Countermeasures on the Development of Neurobehavioral Deficits” – Chronobiology and Neural Adaptation Program Review, Air Force Office of Scientific Research, Colorado Springs, CO
- September 22, 1997 “New Technology in Vigilance Monitoring” – 3rd Annual Conference on Highway Accident Litigation, American Trucking Associations Litigation Center, Monterey, CA
- October 31, 1997 “Functional Impact of Sleep Deprivation” – Harvard Medical School (CME), Brigham and Women’s Hospital, Boston, MA
- November 16, 1997 “Fatigue, Desynchronization and Countermeasures” -1997 Aerospace Medicine Lecture, Alliance of Air National Guard Flight Surgeons, Nashville, TN
- February 10, 1998 “Managing Fatigue by Drowsiness Detection: Can Technological Promises be Realized?” – Third International Conference on Fatigue in Transportation, Main Roads Western Australia, Fremantle, Western Australia
- April 27, 1998 “Consequences of Sleep Restrictions: How Bad Can Things Get?” – Continuing Medical Education Program, Norristown State Hospital, Norristown, PA

- May 10, 1998 “The Future of Applied Chronobiology” - 10<sup>th</sup> Annual Meeting of the Society for Light Treatment and Biological Rhythms, Amelia Island, FL
- May 19, 1998 “Technological Solutions to Fatigue management: A Controlled Double-Blind Validation Trial on Six Technologies” – 69<sup>th</sup> Annual Scientific Meeting of the Aerospace Medical Association, Seattle, WA
- June 18, 1998 “Assessment of Neurobehavioral Performance: Pros and Cons of Current Approaches” – 12<sup>th</sup> Annual Meeting of the Associated Professional Sleep Societies, New Orleans, LA
- August 16, 1998 “Sleep Imperative in Maintaining Performance and Safety in a 24-hour Society” – American Psychological Association, San Francisco, CA
- September 14, 1998 “The New Applied Science of Fatigue Countermeasures” – at the American Trucking Association Litigation Center Conference on Highway Accident Litigation in Scottsdale, AZ
- October 7, 1998 “Physiology of Human Sleep and Fatigue and Potential Countermeasures for Adoption in the Transit Industry” – Annual Association of Public Transit Authorities Meeting in New York City, NY
- October 23, 1998 “Sleep Disorders: Insomnia, Daytime Sleepiness and Fatigue” – Continuing Medical Education (CME) course, Harvard University, Boston, MA
- October 27, 1998 “Countermeasures to Fatigue in Aviation Safety” – National Business Aviation Association Workshop, Las Vegas, NV
- November 23, 1998 “How Much Sleep We Need Depends on How We Define Wakefulness” – Swedish Sleep Research Society, Stockholm, Sweden
- November 25, 1998 “Sleep Need: New Neurobehavioral Science on an Old Mystery” – Honorary Invited Lecture for Swedish Physicians Society, Gothenburg, Sweden
- December 2, 1998 “Sleep Need and Neurobehavioral Vulnerability to Sleep Loss” – workshop on “What is Sleep? What is it Good For?” jointly sponsored by the National Center on Sleep Disorders Research, National Heart, Lung, and Blood Institute, National Institute of Mental Health, National Institute on Aging, and the National Science Foundation Center for Biological Timing, Dulles, VA
- December 16, 1998 “Detecting and managing problem sleepiness” – State Chest Presentation at Yale University-New Haven Hospital, New Haven, CT
- December 17, 1998 “Neurobehavioral Determinants and Consequences of Sleepiness in a World that Values Wakefulness” – Medical Grand Rounds Norwalk Hospital, Norwalk, CT
- February 12, 1999 “Sleepiness and Its Impact on Society” - University of Pennsylvania School of Medicine Continuing Medical Education course, Orlando, FL.
- February 12, 1999 “CPAP - An Effective Treatment for SDB” - University of Pennsylvania School of Medicine Continuing Medical Education course, Orlando, FL



- March 29, 1999 “Sleep Medicine and Liability” - Sunrise Hospital & Medical Center Continuing Medical Education, Las Vegas, NV
- March 30, 1999 “Shiftwork and Performance” - The Regional Center for Sleep Disorders, Sunrise Hospital & Medical Center, Las Vegas, NV
- May 27, 1999 “Chronic Sleep Deprivation: mechanisms and consequences” – Fourth International Meeting on Sleep Disorders, Sommeil: De La Naissance À La Mort Conference, Bordeaux, France
- June 17, 1999 “Neurobehavioral effects of sleep loss: homeostatic and circadian dynamics” – Gordon Conference, Chronobiology Section, Barga, Italy
- June 20, 1999 “Accident-prevention with technologies: Fatigue-management and drowsiness-detection” – 13<sup>th</sup> Annual Meeting of the Associated Professional Sleep Societies, Orlando, FL
- June 22, 1999 “Chronic sleep restriction: Neurobehavioral effects of 4-hour, 6-hour, and 8-hour TIB” – 13<sup>th</sup> Annual Meeting of the Associated Professional Sleep Societies, Orlando, FL
- June 23, 1999 “New technologies for monitoring drowsy driving: Scientific, practical, and legal issues” – 13<sup>th</sup> Annual Meeting of the Associated Professional Sleep Societies, Meet the Professor luncheon, Orlando, Florida
- July 27, 1999 “Causes of, and contributing factors to fatigue” – House of Representatives Standing Committee on Communications, Transport and the Arts, Melbourne, Australia
- July 28, 1999 “Key actions to reduce fatigue related accidents on the road and in the workplace – lessons we can learn from the aviation and military experience” – Transportation Seminar, Melbourne, Australia
- July 28, 1999 “Napping Strategies” – Vic Roads Transportation Seminar, Melbourne, Australia
- July 30, 1999 “Neurobehavioural consequences of sleepiness: What if anything accumulates with sleep debt?” – Australasian Sleep Association 12th Annual Scientific Meeting, Coolangatta, Australia
- July 31, 1999 “Sleepiness and Fatigue – the Catastrophic Consequences” – Australasian Sleep Association 12th Annual Scientific Meeting, Coolangatta, Australia
- August 1, 1999 “Behavioral risks of untreated sleep apnea” – Australasian Sleep Association 12th Annual Scientific Meeting, Coolangatta, Australia
- August 3, 1999 “Sleep disorders and fatigue in industry” – Australian Parliament Commission on Transportation, Sydney, Australia
- August 4, 1999 “Human sleep deprivation: Lessons from the laboratory” – Psychology Colloquium at the University of New South Wales, Kensington, Australia
- August 25, 1999 “Sleep loss and immune responses” – National Institute of Health Sleep and Host Defense Mechanisms meeting, Bethesda, Maryland

- August 29, 1999 “What is wakefulness? Sleep need and circadian control of neurobehavioral functions” – Keynote address at the International Congress on Chronobiology, Washington, DC
- September 9, 1999 “Causes and solutions to fatigue in transportation” – Keynote Speaker at the National Congress & Transport Expo '99, Melbourne, Australia
- October 7, 1999 “Educating government and federally regulated industries about sleep” – Third International Congress on The Function and Functional Significance of Sleep, World Federation of Sleep Research Societies Meeting, Dresden, Germany
- October 7, 1999 “Human immune status during prolonged sleep deprivation, circadian rhythmicity, sleep drive, stress and caffeine” – Third International Congress on The Function and Functional Significance of Sleep, World Federation of Sleep Research Societies meeting, Dresden, Germany
- October 7, 1999 “Driver sleepiness: Validation and implementation of drowsy driving monitoring” – Third International Congress on The Function and Functional Significance of Sleep, World Federation of Sleep Research Societies Meeting, Dresden, Germany
- October 21, 1999 “Behavioral consequences of the interaction between circadian and sleep systems” – 1999 American Physiological Society Meeting on the Determinants of Vigilance: Interaction between the sleep and circadian systems, Fort Lauderdale, FL
- November 5, 1999 “Detecting drowsiness and fatigue: Lessons from the laboratory” – Drexel University School of Biomedical Engineering, Science and Health Systems, Philadelphia, PA
- November 20, 1999 “Chronic sleep debt and the quality of wakefulness” – Belgian Association for the Study of Sleep, Autumn International Meeting, Brussels, Belgium
- December 8, 1999 “Sleep Need and Neurobehavioral Function: Can we adapt to sleep loss?” – Sleep Grand Rounds at Brigham and Women’s Hospital, Harvard Medical School, Boston, MA
- February 24, 2000 “Sleep Loss: From Moods to Mars” – Grand Rounds, University of Pennsylvania Health System, Department of Psychiatry, Philadelphia, PA
- March 6, 2000 “Sleep deprivation-induced cytokine disturbances” – American Academy of Allergy Asthma and Immunology 56<sup>th</sup> Annual Meeting, San Diego, CA
- March 13, 2000 “Human performance in the 21<sup>st</sup> century: A sea of troubles” – Maritime Human Factors 2000 Conference, Maritime Institute, Linthicum, MD
- April 5, 2000 “Stress, fatigue and behavioral energy” – Defining Energy for a New Millennium meeting at the International Life Sciences Institute of North America, Project Committee on Energy, Washington DC
- April 14, 2000 “Sleep, sleep deprivation and affect” – Health Emotions Research Institute, Sixth Annual Wisconsin Symposium on Emotion, The Neurobiology of Positive Emotion, University of Wisconsin, Madison, WI

- April 27, 2000 “Where do we go from here?” – The Second Annual Southern Alleghenies Regional Sleep Conference, Altoona, PA
- May 26, 2000 “Accidents and fatigue – road/air/sea” – Sleep, Sleepiness, Sleep Apnea and Driving Symposium, Stockholm, Sweden
- May 26, 2000 “Alertness monitors” – Sleep, Sleepiness, Sleep Apnea and Driving Symposium, Stockholm, Sweden
- June 20, 2000 “Dose-response effects of chronic sleep restriction on sleep and waking functions: Results from randomized controlled trials” – 14<sup>th</sup> Annual Meeting of the Associated Professional Sleep Societies, Las Vegas, NV
- June 20, 2000 “Neurobehavioral effects of 66 hour of sustained low-dose caffeine during 88 hour of total sleep deprivation” – 14<sup>th</sup> Annual Meeting of the Associated Professional Sleep Societies, Las Vegas, NV
- June 20, 2000 “Field measurement of EDS” – 14<sup>th</sup> Annual Meeting of the Associated Professional Sleep Societies, Las Vegas, NV
- October 5, 2000 “Assessing neurobehavioral functions in relation to cytokines”— Inflammation, Cytokines & Neurobehavioral Functions Workshop sponsored by Schering, Washington, DC
- October 19, 2000 “Effects of sleep loss”—advances in the treatment of sleep disorders, Department of Continuing Education, Harvard Medical School, Cambridge, MA
- November 3, 2000 “Can sleep need be eliminated (or at least reduced) in the new millennium”— Colloquium at the University of Arizona, Tucson, AZ
- March 27, 2001 “Challenges to human behavior and performance during prolonged space flight”— Keynote presenter at the National Science Teachers’ Association, St. Louis, MO
- March 28, 2001 “Chronically reduced sleep: Do we cope, adapt or deteriorate?” – Science of Mind-Body Interactions: An Exploration of Integrative Mechanisms sponsored by the John D. and Catherine T. MacArthur Foundation Network on Mind-Body Interactions, NIMH, NINDS, and OD OIR NIH, Washington DC
- May 18, 2001 “Preventing neurobehavioral deficits from cumulative sleep loss during space flight: Evidence for behavior, pharmacology and technology countermeasures” –Mount Sinai School of Medicine, New York City, NY
- May 21, 2001 “Sleep debt: Neurobehavioral consequences of chronic partial sleep loss” – NIH Behavioral and Social Science Seminar Series, Washington DC
- May 22, 2001 “Chronically reduced sleep: Do we cope, adapt or deteriorate?” – National Advisory Council for Nursing Research, Washington DC
- May 23, 2001 “Latest scientific findings/technology approaches” – Air Transport Association Symposium on “Enhancing Aviation Safety”, Washington, DC

- June 5, 2001 “Sleep debt: Initial discoveries – many questions” – The Sixth Annual Trainee Symposium Series at the 15<sup>th</sup> Annual Meeting of the Associated Professional Sleep Societies, Chicago, IL
- June 7, 2001 “Chronic sleep restriction: relation of sleep structure to daytime sleepiness and performance” – 15<sup>th</sup> Annual Meeting of the Associated Professional Sleep Societies, Chicago, IL
- July 10, 2001 “Human performance and fatigue in modern society” – Groningen Graduate School for Behavioral and Cognitive Neurosciences Summer School, Groningen, Netherlands
- July 10, 2001 “Performance, fatigue and motivation” – Groningen graduate School for Behavioral and Cognitive Neurosciences Summer School, Groningen, Netherlands
- July 11, 2001 “Consequences of acute total sleep deprivation and cumulative partial sleep loss” – Groningen graduate School for Behavioral and Cognitive Neurosciences Summer School, Groningen, Netherlands
- August 22, 2001 “Sleep deprivation and vigilance” – Defense Advanced Research Projects Agency meeting, Las Vegas, NV
- September 10, 2001 “The need to identify basic mechanisms of insomnia” – Neurobiology of Sleep and Waking: Implications for Insomnia Workshop sponsored by National Center on Sleep Disorders Research, National Heart, Lung and Blood Institute, National Institute of Mental Health, National Institute on Aging, National Institute on Alcohol Abuse and Alcoholism and National Institute on Drug Abuse, Bethesda, MD
- October 4, 2001 “Cumulative sleep loss in space flight: Neurobehavioral consequences and countermeasures” – 52<sup>nd</sup> International Astronautical Congress, Toulouse, France (canceled due to September 11<sup>th</sup> attack)
- November 8, 2001 “Mitigating fatigue and maintaining performance: Risks and countermeasures” – Chest 2001, American College of Chest Physicians, Philadelphia, PA
- November 30, 2001 “The future of human intelligence: Enhancing cognitive capability in a 24/7 world” – The 3<sup>rd</sup> International Spearman Seminar, Sydney, Australia
- March 28, 2002 “Neurobehavioral functions and cognitive performance” Wake Up and Smell the Coffee: The Importance of Sleep for Performance and Health – Staff Training in Extramural Programs for National Institutes of Health, Bethesda, MD
- March 29, 2002 “Biological versus social determinants of neurobehavioral capability in a 24/7 world” – Fridays @ Four Seminars at the Center for Biological Timing, University of Virginia, Charlottesville, VA
- April 15, 2002 “Research on sleep fatigue and performance” – Association of American Medical Colleges 2002 Group on Resident Affairs Professional Development Meeting, San Antonio, TX
- May 2, 2002 “Manifestations of sleepiness: What does it mean to be awake?” – University of Bergen, Bergen, Norway

- May 3, 2002 “Sleep and behavioral capability during long duration space flight” – University of Bergen, Bergen, Norway
- May 22, 2002 “Sleepiness and fatigue: Neurobehavioral and physiological features” – American Psychiatric Association Annual Meeting, Philadelphia, PA
- June 10, 2002 “Manifestations of sleepiness: What does it mean to be awake?” – Keynote address at the 16<sup>th</sup> Annual Meeting of the Associated Professional Sleep Societies, Seattle, WA
- June 10, 2002 “Modafinil improves psychomotor vigilance performance in CPAP-treated obstructive sleep apnea” – 16<sup>th</sup> Annual Meeting of the Associated Professional Sleep Societies, Seattle, WA
- June 14, 2002 “New directions for mathematical models of human performance” – Fatigue and Performance Mathematical Modeling Workshop, Seattle, WA
- July 22, 2002 “Napping and fatigue in the workplace” – Transport Workers Union of Australia, Melbourne, Australia
- July 23, 2002 “Napping as a fatigue management tool for drivers in transport industries” – Transport Workers Union of Australia, Melbourne, Australia
- July 23, 2002 “Napping and other solutions for shiftworkers” – Transport Workers Union of Australia, Melbourne, Australia
- August 19, 2002 “Sleep loss and inflammation” – Berzelius Symposium 60, Stockholm, Sweden
- September 13, 2002 “Mitigating the effects of chronic sleep loss on performance” – Kongress “Medizin und Mobilität” in Fürstentfeldbruck, Bavaria, Germany
- September 13, 2002 “Truck driver fatigue: Technology to the rescue” – Kongress “Medizin und Mobilität” in Fürstentfeldbruck, Bavaria, Germany
- September 18, 2002 “Causes and consequences of sleepiness: Assessment and intervention” – Philadelphia Division of the American College of Occupational and Environmental Medicine, Philadelphia, PA
- September 22, 2002 “Modafinil for the maintenance of performance during sustained operations” – Scientific Update on Provigil Meeting, Scottsdale, AZ
- September 30, 2002 “The science of sleep, fatigue and performance” – Association of American Medical Colleges Educational Conference on Resident Physician Duty Hours: Achieving Cultural, Organizational and Operational Change, Chicago, IL
- October 17, 2002 “Effects of sleep deprivation” – Advances in Sleep Disorders Medicine, Department of Continuing Education, Harvard Medical School, Cambridge, MA
- October 23, 2002 “Research on sleep, fatigue and performance,” General Surgery Grand Rounds, University of Chicago, Chicago, IL
- November 18, 2002 “Science of sleep, fatigue and performance,” Combined Surgery and Medicine Grand Rounds, New York University Medical Center, New York, NY

- November 21, 2002 “The role of engineering: The promise and challenges for technologies for monitoring vigilance” – National Sleep Foundation’s National Summit to Prevent Drowsy Driving, National Academy of Science, Washington DC.
- January 24, 2003 “Nutrition effects on sleep deprivation” – Mars Nutrition Research Council, Miami, FL
- January 29, 2003 “Human sleep, sleep disorders and wakefulness” – Merck & Co, West Point, PA
- February 10, 2003 “Sleepiness and fatigue: Impact on performance” – Mayo Clinic, Rochester, MN
- March 6, 2003 “Sleep deprivation and fatigue and its effect on performance—The science and its implications for resident duty hours” – Accreditation Council for Graduate Medical Education’s March 2003 “Mastering the Accreditation Process” Meeting, Chicago, IL
- April 2, 2003 “The science of sleep, fatigue and performance” – Continuing Medical Education Program of the Froedtert Memorial Lutheran Hospital, Medical College of Wisconsin, Milwaukee, WI
- April 24, 2003 “Modern humans and sleep deprivation” – The American Philosophical Society’s Annual General Meeting, Philadelphia, PA
- May 7, 2003 “Attending cardiothoracic surgeon should also be subject to work-hour regulations” (A debate) – Annual Meeting of the American Association for Thoracic Surgery, Boston, MA
- June 2, 2003 “Future of sleep research and sleep disorders medicine” – Board on Neuroscience and Behavioral Health, Institute of Medicine, National Academies of Sciences, Washington, DC
- June 3, 2003 “Neurobehavioral and cognitive effects of sleep loss: theory and measurement” – 17<sup>th</sup> Annual Meeting of the Associated Professional Sleep Societies, Chicago, IL
- June 4, 2003 “Sleep Restriction” (Year-in-Review Lecture) – 17<sup>th</sup> Annual Meeting of the Associated Professional Sleep Societies, Chicago, IL
- June 4, 2003 “Sleep deprivation and simulator research” – 17<sup>th</sup> Annual Meeting of the Associated Professional Sleep Societies, Chicago, IL
- June 5, 2003 “Discussant—Revised National Sleep Disorders Research Plan” – 17<sup>th</sup> Annual Meeting of the Associated Professional Sleep Societies, Chicago, IL
- June 6, 2003 “Subjective sleepiness in acute and chronic sleep loss” – 17<sup>th</sup> Annual Meeting of the Associated Professional Sleep Societies, Chicago, IL
- August 28, 2003 “Fatigue countermeasures for simulated sustained operations in the laboratory” – Air Force Research Laboratory Warfighter Training Research Division, Mesa, AZ
- September 20, 2003 “Respondent—Sleep/arousal regulation in adolescents.” Adolescent Brain Development: Vulnerabilities and Opportunities. New York Academy of Sciences, New York, NY

- September 23, 2003 “The science of sleep, fatigue and performance: Implications for resident duty hours.” Grand Rounds, Department of Surgery, Feinberg School of Medicine, Northwestern University, Chicago, IL
- September 29, 2003 “Sleep deprivation, fatigue and effects on performance.” Medical Education Grand Rounds, Southern Illinois University School of Medicine, Springfield, IL
- September 29, 2003 “Monitoring fatigue and performance: Implications for resident duty hours.” Association of American Medical Colleges Educational Conference. "Resident Physician Duty Hours: Implementing the New Requirements." Chicago, IL
- October 4, 2003 “The effect of sleep deprivation on performance” Continuing education program Johns Hopkins University School of Medicine Division of Pulmonary and Critical Care Medicine Baltimore, MD
- October 8, 2003 “Sleep deprivation in physicians and trainees” Medical Grand Rounds Drexel University College of Medicine, Hahnemann University Hospital Philadelphia, PA
- October 8, 2003 “Sleep deprivation in physicians and trainees” Medical Grand Rounds Drexel University College of Medicine, Medical College of Pennsylvania Hospital Philadelphia, PA
- October 20, 2003 “Sleep and circadian control of neurobehavioral functions” University of Pennsylvania Center for Cognitive Neuroscience Seminar Series Philadelphia, PA
- October 23, 2003 “State instability, neurobehavioral function and sleep homeostasis in sleep-deprived humans” 2003-04 Current Issues in Neuroscience and Behavior Seminar, Princeton University Princeton, NJ
- December 3, 2003 “Objective detection of neurobehavioral distress” New directions in behavioral health: A workshop integrating research and application University of California Davis, CA
- December 8, 2003 “Dose-response effects of chronic sleep restriction in healthy adults” Non-restorative Sleep, The Stanford Sleep Epidemiology Research Center, Stanford University Palo Alto, CA
- January 19, 2004 “Sleep, energy, and alertness” International Life Sciences Institute’s Annual Meeting 2004 North America Scientific Session on Sleep, Energy, and Health Washington, DC
- March 2, 2004 “The science of sleep, fatigue and performance” Medical Grand Rounds Beth Israel Medical Center, New York City, NY
- March 4, 2004 “Overview of sleep/wake homeostasis: Relation to shift work” National Sleep Foundation’s Workshop on Shift Work Sleep Disorder in Washington DC
- March 10, 2004 “Performance and alertness” National Transportation Safety Board Academy Course Investigating Human Fatigue Factors in Transportation Accidents, Ashburn, VA

- March 10, 2004 “Scheduling Factors” National Transportation Safety Board Course Investigating Human Fatigue Factors in Transportation Accidents in Ashburn, VA
- March 18, 2004 “Regulation of wakefulness in a 24/7 world: Sleep need and circadian rhythms” Center for Clinical Epidemiology and Biostatistics, University of Pennsylvania School of Medicine, Philadelphia, PA
- March 29, 2004 “Performance (Accidents, Drowsy Driving)” Frontiers of Knowledge in Sleep & Sleep Disorders: Opportunities for improving Health and Quality of Life sponsored by National Center on Sleep Disorders Research, National Heart, Lung and Blood Institute and Trans-NIH Sleep Research Coordinating Committee, NIH, Bethesda, MD
- April 1, 2004 “Sleep and circadian control of neurobehavioral functions in a 24/7 world” Grand Rounds, University of California San Diego Medical Center, San Diego, CA
- April 7, 2004 “Sleep deprivation: Monitoring fatigue and performance” Grand Rounds, The Lankenau Hospital, Wynnewood, PA
- April 8, 2004 “The science of fatigue effects on performance” Grand Rounds, Sinai Hospital, Baltimore, MD
- April 14, 2004 “Studies of human sleep deprivation and neurobehavioral functioning” Fatigue and Performance Modeling Partnerships at the Walter Reed Army Institute for Research, Silver Spring, MD
- April 23, 2004 “Sleep Deprivation, fatigue and performance – the science and its implications for resident duty hours” The Carabasi Lectureship, Scott & White Memorial Hospital, Temple, TX
- April 24, 2004 “Managing sleep need, circadian phase, and human performance; Professionalism in a 24-7 environment” American Association for Thoracic Surgery 84<sup>th</sup> Annual Meeting, Toronto, Canada
- April 27, 2004 “The neurobiology of fatigue and performance” Association of American Medical Colleges, Council of Deans Spring Meeting, Key Biscayne, FL
- March 10, 2004 “Investigating Human Fatigue Factors in Transportation Accidents: Performance and Alertness” National Transportation Board Academy, Ashburn, VA
- March 10, 2004 “Investigating Human Fatigue Factors in Transportation Accidents: Scheduling Factors” National Transportation Board Academy, Ashburn, VA
- May 6, 2004 “Ensuring human behavioral capability at the frontiers of space and time” The 39<sup>th</sup> Harry G. Armstrong Lecture at the 75<sup>th</sup> Annual Aviation Space Medicine Association meeting, Anchorage, AK
- May 10, 2004 “The criticality of sleep for health and safety in a 24/7 world” The Decade of Behavior Award, Washington DC



- May 13, 2004 “Science of sleep, fatigue and performance: Implications for the resident duty hours” Vukov Lecture, Oregon Health & Science University, Portland, OR
- May 15, 2004 “Effects of chronic sleep restriction in humans: Theory, science and public policy” 2nd Canadian Congress on Sleep and Sleep Disorders, Quebec City, Canada
- May 17, 2004 “State instability and the neurocognitive effects of sleep loss” SCOR Symposium, Boston, MA
- June 6, 2004 “Review of scientific literature on the impact of circadian changes, sleep disorders and experimental sleep deprivation/restriction on neurocognitive and affective functioning” 18<sup>th</sup> Annual Meeting of the Associated Professional Sleep Societies, Philadelphia, PA
- June 7, 2004 “Untreated shift work sleep disorder” 18<sup>th</sup> Annual Meeting of the Associated Professional Sleep Societies, Philadelphia, PA
- June 8, 2004 “Sleepiness and performance” 18<sup>th</sup> Annual Meeting of the Associated Professional Sleep Societies, Philadelphia, PA
- June 10, 2004 “Testing theoretical predictions on the neurobehavioral effects of sleep loss in humans” 18<sup>th</sup> Annual Meeting of the Associated Professional Sleep Societies, Philadelphia, PA
- June 18, 2004 “Why we sleep: Sleep and performance” Connecticut Neurological Society Meeting, Farmington, CT
- June 25, 2004 “Resident work hour guidelines: A sentence or opportunity for orthopaedic education” 117<sup>th</sup> Annual Meeting of the American Orthopaedic Association, Boston, MA
- August 23, 2004 “Behavior and weight regain” Nutrition Research Conference, Glen Eagles, Scotland
- September 10, 2004 “Do we have proper tools to measure impaired alertness?” The Art of Good Sleep Meeting, Paris, France
- September 15, 2004 “Science of sleep, fatigue and performance” Grand Rounds, The Children’s Hospital of Philadelphia, Philadelphia, PA
- September 30, 2004 “A new sleep apnea therapeutic: profile of an ideal agent” Aventis Obstructive Sleep Apnea Advisory Board meeting, Chicago, IL
- October 6, 2004 “Cognitive, subjective and physiological outcomes from Modafinil during escalating sleep deprivation” 17<sup>th</sup> Congress of the European Sleep Research Society, Prague, Czech Republic
- October 7, 2004 “What is sleep debt?” 17<sup>th</sup> Congress of the European Sleep Research Society, Prague, Czech Republic
- October 11, 2004 “Vigilance in a 24/7 world: I. Sleep need and circadian rhythms” Massachusetts Society of Anesthesiologists, Southampton, Bermuda
- October 11, 2004 “Vigilance in a 24/7 world: II. Countermeasures for fatigue” Massachusetts Society of Anesthesiologists, Southampton, Bermuda

- October 21, 2004 “Effects of fatigue on cognitive performance and X-ray target detection” Transportation Security Administration Meeting in Atlantic City, NJ
- October 25, 2004 “Reaction time and psychomotor function” Johnson Space Center Cognitive Meeting, Phoenix, AZ
- October 27, 2004 “Consequences of chronic insufficient sleep” Grand Rounds, Emory University School of Medicine, Atlanta, GA
- October 27, 2004 “Monitoring fatigue and performance: Implications for resident duty hours” Emory University School of Medicine, Residency Education, Atlanta, GA
- November 15, 2004 “Update on management of fatigue” TWU, Melbourne, Australia
- November 15, 2004 “Update on shift work and health” TWU, Melbourne, Australia
- November 16, 2004 “Real world consequences of sleep and circadian disorders” Sleep Medicine Lecture Series, Royal Prince Alfred Hospital, Camperdown NSW, Australia
- November 17, 2004 “Lessons from Exxon Valdez and other disasters: Have we underestimated the consequences of sleep loss?” 2<sup>nd</sup> Annual Symposium on Sleep Loss, Eveleigh NSW, Australia
- November 17, 2004 “Reducing the risk—the prevent, detect and intervene approach to sleep loss and shift work—naps, hours of work and pharmacological approaches”, 2<sup>nd</sup> Annual Symposium on Sleep Loss, Eveleigh NSW, Australia
- November 17, 2004 “Can computer models predict fatigue?” 2<sup>nd</sup> Annual Symposium on Sleep Loss, Eveleigh NSW, Australia
- November 30, 2004 “Sleep loss and its neurocognitive consequences” Neurology Grand Rounds, Northwestern University, Chicago, IL
- December 9, 2004 “Science of Sleep & Performance: Relevance to Residency Duty Hours” Division of Urology Grand Rounds, University of Pennsylvania Health System, Philadelphia, PA
- January 9, 2005 “Fatigue management technologies” Federal Motor Carrier Safety Administration Office of Research and Technology Fifth Annual Forum, Washington, DC
- January 19, 2005 “The critical need for sleep” Veterans Affairs Medical Center, Philadelphia, PA
- February 16, 2005 “The hectic life” North American Branch of the International Life Sciences Institute’s Workshop on Sleep and Quality of Life, Washington, DC
- March 9, 2005 “Human sleep duration and risk: What do we think we know?” Sleep Lecture Series, Sleep Division, Department of Medicine, Hospital of the University of Pennsylvania, Philadelphia, PA

- March 18, 2005 “Sleep and circadian control of neurobehavioral functions” Seminar Series Neuroscience and Cognitive Sciences Program at the University of Maryland, College Park, MD
- March 23, 2005 “Human performance, capability and behavior” Transportation Research Board Conference on Future Truck and Bus Safety Research Opportunities, Washington, DC
- April 1, 2005 “Neurobehavioral risks of sleepiness: Modafinil as a counter measure” Fatigue, Sleep and Biological Clocks International Conference at the Imperial College, London, England
- April 12, 2005 “Sleep Duration: Neurobehavioral, Physiological and Epidemiological Issues” IOM Committee on Sleep Research and Sleep Medicine Workshop on the Public Health Significance of Sleep Deprivation and Disorders, The National Academies, Washington, DC
- May 10, 2005 “Biological Limits to Performance During Extended Duty Days: Work Time, Wake Time, Rest Time, Sleep Time, Clock Time, Biological Time” In: ULR—Extending the Duty Day: Effects on the Operational Performance of Commercial Aviators, 76<sup>th</sup> Annual Aviation Space Medicine Association meeting, Kansas City, MO
- May 23, 2005 “Computer vision of the human face to detect stress in space flight” 15<sup>th</sup> Humans in Space Symposium, Graz, Austria
- May 23, 2005 “Sleep schedule countermeasures to cumulative partial sleep loss in space flight” 15<sup>th</sup> Humans in Space Symposium, Graz, Austria
- May 24, 2005 “Mathematical modeling of human circadian physiology: applications in space and for the general public” 15<sup>th</sup> Humans in Space Symposium, Graz, Austria
- May 26, 2005 Dinner Talk—“A Human Mission to Mars: Lessons from Nansen” 15<sup>th</sup> Humans in Space Symposium, Graz, Austria
- June 11, 2005 “The science of sleep” Sleep Consultant Network, Chicago, IL
- June 19, 2005 “Challenges along the way to independence” 19<sup>th</sup> Annual Meeting of the Associated Professional Sleep Societies, Denver, CO
- June 19, 2005 “Sleep Technologists: The consequences of sleep deprivation” 19<sup>th</sup> Annual Meeting of the Associated Professional Sleep Societies, Denver, CO
- June 20, 2005 “Sleep deprivation: Neurobehavioral consequences” 19<sup>th</sup> Annual Meeting of the Associated Professional Sleep Societies, Denver, CO
- June 20, 2005 “Sleepiness and performance” 19<sup>th</sup> Annual Meeting of the Associated Professional Sleep Societies, Denver, CO
- June 20, 2005 “Excess Sleepiness: A homeostatic perspective” 19<sup>th</sup> Annual Meeting of the Associated Professional Sleep Societies, Denver, CO

- June 21, 2005 “Polysomnographic and neuroendocrine profile on patients diagnosed with night eating syndrome” 19<sup>th</sup> Annual Meeting of the Associated Professional Sleep Societies, Denver, CO
- June 21, 2005 “Sleep, work and drowsiness: Field study of fatigue management technologies in commercial truck drivers” 19<sup>th</sup> Annual Meeting of the Associated Professional Sleep Societies, Denver, CO
- June 25, 2005 “Normal sleep and wakefulness” Sleep Consultant Network, Dana Point, CA
- August 17, 2005 “Resident fatigue and how it affects performance” Grand Rounds at The National Institutes of Health, Bethesda, MD
- September 12, 2005 “Fatigue management in transportation: Personal choice or brave new world” Keynote Address. Fatigue Management Conference, Seattle, WA
- September 13, 2005 “Field study pilot test of fatigue management technologies” Fatigue Management Conference in Seattle, WA
- September 22, 2005 “Cumulative dose-response neurobehavioral effects of chronic sleep restriction” World Federation of Sleep Research and Sleep Medicine Societies Interim Congress, New Delhi, India
- September 23, 2005 “Science of sleep loss and performance: Implications for the physician duty hours” World Federation of Sleep Research and Sleep Medicine’s Interim Congress, New Delhi, India
- September 25, 2005 “Among cognitive processes, attention is particularly sensitive to sleep loss” World Federation of Sleep Research and Sleep Medicine’s Interim Congress, New Delhi, India
- November 3, 2005 “The consequences of sleep debt” FOCUS Seminar Series, University of Pennsylvania School of Medicine, Philadelphia, PA
- November 17, 2005 “Investigating human fatigue factors in transportation accidents: performance and alertness” National Transportation Board Academy, Ashburn, VA
- November 17, 2005 “Investigating human fatigue factors in transportation accidents: scheduling factors” National Transportation Board Academy, Ashburn, VA
- December 14, 2005 “Resident fatigue and how it affects performance” Grand Rounds at Rhode Island Hospital’s Orthopedics Department, Providence, RI
- February 7, 2006 “Sleep schedule countermeasures to cumulative partial sleep loss in space flight” NASA Habitation 2006, Orlando, FL.
- February 8, 2006 “Optical computer recognition of behavioral stress in space flight” NASA Habitation 2006, Orlando, FL
- February 13, 2006 “Sleep and fatigue in extreme environments” Keynote presentation at the Medicine in Challenging Environment Meeting, Galveston, TX
- February 13, 2006 “Future exploration – The lesson of Fridtjof Nansen” Medicine in Challenging Environment Meeting, Galveston, TX

- February 15, 2006 “Causes and consequences of reduced sleep duration” meeting with Takeda Pharmaceuticals North America, Chicago, IL
- February 28, 2006 “Unobtrusive optical computer recognition of stress and negative affect” National Space Biomedical Research Retreat, Houston, TX
- February 28, 2006 “Recovery from chronic sleep restriction” National Space Biomedical Research Retreat, Houston, TX
- February 28, 2006 “Sleep and Fatigue (in extreme environments and high tempo ops)” Astronaut Training Office, Johnson Space Center, Houston, TX
- March 7, 2006 “The science of sleep, fatigue and performance: Implications for residency duty hours” Grand Rounds for the University of Pennsylvania Department of Medicine, Philadelphia, PA
- March 9, 2006 “Overview of Space Medicine” for the University of Pennsylvania Wilderness Medicine Course, Delaware Water Gap, NJ
- March 29, 2006 “Basis of individual variations in sleep phenotypes” NIH Neuroimaging in Sleep Research Meeting, Bethesda, MD
- April 2, 2006 “Neurocognitive Consequences of Sleep Loss” 58<sup>th</sup> American Academy of Neurology Annual Meeting, San Diego, CA
- April 6, 2006 “Science on Sleep Loss and Fatigue: Lessons for House staff & Attendings” Grand Rounds for Anesthesia and Critical Care Medicine of Children’s Hospital of Philadelphia, Philadelphia, PA
- April 12, 2006 “Sleep, Fatigue and Stress: Monitoring human Behavioral Capability” Johns Hopkins University Applied Physics Laboratory Colloquium, Laurel, MD
- April 18, 2006 “Sleep duration and obesity: From linkages to opportunities” Mars Nutrition Research Council at the University of Illinois, Champaign, IL
- April 19, 2006 “Living with too little sleep: Neurobehavioral consequences of sleep restriction” Mars Nutrition Research Council at the University of Illinois, Champaign, IL
- April 21, 2006 “Neurobehavioral consequences of sleep loss” Washington University Multidisciplinary Sleep Medicine Center CME Lecture Series at Washington University, St. Louis, MO
- April 26, 2006 “Investigating human fatigue factors” National Transportation Safety Board Academy, Ashburn, VA
- May 1, 2006 “Sleep and circadian control of neurobehavioral functions” 2006 Seminar for the University of Pennsylvania Health Systems Treatment Research Center at the University of Pennsylvania, Philadelphia, PA
- May 11, 2006 “The Science of Sleep, Fatigue and Performance: Implications for residency Duty Hours” Obstetrics and Gynecology Grand Rounds, University of Pennsylvania School of Medicine, Philadelphia, PA

- May 15, 2006 “Astronaut scheduling assistant: predicting neurobehavioral impairment under altered sleep/wake conditions” Aerospace Medical Association 77th Annual Scientific Meeting, Orlando, FL
- May 18, 2006 “Sleep, fatigue and stress: Monitoring human behavioral capability” Lunch For Hungry Minds Seminar, University of Pennsylvania Science Center, Philadelphia, PA
- May 23, 2006 “Circadian contributions to cumulative homeostatic sleep drive and differential vulnerability to sleep loss” Society for Research on Biological Rhythms Biennial Meeting, Sandestin, FL
- May 29, 2006 “Fatigue management technologies: What technologies, deployed in what ways, for what purposes?” International Conference of the EU 6<sup>th</sup> Framework Integrated Project Sensation on Monitoring Sleep and Sleepiness from Physiology to New Sensors, Basel, Switzerland
- June 1, 2006 “Circadian and sleep homeostatic control of human neurobehavioral functions” at the University of Massachusetts Medical School Program in Neuroscience Seminar Series, Worcester, MA
- June 6, 2006 “BHP Programmatic Review and the rationale for ISS Sleep Long Experiment” NASA Headquarters, Washington, DC
- June 17, 2006 “Sleep deprivation/restrictions, neurobehavioral effects, health & safety” 20<sup>th</sup> Anniversary Meeting of the Associated Professional Sleep Societies, Salt Lake City, UT
- June 18, 2006 “Year in Review – Cognition and performance” 20<sup>th</sup> Anniversary Meeting of the Associated Professional Sleep Societies, Salt Lake City, UT
- June 18, 2006 “Establishing a career in sleep research and developing leadership skills” 20<sup>th</sup> Anniversary Meeting of the Associated Professional Sleep Societies, Salt Lake City, UT
- June 20, 2006 “Impact of sleep deprivation on delta sleep and neuro-behavioral functions” 20<sup>th</sup> Anniversary Meeting of the Associated Professional Sleep Societies, Salt Lake City, UT
- June 21, 2006 “Sleep loss causes state instability: Evidence from vigilant attention performance” 20<sup>th</sup> Anniversary Meeting of the Associated Professional Sleep Societies, Salt Lake City, UT
- June 21, 2006 “Factors associated with sleep duration from the American Time Use Survey database” 20<sup>th</sup> Anniversary Meeting of the Associated Professional Sleep Societies, Salt Lake City, UT
- June 21, 2006 “Field study pilot test of FMT in Commercial trucking” 20<sup>th</sup> Anniversary Meeting of the Associated Professional Sleep Societies, Salt Lake City, UT
- August 10, 2006 “Neurocognitive effects of sleep loss: With a special focus on lapses of attention” CSRN Sleep Center Seminar, University of Pennsylvania School of Medicine, Philadelphia, PA
- August 12, 2006 “Consequences of human sleep deprivation” American Academy of Sleep Medicine National Sleep Medicine Course, Oak Brook, IL

- September 14, 2006 “Negotiating daytime sleep: an intercultural comparison of social and cultural aspects of sleep patterns” 18th Congress of the European Sleep Research Society, Innsbruck, Austria.
- October 18, 2006 “Performance and alertness” National Transportation Safety Board Academy, Ashburn, VA
- October 18, 2006 “Scheduling factors relevant to fatigue and its mitigation” National Transportation Safety Board Academy, Ashburn, VA
- October 26, 2006 “Modeling the link between sleep/wake dynamics and human performance” Mathematical Bioscience Institute, Ohio State University, Columbus, OH
- November 7, 2006 “Sleep and inflammation” Living Well to 100: Is Inflammation Central to Aging? Tufts University Jaharis Family Center for Biomedical and Nutrition Sciences, Boston, MA
- November 20, 2006 “Time use in America: Trading sleep for wake at what price?” Scientific Symposium on Human Sleep and Performance Sleep and Performance Research Center, Washington State University, Spokane, WA
- November 29, 2006 “Sleep deprivation effects” 4<sup>th</sup> International Aviation Security Technology Symposium, Washington DC
- January 24, 2007 “Overview of sleep in society: How much, how good, and what it means” 2007 International Life Sciences Institute Annual Meeting, Cancun, Mexico
- February 9, 2007 “Sleep deprivation and recovery: Public health issues” American Academy of Sleep Medicine Advanced Sleep Medicine Course, San Diego, CA
- February 9, 2007 “Sleep deprivation and circadian rhythms case discussion” American Academy of Sleep Medicine Advanced Sleep Medicine Course, San Diego, CA
- February 9, 2007 “Sleep deprivation and performance” The Sleep Research Society’s A Primer of Sleep Research: Focus on Brain Imaging and Sleep, La Jolla, CA
- February 9, 2007 “Behaving without sleep: Biological limits on our environmental demands” The Science Network Waking Up To Sleep, Salk Institute, La Jolla, CA
- February 10, 2007 “Napping and Recovery” ” The Science Network Waking Up To Sleep, Salk Institute, La Jolla, CA
- February 10, 2007 “Why do we sleep: A panel discussion” ” The Science Network Waking Up To Sleep, Salk Institute, La Jolla, CA
- February 13, 2007 “Optimizing brain and behavior in space through biology and technology” Invited Plenary Lecture for the NASA Human Research Program Investigators’ Workshop, League City, TX

- February 18, 2007 Symposium Chair: "The neurobiology of chocolate: A mind altering experience" The American Association for the Advancement of Science's Annual Meeting, San Francisco, CA
- March 13, 2007 "Optimizing Neurobehavioral Performance through Biology and Technology" Board of Army Science and Technology, Herndon, VA
- March 14, 2007 "Sleep and neurobehavioral functions" Circadian Rhythms and Sleep Disorders: From basic science to clinical applications, Morehouse School of Medicine, Center for Behavioral Neuroscience, Atlanta, GA
- March 16, 2007 "Sleep Deprivation Effects on Cognition: Strategies for Mitigation" Science and Technology Expert Partnership (STEP): Human Performance Modification Conference, McLean, VA
- March 21, 2007 "The Science of Sleep, Fatigue and Performance: Implications for Residency Duty Hours" Obstetrics and Gynecology Grand Rounds Pennsylvania Hospital, Philadelphia, PA
- April 13, 2007 "Sleep Deprivation Effects on Cognition: Strategies for Mitigation" U.S. Naval Academy, Annapolis, MD
- April 16, 2007 "Overview of Sleep: How Much, How Good, and What It Means" LaBuca Club, Philadelphia, PA
- April 20, 2007 "Optimizing Neurobehavioral Performance through Biology and Technology" JASON Program, McLean, VA
- April 24, 2007 "Sleep Deprivation Effects on Cognition: Strategies for Mitigation" Center for Translational Neuroscience, Department of Neurobiology & Developmental Sciences, College of Medicine, University of Arkansas for Medical Sciences, Little Rock, AR
- May 5, 2007 Panelist at International Space Medicine Summit, Rice University, Houston, TX
- May 21, 2007 "Optical Computer Recognition of Behavioral Stress in Space Flight" 16th Annual International Academy of Astronautics, Humans in Space, Beijing, China
- May 23, 2007 "Countermeasures to Neurobehavioral Deficits From Cumulative Sleep Deprivation During Space Flight: Dose-response Effects of Recovery Sleep Opportunities" 16th Annual International Academy of Astronautics, Humans in Space, Beijing, China
- June 6, 2007 "Sleep and Waking in Deployment and Critical Settings: Performance, Biology, Technology" US Public Health Service Scientific and Training Symposium, Cincinnati, OH
- June 11, 2007 "Melatonin and Valerian" Committee on Dietary Supplement Use by Military Personnel, Institute of Medicine of the National Academies, Washington, DC
- June 14, 2007 "Tracking sleepiness and human error on simulated threat detection performance" 21<sup>st</sup> Annual Meeting of the Associated Professional Sleep Societies, Minneapolis, MN



- June 30, 2007 “Sleep disturbance and psychomotor performance” Addressing Unmet Needs in Recognition, Screening, and Management of Symptoms of Excessive Sleepiness in Psychiatric Practice Neuroscience CME Educational Needs Roundtable, Atlanta, GA
- July 3, 2007 “Sleep and creativity” Advanced Management Program, Aresty Institute of Executive Education, The Wharton School, University of Pennsylvania, Philadelphia, PA
- August 16, 2007 “Optimizing neurobehavioral performance through biology and technology” New National Research Council Committee, Washington, D.C.
- August 20, 2007 “Biological Rhythms: What are they, how are they measured, how might they influence evaluation of mental energy, and how should they be accounted for when evaluating mental energy” ILSI North America Technical Committee on Energy, Washington, D.C.
- September 2, 2007 “Why should we care” Excessive Sleepiness Symposium, 5<sup>th</sup> World Congress of the World Federation of Sleep Research & Sleep Medicine Societies, Cairns, Australia
- September 6, 2007 “Sleep need: Science and global public health – The future is now: Presidential Plenary Lecture, 5<sup>th</sup> World Congress of the World Federation of Sleep Research & Sleep Medicine Societies, Cairns, Australia
- September 25, 2007 “Sleep research and policies” 25 Years Two-Process model of Sleep Regulation: Future Perspective Symposium, Zurich, Switzerland
- October 12, 2007 “Sleepiness and its measurement” EU Cost B-26 Action Meeting, Brussels, Belgium
- October 17, 2007 “Shift work sleep disorder” Medical Grand Rounds, Hahnemann Hospital/Drexel University College of Medicine, Philadelphia, PA
- October 30, 2007 “Neurobehavioral and psychosocial factors in space flight” Space Radiation CNS Risk Workshop, Houston, Texas
- November 27, 2007 “Vigilant attention, sleep need and wake state instability” Thomas Jefferson Hospital Neuroscience Seminar Series, Philadelphia, PA
- December 3, 2007 “Scheduling factors relevant to fatigue and its mitigation” National Transportation Safety Board Academy, Ashburn, VA
- December 8, 2007 “The vital role of sleep duration in alertness and neurobehavioral functions” the Mexican Sleep Society, Monterrey, Mexico
- February 15, 2008 “Causes and consequences of excessive sleepiness” Grand Rounds at Wake Forest Medical School, Winston-Salem, NC
- March 3, 2008 “Sleep and human behavior” National Sleep Foundation Waking America to the Importance of Sleep meeting, Washington D.C.
- March 5, 2008 “Lessons from sleep literature on work hours and performance” Institute of Medicine meeting, Irvine, CA

- March 8, 2008 “Trait-like differential vulnerability to the neurobehavioral effects of sleep loss in humans” Keystone symposium, Tahoe City, CA
- April 10, 2008 “Phenotypes for differential vulnerability to sleep deprivation” NIH Gene Workshop, Bethesda, MD
- May 13, 2008 “Countermeasures to neurobehavioral deficits from cumulative sleep deprivation during space flight: Dose-response effects of recovery sleep opportunities” the Aerospace Medical Association 79<sup>th</sup> Annual Scientific Meeting in Boston, MA
- May 18, 2008 “Data sharing and research capabilities” International Space Medicine Meeting, Houston, TX
- June 8, 2008 “Professional development: Challenges along the way to independence and developing leadership” SLEEP 2008 22<sup>nd</sup> Annual Meeting of the Associated Professional Sleep Societies, Baltimore, MD
- June 17, 2008 “Fatigue: Where biology meets technology” FAA Fatigue Symposium, Tysons Corner, VA
- June 20, 2008 “Trait-like differential vulnerability to the neurobehavioral effects of sleep loss in humans” The Role of Genetics and Gene Expression in Sleep Regulation and Dysregulation Conference, New York Academy of Science, New York City, NY
- July 21, 2008 “Sleep Deprivation” Center for Sleep and Respiratory Neurobiology’s Sleep Medicine Grand Rounds, University of Pennsylvania School of Medicine, Philadelphia, PA
- August 7, 2008 “Predicting differential vulnerability to the neurobehavioral effects of sleep loss” Emory University, Atlanta, GA
- September 10, 2008 “Clinical paradoxes in insomnia? Implications for human research” 19<sup>th</sup> Congress of the European Sleep Research Society, Glasgow, Scotland
- October 11, 2008 “Our secret differences: Vulnerability to sleep deprivation” 9<sup>th</sup> Annual Meeting of the Upper Mid-West Sleep Society, Madison, WI
- October 13, 2008 “Sleep need and sleep loss: From laboratory findings to American time use” The Population Health Seminar, University of Wisconsin, Madison, WI
- November 11, 2008 “Where did sleep come from? Why do I need it?” Sleep 101, Trustees’ Council of Penn Women & Penn Women’s Center, University of Pennsylvania, Philadelphia, PA
- February 7, 2009 “Sleep deprivation: Why do we do it and what does it do to us” The Mystery of Sleep Conference, Claremont College, CA
- February 25, 2009 “Establishing and predicting phenotypic differential vulnerability to the neurobehavioral effects of sleep loss” Sustaining Performance Under Stress Meeting, University of Maryland, College Park, MD
- February 25, 2009 “Investigating human fatigue factors in transportation accidents: performance and alertness” National Transportation Board Academy, Ashburn, VA

- February 25, 2009 “Investigating human fatigue factors in transportation accidents: scheduling factors” National Transportation Board Academy, Ashburn, VA
- March 4, 2009 “Sleep loss and performance and the benefits and limits of regulation – from limits on hours to systems to manage alertness and performance” ACGME Meeting, Dallas, TX
- March 5, 2009 “Behavioral consequences of human circadian rhythms” Trans NIH Forum on Circadian Rhythms, Bethesda, MD
- March 14, 2009 “Asleep at the wheel: A race against the (alarm) clock” University of Pennsylvania Academy Lectures, Pebble Beach, CA
- March 24, 2009 “Truck driver fatigue management survey” Fatigue Management Meeting, Cambridge, MA
- April 13, 2009 “The significance of insufficient sleep and sleepiness” NIH Scientific Conference on Sleepiness and Health-Related Quality of Life, Bethesda, MD
- April 21, 2009 “A crisis of inadequate sleep: Health and safety implications” Johns Hopkins University Psychiatry Grand Rounds, Baltimore, MD
- May 4, 2009 “Optical computer recognition of the face to monitor stress, emotion and fatigue in space flight” 80<sup>th</sup> Annual Aerospace Medicine Association Scientific Meeting, Los Angeles, CA
- May 7, 2009 “Cognitive fatigue and the temporal control of behavior by sleep and circadian biology” Cognitive Fatigue Conference, Atlanta, GA
- May 18, 2009 “Sleep (Deprivation) Research and Work Hours” The Society of Neurological Surgeons Annual Meeting, Salt Lake City, Utah
- June 5, 2009 “Obesity and Sleep” National Institute of Nursing Research, Bethesda, MD
- June 7, 2009 “Neurocognitive consequences of sleep deprivation” SLEEP 2009 23<sup>rd</sup> Annual Meeting of the Associated Professional Sleep Societies, Seattle, WA
- June 9, 2009 “Impact of sleep loss on sleepiness and cognitive performance” SLEEP 2009 23<sup>rd</sup> Annual Meeting of the Associated Professional Sleep Societies, Seattle, WA
- June 10, 2009 “Stability, prediction and correlates of trait-like differential vulnerability to the neurobehavioral effects of acute total sleep loss and chronic partial sleep restriction” SLEEP 2009 23<sup>rd</sup> Annual Meeting of the Associated Professional Sleep Societies, Seattle, WA
- June 11, 2009 “What does modern human sleep need and response to sleep loss suggest regarding a universal function for sleep?” SLEEP 2009 23<sup>rd</sup> Annual Meeting of the Associated Professional Sleep Societies, Seattle, WA
- June 15, 2009 “IOM Report on Resident Duty Hours: Enhancing Sleep, Supervision, and Safety” AMA House of Delegates Annual Meeting, Chicago, IL

- July 7, 2009 “Caffeine and cognitive performance with and without sleep deprivation”, NIH National Institute on Drug Abuse – Office of Dietary Supplements Symposium on Caffeine: Is the Next Problem Already Brewing?, Rockville, MD
- September 10, 2009 “Sleep research and residency duty hours”, Accreditation Council for Graduate Medical Education’s Duty Hours Task Force, Chicago, IL
- September 17, 2009 “Sleep need and residency duty hours” The 6<sup>th</sup> Annual Program Director/Coordinator Education Conference, Loma Linda University Medical Center, Palm Springs, CA
- September 24, 2009 “Sleep need and residency duty hours”, Non-Imaging Curriculum in the Department of Radiology of Pennsylvania Hospital, Philadelphia, PA
- October 10, 2009 “Differential neurobehavioral vulnerability to sleep deprivation – what do we know?” New Jersey Sleep Society’s Annual Educational Symposium and Sleep-Board Mini-Review Course, New Brunswick, NJ
- October 14, 2009 “Behavioral Health Issues” The Center for Space Medicine Lecture Series *Topics in Human Space Exploration and Medicine*, Baylor College of Medicine, Houston, TX
- November 9, 2009 “Maintaining neurobehavioral functions in space” Drexel University College of Medicine, Philadelphia, PA
- November 13, 2009 “Differential vulnerability to the neurobehavioral effects of insufficient sleep” Neuropsychology Seminar, University of Pennsylvania School of Medicine, Philadelphia, PA
- November 16, 2009 “Health threats in human space flight: Maintaining neurobehavioral functions in space” Penn Wilderness Medicine Talk, University of Pennsylvania School of Medicine, Philadelphia, PA
- December 10, 2009 “Sleep and waking functions: What aspects of sleep are important for healthy functioning” FAA Workshop on Aircraft Noise Impacts Research, Washington DC

**Testimony/Advisor to Federal Agencies (1987-99) (N = 33):**

- April 7, 1987 Consultant, Department of Defense Study Group evaluating the DOD Polygraph Institute, Fort McClellan, Alabama. Final report submitted April 7, 1987.
- April 30, 1987 Testimony before the United States Congressional House Subcommittee on Transportation Appropriations. Representative, Associated Professional Sleep Societies, Washington, DC
- May 14, 1987 Testimony before the United States Congressional Senate Subcommittee on Transportation Appropriations. Representative, Associated Professional Sleep Societies, Washington, DC

- May 19, 1987      Advisory Panel, Office of Technology Assessment, United States Congress, Workshop on Human Factors in Motor Vehicle Safety (report to US Congress published Sept., 1988), Washington, DC
- June 18, 1987      Invited Faculty, National Transportation Safety Board, United States Department of Transportation, Human Performance Seminar, Lecture on Sleepiness, Alertness & Human Performance, Washington, DC
- June 1987          Consultant to the Port Authority of New York and New Jersey on shiftwork schedules, New York, NY.
- March 15, 1988      Testimony before the United States Congress, House Subcommittee on Surface Transportation. Representative, Association of Professional Sleep Societies, Washington, DC
- April 21, 1988      Testimony before the United States Congress, House Subcommittee on Transportation, Committee on Appropriations. Representative, Associated Professional Sleep Societies, Washington, DC
- August 16, 1988      Consultations with National Transportation Safety Board and Federal Aviation Administration. Representative, Associated Professional Sleep Societies, Public Advisory Committee on Safety, Performance, and Sleep, Washington, DC
- February 10, 1989    Advisory Panel, Office of Technology Assessment, United States Congress, Workshop on New Developments in Neuroscience: Biological Rhythms and Shiftwork, Washington, DC
- February 14, 1989    Expert Witness, United States District Court, Italia S.P.A. di Navigazione v. Howard Merkel (Civil No. PN-86-3059), Baltimore, MD
- April 20, 1989      Testimony before the United States Congress, House Subcommittee on Transportation, Committee on Appropriations. Representative, Associated Professional Sleep Societies, Washington, DC
- December 19, 1989    Advisory Panel, Office of Technology Assessment, United States Congress, Workshop on New Developments in Neuroscience: Biological Rhythms and Shiftwork (report to US Congress published Sept., 1991), Washington, DC
- January 18, 1990      Advisor, Human Factors Aviation Branch, NASA-Ames Research Center, Laboratory and Field Studies of Fatigue in Flight Operations, NASA Ames Research Center, Moffett Field, CA
- June 6, 1990        Associate Staff and Invited Faculty, National Transportation Safety Board Human Performance Advanced Course, Oklahoma City, Oklahoma.
- February 21, 1991    Advisor, APA Transport Corporation, NJ

- March 13, 1991 Testimony "On the national problem of fatigue and sleepiness," before the National Commission on Sleep Disorders Research, Workshop Hearing, Houston, TX
- April 25, 1991 Advisor, American Trucking Association Foundation, Ocean Reef, Florida.
- April 30, 1991 Testimony before the United States Congress, House Subcommittee on Transportation, Committee on Appropriations. Representative, American Sleep Disorders Association, Washington, DC
- August 8, 1991 Advisor, Flight Safety Foundation, Arlington, Virginia.
- September 12, 1991 Advisor, American Trucking Association Foundation, Nashville, TN
- October 10, 1991 Advisor, Corporate Advisory Board, Flight Safety Foundation, Arlington, VA
- October 10, 1991 Advisor to Truck Driver Fatigue Study, National Transportation Safety Board, Washington, DC
- May 20, 1992 Advisor to Accident Investigators, National Transportation Safety Board, Washington, DC
- April 7, 1993 Advisor, Federal Railroad Administration, Washington, DC
- April 14, 1994 Member, Task Force on The Impact of Fatigue on Driving. State of New York, Department of Motor Vehicles, Albany, NY
- October 1994 Advisor, National Transportation Safety Board, Washington, DC
- November 18, 1994 Advisor, National Transportation Safety Board Study of Fatigue in Single-Vehicle Truck Accidents, Washington, DC
- January 18, 1995 Advisor, NASA Space Station Human Research Facility Science Working Group, Johnson Space Center, Houston, TX
- February 10, 1995 Peer Review Panel Member, Office of Motor Carriers, Federal Highway Administration, Washington, DC
- March 13, 1995 Advisor, Truck and Bus Safety Summit, Federal Highway Administration, Kansas City, MO
- April 4, 1996 Advisor, *Administrator's Roundtable*, US Department of Transportation, Federal Railroad Administration, Washington, DC

September 10, 1999 Expert testimony on Managing fatigue in transport, Commonwealth of Australia, House of Representatives, Standing Committee on Communications, Transport and the Arts, Melbourne, Australia

Testimony/Advisor to Non-Federal Groups (1987-00):

- 1987-88 Consultant to the American Psychiatric Association's Task Force on Treatments of Psychiatric Disorders, 1989.
- March 5, 1992 Consulting, FINEX, NY.
- November 25, 1992 Consultant, DuPont Corporation, Corporate Aviation Group, Wilmington, DE.
- February 23, 1993 Consultant, Canadair, Montreal, Canada.
- November 30, 1995 Consultant, BBN Systems and Technologies, Acoustical Society in St. Louis, MO.
- January 4-5, 1996 Advisor, Night Operations and Human Chronobiology Workshop, Air Force Office of Scientific Research (AFOSR), Holloman AFB, NM.
- March 25-26, 1996 Advisor, Human Research Facility Science Working Group, Universities Space Research Association, Division of Space Life Sciences, Center for Advanced Space Studies, Houston, TX.
- August 1996-1997 Consensus Panelist, Use of Continuous Shallow Rumble Strips, National Sleep Foundation, Washington, DC
- April 4 – 5, 2000 Participant, International Life Sciences Institute's North America Project Committee on Defining Energy for a New Millennium in Washington DC

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