CURRICULUM VITAE
Mark R. Opp, PhD

PERSONAL DATA:

Name:	Mark R. Opp
Citizenship:	United States

EDUCATION:

1979	B.S.	(Biology) Walla Walla College, College Place, WA
1983	M.S.	(Biology) Walla Walla College, College Place, WA
1987	Ph.D.	(Zoology) Washington State University, Pullman, WA

POSTDOCTORAL TRAINING:

1987 – 1988 Postdoctoral Research Associate, Department of Physiology and Biophysics, University of Tennessee (UT), Memphis, TN

FACULTY POSITIONS HELD:

1979 – 1981 High School Science Teacher, Pioneer Valley Academy, New Braintree, MA
1988 – 1990 Instructor, Dept. of Physiology and Biophysics, UT, Memphis, TN
1990 – 1993 Research Assistant Professor, Dept. of Physiology and Biophysics, UT, Memphis, TN
1991 – 1993 Participating Faculty, Center for Neuroscience, University of Tennessee, Memphis, TN
1993 – 1997 Assistant Professor, Dept. of Psychiatry, University of Texas Medical Branch (UTMB), Galveston, TX
1994 – 2000 Participating Faculty, Neuroscience Graduate Program, UTMB, Galveston, TX
1994 – 2000 Participating Faculty, Cell Biology Program, UTMB, Galveston, TX
1997 – 2000 Associate Professor (tenured), Dept. of Psychiatry, UTMB, Galveston, TX
2001 – 2004 Associate Professor (tenured), Dept. of Anesthesiology, University of Michigan, Ann Arbor, MI
2001 – 2004 Associate Professor, Dept. of Molecular & Integrative Physiology, University of Michigan, Ann Arbor, MI
2004 – 2010 Professor (tenured), Dept. of Anesthesiology, University of Michigan, Ann Arbor, MI
2004 – 2010 Professor, Dept. of Molecular & Integrative Physiology, University of Michigan, Ann Arbor, MI
2010 – 2017 Professor and Vice Chair for Basic Research, Dept. of Anesthesiology & Pain Medicine, University of Washington, Seattle, WA
2010 – 2017 UW Medicine Education and Research Endowed Chair in Anesthesiology, University of Washington, Seattle, WA
2015 – 2018 Senior Researcher, WebSciences International, Los Angeles, CA
2017 – Professor, Department of Integrative Physiology, University of Colorado, Boulder, CO
2018 – 2021 Chair, Department of Integrative Physiology, University of Colorado, Boulder, CO
2022 – Faculty Director, Health Professions Residential Academic Program, University of Colorado, Boulder, CO

HONORS AND AWARDS:

1981 *Sigma Xi* Award: Territorial utilization by gulls
1984 *Sigma Xi* Award: Effects of thermal stress on sleep patterns of birds
1984 WSU Graduate School Travel Grant-in-Aid
1984 WSU Graduate School Research Grant-in-Aid
1986 Marcia Brady Tucker Travel Award, American Ornithologists' Union
1986 Young Investigator Award, European Sleep Research Society
1986 WSU Guy Brislawn Memorial Scholarship for Professional Achievement
1986 University of Arkansas Biomedical Research Support Grant Award
1986 University of Arkansas Research Incentive Fund Award
1988 Young Investigator Award, European Sleep Research Society
1988 – 1989 University of Tennessee Neuroscience Center of Excellence Fellowship
1991 Secretary Treasurer, Memphis Mid-South Sleep Society
1994 – 1999 Member, Junior Faculty Association, University of Tennessee, Memphis
1998 – 2018 Faculty Participant; Multi-Site Training Program for Basic Sleep Research
2002 – 2004 Secretary Treasurer, Sleep Research Society (***elected***)
2005 – 2007 President-Elect, President, Past-President, Sleep Research Society (***elected***)

2005 Grass Traveling Scientist Award, University of Mississippi Medical Center
2005 Grass Traveling Scientist Award, Louisiana State University Health Sciences Center
2006 Secretary Treasure, Associated Professional Sleep Societies
2006 American Academy of Sleep Medicine/Pfizer Visiting Professorship in Sleep Medicine, Baylor College of Medicine
2007 – 2008 President, Associated Professional Sleep Societies
2006 – 2009 Councilor, Psychoneuroimmunology Research Society (***elected***)
2009 – 2010 Secretary Treasure, Psychoneuroimmunology Research Society (***elected***)
2012 – 2017 Member, Institute of Translational Health Sciences, University of Washington, Seattle, WA
2013 – 2015 President-Elect, President, Past-President, PsychoNeuroImmunology Research Society (***elected***)
2014 Founding Chair, Gordon Research Conference on Sleep Regulation and Function

PROFESSIONAL ORGANIZATIONS:
1986 – American Physiological Society
1985 – European Sleep Research Society
1989 – Sleep Research Society
1996 – Society for Neuroscience
2002 – 2013 American Academy of Sleep Medicine
2005 – PsychoNeuroImmunology Research Society

MENTORSHIP and TEACHING:
MENTORSHIP

University of Texas Medical Branch
High School and Undergraduate Research Rotations
1994 Michael Joseph, Ball High School, Galveston, TX; Laboratory Observation Program
1995 Pooja Singh, Ball High School, Galveston, TX; Student Research Project, Science Engineering Fair of Houston (2nd Prize Winner, Region)
1995 Eric Doyle, SUNY at Geneseo, Geneseo, NY; Summer Research Internship
1996 Caroline Leonard, Ball High School, Galveston, TX; Laboratory Observation Program

Dissertation Supervisory Committees
1996 – 1998 Patrick Cadet, Ph.D. Department of Microbiology & Immunology, supervisory committee
1996 – 2000 Michael Bankson, Ph.D., Department of Pharmacology & Toxicology, supervisory committee
1996 – 1999 Fang-Chia Chang, Ph.D., Neuroscience Graduate Program, **supervisor,** current position: Professor, Department and Graduate Institute of Veterinary Medicine, National Taiwan University, Taipei, Taiwan
1997 – 2000 Stacy Sell, Ph.D., Department of Pharmacology & Toxicology, supervisory committee
1998 – 2000 Nancy MacDonald, Ph.D., Neuroscience Graduate Program, supervisory committee

Postdoctoral Fellows
1997 – 1999 Carmelina Gemma, Ph.D., current position: Research Associate Professor, Department of Anesthesiology & Pain Medicine, University of Washington, Seattle, WA
1998 – 2000 Leslie Hutton, Ph.D.
1999 – 2000 Dale Hogan, Ph.D., current position: Senior Research Associate, Department of Neuroscience and Cell Biology, University of Texas Medical Branch, Galveston, TX

University of Michigan
Undergraduate Student Research Rotations
2001 Neetha Vilasagar, Summer Research Internship
2002 Agnieszka Trzcinka, Summer Research Internship,
2002 Luca Ratti, Visiting Undergraduate Student, University of Milan, Italy
2003 Kristen Childress, Undergraduate Research

2003 Michael Mathai, Summer Research Internship
2004 Sundeep Vikraman, Summer Research Internship
2005 Jian Guan, Summer Research Internship
2006 Ashley Talsma, Psychology 331 Laboratory
2006 Tiffany Hsu, Psychology 326 Independent Study
2008 Christopher C. Angelakos, Summer Research Internship
2009 Uzoma Okeagu, Summer Research Internship

Candidacy Examination Committees

2001 Christal Coleman, Department of Pharmacology, Ph.D. candidacy examination committee
2001 Susan Kennedy, Neuroscience Graduate Program, Ph.D. candidacy examination committee
2003 Sona Kang, Department of Molecular and Integrative Physiology, Ph.D. candidacy examination committee
2003 Susan Howell, Department of Pharmacology, Ph.D. candidacy examination committee
2005 Amy Oakley, Department of Molecular and Integrative Physiology, Ph.D. candidacy examination committee
2005 Christa Van Dort, Department of Molecular and Integrative Physiology, Ph.D. candidacy examination committee
2009 Melissa Carrasco, Neuroscience Graduate Program, Ph.D. candidacy examination committee

Dissertation Supervisory Committees

2001 – 2004 Jonathan Morrow, Ph.D. Neuroscience Graduate Program, **supervisor**, current position: Assistant Professor, Department of Psychiatry, University of Michigan, Ann Arbor, MI
2001 – 2004 Kellie Breen, Ph.D. Department of Physiology Graduate Program, supervisory committee
2004 – 2007 Melissa Olivadoti, Ph.D. Neuroscience Graduate Program, **supervisor,** current position, Medical Science Laison, Ferring Pharmaceuticals,
2004 – 2010 Jamie Perryman, Neuroscience Graduate Program, **co-supervisor**
2004 – 2006 Khrishna Jhaveri, Pharmacology Graduate Student, Southern Illinois University, supervisory committee
2006 – 2009 Christine Walsh, Neuroscience Graduate Program, supervisory committee
2007 – 2010 Deepti Nagarkar, Molecular & Integrative Physiology Graduate Program, supervisory committee
2008 – 2014 Ashley Talsma, Neuroscience Graduate Program, **supervisor**
2009 – 2013 Blair Sutton, Neuroscience Graduate Program, **supervisor**
2009 – 2010 Samantha Zhang, Molecular & Integrative Physiology Graduate Program, supervisory committee

Postdoctoral Fellows

2005 – 2009 Francesca Baracchi, Ph.D., current position, Research Associate, Department of Neurology, University Hospital, Bern, Switzerland
2008 – 2010 Sharon Kozachik, Ph.D., Johns Hopkins University School of Nursing, K01 co-Mentor, current position, Assistant Professor, Department of Acute and Chronic Care, Johns Hopkins University, School of Nursing, Baltimore, MD

Medical Students, Residents, and Fellows

2004 Leila Wing, Summer Medical Student Preceptorship, 1st year medical student, Wayne State University, Detroit, MI, First Prize winning poster at the 2005 Midwest Anesthesiology Resident's Conference, Madison, WI
2005 – 2006 Tara Doherty, D.O., CA1, Department of Anesthesiology, University of Michigan, Research Mentor
2006 – 2008 Yasser El Kouatli, M.D., Critical Care Fellow, Department of Anesthesiology, University of Michigan, Research Mentor.

University of Washington

Undergraduate Student Research Rotations

2012 – 2013 Kelley Jordan
2013 – 2014 Oleg Kritskiy
2013 – 2015 Jenna Grillo
2014 Chloe Choe
2014 – 2015 Christopher Rumer
2015 Albert Ng, Innovations in Pain Research Summer Program awardee
2015 – 2017 Nicole Ducich
2015 – 2017 Nhat-Quynh Nguyen
2015 – 2017 Pheobe Domingo

Dissertation Supervisory Committees

2012 – 2014 Kathryn Jewett, Department of Biomedical Sciences, Washington State University
2013 Marieke Hoekstra, Masters of Behavior and Cognitive Neuroscience, Groningen University, Groningen, NL
2013 – 2017 Hannah Thomasy, Graduate Program in Neurobiology and Behavior, **supervisor**
2013 – 2016 Qian "Grace" Tu, School of Nursing, Graduate School Representative

Postdoctoral Fellows

2011 – 2014 Paulien Barf, Ph.D.
2013 – 2017 Jacqueline Ho, Ph.D.

Medical Students, Residents, Fellows, and Faculty

2011 – 2013 Naola Austin, M.D., Bonica Scholar, Department of Anesthesiology & Pain Medicine, University of Washington, Research Advisor
2011 – 2012 Katherine Gentry, M.D., Faculty Fellow, Department of Anesthesiology & Pain Medicine, University of Washington, Mentoring Team
2011 – Itay Bentov, M.D., Ph.D., Assistant Professor, Department of Anesthesiology & Pain Medicine, University of Washington, Faculty Research Mentor
2012 – 2016 Elizabeth Hansen, M.D., Ph.D., Resident, Department of Anesthesiology & Pain Medicine, Resident Advisor
2012 – 2016 Michael Patz, M.D., Resident, Department of Anesthesiology & Pain Medicine, Resident Advisor
2013 – 2014 Lance Relland, MD., Resident, Department of Anesthesiology & Pain Medicine, Bonica Scholar Research Rotation

University of Colorado Boulder

Undergraduate Student Research Scholars

2017 – 2018 Christopher Thompson
2017 – 2018 Daniel Bush, UROP academic year individual grant 2018-2019
2017 – 2019 Hannah Pfrommer, BSI Scholar 2017-2018, 2018-2019
2018 – Anneli Folkesson, UROP summer individual grant 2018, BSI Scholar 2018-2019
2018 – 2020 Brianna Hormberg
2018 – Annalise Betts
2019 – Lucy Horne
2020 – Sonjia Hadley
2020 – Jacqueline (Jackie) Martensen

Qualifying Exam Committees

2021 William Patterson, Doctoral Candidate, Department of Integrative Physiology (**Chair**)

Dissertation Supervisory Committees

2019 – 2020 Hannah Pfrommer, Department of Integrative Physiology, MS **supervisor**
2020 Shannon Hall, Department of Medical Neuroscience, Dalhousie University, Halifax, Nova Scotia, CA (**Doctoral Dissertation External Examiner**)
2021 – Katrina Rodheim, Department of Integrative Physiology, PhD student

Postdoctoral Fellows
2020 – Salvador Valencia

Medical Students, Residents, Fellows, and Faculty

TEACHING

University of Texas Medical Branch

1994 – 1996 Department of Psychiatry and Behavioral Sciences Consultation & Liaison Teaching Conference (2 lectures/4 contact h)
1995 – 2000 Co-Director, Behavioral Neuroscience Course, Graduate School for Biomedical Sciences
1996 – 2000 Neuroscience Course, School of Medicine (1 lecture/2 contact h)
1996 – 2000 Medical Pharmacology Course (1 lecture/2 contact h)
1997 – 2000 Introduction to Patient Evaluation (1 lecture/2 contact h)

University of Michigan

2001 (fall) Systems and Integrative Physiology (Physiol. 510); Department of Physiology (5 lectures/7.5 contact h)
2001 (fall) Sleep: Neurobiology, Medicine, and Society (Neurosci. 520); Neuroscience Graduate Program (2 lectures/3 contact h)
2001 (fall) Neuroscience 700 seminar series, Faculty Organizer and Facilitator (11 contact h)
2002 (fall) Systems and Integrative Physiology (Physiol. 510); Department of Physiology (4 lectures/6 contact h)
2002 (fall) Sleep: Neurobiology, Medicine, and Society (Neurosci. 520); Neuroscience Graduate Program (2 lectures/3 contact h)
2003 (fall) Systems and Integrative Physiology (Physiol. 510); Department of Physiology (5 lectures/7.5 contact h)
2003 (fall) Sleep: Neurobiology, Medicine, and Society (Neurosci. 520); Neuroscience Graduate Program (2 lectures/3 contact h)
2004 (fall) Systems and Integrative Physiology (Physiol. 510); Department of Physiology (5 lectures/7.5 contact h)
2004 (fall) Sleep: Neurobiology, Medicine, and Society (Neurosci. 520), Neuroscience Graduate Program (2 lectures/3 contact h)
2005 (fall) Systems and Integrative Physiology (Physiol. 510); Department of Physiology (5 lectures/7.5 contact h)
2005 (fall) Sleep: Neurobiology, Medicine, and Society (Neurosci. 520), Neuroscience Graduate Program (2 lectures/3 contact h)
2007 (fall) Sleep: Neurobiology, Medicine, and Society (Neurosci. 520), Neuroscience Graduate Program (1 lecture/1.5 contact h)
2008 (winter) Introduction to Scientific Communication (Pharm 502), Department of Pharmacology (7 sessions/14 contact h)
2008 (fall) Sleep: Neurobiology, Medicine, and Society (Neurosci. 520), Neuroscience Graduate Program (1 lecture/1.5 contact h)
2009 (winter) Introduction to Scientific Communication (Pharm 502), Department of Pharmacology (7 sessions/14 contact h)
2009 (fall) Systems and Integrative Physiology (Physiol. 510); Department of Physiology (3 lectures/4.5 contact h)

University of Milan

2008 (fall) Physiology of Sleep, Scuola di Dottorato in Fisiologia Morfologia (4 lectures/12 contact h)

University of Colorado Boulder

2017 (fall) Professional Skills for the Research Scientist (IPHY 6830): Department of Integrative Physiology (37.5 contact h)
2018 – 2021 Colloquium & Recitation (IPHY 5100): Department of Integrative Physiology (30 contact h / semester)

EDITORIAL RESPONSIBILITIES:

1995	Guest Editor, *Advances in Neuroimmunology* Vol. 5 (Issue 1): Sleep as a model behavior for the study of central nervous system-immune interactions: Part 1
1995	Guest Editor, *Advances in Neuroimmunology* Vol. 5 (Issue 2): Sleep as a model behavior for the study of central nervous system-immune interactions: Part 2
1998 – 2001	Editor: *Sleep Research Society Bulletin*
1999 – 2001	Editorial Board: *American Journal of Physiology: Regulatory, Integrative and Comparative Physiology*
2003 – 2016	Associate Editor: *Sleep*
2004	Guest Editor: *Brain, Behavior and Immunity*; Special Issue: Sleep, Cytokines, and Immunity: Implications for Health
2005	Editor: *SRS Basics of Sleep Guide, 1st edition*
2006 –	Editorial Board: *Brain, Behavior, and Immunity*
2012 –	Editorial Board: *Sleep Medicine Reviews*
2015	Guest Editor: *Brain, Behavior and Immunity*; Special Issue: Sleep, Brain, Behavior, and Immunity
2015 –	Founding Editor-in-Chief: *Neurobiology of Sleep and Circadian Rhythms*
2016	Editor: *Primer of PsychoNeuroImmunology Research, 1st edition*

SPECIAL NATIONAL RESPONSIBILITIES:

1999 – 2002	Committee on Animal Research Ethics, Sleep Research Society
2000 – 2002	Program Committee, PsychoNeuroImmunology Research Society
2000 – 2002	Training and Educational Advisory Council, Sleep Research Society
2000 – 2002	Education and Scientific Review Committee, Sleep Research Society
2007 – 2010	Scientific Councilor, Psychoneuroimmunology Research Society

Federal Advisory Committee Service

1995	Department of Veterans Affairs Merit Award Application Reviewer
1997	NIH: *Ad hoc* reviewer, Integrative, Functional and Cognitive Neuroscience (IFCN) – 3 Initial Review Group
1997	NIH: *Ad hoc* reviewer, Integrative, Functional and Cognitive Neuroscience (IFCN) – 3 Initial Review Group
1998	Department of Veterans Affairs Merit Award Application Reviewer
1998	National Sleep Foundation Postdoctoral Fellowship Application Reviewer
1998 – 2003	NIH: Member Integrative, Functional and Cognitive Neuroscience (IFCN) – 3 Initial Review Group
1999	NIH: *Ad hoc* reviewer, Special Emphasis Panel study section; Phenotypic Characterization of Sleep in Mice
1999	NIH: NHLBI/NIA Workshop: Sleep and Host Defense. Invited Participant
1999	National Space Biomedical Research Institute Workshop: Immunology, Infection and Hematology. Invited Participant
2000	NIH: NIMH Workshop: Strategies for Identifying Functional Links between the Immune System, Brain Function, and Behavior. Invited Participant
2001	DHHS/CDC Conference: Chronic Fatigue Syndrome State of the Science Conference. Invited Participant
2001	Department of Veterans Affairs Merit Award Application Reviewer
2002	NIH: *Ad hoc* reviewer, Special Emphasis Panel, Integrative, Functional and Cognitive Neuroscience–4 study section
2003	NIH: NIGMS/OBSSR Workshop: Allostatic Load and the Response to Traumatic Injury. Invited participant
2003	Trans-NIH Workgroup Workshop: Chronic Fatigue Syndrome. Invited participant
2003	NIH: *Ad hoc* reviewer, Special Emphasis Panel, Integrative, Functional and Cognitive Neuroscience–4 study section
2004	National Space Biomedical Research Institute: Immunology, Infection and Hematology Panel, grant application reviewer

2004	NIH: *Ad hoc* reviewer, Special Emphasis Panel HL04010, Inter-relationships of sleep, fatigue, and HIV/AIDS
2004	NIH: *Ad hoc* reviewer, Biological Rhythms and Sleep study section
2005	NIH: Chair, Special Emphasis Panel, Fever Mechanisms
2005	NIH: NIMH Board of Scientific Counselors *Ad hoc* reviewer
2007	NIH: NIMH Board of Scientific Counselors *Ad hoc* reviewer
2008	NIH: *Ad hoc* reviewer, NINDS SRB-M(61) Initial Review Group
2009	NIH: *Ad hoc* reviewer, RFA-09-003 Challenge Grants in Health and Science Research
2009	NIH: *Ad hoc* reviewer, Special Emphasis Panel 10 ZRG1 IFCN-(96)M: Memory, Sleep, and Addiction
2009	NIH: NIMH/NINDS Workgroup Workshop: Promising Directions and Challenges in the Future of Sleep Research. Invited Participant.
2009	NIH: *Ad hoc* reviewer, Biological Rhythms and Sleep (BRS) Initial Review Group
2010	NIH: *Ad hoc* reviewer, Biological Rhythms and Sleep (BRS) Initial Review Group
2011 – 2014	NIH: Member of Neuroendocrinology, Neuroimmunology, Rhythms and Sleep (NNRS) Initial Review Group
2014	Trans-NIH Workshop: Contribution of Sleep Disturbances to Chronic Pain. Section Organizer
2015	8th Annual Bedside to Bench Conference organized by NIA and the American Geriatric Association: Sleep, Circadian Rhythms, and Aging: New Avenues for Improving Brain Health, Physical Health and Functioning. Invited Participant.
2019	NIH: *Ad hoc* reviewer and Chair, ZRG1 BBBP-J (02) M Member Conflict, Biobehavioral Regulation
2021	Beyond the Symptom: The Biology of Fatigue, a workshop jointly organized by the Sleep Research Society and NIH/NINDS, Organizing Committee

SPECIAL LOCAL RESPONSIBILITIES:

University of Texas Medical Branch

1994 – 2000	Institutional Animal Care and Use Committee
1995	Research Advisory Council Core Facility Review Subcommittee
1995 – 2000	Neuroscience Graduate Program Examinations Committee (Chair1996-2000)
1996	Brain Awareness Week Organizing Committee
1996 – 1997	Cell Biology Graduate Program Advisory Committee
1996 – 2000	Institutional Animal Care and Use Committee, Education and Training subcommittee
1997 – 2000	Steering Committee, Neuroscience Center for Excellence
1997 – 2000	Cell Biology Graduate Program Admissions and Recruitment Committee
1997 – 2000	Institutional Animal Care and Use Committee, Forms subcommittee (Chair)
1998	Summer Undergraduate Research Program Admissions Committee
1999 – 2000	Graduate School of Biomedical Sciences Recruitment Committee
1999 – 2000	Animal Resources Center Task Force

University of Michigan

2001 – 2006	University Committee on Use and Care of Animals (UCUCA)
2003 – 2006	**Chair**, University Committee on Use and Care of Animals (UCUCA)
2002	Search Committee; Director, Chronobiology Research Laboratory, Comprehensive Depression Center, Department of Psychiatry
2008 – 2010	Center for Integrative Genomics Operating Committee, Department of Molecular & Integrative Physiology

University of Washington

2010 – 2015	Director, Grants Administration Services, Department of Anesthesiology & Pain Medicine

University of Colorado

2017 – 2018	Welfare Committee, Department of Integrative Physiology
2017 –	Standing Committee on Research Misconduct, Office of Research Integrity
2017 –	Honors Council: Integrative Physiology Representative

RESEARCH FUNDING:
Completed Research Projects

Agency: NIMH R03 MH47103
Title: "Somnogenic Muramyl Peptides Produced by Macrophages"
Period: 9/1/90 - 8/31/92 Total Direct Costs: $99,144
P.I.: **Mark R. Opp** Effort: 33%

Agency: University of Tennessee Medical Group
Title: "Determination of Circadian IL-1 Rhythms"
Period: 10/1/91 - 11/30/92 Total Direct Costs: $12,436
P.I.: **Mark R. Opp** Effort: 10%

Agency: John Sealy Memorial Endowment Fund for Biomedical Research (Recruitment Grant)
Title: "Stressor-induced alterations in sleep: involvement of corticotropin-releasing hormone (CRH)"
Period: 1/1/94 - 12/31/95 Total Direct Costs: $30,000
P.I.: **Mark R. Opp** Effort: 25%

Agency: NIMH R29 MH52275
Title: "Humoral Regulation of Waking: The Role of CRH"
Period: 8/1/95 - 7/31/00 Total Direct Costs: $349,963
P.I.: **Mark R. Opp** Effort: 50%

Agency: NIMH R01 MH56865
Title: "Dynamics of Interleukin-10 in Neuroimmune Interactions"
Period: 8/1/97 – 7/31/00 Total Direct Costs: $482,288
P.I.: T. Kley Hughes, Jr. Effort: 5%
Co-Investigator: **Mark R. Opp**

Agency: The Moody Foundation
Title: "Sleep Research in Closed Head Injured Adults"
Period: 10/1/98 – 9/30/99 Total Direct Costs: $125,840
P.I.: Sam Kuna Effort: 10%
Co-Investigator: **Mark R. Opp**

Agency: NIMH R03 MH56873
Title: "IL-1 and 5-HT interactions: involvement in sleep regulation"
Period: 4/1/98 - 3/31/00 Total Direct Costs: $99,248
P.I.: **Mark R. Opp** Effort: 10%

Agency: NIMH R01 MH54976
Title: "Mechanisms of HIV-induced Alterations in Sleep"
Period: 9/1/96 - 8/31/01 Total Direct Costs: $829,285
P.I.: **Mark R. Opp** Effort: 40%

Agency: NIMH R01 MH064843
Title: "Cytokine and Neurotransmitter Interactions in Sleep Regulation"
Period: 03/01/00 – 02/28/06 Total Direct Costs: $1,250,000
P.I.: **Mark R. Opp** Effort: 30%

Agency: NIGMS Program Project P01 GM067189
Title: "Immunopathology of Sepsis"
P.I.: Daniel G. Remick (Boston University)
Period: 5/1/05 - 4/31/08 Total Direct Costs (Project): $528,750

Project P.I.: **Mark R. Opp** "Sepsis-induced sickness behavior" Effort: 25%

Agency: NHLBI 1 R01 HL080972
Title: "Sleep, Cytokines and Infection"
Period: 9/27/04 - 6/30/08 Total Direct Costs: $1,000,000
P.I.: **Mark R. Opp** Effort: 30%

Agency: NIAID 1 R01 AI080576
Title: "Mechanisms of Fatigue in a Chronic Viral Disease"
P.I.: Linda A. Toth, Southern Illinois University
Period (Subaward): 7/1/08 - 6/30/10 Total Direct Costs (Subaward): $908,600
P.I. (Subaward): **Mark R. Opp** Effort: 30%

Agency: NIMH 2 R56 MH064843-06
Title: "Cytokine and Neurotransmitter Interactions in Sleep Regulation"
Period: 8/25/08 - 7/24/09 Total Direct Costs: $250,000
Role P.I. **Mark R. Opp** Effort: 25%

Agency: NIMH 2 R01 MH064843-07
Title: "Cytokine and Neurotransmitter Interactions in Sleep Regulation"
Period: 8/25/09 - 7/24/13 Total Direct Costs: $1,000,000
Role: P.I. **Mark R. Opp** Effort: 25%

Agency: NINDS 3R13 NS086119
Title: 2014 Sleep Regulation and Function Gordon Research Conference
Period: 09/30/13 - 08/31/14 Total Direct Costs Requested: $30,000
Role: P.I. **Mark R. Opp** Effort: 0%

Agency: NIA 1 R01 AG041287-01
Title: "Sepsis Outcomes and Aging: Role of Sleep Disruption and the Blood Brain Barrier"
Period: 9/30/12 - 8/31/17 Total Direct Costs: $1,025,000
Role: P.I. **Mark R. Opp** Effort: 20%

Agency: NIAID 1R21 AI115706
Title: "Astrocytes, Sleep and Neuroinflammation"
Period: 05/01/15 - 04/30/17 Total Direct Costs: $275,000
Role: P.I. **Mark R. Opp** Effort: 20%

Agency: NINR 2 R01 HD036520-15 (Krueger)
Title: "Molecular Mechanisms of Sleep Responses to Viral Infection"
Period: 06/01/12 - 05/31/17 Total Direct Costs: $591,718 (sub-award)
Role: sub-award P.I. Effort: 20%

Agency: NINR 1R01 NR012294 (Page)
Title: "Neonatal Pain, Depression and Pain Susceptibility at Maturity in Rats"
Period: 04/15/11 - 02/28/16 Total Direct Costs: $87,055 (sub-award)
Role: sub-award P.I. Effort: 5%

Agency: NINR 1R01 NR014479 (Heitkemper/Shulman)
Title: "Microbiome and Pain in IBS"
Period: 05/13/2014 - 03/31/2018 Total Direct Costs: $261,390
Role: co-Investigator Effort: 2%

Agency: NINDS 5R01 NS025378 (Krueger)
Title: "Interleukin-1: A promoter of slow wave sleep"
Period: 07/01/16 – 06/30/21 Total Direct Costs: $515,325 (sub-award)

Role: sub-award P.I.

Current Research Funding:

Agency: NIA (MPI: Opp; Hoeffer; Link)
Title: "Sleep Disruption and Alzheimer's Disease Pathology"
Period: 08/01/19 – 06/30/24 Total Direct Costs: $2,498,572
Role: Contact P.I. **Mark R. Opp**

Agency: NIA (MPI: Opp; Hoeffer; Link)
Title: "Sleep Disruption and Alzheimer's Disease Pathology – Supplement 1"
Period: 09/01/20 – 03/31/24 Total Direct Costs: $124,223
Role: Contact P.I. **Mark R. Opp**

Agency: Mindsource Brain Injury Network, Colorado Department of Human Services
Title: "Hypocretin Replacement as a Countermeasure for Sleep-Wake Disturbances in a Mouse Model of Traumatic Brain Injury"
Period: 01/01/22 – 12/31/23 Total Direct Costs: $259,946
Role: P.I. **Mark R. Opp**

Agency: Department of Defense (Rowe/Opp)
Title: "The Role of Microglia in Sleep Disturbances Following a Traumatic Brain Injury"
Period: 01/01/22 – 09/30/27 Total Direct Costs Requested: $1,992,603
Role: Partnering P.I. **Mark R. Opp**

Pending:

Agency: NINDS (Rowe)
Title: "Microglia-dependent IL10 signaling as a mechanism to normalize sleep and inflammation"
Period: 04/01/22 – 03/31/27 Total Direct Costs Requested: $970,478
Role: co-I **Mark R. Opp**

Agency: NINDS (Rowe)
Title: "The mechanistic role of microglia-mediated IL10 in the regulation of inflammation and sleep disturbances following experimental TBI"
Period: 07/01/22 – 06/30/27 Total Direct Costs Requested Requested: $1,455,373
Role: co-I **Mark R. Opp**

Agency: NIA (MPI: Opp; Hoeffer; Link)
Title: "Sleep Disruption and Alzheimer's Disease Pathology – Supplement 2"
Period: 11/01/21 – 03/31/24 Total Direct Costs Requested: $249,367
Role: Contact P.I. **Mark R. Opp**

Agency: NIA (Hoeffer)
Title: "Sleep Abnormalities in Down Syndrome-related Alzheimer's Disease"
Period: 07/01/22 – 06/30/27 Total Direct Costs Requested: $2,213,665
Role: co-I **Mark R. Opp**

BIBLIOGRAPHY:
Completed Publications in Scientific Journals
Peer Reviewed

A) Manuscripts

1. **Opp, M. R.**, N. Ball, D. Miller, and C. Amlaner, Jr. Thermoregulation and sleep: effects of thermal stress on sleep patterns of glaucous-winged gulls (*Larus glaucescens*). *J. Therm. Biol.* 12: 199-202, 1987.
2. Galusha, J.G., B. Vorvkick, **M. R. Opp**, and P. T. Vorvick. Nesting season censuses of seabirds on

Protection Island, Washington. *The Murrelet.* 68: 103-107, 1987.

3. **Opp, M. R.**, F. Obál, Jr., and J. M. Krueger. Effects of α-MSH on sleep, behavior and brain temperature: interactions with IL1. *Am. J. Physiol.* 255: R914-R922, 1988.
4. Obál, F. Jr., **M. R. Opp**, A. Cady, L. Johannsen, and J. M. Krueger. Prolactin, vasoactive intestinal peptide (VIP) and peptide-histidine-methionine (PHM) elicit selective increases in REM sleep in rabbits. *Brain Research* 490: 292-300, 1989.
5. **Opp, M. R.**, F. Obál, Jr., A. Cady, L. Johannsen, and J. M. Krueger. Interleukin-6 is pyrogenic but not somnogenic. *Physiol. Behav*. 45: 1069-1072, 1989.
6. **Opp, M. R.**, F. Obál, Jr., and J. M. Krueger. CRF attenuates IL1-induced sleep and fever in rabbits. *Am. J. Physiol.* 257: R528-R535, 1989.
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B) Book Chapters and Review Papers

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11. Krueger, J. M., F. Obál, Jr., L. Toth, L. Johannsen, A. Cady, and **M. R. Opp.** Sleep factors: models concerning their multiple interactions and specificity for sleep. In: *Endogenous Sleep Factors*, Inoue, S., and J. M. Krueger (eds.), Wassenaar: Bouma Text, pp. 19-30, 1990.
12. Krueger, J. M., **M. R. Opp**, L. Toth, L. Johannsen, and L. Kapás. Cytokines and sleep. In: *Current Topics in Neuroendocrinology. Vol. 10: Behavioral Aspects of Neuroendocrinology*. D. Ganten and D. Pfaff (eds.), Berlin: Springer-Verlag, pp. 243-261, 1990.
13. Krueger, J. M., F. Obál, Jr., **M. R. Opp**, L. Johannsen, L. Toth, and J. Majde. Putative sleep neuromodulators. In: *Sleep and Biological Rhythms*, J. Montplaisir and R. Godbout (eds.), Oxford: Oxford University Press, pp. 163-185, 1990.
14. Krueger, J. M., **M. R. Opp**, L. Toth, and L. Kapás. Immune regulation, hormones, and sleep. In: *Sleep '90*, J. A. Horne, (ed.), Bochum: Pontenagel Press, pp. 371-374, 1990.
15. Krueger, J. M., L. Johannsen, L. Toth, **M. R. Opp**, and L. Kapás. CNS mechanisms for sleep responses to microbial challenge. In: *Peripheral Signaling of the Brain: Neuralimmune and Cognitive Function*. (Proceedings of the Sixth International Symposium on Neuronal Control of Bodily Function: Basic and Clinical Aspects.) Frederickson, R., D. Felten, and J. McGaugh (eds.), Toronto: Hogrefe & Huber, pp. 179-192, 1991.
16. Krueger, J. M., **M. R. Opp**, L. Kapás, M. Kimura-Takeuchi, and L. Toth. Muramyl peptides and interleukin-1 in sleep regulation. In: *Endocrine and Nutritional Control of Basic Biological Functions.* Murison, R. (ed.). Toronto: Hogrefe & Huber, pp. 343-349, 1991.
17. **Opp, M. R.** and J. M. Krueger. Interleukin-1 involvement in the regulation of sleep. In: *Interleukin-1 in the Brain*. Rothwell, N. and R. Dantzer (eds.). Oxford: Pergamon Press, pp. 151-171, 1992.
18. Krueger, J. M., L. A. Toth, F. Obál, Jr., **M. R. Opp,** Kimura-Takeuchi, and L. Kapás. Infections, cytokines, and sleep. In: *Sleep, Hormones, and the Immunological System*. Smirne, S., M. Franceschi, L. Ferini-Strambi, and M. Zucconi (eds.). Milan: Masson, pp. 59-70, 1992.
19. Obál F. Jr., L. Payne, **M. R. Opp**, L. Kapás, P. Alföldi, and J. M. Krueger. Hypothalamic releasing hormones in sleep regulation. In: *Sleep, Hormones, and the Immunological System*. Smirne, S., M. Franceschi, L. Ferini-Strambi, and M. Zucconi (eds.). Milan: Masson, pp. 91-98, 1992.
20. Krueger, J. M., L. Kapás, M. Kimura-Takeuchi, and **M. R. Opp**. Somnogenic cytokines: methods and overview. In: *Neurobiology of Cytokines, Part B*. De Souza, E. B. (ed.). Orlando: Academic Press, pp. 111-129, 1993.
21. Krueger, J. M., **M. R. Opp**, L. Kapás, and F. Obál, Jr. Interleukin-1 in sleep regulation. In: *Sleep-Wakefulness.* Kumar, V. M., H. N. Mallick, and U. Nayar (eds.) New Delhi: Wiley Eastern Limited, pp. 11-15, 1993.
22. **Opp, M. R**., and L. A. Toth. Circadian modulation of interleukin-1-induced fever in intact and vagotomized rats. In: *Annals of the New York Academy of Sciences vol. 813; Thermoregulation: Proceedings of the 10th International Symposium on the Pharmacology of Thermoregulation.* Blatteis, C. (ed). New York: New York Academy of Sciences, pp. 435-436, 1997.
23. **Opp, M. R.** Fever, body temperature, and levels of arousal. In: *Handbook of Behavioral State Control: Cellular and Molecular Mechanisms*. Lydic, R., and Baghdoyan, H. (eds.). Boca Raton: CRC Press, Inc., pp. 623-640, 1999.
24. **Opp, M. R.** Cytokines and sleep promotion: A potential mechanism for disorders of excessive daytime sleepiness. In: *Pathogenesis, Diagnosis and Treatment of Sleep Apnea.* Pack, A. I. (ed.). New York: Marcel Dekker, pp.327-351, 2002.
25. Toth, L. A., and **M. R. Opp**. Sleep and infection. In: *Sleep Medicine*. Lee-Chiong, Carskadon, Sateia (eds.). Philadelphia: Hanley & Belfus, Inc, pp. 77-84, 2002.

26. **Opp, M. R**., J. Born, M. R. Irwin. Sleep and the Immune System. In: *Psychoneuroimmunology, 4th Edition.* Ader, R. (ed.). San Diego: Elsevier, pp. 539-578, 2007.
27. Baracchi, F., and **M. R. Opp**. Cytokines, Immunity, and Sleep. In: *The Neuroimmunological Basis of Behavior and Mental Disorders.* Siegel and Zalcman (eds.). Springer Science+Business Media, LLC, New York. pp. 209-233, 2008.
28. **Opp, M. R**., and F. Baracchi. Sleep and Immune Function. In: *Current Advances in Sleep Biology: Regulation and Function*. M. Frank (ed.). Nova Scientific Publishers, Inc., Hauppauge, NW.
29. **Opp, M. R**., and L. Imeri. Sleep Disorders: Basic Science. In: *Cancer Symptom Science: Measurement, Mechanisms, and Management*. Cleeland, Fisch and Dunn (eds.). Cambridge: Cambridge University Press, pp. 170-178, 2011.
30. Ingiosi, A. M., **M. R. Opp**, and James M. Krueger. Sleep and immune function: glial contributions and consequences of aging. *Current Opinion in Neurobiology*, 23: 1-6, 2013.
31. **Opp, M. R.**, and J. M. Krueger. Sleep and immunity: A growing field with clinical impact. *Brain, Behav. Immunity* 47: 1-3, 2015.
32. Krueger, J. M., and **M. R. Opp**. Sleep and microbes. In: *International Review of Neurobiology, vol. 131.* John F. Cryan, Gerard Clarke (eds.). pp. 207-225, 2016.
33. Irwin, M. R. and **M. R. Opp**. Sleep-Health: Reciprocal Regulation of Sleep and Innate Immunity. In: *Neuropsychopharmacology Reviews.* 1-27, 2016.
34. **Opp, M. R.**, and J. M. Krueger. Sleep and host defense. In: *Principles and Practice of Sleep Medicine. Sixth Edition.* M. Kryger, T. Roth, W.C. Dement (eds.). Philadelphia: Elsevier, pp. 193-201, 2017.
35. **Opp, M. R.**, M. Haack, and J. M Krueger. Sleep and host defense. In: *Principles and Practice of Sleep Medicine. Seventh Edition.* M Kryger, T. Roth, W. C. Dement (eds.). Philadelphia: Elsevier (in press).

Non-Peer Reviewed Papers

1. **Opp, M. R.** Diel and arousal state influences on thermoregulation in Glaucous-winged gulls (*Larus glaucescens*). Ph.D. Dissertation, Washington State University, Pullman, WA, 1987.
2. Romanovsky, A. A., and **M. R. Opp**. [Current topics in thermophysiology: review of the 21st annual congress of the Society for Neuroscience, November 10 - 15, 1991, New Orleans, LA USA]. Sechenov Physiological Journal 78:117-118, 1992. (in Russian)
3. **Opp, M. R.**., T. Kley Hughes, Jr., P. Rady, and E. M. Smith. Mechanisms of HIV-induced alterations in sleep: the role of cytokines in the CNS. *Sleep Research Society Bulletin* 2: 31-37, 1996.

Books Edited

1. **Opp, M.R**. (ed). *SRS Basics of Sleep Guide, 1st edition.* Westchester, IL: Sleep Research Society Press. 174 pp, 2005.
2. **Opp, M.R.** (ed). *Primer of PsychoNeuroImmunology Research, 1st edition.* Los Angeles, CA: PsychoNeuroImmunology Research Society press. 331 pp, 2016

Abstracts

I have published more than 275 abstracts, which are not listed here to conserve old growth forests.

OTHER:

Peer Reviewer for the following journals:

Advances in Neuroimmunology
American Journal of Physiology
Archives of Internal Medicine
Behavioural Brain Research
Behavioural Processes
Biological Psychiatry
Brain
Brain, Behavior, and Evolution
Brain, Behavior, and Immunity
Brain Research
British Journal of Pharmacology
Journal of Comparative Neuroscience
Journal of Psychiatry & Neuroscience
Journal of Neuroimmunology
Journal of Neuroscience
The Journal of Clinical Investigation
Journal of Sleep Research
Neuropsychopharmacology
Pediatric Research
Physiology and Behavior
Pharmacology Biochemistry and Behavior
Psychoneuroendocrinology

Canadian Journal of Physiology and Pharmacology
Circulation
European Journal of Neuroscience
Hypnos
Infection and Immunity
International Journal of Developmental Neuroscience
Journal of Applied Physiology
Journal of the Autonomic Nervous System
Nature Reviews Neuroscience
NeuroImmunoModulation
Neuroscience
Neuroscience and Biobehavioral Reviews
Neuroscience Letters
Psychosomatic Medicine
Regulatory Peptides
Sleep
Sleep Research Online
Sleep Reviews

COMMITTEE AND ADMINISTRATIVE SERVICE

University of Texas Medical Branch

Departmental:

1993 – 1996 Department of Psychiatry Computer Use Committee
1997 – 1999 Department of Psychiatry Basic Research Review Committee (Vice Chair)

University of Michigan

Departmental:

2008 – 2010 Center for Integrative Genomics Operating Committee, Department of Molecular & Integrative Physiology.

Institutional:

2001 – 2006 University Committee on Use and Care of Animals (UCUCA)
2003 – 2006 **Chair**, University Committee on Use and Care of Animals (UCUCA)
2002 Search Committee; Director, Chronobiology Research Laboratory, Comprehensive Depression Center, Department of Psychiatry

University of Washington

Departmental:

2010 – 2017 Department of Anesthesiology & Pain Medicine Research Committee, Chair
2010 – 2017 Department of Anesthesiology & Pain Medicine Space Utilization Committee, Chair

Institutional:

2011 – 2012 Harborview Medical Center Research Taskforce

Regional:

2011 – 2012 Search Committee: ACOS-R&D, Puget Sound Health Care System, Seattle, WA

PRESENTED PAPERS AND INVITED SEMINARS:

Institutional

University of Texas Medical Branch

1. Sleep, Neuroimmunomodulation, and HIV: the Role of Cytokines in the CNS. (Grand Rounds, Department of Psychiatry & Behavioral Sciences, University of Texas Medical Branch at Galveston), 1994.
2. Mechanisms of HIV-induced alterations in sleep: the role of cytokines in the CNS. (Invited seminar, Department of Pharmacology and Toxicology, UTMB at Galveston), 1996.
3. Sleep as a model behavior for the study of central nervous system – immune interactions. (Invited Seminar, Marine Biomedical Institute and Department of Anatomy & Neuroscience, University of Texas Medical Branch at Galveston), 1998.
4. The sleeping brain as a window on the immune system. (Grand Rounds Presentation, Department of Psychiatry & Behavioral Sciences, University of Texas Medical Branch at Galveston), 1998.

University of Michigan

5. Altered States: Sleep, Cytokines, and HIV. (Invited Seminar, Department of Anesthesiology, Research Division, University of Michigan, Ann Arbor, MI), 2000.
6. Cytokine and neurotransmitter interactions in sleep regulation. (Invited Seminar, Department of Physiology, University of Michigan, Ann Arbor, MI), 2000.
7. Sleep, Stress and the Immune System. (Invited Seminar, Department of Neurology, University of Michigan, Ann Arbor, MI), 2001.
8. Cytokine and neurotransmitter interactions in sleep regulation: an update of work in progress. (Invited Seminar, Department of Physiology, University of Michigan, Ann Arbor, MI), 2003.
9. Why do we sleep differently when we are sick? (Invited Presentation, Department of Anesthesiology Research Discussion, University of Michigan, Ann Arbor, MI), 2001.
10. Sleep and Sickness: An update of work in progress. (Invited Presentation, Department of Neurology Sleep Research Conference, University of Michigan, Ann Arbor, MI), 2002.
11. What can we learn from mice about sleep of humans? (Department of Molecular and Integrative Physiology, University of Michigan), 2003.
12. Practical Issues in the Use of Telemetry to Phenotype Sleep of Mice. (Unit for Laboratory Animal Medicine, University of Michigan), 2004.
13. Interleukin-6, Tumor Necrosis Factor and Infection-induced Alterations in Sleep and Body Temperature. (Department of Anesthesiology Research Discussion, University of Michigan), 2004.
14. Cytokines and sleep promotion: potential mechanisms for disorders of excessive daytime sleepiness. (Department of Neurology Sleep Research Conference, University of Michigan), 2005.
15. Interleukin-6 and tumor necrosis factor as mediators of lipopolysaccharide-induced alterations in sleep and body temperature of mice. (Department of Pathology Conference, University of Michigan), 2005.
16. Sleep and the ICU: Impediment to Recovery? (Department of Anesthesiology Morbidity and Mortality Conference, University of Michigan), 2005.
17. Why do we sleep differently when we are sick? (Department of Psychology, Biopsychology Colloquium, University of Michigan), 2006.
18. Sickness-induced alterations in sleep. (Department of Molecular & Integrative Physiology, Biological Rhythms and Sleep journal club), 2007.
19. Sickness-induced alterations in sleep: cytokines in action. (Department of Molecular & Integrative Physiology), 2008.
20. Sickness-induced alterations in Sleep. (Department of Anesthesiology Research Discussion), 2008.

University of Washington

21. Why do we sleep differently when sick? (Department of Anesthesiology & Pain Medicine), 2009.
22. Sleep, CNS Inflammation and Immune Function. (Harborview Medical Center Neuroscience Seminar), 2011.
23. Sleep and Immune Function: Relevance to Perioperative Medicine. (Department of Anesthesiology & Pain Medicine Grand Rounds), 2011.
24. Sleep and Immune Function. (UW Medicine Sleep Conference), 2011.
25. The sleeping brain as a window on the immune system. (Graduate Program in Neurobiology & Behavior Seminar), 2012.
26. Sleep and Inflammation. (Neuroscience in Anesthesiology Research Day. Department of Anesthesiology & Pain Medicine organized symposium and workshop), 2012.
27. Cytokines, Inflammation and Sleep. (Center for Research on Management of Sleep Disturbances), 2013.
28. Sleep, Cytokines, and Inflammation. (Epilepsy Research Conference), 2013.
29. Sleep, Cytokines, and Inflammation. (Pulmonary Research Conference), 2013.
30. Sleep and Musculoskeletal Pain. (Department of Anesthesiology & Pain Medicine Research Conference, Harborview Medical Center), 2014.
31. Insufficient Sleep as an Underappreciated Contributor to Chronic Pain. (R&T and NJB Research Seminar Series, Harborview Medical Center), 2015.

32. Cytokines, Inflammation and Sleep: Dogs, Goats and the Search for Factor S. (Invited lecturer, IPHY 3580: Sleep, Circadian Rhythms, and Health; Department of Integrative Physiology, CU Boulder, Boulder, CO), 2017.

University of Colorado

33. Sleep, Circadian Rhythms, and Inflammation. (Invited lecturer, University of Colorado T32 Sleep and Circadian Summer School) 2021 (virtual)

Regional and National

34. Spatial utilization of territory by glaucous-winged gulls (*Larus glaucescens*). (Oral presentation at the Animal Behavior Society meetings, Cheney, WA), 1984.
35. Bioenergetic consequences of sleep based on time-budgets of free-ranging glaucous-winged gulls. (Poster presentation at the Sleep Research Society meetings, Seattle, WA), 1985.
36. Thermal stress and sleep patterns of glaucous-winged gulls (*Larus glaucescens*). (Poster presentation at the Sleep Research Society meetings, Columbus, OH), 1986.
37. Effects of circadian phase on oxygen consumption, body temperature, and thermal conductance in glaucous-winged gulls (*Larus glaucescens*). (Oral presentation at the American Ornithologists' Union meetings, Starkville, MS), 1986.
38. Circadian and arousal state influences on thermoregulation in birds. (Invited seminar, University of Southern Mississippi, Hattiesburg, MS), 1986.
39. Effects of α-melanocyte-stimulating hormone on sleep and brain temperature and interactions with interleukin-1. (Poster presentation at the Association of Professional Sleep Societies meeting, San Diego, CA), 1988.
40. Corticotropin-releasing factor (CRF) attenuates interleukin-1 (IL-1)-induced non-REM sleep and fever in rabbits. (Poster and Oral presentations at the Federation of American Societies for Experimental Biology meeting, New Orleans, LA), 1989.
41. Interleukin-1 and corticotropin-releasing factor effects on sleep and fever in rabbits. (Oral presentation, Association of Professional Sleep Societies Meeting, Washington, D.C.), 1989.
42. IL6: A pyrogenic cytokine that is not somnogenic. (Poster presentation at the Second International Workshop on Cytokines, Hilton Head Island, SC), 1989.
43. Sleep regulation: interaction of immune modifiers and neuropeptides. (Invited seminar, State University of New York, Syracuse, New York), 1990.
44. Temporal and dose-related responsiveness of rats to interleukin-1. (Oral presentation, Association of Professional Sleep Societies meeting, Minneapolis, MN), 1990.
45. Interleukin-1 involvement in the regulation of sleep. (Invited seminar, University of Tennessee, Memphis, TN), 1991.
46. Sleep regulation: involvement of interleukin-1. (Invited seminar, Stanford University, Palo Alto, CA), 1991.
47. Biological activities of an interleukin-1β fragment. (Poster and Oral presentation, 5th International Conference on Immunopharmacology, Tampa, FL), 1991.
48. Sleep and "Stress:" Is Interleukin-1 Involved? (Invited seminar, Western Psychiatric Institute/University of Pittsburgh, Pittsburgh, PA), 1992.
49. Interleukin-1 and the Regulation of Sleep. (Invited seminar, Loma Linda University, Loma Linda, CA), 1992.
50. Interleukin-1 antibodies reduce NREMS and attenuated NREMS rebound after sleep deprivation in the rabbit. (Oral presentation, Association of Professional Sleep Societies meeting, Phoenix, AZ), 1992.
51. Sleep, Stress, and the Hypothalamic-Pituitary-Adrenal Axis. (Invited seminar, University of Texas Medical Branch, Galveston, TX), 1992.
52. Interleukin-1 and IL-1 Antagonism: Relationships to Sleep. (Invited seminar, Albany Medical College, Albany, NY), 1992
53. Arousal from sleep: relationship to EEG □ power density. (Oral presentation, Association of Professional Sleep Societies meeting, Los Angeles, CA), 1993.
54. Cytokines in the brain: involvement of interleukin-1 in the regulation of sleep. (Invited seminar,

Department of Anatomy & Neuroscience, University of Texas Medical Branch, Galveston, TX), 1993.

55. CNS effects of HIV-1: gp120 alters rat sleep. (Poster presentation accepted for 1994 Gordon Conference *Neuroendocrinimmunology*, unable to attend due to scheduling conflict), 1994.
56. HIV-1 glycoprotein-120 alters rat sleep. (Poster presentation, APS Conference: Physiology of the Release and Activity of Cytokines, Yale University, New Haven, CT), 1994.
57. Corticotropin-releasing hormone (CRH) involvement in the regulation of waking: a specific CRH receptor antagonist reduces waking in the rat. (Oral presentation, Association of Professional Sleep Societies meeting, Nashville, TN), 1995.
58. Corticotropin-releasing hormone (CRH) involvement in the regulation of waking: evidence from strain differences in the sleep of rats. (Poster and Oral presentations, Association of Professional Sleep Societies meeting, Nashville, TN), 1995.
59. Human immunodeficiency virus envelope glycoprotein 120 induces cytokine mRNA expression in brain and alters sleep in rats. (Poster and Oral presentations, Association of Professional Sleep Societies meeting, Nashville, TN), 1995.
60. Mechanisms of HIV-induced alterations in sleep: the role of cytokines in the CNS. (Invited seminar, Department of Biology, La Sierra University, Riverside, CA), 1996.
61. Circadian modulation of interluekin-1-induced fever in intact and vagotomized rats. (Invited Symposium Presentation, Tenth International Symposium: Pharmacology of Thermoregulation, Memphis, TN), 1996.
62. Circadian modulation of pyrogenic and somnogenic responses to IL-1 in intact and vagotomized rats. (Poster presentation, 3rd International Congress of the International Society for NeuroImmunoModulation, Bethesda, MD), 1996.
63. Hypothalamic serotonergic activity and brain temperature. (Poster Presentation, Society for Neuroscience, Washington, DC), 1996.
64. Project ICELUS. (Invited seminar, 16th Annual Houston Conference on Biomedical Engineering Research, University of Houston), 1998.
65. Rat strains that differ in corticotropin-releasing hormone (CRH) production exhibit different patterns of somnogenic responses to interleukin-1. (Oral presentation, Association of Professional Sleep Societies meeting, New Orleans, LA), 1998.
66. A sleep research virtual instrument: using LabView to monitor and analyze electrophysiological signals. (Oral presentation, National Instruments Week, Austin, TX), 1998.
67. Sleep, neuroimmunomodulation, and HIV: a role for cytokines in the CNS. (Invited seminar, Visiting Professor Series, Department of Psychiatry, Penn State College of Medicine, Hershey, PA), 1999.
68. Sleep, Stress and the Immune System: Is There a Link? (Invited Participant, "Fourth Annual Psychiatric Update," Galveston, TX), 1999.
69. Sleep, neuroimmunomodulation, and HIV: a role for cytokines in the CNS. (Invited seminar, Department of Psychiatry and Human Behavior, University of Mississippi Medical Center, Jackson, MS), 1999.
70. Sleep, Stress and Depression: New Ways to Look at Old Problems. (Invited Participant, Sealy Society Development Board meeting, Galveston, TX), 1999.
71. Sleep as a behavioral model of neuroimmune interactions. (Symposium Organizer and presenter, PsychoNeruoImmunology Research Society Meeting, Galveston, TX), 1999.
72. Cytokines as mediators of HIV-induced alterations in sleep. (Invited symposium participant, Association of Professional Sleep Societies meeting, Orlando, FL), 1999.
73. Infection-induced alterations in sleep: behavioral responses to HIV. (Invited Seminar, Department of Life Sciences, Indiana State University, Terre Haute, IN), 1999.
74. Cytokines as modulators of arousal state. (Invited symposium participant, American Society of Anesthesiologists Annual Meeting, San Francisco, CA), 2000.
75. Sleep and stress: Mapping overlapping structures and functions. (Invited speaker, American College of Neuropsychopharmacology 39th Annual Meeting, San Juan, PR), 2000.
76. Corticotropin-releasing hormone as a regulator of arousal. (Invited Seminar, Department of Pathology and Anatomy, Eastern Virginia Medical School, Norfolk, VA), 2001.
77. Sleep and immune function: a role for cytokine – neurotransmitter interactions. (Invited Seminar,

Department of Veterinary and Comparative Anatomy, Pharmacology and Physiology, Washington State University, Pullman, WA), 2001.

78. Corticotropin-releasing Hormone (CRH) as a Regulator of Waking and Mediator of Stressor-induced Alterations in Sleep. (Invited Seminar, Department of Medicine, University of Chicago, Chicago, IL), 2001.
79. Corticotropin-releasing Hormone (CRH) as a Regulator of Waking and Mediator of Stressor-induced Alterations in Sleep. (Invited Seminar, Center for Sleep and Circadian Biology, Department of Neurobiology and Physiology, Northwestern University, Evanston, IL), 2001.
80. Sleep and Immune Function, or Why do we Sleep Differently When we are Sick? (Invited Participant, SRS Trainee Workshop, APSS Annual Meeting, Seattle), 2002.
81. Evidence Linking Waking and Corticotropin-releasing Hormone (CRH) Activity. (Invited Participant, SRS Postgraduate Course, APSS Annual Meeting, Seattle), 2002.
82. Cytokine-neurotransmitter interactions and the regulation of arousal state. (Invited speaker, American College of Neuropsychopharmacology 41st Annual Meeting, San Juan, PR), 2002.
83. Why do we sleep differently when we are sick? (Invited Seminar, Department of Chemistry and Biochemistry / Institute of Arctic Biology, University of Alaska, Fairbanks), 2003.
84. Sleep and sickness: cytokines and neurotransmitters as mediators of behavioral responses to immune challenge. (Cousins Center Lectures in Psychoneuroimmunology, Cousins Center for Pschoneuroimmunology, University of California, Los Angeles), 2003.
85. The impact on sleep of interactions between mediators of allostasis. (Invited Participant, NIGMS/OBSSR Workshop: Allostatic Load and the Response to Traumatic Injury, NIH, Bethesda, MD), 2003.
86. Cytokine and neurotransmitter interactions in the regulation of arousal state. (Invited Participant, Trans-NIH Workshop: Neuro-Immune Mechanisms and Chronic Fatigue Syndrome, NIH, Bethesda, MD), 2003.
87. Cytokines and sleep: the first hundred years. (Invited Symposium Participant, Associated Professional Sleep Societies annual meeting, Chicago, IL), 2003.
88. What can we learn from mice about sleep of humans? (Invited Seminar, Department of Veterinary and Comparative Anatomy, Pharmacology and Physiology, Washington State University, Pullman, WA), 2003.
89. Why do we sleep differently when we are sick? (Invited Seminar, NIH Neural Immune Program Lecture, Bethesda, MD), 2004.
90. The rodent EEG as a measure of global CNS processes. (Invited Participant, Innovative Approaches to Safety Pharmacology, Philadelphia, PA), 2004.
91. Why do we sleep differently when we are sick? (Invited Seminar, Center for Sleep and Respiratory Neurobiology, University of Pennsylvania School of Medicine, Philadelphia, PA), 2004.
92. The role of interleukin-6 in responses to sleep deprivation and immune challenge. (Invited Seminar, Department of Pharmacology, Southern Illinois University School of Medicine, Springfield, IL), 2004.
93. IL-6 and TNF as mediators of LPS-induced alterations in sleep and body temperature. (Invited Seminar, Institute for Behavioral Medicine, Ohio State University, Columbus, OH), 2004.
94. Corticotropin-releasing factor as a regulator of wakefulness. (Invited Symposium Participant, 38th Annual Winter Conference on Brain Research, Breckenridge, CO), 2005.
95. Immunomodulators as mediators of infection-induced alterations in sleep: Why do we sleep differently when we are sick? (Grass Traveling Scientist, Department of Psychiatry and Human Behavior, University of Mississippi School of Medicine, Jackson, MS), 2005.
96. Cytokines and sleepiness: Insight from animal research. (Symposium organizer and co-chair, 19th Annual meeting of the Associated Professional Sleep Societies, Denver, CO), 2005.
97. Corticotropin-releasing factor as a mediator of stressor-induced alterations in sleep. (Invited Symposium Participant, 19th Annual meeting of the Associated Professional Sleep Societies, Denver, CO), 2005.
98. Sleep Disturbance. (Invited Participant, Mechanisms and Treatment of Cancer-Related Symptoms, M. D. Anderson Cancer Center, Houston, TX), 2005.
99. Cytokines, Sleep, and Immune Challenge. (Invited Participant, Mechanisms and Treatment of

Cancer-Related Symptoms, M. D. Anderson Cancer Center, Houston, TX), 2005.

100. Cytokines as mediators of infection-induced alterations in sleep: Why do we sleep differently when we are sick? (Grass Traveling Scientist, Department of Pharmacology, Toxicology, and Neuroscience, Louisiana State University Health Science Center, Shreveport, LA), 2005.
101. Why do we sleep differently when we are sick? (Invited seminar, Sleep Medicine Center, Washington University, St. Louis, MO), 2006.
102. Why do we sleep differently when we are sick? (Invited Seminar, Department of Pharmacology, Southern Illinois University, Springfield, IL), 2006.
103. Why do we sleep differently when we are sick? (Invited Workshop Participant, American Academy of Allergy Asthma and Immunology, 2006 Annual Meeting, Miami, FL), 2006.
104. Why do we sleep differently when we are sick? (Invited seminar, Department of Integrative Physiology, University of Colorado, Boulder, CO), 2006.
105. Practical issues in the use of telemetry for determination of sleep-wake behavior. (Northeast Regional Telemetry User Group Symposium, Boston University, Boston, MA), 2006.
106. What rodents can teach us about sleep of humans: a role for cytokines in behavioral responses to infection. (Invited Symposium Participant, SLEEP 2006, the 20th anniversary meeting of the Associated Professional Sleep Societies, Salt Lake City, UT), 2006.
107. Cytokines and sleep regulation: Potential mechanisms for excessive daytime sleepiness and fatigue. (Invited Participant, Penn State Sleep Disorders Medicine Symposium: Daytime Sleepiness and Fatigue, Hershey, PA), 2006.
108. Why do we sleep differently when we are sick? (Invited seminar, Department of Physiology, New York Medical College, Valhalla, NY), 2006.
109. Sleep and Public Health. (Invited Participant, Center for Mind Body Research Annual Retreat, Johns Hopkins University, Baltimore, MD), 2007.
110. The role of research in defining the field of sleep medicine. (Invited Symposium Participant, SLEEP 2007, Minneapolis, MN), 2007.
111. Why do we sleep differently when we are sick? (Invited seminar, WSU-Spokane, Spokane, WA), 2007.
112. Sleep, cytokines and infectious disease. (Invited seminar, SRI, Menlo Park, CA), 2007.
113. Sickness-induced alterations in sleep. (Invited seminar, Emory University, Atlanta, GA), 2008.
114. Role of cytokine-neurotransmitter interactions in sickness-induced suppression of REMS. (Oral presentation, Keystone Symposium “Genetics and Biochemistry of Sleep”, Tahoe City, CA), 2008.
115. Why do we sleep differently when sick? (Invited seminar, Children’s Hospital of Pennsylvania, Philadelphia, PA), 2008.
116. Cytokines and Sleep Regulation in Health and Disease. (Invited Symposium Participant, SLEEP 2009, Seattle, WA), 2009.
117. Anti-inflammatory Cytokines and Sleep Regulation. (Invited Postgraduate Course Participant, SLEEP 2009, Seattle, WA), 2009.
118. Immune Function and Sleep. (Invited Participant: Sleep State of the Art Course, American Thoracic Society Meeting, Miami, FL), 2010.
119. Animal Models in CNS and Disease Research. (Invited Symposium Participant, American Association for Laboratory Animal Science, San Diego, CA), 2011.
120. Sleep and Immune Function. (Invited course lecturer, WSU-Spokane, Spokane, WA), 2011.
121. Basic Science of Sleep. (Invited Speaker, Society for Neuroscience in Anesthesiology and Critical Care, Chicago, IL), 2011.
122. The sleeping brain as a window on the immune system. (Invited Seminar, Rosario Beach Marine Laboratory, Anacortes, WA), 2011.
123. Sleep and Public Health: How a 24/7 lifestyle threatens our health. (Bryce Memorial Young Lecture, Walla Walla University, Walla Walla, WA), 2012.
124. Sleep, Cytokines and Inflammation. (Invited Seminar, The Ohio State University, Columbus, OH), 2012.
125. Cytokines, Inflammation, and Sleep. (Invited Seminary, Johns Hopkins University, Baltimore, MD), 2013.
126. Cytokines, Inflammation, and Sleep. (Invited Seminary, University of Pennsylvania, Philadelphia,

PA), 2013.

127. Sleep and Immune Function: Relevance to Perioperative Medicine. (Symposium organizer and contributor, Society of Anesthesiology & Sleep Medicine annual meeting), 2013.
128. Cytokines, Inflammation, and Sleep. (Invited Seminar and Student Colloquium Participant, University of Colorado, Boulder, CO), 2013.
129. Sleep Disruption, Cytokines and Mechanical Hypersensitivity: Bi-directional Interactions Between Sleep and Pain. (Invited Presenter, Helmut Schmidt Memorial Symposium, Ohio Sleep Medicine Institute, Columbus, OH), 2014.
130. Cytokines, Inflammation, and Sleep (Invited Presenter, Helmut Schmidt Memorial Symposium, Ohio Sleep Medicine Institute, Columbus, OH), 2014.
131. Sleep disruption, cytokines and mechanical hypersensitivity: bidirectional links between sleep and pain. (Invited symposium participant, SLEEP 2014, Minneapolis, MN), 2014.
132. Year-in-Review: Basic Sleep Update. (Invited lecturer, SLEEP 2014, Minneapolis, MN), 2014.
133. Cytokines, Inflammation and Sleep. (Invited seminar, University of Arizona College of Medicine, Tucson, AZ), 2014.
134. Sleep Disruption, Cytokines and Mechanical Hypersensitivity: Bi-directional Interactions Between Sleep and Pain. (Invited presentation, 7th Annual Illinois Chapter of Brain, Behavior and Immunity), 2015.
135. (Insufficient) Sleep and CNS Inflammation. (Invited participant, 8th Annual Bedside to Bench Conference “Sleep, Circadian Rhythms, and Aging: New Avenues for Improving Brain Health, Physical Health and Function”; National Institute on Aging and the American Geriatrics Society), 2015.
136. Sleep Disruption, Inflammation and Mechanical Allodynia in a Mouse Model of Musculoskeletal Pain. (Invited symposium participant, American Pain Society annual meeting), 2016.
137. Sleep Disruption Contributes to Chronic Pain. (Gordon Research Conference on Sleep Function), 2016.
138. Insufficient Sleep and Neuroinflammation. (Invited symposium participant, SLEEP 2016), 2016.
139. Sleep Disruption and Inflammation: co-Conspirators in Chronic Pain. (Plenary Lecture, Johns Hopkins Sleep and Circadian Research Day, Johns Hopkins University, Baltimore, MD), 2017.
140. Hypocretin, Inflammation and Sleep Disturbances in a Mouse Model of Traumatic Brain Injury. (Invited Symposium Participant, 35th Annual Neurotrauma Symposium, Snowbird, UT), 2017.
141. Sleep Disruption and Inflammation: co-Conspirators in Chronic Pain (Invited Speaker, 4th Annual Colorado Sleep and Circadian Research Symposium, Boulder, CO), 2017.
142. Sleep Disruption and Inflammation: co-Conspirators in Chronic Pain (Invited Speaker, All Neurosurgery Morning Research Meeting, Department of Neurosurgery, University of Colorado Anschutz Medical Campus, Denver, CO), 2017.
143. Hypocretin Mediates Post-traumatic Brain Injury Disturbances in Wake and Sleep. (Invited Speaker, 5th Annual Colorado Sleep and Circadian Research Symposium, Boulder, CO), 2018.
144. The Basics of Sleep (Invited Lecture, University of Colorado, Colorado Springs, CO), 2018.
145. Sleep Disruption and Inflammation: co-Conspirators in Chronic Pain (Invited Lecture, Ohio State University, Columbus, OH), 2019.
146. Sleep Disruption and Inflammation: co-Conspirators in Chronic Pain (Invited Lecture, Middleton Symposium, VA Puget Sound, Seattle, WA), 2019.
147. Sleep Physiology: Endocrinology & Immunology (Invited Participant: Basics of Sleep Course), 2020 (virtual)
148. Sleep Disruption and Inflammation: co-Conspirators in Chronic Pain (Symposium Participant, PsychoNeuroImmunology Research Society Annual Meeting). 2021 (virtual)
149. Mechanisms of Sleep and Inflammation (2021 Sleep Research Society Trainee Symposium Series). 2021 (virtual)
150. Hypocretin Mediates Post-TBI Disturbances in Wake and Sleep (Symposium Participant, International Brain Injury Associate World Congress). 2021 (virtual)

International

151. Effects of thermal stress on sleep patterns of glaucous-winged gulls (*Larus glaucescens*). (Oral presentation at the 8th European Congress of Sleep Research, Szeged, HUNGARY), 1986.

152. α-MSH inhibits normal and interleukin-1-induced excess sleep in rabbits. (Oral presentation at the 9th European Congress of Sleep Research, Jerusalem, ISRAEL), 1988.
153. Monosodium glutamate treatment of neonates alters responsiveness of rats to interleukin-1. (Oral presentation, 10th European Congress of Sleep Research, Strasbourg, FRANCE), 1990.
154. Effects of an interleukin-1 receptor antagonist on recovery sleep of rabbits after total sleep deprivation. (Oral presentation, Association of Professional Sleep Societies meeting, Toronto, Ontario, CANADA), 1991.
155. Somnogenic properties of an interleukin-1β fragment. (Oral presentation, Third Milano International Symposium on Sleep: Sleep, Hormones and Immunological Systems, Milano, ITALY), 1991.
156. Somnogenic responses of rabbits and rats to an interleukin-1□ fragment. (Poster presentation, Founding Congress of the World Federation of Sleep Research Societies, Canne, FRANCE), 1991.
157. Central administration of anti-Interleukin-1 reduces non-rapid-eye-movements sleep (NREMS) and attenuates IL-1-induced NREMS in rats. (Poster presentation at the *Philippe Laudat Conf.: Cytokines and the Brain*, Bischenberg, FRANCE), 1992.
158. Interleukin-1 and IL-1 Antagonism: Relationships to Sleep. (Invited seminar, Mario Negri Institute of Pharmacological Research, Milano, ITALY), 1992.
159. Interleukin-1 and IL-1 Antagonism: Relationships to Sleep. (Invited seminar, Institute of Human Physiology II, University of Milan, Milano, ITALY), 1992.
160. GP120 alters rat sleep: potential mechanism for altered sleep in HIV-infected individuals and AIDS patients. (Poster presentation, 3rd International Conference on Cytokines: Basic Principles and Practical Applications, Florence, ITALY), 1992.
161. Interleukin-10 (Cytokine Synthesis Inhibitory Factor) reduces sleep in rats. (Poster presentation at the 12th Congress of the European Sleep Research Society, Florence, ITALY), 1994.
162. HIV-induced alterations in sleep. (Invited Seminar, 'Besta Neurological Institute, University of Milano, ITALY), 1994.
163. State Regulation by Stress Hormones. (Invited Symposium Presentation, World Federation of Sleep Research Societies Second International Congress, Nassau, THE BAHAMAS), 1995.
164. Human immunodeficiency virus envelope glycoprotein 120 alters sleep in rats. (Poster Presentation, World Federation of Sleep Research Societies Second International Congress, Nassau, THE BAHAMAS), 1995.
165. Mechanisms of HIV-induced alterations in sleep. (Invited Symposium Presentation, 13th European Congress on Sleep Research, Brussels, BELGIUM), 1996.
166. Sleep as a model behavior for the study of central nervous system – immune interactions. (Invited Symposium Presentation, 3rd International Congress of the Polish Neuroscience Society, Lodz, POLAND), 1997.
167. The role of corticotropin-releasing hormone (CRH) in the regulation of waking. (Invited seminar, Institute of Pharmacology, University of Zurich, Zurich, SWITZERLAND), 1997.
168. Corticotropin-releasing hormone (CRH) receptor antagonists reduce waking in the rat. (Oral presentation, 14th European Congress on Sleep Research, Madrid, SPAIN), 1998.
169. The increase in SWS induced by a corticotropin-releasing hormone (CRH) receptor antagonist is mediated by the somnogenic cytokine interleukin-1□. (Poster Presentation, 3rd International Congress of the World Federation of Sleep Research Societies, Dresden, GERMANY), 1999.
170. The involvement of corticotropin-releasing hormone in the regulation of physiological waking: evidence from studies of rats. (Invited symposium participant, 3rd International Congress of the World Federation of Sleep Research Societies, Dresden, GERMANY), 1999.
171. HIV gp160 induces cytokine mRNA expression in the CNS of rats. (Poster Presentation, 4th International Congress of the International Society for NeuroImmunoModulation, Lugano, SWITZERLAND), 1999.
172. Cytokine-neurotransmitter interactions in immune stressor-induced alterations in sleep. (Speaker and Organizer, American Physiological Society Symposium on "Stressor-induced Alterations in Sleep", Sao Paulo, BRAZIL), 2001.
173. Mechanisms for HIV-induced alterations in sleep: a potential role for cytokines and chemokines in the brain. (Invited speaker, International Conference on the Frontiers of Biomedical Sciences:

Behavior and Genomics, Chinese Academy of Sciences / Chinese Academy of Medical Sciences / Beijing Genomics Institute, Beijing, CHINA), 2002.

174. Why do we sleep differently when we are sick? (Invited Plenary Lecturer, 5th National Conference, Mexican Sleep Society, Gueretaro, MEXICO), 2003.
175. LPS-induced alterations in sleep and body temperature of mice: roles for IL-6 and TNF. (Poster Presentation, 11th Annual Meeting of the Psychoneuroimmunology Research Society, Titisee, GERMANY), 2004.
176. CRH, Interleukin-1 and the HPA axis: Modulators of arousal state in response to immune challenge. (Invited symposium participant, 35th Annual International Society for Psychoneuroendocrinology Conference, Glasgow, SCOTLAND), 2004.
177. The role of interleukin-6 in responses to sleep deprivation and immune challenge. (Invited Seminar, Institute of Biomedicine/Physiology, University of Helsinki, Helsinki, FI), 2004.
178. Practical issues in the use of the mouse as a subject in telemetric recordings. (Invited Lecturer, Postgraduate Course "Wireless Physiology", A.I. Virtanen Institute for Molecular Sciences, University of Kuopio, Kuopio, FI), 2004.
179. The use of telemetry to determine the impact of immune challenge on sleep of mice. (Invited Lecturer, Postgraduate Course "Wireless Physiology", A.I. Virtanen Institute for Molecular Sciences, University of Kuopio, Kuopio, FI), 2004.
180. Sleep and the immune system. (Invited Lecturer, 2nd International Course on the Integration of Sleep Medicine, Acapulco, MEXICO), 2004.
181. Cytokine – HPA axis interaction and the regulation of sleep. (Invited Participant, Obál Symposium, Szeged, HUNGARY), 2004.
182. Alterations in sleep-wake behavior and body temperature of mice after bacterial LPS challenge are mediated by IL-6. (Oral Presentation, 17th Congress of the European Sleep Research Society, Prague, CZECH REPUBLIC), 2004.
183. The immune system and sleep: the role of corticotropin-releasing hormone and interleukin-1. (Invited Symposium Speaker, XX Annual Meeting of the Brazilian Federation of the Societies for Experimental Biology, Àguas de Lindóia, BRAZIL), 2005.
184. Cytokine-HPA Interactions and the regulation of sleep. (Invited Symposium Participant, 2nd Interim Congress of the World Federation of Sleep Research and Sleep Medicine Societies, New Delhi, INDIA), 2005.
185. The role of interleukin-6 in responses of mice to sleep deprivation and immune challenge. (Invited seminar presentation, Department of Pharmacology, University of Zurich, Zurich, SWITZERLAND), 2005.
186. Sleep in the ICU: Impediment to recovery? (Invited seminar presentation. Chang Gung Memorial Hospital, Linkou, Taipei, TAIWAN), 2006.
187. Why do we sleep differently when we are sick? (Invited seminar presentation. China Medical University, Taichung, TAIWAN), 2006.
188. Cytokines as modulators of arousal state: implications for health and sickness. (Invited lecture. 53rd Annual Meeting of the Japanese Society of Anesthesiologists, Kobe, JAPAN), 2006.
189. CRH, Interleukin-1 and HPA Axis Interactions and the Regulation of Arousal State. (Invited Participant, Max Planck Munich Sleep Symposium, Munich, GERMANY), 2006.
190. Why do we sleep differently when we are sick? (Invited Lecture. 4th Annual Meeting of the Chinese Sleep Research Society, Biejing, CHINA), 2006.
191. Why do we sleep differently when we are sick? (Invited Lecture. Chinese Third Military Medical University, Chongqin, CHINA), 2006.
192. Why do we sleep differently when we are sick? (Symposium Organizer and Participant. World Association of Sleep Medicine Congress. Bangkok, THAILAND), 2007.
193. Sleep and immune function: Why do we sleep differently when we are sick? (Invited participant, pre-Conference Workshop: Sleep, American Psychosomatic Society Annual Conference, Budapest, HUNGARY), 2007.
194. Chronic viral infection, sleep, and fatigue. (Invited Symposium participant, American Psychosomatic Society Annual Conference, Budapest, HUNGARY), 2007.
195. Sleep, cytokines, and immune function. (Invited Participant, International Sleep Symposium on the 10th Anniversary of the Sleep Disorders Clinic, University National Autonomous Mexico,

Mexico City, MEXICO), 2008.

196. Effects of systemic inflammation and cytokines on sleep. (Invited Participant, Oxidative Stress and Inflammation in Obstructive Sleep Apnea Symposium, McGill University, Montreal, CANADA), 2008.
197. Why do we sleep differently when sick? (Invited Seminar, Center for Behavioral Neuroscience, University of Groningen, Groningen, NETHERLANDS), 2009.
198. Host defense and sleep. (Invited Participant: Curso Internacional de Medicina Integral del Sueño, Mexico City, Mexico), 2010.
199. Infection as a stressor: Sepsis-induced alterations in sleep. (Invited Symposium Participant, World Sleep 2011, Kyoto, JAPAN), 2011.
200. Cytokines, Neuroinflammation and Sleep. (Invited Symposium Participant, 7th Annual Meeting of the Asian Sleep Research Society, Taipei, TAIWAN), 2012.
201. Cytokines, Neuroinflammation and Sleep. (Invited seminar, National Taiwan University, Taipei, TAIWAN), 2012.
202. Sleep, cytokines, and inflammation: What we have learned from animal models. (Symposium organizer and participant, PsychoNeuroImmunology Research Society annual meeting. Stockholm, SWEDEN), 2013.
203. Sleep, cytokines and inflammation. (Invited Seminar, Institute of Molecular Genetics of the Academy of Sciences of the Czech Republic, Prague, CZECH REPUBLIC), 2013.
204. Sleep Disruption, Inflammation and Mechanical Allodynia in a Mouse Model of Musculoskeletal Pain. (Invited Seminar, University of Zurich, Zurich, CH), 2016.
205. Sleep Disruption, Inflammation and Mechanical Allodynia in a Mouse Model of Musculoskeletal Pain. (Plenary Lecture, Dutch Sleep Society Meeting, Ermelo, NETHERLANDS), 2016.
206. Sleep Disruption and Inflammation: co-Conspirators in Chronic Pain (Invited Lecture, Mexican Society for Sleep Research and Sleep Medicine, Monterrey, MX), 2019.