CECILIA DINIZ BEHN

1015 14th Street; Chauvenet Hall, Room 141; Golden, CO 80401
303.273.3872 (work) | cdinizbe@mines.edu
http://inside.mines.edu/~cdinizbe/

EDUCATION

Boston University, Boston, MA *2006*
PhD, Mathematics.
Advisors: Professors Nancy Kopell and Emery Brown.

University of Texas, Austin, TX *2002*
MA, Mathematics.
Advisor: Professor Oscar Gonzales.

Bryn Mawr College, Bryn Mawr, PA *1999*
AB, Mathematics, magna cum laude.
Honors thesis advisor: Professor Paul Melvin.

Technical University of Budapest, Budapest, Hungary *Spring 1998*
Budapest Semesters in Mathematics

PROFESSIONAL EXPERIENCE

Colorado School of Mines, Golden, CO *2013–present*
Department of Applied Mathematics & Statistics, Assistant Professor

University of Colorado School of Medicine, Denver, CO *2014–present*
Department of Pediatrics, Adjoint Assistant Professor

Gettysburg College, Gettysburg, PA *2011–2013*
Department of Mathematics, Assistant Professor

University of Michigan, Ann Arbor, MI *2007–2011*
Department of Mathematics, Term Assistant Professor

Harvard Medical School, Boston, MA *2006–2007*
Analysis and Modeling Unit of the Division of Sleep Medicine,
Postdoctoral Research Fellow
Advisors: Drs. Thomas Scammell and Elizabeth Klerman.

Boston University, Boston, MA *2002–2006*
Department of Mathematics, Graduate Research Assistant

University of Texas, Austin, TX *2001–2002*
Department of Mathematics, Graduate Research Assistant

Sandia National Laboratories, Albuquerque, NM *Summers, 1994–2001*
Divisions of Applied Mathematics/Optimization;
Laser and Computational Initiatives; and Analytical Chemistry, Summer intern

EXTERNAL FUNDING

Ongoing funding:

National Science Foundation Grant DMS 1412571 2014-2018
"Collaborative Research: Multiscale Modeling of the Physiological Interactions Between Sleep and Circadian Systems," $158,000
Role: Principal Investigator

Children's Hospital/Colorado School of Mines Collaboration Pilot Award 2015-2017
"Investigating the Relationship Between Circadian Phase and Insulin Resistance in Obese Adolescents," $30,000
Role: Co-Principal Investigator (Co-PI Stacey Simon)

Boettcher Webb-Waring Biomedical Research Award 2016-2017
"Non-invasive assessment of liver glucose metabolism in obese girls," $10,000
Role: Co-Investigator (PI Melanie Cree Green)

National Institutes of Health Grant ROIHD087707 2017-2022
"Sensitivity of the Circadian Clock to Light in Early Childhood," $2.9 million; CDB $278,000
Role: Co-Investigator (PI Monique LeBourgeois)

Completed funding:

Air Force Office of Scientific Research Grant FA9550-08-1-0111 2008-2011
"Modeling the Interactive Effects of the Circadian Pacemaker and the Sleep-Wake System," $408,253 (*2008–2011*)
Role: Co-Investigator (PI Victoria Booth)

National Science Foundation Grant DMS 1121361 2011-2014
"Dynamics of Sleep-Wake Regulation," $299,998
Role: Co-Principal Investigator (PI Victoria Booth)

Children's Hospital/Colorado School of Mines Collaboration Pilot Award 2014-2015
"Hepatic and Adipose Insulin Resistance in Polycystic Ovarian Syndrome," $20,000
Role: Co-Principal Investigator (Co-PI Melanie Cree Green)

University of Colorado Nutrition Obesity Research Center Pilot Award 2014-2015
"Hepatic and Adipose Insulin Resistance in Polycystic Ovarian Syndrome," $20,000
Role: Co-Investigator (PI Melanie Cree Green)

University of Colorado Center for Women's Health Pilot Award 2014-2015
"The Role of Circadian Factors & Sleep Disordered Breathing on Insulin Resistance in Girls with Polycystic Ovarian Syndrome," $20,000
Role: Co-Investigator (PI Stacey Simon)

HONORS

Richard E. Kronauer Award for Excellence in Biomathematical Modeling (*2006*)
Prize awarded every 2-4 years at the SIAM Life Sciences conference to a graduate student or post-doctoral fellow who has made significant contributions to modeling circadian rhythmicity, sleep regulation, or neurobehavioral function.
National Physical Science Consortium Fellow (*1999–2005*)

Graduate fellowship awarded annually to promote diversity in the physical sciences and engineering.

Barry M. Goldwater Scholar for Science and Math (*1997–99*)
Scholarship awarded annually to promising undergraduates in science, mathematics, and engineering.

Charlotte Angas Scott Prize in Mathematics, Bryn Mawr College Commencement (*1999*)
Prize awarded annually to outstanding Bryn Mawr College undergraduate in mathematics on the recommendation of the Department.

TRAVEL AWARDS & OTHER MERIT-BASED SUPPORT

AWM Research Symposium travel award, Los Angeles, CA (*2017*)
Sleep Research Society travel award to attend NIDDK workshop, Bethesda, MD (*2015*)
Mathematical Biosciences Institute workshop travel award, Columbus, OH (*2013*)
AWM Research Symposium travel award, Santa Clara, CA (*2013*)
Frontiers in Mathematical Biology Young Investigators conference travel award, University of Maryland, College Park, MD (*2012*)
Fields Institute workshop travel award, Toronto, Canada (*2012*)
Mathematical Biosciences Institute workshop travel award, Columbus, OH (*2011*)
Poster prize, University of Michigan Systems Biology Symposium (*2011*)
Frontiers in Applied and Computational Mathematics travel award, Newark, NJ (*2010*)
NIH Sleep, Circadian and Respiratory Neurobiology Training Program Fellow (*2006–07*)
AWM workshop travel award, SIAM Annual Meeting, Boston, Massachusetts (*2006*)
Research assistantship, Boston University (Summers, *2002–2004*)
David Bruton, Jr. Fellow, UT Austin (*1999–2002*)

PUBLICATIONS & CONFERENCE PROCEEDINGS

Peer-reviewed journal articles:

[**19**] Simens J; Cree Green M; Bergman B; Nadeau K; and **Diniz Behn C**. *Structural identifiability analysis of a labeled oral minimal model for quantifying hepatic insulin resistance*, under revision.

[**18**] Stack, N; Barker, D; Carskadon, M; and **Diniz Behn, C**. *A model-based approach to optimizing ultradian forced desynchrony protocols for human circadian research*, submitted.

[**17**] Booth, V; Xique, X; **Diniz Behn, C**. (2017) *One-dimensional map for the circadian modulation of sleep in a sleep-wake regulatory network model for human sleep*, SIAM J. Appl. Dyn. Syst., 16:1089-1112.

[**16**] Lopp,S; Navidi W; Achermann, P; LeBourgeois, M; and **Diniz Behn, C**. (2017) *Developmental changes in ultradian sleep cycles across early childhood: preliminary insights*, J. Biol. Rhythms, 32:64-74.

[**15**] Branch A; Navidi W; Tabuchi S; Terao A; Yamanaka A; Scammell T; and **Diniz Behn C**. (2016) *Progressive loss of the orexin neurons reveals dual effects on wakefulness*, SLEEP, 39:369-377.

[**14**] Waldrop L; **Diniz Behn C**; Braley E; Drew J; Full R; Gross L; Jungck J; Kohler B; Prairie J; Shtylla B; Adolph S; and Miller L. (2015) *Using active learning to teach concepts and methods in quantitative biology*, Integr. Comp. Biol., 55(5):933-48.

[**13**] Grabek K; **Diniz Behn C**; Barsh G; Hasselberth J; and Martin S. (2015) *Enhanced stability and polyadenylation of select mRNAs support rapid thermogenesis in the brown fat of a hibernator*, eLife, 4:e04517.

[**12**] Booth V; **Diniz Behn C**. (2014) *Physiological modeling of sleep-wake regulatory networks*, Math. Biosci., 250:54:68. PMID: 24530893.

[11] Gleit R**; Diniz Behn C;** Booth V. (2013) *Modeling inter-individual differences in spontaneous internal desynchrony patterns*, J. Biol. Rhythms, 28:339-355. PMID: 24132060.

[10] Diniz Behn C; Ananthasubramaniam A; Booth V. (2013) *Contrasting existence and robustness of REM/Non-REM cycling in physiologically based models of REM sleep regulatory networks*, SIAM J. Appl. Dyn. Syst. 12:279-314.

[9] Diniz Behn C and Booth V. (2012) *A fast-slow analysis of the dynamics of REM sleep*, SIAM J. Appl. Dyn. Syst. 11:212-242.

[8] Diniz Behn C; Booth V. (2011) *Modeling the temporal architecture of rat sleep-wake behavior*, Conf. Proc. IEEE Eng. Med. Biol. Soc. 2011:4713-4716. PMID: 22255390.

[7] Fleshner M; Booth V; Forger D; **Diniz Behn C**. (2011) *Circadian regulation of sleep-wake behavior in nocturnal rats requires multiple signals from the suprachiasmatic nucleus required for*, Phil. Trans. Roy Soc. A. 369:3855-3883. PMID: 21893532.

[6] Williams K**; Diniz Behn C**. (2011) *Dynamic interactions between orexin and dynorphin may delay onset of functional orexin effects: a modeling study*, J. Biol. Rhythms 26:171-181. PMID: 21454297.

[5] Diniz Behn C and Booth V. (2010) *Simulating microinjection experiments in a novel model of the rat sleep-wake regulatory network,* J. Neurophysiol. 103:1937–1953. PMID: 20107121.

[4] Diniz Behn C; Klerman E; Mochizuki T; Lin S-C; Scammell T. (2010) *Abnormal sleep/wake dynamics in orexin knockout mice,* SLEEP 33:297–306. PMID: 20337187.

[3] Diniz Behn C; Kopell N; Brown E; Mochizuki T; Scammell T. (2008) *Delayed orexin signaling consolidates wake and sleep: physiology and modeling,* J. Neurophysiol. 99:3090–3106. PMID: 18417630.

[2] Best J; **Diniz Behn C**; Poe G; Booth V. (2007) *Modeling the structure and function of sleep,* J. Biol. Rhythms 22(3):220–232. PMID: 17517912.

[1] Diniz Behn C; Brown E; Scammell T; Kopell N. (2007) *A mathematical model of network dynamics governing mouse sleep-wake behavior*. J. Neurophysiol. 97(6):3828–40. PMID: 17409167.

Other journal articles:

[1] Arble D; Bass J; **Diniz Behn C**; Butler M; Challet E; Czeisler C; Depner M; Elmquist J; Franken P; Grandner M; Keene A; Joyner M; Karatsoreos I; Kern P; Klein S; Morris C; Pack A; Panda S; Ptacek L; Punjabi N; Sassone-Corsi P; Scheer F; Seaquest E; Saxena R; Thimgan M; Van Cauter E; Wright K. (2015) *Impact of sleep and circadian disruption on energy balance and diabetes: A summary of workshop discussions,* SLEEP 38:1849-1860.

Book chapters:

[2] Diniz Behn C. (2011) *Mathematical models of narcolepsy.* In: Baumann C; Scammell T; Bassetti C, eds. *Narcolepsy: Pathophysiology, Diagnosis, and Treatment*. New York: Springer.

[1] Diniz Behn C and Booth V. (2011) *A population network model of neuronal and neurotransmitter interactions regulating mammalian sleep-wake behavior*. In: Hutt A, ed. *Sleep and anesthesia: neural correlates in theory and experiment.* New York: Springer.

Journal articles in preparation:

[2] Simens J; Cree Green M; Bergman B; Nadeau K; and **Diniz Behn C**. *Mathematical modeling of glycerol dynamics to quantify adipose insulin resistance during an oral glucose tolerance test*, in preparation.

[1] Diniz Behn C; Gong C; Pal D; Vanini G; Mashour G; Lydic R; Booth V. *Modeling sleep-wake temporal dynamics in multiple species to investigate underlying physiology of behavioral state regulation,* in preparation.

Published abstracts:

Stack N; Carskadon M; Barker D; **Diniz Behn C**. (2017) *Optimizing ultradian forced desynchrony protocols to assess intrinsic circadian period.* SLEEP 40, A265.

Diniz Behn C.; Murray M; Booth V. (2016) *Multiscale mathematical modeling of vigilance state effects on the circadian clock*. Soc Neurosci Abstr online, Program No. 815.11.

Stack N; Booth V; **Diniz Behn C**. (2016) *Mathematical modeling of sleep architecture in adolescence.* SLEEP 39, A11.

Murray M; Booth V; **Diniz Behn C**. (2016) *Multiscale mathematical modeling of vigilance state effects on the circadian clock.* SLEEP 39, A61.

Simens J; Cree Green M; Bergman B; Nadeau K; and **Diniz Behn C**. (2016) *Modeling glycerol dynamics following an oral glucose challenge,* Endocrine Practice, 22(1) 36A.

Branch A; Navidi W; Tabuchi S; Yamanaka A; Scammell T; **Diniz Behn C**. (2014) *Analyzing sleep/wake architecture in mice with progressive orexin/hypocretin cell loss*. Soc Neurosci Abstr online, Program No. 549.08.

Booth V; Gleit R; **Diniz Behn C**. (2013) *Modeling spontaneous internal desynchrony of sleep-wake behavior and the circadian rhythm in humans*. Soc Neurosci Abstr online, Program No. 281.18.

Diniz Behn C and Booth V. (2013) *Implications of a mutually inhibitory network structure for ultradian cycling in human sleep.* SLEEP 36, A98.

Diniz Behn C; Pal D; Booth V. (2012) *Modeling the fine temporal structure of rapid eye movement sleep in rats.* SLEEP 35, A67.

Diniz Behn C; Pal D; Booth V. (2011) *Modeling the fine temporal architecture of rat sleep-wake behavior.* Soc Neurosci Abstr online, Program No. 721.05.

Diniz Behn C (2011) *Insights from mathematical modeling of sleep/wake behavior*. Sleep and Biol Rhyth 9, 221.

Diniz Behn C; Pal D; Vanini G; Lydic R; Mashour G; Booth V. (2010) *Modeling sleep-wake temporal architecture in multiple species to investigate underlying physiology of behavioral state regulation.* Soc Neurosci Abstr online, Program No. 300.18.

Diniz Behn C; Booth V. (2009) *Modeling the interaction between circadian and sleep-wake regulatory systems.* Soc Neurosci Abstr online, Program No. 376.29.

Williams K; **Diniz Behn C**. (2009) A Hodgkin-Huxley-type model orexin neuron. SLEEP 32, A25.

Diniz Behn C; Booth V. (2008) *Simulating microinjection of GABA agonists and antagonists in a novel model of the sleep-wake regulatory network.* Soc Neurosci Abstr online, Program No. 586.22.

Diniz Behn C; Mochizuki T; Lin S-C; Clark E; Klerman E; Nicolelis M; Scammell T. (2007) *State space analysis of sleep-wake behavior in wild type and orexin knockout mice*. Soc Neurosci Abstr online, Program No. 632.17.

Diniz Behn C; Brown E; Scammell T; Kopell N. (2006) *Modeling dynamics of sleep-wake behavior in wild type and orexin knockout mice.* Soc Neurosci Abstr online, Program No. 458.2.

Diniz Behn C; Brown E; Scammell T; Kopell N. (2006) *A possible mechanism for fragmented sleep-wake behavior in orexin knockout mice.* SLEEP 29, 664.

Diniz Behn C; Brown E; Scammell T; Kopell N. (2005) *A mathematical model of network dynamics governing sleep-wake patterns in mice*. Soc Neurosci Abstr online, Program No. 512.36.

Dissertation/theses:

Diniz Behn C. *A mathematical model of network dynamics governing sleep-wake patterns in mice,* PhD Dissertation. Boston University, Boston, Massachusetts, 2006.

Diniz Behn C. *Effects of ideal configurations on the steady motions of knotted loops in viscous fluid,* Master's thesis. University of Texas at Austin, Austin, Texas, 2002.

Diniz C. *Quantum spin invariants of lens spaces,* Undergraduate Honors thesis. Bryn Mawr College, Bryn Mawr, Pennsylvania, 1999.

PRESENTATIONS & POSTERS

2017 Minisymposium speaker, SIAM Applications of Dynamical Systems, Snowbird, UT.

Minisymposium speaker, SLEEP Annual Meeting, Boston, MA.

Poster presentation, SLEEP Annual Meeting, Boston, MA.

Poster presentation, International Conference on Mathematical and Computational Neuroscience, Boulder, CO.

Invited speaker, Colloquium, Colorado College, Colorado Springs, CO.

Minisymposium speaker, Association for Women in Mathematics Research Symposium, Los Angeles, CA.

2016 Invited speaker, Applied Math Seminar, Colorado State University, Fort Collins, CO.

Minisymposium speaker, SLEEP Annual meeting, Denver, CO.

Invited speaker, Brigham and Women's Hospital and Harvard Medical School, Boston, MA.

Minisymposium speaker, SIAM Annual meeting, Boston, MA.

Poster presentation, Society for Neuroscience, San Diego, CA.

2015 Invited speaker, Society for Integrative and Comparative Biology Annual Meeting, West Palm Beach, FL.

Poster presentation, NIDDK workshop on "Impact of sleep and circadian disruption on energy balance and diabetes," National Institutes of Health, Bethesda, MD.

Invited speaker, Applied Math seminar, University of Colorado, Boulder, CO.

Invited speaker, Human Circadian Rhythms workshop, Lorentz Center, Leiden University, Leiden, The Netherlands.

2014 Invited speaker, Colorado Sleep and Circadian Research Symposia, University of Colorado, Boulder, CO.

Poster presentation, Society for Neuroscience annual meeting, Washington, DC.

Invited speaker, Applied Math seminar, Colorado State University, Fort Collins, CO.

2013 Invited speaker, Applied Math seminar, University of North Carolina, Chapel Hill, NC.

Invited speaker, Cyber Engineering Research Laboratory, Sandia National Laboratories, Albuquerque, NM.

Invited speaker, Applied Math seminar, Colorado School of Mines, Golden, CO.

Invited speaker, Cellular and Subcellular Workshop, Mathematical Biosciences Institute, Ohio State University, Columbus, OH.

Invited speaker, Applied Math seminar, University of Colorado Denver|Anschutz Medical Campus, Denver, CO.

Invited speaker, Department seminar, Pomona College, Claremont, CA.

Invited speaker, Department seminar, Bryn Mawr College, Bryn Mawr, PA.

Invited speaker, Association for Women in Mathematics Research Symposium, Santa Clara, CA.

Poster presentation, Society for Neuroscience annual meeting, San Diego, CA.

2012 Minisymposium organizer/speaker, SIAM Life Sciences conference, San Diego, CA.

Invited speaker, Associated Professional Sleep Societies annual meeting, Boston, MA.

Invited speaker, Frontiers in Mathematical Biology Young Investigators conference, University of Maryland, College Park, MD.

Invited speaker, Applied Math seminar, New Jersey Institute of Technology, Newark, NJ.

Invited speaker, Applied Math colloquium, Shippensburg University, Shippensburg, PA.

2011 Invited speaker, WorldSleep 2011, Congress of the World Sleep Federation, Kyoto, Japan.

Invited speaker, Radcliffe Institute Workshop, Harvard University, Cambridge, MA.

Poster presentation, Society for Neuroscience annual meeting, Washington, DC.

Minisymposium organizer/speaker, SIAM Applications of Dynamical Systems, Snowbird, UT.

Invited speaker, Mathematical Biology seminar, University of California, Davis, CA.

Invited speaker, Mathematics seminar, Christopher Newport University, Newport News, VA.

Invited speaker, Mathematics seminar, St. Olaf College, Northfield, MN.

Invited speaker, Mathematics seminar, Smith College, Northampton, MA.

Invited speaker, Mathematics seminar, Georgia State University, Atlanta, GA.

Invited speaker, Mathematics seminar, Gettysburg College, Gettysburg, PA.

Poster presentation, Mathematical Biosciences Institute, The Ohio State University, Columbus, OH.

Poster presentation, Systems Biology Symposium, University of Michigan, Ann Arbor, MI.

Invited speaker, ACM/MAA Lecture Series, Mount St. Mary's University, Emmitsburg, MD.

Invited speaker, Mathematics seminar, Franklin & Marshall College, Lancaster, PA.

2010 Poster presentation, Society for Neuroscience annual meeting, San Diego, CA.

Minisymposium organizer/speaker, SIAM-Life Sciences conference, Pittsburgh, PA.

Invited speaker, SIAM annual meeting, Pittsburgh, PA.

Selected speaker, Frontiers in Applied and Computational Mathematics, New Jersey Institute of Technology, Rutgers, NJ.

Invited speaker, Mathematical Biosciences Institute special seminar, The Ohio State University, Columbus, OH.

Invited speaker, Mathematical Biology seminar, University of Utah, Salt Lake City, UT.

Invited speaker, Mathematics seminar, University of Michigan-Dearborn, Dearborn, MI.

Invited speaker, Mathematics seminar, Hampshire College, Amherst, MA.

2009 Poster presentation, Society for Neuroscience annual meeting, Chicago, IL.

Poster presentation, Systems Biology Symposium, University of Michigan, Ann Arbor, MI.

Invited speaker, International Symposium on Narcolepsy, Ascona, Switzerland.

Invited speaker, Mathematical Biology seminar, University of Michigan, Ann Arbor, MI.

Invited speaker, Biological Rhythms and Sleep seminar, University of Michigan, Ann Arbor, MI.

2008 Poster presentation, Society for Neuroscience annual meeting, Washington, DC.

Invited speaker, SIAM-Life Sciences conference, Montreal, Canada.

Invited speaker, Mathematical Biology seminar, Mathematical Biosciences Institute, The Ohio State University, Columbus, OH.

2007 Invited speaker, UM-MSU Math Biology conference, Michigan State University, East Lansing, MI.

Invited speaker, Research seminar, Boston University, Boston, MA.

Invited speaker, Sleep Trainee seminar, Harvard Medical School, Boston, MA.

Invited speaker, Mathematical Biology seminar, University of Michigan, Ann Arbor, MI.

Poster presentation, Society for Neuroscience annual meeting, San Diego, CA.

Invited speaker, Mathematical Biology seminar, University of Utah, Salt Lake City, UT.

2006 Invited speaker, SIAM-SMB Joint conference, Raleigh, NC.

Invited speaker, International Conference on Complex Systems, Boston, MA.

Invited speaker, Mathematical Biology seminar, University of Michigan, Ann Arbor, MI.

Poster presentation, Associated Professional Sleep Societies annual meeting, Salt Lake City, UT.

Poster presentation, Association for Women in Mathematics workshop, SIAM annual meeting, Boston, MA.

Poster presentation, Society for Neuroscience annual meeting, Atlanta, GA.

Invited speaker, Mathematics seminar, Worcester State College, Worcester, MA.

2005 Poster presentation, Society for Neuroscience annual meeting, Washington, DC.

Invited speaker, Research seminar, Boston University, Boston, MA.

Invited speaker, Graduate student dynamics seminar, Boston University, Boston, MA.

Poster presentation, SIAM conference for Applied Dynamical Systems, Snowbird, UT.

Invited speaker, Mathematics seminar, Bryn Mawr College, Bryn Mawr, PA.

2003 Invited speaker, Research seminar, Boston University, Boston, MA.

2002 Contributed presentation, SIAM Annual Meeting, Philadelphia, PA.

1999 Invited speaker, Division of Applied Mathematics/Optimization, Sandia National Laboratories, Albuquerque, NM.

ADVISING EXPERIENCE

Current graduate students

Nora Stack: "Mathematical modeling of sleep-wake architecture across the lifetime" (*MS, December 2016; Anticipated PhD, May 2019*)
Kai Bartlette: "Modeling tissue-specific insulin resistance in adolescents" (*Anticipated PhD, May 2020*)
Alicia Colclasure: "Modeling the functional role of orexin/hypocretin neurons" (*Anticipated PhD, May 2022*)

Graduated students

Jacqueline Simens: "Modeling hepatic and adipose insulin resistance in polycystic ovarian syndrome" (*MS, December 2015*)
Kelsey Kalmbach: "Map-based approaches for investigating sleep/wake dynamics" (*MS, December 2016*)

Undergraduate research students

Colorado School of Mines Undergraduate Research Fellows

Sean Lopp: "Mathematical modeling of sleep and circadian rhythms" (*Fall 2014, Spring 2015*)
Abigail Branch: "Characterizing mouse sleep/wake architecture with progressive orexin cell loss" (*Spring 2014*)
Mollie Murray: "Investigating interactions between electrophysiology and the molecular clock in SCN neurons" (*Fall 2015, Spring 2016*)
Nicholas Koprowicz: "Mathematical modeling of salivary melatonin" (*Spring 2016*)

Kate Bubar: "Modeling mechanisms of circadian behavior in Per2 KO mice" (*Spring, Summer 2017*)

Colorado School of Mines Undergraduate and General Graduate Advising (*2013 – present*)
Advising for math majors and general graduate and undergraduate population

Gettysburg College Senior Capstone Theses (*2012-2014*)
Jennifer Donoghue: "Mathematical modeling of HIV infection in the human body"
Margaret Kelly: "Host-parasitoid interactions and the Nicholson-Bailey model"
Aleksandra Petkova: "Modeling human sleep/wake behavior in development"

Gettysburg College-HHMI Summer Research Fellow (*2013*)
Ziyi (Sirius) Xu: "Mathematical modeling of orexin neurons and adaptive glucose-sensing mechanism"

Gettysburg College Undergraduate Advising (*2012 – 2013*)
Advising for math majors and general undergraduate population

University of Michigan Research Experience for Undergraduates
Aparna Ananthasubramaniam: "Investigating the network structures underlying REM sleep generation" (*Summer 2010*)
Michelle Fleshner: "Integrating sleep and circadian rhythms" (*Summer 2009*)
and Independent study (*Winter 2010*)
Katherine Williams: "Hodgkin-Huxley-type model of an orexin (hypocretin) neuron" (*Summer 2008*)

COURSES TAUGHT

Calculus I
Calculus II
Multivariable Calculus
Differential Equations
Linear Algebra
Mathematical Biology
Intermediate Differential Equations and Dynamics
Senior Capstone in Mathematics
Mathematical and Computational Neuroscience
Applied Analysis (graduate)

SERVICE & OTHER ACTIVITIES

Minisymposium organizer, "Novel applications of discrete maps in neuroscience" at SIAM Applications of Dynamical Systems conference, Snowbird, UT, 2017.

Mentor, Women's mentoring event at SIAM Applications of Dynamical Systems conference, Snowbird, UT, 2017.

Presenter, Discover STEM Camp for Middle School students, Colorado School of Mines, 2016.

Invited lecturer, q-Bio Summer School, Colorado State University, Fort Collins, CO, 2016.

Minisymposium organizer, "Advances in modeling sleep-wake behavior and circadian rhythms" at SIAM Life Sciences conference, Boston, MA, 2016.

Participant, "Human Circadian Rhythms: Developing a Multi-Oscillator Framework," Lorentz Center, Leiden University, Leiden, The Netherlands, 2015.

Participant, "Impact of sleep and circadian disruption on energy balance and diabetes workshop," National Institutes of Health, Bethesda, MD, 2015.

Workshop organizer and participant, "Active Learning in Quantitative Biology," Society for Integrative and Comparative Biology Annual Meeting, West Palm Beach, 2015.

Faculty participant, Society for Women in Mathematics at Colorado School of Mines, Golden, CO, 2013-present.

Participant, "Workshop on Parameter Estimation for Biological Models," North Carolina State University, Raleigh, NC, 2014.

Participant, "Nonlinear dynamics and stochastic methods: from neuroscience to other biological applications conference (Bardfest)," University of Pittsburgh, Pittsburgh, PA, 2014.

Participant, "Cellular and Subcellular Workshop" at the Mathematical Biosciences Institute at The Ohio State University, Columbus, OH, 2013.

Participant, "Special Session on Mathematics for Human Physiology and Disease" at the Association for Women in Mathematics Research Symposium, Santa Clara, CA, 2013.

Minisymposium organizer, "Hysteresis in Neuroscience: Bursting and Beyond" at SIAM Life Sciences conference in San Diego, CA, 2012.

Member of Curricular Committee for Neuroscience, Gettysburg College, Gettysburg, PA, 2012-2013.

External reviewer for NSF-funded project for the Interdisciplinary Training for Undergraduates in Biological and Mathematical Sciences (UBM), Dickinson College, December 2012.

Participant, Anesthesiology/Sleep disorders workshop in Focus Program on "Towards Mathematical Modeling of Neurological Disease from Cellular Perspectives" at The Fields Institute, Toronto, Canada, 2012.

Minisymposium organizer, "Modeling Dynamics of Sleep-Wake Regulation" at SIAM Applications of Dynamical Systems conference in Snowbird, UT, 2011.

Grant review panelist, National Science Foundation Division of Mathematical Sciences.

Participant, "Workshop on New Developments in Dynamical Systems Arising from the Biosciences" at the Mathematical Biosciences Institute at The Ohio State University, Columbus, OH, 2011.

Minisymposium organizer, "Multi-scale Modeling of Mammalian Circadian Clocks" at SIAM Life Sciences conference, Pittsburgh, PA, 2010.

Minisymposium organizer, "Investigating Neural Mechanisms of Sleep and Anesthesia through Modeling" at SIAM Life Sciences conference, Montreal, Canada, 2008.

Ad hoc reviewer (Journal of Neurophysiology, Journal of Computational Neuroscience, Journal of Biological Rhythms, PLoS ONE, Journal of Theoretical Biology, Journal of Comparative Neurology, Mathematical Biosciences, SIAM Undergraduate Research Online, SLEEP, Bipolar Disorders, Journal of Computational and Applied Math), 2007–present.

Member of selection committee for Richard E. Kronauer Award for Excellence in Biomathematical Modeling, 2008–present.

Journal club organizer, Analysis and Modeling Unit of the Division of Sleep Medicine, 2006–2007.

Participant, "Workshop on New Approaches to Modeling Sleep/Wake Dynamics and Cognitive Performance" at the Mathematical Biosciences Institute at The Ohio State University, Columbus, OH, 2006.

Seminar organizer, "Geometric singular perturbation theory and canards," Boston University, Spring 2005.

Workshop presenter at math outreach events designed to encourage interest among elementary and middle school girls: Math Badge Day for Patriots Trail girl scouts (Boston, MA: 2003, 2004) and Expanding Your Horizons (Austin, TX: 2000, 2001).

PROFESSIONAL SOCIETIES

Society for Industrial and Applied Mathematics
Society for Neuroscience
Sleep Research Society