

**CURRICULUM VITAE**  
**David Paydarfar**

**ADDRESS**

Department of Neurology  
Dell Medical School  
The University of Texas at Austin  
1501 Red River Street  
Austin, Texas 78712  
phone: 512.495.5196  
email: david.paydarfar@austin.utexas.edu

**EDUCATION**

1978-80 Duke University, Durham, NC; B.S. (Physics) 1980  
1981-85 University of North Carolina at Chapel Hill, NC; M.D. 1985

**CERTIFICATION**

1989- Medical license, Commonwealth of Massachusetts, #72937  
1993 Diplomate, American Board of Psychiatry and Neurology, #38674

**APPOINTMENTS**

1981 Staff Scientist, Solar Physics Division, Lawrence Berkeley Laboratories,  
University of California, Berkeley, CA  
1985-87 Postdoctoral Fellow, Department of Physiology,  
University of North Carolina School of Medicine  
1987-88 Intern in Medicine, University of North Carolina Hospitals  
1988-91 Resident in Neurology, Massachusetts General Hospital, Boston, MA  
1991-97 Assistant Professor of Neurology, Tufts Univ. School of Medicine, Boston;  
Staff Neurologist & Chief of Neurology Research,  
St. Elizabeth's Medical Center of Boston  
1997-04 Associate Professor of Neurology & Physiology,  
University of Massachusetts Medical School, Worcester, MA  
2004-16 Professor of Neurology & Physiology,  
University of Massachusetts Medical School  
2014-15 Acting Chair of Neurology,  
University of Massachusetts Medical School  
2010-14 Vice Chair for Clinical Operations & Research,  
Department of Neurology, University of Massachusetts Medical School  
2010-16 Associate Faculty, Wyss Institute for Biologically Inspired Engineering,  
Harvard University, Boston MA  
2015-16 Executive Vice Chair of Neurology,  
University of Massachusetts Medical School

2016- Professor & Chair of Neurology,  
Dell Medical School  
The University of Texas at Austin, Austin TX

#### HONORS AND AWARDS

1980 Phi Beta Kappa, Duke University  
1980 *summa cum laude*, Duke University  
1984-85 Howard Holderness Medical Fellowship  
University of North Carolina School of Medicine  
1985-87 Parker B. Francis Foundation Fellowship  
University of North Carolina School of Medicine  
1999 M.G.F. Fuortes & H. Keffer Hartline Fellowships  
Marine Biological Laboratory, Woods Hole, MA  
2000 Frederik B. Bang & John O. Crane Fellowships  
Marine Biological Laboratory, Woods Hole  
2001 Teacher of the Year Award, Neurology Residency Program  
University of Massachusetts Medical School  
2006 Alpha Omega Alpha Honor Medical Society  
University of Massachusetts Medical School  
2006 Teacher of the Year Award, Neurology Residency Program  
University of Massachusetts Medical School  
2006 Tenure, University of Massachusetts  
2007 Fellow of the American Neurological Association  
2007- *Best Doctors in America*  
2015 The David A. Chad Teaching Award, Department of Neurology  
University of Massachusetts Medical School

#### VISITING PROFESSORSHIPS

1994 Visiting Professor, Department of Neurology  
University of Heidelberg, Heidelberg, Germany  
1998 Visiting Professor, Department of Physiology  
McGill University, Montreal, Canada  
2007 Dunaway Burnham Visiting Scholar, Department of Physiology  
Dartmouth Medical School, Lebanon, NH  
2008 Bevan Visiting Professor, Van der Veer Institute for Parkinson's and  
Brain Research, University of Canterbury, Christchurch,  
New Zealand  
2012 Dunaway Burnham Visiting Scholar, Department of Physiology  
Dartmouth Medical School, Lebanon, NH  
2012 Visiting Professor, Center for Adaptive Data Analysis,  
National Central University, Taiwan

## RESEARCH SUPPORT

- 1993-98 Principal Investigator, NIH R29 HL49848  
“Dysrhythmias of the Respiratory Oscillator”
- 1998-03 Principal Investigator, NIH R01 HL49848  
“Dysrhythmias of the Respiratory Oscillator”
- 1998-03 Investigator (PI: Robert Banzett, Ph.D.), NIH R01 HL57916  
“Vagal Afferents in Humans: Sensations Arising from the Lung”
- 1999-04 Principal Investigator, Established Investigator Award, Am. Heart Assoc.  
“Respiration in the Pathogenesis of Neurally Mediated Syncope”
- 2003-08 Principal Investigator, NIH R01 HL071884  
“Physiology of Swallowing and Airway Protection”
- 2004-08 Investigator (PI: William Schwartz, M.D.), NIH R01 NS046605  
“Neurobiology of Circadian Dysrhythmias”
- 2005-08 Investigator (PI: Robert Banzett, Ph.D.), NIH R01 HL46690  
“Cerebral Mechanisms Underlying Dyspnea”
- 2006-11 Mentor (PI: Romolo Gaspari, M.D.), NIH K08 NS048857  
“Central respiratory effects of organophosphate poisoning”
- 2007-08 Principal Investigator, Research Pilot Program, Mental Retardation  
Research Center, University of Massachusetts Medical School  
“Maturation of respiratory control and somatosensory function in  
premature infants”
- 2007-09 Principal Investigator, Pilot Project Program in Clinical and Translational  
Research, University of Massachusetts Medical School  
“Pathological disturbances in respiratory rhythm”
- 2010-14 Principal Investigator, Anticipatory Medical Devices Platform, Wyss  
Institute for Biologically Inspired Engineering, Harvard University  
Development of AMD for detection and prevention of apnea of  
prematurity”
- 2013-15 Investigator (PI: Elisabeth Bloch-Salisbury, Ph.D.), NIH R21 DA035355  
“Abstinence and drug withdrawal: Innovative translational  
methods for neonates”
- 2012-20 Investigator (PI: Ary Goldberger, M.D.), NIH R01 GM104987  
“Research Resource for Complex Physiologic Signals”
- 2015-18 Co-Principal Investigator (w/ Premananda Indic, Ph.D.), NSF IIS-1401711  
“SCH: EXP: Collaborative Research: Design of a wearable  
biosensor system with wireless network for the remote detection of  
life threatening events in neonates”

## ADMINISTRATIVE SERVICE

Local

- 1984-85 Member, Board of Directors, Holderness Medical Fellowship Program  
University of North Carolina School of Medicine
- 1985-86 Founder and Editor, UNC Journal of Medical Student Research  
University of North Carolina School of Medicine

- 1992-97 Member, Human Research Committee  
St. Elizabeth's Medical Center of Boston
- 1993-94 Member, Institutional Animal Care and Use Committee  
St. Elizabeth's Medical Center of Boston
- 1994-96 Chair, Institutional Animal Care and Use Committee  
St. Elizabeth's Medical Center of Boston
- 1997-98 Interim Director, Multiple Sclerosis Service  
University of Massachusetts Medical Center
- 1998-16 Member, Neurology Resident Recruitment Committee  
University of Massachusetts Medical School
- 2001-16 Member, Advisory Board, The Millenium MD/PhD Program  
University of Massachusetts Medical School
- 2001-09 Chair, Neurology Curriculum Committee  
University of Massachusetts Medical School
- 2004-06 Member, Board of Trustees, Seven Hills Foundation, Worcester
- 2004-16 Member, Neurology Department Promotions & Appointments Committee,  
University of Massachusetts Medical School
- 2006-16 Member, Board of Directors, Seven Hills Foundation
- 2008-10 Member, Cells & Tissue Course Committee (Learner-centered Integrated  
Curriculum (LInC) Redesign Program)  
University of Massachusetts Medical School
- 2008-10 Member, Medical Neurosciences Course Committee (LInC)  
University of Massachusetts Medical School
- 2009-11 Chair, Neurology Education Committee  
University of Massachusetts Medical School
- 2010-12 Member, Patients Course Committee (LInC Redesign Program)
- 2010-16 Member, Neurology Department Finance Committee
- 2011-16 Member, Neurology Education Committee
- 2012-16 Member, Chairs Council, University of Massachusetts Medical School
- 2015-16 Chair, Neurosurgery Chair Search Committee, University of  
Massachusetts Medical School

#### National

- 1998-06 Member, External Advisory Committee, Training Program in Sleep,  
Circadian and Respiratory Neurobiology (funded by NIH/NHLBI  
T32 HL07901), Harvard Medical School
- 2004 Member, NIH Special Emphasis Panel (ZRG1 DIG-C (02) M), to review  
member conflict applications from standing members of the CIGP,  
GCMB and CIGP Study Sections
- 2004- Member, Scientific Advisory Committee  
The Arthur T. Winfree Foundation for Interdisciplinary Studies
- 2005- Member, The Tobin Project, Cambridge, MA
- 2006 Member, National Institute on Deafness and Other Communication  
Disorders Special Emphasis Panel (ZDC1 SRB- O (14)), Patient-  
Oriented Developmental Grants
- 2009 Member, National Institute on Deafness and Other Communication  
Disorders Special Emphasis Panel (ZDC1 SRB-C (21))

- Member, National Heart, Lung, and Blood Institute (NHLBI) Strategic Planning Work Group, Workshop on Developmental Aspects of the Upper Airway (<http://pats.atsjournals.org/cgi/reprint/6/6/513>)
- 2010 Member, National Institute on Deafness and Other Communication Disorders Special Emphasis Panel (ZDC1 SRB-Q (63)), Translational PAR
- 2011 Member, Clinical Program Advisory Board, 33rd Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC '11)

ad hoc Journal Reviewer (past 5 years)

American Journal of Physiology  
 American Journal of Respiratory and Critical Care Medicine  
 Annals of Neurology  
 Biological Cybernetics  
 Circulation  
 Dysphagia  
 Journal of Applied Physiology  
 Journal of Biological Rhythms  
 Journal of Physiology  
 Journal of the Royal Society Interface  
 Journal of Speech and Language Pathology  
 Journal of Theoretical Biology  
 Neurocritical Care  
 Neurology  
 New England Journal of Medicine  
 Physical Review E  
 Proceedings of the National Academy of Sciences  
 Respiratory Physiology & Neurobiology  
 Proceedings of the IEEE

ad hoc Reviewer of Grant Applications (past 5 years)

Fellowship Program, Marine Biology Laboratory, Woods Hole

TEACHING EXPERIENCE

Clinical Neuroscience and Neurology

- 1990-91 Lecturer, Clinical Neuroscience Course, Harvard Medical School
- 1991-96 Case Conference Leader, Medical Neuroscience Course, Tufts University School of Medicine
- 1997-10 Lecturer, Mind, Brain, & Behavior II, "Autonomic Disorders" University of Massachusetts Medical School
- 1999-12 Conference Leader, Neurology Curriculum, "NeuroLogic" University of Massachusetts Medical School
- 2005-12 Lecturer, Mind, Brain, & Behavior I, "Clinical Correlation on Stroke"

## University of Massachusetts Medical School

- 2008-16 Lecturer, Neurological Emergencies Lecture Series, “Intracerebral Hemorrhage”; “Brain Death”; “Collapse Spells”  
University of Massachusetts Medical School
- 2012-16 Lecturer, Brain course track 2, Ischemic Stroke I & II

Medical Physiology

- 1984-85 Conference Leader, Medical Physiology Course  
University of North Carolina School of Medicine
- 1997-16 Lecturer, Medical Physiology Course, “Regulation of Respiration”  
University of Massachusetts Medical School  
Conference Leader, Medical Physiology Course, Respiration Section  
University of Massachusetts Medical School

Medical Pharmacology

- 2007-16 Lecturer, Medical Pharmacology, “Autonomic Pharmacology”  
University of Massachusetts Medical School

Graduate Neuroscience

- 1997-15 Lecturer, Introduction to Neuroscience, “The Autonomic Nervous System”  
University of Massachusetts Medical School

## TRAINEES

- 1995-97 Edwin Trayner, M.D., Postdoctoral Research Fellow  
Current position: Assistant Professor of Medicine, Tufts University
- 1997-00 Rebecca (Prince) Byrne, Masters Graduate Student in Biomed. Eng.  
Current position: System Engineer II, Cytoc Corporation,  
Marlborough, MA
- 2000-01 Vladislav Zilberman, Masters Graduate Student in Biomed. Eng.  
Current position: Research Engineer, AbioMed Inc, Artificial  
Implantable Heart Trial
- 2000-03 Samah Jafari, M.D., Postdoctoral Research Fellow  
Current position: NA
- 2001-03 Elisabeth Bloch-Salisbury, Ph.D., Postdoctoral Research Fellow  
Current position: Research Associate Professor of Pediatrics,  
University of Massachusetts Medical School
- 2003 Shakeeb Moosavi, Ph.D., Parker B. Francis Foundation Fellow  
Current position: Lecturer in Respiratory Physiology, National Heart  
and Lung Institute, Imperial College School of Medicine, London
- 2004-10 Romolo Gaspari, M.D., Ph.D. candidate  
Current Position: Associate Professor of Emergency Medicine  
University of Massachusetts Medical School
- 2004-05 Premananda Indic, Ph.D, Postdoctoral Research Fellow  
Current position: Research Assistant Professor of Neurology and

Biomed. Eng., University of Massachusetts Medical School

2012- Joshua Chang, M.D., Ph.D. candidate  
 2012- Ruby Kandah, Ph.D. candidate  
 2014- Ian Zuzarte, Ph.D. candidate

## INVITED LECTURES

### Grand Rounds/Clinical Conference Speaker

1990 The Montreal Neurological Institute, McGill University  
 “Cardiorespiratory Control in Epilepsy”

1992 Department of Neurology, Massachusetts General Hospital  
 “Dysrhythmias of the Respiratory Oscillator”

1994 Department of Neurology, University of Heidelberg  
 “Breathing Rhythmicity and Central Apnea: Theory,  
 Neurophysiology, and Clinical Therapeutics”

1996 Clinico-Pathological Conference, Massachusetts General Hospital  
 “A 50 Year-Old Woman with Multiple Sclerosis and a Slowly  
 Enlarging Intracranial Mass”

1998 Division of Sleep Medicine, Brigham and Women’s Hospital, Boston  
 “Functional Dissection of Rhythm Generation: Implications for  
 Infant Sleep Apnea”

Department of Neurology, The University of Texas at Houston  
 “Neurogenic Syncope”

2002 Department of Medicine, Baystate Medical Center, Springfield, MA  
 “Syncope”

2006 Department of Neurology, Tufts University School of Medicine  
 “Carotid Sinus Syndromes”

2012 Department of Pediatrics, National Taiwan University Hospital  
 “Noise, Feedback, and Switches: Harnessing Nonlinear Feedback  
 in the Brain”

2015 Dell Medical School, The University of Texas at Austin  
 “Oscillopathies: From Squid Axons to Infant Apneas”  
 Society of Clinical Research Associates (SOCRA)  
 “Preventing Infant Apnea and Hypoxia”

### Symposium Speaker

1996 Am. Heart Assoc. Symposium on Neurocardiogenic Syncope, Pewaukee, WI  
 “Neurological Causes of Syncope”

1994 Symposium on Dynamical Disease, Mt. Tremblant, Canada  
 “Dysrhythmias of the Respiratory Oscillator”  
 “Abnormal Initiation and Termination of Rhythms”

1997 FASEB Symposium on Airway Physiology, Los Angeles, CA  
 “Swallowing and Breathing Coordination in Humans”  
 Symposium Honoring Prof. Frederic L. Eldridge  
 University of North Carolina School of Medicine

- 1998 “Investigations on the Neural Control of Breathing”  
Symposium on Time and Timing in Biological Systems, Seon, Germany  
“Regulation of Oscillatory State by Low-Level Noise”
- 2000 VIII<sup>th</sup> Oxford Conf. on Frontiers in Modeling and Control of Breathing  
Falmouth, MA  
“Nonlinear Dynamics of the Respiratory Oscillator”
- 2002 Symposium for Established Investigators, Am. Heart. Assoc., Dallas, TX  
“Neurogenic hyperventilation preceding syncope: An analysis of 100 consecutive patients”
- 2005 18<sup>th</sup> Intl. Conference on Noise and Fluctuations, Salamanca, Spain  
“Starting and stopping a bistable pacemaker: stochastic stimulation identifies critical perturbations”
- 2006 Presidential Symposium, 10<sup>th</sup> Mtg. Soc. Res. Biol. Rhythms, Sandestin, FL  
“Falling Off the Limit Cycle”
- 2008 16<sup>th</sup> Annual Dysphagia Research Society Meeting, Isle of Palms, SC  
“Neural Underpinnings and Sensory Regulation of Airway Protection”
- 2009 BCN Symposium, In Time: Clocks in the Brain and Concepts of Time  
University of Groningen, The School of Behavioral and Cognitive Neurosciences (BCN), Groningen, Netherlands  
“A Mathematical View of Dysrhythmia”  
Symposium on Pulmonary Disease in Ataxia-Telangiectasia, The A-T Children’s Project and Johns Hopkins School of Medicine  
“Respiratory Phase Resetting During Swallowing: Implications for Patients with Neurologic Disruptions”
- 2010 NIH sponsored conference: Integrative Neural Systems Underlying Vital Aerodigestive Tract Functions, University of Wisconsin, Madison, WI  
“Sensory Regulation of Aerodigestive Function”  
Symposium on Modeling Biological feedback Mechanisms, Soc. Industr. Appl. Math. Conference on the Life Sciences, Pittsburgh, PA  
“Harnessing Noisy Inputs: From Bistable Squid Axons to the Treatment of Infant Apneas”
- 2012 3<sup>rd</sup> International Wyss Symposium on Noise & Rhythm, Boston, MA  
“The Bifurcating Brain: Harnessing Noise and Feedback for Neural Stability”  
2<sup>nd</sup> International Symposium on Dynamical Biomarkers for Translational Medicine, Taiwan  
“Noise, Feedback, and Switches: Harnessing Nonlinear Feedback in the Brain”  
XII<sup>th</sup> Oxford Conference on Breathing, Emotion and Evolution, Almelo, Netherlands  
“Breathing on the Edge: Harnessing Noise to Promote Stability”
- 2014 Experimental Biology 14, San Diego, CA



- Symposium on New Perspectives on Regulation, Interaction, and Noise Found in Physiological Systems  
 “Harnessing Noise to Promote Stability of Physiological Systems”  
 Computing in Cardiology, Boston, MA  
 Symposium on Data-Driven Learning, Discovery, and Innovation  
 “Detection and Prevention of Apnea in Preterm Infants”  
 138<sup>th</sup> Annual Meeting of the American Neurological Association,  
 Baltimore, MD  
 Mid/Senior Level Development Course  
 “Developing a Novel, Transparent, and Equitable Departmental  
 Compensation Plan”  
 Ohio State University, Mathematical Biosciences Institute, Columbus OH  
 Summer Graduate Course on Rhythms & Oscillations  
 “Respiratory Oscillations & Dysrhythmias”  
 2016 NSF Smart and Connected Health Workshop, Worcester Polytechnic  
 Institute, Worcester MA  
 “Edgy Oscillators in the Brain: Theory and Medical Applications”  
 7<sup>th</sup> International Wyss Symposium on Mechanotherapeutics: From Drugs  
 to Wearables, Boston, MA  
 “Preventing Infant Apnea Using the Laws of Mechanics”

#### Research Seminar Speaker

- 1992 Respiratory Biology Program, Harvard University  
 “Chronobiology of the Respiratory Rhythm Generator”  
 1994 Program in Neuroscience, University of Massachusetts Medical School  
 “Neurobiology of the Breathing Oscillator”  
 1995 Department of Biomedical Engineering, Boston University  
 “Fatal Attractors of the Respiratory Oscillator”  
 2001 Department of Physiology and Centre for Nonlinear Dynamics in  
 Physiology and Medicine, McGill University  
 “Vulnerabilities in the Control of Breathing”  
 “Fatal Attraction: Apnea as a Collapse of Limit Cycle Rhythmicity”  
 2000 Marine Biological Laboratory, Woods Hole  
 “Abrupt and Long-lasting Alterations in Neural Behavior Induced by  
 Transient Perturbations”  
 Center for Biological Timing, University of Virginia, Charlottesville, VA  
 “Fatal Attraction: Apnea as a Collapse of Limit Cycle Rhythmicity”  
 2001 Department of Biomed. Eng., Worcester Polytechnic Institute, Worcester  
 “Bistable Neural Oscillators: To Breathe or Not to Breathe”  
 2002 Rey Institute for Nonlinear Dynamics in Medicine, Beth Israel Deaconess  
 Medical Center, Boston  
 “Bistable Neural Oscillators: A Tale of Two States”  
 2003 Frontiers in Neuroscience Lecture Series, Univ. Calif., San Francisco  
 “Bistable Neural Oscillators: From Squid Axons to Infant Apnea”

- 2005 Department of Computer Sciences, University of Massachusetts, Amherst  
 “Bistable Neural Oscillators: A Tale of Two States”  
 National Institutes of Health, Clinical Neurosciences Program, Bethesda MD  
 “Afferent Signals Regulate Bolus Traffic and Prevent Airway  
 Accidents during Swallowing”
- 2006 Institute for Systems Research, University of Maryland, College Park, MD  
 “Harnessing Noisy Inputs: From Bistable Squid Axons to Treatment  
 of Infant Apneas”
- 2007 Medical College of South Carolina, Charleston, SC  
 “Neural Underpinnings of Swallowing and Airway Protection”  
 Department of Physiology, Dartmouth Medical School  
 “Coping with Vulnerable Biological Oscillators”  
 “Theory of Coupled Cellular Oscillators”  
 “Somatosensory Enhancement of Respiratory Control in Premature Infants”  
 NIH Workshop on Applying Principles from Complex Systems to Studying the  
 Efficacy of CAM Therapies, Washington, DC  
 “Models, Simulations and Experiments in Complex Systems:  
 Control of Breathing”
- 2008 Van der Veer Institute for Parkinson’s and Brain Research, University of  
 Canterbury, Christchurch, New Zealand  
 “Managing Vulnerable Neural Oscillators: Squid Evasion, Infant  
 Apnoea, and Safe Swallowing”  
 Division of Interdisciplinary Medicine and Biotechnology,  
 Beth Israel Deaconess Medical Center, Boston MA  
 “Taming Unstable Biological Oscillators: From Squid Axons to  
 Infant Apneas”
- 2012 Department of Physiology, Dartmouth Medical School  
 “Neural Oscillations on the Edge of Collapse: Harnessing Noise to  
 Promote Stability”  
 Department of Biology, Northeastern University, Boston MA  
 “Neural Oscillators on the Edge: Harnessing Noise to Promote Stability”
- 2013 Massachusetts Institute of Technology, Computational Physiology Program  
 “Infants Breathing on the Edge: Harnessing Nonlinear Dynamics to Prevent  
 Apnea of Prematurity”  
 University of Massachusetts, Dartmouth, College of Engineering  
 “Neural Oscillators on the Edge: Harnessing Noise to Promote Stability”  
 Northwestern University, Feinberg School of Medicine, Department of Neurology  
 “Oscillopathies: From Squid Axons to Infant Apneas”
- 2014 University of Louisville, Department of Pediatrics  
 “Clinical Challenges to Respiratory Control in Neonates”  
 “Oscillopathies: From Squid Axons to Infant Apneas”

PUBLICATIONS (Total of 67 publications: 40 Original Investigations, 12 Book Chapters, 2 Reports, 1 Guest Editorship, 8 Invited Commentaries/Editorial, 4 Patents)

### Original Investigations

- Paydarfar D, Eldridge FL, Kiley JP. Resetting of mammalian respiratory rhythm: existence of a phase singularity. *American Journal of Physiology* 250:R721-727, 1986.
- Paydarfar D, Eldridge FL. Phase resetting and dysrhythmic responses of the respiratory oscillator. *American Journal of Physiology* 252:R55-62, 1987.
- Eldridge FL, Kiley JP, Paydarfar D. Dynamics of medullary extracellular hydrogen ion and respiratory responses to square-wave changes in arterial carbon dioxide in cats. *Journal of Physiology (London)* 385:627-642, 1987.
- Eldridge FL, Paydarfar D. Desynchronized respiratory rhythms and their interactions in cats with split brainstems. *Journal of Physiology (London)* 410:513-532, 1989.
- Eldridge FL, Paydarfar D, Scott SC, Dowell RT. Role of endogenous adenosine in recurrent generalized seizures. *Experimental Neurology* 103:179-185, 1989.
- Eldridge FL, Paydarfar D, Wagner PG, Dowell RT. Phase resetting of respiratory rhythm: effect of changing respiratory "drive". *American Journal of Physiology* 257:R271-277, 1989.
- Harris AK, Pryer NK, Paydarfar D. Effects of electric fields on fibroblast contractility and cytoskeleton. *Journal of Experimental Zoology* 253:163-176, 1990.
- Paydarfar D, Eldridge FL, Scott SC, Dowell RT. Respiratory responses to focal and generalized seizures in cats. *American Journal of Physiology* 260:R934-R940, 1991.
- Paydarfar D, Eldridge FL, Wagner PG, Scott SC. Neural respiratory responses to cortically induced seizures in cats. *Respiration Physiology* 89:225-237, 1992.
- Shea SA, Andres LP, Paydarfar D, Banzett RB, Shannon DC. Effect of mental activity on breathing in congenital central hypoventilation syndrome. *Respiration Physiology* 94:251-263, 1993.
- Paydarfar D, Gilbert RJ, Poppel C, Nassab PF. Respiratory phase resetting and airflow changes induced by swallowing in humans. *Journal of Physiology (London)* 483:273-288, 1995.
- Paydarfar D, Buerkel DM. Dysrhythmias of the respiratory oscillator. *Chaos* 5:18-29, 1995.
- Paydarfar D, Buerkel DM. Sporadic apnea: paradoxical transformation to eupnea by perturbations that inhibit inspiration. *Medical Hypotheses* 49:19-26, 1997.
- Paydarfar D, Eldridge FL, Paydarfar JA. Phase resetting of the respiratory oscillator by carotid sinus nerve stimulation in cats. *Journal of Physiology (London)* 506:515-528, 1998.
- Banzett, RB, Guz A, Paydarfar D, Shea SA, Schachter SC, Lansing RW. Cardiorespiratory variables and sensation during stimulation of the left vagus in patients with epilepsy. *Epilepsy Research* 35:1-11, 1999.
- Binks AP, Paydarfar D, Schachter SC, Guz A, Banzett RB. High strength stimulation of the vagus nerve in awake humans: A lack of cardiorespiratory effects. *Respiration Physiology* 127:125-133, 2001.
- Paydarfar D, Krieger D, Dib N, Blair RH, Pastore JO, Stetz Jr JJ, Symes JF. In vivo magnetic resonance imaging and surgical histopathology of intracardiac masses:

- distinct features of subacute thrombi. *Cardiology* 95:40-47, 2001.
- Jafari S, Prince RA, Kim DY, Paydarfar D. Sensory regulation of swallowing and airway protection: a role for the internal superior laryngeal nerve in humans. *Journal of Physiology (London)* 550:287-304, 2003.
- Forger DB, Paydarfar D. Starting, stopping, and resetting biological oscillators: In search of optimum perturbations. *Journal of Theoretical Biology* 230:521-532, 2004.
- Paydarfar D, Forger DB, Clay JC. Noisy inputs and the induction of on-off switching behavior in a neuronal pacemaker. *Journal of Neurophysiology* 96:3338-3348, 2006.
- Gaspari RJ, Paydarfar D. Pathophysiology of respiratory failure following acute dichlorvos poisoning in a rodent model. *Neurotoxicology* 28:664-671, 2007.
- Indic P, Schwartz WJ, Paydarfar D. Design principles for phase-splitting behavior of coupled cellular oscillators: clues from hamsters with split circadian rhythms. *Journal of the Royal Society Interface* 5:873-883, 2008.
- Clay JR, Paydarfar D, Forger DB. A simple modification of the Hodgkin and Huxley equations explains type 3 excitability in squid giant axons. *Journal of the Royal Society Interface* 5:1421-1428, 2008.
- Indic P, Salisbury EB, Paydarfar D, Brown EN, Barbieri R. Interaction between heart rate variability and respiration in preterm infants. *Computers in Cardiology* 35:57-60, 2008.
- Gaspari RJ, Paydarfar D. Respiratory failure induced by organophosphate poisoning in rats: effects of vagotomy. *Neurotoxicology* 30:298-304, 2009.
- Bloch-Salisbury E, Indic P, Bednarek F, Paydarfar D. Stabilizing immature breathing patterns of preterm infants using stochastic mechanosensory stimulation. *Journal of Applied Physiology* 107:1017-1027, 2009.
- Bloch-Salisbury E, Hall MH, Sharma P, Boyd T, Bednarek F, Paydarfar D. Heritability of apnea of prematurity: a retrospective twin study. *Pediatrics* 226:e779-787, 2010.
- Gaspari RJ, Paydarfar D. Dichlorvos-induced central apnea: effects of selective brainstem exposure in the rat. *Neurotoxicology* 32:206-214, 2011.
- Forger DB, Paydarfar D, Clay JR. Optimal stimulus shapes for neuronal excitation. *PLoS Computational Biology* 7(7)e1002089, 2011.
- Indic P, Bloch-Salisbury E, Bednarek F, Brown EN, Paydarfar D, Barbieri R. Assessment of cardiopulmonary interactions in preterm infants by bivariate autoregressive modeling and surrogate data analysis. *Early Human Development* 87:477-487, 2011.
- Clay JR, Forger DB, Paydarfar D. Ionic mechanism underlying optimal stimuli for neuronal excitation: role of  $Na^+$  channel inactivation. *PLoS One* 7:e45983, 2012.
- Gaspari RJ, Paydarfar D. Respiratory recovery following organophosphate poisoning in a rat model is suppressed by isolated hypoxia at the point of apnea. *Toxicology* 302:242-247, 2013.
- Indic P, Paydarfar D, Barbieri D. Point process modeling of inter-breath interval: a new approach for the assessment of instability of breathing in neonates. *IEEE Transactions on Biomedical Engineering* 60:2858-2866, 2013.
- Williamson JR, Bliss DW, Paydarfar D. Forecasting respiratory collapse: theory and practice for averting life-threatening infant apneas. *Respiratory Physiology & Neurobiology* 189:223-231, 2013.

- Kheradmand A, Fisher M, Paydarfar D. Ischemic stroke in evolution: predictive value of perfusion computed tomography. *Journal of Stroke and Cerebrovascular Diseases* 23:836-843, 2014.
- Gaspari RJ, Paydarfar D. Pulmonary effects of intravenous atropine induce ventilation perfusion mismatch. *Canadian Journal of Physiology & Pharmacology* 92:399-404, 2014.
- Chang J, Paydarfar D. Switching neuronal state: optimal stimuli revealed using a stochastically-seeded gradient algorithm. *Journal of Computational Neuroscience* 37:569-582, 2014.
- Bloch-Salisbury E, Zuzarte I, Indic P, Bednarek F, Paydarfar D. Kangaroo care: cardio-respiratory relationships between the infant and caregiver. *Early Human Development* 90:843-850, 2014.
- Bod'ová K, Paydarfar D, Forger DB. Characterizing spiking in noisy type II neurons. *Journal of Theoretical Biology* 365:40-54, 2015.
- Smith VC, Kelty-Stephen D, Qureshi Ahmad M, Mao W, Cakert K, Osborne J, Paydarfar D. Stochastic resonance effects on apnea, bradycardia and oxygenation: A randomized controlled trial. *Pediatrics* 136:e1561-e1568, 2015

#### Book Chapters and Conference Proceedings

- Eldridge FL, Paydarfar D. Phase resetting of respiratory rhythm studied in a model of a limit-cycle oscillator: Influence of stochastic processes. In: *Respiratory Control*. Edited by Swanson GD, Grodins FS, Hughson RL. Plenum Publisher, pp 379-388, 1989.
- Nassab PF, Paydarfar D. Neurogenic orthostatic hypotension. In: *Medicine for the Practicing Physician*. 4th edition. Edited by Hurst JW. Appleton & Lange, pp 1794-1798, 1996.
- Paydarfar D, Buerkel DM. Dysrhythmias of the respiratory oscillator. In: *Bioengineering Approaches to Pulmonary Physiology and Medicine*. Edited by Khoo M. Plenum Publisher, pp 115-136, 1996.
- Paydarfar D, Buerkel DM. Collapse of homeostasis during sleep. In: *Sleep Science: Integrating Basic Research and Clinical Practice*. Edited by Schwartz WJ. Karger Press, pp 60-85, 1997.
- Drachman DA, Paydarfar D (section editors). Neurological problems in the intensive care unit. In: *Manual of Intensive Care*, 3rd edition. Edited by Irwin RS, Rippe JM. Lippincott Williams & Wilkins, pp 769-806, 2000.
- Moosavi SH, Paydarfar D, Shea SA. Suprapontine control of breathing. In: *Pharmacology and Pathophysiology of the Control of Breathing*. Edited by Ward DS, Dehan A, Teppema LJ. Taylor & Francis Group, LLC, pp 71-91, 2005.
- Paydarfar D, Forger DB, Clay JR. Starting and stopping a bistable pacemaker: stochastic stimulation identifies critical perturbations. In: *Noise and Fluctuations*. Edited by Gonzalez T, Mateos J, Pardo D. American Institute of Physics, pp 571-574, 2005.
- McFarland DH, Paydarfar D. Proceedings of the Integrative Neural Systems Underlying Vital Aerodigestive Tract Functions Conference, June 17-19: work group summary and call to action. *Head and Neck* 33 Suppl 1: S54-57, 2011.

- Indic P, Paydarfar D, Barbieri R. A point process model of respiratory dynamics in early human development. *IEEE Conf Proc Med Biol Soc* pp. 3804-3807, 2011. PMID: PMC3340562.
- Williamson JR, Bliss DW, Browne DW, Indic P, Bloch-Salisbury E, Paydarfar D. Using physiological signals to predict apnea in preterm infants. *IEEE Conf Proc Signals, Systems, Computers* pp. 1098-1102, 2011.
- Williamson JR, Bliss DW, Browne DW, Indic P, Bloch-Salisbury E, Paydarfar D. Individualized apnea prediction in preterm infants using cardio-pulmonary and movement signals. *IEEE Conf Body Sensor Networks* pp. 1-6, 2013.
- Zuzarte I, Temple C, Indic P, Paydarfar D. Transforming artifact to signal: A wavelet-based algorithm for quantifying neonatal movement. *IEEE Conf Proc EMBC* August 2014 pp 5461-5469.
- Gee AH, Barbieri R, Paydarfar D, Indic P. Uncovering statistical features of bradycardia severity in premature infants using a point process model. *IEEE Conf Proc EMBC* August 2015 pp 5855-5858.

#### Clinical Case Reports

- Gominak S, Cros D, Paydarfar D. Herpes simplex labialis and trigeminal neuropathy. *Neurology* 40:151-152, 1990.
- Cachia D, Smith T, Paydarfar D, Pomorska G. A case of early onset rapidly progressive dementia. *JAMA Neurology* 71:1445-1449, 2014.

#### Guest Editorship

- Mitchell G, Ramirez J-M, Baker-Herman T, Paydarfar D (editors). Special issue of *Respiratory Physiology & Neurobiology* "Clinical Challenges to Ventilatory Control", volume 189, issue 2, 2013.

#### Invited Commentaries, Editorials and Letters

- Paydarfar D, de la Monte SM. A 50 year old woman with multiple sclerosis and an intracranial mass (Case Records of the Massachusetts General Hospital) *New England Journal of Medicine* 336:1163-1171, 1997.
- Paydarfar D, Schwartz WJ. An algorithm for discovery. *Science* 292:13, 2001.
- Paydarfar D. Nonlinear dynamics of the respiratory oscillator. In: *Frontiers in Modeling and Control of Breathing. Integration at Molecular, Cellular, and Systems Levels*. Edited by Poon CS, Kazemi H. Kluwer Academic/Plenum Publisher, page 499, 2001.
- Paydarfar D, Schwartz WJ. On the quest for scientific enlightenment: Counsel from Cajal. *Journal of Biological Rhythms* 17:200-201, 2002.
- Marcus CL, Smith RJ, Mankarious LA, Arens R, Mitchell GS, Elluru RG, Forte V, Goudy S, Jabs EW, Kane AA, Katz E, Paydarfar D, Pereira K, Reeves RH, Richtsmeier JT, Ruiz RL, Thach BT, Tunkel DE, Whitsett JA, Wootton D, Blaisdell CJ. Developmental aspects of the upper airway: report from an NHLBI Workshop, March 5-6, 2009. *Proceedings of the American Thoracic Society* 15: 513-520, 2009.

- Adams L, Lansing RW, O'Donnell CR, Paydarfar D, Banzett RB. No evidence for reduction in dyspnea following lesions of the right insula. *American Journal of Respiratory and Critical Care Medicine* 179:623, 2009.
- Paydarfar D, Schwartz WJ. Dear Provider. *Journal of the American Medical Association* 305: 2046-2047, 2011.
- Paydarfar D. Protecting the airway during swallowing: What is the role for afferent surveillance? *Head and Neck* suppl 1:S26-S29, 2011.

### Patents

- Paydarfar D, Barbieri R, Indic P, Kandah RK, Niemi J, Osborne JP, Sallum HM, Wozniak A. Systems and methods for inhibiting apneic events. Application # 14/342,050, published on 10/09/2014.
- Paydarfar D, Niemi J, Williamson J, Indic P, Osborne J, Knodel C. Systems and methods for inhibiting apneic and hypoxic events. Application # 14/889486, published on 4/28/2016.
- Bloch-Salisbury E, Paydarfar D. Methods and systems for reducing irritability in infants. Application filed on March 21, 2015.
- Paydarfar D, Chang J. The application of the stochastic extrema distortion method to optimize control signals. Application filed on March 27, 2016.