CURRICULUM VITAE

David Paydarfar

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EDUCATION

1978-1980	BS (Physics), 1980	Duke University, Durham, NC
1981-1985	MD, 1985	The University of North Carolina at Chapel Hill, NC

LICENSURE

1989-Present	Medical License, Commonwealth of Massachusetts, #72937
2017-2019	Medical License, Texas Medical Board, Temporary Faculty License #45769, 46329
2019-Present	Medical License, Texas Medical Board, #S1676

BOARD CERTIFICATIONS

1993	Diplomate, American Board of Psychiatry and Neurology, #38674

APPOINTMENTS

1981	Staff Scientist, Solar Physics Division, Lawrence Berkeley Laboratories, University of California, Berkeley, CA
1985-1987	Postdoctoral Fellow, Department of Physiology University of North Carolina School of Medicine
1987-1988	Intern in Medicine University of North Carolina Hospitals
1988-1991	Resident in Neurology Harvard Medical School, Massachusetts General Hospital, Boston, MA
1991-1997	Assistant Professor of Neurology Tufts Univ. School of Medicine, Boston; Staff Neurologist & Chief of Neurology Research, St. Elizabeth's Medical Center of Boston

1997-2004	Associate Professor of Neurology & Physiology University of Massachusetts Medical School, Worcester, MA
2004-2016	Professor of Neurology & Physiology University of Massachusetts Medical School
2010-2014	Vice Chair for Clinical Operations & Research Department of Neurology University of Massachusetts Medical School
2014-2015	Acting Chair of Neurology University of Massachusetts Medical School
2010-2016	Associate Faculty Wyss Institute for Biologically Inspired Engineering Harvard University, Boston MA
2015-2016	Executive Vice Chair of Neurology University of Massachusetts Medical School
2016-present	Professor & Chair of Neurology Dell Medical School The University of Texas at Austin
2016-present	Affiliated Faculty and Member of CSEM Graduate Studies Committee Oden Institute for Computational Engineering and Sciences The University of Texas at Austin
2018-present	Director, Mulva Clinic for the Neurosciences Dell Medical School The University of Texas at Austin

HONORS AND AWARDS

1980	Phi Beta Kappa, Duke University
1980	summa cum laude, Duke University
1984-1985	Howard Holderness Medical Fellowship, University of North Carolina School of Medicine

1985-1987	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
2007-2022	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

1993-1998	Principal Investigator, NIH R29 HL49848, "Dysrhythmias of the Respiratory Oscillator"
1998-2003	Principal Investigator, NIH R01 HL49848, "Dysrhythmias of the Respiratory Oscillator"
1998-2003	Investigator (PI: Robert Banzett, Ph.D.), NIH R01 HL57916, "Vagal Afferents in Humans: Sensations Arising from the Lung"
1999-2004	Principal Investigator, Established Investigator Award, Am. Heart Assoc. "Respiration in the Pathogenesis of Neurally Mediated Syncope"
2003-2008	Principal Investigator, NIH R01 HL071884 "Physiology of Swallowing and Airway Protection"
2004-2008	Investigator (PI: William Schwartz, M.D.), NIH R01 NS046605 "Neurobiology of Circadian Dysrhythmias"
2005-2008	Investigator (PI: Robert Banzett, Ph.D.), NIH R01 HL46690 "Cerebral Mechanisms Underlying Dyspnea"
2006-2011	Mentor (PI: Romolo Gaspari, M.D.), NIH K08 NS048857 "Central Respiratory Effects of Organophosphate Poisoning"
2007-2008	Principal Investigator, Research Pilot Program, Mental Retardation Research Center, University of Massachusetts Medical School "Maturation of Respiratory Control and Somatosensory Function in Premature Infants"
2007-2009	Principal Investigator, Pilot Project Program in Clinical and Translational Research, University of Massachusetts Medical School "Pathological Disturbances in Respiratory Rhythm"
2010-2014	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"

2013-2015	Investigator (PI: Elisabeth Bloch-Salisbury, Ph.D.), NIH R21 DA035355 "Abstinence and Drug Withdrawal: Innovative Translational Methods for Neonates"
2012-2020	Investigator (PI: Ary Goldberger, M.D.), NIH R01 GM104987 "Research Resource for Complex Physiologic Signals"
2015-2018	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"
2016-2021	Investigator (PI: Ambalavaman), NIH U01 HL133536 "PRE-VENT Apnea"
2016-2021	Principal Investigator, Texas Alzheimer's Research and Care Consortium "Cohort Studies and Biomarkers of Dementia"
2017-present	Principal Investigator, Clayton Foundation for Research, UTA17-000216 "Electroceutical Science and Medicine"
2021-present	Principal Investigator, NSF SCH #2124405 "Movement as a Vital Sign in Preterm Infants"
2021-present	Principal Investigator, Coleman Fung Foundation "Human Cortical Network Plasticity Induced by Multimodal Gaming Technologies"

ADMINISTRATIVE SERVICE

Local

1984-1985	Member, Board of Directors, Holderness Medical Fellowship Program University of North Carolina School of Medicine
1985-1986	Founder and Editor, UNC Journal of Medical Student Research University of North Carolina School of Medicine
1992-1997	Member, Human Research Committee St. Elizabeth's Medical Center of Boston
1993-1994	Member, Institutional Animal Care and Use Committee St. Elizabeth's Medical Center of Boston
1994-1996	Chair, Institutional Animal Care and Use Committee St. Elizabeth's Medical Center of Boston

1997-1998	Interim Director, Multiple Sclerosis Service University of Massachusetts Medical Center
1997-2016	Member, Graduate School for Biomedical Sciences University of Massachusetts Medical School
1998-2016	Member, Neurology Resident Recruitment Committee University of Massachusetts Medical School
2001-2016	Member, Advisory Board, The Millennium MD/PhD Program University of Massachusetts Medical School
2001-2009	Chair, Neurology Curriculum Committee University of Massachusetts Medical School
2004-2006	Member, Board of Trustees, Seven Hills Foundation, Worcester, MA
2004-2016	Member, Neurology Department Promotions & Appointments Committee, University of Massachusetts Medical School
2006-present	Member, Board of Directors, Seven Hills Foundation & Affiliates, Worcester, MA
2008-2010	Member, Cells & Tissue Course Committee (Learner-centered Integrated Curriculum (LInC) Redesign Program) University of Massachusetts Medical School
2008-2010	Member, Medical Neurosciences Course Committee (LInC) University of Massachusetts Medical School
2009-2011	Chair, Neurology Education Committee University of Massachusetts Medical School
2010-2012	Member, Patients Course Committee (LInC Redesign Program) University of Massachusetts Medical School
2010-2016	Member, Neurology Department Finance Committee University of Massachusetts Medical School
2010-2016	Member, MD/PhD Program Steering Committee University of Massachusetts Medical School

2011-2016	Member, Neurology Education Committee University of Massachusetts Medical School
2012-2016	Member, Chairs Council, University of Massachusetts Medical School University of Massachusetts Medical School
2015-2016	Chair, Neurosurgery Chair Search Committee University of Massachusetts Medical School
2016-2021	Chair, MSRDP Committee on Faculty on Performance and Compensation Dell Medical School, The University of Texas at Austin
2016-present	Member, MSRDP Compliance, Ethics & Professional Affairs Subcommittee Dell Medical School, The University of Texas at Austin
2016-present	Member, Health Enterprise Committee Dell Medical School, The University of Texas at Austin
2016-present	Member, Texas Alzheimer's Research and Care Consortium Steering Committee (TARCC)
2016-present	Member, Department of Neurology Adult Neurology Residency Recruitment Committee, Dell Medical School, The University of Texas at Austin
2017-2018	Member, Chair of Neurosurgery Search Committee Dell Medical School, The University of Texas at Austin
2017- present	Co-Founder and Scientific Advisor, Prapela, Inc
2017-present	Member, Neurosciences NC3 Committee, Dell Seton Medical Center at The University of Texas
2019	Chair, Chief of Pediatric Neurosurgery Search Committee Dell Medical School, The University of Texas at Austin
2019-present	Member, Pediatric Neurosciences Steering Committee Dell Children's Medical Center
2019-present	Member, Medical Executive Committee, Dell Seton Medical Center at The University of Texas
2019-present	Chair, Oskar Fisher Lectureship Selection Committee, The University of Texas at Austin

2019-present	Member, Program Steering Committee, Computational Medicine Graduate Portfolio, Oden Institute for Computational Engineering and Sciences, The University of Texas at Austin
2019-present	Member, Policy Board, Oden Institute for Computational Engineering and Sciences, The University of Texas at Austin
2020-present	Member, Neurosciences Peer Review Committee, Dell Seton Medical Center at The University of Texas at Austin
2021-present	Chair, MSRDP Outside Activities Subcommittee Dell Medical School, The University of Texas at Austin
2021-present	Member, Neurological Institute Advisory Council, Ascension Seton and Dell Medical School, The University of Texas at Austin
2021-present	Member, Strategy & Implementation Committee, Dell Medical School, The University of Texas at Austin
2022-Present	Chair, Clinical Chairs Council Dell Medical School, The University of Texas at Austin

National

1998-2006	Member, External Advisory Committee, Training Program in Sleep, Circadian and Respiratory Neurobiology (funded by NIH/NHLBI T32 HL07901), Harvard Medical School
2000-2010	Scientific Reviewer, Research Fellowship Program, Marine Biology Laboratory, Woods Hole
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-present	Member, Scientific Advisory Committee The Arthur T. Winfree Foundation for Interdisciplinary Studies
2005-2016	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

International

2011	Member, Clinical Program Advisory Board, 33rd Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC '11)
2018	Scientific Reviewer, Programe: Mathématique, informatique, automatique, traitement du signal pour répondre aux défis de la biologie et de la santé, Agence Nationale de la Recherche, France
2021	Scientific Reviewer, Dutch Research Council (NWO), Applied and Engineering Sciences (AES) "Connecting Innovators" Open Technology Programme 2021

<u>*ad hoc* Journal Reviewer (past 10 years)</u>
American Journal of Physiology
American Journal of Respiratory and Critical Care Medicine
Annals of Neurology
Biological Cybernetics
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
Neurology
New England Journal of Medicine
Physical Review E
Proceedings of the National Academy of Sciences
Respiratory Physiology & Neurobiology
Proceedings of the IEEE

PROFESSIONAL MEMBERSHIPS

1993-present	Member, Society for Neuroscience
1993-present	Member, American Academy of Neurology (AAN)
2014-present	Member American Heart Association
2020-present	Member, Association for Professors of Neurology (AUPN)
2016-present	Member, Texas Neurological Society

TEACHING EXPERIENCE

Clinical Neuroscience and Neurology

1990-1991	Lecturer, Clinical Neuroscience Course, Harvard Medical School
1991-1996	Case Conference Leader, Medical Neuroscience Course, Tufts University School of Medicine
1997-2010	Lecturer, Mind, Brain, & Behavior II, "Autonomic Disorders" University of Massachusetts Medical School
1999-2012	Conference Leader, Neurology Curriculum, "NeuroLogic" University of Massachusetts Medical School
2005-2012	Lecturer, Mind, Brain, & Behavior I, "Clinical Correlation on Stroke" University of Massachusetts Medical School
2008-2016	Lecturer, Neurological Emergencies Lecture Series, "Intracerebral Hemorrhage"; "Brain Death"; "Collapse Spells" University of Massachusetts Medical School
2012-2016	Lecturer, Brain course track 2, Ischemic Stroke I & II University of Massachusetts Medical School
2016-present	Lecturer, Emergency Neurology Lecture Series Dell Medical School, The University of Texas at Austin
2022-present	Lecturer, Neuroscience for Psychiatrists (PGY-3) Neuroscience II Dell Medical School, The University of Texas at Austin

Medical Physiology

1984-1985	Conference Leader, Medical Physiology Course University of North Carolina School of Medicine
1997-1916	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

2007-2016	Lecturer, Medical Pharmacology, "Autonomic Pharmacology" University of Massachusetts Medical School

Graduate Neuroscience

1997-2015	Lecturer, Introduction to Neuroscience, "The Autonomic Nervous System" University of Massachusetts Medical School

Mathematical Physiology and Neural Engineering

2021-present	Course Co-Director and Instructor, Mathematical Physiology (CSE397), The University of Texas at Austin
2021-present	Lecturer, Neural Engineering (EE379K), The University of Texas at Austin

Trainees

1995-1997	Edwin Trayner, M.D., Postdoctoral Research Fellow Current position: Assistant Professor of Medicine, Tufts University
1997-2000	Rebecca (Prince) Byrne, Masters Graduate Student in Biomed. Eng. Current position: System Engineer II, Cytyc Corporation, Marlborough, MA
2000-2001	Vladislav Zilberman, Masters Graduate Student in Biomed. Eng. Current position: Research Engineer, AbioMed Inc, Artificial Implantable Heart Trial
2000-2003	Samah Jafari, M.D., Postodoctoral Research Fellow Current position: Medical Sciences Director, Medscape Medical Affairs at WebMD

2001-2003	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: Reader in Clinical Physiology, Department of Biological and Medical Sciences, Oxford Brookes University, Oxford, UK
2004-2010	Romolo Gaspari, M.D., Ph.D. candidate (primary mentor) Current Position: Professor and Executive Vice Chair of Emergency Medicine, University of Massachusetts Medical School
2004-2005	Premananda Indic, Ph.D. Postdoctoral Research Fellow Current position: Associate Professor of Electrical and Computer Engineering, The University of Texas at Tyler
2012-2016	Joshua Chang, M.D., Ph.D. candidate (primary mentor) Current position: Assistant Professor of Neurology and Population Health, The University of Texas at Austin
2016-2020	Alan Gee, MS, candidate (co-mentor with Joydeep Ghosh) Current position: Applied Machine Learning Scientist, Amira Learning
2017-2019	Laura Santoso, M.D. candidate, Clayton Research Fellow (primary mentor) Current position: Internal Medicine Resident, University of California, Los Angeles
2019-2021	Nitya Rao, M.D. candidate (research thesis) Current Position: Ophthalmology Resident, University of Pennsylvania Medical School
2020-present	Allison Torsey, Ph.D. candidate (primary mentor) Graduate program in Computational Science, Engineering and Mathematics, The University of Texas at Austin
2022-present	Sophia Epstein, Ph.D. candidate (primary mentor) Graduate Program in Computational Science, Engineering and Mathematics, The University of Texas at Austin
2022-present	Cara Charpentier, Track II, Undergraduate Studies (primary mentor) Department of Biomedical Engineering, The University of Texas at Austin

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, MA
"Functional Dissection of Rhythm Generation: Implications for Infant Sleep Apnea"

Department of Neurology, The University of Texas at Houston, Houston, TX
"Neurogenic Syncope"

2002 Department of Medicine, Baystate Medical Center, Springfield, MA
"Syncope"

2006 Department of Neurology, Tufts University School of Medicine, Boston, MA
"Carotid Sinus Syndromes"

2012 Department of Pediatrics, National Taiwan University Hospital, Taipei City, Taiwan
"Noise, Feedback, and Switches: Harnessing Nonlinear Feedback in the Brain"

2015 Dell Medical School, The University of Texas at Austin, Austin, TX
"Oscillopathies: From Squid Axons to Infant Apneas"

Society of Clinical Research Associates (SOCRA)
"Preventing Infant Apnea and Hypoxia"

2019 Texas Neurological Society, Austin, TX
"Electroceutical Therapies of the Nervous System: Optimization and Opportunities"

Spectrum Health Neuroscience Grand Rounds, Grand Rapids, MI
"Electroceutical Therapies of the Nervous System: Optimization and Opportunities"

Neurosurgery Grand Rounds, Dell Medical School, The University of Texas at Austin, Austin, TX, "Electroceutical Therapies of the Nervous System: Optimization and Opportunities"

2021 Neurology Grand Rounds, UT Southwestern Medical Center, Virtual Conference
"Electroceutical Therapies of the Nervous System: What Have We Learned in 4500 Years?"

Neurology Grand Rounds, UMass Memorial Health Care, Department of Neurology,
"Carotid Sinus Syndromes: Physiological Understanding of an Under-Recognized Disorder"

Neurology Grand Rounds, Dell Medical School, The University of Texas at Austin, "The State of the Department", Virtual Event, 9/7/2021

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, Chapel Hill, NC
"Investigations on the Neural Control of Breathing"

1998 Symposium on Time and Timing in Biological Systems, Seeon, Germany
"Regulation of Oscillatory State by Low-Level Noise"

2000 VIIIth 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 18th Intl. Conference on Noise and Fluctuations, Salamanca, Spain
"Starting and stopping a bistable pacemaker: stochastic stimulation identifies critical perturbations"

2006	Presidential Symposium, 10th Mtg. Soc. Res. Biol. Rhythms, Sandeston,FL "Falling Off the Limit Cycle"
2008	16th 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, Baltimore, MD "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	3rd International Wyss Symposium on Noise & Rhythm, Boston, MA "The Bifurcating Brain: Harnessing Noise and Feedback for Neural Stability"
	2nd International Symposium on Dynamical Biomarkers for Translational Medicine, Taiwan "Noise, Feedback, and Switches: Harnessing Nonlinear Feedback in the Brain"
	XIIth 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"

138th 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 Polytech Institute, Worcester MA
"Edgy Oscillators in the Brain: Theory and Medical Applications"

7th International Wyss Symposium on Mechanotherapeutics: From Drugs to Wearables, Boston, MA
"Preventing Infant Apnea Using the Laws of Mechanics"

2017 25th Anniversary of the Dysphagia Research Society, Portland, OR
"Neurophysiological Interactions Between Eating and Breathing"
"Understanding Impairment in Motor Output"

5th Annual Haunstein Neuroscience Symposium, Grand Rapids, MI
"A New Paradigm for Academic Clinical Neurosciences in Austin"

NSF Smart and Connected Health Workshop, The University of Texas at Tyler, Tyler, TX
"Edgy Oscillators in the Brain: Theory and Medical Applications"

Austin Speech Lab, Austin, TX
"One Word at a Time"

Ohio State University, Mathematical Biosciences Institute, Columbus OH
Workshop on Control and Modulation of Neuronal and Motor Systems
"Oscillopathies: From Squid Axons to Infant Apneas"

Pop-Up Institute Symposium on Big Data in Biology, The University of Texas at Austin, Austin, TX
"Tailoring a Brain Therapy: How can we break the curse of dimensionality?"

2018 The Charleston Swallowing Conference at Northwestern University, Chicago, IL
"Neural systems impacting swallowing function, impairment, and rehabilitation"
"Hypotheses to explain the benefits of swallowing-breathing training"

2019 50th Anniversary Program on Dynamical Disease – From Blackboard to Bedside, Centre de Recherches Mathematiques, Montreal Canada
"Oscillopathies: From Squid Axons to Infant Apneas"

2020 Invited Panelist: South Texas Alzheimer's Conference, Presented by the Glenn Biggs Institute for Alzheimer's and Neurodegenerative Diseases in partnership with the Alzheimer's Association, UT Health San Antonio, San Antonio, TX
"Collaborative and Cross Disciplinary Research Career Opportunities"

12th Annual Chair Summit, Las Vegas NV
"Electroceuticals in Neurologic and Psychiatric Disorders"
"Technology in Medicine: New Frontiers Leading to Better Care"

2021 Invitation to Moderate: Texas Science Festival Session: Addressing Alzheimer's, Virtual

Women in Neuroscience Summer Speakers, Women in Neuroscience, Austin, Texas
"What's the Secret to Becoming a Great Neurologist", Virtual Event, 7/23/2021

Research Seminar Speaker

1992 Respiratory Biology Program, Harvard University, Cambridge, MA
"Chronobiology of the Respiratory Rhythm Generator"

1994 Program in Neuroscience, University of Massachusetts Medical School, Worcester, MA
"Neurobiology of the Breathing Oscillator"

1995 Department of Biomedical Engineering, Boston University, Boston, MA
"Fatal Attractors of the Respiratory Oscillator"

2001 Department of Physiology and Centre for Nonlinear Dynamics in Physiology and Medicine, McGill University, Montreal, Quebec, Canada
"Vulnerabilities in the Control of Breathing"
"Fatal Attraction: Apnea as a Collapse of Limit Cycle Rhythmicity"

2000 Marine Biological Laboratory, Woods Hole, MA
"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, MA
"Bistable Neural Oscillators: To Breathe or Not to Breathe"

2002 Rey Institute for Nonlinear Dynamics in Medicine, Beth Israel Deaconess Medical Center, Boston, MA
"Bistable Neural Oscillators: A Tale of Two States"

2003 Frontiers in Neuroscience Lecture Series, University of California, San Francisco, CA
"Bistable Neural Oscillators: From Squid Axons to Infant Apnea"

2005 Department of Computer Sciences, University of Massachusetts, Amherst, MA
"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, Hanover, NH
"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, Hanover, NH
"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, Cambridge, MA
"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, Chicago, IL
"Oscillopathies: From Squid Axons to Infant Apneas"

2014 University of Louisville, Department of Pediatrics, Louisville, KY
"Clinical Challenges to Respiratory Control in Neonates"
"Oscillopathies: From Squid Axons to Infant Apneas"

2017 Biomedical Research Seminar, The University of Texas at Tyler, Tyler, TX
"Electroceutical Engineering"

Division of Pediatric Cardiology, The University of Texas Southwestern, Dallas, TX
"Preventing Adverse Cardio-Respiratory Events in Preterm Infants Using Stochastic Resonance Technology"

2018 Oden Institute for Computational Engineering and Sciences, The University of Texas at Austin, Austin, TX
"Oscillopathies: From Squid Axons to Infant Apneas"

2019 Oden Institute for Computational Engineering and Sciences, The University of Texas
2019 Workshop on Neuromorphic Computing, The University of Texas at Austin, Austin, TX
"The Intrinsic Electrophysiological and Computational Properties of Neurons"

Invited Panelist: Research & Care of Neurodegenerative Diseases Sun City Town Hall, Georgetown, TX

2020 Invited Panelist: UT Brainstorms A Conversation on the Brain, Department of Neuroscience, College of Natural Sciences, The University of Texas at Austin, Austin, TX, "The COVID Brain: A Conversation About How COVID May Impact Our Brain Health", YouTube Virtual Event

2021 Invited Inaugural Guest Speaker: Health Transformation Research Institute's (HTRI) Senior Scientist Seminar Series (S^4), Dell Medical School, The University of Texas at Austin, Austin, TX, "Solving the Unexpected Death of K.P.: A Clinician-Scientist's 40-Year Quest", Virtual Event, 9/9/2021

Invitation to Moderate: Your Health Starts Here. "Keep Your Neurons Firing", Development, Dell Medical School, The University of Texas at Austin, Virtual Event, 12/2/2021

2022 Invited Moderator: 2022 Texas Neurological Society Winter Conference, Hyatt Regency Austin, Austin, TX, 2/5/2022

Invited Panelist: UT Hour: Neurodegeneration, Texas Development Foundation Relations, The University of Texas at Austin, Virtual, 1/24/2022

Invited Guest Speaker: NERVE-UT Student Organization, The University of Texas at Austin, Title: "Whither Neurology?", 2/24/2022

Invited Guest Speaker: What Starts Here Campaign, Dell Medical School Campaign Launch Event, The University of Texas at Austin, 3/4/2022

Invited Guest Speaker: Association of Health Care Journalists Field Trip, Dell Medical School, The University of Texas at Austin, 4/28/2022

Invited Guest Speaker: NSF-NIH SCH Smart Health Workshop 2022, Theme: Smart Health Through the Life Course, Virtual, 10/6-7/2022

Invited Guest Speaker: UT American Medical Student Association (AMSA), The University of Texas at Austin, Jackson Geological Sciences Building, 11/2/2022

Invited Guest Speaker: 5th Annual Meeting, Society for Industrial and Applied Mathematics (SIAM), SIAM TX-LA Section, Department of Mathematics, University of Houston, Houston, TX, "Oscillopathies of Brain and Heart: Lessons from the Computational Medicine Clinic" 11/4-6/2022

Upcoming 2023:

Invited Guest Speaker: TARCC 1/25-26/2023, Austin, TX

Invited Guest Speaker: Digital Twin for Precision Health Workshop, Snowmass, CO, 2/24-25/2023

Invited Guest Speaker: Action Club Seminar, Northwestern University, Boston, MA 3/2/2023

Invited Guest Speaker: UT OLLI Women in Neuroscience Seminar, Austin, TX 3/30/2023

Invited Guest Speaker: The University of Texas at Austin, Department of Neuroscience 2022-2023 Seminar Series, Austin, TX, Title: TBD, 4/23/2023

PUBLICATIONS

Original Investigations

1. Paydarfar, D., Eldridge, F.L., Kiley, J.P., "Resetting of mammalian respiratory rhythm: existence of a phase singularity", American Journal of Physiology 250:R721-727, 1986.

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25. Gaspari, R.J., Paydarfar, D., "Respiratory failure induced by organophosphate poisoning in rats: effects of vagotomy" Neurotoxicology 30:298-304, 2009.

26. 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.

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38. 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.

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55. Paydarfar, D.A., Paydarfar, D., Mucha, P.J., Chang, J., "Optimizing emergency stroke transport strategies using physiological models", Stroke 52:4010-4020, 2021.

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Book Chapters and Conference Proceedings

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17. Gee, A.H., Chang, J., Ghosh, J., Paydarfar, D., "Bayesian online changepoint detection of physiological transitions". IEEE Conf Proc EMBS pp 45-48, 2018.

18. Santoso, L.F., Baqai, F., Gwozdz, M., Lange, J., Rosenberger, M.G., Sulzer, J., Paydarfar, D., "Applying machine learning algorithms for automatic detection of swallowing from sound". IEEE Conf Proc EMBS pp 2584-2588, 2019.

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Guest Editorship

1. 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

1. 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.

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Other Active Research Activities and Clinical and Quality Improvement Projects:

1. Bellenguez, C., Küçükali, F., Jansen, I.E. *et al.* New insights into the genetic etiology of Alzheimer's disease and related dementias. *Nat Genet* 54:412–436 (2022). https://doi.org/10.1038/s41588-022-01024-z

   Comment: I was PI of the UT Austin TARCC grant that provided clinical data, blood samples, and other clinical support to this international effort for defining novel genetic markers. My name was listed in the roster of investigators providing this support.

Patents

1. Paydarfar, D., Niemi, J., Williamson J, Indic, P., Osborne, J., Knodel, C. Systems and methods for inhibiting apneic and hypoxic events. Patent Application No. US 2016/0113838 A1, published April 28, 2016.

2. Paydarfar, D., Niemi, J., Stochastic stimulation to improve infant respiration. U.S. Prov. Application. No. 62546,401, filed August 17, 2017

3. Bloch-Salisbury, E., Paydarfar, D., Methods and systems for reducing irritability in infants. Patent No. US 10,251,552 B2, issued April 9, 2019.

4. Paydarfar, D., Barbieri, R., Indic, P., Kandah, R.K., Niemi, J., Osborne J.P., Sallum, H.M, Wozniak, A. Systems and methods for inhibiting apneic events. Patent No. US 10,258,531 B2, issued April 16, 2019.
5. Paydarfar, D., Chang J., Application of the stochastic extrema distortion method to optimize control signals. Patent No. US 10,506,893 B2, issued December 17, 2019.

6. Paydarfar, D., Chang J., Hackett S., Sridhar V., Apparatus and methods for phase-agnostic stimuli. Filed November 17, 2020., Patent No. US 506598450, Recordation Date: April 7, 2021

7. Chang, J., Paydarfar, D., Paydarfar, D.A., Mucha, P., System and Method for Calculating Transport Routes, US Application No. 63/182,140, Filed April 30, 2021

8. Paydarfar, D., Chang, J., Hackett, S.A., Sridhar, V.K., Apparatus and methods for phase-agnostic stimuli, US Patent Application No 17/506,019, Filed 2022