

**University of Texas at Austin**  
**CURRICULUM VITAE**

**Name:** Robert O. Messing, MD

**Position:** Chair and Professor of Neuroscience  
Professor of Neurology  
Director, Waggoner Center for Alcohol and Addiction Research

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**EDUCATION**

1970 - 1974	Stanford University	B.A.	History
1975 - 1979	Stanford University	M.D.	Medicine
1979 - 1980	University of Virginia	Intern	Internal Medicine
1980 - 1981	University of Virginia	Resident	Internal Medicine
1981 - 1983	Univ. CA, San Francisco	Resident	Neurology
1983 - 1984	Univ. CA, San Francisco	Chief Resident	Neurology
1984 - 1986	Univ. CA, San Francisco	Research Fellow	Neuroscience

**LICENSES, CERTIFICATION**

1980	National Board of Medical Examiners
1981-now	Medical license, California G046801
1986	American Board of Psychiatry and Neurology (Neurology)
2013-now	Medical license, Texas P5685

**PRINCIPAL POSITIONS HELD**

1984 - 1986	University of California, San Francisco	Clinical Instructor	Neurology
1986 - 1994	University of California, San Francisco	Assistant Professor	Neurology

1986 - 2013	Ernest Gallo Clinic and Research Center, UCSF	Principal Investigator	Neurology
1994 - 2000	University of California, San Francisco	Associate Professor	Neurology
1994 - 1995	San Francisco General Hospital	Interim Chief of Service	Neurology
1998 - 1999	Ernest Gallo Clinic and Research Center, UCSF	Assistant Director	Neurology
2000 - 2008	Ernest Gallo Clinic and Research Center, UCSF	Associate Director	Neurology
2000 - 2013	University of California, San Francisco	Professor	Neurology
2009 - 2011	Ernest Gallo Clinic and Research Center, UCSF	Senior Associate Director	Neurology
2012 - 2013	Ernest Gallo Clinic and Research Center, UCSF	Vice President, Internal Affairs	Neurology
2013 - 2015	University of Texas at Austin	Vice Provost for Biomedical Sciences	Office of the Executive Vice President and Provost
2015 - 2017	University of Texas at Austin	Assoc. Dean for Research Development	Dell Medical School
2013 - 2017	University of Texas at Austin	Professor	Div. Pharmacol. & Toxicol., College of Pharmacy
2017-now	University of Texas at Austin	Professor (0% appointment)	Div. Pharmacol. & Toxicol., College of Pharmacy
2017 - now	University of Texas at Austin	Professor	Dept. of Neurology, Dell Medical School
2017 - now	University of Texas at Austin	Professor	Dept. of Neuroscience, College of Natural Sciences
2017 – now	University of Texas at Austin	Director	Waggoner Center for Alcohol and Addiction Research
2020- now	University of Texas at Austin	Chair	Dept. of Neuroscience, College of Natural Sciences

#### **OTHER POSITIONS HELD CONCURRENTLY**

1995 - 2000	University of California, San Francisco	Faculty Member	Program in Biomedical Sciences
1997 - 2013	University of California, San Francisco	Faculty Member	Center for the Neurobiology of Addiction
1997 - 1997	Terrapin Technologies, South San Francisco, CA	Consultant	

1997 - 2013	University of California, San Francisco	Faculty Member	Graduate Program in Neuroscience
1997 - 2013	University of California, San Francisco	Faculty Member	Program in Biological Sciences
2007 - 2013	University of California, San Francisco	Faculty Member	Graduate Group in Oral and Craniofacial Sciences
2007 - 2010	Ernest Gallo Clinic and Research Center, UCSF	Director	Translational Clinical Unit
2008 - 2013	National Institute on Alcohol Abuse and Alcoholism	Founding Director	Alcohol Center for Translational Genetics
2008 - 2012	Children's Hospital of Oakland Research Institute	Adjunct Scientist	
2009 - 2013	University of California, San Francisco	Faculty Member	Institute of Molecular Medicine
2013 - present	University of California San Francisco	Professor Emeritus	Neurology
2013 - 2017	University of Texas at Austin	Associate Director	Waggoner Center for Alcohol and Addiction Research
2014 - 2015	University of Texas at Austin	Interim Director	Dell Pediatrics Research Institute
2017 - 2020	University of Texas at Austin	Senior Advisor to the Dean on Research Strategy	Dell Medical School

## HONORS AND AWARDS

1972	Phi Beta Kappa	Stanford University
1974	B.A. with Honors in History	Stanford University
1984	Sandoz Award for Outstanding Neurology Resident	UCSF Dept. of Neurology
1984	National Research Service Award	NIAAA
1986	Clinical Investigator Development Award	NINDS
1988	Basil O'Connor Starter Scholar Research Award	March of Dimes
1995	Robert B. Layzer "Golden Toe" Award for Outstanding Neurology Resident Teaching	UCSF Dept. of Neurology
1999	Visiting Professor, Dept. of Pharmacology	University of Texas, San Antonio, TX
2000	Visiting Professor, Dept. of Pharmacology	Univ. of Colorado Health Sciences Center, Denver, CO and Institute for Behavioral Genetics, Univ. of Colorado, Boulder, CO

2000	Visiting Professor, Institute for Cellular and Molecular Biology	University of Texas, Austin, TX
2002-2012	Method to Extend Research in Time (MERIT) Award	NIAAA
2002	Visiting Professor, Dept. of Physiology and Neuroscience	Medical University of South Carolina, Charleston, SC
2002	Visiting Professor, Bowles Center for Alcohol Studies	University of North Carolina, Chapel Hill, NC
2004	Visiting Professor, Dept. of Neuroscience and Physiology	SUNY, Syracuse, NY
2004	Nominee, Kaiser Awards for Excellence in Teaching	University of California, San Francisco
2004	Endowed Chair in Neurology in Honor of the Gallo Family	University of California, San Francisco
2007	Alberta Heritage Foundation for Medical Research Visiting Lecturer Award	University of Calgary, Calgary, Canada
2007	UCSF Medical Student Nominee for AOA Faculty Membership	University of California, San Francisco
2011	Bowles Lectureship Award	University of North Carolina, Chapel Hill, NC
2013-2017	Henry M. Burlage Centennial Professor of Pharmacy	University of Texas, Austin, TX
2016	Boston University School of Medicine Sterling Drug Visiting Lecturer	Boston University School of Medicine, Boston, MA
2017	Distinguished Faculty Speaker, Louis C. Littlefield Research Excellence Day	College of Pharmacy, UT Austin
2020	M. June and J. Virgil Waggoner Chair in Molecular Biology	University of Texas, Austin, TX
2021	RSA Distinguished Investigator Award	Annual meeting, San Antonio, TX (virtual)
2021	James H. Tharp Award	Res. Society on Alcoholism

### **KEYWORDS/AREAS OF INTEREST**

Addiction, ethanol, nicotine, anxiety disorders, pain, signal transduction, protein kinase, GABA, nicotinic receptor, neuropeptides

## **PROFESSIONAL ACTIVITIES**

### **CLINICAL-UCSF**

1984 - 2013: Attending Neurologist, University of California Hospitals, San Francisco General Hospital (SFGH), San Francisco VA Med. Center (SF VA).

**SUMMARY OF CLINICAL ACTIVITIES**

While at UCSF, from 1984 until 1999, I attended for 2 months each year on the SFGH Neurology service, usually for one month on the in-patient service and for one month on the consult service. I also attended a clinic at SFGH, one half day per week where I saw my own patients and supervised residents with theirs. I also had privileges at UCSF Moffitt Hospital and the SF VA Medical Center where I occasionally covered for other faculty. From 1994-1995 I served as interim Chief of the Neurology Service at SFGH. In 1999 with the move of the Gallo Center to Emeryville, I decreased my clinical activity to one month per year as Attending Physician on the SFGH inpatient service. I attended in the SFGH outpatient clinic during the month I was in-patient ward attending, for one-half day per week. With my move to UT Austin, I obtained a Texas Medical license but have not applied for hospital privileges in Texas.

**PROFESSIONAL ORGANIZATIONS****Memberships**

1981 - present	American Academy of Neurology
1984 - 2006	American Association for the Advancement of Science
1985 - present	Society for Neuroscience
1989 - present	Research Society on Alcoholism
1991 - present	International Society for Biomedical Research on Alcoholism
1992 - present	American Society for Biochemistry and Molecular Biology
1994 - 2000	American Epilepsy Society
1996 - present	American Neurological Association
2004 - present	American Society for Pharmacology and Experimental Therapeutics
2016 - present	American College of Neuropsychopharmacology

**Service to Professional Organizations**

1991 - 1993	Research Society on Alcoholism, Publications Committee	Member
1992 - 1992	Research Society on Alcoholism Annual Meeting	Session Co-chair
1992 - 1992	Research Society on Alcoholism, Program Committee	Member
1992 - 2002	The Wellcome Trust	Grant Reviewer
1993 - 1993	Research Society on Alcoholism, symposium "Neurotrophic factors and cell adhesion molecules in alcohol neurotoxicity"	Organizer
1995 - 1995	Research Society on Alcoholism, symposium "Phosphorylation of Membrane Transporters and Channels"	Organizer
1995 - 1996	Research Society on Alcoholism, Program Committee	Member
1997 - 1997	Spinal Cord Research Foundation	Ad Hoc Reviewer
1997 - 1999	Research Society on Alcoholism, Program Committee	Co-Chair

1999 - 1999	Ohio Cancer Research Associates	Grant Reviewer
2000 - 2002	Research Society on Alcoholism	Secretary
2000 - 2004	Alzheimer's Association, Initial Review Board of the Medical and Scientific Advisory Council	Member
2001 - 2008	Scientific Advisory Board, The Epilepsy Therapy Development Project	Member
2002 - 2009	Research Society on Alcoholism, Awards Committee	Member
2002 - 2002	Zaffaroni Innovation Fund for Addiction Research, Stanford University	Grant Reviewer
2002 - 2002	Waggoner Center for Alcohol and Addiction Research, Univ. of Texas at Austin	Grant Reviewer
2003 - 2010	Medical Advisory Council of the Alcoholic Beverage Medical Research Foundation; Chair, 2006-2009, ad hoc member 2010	Chair Ad Hoc Member
2004 - 2006	Research Society on Alcoholism, Priorities Committee	Member
2005 - 2005	U.K. Medical Research Council	Grant Reviewer
2006 - 2009	Research Society on Alcoholism, Board of Directors	Member
2006 - 2009	Research Society on Alcoholism, Nominations Committee	Member
2007 - 2007	Research Society on Alcoholism, symposium "PKC Pathways and Ethanol: From Cells to Behavior"	Co-organizer
2007 - 2007	Research Society on Alcoholism NIH Peer Review Task Force	Member
2008-present	Scientific Advisory Committee: Alcoholism and Stress Conferences (triannual event in Volterra, Italy)	Member
2009 - 2010	Research Society on Alcoholism	Vice President
2010 - 2011	Research Society on Alcoholism	President
2011 - 2012	Research Society on Alcoholism	Past President
2011 - 2014	American Neurological Association's Scientific Program Advisory Committee	Member
2012	American Neurological Association symposium: "Advances in Headache and Pain Research and Treatment"	Organizer
2016	UT System: Texas Fresh Air: Grand Challenges in Neuroscience Conference	Co-organizer
2018	Research Society on Alcoholism, symposium "Medications to Treat Alcohol Use Disorder: From Computer to Bench to Bedside "	Organizer
2022	Scientific Advisory Board, Center for the Translational Neuroscience of Alcoholism at Yale	Chair

2022 External Advisory Board: Univ. of Chicago T32 NIDA Training Grant Member

### **SERVICE TO PROFESSIONAL PUBLICATIONS**

1995 - 1999 Editorial Board, Alcoholism: Clinical and Experimental Research  
 1996 - 1998 Associate Editor, Alcoholism: Clinical and Experimental Research  
 2005 - 2013 Associate Editor, Annals of Neurology  
 2007 - 2012 Editorial Board, Addiction Reviews  
 2010 Textbook review, Oxford University Press  
 2011 - present Advisory Council, Alcoholism: Clinical and Experimental Research  
 2011 - present Faculty of 1000: Section on Neuropharmacology & Psychopharmacology  
 2015 - 2021 Senior Editor for North America (Basic and Preclinical Studies), Addiction Biology  
 1988 - present Ad hoc referee to: Addiction Biology; Alcohol; Alcohol and Alcoholism; American Journal of Medicine; Annals of Neurology; Biochemical Pharmacology; Biological Psychiatry; Brain Research; Chemical Reviews; eNeuro; Epilepsia; Gene; Genes, Brain and Behavior; Journal of AIDS; Journal of Biological Chemistry; Journal of Clinical Investigation; Journal of Comparative Neurology; Journal of Neurochemistry; Journal of Neuroscience; Journal of Neuroscience Research; Journal of Pharmacology & Experimental Therapeutics; Molecular and Cellular Biology; Molecular Biology of the Cell; Molecular Pharmacology; Molecular Psychiatry; Nature; Nature Communications; Nature Medicine; Nature Neuroscience; Neurology; Neuron; Neuropsychopharmacology; Neuroscience and Biobehavioral Reviews; Pharmacology, Biochemistry and Behavior; Pharmacology and Therapeutics; Proc. Nat. Acad. Sci. USA; Psychopharmacology; Science Translational Medicine; Science Advances; Trends in Neurosciences; Western Journal of Medicine

### **INVITED PRESENTATIONS**

#### **INTERNATIONAL**

1988	International Medical Advisory Group "Calcium Channels and Adaptation to Alcohol"	Speaker
1992	International Society for Biomedical Research on Alcoholism "Calcium Channels, PKC and Adaptation to Alcohol"	Speaker
1992	Lund University, Lund, Sweden, Symposium on Alcohol, Cell Membranes and Signal Transduction	Speaker
1993	86th Nobel Symposium of the Karolinska Institutet, Stockholm, Sweden, "Adaptive Responses to Ethanol Mediated by PKC Delta and Epsilon"	Speaker
1993	Tampere Brain Research Center, University of Tampere, Finland, "Adaptive Responses to Ethanol Mediated by PKC Delta and Epsilon"	Speaker
1994	International Society for Biomedical Research on Alcoholism, "Adaptive Responses to Ethanol Mediated by PKC Delta and Epsilon"	Speaker

1998	International Society for Biomedical Research on Alcoholism, "PKC Epsilon in Neuronal Function and Adaptation to Ethanol"	Speaker
1998	Imperial Cancer Research Fund, London, UK, "PKC Epsilon in Neuronal Function and Adaptation to Ethanol"	Speaker
1998	Department of Laboratory Medicine, University of Lund Hospital, Malmö, Sweden, "PKC Delta and Epsilon Regulate Multiple Responses to Alcohol In Vivo and In Vitro"	Speaker
1998	Satellite Meeting of the International Society for Biomedical Research on Alcoholism, Lund, Sweden "Ethanol and Intracellular Signaling: From Molecule to Behavior"	Speaker
1998	10th International Conference on Second Messengers & Phosphorylation, Jerusalem, Israel, "Phenotypes in PKC Epsilon Null Mice"	Speaker
1998	Weizmann Institute, Rehovot, Israel, "Phenotypes in PKC Epsilon Null Mice"	Speaker
2000	International Society for Biomedical Research on Alcoholism, Yokohama, Japan, "PKC Epsilon-Regulates Sensitivity of GABA-A receptors to Allosteric Agonists" and "Strategies for Targeted and Regulated Knockouts"	Speaker
2000	Dept. of Molecular Biology, Yokohama University, Yokohama, Japan, "Protein Kinase C Epsilon in Neuronal Function"	Speaker
2001	Research Society on Alcoholism, Montreal, Canada, "Tetracycline-regulated Expression of PKC Epsilon Regulates Alcohol Consumption"	Speaker
2003	Institute of Genetics and Molecular and Cellular Biology, Strasbourg University, France, "PKC Epsilon in Anxiety and Addiction"	Speaker
2004	Molecular Advances in DAG Signaling, Juan March Foundation, Madrid, Spain, "CNS Phenotypes in PKC Delta Null Mice"	Speaker
2004	Research Society on Alcoholism, Vancouver, BC, Canada, "PKC Epsilon and Delta in the Regulation of GABA-A Receptors and Behavioral Responses to Ethanol"	Speaker
2006	Neuromed Technologies, Vancouver, BC, Canada, "PKC Epsilon as a Drug Target in Pain and Anxiety"	Speaker
2007	Dept. of Physiology and Biophysics, University of Calgary, Calgary, Alberta, Canada, "PKC Regulation of GABA-A Pharmacology and Behavior"	Speaker
2008	Central Institute of Mental Health, Dept. of Psychopharmacology, Mannheim, Germany "Protein Kinase C Isozymes as Targets for Anxiety and Alcohol Use Disorders"	Speaker
2008	Alcoholism and Stress: A Framework for Future Treatment Strategies, Volterra, Italy, "Opposing Roles of Amygdala PKC delta and epsilon on Neuropeptide Expression, Anxiety, and Alcohol Consumption"	Speaker
2008	International Symposium on Drug Addiction: Mechanisms and Therapeutic Approaches, Kunming, Yunnan, P. R. China, "Molecular Targets for Substance Abuse in the Amygdala"	Speaker



2010	Dept. of Neuroscience and Pharmacology, Rudolf Magnus Institute of Neuroscience, University Medical Center Utrecht, The Netherlands, "Sibling Rivalry: Opposing Regulation of Anxiety and Alcohol Responses by PKC Delta and Epsilon"	Speaker
2010	International Society on Biomedical Research on Alcoholism, Annual Meeting, Paris France, "Regulation of Neuropeptide Signaling by PKC Isozymes in the Amygdala"	Speaker
2011	Alcoholism and Stress: A Framework for Future Treatment Strategies, Volterra, Italy, "Alcoholic Polyneuropathy is Worsened by Binge Drinking and is PKC epsilon-dependent"	Speaker
2011	European Society for Biomedical Research on Alcoholism, Vienna, Austria, "Protein Kinase C Regulation of Ethanol Actions at GABA-A Receptors"	Speaker
2017	Alcoholism and Stress: A Framework for Future Treatment Strategies, Volterra, Italy, "A Distributed CRF Network in Extended Amygdala Regulates Anxiety and Alcohol Drinking"	Speaker
2019	Life Science PhD Meeting, Medical University of Innsbruck: "Targeted and Genomic Approaches to Drug Discovery for Alcohol Use Disorder", April 26, 2019	Keynote speaker
2022	Center for Social and Affective Neuroscience (CSAN), Linköping University, Sweden. "Amygdala PKC delta", (via Zoom) October 20, 2022	Speaker

#### NATIONAL

1988	University of Utah, Neurology Grand Rounds, "Neurocysticercosis"	Speaker
1988	University of Utah, Neurology Research Seminar, "Calcium Channels and Adaptation to Alcohol"	Speaker
1989	Winter Conference on Brain Research, Snowbird, UT, "Calcium Channels and Adaptation to Alcohol"	Speaker
1990	NIAAA Conference on Pharmacologic Aspects of Ion Channel Function, Annapolis, MD, "Calcium Channels and Adaptation to Alcohol"	Speaker
1992	University of Colorado Neurology Grand Rounds, Denver, CO, "Regulation of Calcium Channels by Alcohol"	Speaker
1992	University of Colorado, Department of Pharmacology Seminar, Denver, CO, "Adaptive Responses to Ethanol Mediated by PKC Delta and Epsilon"	Speaker
1993	Amgen, Inc., Thousand Oaks, CA, "Adaptive Responses to Ethanol Mediated by PKC Delta and Epsilon"	Speaker
1996	Research Society on Alcoholism, Washington, DC, "Regulation of N-type Calcium Channels by Ethanol"	Speaker
1997	Neurology Grand Rounds, Stanford University, Stanford, CA, "Adaptive Responses to Ethanol Mediated by PKC Delta and Epsilon"	Speaker

1997	Research Society on Alcoholism, San Francisco, CA, "PKC Epsilon-dependent Enhancement of NGF Signaling by Ethanol"	Speaker
1997	Research Society on Alcoholism Satellite Meeting, San Francisco, CA, "Ethanol and Intracellular Signal Transduction"	Speaker
1998	Scripps Research Institute, La Jolla, CA, "PKC Epsilon in Neuronal Function and Adaptation to Ethanol"	Speaker
1998	Research Society on Alcoholism, Hilton Head, SC, "PKC Epsilon in Neuronal Function and Adaptation to Ethanol"	Speaker
1998	FASEB Conference on Protein Kinase C, Tahoe City, CA, "The Role of PKC Epsilon in Nociception"	Speaker
1998	Society for Neuroscience Satellite Symposium: "Applications of Gene Knockout Techniques to Alcohol Research", Los Angeles, CA, "Knockout Mice to Study the Role of PKC Epsilon in Responses to Alcohol"	Speaker
1999	Fetal Alcohol Study Group, Research Society on Alcoholism, Santa Barbara, CA, "PKC Epsilon in Responses to Alcohol"	Speaker
1999	ASBMB Fall Symposium: "Ethanol and Cell Signaling", Tahoe City, CA, "Decreased Anxiety and Down-regulated HPA Axis in PKC Epsilon Null Mice"	Speaker
1999	Department of Pharmacology, University of Texas, San Antonio, TX, "PKC Epsilon Regulation of GABA-A Receptors"	Speaker
1999	NIEHS Symposium: "Calcium Channels: Critical Targets of Toxicants and Diseases", Durham, NC, "Calcium Channels and Alcohol"	Speaker
2000	Eli Lilly, Indianapolis, IN, "Protein Kinase C in Pain and Anxiety"	Speaker
2000	Keystone Symposium: "Protein Kinase C", Taos, NM, "Protein Kinase C Epsilon in Nervous System Function"	Speaker
2000	Experimental Biology 2000, San Diego, CA, "PKC Isozymes: Lessons from Knockout Mice"	Speaker
2000	Institute for Behavioral Genetics, University of Colorado, Boulder, CO, "PKC Epsilon and the Nervous System"	Speaker
2000	Department of Pharmacology, University of Colorado Health Sciences Center, Denver, CO, "PKC Epsilon in Neuronal Function"	Speaker
2000	NIAAA Intramural Program, Bethesda, MD, "Regulation of Alcohol Consumption, Anxiety and Pain by PKC Epsilon"	Speaker
2000	Institute for Cellular and Molecular Biology, University of Texas, Austin, TX, "Protein Kinase C Epsilon in Neuronal Function"	Speaker
2001	NIAAA Intramural Program, Bethesda, MD, "Regulation of Alcohol Consumption, Anxiety and Pain by PKC Epsilon"	Speaker
2001	Molecular Mechanisms of Alcohol and Anesthetic Action, Philadelphia, PA, "Regulation of GABA-A Receptors and Related Behaviors by Protein Kinase C"	Speaker

2001	California Society of Addiction Medicine, Los Angeles, CA, "Transgenic Mouse Models in Discovering Drugs to Treat Addiction"	Speaker
2001	Society for Neuroscience, Satellite Symposium: "Neurogenetics of Alcoholism", San Diego, CA, "Genetic Manipulations in Mice to Identify Proteins that Regulate Responses to Alcohol"	Speaker
2001	American College of Neuropsychopharmacology, Waikaloa, HI, "PKC Epsilon Regulates Alcohol Consumption and Anxiety"	Speaker
2002	American Society of Addiction Medicine 33rd Annual Meeting, Atlanta, GA, "Identification of Possible Therapeutic Targets by Gene Targeting in Mice"	Speaker
2002	The Scripps Research Institute, La Jolla, CA, "Behavioral Responses to Alcohol in PKC Epsilon and ENT1 Null Mice"	Speaker
2002	Department of Physiology and Neuroscience, Medical University of South Carolina, Charleston, SC, "Responses to Alcohol and Opiates in PKC Epsilon and ENT1 Knockout Mice"	Speaker
2002	University of Arizona, Department of Neurology Grand Rounds, Tucson, AZ, "PKC Epsilon Regulation of GABA-A Receptors in Anxiety and Addiction"	Speaker
2002	NIAAA Workshop: "Presynaptic Substrates of Alcohol Action", Bethesda, MD, "PKC Epsilon Regulation of GABA-ergic Synapses on VTA Dopaminergic Neurons Modulates Alcohol and Opiate Reward"	Speaker
2002	Bowles Center for Alcohol Studies, University of North Carolina, Chapel Hill, NC, "Drugs of Abuse in Mice with Altered Expression of PKC Epsilon, PKC Delta or ENT1"	Speaker
2003	Department of Neurology and Vollum Institute, Oregon Health Science University, Portland, OR, "PKC Epsilon in Anxiety and Addiction"	Speaker
2003	Department of Neurology, VA Health Care System, Harvard University, Boston, MA, "N-type Calcium Channels Modulate Acute Responses to Alcohol and Alcohol Consumption in Mice"	Speaker
2003	Wyeth Pharmaceuticals, Cambridge, MA, "PKC Epsilon in Pain, Anxiety and Addiction"	Speaker
2004	Department of Neuroscience and Physiology, SUNY, Syracuse, NY, "Protein Kinase C Epsilon Regulates GABA-A Receptors and Responses to Drugs of Abuse"	Speaker
2005	Eli Lilly, Indianapolis, IN, "PKC Epsilon as a Drug Target in Neurology and Psychiatry"	Speaker
2005	NIAAA, Rockville, MD, "Regulation of Alcohol Responses and GABA-A Receptors by PKC Epsilon and PKC Delta"	Speaker
2005	NIDA, Baltimore, MD, "PKC Epsilon and PKC Delta in Responses to Alcohol, Opiates, and Cannabinoids"	Speaker
2006	Department of Neuroscience, University of New Mexico, Albuquerque, NM, "PKC Epsilon and PKC Delta in Anxiety and Alcoholism"	Speaker

2006	Department of Molecular and Medical Pharmacology, UCLA, "PKC Epsilon and PKC Delta Regulate GABA-A Receptors, Anxiety and Behavioral Responses to Alcohol"	Speaker
2006	Research Society on Alcoholism, Baltimore, MD, "Amygdala PKC Epsilon Regulates CRF, Anxiety-like Behavior and Alcohol Consumption"	Speaker
2007	American Psychiatric Association, San Diego, CA, "Amygdala Protein Kinase C Epsilon Regulates Corticotropin Releasing Factor, Anxiety and Alcohol Self-administration"	Speaker
2007	Department of Psychiatry, Yale University School of Medicine, New Haven, CT, "Protein Kinase C Regulation of GABA-A Receptor Pharmacology and Behavior"	Speaker
2007	Department of Physiology, Northwestern University Feinberg School of Medicine, Chicago, IL, "Protein Kinase C Regulation of GABA-A Receptor Pharmacology and Behavior"	Speaker
2007	Research Society on Alcoholism, Chicago, IL, "PKC Delta Regulates GABA-mediated Tonic Inhibition and Motor Responses to Ethanol"	Speaker
2007	Department of Neurology, Grand Rounds, Stanford University, Stanford, CA, "Current and Novel Therapeutics for Alcohol Use Disorders"	Speaker
2008	Department of Molecular Pharmacology and Experimental Therapeutics, Mayo Clinic College of Medicine, Rochester, NY, "Sibling Rivalry in the Amygdala: PKC Delta and PKC Epsilon Compete to Control Anxiety and Alcohol Use"	Speaker
2008	Waggoner Center for Alcohol and Addiction Research, University of Texas, Austin, TX, "PKC Delta and PKC Epsilon in Anxiety and Alcohol Self-administration"	Speaker
2009	Department of Cellular and Molecular Pharmacology, Rosalind Franklin University of Medicine and Science, North Chicago, IL, "The Dark Side of Protein Kinase C Epsilon"	Speaker
2009	American Psychiatric Association Annual Meeting, San Francisco, CA, "N-type Calcium Channel Blockers for Alcohol Use Disorders: From Cells to People"	Speaker
2009	Department of Psychiatry, University of Chicago, Chicago, IL, "Sibling Rivalry: PKC Delta and PKC Epsilon in Anxiety and Alcohol Self-administration"	Speaker
2009	Department of Behavioral Neuroscience, Oregon Health and Science University, Portland, OR, "Sibling Rivalry: PKC Delta and PKC Epsilon in Anxiety and Binge Drinking"	Speaker
2009	Department of Pharmacology and Toxicology, Virginia Commonwealth University, Richmond, VA, "Protein Kinase C Regulation of GABA-A Receptor Function and Trafficking"	Speaker
2009	Department of Pharmacology, University of Colorado at Denver, Denver, CO, "PKC Epsilon in Pain, Anxiety and Alcoholism: From Mouse Towards the Bedside"	Speaker

2010	Abbott Neuroscience, Abbott Park, IL, "Protein Kinase C Epsilon as a Drug Target for Pain, Anxiety and Alcoholism"	Speaker
2010	Department of Pharmacology, Rush University, Chicago, IL, "Sibling Rivalry, PKC Delta and Epsilon in Anxiety and Binge Drinking"	Speaker
2010	Department of Cellular and Molecular Pharmacology, Rosalind Franklin University of Medicine and Science, North Chicago, IL, "PKC Epsilon Regulation of GABA-A Receptor Trafficking and Function"	Speaker
2010	Department of Physiology and Biophysics, University of Chicago, Chicago, IL, "Rival Siblings: Protein Kinase Delta and Epsilon in Anxiety and Responses to Ethanol"	Speaker
2010	Department of Anesthesiology, Washington University, St. Louis, MO, "Peripheral and Central Substrates of Protein Kinase C Epsilon in Pain"	Speaker
2011	Department of Pharmacology, University of Michigan, Ann Arbor, MI, "PKC Regulation of Cys-loop Receptors Modifies Behavioral Responses to Alcohol and Nicotine"	Speaker
2011	Bowles Center for Alcohol Studies, University of North Carolina, Chapel Hill, NC, "PKC Regulation of Cys-loop Receptors in Alcohol and Nicotine Addiction"	Speaker
2011	Great Lakes Chapter of ASPET, Chicago, IL, Plenary Lecture: "PKC Regulation of Cys-loop Receptors in Models of Alcohol and Nicotine Addiction"	Speaker
2011	Research Society on Alcoholism 34th Annual Meeting, Atlanta, GA. Symposium: "Fyn Kinase, NMDA Receptor Function, and Alcohol Response: A Translational Neuroscience Perspective"	Discussant
2011	School of Pharmacy, Univ. of Texas at Austin, "PKC Epsilon Regulation of Cys-Loop Receptors in Alcohol and Nicotine Addiction"	Speaker
2011	Dept. of Neuroscience, University of Wisconsin, Madison, WI, "PKC Epsilon Regulation of Cys-Loop Receptors in Alcohol and Nicotine Addiction"	Speaker
2012	Dept. of Neuroscience, Medical University of South Carolina, Charleston, SC, "PKC Epsilon Signaling in Addiction and Pain"	Speaker
2012	American Neurological Association Annual Meeting, Boston, MA "Mining Nociceptor Signaling for Pain Therapeutics"	Speaker
2013	American Neurological Association, New Orleans, LA. "Addiction"	Speaker
2014	Gordon Research Conference: Alcohol and the Nervous System, Galveston TX, "Molecular Signaling and Crosstalk"	Speaker & Moderator
2014	Research Society on Alcoholism, Bellevue, WA, "Protein kinase C phosphorylation of GABA-A receptors in responses to ethanol",	Speaker
2015	Research Society on Alcoholism, San Antonio, TX, "Calcium Signaling Toolkit- Integrators and Targets of Alcohol: Introduction"	Speaker & Moderator
2016	ACTG Retreat, San Francisco, CA: "Atypical PKM zeta in Models of Binge Drinking and Relapse", April 28, 2016	Speaker

2016	Gordon Research Conference: Alcohol and the Nervous System, Galveston TX, “A <i>Crh</i> -Cre Rat for Studying the Anatomy and Physiology of CRF Neurons”, Feb 8, 2016	Speaker
2016	Dept. of Psychiatry, UT Southwestern, Dallas, TX, “PKC Epsilon as a Target for Treatment of Addiction and Pain”, March 8, 2016	Speaker
2016	Boston University Department of Pharmacology, Boston MA, BUSM Sterling Drug Visiting Lecture, “Developing Protein Kinase C Epsilon Inhibitors to Treat Alcohol Dependence and Pain”, May 18, 2016	Speaker
2016	NIAAA Scientific Advisory Council, Rockville MD, “Developing PKC Epsilon Inhibitors to Treat Alcohol Use Disorder”, June 9, 2016	Speaker
2016	Center for Innovative Drug Discovery Symposium, UT San Antonio “Targeting Protein Kinase C Epsilon to Develop Novel Therapeutics Against Pain and Addiction”, June 10, 2016	Speaker
2016	Alcohol Abuse Co-morbidities & Triggers for Addiction RSA Satellite Symposium, Louisiana State University Health Science Center, New Orleans, LA “The <i>Crh</i> -Cre Rat as a Pre-Clinical Tool for Studying Alcohol Use Disorder”, June 25, 2016	Speaker
2016	Research Society on Alcoholism, New Orleans, LA, “Designer Receptor Manipulations Show Recruitment of CRF Neurons in the CeA with Intermittent Drinking” June 28, 2016	Speaker
2016	University of Minnesota, Department of Neuroscience, Minneapolis MN, “Molecular Targets for Treating Alcohol and Nicotine Addiction” July 15, 2016	Speaker
2016	Department of Pharmacology and Neuroscience Retreat, Texas Tech University Health Sciences Center, Santa Fe, NM, “CRF Neurons of the Extended Amygdala in Anxiety, Fear, and Alcohol Dependence” Oct. 28, 2016	Keynote Speaker
2018	Science of Addiction Symposium, University of Missouri, Columbia MO, “New Compounds for Treating Alcohol Use Disorder” December 6, 2018	Keynote Speaker
2020	Gordon Research Conference: Alcohol and the Nervous System, Galveston TX, “Identifying Functional Roles for Specific Neuropeptides and GABA Expressed in CRF Neurons of the Central Amygdala” March 4, 2020	Speaker
2021	Tufts University Dept. of Neuroscience, Boston MA (online via Zoom). “Targeted and Genomic Approaches to Drug Discovery for Alcohol Use Disorder” March 24, 2021	Speaker
2021	RSA Distinguished Investigator Award: “Targeted and Genomic Approaches to Medication Discovery for Alcohol Use Disorder” June 19, 2021	Keynote Speaker
2021	University of Iowa Department of Neuroscience and Pharmacology (via Zoom). “Targeted and Genomic Approaches to Drug Discovery for Alcohol Use Disorder” November 9, 2021	Speaker
2023	National Institute on Alcohol Abuse and Alcoholism (via Zoom), “Approaches to Medication Discovery for Alcohol Use Disorder” January 31, 2023	Speaker

## REGIONAL AND OTHER INVITED PRESENTATIONS

1988	Children's Hospital of San Francisco, San Francisco, CA, "Lyme Disease"	Speaker
1988	Neurology Grand Rounds, Kaiser-Permanente Hospital, Oakland, CA, "Lyme Disease"	Speaker
1989	San Francisco Neurological Society, San Francisco, CA, "Lyme Disease"	Speaker
1989	Grand Rounds, St. Mary's Hospital, San Francisco, CA, "Lyme Disease"	Speaker
1990	Neurology Rounds, Kaiser-Permanente Hospital, Oakland, CA, "Lyme Disease"	Speaker
1991	Sutter Neuroscience Center Annual Symposium, Sacramento, CA, "Coma: An Update"	Speaker
1994	SFGH Cardiology Division Seminar, San Francisco, CA, "Calcium Channels, PKC and Adaptation to Alcohol"	Speaker
1996	Terrapin Technologies, Inc., South San Francisco, CA, "Adaptive Responses to Ethanol Mediated by PKC Delta and Epsilon"	Speaker
1997	UCSF Program in Neurosciences Seminar, San Francisco, CA, "PKC Delta and PKC Epsilon Mediate Adaptive Responses to Ethanol in PC12 Cells"	Speaker
1999	UCSF Pain Research Group Seminar, San Francisco, CA, "PKC Epsilon Modulates Nociceptor Sensitization"	Speaker
2001	UCSF Frontiers in Neurology and Neuroscience, San Francisco, CA, "Neurology of Addiction"	Speaker
2001	UCSF/Gallo Center Symposium: Neurobiology of Alcoholism and Addiction, San Francisco, CA, "Regulation of GABA-A Receptors and Alcohol Consumption by Protein Kinase C Epsilon"	Speaker
2001	Elan Pharmaceuticals, South San Francisco, CA, "PKC Epsilon Modulates Pain, Anxiety, and Alcohol Self-administration"	Speaker
2002	The Buck Institute, Novato, CA, "PKC Epsilon in the Nervous System: A Tale of Pain, Anxiety, and Addiction"	Speaker
2002	Theravance, South San Francisco, CA, "Pain, Addiction and Anxiety: Studies with PKC Epsilon Null Mice"	Speaker
2003	UCSF Neuroscience of Disease Seminar, San Francisco, CA, "Neurology of Addiction"	Speaker
2003	Wheeler Center Fall Retreat, San Francisco, CA, "ENT1 in Alcohol Intoxication, Consumption, and Relapse"	Speaker
2003	Roche Pharmaceuticals, Palo Alto, CA, "PKC Epsilon in Pain, Anxiety and Addiction"	Speaker
2004	UCSF Department of Psychiatry Grand Rounds, San Francisco, CA, "PKC Epsilon in Anxiety and Addiction"	Speaker

2004	UCSF Child Neurology Research Laboratory, San Francisco, CA, "PKC Delta in Stroke and Responses to Alcohol"	Speaker
2004	Plexxikon, Inc., Berkeley, CA, "PKC Epsilon as a Drug Target in Neurology and Psychiatry"	Speaker
2005	Kai Pharmaceuticals, South San Francisco, CA, "PKC Epsilon and PKC Delta as Drug Targets in Neurology and Psychiatry"	Speaker
2006	Amgen Neuroscience Meeting, Mission Bay Campus, UCSF, San Francisco, CA, "PKC Epsilon Regulates Nociception and A-beta Clearance"	Speaker
2006	Frontiers in Neurology and Neuroscience, UCSF, San Francisco, CA, "PKC Epsilon as a Drug Target in Pain: Bench to Bedside"	Speaker
2006	Renovis, South San Francisco, CA, "PKC Epsilon as a Drug Target in Pain and Anxiety"	Speaker
2006	Roche, Palo Alto, CA, "PKC Epsilon as a Drug Target in Pain and Anxiety"	Speaker
2012	UCSF Dept. of Neurology Grand Rounds, "Neurobiology and Treatment of Addiction"	Speaker
2012	UCSF Office of Innovation, Technologies & Alliances, "PKC Epsilon is a Drug Target for Pain"	Speaker
2013	UT Austin Waggoner Center ADVANCE, "Drinking Despite Aversive Consequences: Circuits and Receptors"	Keynote Speaker
2013	Institute for Computational Engineering and Sciences, UT Austin: "Dell Medical School: Update and Research Perspective"	Speaker
2014	UT Austin Sage Enrichment Lecture: "Dell Medical School Update"	Speaker
2014	UT Austin Behavioral Neuroscience Seminar: "Neuroadaptations that Promote Alcohol Drinking Despite Adverse Circumstances"	Speaker
2015	UT Austin Waggoner Center ADVANCE, "Protein Kinase C Epsilon Inhibitors to Treat Alcohol Dependence and Pain"	Speaker
2015	UT Austin Biomedical Engineering External Advisory Committee, "Dell Medical School Update"	Speaker
2016	Dell Medical School Research Connect, "Research Connect Series Introduction", May 5, 2016	Speaker
2016	Dell Medical School Orientation "Dell Medical School Research", June 30, 2016	Speaker
2016	UT Austin Institute for Neuroscience Retreat "Of Men and Mice: Perspectives of an MD Neuroscientist" October 8, 2016	Keynote Speaker
2017	UT Austin College of Pharmacy Faculty Retreat, "Dell Medical School Research Opportunities" January 11, 2017	Speaker
2017	UT Austin College of Pharmacy Research Day, "New Lead Compounds for Treating Alcohol and Nicotine Addiction" April 11, 2017	Keynote Speaker



2017	Dell Medical School Dept. of Neurology Resident Research Evening, “Why Would a Neurologist Study Addiction?” November 8, 2017	Speaker
2018	Dept. of Neuroscience, UT Brainstorms Series: “The Addicted Brain” January 27, 2018	Speaker
2019	Texas Neurological Society, Austin, TX, “Neurology of Addiction” February 3, 2019	Speaker
2019	UT Austin Waggoner Center ADVANCE “Two birds with one stone: Inhibiting PKC $\epsilon$ to treat chronic pain and opioid addiction” March 29, 2019	Speaker
2019	UT Austin Neurology Grand Rounds “Discovering New Treatments for Alcohol Use Disorder”, Oct 29, 2019	Speaker

### **GOVERNMENT AND OTHER PROFESSIONAL SERVICE**

1986 - 1986	Air Force Office of Scientific Research	Grant Reviewer
1989 - 1989	Veterans Administration	Grant Reviewer
1990 - 1990	Veterans Administration, Site Visit Team	Member
1993 - 1993	NIAAA, Center Grant Site Visit Team	Member
1995 - 1995	NIAAA, Special Grant Review Committee	Member
1996 - 1996	NIAAA, Special Grant Review Committee	Member
1997 - 1997	NIAAA, Center Grant Review Committee	Member
1997 - 1997	DRG AL/TX 3 Study Section	Ad Hoc Member
1998 - 1998	Special Emphasis Panel (ZAA1-EE-1)	Member
1998 - 2002	DRG AL/TX 3 Study Section	Regular Member
2002 - 2008	Board of Scientific Counselors, NIAAA Intramural Program	Member
2003 - 2003	CSR IFCN1 Study Section	Member
2003 - 2016	Scientific Advisory Board, Integrative Neuroscience Initiative on Alcoholism-West, NIAAA	Member
2003 - 2019	Scientific Advisory Board, NIAAA Portland Alcohol Research Center, Oregon Health and Science University, Portland, OR	Member
2004 - 2004	Special Emphasis Panel CSR ZRG1 IFCN-A (06) (M)	Member
2004 - 2005	Scientific Advisory Board, Integrative Neuroscience Initiative on Alcoholism and Stress, NIAAA	Member
2010 - 2012	Scientific Advisory Board, NIAAA Center for the Individualized Treatment of Alcohol Dependence, Mayo Clinic Medical School, Rochester, MN	Chair
2011 - 2011	Board of Scientific Counselors, NIAAA Intramural Program	Ad Hoc Member

2012 - 2012	Molecular Neurogenetics (MNG) Study Section	Member
2012 - 2016	NIAAA Advisory Council	Member
2021 - now	Scientific Advisory Board, Center for the Translational Neuroscience of Alcoholism, Yale University, New Haven, CT	Chair

## UNIVERSITY AND PUBLIC SERVICE

### UNIVERSITY SERVICE-UNIVERSITY OF TEXAS

#### UT SYSTEM

2014 - 2015	Neuroscience Council	Member
2014	UT System Institute of Neuroscience and Neurotechnology: Steering Committee	Member
2022	UT System Brain Research Symposium: Pain Research	Co-moderator

#### UT AUSTIN CAMPUS-WIDE

2013 - 2014	Executive Compliance Committee	Member
2013 - 2014	UT-Seton Affiliation Working Group	Member
2013 - 2014	Search Committee for Dean of Dell Medical School	Chair
2015	Research Capabilities Task Force	Member
2015	Vice President for Research Search Committee	Member
2016 - 2017	VPR Research Cores Strategic Committee	Chair
2020	Lab-Intensive Research Restart Committee	Member
2020	COVID-19 Dashboard Committee	Member
2021-2022	Search Committee for Dean of Dell Medical School	Member
2021-Now	HDB Space Governance Committee	Chair→Member

#### UT AUSTIN – DELL MEDICAL SCHOOL

2013 - 2014	Medical School Steering Committee	Co-chair
2013 - 2014	Research Working Group	Chair
2013 - 2014	Facilities and Space Working Group	Co-chair
2013 - 2014	Curriculum Working Group	Member
2014	Clinical Neurosciences Mechanisms of Disease Block	Leader
2014 - 2016	Internal Medicine Chair Search Committee	Chair
2014 - 2015	Neurology Chair Search Committee	Chair
2014 - 2015	Pediatrics Chair Search Committee	Member

2014 - 2016	Psychiatry Chair Search Committee	Chair
2014 - 2016	LIVESTRONG Cancer Institutes Director Search Advisory Committee	Co-chair
2015 - 2016	Search Committee for Clinical Neurologists	Chair
2015-2016	Search Committee for the Associate Chair of Investigation and Discovery for the Department of Women's Health	Member
2016 - 2018	Dell Medical School Appointment Promotion and Tenure Committee	Member
2016 - 2017	Research Strategic Planing Committee	Co-chair
2017 - 2020	Search Committee for Director of the Mulva Neurosciences Clinics	Chair
2017 - 2019	Search Committee for Faculty for Waggoner Center for Alcohol and Addiction Research	Chair
2017 - now	Dept. of Neurology Academic Affairs Committee	Member
2017 - now	Mulva Neurosciences Executive Committee	Member
2019 - 2020	Associate Chairs of Research Committee	Member
2020	Search Committee for Chair of Diagnostic Medicine	Member

#### UT AUSTIN – COLLEGE OF PHARMACY

2015 - 2017	Research Infrastructure & Lab Safety Committee	Member
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#### UT AUSTIN – INSTITUTE FOR NEUROSCIENCE

2015 - 2017	Executive Committee	Member
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#### UT AUSTIN – DEPARTMENT OF NEUROSCIENCE

2020 - now	Department Chair	Chair
2022	Committee to Update Governance Policies	Chair

#### **UNIVERSITY SERVICE-UCSF**

##### UCSF CAMPUS-WIDE

1991 - 1995	SFGH Utilization Review Committee	Member
1992 - 1998	SFGH Clinical Research Center Advisory Committee	Member
1993 - 1995	Search Committee for Associate Director of SFGH Clinical Research Center	Member
1997 - 1998	SFGH Clinical Research Center Advisory Committee	Chair
1997 - 1999	SFGH Research Committee	Member
1997 - 1999	SFGH Animal Care Facility Subcommittee	Member

2009 - 2013	UCSF Resource Allocation Program Neurosciences Review Committee	Member
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UCSF SCHOOL OF MEDICINE

1985 - 1985	Third Year Medical Student Comprehensive Examination	Examiner
1993 - 1993	Committee on Curriculum & Educational Policy Course Directors Retreat	Member
1993 - 1994	Search Committee for Faculty, Gladstone Inst. of Cardiovascular Disease and Division of Endocrinology, SFGH	Member
1993 - 1994	Search Committee: Clinical Neurologist interested in Alcoholic Neurological Disease	Chair
1994 - 1995	Search Committee: Chief of Neurology Service, SFGH	Member
1994 - 1995	Search Committee: Research Neurologist, SFGH	Member
1994 - 1995	Search Committee: AIDS Neurologist, SFGH	Member
1994 - 1995	Search Committee: Neuroscientist, Gladstone Institute of Cardiovascular Disease and Dept. of Neurology, UCSF	Member
1994 - 1996	Alpha Omega Alpha Selection Committee	Member
1995 - 1995	Working Group on Faculty Composition and Evaluation	Member
1995 - 1996	Search Committee: Associate Professor, Pulmonary Division, SFGH	Member
1996 - 1998	Clinical Courses Operating Committee	Member
1996 - 1998	Committee on Curriculum and Educational Policy	Member
1998 - 1998	Search Committee: Neurologist/Neuroscientist, Dept. of Neurology, UCSF and Gladstone Foundation	Member
1998 - 1998	Working Group: Educational Mission and Objectives of UCSF School of Medicine	Member
1998 - 1998	Search Committee: Neuroscience Program Representative, Neuroscience-Neurosurgery Regeneration Research, UCSF	Member
1999 - 2000	UCSF Committee on Animal Research IACUC	Member
1999 - 2000	UCSF Neuroscience Annual Retreat	Organizer
1999 - 1999	Search Committee for Neurophysiologist, Gallo Center	Chair
1999 - 1999	Search Committee for Mouse Geneticist, Gallo Center	Chair
2000 - 2002	Search Committee for Vice Chair of Neurology and Chief of Neurology Service SF VA Medical Center	Member
2000 - 2002	Search Committee for Director, Ernest Gallo Clinic & Research Center	Member
2000 - 2002	Search Committee for Behavioral Pharmacologist, Gallo Center	Member

2001 - 2001	Ad Hoc Promotion Review Committee	Chair
2002 - 2005	Steering Committee for Bay Area Screening Center	Member
2004 - 2006	Search Committee for Molecular Pharmacologist, Gallo Center	Member
2005 - 2007	Neuroscience Journal Club Screening Committee	Member
2007 - 2008	Search Committee for Clinical Research Scientist, Gallo Center	Chair
2008 - 2009	Search Committee for faculty member, Gladstone Institute for Neurological Disease	Member
2009 - 2011	UCSF Resource Allocation Program (RAP) Neurosciences Grant Review Committee	Member
2011	Search Committee for electrophysiologist, Ernest Gallo Clinic and Research Center	Member
2011 - 2012	Search Committee for translational neuroscientist, Ernest Gallo Clinic and Research Center	Chair
2012	Search committee for faculty member for the Glenn W. Johnson, Jr. Memorial Endowed Chair in Neurology	Chair

#### UCSF NEUROLOGY DEPARTMENTAL SERVICE

1986 - 1986	Neurology In-service Examination	Examiner
1988 - 1995	SFGH Neurology Service: EEG reading	
1988 - 1992	SFGH Neurology Service: Morning Report	
1989 - 1991	UCSF Neurology Resident Selection Committee	Member
1993 - 1998	Neurology 110 Core Clerkship	SFGH Site Director
1994 - 2013	Neurology Resident Faculty Advisor	
1996 - 1998	Neurology 110 Core Clerkship	Course Director
1997 - 1998	Gallo Center Web Site	Manager
1999 - 2000	Gallo Center IACUC	Chair
1999 - 2000	Gallo Center Animal User's Committee	Chair
1999 - 2003	Gallo Center Drug Discovery Program	Leader
1999 - 2009	Transgenic and Gene Targeting Core	Faculty Leader
2000 - 2013	Neurology Department Appointments and Promotions Committee	Member
2000 - 2003	Gallo Center IACUC	Vice Chair
2000 - 2007	Neurology Department Review Committee for non-peer reviewed research proposals	Chair
2001 - 2013	Gallo Center Histology Core	Faculty Leader
2004 - 2013	Neurology Department Executive Committee	Member

2004 - 2013	Gallo Center Executive Committee	Member
2005 - 2013	Gallo Center Medications Development Program Advisory Committee	Member
2010 - 2013	Gallo Center Clinical Research Group	Member
2012 - 2013	Gallo Center Executive Committee	Chair
2014	External Review of SFGH Neurology Service	Member

### SUMMARY OF SERVICE ACTIVITIES

Early service activities were at UCSF, where I was a member of the UCSF Resource Allocation Program Neuroscience Review Committee, which met three times each year to review intramural grants on topics in neuroscience. I served for several years on the Appointment and Promotions Committee for the UCSF Neurology Department. At the Gallo Center, I was Senior Associate Director and later Vice President for Internal Affairs, in charge of allocation of space, oversight of the histology and imaging core, the vivarium and IACUC (until 2005), and oversight of major shared equipment. I also chaired the Gallo Center Executive Committee, the Medications Development Program Advisory Committee, and I provided on-call MD coverage for the Gallo Center Clinical Research Group.

At UT Austin I played a major role in the creation of the new Dell Medical School as Vice Provost for Biomedical Sciences, co-chairing the Steering Committee that initiated the process. I chaired the search committees for the inaugural dean and for chairs of psychiatry, medicine, and neurology. I was also a member of the search committee for the chair of pediatrics and co-chair for the search for director of the Livestrong Cancer Institutes. I was the lead person representing the medical school in the construction of the Health Discovery Building which opened in 2017 to provide research space for approximately 90 investigators plus a vivarium, state-of-the-art imaging facility, and core laboratories. I participated in weekly meetings with Seton Healthcare Family to craft the UT-Seton affiliation agreement, which was completed in October 2014. From 2015-2017, I assumed the position of Associate Dean for Research Development for Dell Medical School to lead recruitment efforts for attracting stellar investigators in partnership with other UT Austin colleges. From September 2017, until September 2020, I served as Senior Advisor to the Dean of Dell Medical School for Research Strategy, managing wet lab space and associated shared equipment allocation, policies and procedures for the Dell Medical School.

Upon arriving at UT Austin, I also served as Associate Director of the Waggoner Center for Alcohol and Addiction Research (WCAAR), an internationally recognized organized research center founded in 1999 in the College of Natural Sciences that is focused on basic research in the neurobiology of addiction. On September 1, 2017, I became WCAAR director. I recruited four new research faculty (including two women and one Latinx man) and expanded the WCAAR mission to include clinical research and care. The goal is to build a clinical program that will provide much needed substance abuse care in Travis County and perform cutting-edge clinical research, in collaboration with the Department of Psychiatry and Behavioral Sciences and the Department of Neurology of Dell Medical School, and other colleges on the UT Austin campus. We received provisional approval in February 2020 from the ACGME for creation of an Addiction Psychiatry Fellowship Program, which is now fully approved.

For UT System I participated as one of three UT Austin representatives on the Neuroscience Council, which was formed in response to President Obama's BRAIN Initiative announced in 2013. I also helped plan the UT System Institute of Neuroscience and Neurotechnology which provided seed funding in 2015

for neuroscience research projects aligned with the NIH BRAIN initiative to UT investigators. Finally, I spearheaded the creation of a Nikon Center of Excellence at UT Austin which opened in 2019.

In 2020 I served as the representative for Dell Medical School on the Lab-intensive Research Restart Committee of Associate Deans of Research, appointed by the UT Austin Vice President for Research. The committee was tasked with planning and implementing procedures for phased restart of research during the COVID-19 pandemic. I wrote and put into operation policies and procedures for two wet lab research buildings (Dell Pediatrics Research Institute and Health Discovery Building), operated by the Dell Medical School.

In September 2020 I became Chair of the Department of Neuroscience in the College of Natural Sciences, while retaining an affiliated appointment in the Neurology Department of Dell Medical School. As chair, I recruited one MD/PhD assistant professor from Stanford jointly with the Department of Psychiatry and Behavioral Sciences. I helped recruit the department's first professional track instructor who is from an underrepresented group. I provide support for the Provost's Early Career Fellowship Program which is intended to increase the number of faculty who will further goals of diversity, equity, and inclusiveness by hiring candidates with outstanding scholarly records, as well as knowledge and experience in the issues and practices of DEI. Our department currently hosts two fellows from underrepresented backgrounds. I have also promised support for the UT Austin application for an NIH FIRST Award to promote an institutional culture of inclusion and diversity. This award would provide funds to support recruitment of three tenure track and one senior hire in neuroscience. I continue to serve on the Executive Committee of the Mulva Clinic for the Neurosciences. To plan joint programs and recruitment with clinical colleagues in Dell Medical School. I am currently working to update the Neuroscience Department's Governance Policies (originally written in 2008) and seek philanthropic support for two centers administratively based in the Department, the Center for Learning and Memory and the Center for Theoretical and Computational Neuroscience.

## TEACHING AND MENTORING

### TEACHING

#### FORMAL SCHEDULED CLASSES FOR UCSF STUDENTS

Qtr	Academic Yr	Course Number and Title	Teaching Contribution	Units	Class Size
varies	1986 - 2013	Neuro 110: Neurology Core Clerkship	Attending Physician (1-2 months/year)	6	3-5
All	1996 - 1998	Neuro 110: Neurology Core Clerkship	Course Director	6	9-15
Spring	1999 - 2002	Medicine 132B: Introduction to Clinical Medicine	Preceptor, 1 lecture	3	150-175
Winter	2003 - 2003	NS225: Neurobiology of Disease	Course Director	3	25-40
Winter	2007 - 2007	NS225: Neurobiology of Disease	Course Director	3	25-40
Spring	2008 - 2008	NS219: Topics in Basic or Translational Neuroscience: Neurobiology of Addiction	Course Director	3	5-8
Spring	2009 - 2009	NS219: Topics in Basic or Translational Neuroscience: Neurobiology of Addiction	Course Director	3	5-8
Spring	2011 - 2013	Neuroscience Nights	Discussion group leader	0	6
Spring	2012 - 2012	NS219: Topics in Basic or Translational Neuroscience: Neurobiology of Addiction	Course Director	3	5-8

## FORMAL SCHEDULED CLASSES FOR UT AUSTIN STUDENTS

Session	Academic Yr	Course Number and Title	Teaching Contribution	Class Size
Spring	2013-18	NEU 394P: CAREER DEVELOPMENT FOR NEUROSCIENTISTS	Lecturer: 1h per year	5-6
Spring	2015-17	PGS 388K and NEU 385L: PHARMACOLOGICAL MECHANISMS OF ADDICTION	Discussion leader: 30h	4-6
Spring	2019	NEU 385L: ADDICTION NEUROSCIENCE	Discussion leader 30h	5
Spring	2020	NEU 365W: NEUROBIOLOGY OF ADDICTION	Course director and lecturer: 90h	123

## POSTGRADUATE AND OTHER COURSES

1990 - 1990	UCSF Recent Advances in Neurology Course: "Lyme Disease"	Lecture and Syllabus
1992 - 1992	UCSF Recent Advances in Neurology Course: "AIDS Update: AIDS Dementia"	Lecture and Syllabus
1997 - 1998	UCSF CME Course "Neurology for the Primary Care Practitioner: Geriatric Neurology"	2 Lectures and Syllabus
2005 - 2005	Bay Area General Counsel Group Continuing Legal Education Course "Substance Abuse"	1 Lecture

## INFORMAL TEACHING

1986 - present I mentor students (graduate and undergraduate) and postdoctoral fellows in my laboratory on a daily basis. I also regularly provide informal advice and support to junior faculty in the Dell Medical School and College of Natural Sciences at UT Austin. Those for whom I provide formal mentorship are listed below.

## MENTORING

## PREDOCTORAL STUDENTS

## AT UCSF

Dates	Name	Program or School	Role	Last Known Position
1998-2000	Charles Howe	UCSF Neurosci.	Thesis Advisor	Assoc Prof. Neuroscience, Mayo Clinic
1998-1998	Nicholas Justice	UCSF Neurosci.	Qual. Committee	Assoc. Prof. UT Houston, Inst. Of Molec. Med.
1988-1988	Elizabeth Kiyasu	Yale University	Mentor	MD, Private Practice
1994-1994	Kamaljit Hundle	U. of Westminster, UK	Mentor	unknown
1998-1998	Reid Andersen	MIT	Mentor	Microsoft Research
1999-1999	Linus Tsai	UCSF Neurosci.	Qual. Committee	Asst. Professor Harvard Med School



Dates	Name	Program or School	Role	Last Known Position
2001-2001	Nam-Hee Kim	Yonsei U., Korea	Mentor	unknown
2002-2002	Jennifer Gray	UCSF PSPG	Qual Committee	unknown
2002-2007	Cory Blaiss	UCSF Neurosci.	Thesis Committee	Teva Pharmaceuticals
2003-2007	Siddhartha Mitra	UCSF BMS	Thesis Committee	Director, Clin Res Gilead Sciences
2003-2007	Marian Logrip	UCSF Neurosci.	Thesis Committee	Fellow, Scripps
2003-2006	Ryan Owen	UCSF Biopharm Sci.	Thesis Committee	Senior Scientist Genentech
2004-2009	Gerard Honig	UCSF Neurosci.	Thesis Committee	Res. Manager Crohn's & Colitis Foundation
2005-2005	Jasmina Allen	UCSF Chem. Bio.	Qual. Committee	Fellow, UC Berkeley
2005-2006	Judith Wong	UCSF Med.	Mentor	MD Private Practice
2006-2008	Lilly Zeng	UC Berkeley	Mentor	MD Private Practice
2006-2008	Sarah Paredes	UC Berkeley	Mentor	Mental Health NP, New Haven, CT
2006-2008	Victoria Wang	UC Berkeley	Mentor	DVM student, UC Davis
2007-2009	Terrance Chiang	UC Berkeley	Mentor	UCSF EH&S
2007-2012	S. Ahmadiantehrani	UCSF PSPG	Thesis Committee	Postdoc. Fellow, Univ. of Chicago
2007-2012	Anita Devineni	UCSF Neurosci.	Thesis Committee	Dept. Anatomy UCSF
2010-2011	Chichen Qiu	UC Berkeley	Mentor	Student, UC Berkeley
2012-2012	Dmitri Nathan Yousef Yengej	Rudolf Magnus Institute, Univ. of Utrecht	Mentor	Ph.D. candidate U. Amsterdam
2012-2012	Adam Weinstein	UC Berkeley	Mentor	Student, UC Berkeley

## UT AUSTIN

Dates	Name	Program or School	Role	Last Known Position
2013	Joel Shillinglaw	College of Pharmacy	Lab Rotation mentor	Neuroscientist at PsychoGenics
2013-2015	Dev Gandhi	Neuroscience	Lab mentor	Medical Student UTSW
2013-2015	Viktoria Topper	UT Austin/UTMB joint program	Mentorship team member	MD Private Practice
2013-2015	Holly Chapman	Psychology	Lab mentor	Research Assistant, UTMB
2013-2014	Kuen-Woo Lee	Neuroscience	Lab mentor	Unknown
2013-2014	Brittany Li	Neuroscience	Lab mentor	Unknown
2014-2019	Matt Pomrenze	Institute for Neuroscience	Thesis Advisor	Postdoctoral Fellow, Stanford Univ.
2014-2016	Dana Most	Institute for Neuroscience	Thesis Committee	Neurology Resident, UCSF
2014-present	Laura Ferguson	Institute for Neuroscience	Thesis Committee	Postdoc, UT Austin
2014	Omar Hariah	Neuroscience	Lab mentor	Undergraduate UT Austin
2015	Adam Gordon	Institute for Neuroscience	Lab Rotation Mentor	Postdoc, Univ. Wash.
2015-2018	David Giles	College of Pharmacy	Thesis Committee	Consultant at L.E.K. Consulting
2015-present	Juliana Taliaferro	College of Pharmacy	Thesis Committee	Research Assistant, UT Austin

Dates	Name	Program or School	Role	Last Known Position
2016-present	Anna Warden	Institute for Neuroscience	Qualifying and Thesis Committees	Research Scientist, UT Austin
2016-2018	Charles Zogzas	College of Pharmacy	Thesis Committee	Support, Nikon Instruments
2016-2018	Yesha Shah	Biology & Business Honors	Lab mentor	Medical Student, Johns Hopkins
2017	Wanjie Yang	Cell and Molecular Biology Graduate Program	Lab rotation mentor	Unknown
2017	Philip Lambeth	Institute for Neuroscience	Qualifying Committee	Postdoctoral Fellow, UCSF
2018-2021	Andre DeGroot	Biomedical Engineering Grad. Student	Thesis Committee	Scientist at Sana Biotechnology, Boston MA
2018-2022	Cherish Taylor	Institute for Neuroscience	Thesis Committee	Postdoctoral Fellow, Harvard
2018-2022	Blaine Caslin	Institute for Neuroscience	Thesis Committee	Postdoctoral Fellow, UT Austin
2018-2019	Cheaseequa Blevins	Institute for Neuroscience	Thesis Committee	Postdoc, Mathematical Biosciences Institute, Columbus OH
2018-present	Geoff Dilly	Institute for Neuroscience	Thesis Advisor	PhD Candidate UT Austin
2018-present	Emily Grantham	Institute for Neuroscience	Thesis Committee	Postdocotroal Fellow, UT Austin
2018-present	Victor Liaw	Biochemistry	Lab mentor	Medical Student UTSouthwestern
2018-2020	Thi Tran	Biochemistry	Lab mentor	Medical Student, McGovern Med School
2019	Kenji Nishimura	Institute for Neuroscience	Lab rotation mentor	PhD Candidate UT Austin
2019	Michael Dugan	Institute for Neuroscience	Thesis Advisor	PhD Candidate UT Austin
2019	Bailey Moskowitz	Univ. of VA, Biology	Summer mentor	Research Assistant Univ. of Wisconsin
2019-2022	Cory Kittleman	Neuroscience	Lab mentor	Medical student UT San Antonio HSC
2019-2021	Atharva Railkar	Neuroscience	Lab mentor	Associate Health Business Analyst at Florida Blue
2019-2020	Angus Brooks	Biology	Lab mentor	Medical student at UT McGovern
2019-2021	Sathvik Srinivasan	Neuroscience	Lab mentor	High School tutor
2020-2021	Shruti Patil	Neuroscience/ English	Lab mentor	Texas Criminal Justice Coalition Intern
2020-present	Adriana Gregory Flores	Institute for Neuroscience	Thesis Co-Advisor	PhD Candidate UT Austin
2020-present	Sam Bazzi	Institute for Neuroscience	Thesis Committee	PhD Candidate UT Austin
2021-present	Amanda Essoh	Dept. Neuroscience & Exp. Ther.	Thesis committee	PhD candidate Texas A&M
2021-present	Dylan Kirsch	Institute for Neuroscience	Thesis committee	PhD Candidate UT Austin
2021-present	Sandra Cong	Biology	Lab mentor	Undergraduate UT Austin
2022-present	Kanako Matsumura	Institute for Neuroscience	Thesis committee	PhD Candidate UT Austin
2022-present	Stephanie Grant	Pharmaceutical Sciences	Thesis Committee	PhD Candidate UT Austin

## POSTDOCTORAL FELLOWS &amp; RESIDENTS

## UCSF

Dates	Name	Fellow	Faculty Role	Last Known Position
1991-1993	Reina Roivainen, M.D., Ph.D.	Fellow	Mentor	Neurologist, Helsinki Univ. Central Hospital Helsinki, Finland
1992-1997	Bhupinder Hundle, Ph.D.	Fellow	Mentor	Director Distribution Sales at Oxford Nanopore Technologies, Oxford, UK
1993-1995	Michele Solem, Ph.D.	Fellow	Mentor	Assoc Prof, T Jefferson U
1995-1997	Edward Gerstin Jr., Ph.D.	Fellow	Mentor	Science teacher, San Diego
1996-1998	Effie Lin, Ph.D.	Fellow	Mentor	Scientist, Gentastic Corp.
1997-2000	Karen Zhu, Ph.D.	Fellow	Mentor	Senior Scientist, BioRad
1997-2001	Annick Martin Ph.D.	Fellow	Mentor	Project Leader, Francaise Contre les Myopathies
1998-2002	Helen Walter, Ph.D.	Fellow	Mentor	Teacher, Peralta College
1998-2001	Asa Abeliovich M.D., Ph.D.	Resident	Advisor	CEO and Founder, Prevail Therapeutics
1999-2005	Doo-Sup Choi, Ph.D.	Fellow	Mentor	Prof. Pharmacology & Psychiatry, Mayo Clinic
2001-2004	Anita Koshy, M.D.	Resident	Advisor	Assoc. Prof of Neurology, Univ. of Arizona
2001-2009	Phillip Newton, Ph.D.	Fellow	Mentor	Prof. of Medicine, Swansea Univ. Med. School, UK
2001-2004	Maengseok Song, Ph.D.	Fellow	Mentor	Senior Scientist, Applied Biosystems, Foster City, CA
2003-2009	Melissa Wallace, Ph.D.	Fellow	Mentor	Professor of Pharmacology and Medical Sciences Education, Swansea Univ. UK
2003-2006	Miho Oyasu, Ph.D.	Fellow	Mentor	Scientist, Bristol Myers Squibb, Redwood City, CA
2004-2006	Heidi Lesscher, Ph.D.	Fellow	Mentor	Assoc. Professor of Vet Med, Univ. of Utrecht, Netherlands
2004-2006	Anthony Kim, M.D.	Resident	Advisor	Assoc. Prof. of Neurology UCSF
2005-2008	Emily Ho, M.D., Ph.D.	Resident	Advisor	Neurologist, Swedish Neurosci. Inst., Seattle WA
2007-2009	Dev Chandra, DDS, Ph.D.	Fellow	Mentor	Postdoctoral Fellow, UCSF School of Dentistry
2007-2014	Anna Lee, Ph.D.	Fellow	Mentor	Assoc. Prof. of Pharmacology, Univ. of MN
2008-2011	Amy Gelfand, M.D.	Resident	Advisor	Assoc. Prof. of Neurology UCSF
2008-2010	Nurith Amitai, Ph.D.	Fellow	Mentor	Scientific Writer, Absorption Systems, San Diego CA
2009-2014	Daifei Wu, Ph.D.	Fellow	Mentor	Senior Research Scientist, Jiangsu SR-Biopharma Co., Ltd, China
2010-2013	Taban Seif, Ph.D.	Fellow	Mentor	Instructor, Cal. State Univ., East Bay
2011-2013	James Orenge, M.D., Ph.D.	Resident	Advisor	Asst. Prof. of Neurology, Baylor College of Medicine UCSF
2011-2013	Richard van Rijn, Ph.D.	Fellow	Co-Mentor for K99 award	Assoc. Prof. of Pharmacology, Purdue University; Principal Scientist, Disease Biology, Septerna, South San Francisco, CA
2012-2013	Rajani Maiya, Ph.D.	Fellow	Mentor	Asst. Prof. of Physiology, LSU School of Medicine

## UT AUSTIN

Dates	Name	Position	Faculty Role	Last Known Position
2014-2016	Angelo Blasio, PhD	Postdoctoral Fellow	Mentor	Research Scientist II, Vertex Pharmaceuticals, Boston, MA
2013-2020	Rajani Maiya, PhD	Assistant Res. Scientist,	Supervisor	Asst. Prof. Physiology , LSU School of Medicine
2013-2014	Daifei Wu, Ph.D.	Assistant Res. Scientist, UT Austin	Mentor	Senior Scientist and Vice General Manager, Jiangsu SR-Biopharma Co, Taizhou City, China
2015-2018	Jingyi Wang, PhD	Postdoctoral Fellow	Mentor	Manager GLG, Austin TX
2018-present	Laura Ferguson, PhD	Postdoctoral Fellow	Mentor	Postdoctoral Fellow
2019-2020	Lauren Smith, PhD	Postdoctoral Fellow	Co-Mentor	Manager, Educational Development at NACCME an HMP Company
2021-present	Lubov Ezerskiy, PhD	Postdoctoral Fellow	Mentor	Postdoctoral Fellow

## FACULTY MENTORING

## UCSF

Dates	Name	Position While Mentored	Mentoring Role	Current Position
2001-2003	Janice Williams, Ph.D.	Staff Scientist	Supervisor	Sen. Scientist, Presidio Pharma.
2001-2010	Wen-Hai Chou, Ph.D.	Adj. Asst. Prof.	Supervisor	Assist. Investigator, Ctr. for Neuropsychiatric Res., National Health Research Institutes, Taiwan
2002-present	Viktor Kharazia, Ph.D.	Histology Dir.	Supervisor	Histology and Imaging Specialist, UCSF
2003-2007	Vineeta Singh, M.D.	Asst. Clin. Prof.	Mentor	Prof. of Neurology, UCSF
2008-2008	Gil Rabinovici, M.D.	Clin. Fellow	Mentor	Prof. of Neurology, UCSF
2011-2013	Lea Grinberg, M.D., Ph.D.	Asst. Prof.	Mentor	Assoc. Prof., Neurology, UCSF

## UT AUSTIN

Dates	Name	Position While Mentored	Mentoring Role	Current Position
2013-2014	Anna Lee, Ph.D.	Res. Asst. Prof. of Pharmacology-Toxicology	Advisor	Assoc. Prof. of Pharmacology, University of Minnesota
2013-2019	Somshuvra Mukhopadhyay Ph.D.	Asst. Prof. of Pharmacology-Toxicology	Advisor	Assoc. Prof. of Pharmacology/Toxicology UT Austin
2014-2018	Boris Zemelman, Ph.D.	Asst. Prof. of Neuroscience	Advisor	Assoc. Prof. of Neuroscience UT Austin
2017-present	Esther Melamed, M.D., Ph.D.	Asst. Prof. of Neurology	Advisor	Asst. Prof. of Neurology, UT Austin

**TEACHING AND MENTORING NARRATIVE**

At UCSF I taught medical students and neurology residents on the in-patient service at San Francisco General Hospital for one month per year for many years, and mentored students and residents in the outpatient neurology clinic. I also taught neuroscience graduate students by directing a two-week minicourse on Addiction (NS219) approximately every other year and by directing the Neurobiology of Disease course (NS225) every four to six years. I informally taught postdoctoral fellows in my laboratory daily and I assisted graduate students in the UCSF Neuroscience program 6-10 hours per year each by participating on their thesis committees. I also mentored six neurology residents and three junior faculty members in Neurology between 1998-2013.

At UT Austin I continued to mentor two senior scientists and one research Assistant Professor who came with me from UCSF. The research assistant professor, Dr. Anna Lee, obtained a tenure-track faculty position at University of Minnesota in the Department of Pharmacology in 2015 and the other, Rajani Maiya, obtained a tenure-track faculty position in 2020 at Louisiana State University (New Orleans) School of Medicine in the Department of Physiology. I mentored several more (see above), and there are now two postdoctoral fellows and three neuroscience graduate students doing thesis projects in my lab. I am on thesis committees for several other Neuroscience graduate students. I also organize weekly conferences of the Waggoner Center and attend Neuroscience Department conferences in the College of Natural Sciences. In 2019, I directed the graduate course NEU 385L Addiction Neuroscience and in spring 2020 directed the undergraduate course NEU 365W Neurobiology of Addiction. Since I became Chair of Neuroscience in 2021, I have been relieved of formal course teaching.

**OTHER****PRE- and POST-DOCTORAL EDUCATION**

1991-1995	Faculty Member, Molecular Medicine Program, UCSF
1991-2000	Faculty Member, Program in Cellular and Molecular Medicine, SFGH
1996-2000	Faculty Member, Program in Biomedical Sciences, UCSF
1997-2013	Faculty Member, Graduate Program in Neurosciences, UCSF
1997-2013	Faculty Member, Program in Biological Sciences, UCSF
1999-2013	Faculty Member, Institute for Neurodegenerative Diseases, UCSF
2003-2013	Faculty Member, Wheeler Center for Neurobiology of Addiction
2008-2013	Faculty Member, UCSF Graduate Group in Oral and Craniofacial Sciences
2009-2013	Faculty Member, UCSF Institute of Molecular Medicine
2013-now	Faculty Member, UT Institute for Neuroscience Graduate Program
2013-now	Faculty Member, UT Interdisciplinary Life Sciences Graduate Programs (formerly Cell and Molecular Biology Graduate Program)

**TEACHING AND MENTORING AWARDS AND NOMINATIONS**

1995                    Robert B. Layzer "Golden Toe" Award for Outstanding Neurology Resident Teaching

2004 Nominee, Kaiser Awards for Excellence in Teaching

## RESEARCH AND CREATIVE ACTIVITIES

### RESEARCH AWARDS

#### CURRENT

NIH, R01AA026075 07/20/2017 to 06/30/2023 (NCE)

“CRF Neurons of the Extended Amygdala and Alcohol Drinking”

To test the hypothesis that as animals develop ethanol dependence, CRF neurons in the central amygdala and bed nucleus of the stria terminalis promote ethanol consumption through the coordinated release of GABA, CRF, and other neuropeptides.

Total Direct Costs: \$1,125,000

Role: PI (5%)

NIH, U01AA013520-21 02/01/2022 to 01/31/2027

“Biomedical and Genetic Determinants of Alcohol Consumption”

To examine the role of interferon-1 (IFN-1) signaling in behavioral responses to alcohol and identify and validate potential drug targets within IFN-1 signaling pathways to reduce alcohol consumption.

Total Direct Costs: \$1,499,117

Role: MPI (10%) with Blednov

NIH, U24 AA025479 02/01/2022 to 01/31/2027

“Integrative Neuroscience Initiative on Alcoholism”

Administrative Core for INIA-Neuroimmune, a multi-disciplinary, highly collaborative research consortium that studies immune and inflammatory pathways in the brain, combining novel genomic and systems-level analyses to identify potential treatments for alcohol use disorder.

Total Direct Costs: \$1,616,223

Role: PI (15%)

NIH, R01AA028807 09/12/2022 to 08/31/2027

“PDE4 regulation of GABA-A receptors in alcohol tolerance and consumption”

These studies will investigate the role of phosphodiesterase 4 (PDE4) enzymes and GABAA receptor beta subunits in alcohol tolerance and alcohol consumption. These studies hope to identify a specific PDE4 and a specific subunit of GABAA receptors as drug targets for treatment of alcohol use disorder

Total Direct Costs: \$2,162,710

Role: PI (10%)

#### COMPLETED

DoD/CDMRP, W81XWH1810389

08/31/2018 to 09/01/2022 (NCE)

“Protein Kinase C Epsilon Inhibitors to Treat Pain”

Role: PI (5%)

NIH, U01AA013520 02/01/2017 to 01/31/2022  
“Biomedical and Genetic Determinants of Alcohol Consumption”  
Role: MPI (5%) with Blednov

Harrington Discovery Institute, HDI2018-SI-3044 01/01/2018 to 12/31/2020 (NCE)  
“Protein Kinase C Epsilon Inhibitors”  
Role: PI.

NIH, R21AA025244 07/15/2016 to 06/30/2019 (NCE)  
“The Transcriptional Co-Factor LMO4 and Ethanol Drinking”  
Role: PI (10%)

NIH, P50AA017072 07/01/2013 to 06/30/2018  
“Alcohol Center for Translational Genetics: Component 5 - Atypical PKM zeta in Models of Binge Drinking and Relapse”  
Role: PI

NIH, R01AA013588 05/01/2002 to 07/31/2018  
“Regulation of GABA-A Receptors by PKC epsilon”  
Role: PI

NIH, R21AA023223, Hopf, Frederic 09/01/2015 to 08/31/2016  
“Opto/Chemo-genetic Analysis of Locus Coeruleus CRF and Compulsive Ethanol Intake”  
Role: Co-I

Univ of TX System, Brain Seed Grant 365094, Ben-Yakar, Adela 09/01/2015 to 08/31/2016  
“Single Cell Capture for Transcriptome Analysis of Ensembles that Encode Emotional Valence”  
Role: Co-I

US Army, 803-07W81XWH-11-2-0145, Messing, Robert 07/06/2012 to 04/30/2013  
“N-Type Calcium Channel Blockers for PTSD and Alcohol Use Disorders”  
Role: PI

NIH, P50AA017072, Messing, Robert 05/20/2010 to 04/30/2013  
“Alcohol Center for Translational Genetics (ACTG): Component 6: Nucleus Accumbens Atypical PKCs and Pathological Ethanol Drinking”  
Role: Co-PI

NIH, R01AA018316, Messing, Robert 09/20/2009 to 06/30/2015  
“PKC Delta in Ethanol Regulation of GABA-A Receptors and Behavior”  
Role: PI

US Army, W81XWH-08-1-0620, Messing, Robert 0 9/01/2008 to 08/31/2011  
“PKC-epsilon in the Amygdala-Prefrontal Cortex Circuit Regulates the Extinction of Conditioned Fear”  
Role: PI

NIH, P50AA017072, Messing, Robert 05/20/2008 to 06/30/2013  
“Alcohol Center for Translational Genetics (ACTG) “  
Role: Director

NIH, P01NS53709, Levine, Jon	09/01/2007 to 06/30/2013
“Receptors and Second Messengers for Pain and Analgesia, Project 2: Mechanisms Downstream from PKC Epsilon in Inflammatory Hyperalgesia”	
Role: PI	
US Army, W81XWH-07-1-0078, Messing, Robert	05/15/2007 to 01/14/2010
“PKC Delta Regulation of Response to Ethanol”	
Role: PI	
US Army, WB1XWH-06-1-0159, Messing, Robert	01/02/2006 to 01/01/2009
“Responses to Ethanol in Mice Lacking DGK zeta, DGK iota, or PDK1”	
Role: PI	
US Army, W81XWH-05-1-0215, Messing, Robert	01/15/2005 to 01/14/2010
“Implementation of a Clinical Translational Research Unit at the Ernest Gallo Clinic and Research Center”	
Role: PI	
NIH, R01AA013875, Levine, Jon	08/01/2004 to 05/31/2009
“Ethanol-induced Symptomatic Peripheral Neuropathy”	
Role: Co-I	
US Army, DAMD 03143005, Messing, Robert	10/01/2003 to 09/30/2005
“Identification of alleles of PKCε as risk factors in alcohol use disorders”	
Role: PI	
US Army, DAMD17-03-1-0058, Messing, Robert	01/15/2003 to 01/31/2007
“Amygdala CRF in reduced anxiety and alcohol consumption in PKCε”	
Role: PI	
NIH, R37AA013588, Messing, Robert	05/01/2002 to 04/30/2013
“Regulation of GABA-A Receptors by PKC Epsilon”	
Role: PI	
NIH, R01AA010036, Messing, Robert	04/01/1995 to 03/31/2001
“Ethanol, Neural Differentiation, and Protein Kinase C”	
Role: PI	
NIH, R01AA008117, Messing, Robert	12/01/1989 to 06/30/2004
“Ethanol, Calcium Channels, and Protein Kinase C”	
Role: PI	
NIH, F32AA005223, Messing, Robert	07/20/1985 to 07/19/1986
“Modulation of Calcium Dependent Neurotransmitter Release”	
Role: PI	
NIH, K08NS001151, Messing, Robert	07/01/1985 to 06/30/1991
“Regulation of Calcium Channels by Protein Kinase C”	
Role: PI	



## PUBLICATIONS

Total citations and *h*-index Feb 3, 2023:

Google Scholar: 14,317 citations; *h*-index = 68

Scopus 10,269 citations; *h*-index = 57

Web of Science: 9,721 citations; *h*-index = 56

## Manuscripts

1. Hill R, Robbins AW, **Messing RO**, Arora NS. Sleep apnea syndrome after poliomyelitis. *Am. Rev. Res. Dis.* 127:129-131, 1983.
2. Schmidley JW, **Messing RO**. Agitated confusional states in patients with right hemisphere infarctions. *Stroke* 15:883-885, 1984.
3. **Messing RO**, Closson R, Simon R. Drug-induced seizures: A 10-year experience. *Neurology* 34:1582-1586, 1984.
4. Panitch HS, Francis GS, Hooper CJ, **Messing RO**, Lipkin WI. Immunological studies in patients with acquired immune deficiency syndrome. *Ann. NY Acad. Sci.* 437:513-517, 1984.
5. Edwards R, **Messing RO**, McKendall RR. Cytomegalovirus meningoencephalitis in a homosexual man with Kaposi's sarcoma: Isolation of CMV from CSF cells. *Neurology* 35:560-562, 1985.
6. **Messing RO**, Carpenter CL, Greenberg D. Mechanism of calcium channel inhibition by phenytoin: Comparison with classical calcium channel antagonists. *J. Pharmacol. Exp. Ther.* 235:407-411, 1985.
7. Greenberg DA, Carpenter CL, **Messing RO**: Inactivation of  $^{45}\text{Ca}^{2+}$  uptake by prior depolarization of PC12 cells. *Neurosci. Lett.* 62:377-381, 1985.
8. **Messing RO**, Carpenter CL, Greenberg DA. Inhibition of calcium flux and calcium channel antagonist binding in the PC12 neural cell line by phorbol esters and protein kinase C. *Biochem. Biophys. Res. Commun.* 136:1049-1056, 1986.
9. **Messing RO**, Carpenter CL, Diamond I, Greenberg DA. Ethanol regulates calcium channels in clonal neural cells. *Proc. Natl. Acad. Sci. USA* 83:6213-6215, 1986.
10. Greenberg DA, Carpenter CL, **Messing RO**. Depolarization-dependent binding of the calcium channel antagonist (+)-[3H]PN200-110 to intact cultured neural cells. *J. Pharmacol. Exp. Ther.* 238:1021-1027, 1986.
11. Greenberg DA, Carpenter CL, **Messing RO**. Calcium channel antagonist properties of the antineoplastic antiestrogen, tamoxifen, in the PC12 neurosecretory cell line. *Cancer Res.* 47:70-74, 1987.
12. Greenberg DA, Carpenter CL, **Messing RO**. Interaction of calmodulin inhibitors and protein kinase C inhibitors with voltage-dependent calcium channels. *Brain Res.* 404:401-404, 1987.
13. Greenberg DA, Carpenter CL, **Messing RO**. Lectin-induced enhancement of voltage-dependent calcium flux and calcium channel antagonist binding. *J. Neurochem.* 48:888-894, 1987.
14. Greenberg DA, Carpenter CL, **Messing RO**. Ethanol-induced component of  $^{45}\text{Ca}^{2+}$  uptake in PC12 cells is sensitive to  $\text{Ca}^{2+}$  channel modulating drugs. *Brain Res.* 410:143-146, 1987.
15. **Messing RO**, Stevens AM, Kiyasu E. Nicotinic and muscarinic agonists stimulate rapid protein kinase C translocation in PC12 cells. *J. Neurosci.* 9:507-512, 1989.
16. Marks SS, Watson DL, Carpenter CL, **Messing RO**, Greenberg DA. Calcium channel antagonist receptors in cerebral cortex from alcoholic patients. *Brain Res.* 478:196-198, 1989.

17. Marks SS, Watson DL, Carpenter CL, **Messing RO**, Greenberg DA. Comparative effects of chronic exposure to ethanol and calcium channel antagonists on calcium channel antagonist receptors in cultured neural (PC12) cells. *J. Neurochem.* 53:168-172, 1989.
18. Rawlings D, Ferriero DM, **Messing RO**. Early CT reevaluation after empiric praziquantel therapy in neurocysticercosis. *Neurology* 39:739-741, 1989.
19. **Messing RO**, Sneade AB, Savidge B. Protein kinase C participates in up-regulation of dihydropyridine-sensitive calcium channels by ethanol. *J. Neurochem.* 55:1383-1389, 1990.
20. **Messing RO**, Henteleff M, Park JJ. Ethanol enhances growth factor-induced neurite formation in PC12 cells. *Brain Res.* 565:301-311, 1991.
21. **Messing RO**, Petersen PL, Henrich CJ. Chronic ethanol exposure increases levels of protein kinase C delta and epsilon and protein kinase C-mediated phosphorylation in cultured neural cells. *J. Biol. Chem.* 266:23428-23432, 1991.
22. Roivainen R and **Messing RO**. The phorbol derivatives thymeleatoxin and 12-deoxyphorbol-13-O-phenylacetate-10-acetate cause translocation and down-regulation of multiple protein kinase C isozymes. *FEBS Lett.* 319:31-34, 1993.
23. Smith WS and **Messing RO**. Cerebral aneurysm presenting as cough headache. *Headache* 33:203-204, 1993.
24. Roivainen R, McMahon T, **Messing RO**. Protein kinase C isozymes that mediate enhancement of neurite outgrowth by ethanol and phorbol esters in PC12 cells. *Brain Res.* 624:85-93, 1993.
25. Garcia PA, Bredesen DE, Vinters HV, Graefin von Einsiedel R, Williams RL, Kahn JO, Byers VS, Levin AS, Waites LA, **Messing RO**. Neurological reactions in HIV-infected patients treated with trichosanthin. *Neuropathol. Appl. Neurobiol.* 19:402-405, 1993.
26. Ferriero DM, Sheldon RA, **Messing RO**. Somatostatin enhances nerve growth factor induced neurite outgrowth in PC12 cells. *Dev. Brain Res.* 80:13-18, 1994.
27. Roivainen R, Hundle B, **Messing RO**. Ethanol enhances growth factor activation of mitogen-activated protein kinases by a protein kinase C-dependent mechanism. *Proc. Nat. Acad. Sci. USA* 92:1891-1895, 1995.
28. Solem M, McMahon T, **Messing RO**. Depolarization-induced neurite outgrowth in PC12 cells requires permissive, low level NGF receptor stimulation and activation of calcium/calmodulin-dependent protein kinase. *J. Neurosci.* 15:5966-5975, 1995.
29. Hundle B, McMahon T, Dadgar J, **Messing RO**. Overexpression of epsilon-protein kinase C enhances nerve growth factor-induced phosphorylation of mitogen-activated protein kinases and neurite outgrowth. *J. Biol. Chem.* 270:30134-30140, 1995.
30. Lai H-L, Yang T-H, **Messing RO**, Ching Y-H, Lin S-C, Chern Y. Protein kinase C inhibits adenylyl cyclase type VI activity during desensitization of the A2a-adenosine receptor-mediated cAMP response. *J. Biol. Chem.* 272:4970-4977, 1997.
31. Hundle B, McMahon T, Dadgar J, Chen C-H, Mochly-Rosen D, **Messing RO**. An inhibitory fragment derived from protein kinase C epsilon prevents enhancement of nerve growth factor responses by ethanol and phorbol esters. *J. Biol. Chem.* 272:15028-15035, 1997.
32. Solem M, McMahon T, **Messing RO**. Protein kinase A regulates inhibition of N- and P/Q-type calcium channels by ethanol in PC12 cells. *J. Pharmacol. Exp. Ther.* 282:1487-1495, 1997.

33. Gerstin E, McMahon T, Dadgar J, **Messing RO**. Protein kinase C delta mediates ethanol-induced up-regulation of L-type calcium channels. *J. Biol. Chem.* 273:16409-16414, 1998.
34. Liu J, Solway K, **Messing RO**, Sharp FR. Increased neurogenesis in the dentate gyrus after transient global ischemia in gerbils. *J. Neurosci.* 18:7768-7778, 1998.
35. Khasar SG, Lin Y-H, Martin A, Dadgar J, McMahon T, Hundle B, Aley KO, Isenberg W, Green PG, Hodge, CH, Levine JD, **Messing RO**. A novel nociceptive signaling pathway revealed in protein kinase C epsilon mutant mice. *Neuron* 24:253-260, 1999.
36. Hodge CW, Mehmert K, Kelley SP, McMahon T, Haywood A, Olive MF, Wang D, Sanchez-Perez AM, **Messing RO**. Supersensitivity to allosteric GABA<sub>A</sub> receptor modulators and alcohol in mice lacking PKC epsilon. *Nat. Neurosci.* 2:997-1002, 1999.
37. McMahon T, Andersen R, **Messing RO**. PKC epsilon mediates up-regulation of N-type calcium channels by ethanol. *Mol. Pharmacol.* 57:53-58, 2000.
38. Aley KO, **Messing RO**, Mochly-Rosen D, Levine JD. Chronic hypersensitivity for inflammatory nociceptor sensitization mediated by the epsilon isozyme of protein kinase. *J. Neurosci.* 20:4680-4685, 2000.
39. Walter H, McMahon T, Gerstin E, Dadgar J, Wang D, **Messing RO**. Ethanol regulates calcium channel subunits by protein kinase C delta-dependent and -independent mechanisms. *J. Biol. Chem.* 275:25717-25722, 2000.
40. Olive MF, Mehmert KK, **Messing RO**, Hodge CW. Reduced operant ethanol self-administration and in vivo mesolimbic dopamine responses to ethanol in PKC epsilon-deficient mice. *Eur. J. Neurosci.* 12:4131-4140, 2000.
41. Choi D-S, Handa M, Young H, Gordon AS, Diamond I, **Messing RO**. Genomic organization and expression of the mouse equilibrative, nitrobenzylthioinosine-sensitive nucleoside transporter 1 (ENT1) gene. *Biochem. Biophys. Res. Commun.* 277:200-208, 2000.
42. Dina OA, Barletta J, Chen XJ, Mutero A, Martin A, **Messing RO**, Levine JD. Key role for the epsilon isoform of protein kinase C in painful alcoholic neuropathy in the rat. *J. Neurosci.* 20:8614-8619, 2000.
43. Handa M, Choi D-S, Caldeiro RM, **Messing RO**, Diamond I, Gordon AS. Cloning of a novel isoform of the NBMPR-sensitive equilibrative nucleoside transporter (ENT1) in mouse that lacks a putative phosphorylation site. *Gene* 262:301-307, 2001.
44. Huang NK, Lin YW, Huang CL, **Messing RO**, Chern Y. Activation of protein kinase A and atypical protein kinase C by A<sub>2A</sub> adenosine receptors antagonizes apoptosis due to serum deprivation in PC12 cells. *J. Biol. Chem.* 276:13838-13846, 2001.
45. Olive MF, Mehmert KK, Nannini MA, Camarini R, **Messing RO**, Hodge CW. Reduced ethanol withdrawal severity and altered withdrawal-induced c-fos expression in various brain regions of mice lacking protein kinase C-epsilon. *Neuroscience* 103:171-179, 2001.
46. Aley KO, Martin A, McMahon T, Levine JD, **Messing RO**. Nociceptor sensitization by extracellular signal-regulated kinases. *J. Neurosci.* 21:6933-6939, 2001.
47. Zhu G, Wang, D, Lin YW, Lim S, Dadgar J, Koo EH and **Messing RO**. Protein kinase C epsilon suppresses A $\beta$  production and promotes activation of alpha-secretase. *Biochem. Biophys. Res. Commun.* 285:997-1006, 2001.
48. Dina OA, Aley KO, **Messing RO**, Levine JD. Sex hormone regulates the contribution of PKC epsilon and PKA signaling in inflammatory pain in the rat. *Eur. J. Neurosci.* 13:2227-2233, 2001.

49. Jin Z-Q, Zhou H-Z, Zhu P, Honbo N, Mochly-Rosen D, **Messing RO**, Goetzl E, Karliner JS, Gray MO. Cardioprotection mediated by sphingosine-1-phosphate and the ganglioside GM-1 in wild type and epsilon PKC knockout mouse hearts. *J. Appl. Physiol.* 282:H1970-H1977, 2002.
50. Hodge CW, Raber J, Walter H, McMahon T, Sanchez-Perez AM, Olive MF, Mehmert K, Morrow AL, **Messing RO**. Decreased anxiety-like behavior, reduced stress hormones, and neurosteroid supersensitivity in mice lacking protein kinase C epsilon. *J. Clin. Invest.* 110:1003-1010, 2002.
51. Choi D-S, Wang D, Dadgar J, Chang WS, **Messing RO**. Conditional rescue of protein kinase C epsilon regulates ethanol preference and hypnotic sensitivity in adult mice. *J. Neurosci.* 22:9905-9911, 2002.
52. Littler CM, Morris KG Jr, Fagan KA, McMurry IF, **Messing RO**, Dempsey EC. Protein kinase C epsilon null mice have decreased hypoxic pulmonary vasoconstriction. *Am. J. Physiol. Heart Circ. Physiol.* 284:H1321-H1331, 2003.
53. Proctor WR, Poelchen W, Bowers BJ, Wehner JM, **Messing RO**, Dunwiddie TV. Ethanol differentially enhances hippocampal GABA<sub>A</sub> receptor-mediated responses in PKC gamma and PKC epsilon null mice. *J. Pharmacol. Exp. Ther.* 305:264-270, 2003.
54. Choi D-S, Young H, McMahon T, Wang D, **Messing RO**. The mouse RACK1 gene is regulated by NF-kappaB and contributes to cell survival. *Mol. Pharmacol.* 64:1541-1548, 2003.
55. Gray MO, Zhou H-Z, Schafhalter-Zoppoth I, Zhu P, Mochly-Rosen D, **Messing RO**. Preservation of baseline hemodynamic function and loss of inducible cardioprotection in adult mice lacking protein kinase C epsilon. *J. Biol. Chem.* 279:3596-3604, 2004.
56. Chou W-H, Choi D-S, Zhang H, Mu D, McMahon T, Kharazia VN, Lowell CA, Ferriero DM, **Messing RO**. Neutrophil protein kinase C delta as a mediator of stroke-reperfusion injury. *J. Clin. Invest.* 114:49-56, 2004.
57. Choi D-S, Cascini M-G, Mailliard W, Young H, Paredes P, McMahon T, Diamond I, Bonci A, **Messing RO**. The equilibrative nucleoside transporter type 1 modulates ethanol intoxication and preference in mice. *Nat. Neurosci.* 7:855-861, 2004.
58. Newton PM, Orr CJ, Wallace MJ, Shin H-S, **Messing RO**. Deletion of N-type calcium channels blocks ethanol reward and reduces ethanol consumption in mice. *J. Neurosci.* 24:9862-9869, 2004.
59. Newton PM, Tully K, McMahon T, Connolly J, Dadgar J, Treistman SM, **Messing RO**. Chronic ethanol exposure induces an N-type calcium channel splice variant with altered channel kinetics. *FEBS Lett.* 579:671-676, 2005.
60. Olive MF, McGeehan AJ, Kinder JR, McMahon T, Hodge CW, Janak PH, **Messing RO**. The mGluR5 antagonist 6-methyl-s-(phenylethynyl)pyridine decreases ethanol consumption via a protein kinase C epsilon-dependent mechanism. *Mol. Pharmacol.* 67:349-355, 2005.
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62. Littler C, Wehling C, Wick M, Fagan K, Cool C, **Messing RO**, Dempsey E. Divergent contractile and structural responses of the murine PKC-epsilon null pulmonary circulation to chronic hypoxia. *Am. J. Physiol. Lung Cell. Mol. Physiol.* 289:L1083-1093, 2005.
63. Xuan YT, Guo Y, Zhu Y, Wang OL, Rokosh G, **Messing RO**, Bolli R. Role of the protein kinase C-epsilon-Raf-1-MEK-1/2-p44/42 MAPK signaling cascade in the activation of signal transducers and activators of transcription 1 and 3 and induction of cyclooxygenase-2 after ischemic preconditioning. *Circulation* 112:1971-1978, 2005.

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## **PATENTS ISSUED**

1. "Use of Inhibitors of Protein Kinase C Epsilon to Treat Pain"

US 6,376,467 granted April 23, 2002

US 6,686,334 granted February 3, 2004

EPO 1093379 granted January 7, 2003 (validated in Germany, Spain, France, Great Britain, Ireland, Italy, Sweden)

New Zealand 508767 granted March 29, 2004

South Africa 2000/7494 granted June 26, 2002

2. "Protein Kinase C Epsilon as Modulator of Anxiety, Alcohol Consumption and Self-Administration of Drugs of Abuse"

US 6,717,030 granted April 6, 2004

US 7,534,859 granted May 19, 2009

EPO 1095136 granted March 18, 2009 (validated in Germany, France, Great Britain)

South Africa 2000/7780 granted May 29, 2002

3. "Methods for Modulating a Drug-related Effect on Behavior"

US Patent 7,365,050 granted April 29, 2008.

4. "PKC-Epsilon Inhibitors"

US Patent No. 8,785,648; Issued on 7/22/2014

US Patent No. 9,376,423; Issued on 6/28/2016

WIPO|PCT No. WO 2016/003450 A1; Issued on 1/7/2016

## RESEARCH PROGRAM

My interests are in translational neuroscience with a focus on molecular and circuit mechanisms that underlie addiction to alcohol and chronic pain. Much of my work has involved identifying and testing the role of candidate drug targets in models of nociceptor sensitization and addiction-related behavior. My laboratory has made several major contributions to the fields of pain and drug addiction, including determining that protein kinase C epsilon is a major mediator of nociceptor sensitization, and that protein kinase C epsilon and delta, N-type voltage-dependent calcium channels, the type 1 equilibrative nucleoside transporter, toll-like receptor 3, myeloid differentiation primary response 88 (MyD88), and phosphodiesterase 4 regulate ethanol intoxication and self-administration in rodents. The techniques we use include gene targeting and gene editing, RNA interference, chemical genetics with ATP analog specific kinases, and genomic analyses. This work has resulted in drug discovery projects involving protein kinase C epsilon and more recently phosphodiesterase 4 isoforms. I am also interested in the basic neurobiology of neuropeptides and how they interact with classical neurotransmitters within limbic circuits to influence emotion and motivation. Current projects are:

**PKC epsilon:** Over the past two decades, we have found that PKC epsilon promotes ethanol and nicotine consumption, increases anxiety-like behavior, and is an important mediator of inflammatory and neuropathic pain. Our work has focused on identifying the molecular mechanisms by which PKC epsilon contributes to these phenotypes. For example, we found that PKC epsilon reduces the effect of several drugs that activate GABA<sub>A</sub> receptors, promotes corticotropin releasing factor (CRF) signaling in the amygdala, and mediates sensitization of peripheral sensory neurons to inflammatory mediators and ethanol. Ongoing projects aim to: (1) identify PKC epsilon substrates that regulate drug reward, and (2) optimize a group of structurally related compounds that inhibit PKC epsilon to develop a non-opioid drug for treating chronic pain and alcohol use disorder. The latter project is a collaborative effort with Stanton McHardy, PhD at UT San Antonio.

**Neural circuits that regulate emotion:** I am interested in neural circuits that regulate anxiety, fear, and drug reward. While investigating aversion-resistant alcohol drinking in rats, we identified cortical inputs to the nucleus accumbens and GRIN2C-containing NMDA receptors in accumbens neurons as critical for this behavior. My recent work is focused on neuropeptides produced by central amygdala neurons that regulate anxiety, fear learning, and drug self-administration. To perform such studies, we developed a *Crh*-Cre rat and have used it to knockdown individual neuropeptides through Cre-dependent RNA interference. To examine the timing and location of CRF release from neurons, we are testing a novel fluorescent protein sensor designed by Lin Tian, Ph.D. at UC Davis to detect CRF. Finally, to understand neuroadaptive changes that the central amygdala undergoes as animals become alcohol-dependent, we are performing single-cell RNAseq studies of central amygdala neurons in alcohol-dependent rats. This project is being done in collaboration with R. Dayne Mayfield, Ph.D. at UT Austin.

**Neuroimmune signaling in regulation of alcohol consumption.** Over the past 15 years much evidence has accumulated indicating that chronic alcohol consumption activates signal transduction pathways in the brain that are traditionally associated with innate immunity. Yuri Blednov, Ph.D. at UT Austin and I have been investigating the role of innate neuroimmune signaling in alcohol consumption, focusing mainly on TRIF-dependent and more recently on type 1 interferon signaling. We have also examined the role of PDE4 inhibitors and have found that the FDA approved drug apremilast reduces alcohol consumption and tolerance in mice. Based on our work, Barbara Mason, Ph.D. at Scripps Research performed a pilot human study that found apremilast reduces alcohol consumption in non-treatment-seeking heavy drinkers. We hypothesize that this effect of apremilast results from PDE4 regulation of GABA<sub>A</sub> receptor phosphorylation. This neuroimmune signaling project has been funded through the NIAAA-sponsored

consortium entitled the Integrative Neuroscience Initiative on Alcoholism-Neuroimmune, of which I am currently the Director.

**Genomic profiling of blood for diagnosis and management of alcohol use disorder (AUD).** Brain gene expression profiles can identify alcohol-dependent human subjects and mice, and they can be used to repurpose drugs for reducing alcohol consumption in rodents. Although molecular profiles from brain might also guide management of AUD, it is not possible to obtain brain specimens from living patients. We recently compared blood and brain gene expression profiles from mice after chronic intermittent ethanol (CIE) exposure and found a high degree of correspondence between their transcriptional responses to alcohol. Blood profiles predicted that cardiac glycosides would reduce drinking and indeed digoxin reduced alcohol intake in mice. Also, predictive models built from blood profiles could distinguish between CIE and air-exposed mice. Currently we are examining: (1) whether there is an AUD genomic signature in human blood that can accurately classify subjects as having AUD; (2) if longitudinal blood gene expression profiles can be used for AUD diagnosis and to identify treatment targets; and (3) if there is a gene expression signature in blood that reflects treatment response. This project is being done in collaboration with Vijay Ramchandani, Ph.D. of the NIAAA intramural program.



## **MENTORING AND OUTREACH ACTIVITIES**

I have mentored several undergraduate students, graduate students, postdoctoral fellows, and faculty members during my career. I have consistently promoted the recruitment and mentoring of women scientists. For example, at UCSF I mentored 12 women undergraduates, most from UC Berkeley, over the course of 27 years. At UT Austin I have mentored 20 women undergraduates in my lab. Among these, 5 were Latinx or Black. At UCSF I mentored 14 women as postdoctoral fellows and 5 women residents in neurology. At UT Austin I have had 5 women postdoctoral fellows train in my laboratory, one of whom was Native American. Six of these postdoctoral trainees hold university faculty positions. While at UCSF, I was career mentor for 3 women neurology residents and 3 women faculty members. At UT Austin, before becoming Chair of Neuroscience, I mentored 2 women faculty members. Now as chair I am responsible for mentorship of all in the neuroscience department, which has a total of 30 tenured or tenure-track faculty members, 7 of whom are women. One of my major goals is to recruit more women faculty members to the department.

I have experience in mentoring trainees from underrepresented backgrounds. Most recently, I have been a member of thesis committees for two Black women graduate students in the Institute for Neuroscience (INS) graduate program, one of whom just graduated and will be doing a fellowship at Harvard. In 2019 I informally mentored an exceptionally bright Black undergraduate woman who was in my course NEU365W; I remain in contact with her as she studies in a master's program at UT Houston. In 2020 I accepted a Latinx woman INS student into my lab to study neuronal signaling in opioid withdrawal-induced hyperalgesia, and she is well on her way to a first manuscript.

I think that recruitment is the key to cultural change that will establish diversity at all levels in the university. I am therefore a strong proponent of diversity in recruitment. I have successfully recruited 4 women to UT Austin. I attempted to recruit 2 more, both of Latinx background, who unfortunately decided to go elsewhere (Harvard and UIC). In 2020, I helped recruit a Latinx man to the College of Pharmacy as part of a Waggoner Center sponsored recruitment. In 2019 I tried to recruit another Latinx man who accepted a job instead at NIH. In 2021 I recruited another Latinx man as an Assistant Professor of Instruction to teach neuroscience courses to undergraduates and serve as a role model for the large numbers of Latinx students at UT Austin, which in 2020 was recognized as a leading Hispanic-Serving Institution of Higher Learning. I am keenly aware of the relative paucity of faculty members from underrepresented groups at UT Austin, and as Chair of Neuroscience I actively seek to recruit role models from under-represented backgrounds.

In 2020 our department established a Diversity, Equity, and Inclusion committee and as department chair, I seek the committee's assistance in faculty and student recruitment and in establishing an open culture of acceptance and inclusion for all in activities of the Neuroscience Department. The Department also sponsors an outreach program founded in 2018 called Women in Neuroscience (WiN). The program provides stipends to help women students (high school and undergraduate) from under-represented or economically disadvantaged backgrounds pursue studies in neuroscience labs to foster their future careers in neuroscience.