

# Peter Jeffrey Conn

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## Professional Address

P. Jeffrey Conn, Ph.D.  
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## Education

1977 – 1981 B.S. Lee University, Cleveland, Tennessee (Psychology) (Magna Cum Laude)  
1981 – 1982 University of Cincinnati, Cincinnati, Ohio (Physiological Psychology)  
1982 – 1986 Ph.D. Vanderbilt University, Nashville, Tennessee (Pharmacology)

## Professional Training and Experience

1986 Research Associate, Department of Pharmacology, Vanderbilt University  
School of Medicine, Nashville, TN  
1986 – 1988 Postdoctoral Fellow, Department of Pharmacology, Yale University School of  
Medicine, New Haven, CT  
1988 Visiting Lecturer, Yale College, Yale University, New Haven, CT  
1988 – 1994 Assistant Professor, Department of Pharmacology, Emory University School of  
Medicine, Atlanta, GA

- 1994 – 1999 Associate Professor, Department of Pharmacology, Emory University School of Medicine, Atlanta, GA
- 1999 – 2000 Professor, Department of Pharmacology, Emory University School of Medicine, Atlanta, GA
- 2000 – 2003 Senior Director and Head, Department of Neuroscience, Merck Research Laboratories, Merck and Company, West Point, PA
- 2000 – 2005 Adjunct Professor, Department of Pharmacology, Emory University School of Medicine, Atlanta, GA
- 2003 – 2008 Professor, Department of Pharmacology, Vanderbilt University School of Medicine, Nashville, TN
- 2003 – 2010 Director, Vanderbilt Program in Drug Discovery, Vanderbilt University School of Medicine, Nashville, TN
- 2008 – present Lee E. Limbird Professor of Pharmacology, Department of Pharmacology, Vanderbilt University School of Medicine, Nashville, TN
- 2011 – present Director, Vanderbilt Center for Neuroscience Drug Discovery, Vanderbilt University School of Medicine, Nashville, TN

### **Consultancies and Scientific Advisory Boards**

- 1986 – 1988 Research Consultant, Miles Pharmaceuticals, New Haven, CT
- 1996 – 1997 Research Consultant, CNS Research, Eli Lilly and Co, Indianapolis, IN
- 1994 – 1999 Research Consultant, Wyeth Ayerst Pharmaceuticals, Research Division, Princeton, NJ
- 1997 – 2000 Research Consultant, Pfizer Pharmaceuticals, Groton, CT
- 2003 – 2004 Research Consultant, Boston Scientific, Natick, MA
- 2004 Research Consultant, Merck and Co., West Point, PA
- 2004 Research Consultant, Solvay Pharmaceuticals, Marietta, GA
- 2004 – 2006 Scientific Advisory Board Member, Research Consultant, Prescient Neuropharma, Vancouver, BC, Canada
- 2005 – 2006 Scientific Advisory Panel, Invitrogen Life Technologies, Madison, WI
- 2005 – 2006 Consultant, Renovis Inc., San Francisco, CA
- 2004 – 2007 Expert Consultant, Compound Selection Committee, Treatment Units for Research on Neurocognition and Schizophrenia (TURNS)
- 2006 – 2007 Consultant, Eli Lilly and Company, Indianapolis, IN
- 2006 – 2007 External Advisory Network, Invitrogen, Madison, WI
- 2006 – 2007 Consultant, Roche Pharmaceutical Co., Palo Alto, CA
- 2004 – 2008 Scientific Advisory Board Member, Addex Pharmaceuticals, Geneva, Switzerland
- 2006 – 2008 Scientific Advisory Board Member, Cephalon, Inc., West Chester, PA
- 2006 – 2008 Scientific Advisory Board Member, AstraZeneca USA, Wilmington, DE
- 2007 – 2008 CNS Advisory Board Member, Eyeforpharma, London, UK

- 2007 – 2008 CNS Target Advisory Board, Forest Research Institute, Jersey City, NJ
- 2007 – 2008 Scientific Advisory Board Member, CNS, Roche, Basel, Switzerland
- 2007 – 2008 Consultant, LEK Consulting, Chicago, IL
- 2008 Consultant, Merck and Company, West Point, PA
- 2005 – 2009 Scientific Advisory Board Member, Dystonia Medical Research Foundation, Chicago, IL
- 2006 – 2009 Scientific Advisory Board Member, NeuroOP Inc., Atlanta, GA
- 2007 – 2009 Consultant, Epix Pharmaceuticals, Lexington, MA
- 2008 – 2009 Consultant, AMRI, Albany, NY
- 2008 – 2009 Consultant, Evotec, San Francisco, CA
- 2008 – 2009 Scientific Advisory Board, Merck Serono, Geneva, Switzerland
- 2008 – 2009 Consultant, Genentech, San Francisco, CA
- 2008 – 2009 Executive Scientific Advisory Board Member, Michael J. Fox Foundation, New York, NY
- 2006 – 2010 Founding Member, Cure Dystonia Initiative Advisory Council (CDIAC), Dystonia Medical Research Foundation, Chicago, IL
- 2008 – 2012 Consultant, Millipore Corp., St. Charles, MO
- 2005 – 2013 Scientific Advisory Board Member, Seaside Therapeutics, Boston, MA
- 2008 – 2014 Scientific Advisory Board Member, Stanley Center for Psychiatric Research, Broad Institute (MIT/Harvard), Cambridge, MA
- 2015 Member of the Steering Committee, Scientific advisory group, Center for Strategic Philanthropy, Milken Institute, Santa Monica, CA
- 2004 – 2016 Scientific Advisory Board Member, Michael J. Fox Foundation, New York, NY
- 2009 – 2016 Founding Director, Scientific Advisory Board, Karuna Pharmaceuticals, Boston, MA
- 2011 – present Scientific Advisory Board, Lieber Institute for Brain Development, Johns Hopkins University, Baltimore, MD
- 2012 – present Expert Consultant, Clinical Mechanism (POCM) and Proof of Concept (POC) Consortium, New York, NY
- 2012 – present Scientific Advisory Board, Neurobiology Foundation for Schizophrenia and Bipolar Disorder
- 2014 – present Scientific Council, Brain & Behavior Research Foundation, New York, NY
- 2017 – present Founding Director, Scientific Advisory Board, Appello Pharmaceuticals, Nashville, TN
- 2017 – present Founding Member, Board of Directors, Appello Pharmaceuticals, Nashville, TN
- 2019 – present Consultant, Finnegan, Henderson, Farabow, Garrett & Dunner, Washington, DC

**Individual Consultant visits**

1987 Bristol Myers and Company, Wallingford, CT

1988 Merrell Dow Research Institute, Cincinnati, OH

1991 Merrell Dow Research Institute, Cincinnati, OH  
Eli Lilly and Co., Indianapolis, IN

1992 ICI Pharmaceuticals Group, Wilmington, DE

1993 Parke-Davis Pharmaceuticals, Ann Arbor, MI

1995 Pfizer Pharmaceuticals, Groton, CT  
Zeneca Pharmaceuticals, Wilmington, DE  
Eli Lilly and Co., Indianapolis, IN

1998 Parke-Davis Pharmaceuticals, Ann Arbor, MI

1999 Novartis Pharmaceuticals, Basel, Switzerland  
Eli Lilly and Co., Indianapolis, IN

2000 AstraZeneca, Worcester, MA  
Merck Research Labs, San Diego, La Jolla, CA  
Eli Lilly and Co., Indianapolis, IN

2003 Acadia Pharmaceuticals, San Diego, CA  
Eli Lilly and Co., Indianapolis, IN

2004 Acadia Pharmaceuticals, San Diego, CA  
Merck Research Labs, West Point, PA  
Eli Lilly and Co., Indianapolis, IN

2005 Acadia Pharmaceuticals, San Diego, CA  
Neurocrine Biosciences, San Diego, CA  
Serono Pharmaceutical Research Institute, Geneva, Switzerland  
Johnson and Johnson, Raritan, NJ  
Seaside Therapeutics, Boston, MA

2006 Eli Lilly and Co., Indianapolis, IN  
Roche Palo Alto, Palo Alto, CA  
Forest Research Institute, Newark, NY

2007 IMS Health, West Lawn, PA  
Johnson and Johnson, Beerse, Belgium  
Sepracor, Inc., Marlborough, MA  
Lundbeck Research USA, Paramus, NJ  
Otsuka Pharmaceuticals, Princeton, NJ  
Prestwick Pharmaceutical Company, Washington, DC  
Genentech, Inc., San Francisco, CA  
Primary Insight, New York, NY  
GlaxoSmithKline, Harlow, United Kingdom

2008 Merck Research Labs, West Point, PA  
The Frankel Group, New York, NY

Metastatix, Inc., Atlanta, GA  
GlaxoSmithKline, Harlow, United Kingdom  
Adolor Corporation, Exton, PA  
PureTech, Boston, MA  
2009 Abbott Laboratories, Abbott Park, IL  
PureTech, Boston, MA  
2010 Eli Lilly and Co., Indianapolis, IN  
PureTech, Boston, MA  
2013 Pfizer, Cambridge MA

## **Honors and Awards**

1980 – 1981 Undergraduate Honors Teaching Assistant, Lee University  
1981 Who's Who among Students in American Colleges and Universities  
1981 Behavioral and Social Sciences Departmental Award, Lee University  
1982 University of Cincinnati Summer Research Fellowship  
1984 – 1986 Eli Lilly Research Fellowship  
1986 American College of Neuropsychopharmacology/ Mead Johnson Travel Award  
1988 Winter Conference on Brain Research Fellowship Award  
1991 Eli Lilly Graduate Training Award  
1998 Distinguished Alumnus in Natural Sciences Award, Lee University  
1998 Elected to membership in American College of Neuropsychopharmacology (ACNP)  
1999 Independent Investigator Award, National Alliance for Research on Schizophrenia and Depression (NARSAD)  
2003 ISI Most-Cited Scientists in Pharmacology & Toxicology  
2004 NARSAD Essel Investigator; Distinguished Investigator Award, National Alliance for Research on Schizophrenia and Depression (NARSAD)  
2007 American Society for Pharmacology and Experimental Therapeutics (ASPET) Astellas Award in Translational Pharmacology  
2007 Pharmacia – American Society for Pharmacology and Experimental Therapeutics (ASPET) Award for Experimental Therapeutics  
2007 Charles R. Park Award for Basic Revealing Insights into Physiology and Pathophysiology  
2007 Discovery Lecturer at Vanderbilt University  
2008 Lee University Distinguished Alumnus of the Year Award  
2008 PhRMA Foundation Award for Excellence in Pharmacology and Toxicology  
2008 Lee E. Limbird Endowed Professor of Pharmacology  
2009 Emory Distinguished Lecturer in Pharmacology  
2009 Distinguished Visiting Professor, Sun Yat-sen University and The South China Center for Innovative Pharmaceutics, Guangzhou, China

- 2009 Chauncey Leake Lecture, University of Texas Medical Branch, Galveston, TX
- 2010 Ralph J. Cazort Heritage Lecture, Meharry Medical College, Nashville, TN
- 2011 Thompson Reuters Rising Star in Pharmacology and Toxicology
- 2012 Murray Barr Awardee and Lecturer, Western University, ON, Canada
- 2012 Governor's Award for Innovation Excellence, Tennessee Technology Development Corporation and the Tennessee Department of Economic and Community Development, Nashville, TN
- 2012 Music City Achiever, Nashville Business Journal, Nashville, TN
- 2012 Elected AAAS Fellow, American Association for the Advancement of Science, Washington, DC
- 2013 Cade Lecturer, Mental Health Research Institute, Melbourne, Australia
- 2013 Arthur H. Briggs Lectureship, University of Texas Science Center, San Antonio, TX
- 2014 Frank Standaert Lecturer, Department of Pharmacology and Physiology, Georgetown University Medical Center, Washington, DC
- 2014 V. Sagar Sethi, MD Mental Health Research Award and Lecturer, NC Psychiatric Association, Wrightsville Beach, NC
- 2014 Jacob K. Javits Neuroscience Investigator Award, National Institute of Neurological Disorders & Strokes (NINDS), Bethesda, MD
- 2014 Most Highly Cited Researchers in Pharmacology and Toxicology (2002 – 2012), Thomson Reuters
- 2014 The World's Most Influential Scientific Minds, 2014, Thomson Reuters
- 2015 Elected Fellow of American College of Neuropsychopharmacology (ACNP)
- 2015 The Behavioral & Social Sciences Department Distinguished Alumnus of the Year Award, Lee University, Cleveland, TN
- 2015 Theodore M. Brody Award, Michigan State University, East Lansing, MI
- 2015 Clarivate Analytics Most Highly Cited Researchers in Pharmacology and Toxicology
- 2016 Honorary Professor of Zunyi Medical University, awarded in recognition of Outstanding Academic Achievements in GPCR Research
- 2016 Most Highly Cited Researchers in Pharmacology and Toxicology, Thomson Reuters
- 2016 The World's Most Influential Scientific Minds, 2016, Thomson Reuters
- 2017 John A. Oates Award for Outstanding Contributions to Research, Vanderbilt University, Nashville, TN.
- 2017 Clarivate Analytics Highly Cited Researcher in Pharmacology & Toxicology
- 2017 Research & Hope Award for "Excellence in Academic/Government Research", Pharmaceutical Research and Manufacturers of America (PhRMA)
- 2018 Philip Portoghese Lecture in Medicinal Chemistry, University of Minnesota, Minneapolis, MN
- 2018 Albert Nelson Marquis Lifetime Achievement Award

- 2019 Hugh Arthur Pritchard Memorial Lecturer, Program of Neuroscience at the University of Maryland, School of Medicine, Baltimore, MD
- 2020 2020 Julius Axelrod Award in Pharmacology, American Society for Pharmacology and Experimental Therapeutics (APSET)
- 2020 Isreal Hanin Lecturer, Loyola University, Chicago, IL

### **Research Funding - Current**

Functions of Metabotropic Glutamate Receptor Subtypes, 8/1/93 – 4/30/21, NIH/NINDS, R37, \$2,329,200 direct costs (current funding period), P. Jeffrey Conn, Principal Investigator.

Regulation of Signaling by mGluR5, 2/15/01 – 4/30/21, NIH/NIMH, R01, \$1,590,956 direct costs (current funding period), P. Jeffrey Conn, Principal Investigator.

Muscarinic receptor activators as novel antipsychotic agents, 4/01/05 – 2/28/21, NIH/NIMH, R01, \$2,579,194 direct costs (current funding period), P. Jeffrey Conn, Principal Investigator.

Normalizing E:I imbalance in Rett Syndrome by Modulation of Late Response Genes, 9/19/17 – 6/30/21, NIH, \$502,847 direct costs, P. Jeffrey Conn, Mentor.

Discovery and Development of Novel M4 Positive Allosteric Modulators (PAMs), 12/20/17-3/20/2020, H. Lundbeck A/S, \$3,511,239 direct costs, P. Jeffrey Conn/Craig Lindsley, Co-Principal Investigators.

Discovery of Novel mGluR3 Positive Allosteric Modulators (PAMs), 11/15/18 – 11/14/20, Boehringer - Ingelheim International, \$2,062,500 direct costs, P. Jeffrey Conn/Craig Lindsley, Co-Principal Investigators.

Discovery of Novel mGluR1 Positive Allosteric Modulators (PAMs), 11/15/18 – 11/14/20, Boehringer - Ingelheim International, \$3,437,500 direct costs, P. Jeffrey Conn/Craig Lindsley, Co-Principal Investigators.

Selective M4 antagonists for the treatment of dystonia, 1/4/19 – 1/8/21, Ancora, \$3,695,312 direct costs, P. Jeffrey Conn/Craig Lindsley, Co-Principal Investigators.

Discovery of mGlu receptor PAMs for treatment of Schizophrenia, 02/15/19-11/30/23, NIH, \$2,247,790 direct costs, P. Jeffrey Conn, Principal Investigator.

Optimization of selective M4 muscarinic receptor antagonists for treatment of dystonia, 07/15/19-07/14/22, DOD, \$2,997,528 direct costs, P. Jeffrey Conn, Principal Investigator.

### **Research Funding - Completed**

Protein Kinase C-Induced Modulation of Calcium Channels, 7/1/87 – 11/31/88, NIH, Personal NRSA Postdoctoral Fellowship, P. Jeffrey Conn, Principal Investigator.

Kindling-Induced Changes in Ionic Conductances in Pyramidal Cells of the Piriform Cortex and Hippocampus, 1/1/89 – 12/31/89, NIH, \$25,000 direct costs, P. Jeffrey Conn, Principal Investigator.

Cellular Mechanisms of Kindling-Induced Epileptogenesis, 1/1/89 – 12/31/90, Pharmaceutical Manufacturers Association Foundation, \$20,000 direct costs, P. Jeffrey Conn, Principal Investigator.

Molecular and Cellular Mechanisms of Kindling-Induced Seizure Activity, 8/31/89 – 8/31/90, Emory University Research Committee, \$10,000 direct costs, P. Jeffrey Conn, Principal Investigator.

Regulation of Synaptic Inhibition in the Hippocampus by G-Protein-Linked Glutamate Receptors, 9/1/92 – 8/31/93, Emory University Research Committee, \$10,000 direct costs, P. Jeffrey Conn, Principal Investigator.

Metabotropic Glutamate Receptors and Synaptic Plasticity, 7/1/92 – 6/30/95, Council for Tobacco Research, \$128,000 direct costs, P. Jeffrey Conn, Principal Investigator.

Cellular Mechanisms of Kindling-Induced Epileptogenesis, 4/1/90 – 3/31/95, NIH, R29, \$323,000 direct costs, P. Jeffrey Conn, Principal Investigator.

Cellular Mechanisms of Kindling-Induced Epileptogenesis, 4/1/95 – 3/31/99, NIH, R01, \$455,000 direct costs, P. Jeffrey Conn, Principal Investigator.

Physiological Roles of Muscarinic Acetylcholine Receptor Subtypes in the Hippocampus, 7/1/95 – 12/31/98, Council for Tobacco Research, \$204,000 direct costs, P. Jeffrey Conn, Principal Investigator.

Production and Characterization of Subtype-Specific Antibodies for Metabotropic Glutamate Receptors, 2/1/96 – 12/31/98, Wyeth-Ayerst Pharmaceuticals, \$125,000 direct costs, P. Jeffrey Conn, Principal Investigator.

Neuromodulatory Roles of Multiple Muscarinic Receptor Subtypes, 2/1/96 – 1/31/01, NIH, R01, \$540,000 direct costs, P. Jeffrey Conn, Principal Investigator.

Regulation of NMDA receptors by Muscarinic ACh Receptors, 9/30/97 – 5/31/01, NIH, R01, \$547,000 direct costs, P. Jeffrey Conn, Principal Investigator.

Inhibition of Glutamate Autoreceptor Function as a Novel Strategy for Treatment of Schizophrenia, 9/15/98 – 9/14/00, National Alliance for Research on Schizophrenia and Depression (NARSAD) Independent Investigator Award, \$100,000 direct costs, P. Jeffrey Conn, Principal Investigator.

Regulation of Substantia Nigra Function by GABA-B Receptors, 5/1/00 – 4/31/01, Tourette Syndrome Association Research Award, \$40,000 direct costs, P. Jeffrey Conn, Principal Investigator.

Regulation of Metabotropic Glutamate Receptor Responses by RGS proteins, 2/1/99 – 1/31/01, NIH, R01, Julie Saugstad, Principal Investigator; P. Jeffrey Conn, Co-PI.



Muscarinic Receptor Proteins in Alzheimer's Disease, 8/1/99 – 7/31/03, NIH, R01, \$1,019,000 direct costs, Allan Levey, Principal Investigator; P. Jeffrey Conn, Co-PI.

Control of glutamate receptor activation, 7/1/98 – 6/31/02, NIH, R01, \$535,000 direct costs, Steven Traynelis, Principal Investigator; P. Jeffrey Conn, Co-PI.

Metabotropic Glutamate Receptor mGluR4 as a Novel Target for Parkinson's Disease Treatment, 8/1/98 – 7/31/02, U.S. Army Medical Research and Material Command, \$720,000 direct costs, Allan Levey, Principal Investigator; P. Jeffrey Conn, Co-PI.

Zinc-Dependent Apparent Desensitization of NMDA Receptors, 7/1/00 – 6/30/04, NIH, R01, \$775,000 direct costs, Fang Zheng, Principal Investigator; P. Jeffrey Conn, Co-PI.

Metabotropic Glutamate Receptors in Basal Ganglia, Project in program Center Grant entitled Models of Parkinson's Disease, 9/1/99 – 8/31/04, NIH, \$760,000 direct costs for individual project, P. Jeffrey Conn, Principal Investigator of project 5; Mahlon Delong, Principal Investigator of center grant.

Educational Grant in Basic Neuroscience, 07/01/03 – 6/30/04, Eli Lilly and Company, \$50,000 direct costs, P. Jeffrey Conn, Principal Investigator.

High Throughput Assay: Allosteric Potentiator of GluR (RMI), 9/30/04 – 8/31/05, NIH/NINDS, R03, \$50,000 direct costs, P. Jeffrey Conn, Principal Investigator.

Allosteric Potentiators of mGluR5 as a novel approach for the treatment of Schizophrenia, 5/1/04 – 4/30/05, NARSAD, \$100,000 direct costs, P. Jeffrey Conn, Principal Investigator.

Amgen/Vanderbilt Partnership for Drug Discovery, 1/1/05 – 6/31/06, Amgen, P. Jeffrey Conn, Principal Investigator.

Discovery of allosteric potentiators of mGluR7 as novel antiparkinsonian agents, 8/01/05 – 6/30/07, Michael J. Fox Foundation, \$200,000 direct costs, P. Jeffrey Conn, Principal Investigator.

Discovery of Novel Allosteric Modulators of the M1 Muscarinic Receptor, 02/01/06 – 1/31/07, NIH/NMDH, X01, P. Jeffrey Conn, Principal Investigator (Facilities access grant).

Allosteric Potentiators of mGluR5 as a novel approach for the treatment of schizophrenia, 9/01/04 – 8/31/06, Stanley Medical Research Institute, \$150,000 direct costs, P. Jeffrey Conn, Principal Investigator.

An MLSCN for GPCRs, Ion Channels, and Transporters, 3/1/05 – 6/30/10, NIH/NIMH, U54, \$7,586,731 direct costs, David Weaver, Co-PI; P. Jeffrey Conn, Co-PI.

mGluR4 potentiators as a Treatment for Parkinson's Disease, 1/1/06 – 12/31/07, NIH/NINDS R21, \$221,738 direct costs, P. Jeffrey Conn, Principal Investigator.

A Direct Assay for HTS of Gi/Go-Linked GPCRs: mGluR7 as the Prototype, 9/30/05 – 9/29/07, NIH/NINDS, R21, \$150,000 direct costs, Colleen Niswender, Principal Investigator.

Metabotropic Glutamate Receptors in Basal Ganglia, 12/01/04 – 11/30/10, NIH/NINDS, RO1, \$1,164,867 direct costs, P. Jeffrey Conn, Principal Investigator.

- Partial antagonists of mGluR5 for treatment of cocaine addiction, NIH/NIDA, 6/1/08 – 5/31/11, \$1,342,800 direct costs. Craig Lindsley, Principal Investigator. P. Jeffrey Conn, Co-PI.
- Novel strategies for treatment of Fragile X syndrome, 11/1/07 – 4/31/11, Seaside Therapeutics, \$3,094,463 direct costs, P. Jeffrey Conn, Principal Investigator.
- Recruitment of in vivo Neuropharmacologist to Support CNS Drug Discovery Research, 9/30/10 – 8/31/11, NIH (ARRA), \$1,000,000 direct costs, P. Jeffrey Conn, Principal Investigator.
- Selective M1 mAChR allosteric modulators for the treatment of schizophrenia, NIH/NIMH, 5/20/08 – 4/30/11, \$1,120,500 direct costs, Craig Lindsley, Principal Investigator; P. Jeffrey Conn, Co-PI.
- Discovery of mGluR potentiators for symptomatic and disease modifying treatments in Parkinson's Disease, 12/1/07 – 3/31/12, Michael J. Fox Foundation, LEAPS Award, \$4,011,989 direct costs, P. Jeffrey Conn, Principal Investigator.
- Functional effects of mGluR potentiators in the CNS, 7/1/06 – 5/31/12, NIH/NIMH, R01, \$880,280 direct costs, P. Jeffrey Conn, Principal Investigator.
- Discovery of Novel M1 muscarinic receptor antagonists, 1/1/10 – 8/28/12, Seaside Therapeutics, \$2,051,282 direct costs, P. Jeffrey Conn, Principal Investigator.
- Johnson and Johnson Industry Sponsored Contract: Discovery of mGlu5 PAMs for treatment of Schizophrenia, VUMC34998, 12/9/08 – 12/9/12, \$4,343,109 direct costs, P. Jeffrey Conn, Principal Investigator.
- Vanderbilt NCDDDG for Discovery of Novel Treatments of Schizophrenia, 2/19/10 – 12/31/14, NIH, U01, \$5,921,620 direct costs, P. Jeffrey Conn, Principal Investigator.
- Bristol Myers Squibb Industry Sponsored Contract: Discovery and Development of mGlu4 PAMs for treatment of Parkinson's Disease, 9/19/12 – 1/31/15, \$7,000,000 direct costs, P. Jeffrey Conn, Principal Investigator.
- Vanderbilt Specialized Chemistry Center for Accelerated Probe Development, NIH/NIMH, U54, 9/1/08 – 5/31/15, \$16,240,910 total direct costs, Craig W. Lindsley, Principal Investigator; P. Jeffrey Conn, Co-PI.
- M4 Positive Allosteric Modulators for the Treatment of Schizophrenia, 8/28/09 – 5/31/15, NIH, R01, \$1,232,600 total direct costs, Carrie Jones, Principal Investigator; P. Jeffrey Conn, Co-PI.
- Roles of M1 and M4 mAChR in striatum-implication of treatment of movement disorders, 4/1/10 – 3/31/15, NIH, R01, \$1,066,603 total direct costs, Zixiu Xiang, Principal Investigator; P. Jeffrey Conn, Co-PI.
- In vivo characterization of metabotropic glutamate receptor subtype 5 positive allosteric modulators in a mouse model of Alzheimer's disease, 4/1/13 – 3/31/15, Thome Memorial Foundation, \$181,820 direct costs, P. Jeffrey Conn, Principal Investigator.

Circuitry to therapy: regulation of basal ganglia and antiparkinsonian effects of muscarinic agents, 9/30/10 – 8/31/15, NIH, P50, Subcontract with Emory University, \$793,408 direct costs, P. Jeffrey Conn, Principal Investigator, Vanderbilt.

Evaluation of mGlu4 Positive Allosteric Modulators in Nonhuman Primate Models of Parkinson's Disease, 9/18/14 – 9/17/15, Michael J. Fox Foundation for Parkinson's Research, \$774,744 direct costs, P. Jeffrey Conn, Principal Investigator.

Development of mGluR5 NAMs for Treatment of Major Depression, 1/8/13 – 11/30/15, NIH/NIMH, U19, \$2,405,322 direct costs, P. Jeffrey Conn, Principal Investigator.

Group II mGluR antagonists and negative modulators in depression, 9/22/10 – 10/31/15, NIH/NIDA, R01, Subcontract with Burnham Institute, \$370,378 direct costs, P. Jeffrey Conn, Principal Investigator.

Vanderbilt NCDDDG for Discovery of Novel Treatments of Schizophrenia, 2/19/10 – 12/31/15, NIH, U01, \$5,921,620 direct costs, P. Jeffrey Conn, Principal Investigator.

Interactions of M4 and D1/Gαolf Signaling in Striatum: Implications for Treatment of Primary Dystonia, 8/1/14 – 7/31/16, Dystonia Medical Research Foundation, \$200,000 direct costs, P. Jeffrey Conn, Principal Investigator.

AstraZeneca Industry Sponsored Contract: Discovery of Novel M4 Positive Allosteric Modulators (PAMS), 12/21/12 – 12/31/16, \$6,015,625 direct costs, P. Jeffrey Conn, Principal Investigator.

Postdoctoral Training in CNS Drug Discovery Research, 7/4/11 – 6/30/17 NIH/NIMH T32, \$999,533 direct costs, Principal Investigator, P. Jeffrey Conn.

William K. Warren Foundation: Supporting IND-enabling Studies for a promising Neurotherapeutic Agent, 07/01/15 – 06/30/17, \$2,045,455 direct costs, P. Jeffrey Conn, Co-Principal Investigator.

William K. Warren Foundation: VU PAM Program, 08/15/16 – 08/15/17. \$909,091 annual direct costs, P. Jeffrey Conn, Co-Principal Investigator.

William K. Warren Foundation: Muscarinic Acetylcholine Receptor Subtype 1- Positive Allosteric Modulators (M1 PAM), 09/16/14 – 09/15/17, \$4,545,455 direct costs, P. Jeffrey Conn, Co-Principal Investigator.

Regulation of Striatal Function by M4 in Huntington's Mice, 7/1/16 – 6/30/18, CHDI Foundation, \$614,572 direct costs, P. Jeffrey Conn, Principal Investigator.

Development of an M1 PAM Experimental Therapeutic for Schizophrenia, 9/10/15 – 6/30/19, NIH/NIMH, U19, \$3,377,068 direct costs, P. Jeffrey Conn, Principal Investigator.

## **Trainee Grants**

Manisha A. Desai, Predoctoral Graduate Training Award, Eli Lilly and Company, 10/1/91 – 9/31/93

- Valerie Boss, NIH NRSA Postdoctoral Training Award, Multiple subtypes of metabotropic glutamate receptors, 7/1/92 – 6/30/95
- Danny G. Winder, NIH NRSA Predoctoral Graduate Training Award, Regulation of kainate-evoked currents by mGluRs, 10/1/93 – 9/30/95
- Heather Prince Miller, Predoctoral Graduate Training Award, Pharmaceutical Manufacturers Research Association Foundation, AMPA receptor subunit expression and physiology in kindling, 1/1/94 – 12/31/96
- Dorothy S. Chung, NIH NRSA Predoctoral Graduate Training Award, The role of mGluR<sub>1a</sub> in hippocampal interneurons, 9/1/94 – 8/31/96
- Stefania Risso Bradley, NIH NRSA Postdoctoral Training Award, Physiological roles of mGluR4a in the hippocampus, 6/1/95 – 2/28/99
- Fang Zheng, NIH NRSA Postdoctoral Training Award, Presynaptic roles of group II mGluRs in hippocampus, 12/1/97 – 11/30/99
- Michael J. Marino, NIH NRSA Postdoctoral Training Award, Physiological roles of the M1 muscarinic receptor, 4/1/97 – 3/31/98
- Susan Taylor Rouse, NIH NRSA Postdoctoral Training Award, Muscarinic acetylcholine receptors in perforant pathways, 10/1/97 – 9/30/00
- Sudar Alagarsamy, NIH NRSA Postdoctoral Training Award, Mechanism of NMDA regulation of mGluR5 function, 9/1/97 – 8/31/00
- Thomas A. Macek, NIH NRSA Predoctoral Graduate Training Award, Modulation of mGluR7 function by protein kinase C, 5/1/98 – 4/30/00
- Hervé Schaffhauser, National Alliance on Schizophrenia and Depression (NARSAD) Young Investigator Award, Molecular Aspect of Inhibition of group II metabotropic glutamate receptors by protein kinase C, 7/1/99 – 6/31/01
- Fang Zheng, National Alliance on Schizophrenia and Depression (NARSAD) Young Investigator Award, Reduction of zinc inhibition of NMDA receptor by tyrosine kinase as a new strategy for development of antipsychotic agents, 7/1/99 – 6/31/01
- Richard Peavy, NIH NRSA Predoctoral Graduate Training Award, Desensitization of mGluR5 in astrocytes mediated by PKC, 7/1/99 – 6/31/01
- Michael Marino, National Parkinson's Disease Foundation, Metabotropic glutamate receptors as a novel target for prevention of Parkinson's Disease, 6/1/99 – 5/31/00
- Scott Sorensen, NIH NRSA Postdoctoral Training Award, GRK2-mediated regulation of mGluR5 signaling, 4/1/00 – 3/31/03
- Alice Rodriguez, NIH NRSA Postdoctoral Training Award, Development of allosteric potentiators of mGluR4, 9/1/04 – 8/31/07

Carrie Jones, Pharmaceutical Research and Manufacturers Association Postdoctoral Fellowship, Allosteric potentiators of mGluR5 as a novel approach to treatment of schizophrenia, 2/1/06 – 10/31/06

Carrie Jones, NIH NRSA Postdoctoral Training Award, mGluR5 allosteric potentiators: In Vivo Characterization, 11/1/06 – 10/31/08

Jana Shirey, NIH NRSA, Graduate Student Training Award, Development and use of novel allosteric potentiators to study the role of M4 mAChR in modulating hippocampal neurotransmission, 7/1/07 – 6/30/09

Doug Sheffler, Pharmaceutical Research and Manufacturers Association Postdoctoral Fellowship, Regulation of mGluR1 function by positive allosteric modulators, 8/1/07 – 7/31/09

Ashley Brady, NIH/NIMH NRSA, Ectopic activators of M1 as novel antipsychotic agents, 9/1/07 – 8/31/09

Paulianda Jones, Pharmaceutical Research and Manufacturers Association Postdoctoral Fellowship, Activation of group II mGlu receptors by agonists and positive allosteric modulators, 2/1/08 – 1/31/10

Alexis Hammond, NIH, Discovery of a Novel Chemical Class of mGlu5 Allosteric Ligands with Distinct Modes of Pharmacology, 7/1/09 – 6/30/10

Gregory Digby, NIH/NIMH NRSA, Allosteric and orthosteric agonists differentially activate M1 ACh Receptors, 9/1/09 – 8/31/12

Jerri Rook, NIH/NIMH, In Vivo characterization of mGluR5 positive allosteric modulators, 9/1/09 – 8/31/12

Kari Johnson, NIH/NINDS, Metabotropic glutamate receptor-mediated synaptic plasticity in the basal ganglia, 6/1/10 – 12/31/12

Meredith Noetzel, NIH/NIMH, Characterization of the molecular biological effects of M1 allosteric modulators, 7/1/10 – 6/30/13

Karen Gregory, American Australian Association's Merck Company Foundation Fellowship, 9/1/10 – 8/31/11

Karen Gregory, NARSAD, Positive Allosteric Modulation of Metabotropic Glutamate Receptor 5: A Novel Approach for the Treatment of Schizophrenia, 7/15/11 – 7/14/13

Karen Gregory, NHMRC Training Fellowship, Enhancement of glutamate signaling as a novel approach to treat schizophrenia and cognitive disorders, 2/1/11 – 1/31/13

Daniel Foster, NIH/NIMH, Elucidation of M5 Muscarinic Receptor Neurophysiology using Allosteric Modulators, 7/1/11 – 6/30/14

Rocco Gogliotti, NIH, Training Program in Neurogenomics, mGlu7, a novel target for Rett Syndrome therapeutics, 6/1/12 – 5/30/13

Rocco Gogliotti, NIH, Training Program in CNS Drug Discovery, mGlu7, a novel target for Rett Syndrome therapeutics, 6/1/13 – 5/30/14

Adam Walker, PhRMA Postdoctoral Fellowship, Regulation of hippocampal function by allosteric modulators of mGlu3, 7/1/13 – 6/30/15

Rocco Gogliotti, Rettsyndrome.org, Mentored Training Fellowship, Temporal Divergence Between Hyperexcitation and Hypoconnectivity in Rett Syndrome, 7/1/2014 – 6/30/2016

Dan O'Brien, NIH/NIMH, Postdoctoral Training in CNS Drug Discovery Research, 9/1/14 – 2/1/16

Branden Stansley, NRSA, Training Program in Ion Channel and Transporter Biology, 7/1/15 – 8/1/16

Mark Moehle, NIH/NIMH, Postdoctoral Training in CNS Drug Discovery Research, 6/1/15 – 5/1/16

James Maksymetz, Vanderbilt International Scholar's Program, 8/1/15 – 6/1/16

Daniel Foster, NARSAD, Young Investigator Award, 1/15/16 – 1/14/18

Jerri Rook, NARSAD, Young Investigator Award, 1/15/16 – 1/14/18

Mark Moehle, Mahlon DeLong Young Investigator award, Dystonia Medical Research Foundation, 3/1/16 – 2/28/17

Dan O'Brien, PhRMA Foundation Postdoctoral Fellowship in Pharmacology/Toxicology, 2/1/16 – 2/1/18

Jerri Rook, NIH, mGlu Allosteric Modulation in Neurodegenerative Diseases, 5/15/16 – 4/30/21

Mark Moehle, Antagonism of the M4 Receptor as a Treatment for PD and PD-Dystonia, Michael J. Fox Foundation, 12/9/16 – 2/08/18

Branden Stansley, Ruth L. Kirschstein National Research Service Award Individual Postdoctoral Fellowship, 7/1/16 – 6/30/18

James Maksymetz, Doctoral Foreign Study Award (DFSA) – Canadian Institutes of Health Research, 5/1/16 – 5/1/19

Rocco Gogliotti, Brain and Behavior Research Foundation, NARSAD Young Investigator Award, 1/1/17 – 12/31/19

Sean Moran, NIH, F31, Role of Phospholipase D in M1 Allosteric Modulation of Synaptic Plasticity: Implications for the Treatment of Schizophrenia, 8/1/17 – 12/31/19

Max Joffe, PhRMA Foundation Postdoctoral Fellowship in Pharmacology, 6/1/2017 – 5/31/19

Samantha Yohn, NIH, F32, Elucidation of mGlu1 Receptor Neurophysiology through use of Allosteric Modulators: Implications for the Treatment of Schizophrenia, 7/1/2017 – 6/30/2019

Nicole Fisher, NIH, F31, Metabotropic Glutamate Receptor 7 as a Novel Therapeutic Target for MECP2 Duplication Syndrome, 9/30/17 – 9/29/20

Rocco Gogliotti, NIH, K01, Normalizing E: I imbalance in Rett Syndrome by Modulation of Late Response Genes, 6/19/17 – 6/30/21

Daniel Foster, Nicholas Hobbs Discovery Grant from the Vanderbilt Kennedy Center, 2/1/18 – 1/31/19

Daniel Foster, Brain & Behavior Research Foundation, mGlu5 and Beyond: Transcriptional Profiling MECP2- and MECP2- Autonomous Rett Syndrome Autopsy Samples, 1/15/17 – 1/15/20

Daniel, Foster, Brain & Behavior Research Foundation, Modulation of repetitive behaviors by M4 PAMs, 1/15/19 – 1/14/21

Mark Moehle, NIH, K99, M4 muscarinic acetylcholine receptor signaling as a potent regulator of motor deficits, 4/1/19 – 3/31/24

## **Graduate Students**

Manisha A. Desai, Emory Department of Pharmacology Graduate Program, 1988 – 1993; Currently, Associate General Patent Counsel, UBC Pharmaceuticals, Brussels, Belgium

Danny G. Winder, Emory Neuroscience Graduate Program, 1990 - 1996; Currently, Professor, Department of Molecular Physiology and Biophysics, Director Vanderbilt Center for Addiction Research, Vanderbilt University School of Medicine, Nashville, TN

Robert W. Gereau, Emory Neuroscience Graduate Program, 1991 - 1995; Currently, Vice Chair for Research at Washington University, Department of Anesthesiology, Dr. Seymour and Rose T. Brown Professor of Anesthesiology, and Chief, Basic Research Division, Washington University Pain Center, Washington University School of Medicine, St. Louis, MO

Dorothy S. Chung, Emory Neuroscience Graduate Program, MD/PhD Program, 1992 – 1997; Currently, Neurologist, Perry Hall, MD

Heather Prince Miller, Emory Neuroscience Graduate Program, 1991 – 1997; Currently, Director, Clinical Strategy –THV, Edwards Lifesciences, Irvine, CA

Thomas A. Macek, Emory Molecular Therapeutics and Toxicology Graduate Program, 1994 – 1999; Currently, Executive Director, AveXis, Chicago, IL

Richard D. Peavy, Emory Molecular Therapeutics and Toxicology Graduate Program, 1995 – 2001; Currently, Scientific Operations Manager, Laboratory of Allergic Diseases, National Institute of Allergy and Infectious Diseases, Bethesda, MD

Hazar Awad Granko, Emory Molecular Therapeutics and Toxicology Graduate Program, 1996 – 2001; Currently, Vice President, Drug Development and Regulatory Affairs, Emergo Therapeutics, Raleigh-Durham, NC

Marion Wittmann, Trained at Emory University, Degree granted by Department of Physiology, University of Tübingen, Tübingen, Germany, 1998 – 2001; Currently, Vice President Biology, Praxis Precision Medicines, Cambridge, MA

Olga Maltseva-Poisik, Emory University, Neuroscience Graduate Program, 1999 – 2006; Currently, Research Professional, Miami, FL

Yelin Chen, Vanderbilt University, Neuroscience Graduate Program, 2003 – 2007; Currently, Principle Investigator and Lab Head, Interdisciplinary Research Center on Biology and Chemistry, Chinese Academy of Sciences, Shanghai, China

Sameer Sharma, Vanderbilt University, Department of Pharmacology (Craig Lindsley, co-mentor), 2007 – 2009; Currently, Senior Manager, Global Market Planning at BioMarin Pharmaceutical Inc., San Francisco, CA

Jennifer Ayala, Vanderbilt University, Department of Pharmacology, 2004 – 2009; Currently, Project Manager, Vanderbilt Institute for Clinical and Translational Research, Vanderbilt University Medical Center, Nashville, TN

Jana Shirey-Rice, Vanderbilt University, Department of Pharmacology, 2004 – 2010; Currently, Team Lead, Vanderbilt Institute for Clinical and Translational Research, Vanderbilt University Medical Center, Nashville, TN

Alexis Hammond, Vanderbilt University, Department of Pharmacology, 2006 – 2011; Currently, Assistant Professor, Johns Hopkins Bayview Medical Center, Baltimore, MD

Tom Bridges, Vanderbilt University, Department of Pharmacology (Craig Lindsley, co-mentor), 2007 – 2010; Currently, Research Assistant Professor, Vanderbilt University, Nashville, TN

Kari Johnson, Vanderbilt University, Department of Pharmacology, 2006 – 2012; Currently, Assistant Professor, Uniformed Services University of the Health Sciences (USUHS), Bethesda, MD

Shen Yin, Vanderbilt University, Department of Pharmacology, 2009 – 2013; Currently, Associate Clinical Scientist, gRED-Exploratory Clinical Development, BioOncology, Genentech, Inc, San Francisco, CA

Rebecca Klar Senter, Vanderbilt University, Department of Pharmacology (Colleen Niswender, co-mentor), 2011 – 2015; Currently, Scientist, Pharmacology, Flexion Therapeutics, Burlington, MA

Nicole Fisher, Vanderbilt University, Department of Pharmacology (Colleen Niswender, co-mentor), 2015 – present

Sean Moran, Vanderbilt University, Neuroscience Graduate Program, 2015 – present

James Maksymetz, Vanderbilt University, Department of Pharmacology, 2015 – present

Sheryl Vermundez, Vanderbilt University, Department of Pharmacology (Colleen Niswender, Co-Mentor), 2017 – present



## **Postdoctoral Fellows and Research Faculty**

Valerie Boss, 1991 – 1994; Currently, Independent Writing and Editing Professional, Atlanta, GA.

Stefania (Risso) Bradley, 1994 – 1999; Currently R&D Lead, TEVA Pharmaceutical, North Wales, PA.

Haley (Berson) Melikian, 1995 – 1997; Currently, Professor of Neurobiology, University of Massachusetts School of Medicine, Brudnick Neuropsychiatric Research Institute, Worcester, MA.

Fang Zheng, 1995 – 2000; Currently, Associate Professor, Department of Pharmacology and Toxicology, University of Arkansas School of Medicine, Little Rock, AR.

Susan Taylor Rouse, 1996 – 1999; Most recent position, Professor of Biology, Chair, Science Division, Southern Wesleyan University (deceased 2014).

Julie Saugstad, 1996 – 2000, Currently, Professor, Oregon Health and Science University, Portland, OR.

Hervé Schaffhauser, 1998 – 2000; Currently, Senior Biology Leader, Versameb AG, Bern, Switzerland.

Michael J. Marino, 1995 – 2001; Director Exploratory Pharmacology Psychiatry, Merck Research Laboratories, West Point, PA.

Sudar Alagarsamy, 1996 – 2001; Currently, Senior Director Project Manager, Mirati Therapeutics, San Diego, CA.

Guido Mannaioni, 1999 – 2001; Currently, Professor, University of Florence, Florence, Italy.

Scott Sorensen, 1999 – 2001; Currently, Clinical Pharmacist, University of North Carolina (UNC) Health Care, Raleigh-Durham, NC.

Zhaohui Cai, 1999 – 2001; Currently, Senior Scientist, Paradigm Genetics, Inc., Research Triangle Park, NC.

Kelly J. Ciombor, 2000 – 2001: Currently, Industrial Manager Associate, GE Tech, Atlanta, GA.

Ornella Valenti, 2000 – 2003; Currently, Assistant Professor, Medical University of Vienna, Vienna, Austria

Marion Wittmann, 2001 – 2003; Currently, Vice President Biology, Praxis Precision Medicines, Cambridge, MA.

Yongqin (Yong Q) Zhang, 2003 – 2005; Currently, Research Associate, Department of Biological Sciences, Vanderbilt University, Nashville, TN.

Ruggero Galici, 2004 – 2005; Currently, Associate Director, Medical Writer, Pfizer, New York, NY.

Warinkarn (Kamondanai) Hemstapat, 2004 – 2006; Currently, Assistant Professor, Department of Pharmacology, Mahidol University, Bangkok, Thailand.

Yi Nong, 2004 – 2006; Currently, Senior Research Associate, Rockefeller University, New York, NY.

Jessica Banko, 2005 – 2006; Currently, Business Development and Scientific Liaison, Bioseb Instruments, Tampa, FL.

Marketa Marvanova, 2005 – 2006; Currently, Department Chair/Professor with Tenure, Pharmacy Practice Department, Fargo, ND.

Joy Marlo, 2006 – 2009; Currently, Department of Biomedical Informatics Vanderbilt University School of Medicine, Nashville, TN.

Paulianda Jones, 2007 – 2009; Currently, Professor, Fieldston Upper, Science Teacher, New York, NY.

Ashley Brady, 2005 – 2009; Currently, Assistant Dean of Biomedical Career Engagement and Strategic Partnership, Vanderbilt University School of Medicine, Nashville, TN.

Alice Rodriguez, 2003 – 2007; Currently, Instructor of Pharmacology, Department of Pharmacology, Vanderbilt Center for Neuroscience Drug Discovery, Vanderbilt University, Nashville, TN.

Colleen Niswender, 2004 – 2006; Currently, Professor of Pharmacology, Director, Molecular Pharmacology, Vanderbilt Center for Neuroscience Drug Discovery, Vanderbilt University, Nashville, TN.

Carrie Jones, 2005 – 2009; Currently, Associate Professor of Pharmacology, Director, In Vivo Pharmacology, Vanderbilt Center for Neuroscience Drug Discovery, Vanderbilt University, Nashville, TN.

Doug Sheffler, 2005 – 2010; Currently, Research Assistant Professor, Sanford-Burnham Prebys Medical Discovery Institute, La Jolla, CA.

Analisa Thompson, 2007 – 2009; Currently, Staff Scientist, Department of Pharmacology, Vanderbilt University, Nashville, TN.

Thomas Utley, 2009 – 2011; Currently, Licensing Agent, Center for Technology Transfer & Commercialization, Vanderbilt University, Nashville, TN.

Kera Lawson, 2009 – 2010; Currently, Contract Scientific Review Officer, Kelly Services, Washington D.C.

Julie Field (Kropski), 2009 – 2011; Currently, Manager, Health Information Systems, Vanderbilt Research Institute for Clinical and Translational Research, Vanderbilt University, Nashville, TN.

Jerri Rook, 2008 – 2012; Currently, Assistant Professor of Pharmacology, Department of Pharmacology, Vanderbilt Center for Neuroscience Drug Discovery, Vanderbilt University, Nashville, TN.

Karen Gregory, 2009 – 2013; Currently, Research Fellow, Monash Institute of Pharmaceutical Science, Melbourne, Australia.

Gregory Digby, 2008 – 2013; Currently, General Dentist, Spanish Trail Dentistry, P.A., Memphis, TN.

Meredith Noetzel, 2009 – 2013; Currently, Quality and Regulatory Affairs Scientist I, Insight Genetics, Inc., Nashville, TN.

Sharang Phatak, 2012 – 2013; Currently, Head Lab Platforms, Life Biosciences, Cambridge, MA.

Jonathan Dickerson, 2010 – 2014; Currently, Research Specialist Senior, Vanderbilt Center for Neuroscience Drug Discovery, Vanderbilt University, Nashville, TN.

Nidhi Jalan – Sakrikar, 2012 – 2014; Currently, Research Fellow, Mayo Clinic, Rochester, MN.

Nicole Hawkins, 2013 – 2014; Currently, Research Associate Scientist at Northwestern Memorial Hospital, Chicago, IL.

Adam Walker, 2010 – 2015; Currently, Sr. Writer, Davita Clinical Research, Fort Collins, CO.

Ayan Ghoshal, 2011 – 2015; Currently, Translational Neuroscientist, Drug Discovery Lead, Stanley Center for Psychiatric Research, Broad Institute, Cambridge, MA.

Tristano Pancani, 2011 – 2015; Currently, Research Assistant Professor, Northwestern University, Chicago, IL.

Luis Diaz Gimenez, 2014 – 2015; Currently, Research Investigator, University of Michigan, Life Science Institute, Ann Arbor, MI.

Molly Altman, 2014 – 2015; Currently, Project Manager, Sarah Cannon Cancer Research Institute, Nashville, TN.

Daniel Foster, 2010 – 2016, Currently, Research Assistant Professor, Department of Pharmacology, Vanderbilt Center for Neuroscience Drug Discovery, Vanderbilt University, Nashville, TN.

Rocco Gogliotti, 2012 – 2016, Currently, Research Assistant Professor, Department of Pharmacology, Vanderbilt Center for Neuroscience Drug Discovery, Vanderbilt University, Nashville, TN.

Dan O'Brien, 2014 – 2017, Currently, Senior Medical Writer at Abbvie, North Chicago, IL.

Robert Cole, 2017 – 2018: Currently, Postdoctoral Fellow, University of South Carolina School of Medicine, Columbia, SC.

Branden Stansley, 2015 – 2019, Currently, Medical Science Liaison, Neurology, Celgene Corporation, Ann Arbor, MI.

Mark Moehle, 2015 – present, Vanderbilt University, Department of Pharmacology.

Max Joffe, 2016 – present, Vanderbilt University, Department of Pharmacology.

Samantha Yohn, 2016 – present, Vanderbilt University, Department of Pharmacology.

Shalini Dogra, 2018 – present, Vanderbilt University, Department of Pharmacology.

Deborah Luessen, 2020 – present, Vanderbilt University, Department of Pharmacology.

## **Visiting Scholars**

Katarzyna Stachowicz, Polish Academy of Sciences, Warsaw, Poland (2013 – 2014)

Juliana Doria, Departamento de Bioquímica e Imunologia, Instituto de Ciências Biológicas, Universidade Federal de Minas Gerais, Brazil (2014 – 2015)

Joanna Wieronska, Institute of Pharmacology, Polish Academy of Sciences, Krakow, Poland (2016)

## **Graduate Student Committees**

### **Emory**

Bryan Atkinson, Hong Ying Zhong, Tracey Theroux, Mitchell Kalis, Jim Kiley, Haley Melikian, Susan Taylor, Deedra Woolfolk, Jenni Palocsik, Amy Waddel, Michelle Gilmore, Tracy Thomas, Brenden Guingrich, Shelly Wood, Audra Brown, Fernanda Laezza, Stephanie Dall Vechia, Jennifer Berkeley, Laura Volpicelli, Cecily Hammil, Masa Kuwajima, Gus Davis, Evan LeBois.

### **Vanderbilt**

Mihaela Bazalakova (2003 – 2007, Committee Chair), Amanda Vanhose (2003-2005), Brad Greuter (2003-2005), Ming Xu (2003 – 2006), Michael Bennyworth (2003 – 2007, Committee Chair), Elizabeth Hackler (2004 – 2007), Will Oldham (2004-2007), Kyle Arneson (2004 – 2007), Eun-Ja Yoon (2004 – 2008, Committee Chair), Sunita Misra (2004 – 2008, Committee Chair), Uade DaSilva (2004 – 2009), Jenny Madison (2007 – 2009), Leslie Aldrich (2010 – 2012), Jennifer Veale (2004 – 2009), Bryan Voss (2004 – 2009), Jennifer Steiner (2004 – 2008), Richard Gustin (2005 – 2009), Bonnie Garcia (2006 – 2011), Phil Kennedy (2006 – 2011), Julie Field, (2006 – 2011), Heather Gosnell (2006 – 2011), David Lund (2007 – 2011), Jason Klug (2010 – 2012), Elizabeth Dong Nguyen (2010 – 2013), Summer Young (2009 – 2013), Katherine Betke (2009 – 2014, Committee Chair), Michael Grannan (2012 – present), Cody Wenthur (2013 – 2015, Committee Chair), Oakleigh Marie Folkes (2017 – present), Daniel Jeffries (2017 – present) Benjamin Coleman (2019 – present).

## **Rotation Students**

Traci Thomas (1993), Karen Nutt (1993), Deepa Joshi (1994), Gretchun VonAlman (1995), Brenden Guingrich (1995), Charlotte Owens (1995), Orem Levey (1996), David Wolf (1996), Laura Volpicelli (1998), Walter Hubert (1998), David Guttman (1998), Chris Bowden (1998), Candice Junge (1999), Alisa Guttman (2000), Vidya Balasubramanian (2000), Masa Kuwajima (2000), Anthony Blount (2003), Gia Piak (2003), Matt Judson (2004), Jana Shirey (2004), Vandana Grover (2004), Jennifer Edl (2004), Dalyir Pretto (2004), Christina Stujenske (2004),

Julie Field (2004), Alisha Russell (2004), Sheila Kosnoor (2004), Kirsten Hemelke (2004), Yeraí Oliveres (2004), Jaqueline Recktenwald, (2005), Jennifer Madison (2005), Bill Nobis (2005), Sonya Dave (2005), Aliya Fredrick (2006), Jason Klug (2007), Evan Lebois (2007), Katherine Betke (2008), Shen Yin (2009), Alexander Nackenoff (2009), JT Brogan (2009), Kevin Kumar (2010), Uyen Le (2011), Brittney Bates (2012), Mackenzie Catron (2013), Aparna Shekar (2014), Sheridan Carrington (2014), Sahana Nagabhushan Kalburgi (2014), James Maksymetz (2014), Sean Moran (2015), Jenny Aguilar (2015), Nicole Fisher (2015), Francis Prael (2015), Azadeh Hadadianpour (2016), Nathan Winters (2017), Jason Russell (2017), Laura Winalski (2017), Jerome Arceneaux (2018), Jennifer Zachry (2019), Brett Nebitt (2019), Aaron Gochman (2019).

## **Undergraduate Research Students**

Tommy Hahm (1992), Timothy Shane Smith (1993), Temeika Smith (1994), Afua Boaten (1994), Carolyn Conley (1995), Trisha Ritch (1995 – 1996), Chris Conn (1996), Anastassios Tzingounis (1995 – 1997), Prasad Reddy (1998 – 1999), Todd Deveau (2004), Katja Mimms (2004), Lily Williams (2005 – 2006), B.J. Johnson (2005), Jonathan Reeves (2005, 2006), Samuel Kane (2007 – 2009), Brianna Mann (2007-2008), John Rosanelli (2008 – 2009), Catherine Ruelens (2009 – 2010), Emma Squire (2011), Robert Pauszek (2013), Amanda Huang (2014-present, Honors Thesis Committee), David Huan (2015), Frank Sanders Pair (2015 – 2016) Annalise McDonald (2016 – 2017), Madigan Lavery (2016), Muhammad (Suhuib) Mahmood (2016), Deepa Rajan (2016), Ryan Hanson (2016), Catherine Doyle (2016), Douglas Shaw (2016), Joe Braun (2017), Jordan Galbraith (2017 - present), Chiaki Santiago (2017 - present), Priyanka Sheth (2017), Brianna Li (2018-present), Sehr Faltin (2018-present), Susmita Chennareddy (2018-present), Ellen Reith (2018-present), Hana Badivuku (2018-present), Patrick Qian (2018-present), Emily Vega (2018-present), Aaron Yang (2018-present), Jennifer Du (2019-present).

## **Teaching Responsibilities**

1987 – 1988	Course Director, Neurobiology of Drug Abuse (Undergraduates)
1989 – 1990	Developmental Neurobiology (Graduate Students)
1993 – 1994	Co-director – Advanced Graduate Seminar (Graduate Students)
1990 – 1995	Systems of Neuroscience (Graduate Students)
1989 – 2000	Medical Pharmacology (Medical Students)
1989 – 2000	Pharmacology for Allied Health Professionals
1989 – 2000	Introductory Pharmacology (Graduate Students)
1989 – 2000	Neuropharmacology (Graduate Students)
1990 – 2000	Cellular Neurobiology (Graduate Students)
1997 – 2000	Course Director - Principles of Molecular Therapeutics and Toxicology (Graduate Students)
2004 – 2007	Pharmacological Targets and Mechanisms (Graduate Students)
2004 – 2010	Biotech and Pharma Industries (MBA Students)
2005 – 2010	Drug and Device Development (Graduate Students)
2010 – 2011	The Biological Basis of Mental Disorders (Undergraduate Students)
2004 – 2015	Foundations of Neuroscience (Graduate Students)

- 2005 – 2015 Molecular Basis of Psychotropic Drug Action (Graduate Students)  
2005 – 2015 Cell and Developmental Biology / Biotech (Graduate Students)  
2007 – Modern Drug Discovery - Director (2007-2014) (Graduate Students)

## **Intramural Activities**

### **Emory**

- 1990 – 1993 Graduate Recruitment Committee, Graduate Program in Physiological and Pharmacological Sciences  
1990 – 1993 Director, Summer Research Scholars Program, Graduate Division of Biological and Biomedical Sciences  
1991 – 1993 Executive Committee, Graduate Program in Physiological and Pharmacological Sciences  
1992 – 1993 Graduate Admissions Committee, Graduate Program in Neuroscience  
1993 – 1996 Director of Graduate Studies, Graduate Program in Neuroscience  
1994 – 1996 Qualifying Examination Committee, Graduate Program in Physiological and Pharmacological Sciences  
1995 – 1996 Executive Committee, Howard Hughes Medical Institute Undergraduate Research Program  
1996 – 1997 Admissions Committee, MD/Ph.D. Program  
1993 – 1998 Executive Committee, Graduate Program in Neuroscience  
1999 Qualifying Examination Committee, Graduate Program in Molecular Therapeutics and Toxicology  
1995 – 2002 Emory University Committee on Promotions and Tenure

### **Vanderbilt**

- 2003 Synthetic/Medicinal Chemistry Faculty Search Committee, Department of Chemistry  
2003 – 2005 Faculty Mentoring Committee, Richard Nass  
2003 – 2005 Faculty Mentoring Committee, Christine Saunders  
2004 – 2005 Recruitment Committee for Structural Biologist, Department of Pharmacology  
2004 – 2005 Chemical Safety Committee  
2004 – 2005 Chair, Neuroscience Program Self Study Committee  
2005 Recruitment Committee for Drug Disposition, Division of Clinical Pharmacology, Vanderbilt University  
2005 VICB Synthetic Chemistry Core Search Committee  
2005 Organizing Committee, Career Opportunities in the Biological and Biomedical Sciences  
2004 – 2006 Organizer, Vanderbilt Department of Pharmacology Seminar Series  
2005 – 2006 VICB Faculty Recruitment Search Committee  
2004 – 2007 Vanderbilt Pharmacology Development Committee  
2006 – 2007 Chair, Vanderbilt Therapeutic Discovery Grant Review Panel

- 2006 – 2007 Recruitment Committee for Drug Disposition, Division of Clinical Pharmacology, Vanderbilt University
- 2007 – 2008 Vanderbilt Faculty Mentoring Committee Chair, Craig Lindsley
- 2007 – 2008 Search Committee, Pharmacology/Bone Biology Medicinal Chemistry
- 2007 – 2009 Qualifying Exam Committee, Pharmacology Graduate Training Program
- 2004 – 2010 Vanderbilt Institute for Chemical Biology, Executive Committee
- 2004 – 2010 Vanderbilt Faculty Mentoring Committee, Tony Forster
- 2005 – 2010 Advisory Board, VICB HTS facility
- 2007 – 2010 Vanderbilt Faculty Mentoring Committee, Ben Spiller
- 2010 Postdoctoral Affairs Director Search Committee
- 2004 – 2011 Vanderbilt Faculty Mentoring Committee, Eugenia Gurevich
- 2007 – 2011 R&D Committee, VA Medical Center
- 2007 – 2012 Vanderbilt Faculty Mentoring Committee, Gregory Mathews
- 2008 – 2012 Large Animal Advisory Committee
- 2008 – 2012 VICB Synthesis Core Advisory Board
- 2010 – 2012 Vanderbilt Faculty Mentoring Committee, Carrie Jones
- 2011 – 2012 Search Committee, Radiology and Radiological Sciences
- 2011 – 2012 Endowed Chair Review Committee, Jim Turner Chair in Cognitive Disorders
- 2012 – 2013 Endowed Chair Review Committee, John York, Natalie Overall Warren Distinguished Chair in Biochemistry
- 2012 – 2013 Executive Committee of the Executive Faculty
- 2010 – 2015 Vanderbilt Faculty Mentoring Committee, Scott Daniels
- 2014 – 2015 Vanderbilt Pharmacology Chair Search Committee
- 2010 – 2016 Vanderbilt Faculty Mentoring Committee, Qi Zhang
- 2016 Committee Chair, Endowed Chair Review Committee, Sachin Patel, James G. Blakemore Chair in Psychiatry
- 2016 Search Committee for the Chair of the Department of Neurology
- 2017 Basic Sciences Community Outreach Program
- 2017 Endowed Chair Review Committee, Warren D. Taylor, James G. Blakemore Chair in Psychiatry
- 2017 Clinical Pharmacology Faculty Search Committee
- 2017 Department of Pharmacology Advisory Committee – Cancer Biology
- 2019 Psychiatry and Behavioral Health Strategic Planning Committee
- 2003 – present Vanderbilt Pharmacology Training Program Advisory Committee
- 2009 – present Vanderbilt Department of Pharmacology Executive Committee
- 2010 – present Internal Advisory Committee Radiochemistry Research Faculty
- 2011 – present Vanderbilt Institute for Clinical and Translational Research Internal Advisory Committee
- 2013 – present Vanderbilt Medical Center Executive Faculty
- 2015 – present Faculty Executive Committee, POD3, Vanderbilt University

- 2017 – present Vanderbilt Faculty Mentoring Committee, Erin Calipari  
2019 – present Vanderbilt Memory and Alzheimer’s Center Advisory Committee

### **Extramural Activities**

- 1987 Reviewer of grant applications for National Science Foundation (USA), US Veterans Administration, Swiss National Science Foundation, and The Wellcome Trust, U.K.
- 1991 Chairman, Second Messengers I slide session, Society for Neuroscience 21st Annual Meeting, New Orleans, Louisiana
- 1991 – 1993 Councilor, Atlanta Chapter of Society of Neuroscience
- 1994 Ad Hoc member, N.I.H. Neurological Sciences Study Section II
- 1994 Special Emphasis Panel, N.I.H. Neurological Sciences Study Section II
- 1993 – 1995 Dissertation committee for Tracy Kneisler, Department of Pharmacology, University of North Carolina, Chapel Hill, North Carolina
- 1995 Dissertation committee for Jeffrey Kogan, Department of Cellular and Molecular Physiology, Yale University, New Haven, CT
- 1996 – 1997 Committee Chair, Committee on Public Information, American Society for Pharmacology and Experimental Therapeutics
- 1997 Special Emphasis Panel of N.I.H. National Institute on Neurological Disorders and Stroke, Scientific Review Branch
- 1997 Dissertation committee for Gilles Dubè, Department of Physiology, University of Ottawa, Ottawa, Ontario, Canada
- 1995 – 1998 Committee on Public Information, American Society for Pharmacology and Experimental Therapeutics
- 1998 Behavioral and Neurosciences Special Emphasis Panel, N.I.H., NINDS Scientific Review Branch
- 1997 – 2000 Program Committee, Society for Neuroscience
- 1998 – 2000 Thesis committee for Phillip Harp, Georgia Institute of Technology, Atlanta, GA
- 1998 – 2001 Regular member, NIH Brain Disorders and Clinical - 2 Study Section
- 1998 – 2003 Consultant, Program Project Grant - Regulation of Neuronal Excitability, Department of Neuroscience, Baylor College of Medicine, Houston, TX
- 2001 – 2003 Executive Committee, American Society for Pharmacology and Experimental Therapeutics (ASPET) Neuropharmacology Division
- 2003 – 2004 NIMH National Advisory Mental Health Council (NAMHC)
- 2004 Michael J. Fox Foundation Panel to Evaluate Opportunities to Contribute to Drug Discovery in Parkinson’s Disease
- 2004 Co-organizer, Study Group, Early Phase Drug Discovery in the 21st Century: Are Academic, Government, and Industrial Partnerships Possible? Annual Meeting of the American College of Neuropsychopharmacology (ACNP), San Juan, Puerto Rico



- 2004 Special Emphasis Panel, NIMH Cooperative Drug Development Group program (CDDG)
- 2004 – 2005 Pharmacia – American Society for Pharmacology and Experimental Therapeutics (ASPET) Award for Experimental Therapeutics Committee
- 2005 Participant, NIH NINDS Parkinson’s Disease Research Summit; Strategic planning for support of Parkinson’s disease research
- 2005 Organizing Committee, Fifth Annual Meeting on Metabotropic Glutamate Receptors, Taormina, Italy
- 2005 Chair, NIH MLSCN Steering Committee Administrative Subgroup
- 2005 Michael J. Fox Foundation Fast Track Award Review Committee
- 2006 Chair, Michael J. Fox Foundation Drug Discovery Award Review Committee
- 2006 Dystonia Foundation Research Grant Review Committee
- 2003 – 2007 Liaison Committee with Governmental Agencies and the Pharmaceutical Industry, American College of Neuropsychopharmacology (ACNP)
- 2004 – 2007 Expert Consultant, Compound Selection Committee, Treatment Units for Research on Neurocognition and Schizophrenia (TURNS)
- 2006 – 2007 American Society for Pharmacology and Experimental Therapeutics (ASPET) Award Committee
- 2006 – 2007 Chair Elect, Neuropharmacology Division, American Society for Pharmacology and Experimental Therapeutics (ASPET)
- 2007 Organizing Committee, National Academies of Science Institute of Medicine Forum on Drug Discovery, Development, and Translation
- 2005 – 2008 NIH Molecular Libraries Screening Centers Network (MLSCN) Steering Committee
- 2008 Board of Scientific Counselors, Ad hoc member, NIH, NIDDK Intramural Program Review
- 2008 Technical Evaluation Panel, NIMH Program Review
- 2008 Symposium Organizer, Novel approaches to treatment of schizophrenia: Beyond the monoamines, Annual meeting of the American Society for Pharmacology and Therapeutics, San Diego, CA
- 2008 Symposium Organizer, Drug Discovery in an Academic Setting, Annual meeting of the American Society in Biochemistry and Molecular Biology (ASBMB), San Diego, CA
- 2008 Meeting Co-Organizer, Keystone Symposium, G Protein-Coupled Receptors: New Insights in Functional Regulation and Clinical Application, Killarny, Ireland
- 2007 – 2009 Chair, Neuropharmacology Division, American Society for Pharmacology and Experimental Therapeutics (ASPET)
- 2007 – 2009 Executive Scientific Advisory Board, Michael J. Fox Foundation
- 2009 – 2010 NIMH National Advisory Mental Health Council (NAMHC)
- 2010 NIH Blueprint for Neuroscience Research Study Section
- 2006 – 2011 Member, Publications Board of Trust, American Society for Pharmacology and Experimental Therapeutics (ASPET)

- 2011 Special Emphasis Panel, Center for Scientific Review, National Institutes of Health
- 2011 Member, The National Center for Research Resources (NCRR) Special Emphasis Panel for evaluation of Center for Translational Science Awards competitive revisions
- 2012 Board of Scientific Counselors, Ad hoc member, NIH, NIDDK Intramural Program Review
- 2010 – 2013 Allosteric Modulator Drug Discovery Congress Advisory Board
- 2012 – 2013 Chair, Organizing Committee, International Meeting, Academic Drug Discovery Consortium, Nashville, TN
- 2009 – 2014 Scientific Advisory Board, Stanley Center for Psychiatric Research, The Broad Institute of MIT and Harvard, Cambridge, MA
- 2013 – 2014 Ad Hoc Member, NIH Molecular Neuropharmacology and Signaling Study Section (MNPS), NIH, Scientific Review Branch
- 2013 – 2014 Meeting Organizer, Dystonia Medical Research Foundation Receptors Meeting, Miami, FL
- 2013 – 2014 Program Committee Member, Grand Challenges in Parkinson’s Disease: From Molecules to People, Taking Compounds from the Laboratory to the Bedside, Van Andel Research Institute, Grand Rapids, MI
- 2013 – 2014 Meeting Organizer, American Society for Pharmacology and Experimental Therapeutics (ASPET) Drug Discovery and Development Division Symposium: Productive Public Private Partnerships for Pharmacological Progress, San Diego, CA
- 2013 – 2014 Organizing Committee, Grand Challenges in Parkinson’s Disease: From Molecules to People, Taking Compounds from the Laboratory to the Bedside, Van Andel Research Institute, Grand Rapids, MI
- 2013 – 2014 Meeting Organizer, Dystonia Medical Research Foundation, Neurotransmitter Receptors as Targets for Dystonia Meeting, Miami, FL
- 2011 – 2015 NINDS Blueprint Neurotherapeutics Steering Committee
- 2014 – 2015 External thesis committee member, Shaun Hopper, The Florey Institute of Neuroscience and Mental Health, The University of Melbourne, Victoria, Australia
- 2015 Reviewer, Michael J. Fox Foundation Target Advancement Program
- 2015 American College of Neuropsychopharmacology (ACNP) Industry Task Force
- 2005 – 2016 Scientific Advisory Board, Michael J. Fox Foundation
- 2014 – 2016 Program Committee, 4<sup>th</sup> World Parkinson Congress, World Parkinson Coalition, Portland, OR
- 2015 - 2016 Meeting Organizer, Meeting of the Academic Drug Discovery Consortium, In conjunction with the American Society for Pharmacology and Experimental Therapeutics (ASPET) Annual Meeting, San Diego, CA
- 2016 External Advisory Board, Department of Pharmacology, Department of Structural and Chemical Biology, and Experimental Therapeutics Institute, Icahn School of Medicine at Mount Sinai, Strategic Planning Initiative

- 2011 – 2017 Founding Member Board of Directors, Academic Drug Discovery Consortium (ADDC), Baltimore, MD
- 2012 – 2017 Julius Axelrod Prize Selection Committee, Society for Neuroscience
- 2013 – 2017 Vice President, Academic Drug Discovery Consortium (ADDC), Baltimore, MD
- 2016 – 2017 Member Organizing Committee, Molecular Pharmacology Gordon Conference, Lucca (Barga), Italy
- 2017 Chair, NIH Center for Scientific Review Panel, for ZRG1 MDCN-L04 Meeting, Scientific Review Branch
- 2015 – 2019 Member, NIH Molecular Neuropharmacology and Signaling Study Section (MNPS), NIH, Scientific Review Branch
- 1999 – present International Union of Pharmacology (IUPHAR) subcommittee on Metabotropic Glutamate Receptors
- 2011 – present Scientific Advisory Board, Lieber Institute for Brain Development, Johns Hopkins University, Baltimore, MD
- 2012 – present International Committee for the Linked Pilot Clinical Trials Initiative of the Cure Parkinson's Trust, The Cure Parkinson's Trust
- 2014 – present Academic Advisory Committee, Translational Research Postdoctoral Training Program, Department of Psychiatry, Johns Hopkins University School of Medicine, Baltimore, MD
- 2014 – present Scientific Council, Brain & Behavior Research Foundation, New York, NY
- 2017 – present External Advisory Board, Center for the Neurobiology of Addiction Treatment, Wake Forest School of Medicine, Winston-Salem, NC
- 2017 – present External Advisory Board Member, Center for Innovative Drug Discovery, UT Health and UTSA, San Antonio, TX
- 2018 – present External Thesis Committee Member, Mariacristina Mazzitelli, Texas Tech University Health Sciences Center, Lubbock, TX

## **Editorial Activities**

- 1987 – Reviewer of manuscripts for European Journal of Pharmacology, Journal of Pharmacology and Experimental Therapeutics, Experimental Neurology, Experimental Eye Research, Neurodegeneration, Journal of Experimental Biology, Learning and Memory, Neuroscience Letters, Journal of Neurochemistry, British Journal of Pharmacology, Journal of Neuroscience, Synapse, Molecular Pharmacology, Science, Journal of Biological Chemistry, Journal of Neurophysiology, Neuron, Journal of Physiology (London), Neuroscience, European Journal of Neuroscience, Neuropharmacology, Proceedings of the National Academy of Science (USA), Nature Neuroscience
- 1995 – 2000 Associate Editor – *Molecular Pharmacology*
- 1996 – 2001 Editorial Board Member – *Neuroscience Net*
- 2002 Guest Editor – *Pharmacology, Biochemistry and Behavior*, Special issue dedicated to Metabotropic Glutamate Receptors

- 2002 Guest Editor – *Current Drug Targets, CNS and Neurological Disorders*  
Special issue dedicated to Metabotropic Glutamate Receptors
- 1993 – 2004 Editorial Board Member – *SYNAPSE*
- 2004 Guest Editor – *Current Neuropharmacology*
- 2003 – 2005 Editorial Board Member – *Medicinal Chemistry Reviews*
- 2002 – 2007 Editorial Board Member – *Letters in Drug Design & Discovery*
- 2003 – 2008 Editorial Board Member – *Current Medicinal Chemistry*
- 2004 – 2008 Editorial Board Member – *Medicinal Chemistry*
- 2009 Honorary Editorial Board Member – *International Journal of High Throughput Screening*
- 1998 – 2011 Handling Editor – *Journal of Neurochemistry*
- 2006 – 2011 Editor in Chief – *Molecular Pharmacology*
- 2011 Guest Editor – *Neuropsychopharmacology*
- 2000 – 2013 Editorial Board Member – *Current Drug Targets, CNS and Neurological Disorders*
- 2002 – 2014 Regional Editor (North America) – *Current Neuropharmacology*
- 2004 – 2014 Editorial Board Member – *Neurobiology of Disease*
- 2010 – 2014 Editorial Advisory Board Member – *ACS Medicinal Chemistry Letters*
- 2011 – 2015 Editorial Board Member – *Journal of Clinical and Experimental Pharmacology*
- 2017 – 2018 Guest Editor, *ACS Chemical Neuroscience, Special Issue: Synaptic Plasticity*
- 2015 – present Editorial Board Member – *Neuropharmacology*
- 2016 – present Editorial Advisory Board, *ACS Chemical Neuroscience*
- 2016 – present Editorial Board Member – *Journal of Schizophrenia Research*

## **Professional Societies**

American College of Neuropsychopharmacology (ACNP)  
American Association for the Advancement of Science (AAAS)  
American Society for Pharmacology and Experimental Therapeutics (ASPET)  
Society for Neuroscience (SfN)  
International Brain Research Organization  
International Basal Ganglia Society  
American Chemical Society (ACS)  
Academic Drug Discovery Consortium  
Schizophrenia International Research Society (SIRS)  
SIGMA XI, The Scientific Research Honor Society  
International College of Neuropsychopharmacology (CINP)

## **Invited Presentations**

**1987**

Department of Psychiatry, University of Cincinnati School of Medicine, Cincinnati, OH  
Department of Preclinical CNS Research, Bristol Meyers Company, Wallingford, CT

**1988**

Department of Pharmacological Sciences, Merrell Dow Research Institute, Cincinnati, OH  
Department of Pharmacology, Vanderbilt University School of Medicine, Nashville, TN  
Symposium, Neuromodulation in Model Systems, Annual meeting of the European Society for Neuroscience, Goteberg, Sweden

**1989**

Symposium, Winter Conference on Brain Research, Snowbird, UT

**1990**

Symposium Chair for the Metabotropic Glutamate Receptors in the CNS, Winter Conference on Brain Research, Snowmass, CO  
Society for Neuroscience, Atlanta Chapter, Annual Neuroscience Symposium, Atlanta, GA

**1991**

Department of Biology, Central Missouri State University, Warrensburg, MO  
Lilly Research Laboratories, Eli Lilly and Company, Indianapolis, IN  
Department of Pharmacological Sciences, Merrell Dow Research Institute, Cincinnati, OH  
Department of Biology, St. Lawrence University, Canton, NY

**1992**

ICI Pharmaceuticals Group, Wilmington, DE

**1993**

Parke-Davis Pharmaceuticals, Ann Arbor, MI  
Symposium, First International Meeting on Metabotropic Glutamate Receptors, Taormina, Italy

**1994**

Neuroscience Program, University of Pennsylvania, Philadelphia, PA  
Symposium, XIXth Congress of Collegium Internationale Neuro-Psychopharmacologicum, Washington, DC  
Department of Pharmacology, Georgetown University School of Medicine, Washington, DC  
Spring Hippocampal Research Conference, Grand Cayman, Bahamas  
Symposium, Glutamate Targets for Schizophrenia Symposium, Wyeth Ayerst Pharmaceuticals, Research Division, Princeton, NJ  
Glutamate Program Project Group, Georgetown Univ. School of Medicine, Washington, DC

**1995**

Council for Tobacco Research, Spring Symposium, New York, NY  
Division of Neuroscience, Visiting Professor Series, University of Pittsburgh, Pittsburgh, PA  
Neuronal and Behavioral Plasticity - Amino Acids and Amines, University of Texas, Galveston  
(Satellite Symposium of the 1995 meeting of the Society for Neuroscience), Galveston, TX  
Wyeth Ayerst Pharmaceuticals, Research Division, Princeton, NJ  
Zeneca Pharmaceuticals, Wilmington, DE  
Pharmacological Properties and Physiological Roles of Metabotropic Glutamate Receptors,  
Experimental Biology 95 (Annual meeting of the Federation of American Societies in  
Experimental Biology, Atlanta, GA)  
Department of Biology, Dickenson State University, Dickenson, ND  
Division of Neuroscience, Pfizer Pharmaceuticals, Groton, CT  
Department of Neurobiology, Brown University, Providence, RI  
Symposium, Regulation of Glutamate Receptors, Annual meeting of the American Epilepsy  
Society, Baltimore, MD

**1996**

Symposium, Regulatory Roles of Adenosine in the Central Nervous System, Italy  
Winter Conference on Brain Research, Snowmass, CO  
Symposium, Second International Meeting on Metabotropic Glutamate Receptors, Taormina-  
Sicily,  
Symposium, Neuronal Plasticity and Responses to Psychoactive Drugs: A Molecular Analysis.  
Annual meeting of the Society of Biological Psychiatry, New York, NY.  
Lilly Research Laboratories, Eli Lilly and Company, Indianapolis, IN  
Neuroscience Program, Cornell Graduate School in Medical Sciences, Cornell University, New  
York, NY

**1997**

Wyeth Ayerst Pharmaceuticals, Research Division, Princeton, NJ  
Division of Neuroscience, Baylor College of Medicine, Houston TX  
Symposium, Roles of Metabotropic Glutamate Receptors in Epilepsy, Winter Conference on  
Brain Research, Breckenridge, CO  
Department of Pharmacology, Vanderbilt University School of Medicine, Nashville, TN  
Gordon Research Conference, Excitatory Amino Acids & Brain Function, Plymouth State, NH  
Neuroscience Graduate Program Seminar Series, University of Georgia, Athens, GA  
Department of Neurobiology, University of Alabama, Birmingham, AL  
Division of Neuroscience, Pfizer Pharmaceuticals, Groton, CT  
Recent Advances in the Metabotropic Glutamate Receptor Field: Clinical Implications, Annual  
Meeting of the American College of Neuropsychopharmacology (ACNP), Kamuela, HI

**1998**

Metabotropic Glutamate Receptors as Novel Therapeutic Targets in Neuropharmacology, XXIst CINP Congress, Glasgow, UK

Pharmacology and Functions of Metabotropic Glutamate Receptors, Meeting of the European Society for Neurochemistry, Saint Petersburg, Russia

Modulation of Hippocampal Function by G-Protein-Coupled Receptors, Spring Hippocampal Research Conference, Grand Cayman, Bahamas

Wyeth Ayerst Pharmaceuticals, Research Division, Princeton, NJ

Division of Neuroscience, Pfizer Pharmaceuticals, Groton, CT

Department of Neurobiology, University of Pittsburgh, Pittsburgh, PA

Symposium, Excitatory Amino Acids in Epilepsy, International Meeting on Excitatory Amino Acids: Ten Years Later, Manaus, Brazil

Signal Transduction Colloquium, Dept of Pharmacology, Duke University, Durham, NC

Ligand-Gated Ion Channels, Meeting of the Southeastern Pharmacology Society, Nashville, TN

Metabotropic Glutamate Receptors as Therapeutic Targets, Parke-Davis Pharmaceuticals, Ann Arbor, MI

Department of Physiology, University of North Carolina, Chapel Hill, NC

**1999**

Plenary Lecture, Third International Meeting on Metabotropic Glutamate Receptors, Taormina-Sicily, Italy

Roles of Metabotropic Glutamate Receptors in Basal Ganglia, Winter Conference on Brain Research, Snowmass, CO

Department of Physiology, University of Tübingen, Tübingen, Germany

Department of Neuropharmacology, Institute for Neurobiology, Magdeburg, Germany

Department of Neurology, University of Freiburg, Freiburg, Germany

Wyeth-Ayerst Pharmaceuticals, Research Division, Princeton, NJ

Novartis Pharmaceuticals, Nervous System Research, Basel, Switzerland

Lilly Research Laboratories, Eli Lilly and Company, Indianapolis, IN

Investigators Workshop, Glutamate Metabotropic Receptors as Therapeutic Targets in Epilepsy, Meeting of the American Epilepsy Society, Orlando, FL

Division of Neuroscience, Pfizer Pharmaceuticals, Groton, CT

Endogenous Glutamate Receptor Ligands: Novel leads for Schizophrenia Research and Therapy, Annual Meeting of the American College of Neuropsychopharmacology (ACNP).  
Acapulco, Mexico

Department of Biology, Georgia State University, Atlanta, GA

**2000**

New Insights in Metabotropic Glutamate Receptor Functions, Biannual meeting of the European Neuroscience Association, Brighton, U.K.

Roles of Metabotropic Glutamate Receptors in Modulation of Hippocampal Function, Spring  
Hippocampal Research Conference, Grand Cayman, Bahamas

Pfizer Pharmaceuticals, Sandwich, UK

Department of Molecular Pharmacology, AstraZeneca, Worcester, MA

Merck Research Labs, San Diego, La Jolla, CA

International Workshop on Basal Ganglia and Thalamus in Health and Movement Disorders,  
Moscow, Russia

Department of Pharmacology and Toxicology, Medical College of Georgia, Augusta, GA

Department of Pharmacology, Merck Research Labs, West Point, PA

Department of Molecular Physiology, Baylor College of Medicine, Houston, TX

Lilly Research Laboratories, Eli Lilly and Company, Indianapolis, IN

Merck Sharp & Dohme Research Laboratories, Neuroscience Research Centre, Harlow, Essex,  
United Kingdom

Department of Pharmacology, University of Rome, Rome, Italy

NYU Neuroscience Seminar Series, New York University, New York, NY

Department of Biology, Lee University, Cleveland, TN

Pfizer Pharmaceuticals, Groton, CT

Symposium, Metabotropic Glutamate Receptors, The Royal Danish School of Pharmacy,  
Copenhagen, Denmark

## **2001**

Pharmacology, Regulation, and Function of Metabotropic Glutamate Receptor Subtypes,  
Experimental Biology 2001, Orlando, FL

Group I Metabotropic Glutamate Receptors: Roles in Pain, Epilepsy, Movement Disorders, and  
Brain Injury, Winter Conference on Brain Research, Steamboat Springs, CO

Cell Signaling Seminar Series, Downstate Medical Center, Brooklyn, New York, NY

Department of Defense-Funded Parkinson-Related Research, Potomac, MD

Meeting of the International Basal Ganglia Society (IBAGS) meeting, Auckland, New Zealand.

Neuro- and Psychotropic Effects of Drugs Active at Metabotropic Receptors Therapeutic  
Perspectives. 7th International Congress on Amino Acids, Vienna, Austria

MIT/Merck Annual Spring Symposium, Massachusetts Institute of Technology, Cambridge, MA

## **2002**

Glutamate Mechanisms, 5th International Symposium on Medicinal Chemistry of  
Neurodegenerative Diseases, Yucatan Peninsula, Mexico

Distribution and Functional Roles of Glutamate Receptors in Basal Ganglia: Implications for  
Treatment of Parkinson's Disease, Experimental Biology 2002, New Orleans, LA

Fourth International Meeting on Metabotropic Glutamate Receptors, Taormina-Sicily, Italy

Center for Neurodegenerative Disorders, Emory University, Atlanta, GA

Department of Pharmacology Seminar Series, Vanderbilt University School of Medicine,  
Nashville, TN



Session Chair, Schizophrenia/Psychosis Panel, Glutamate and Glutamate receptors in Psychosis affective disorders, Annual Meeting of the American College of Neuropsychopharmacology (ACNP), San Juan, PR

Glutamate Mechanisms in Schizophrenia, Winter Conf. on Brain Research, Snowbird, UT

**2003**

Plenary Lecture, New York Academy of Sciences Meeting on Glutamate and Disorders of Affect and Motivation, New Haven, CT

Keynote Speaker, British Pharmacological Society Focus Meeting, Basic and Clinical Aspects of Glutamate Pharmacology, Bristol, UK

Department of Neuropharmacology, The Scripps Research Institute, La Jolla, CA

Department of Pharmacology, Georgetown University School of Medicine, Washington, D.C.

Department of Pharmacology, University of Rome, Rome, Italy

Program in Clinical and Preclinical Pharmacology, University of Catania, Catania, Italy

National Parkinson Foundation Annual Meeting, New Orleans, LA

Acadia Pharmaceuticals, La Jolla, CA

Department of Pharmacology, Emory University School of Medicine, Atlanta, GA

Lilly Research Laboratories, Eli Lilly and Company, Indianapolis, IN

Hot Topics Session, Annual Meeting of the American College of Neuropsychopharmacology  
San Juan, PR

**2004**

Department of Pharmacology, Case Western Reserve University, Cleveland, OH

Symposium, Novel Approaches to Treatment of Disorders of Cognition, Solvay  
Pharmaceuticals, Miami, FL

Tourette Syndrome Association meeting, Atlanta, GA

Drug Discovery Frontiers in Cancer and Neuroscience: The Application of Chemistry to  
Diseases, Drug Discovery Program, Georgetown University Medical Center, Washington,  
DC

Department of Medicinal Chemistry & Molecular Pharmacology, Purdue University School of  
Pharmacy, West Lafayette, IN

Symposium, Role of proline and its metabolism in human disease. National Cancer Institute, Ft.  
Detrick, MD

CNS Diseases Congress, Strategic Research Institute, Philadelphia, PA

Grass Foundation Mini-Symposium: Neuronal Ion Channels: From Molecules to Disease,  
Nashville, TN

Department of Molecular Neurology, Merck and Company, West Point, PA

Symposium, Physiological functions and therapeutic potential of metabotropic glutamate 5  
(mGluR5) receptors, Annual Meeting of the American College of  
Neuropsychopharmacology (ACNP), San Juan, PR

Novel approaches to drug discovery: allosterism, interfaces, & receptoromics Symposium,  
Annual Meeting of the American College of Neuropsychopharmacology (ACNP), San  
Juan, PR

Department of Psychiatry, Yale University School of Medicine, New Haven, CT

**2005**

Fifth International Meeting on Metabotropic Glutamate Receptors, Taormina-Sicily, Italy  
Symposium, Challenges for Drug Discovery Programs in Academia, Annual meeting of the American Association for Cancer Research, Anaheim, CA

Symposium, Molecular Library approaches to CNS drug discovery, American Society for Pharmacology and Experimental Therapeutics (ASPET) 2005, San Diego, CA

New York Academy of Sciences symposium, "Allosteric Modulation of G Protein-coupled Receptors," New York, NY

Department of Cell & Structural Biology, University of Illinois, Chicago, IL

Third Annual Meeting on Psychiatric Drug Discovery and Development, Princeton, NJ  
Neurocrine Biosciences, San Diego, CA

Plenary Lecture, International Congress on Schizophrenia Research, Savannah, GA

Finding Quality Leads and Lead Optimization, Drug Discovery Technology Conference, Boston, MA

Acadia Pharmaceuticals, La Jolla, CA

Division of Neuroscience, Wyeth Ayerst Pharmaceuticals, Princeton, NJ

Division of Neurological Disorders, Johnson and Johnson, Raritan, NJ

Renovis Inc. San Francisco, CA

Annual meeting of the Southeastern Pharmacology Society (SEPS), Nashville, TN

Seaside Therapeutics, Boston, MA

**2006**

Pharmacology, Biochemistry and Behavior Conference, Morzine, France

Keynote Speaker, Symposium on New Targets in Psychiatry, Copenhagen, Denmark

Annual meeting of CINP, Symposium, Mechanisms of action of drugs for schizophrenia: future directions, Chicago, IL

Gordon Conference on Medicinal Chemistry, New London, NH

Department of Pharmacology, Emory University School of Medicine, Atlanta, GA

Cephalon Inc., West Chester, PA

Michael J. Fox Foundation, Community Outreach, Atlanta, GA

Grand Rounds, Eli Lilly and Co., Indianapolis, IN

11<sup>th</sup> Anniversary G-Protein Coupled Receptors Conference, Las Vegas, NV

**2007**

Ray Fuller Symposium, American Society for Pharmacology and Experimental Therapeutics, Experimental Biology, Washington, D.C.

Session chair, Symposium, International Brain Research Organization (IBRO) World Congress of Neuroscience, Melbourne, Australia

British Pharmacological Society Meeting on Cell Signaling, Leicester, UK  
Glutamate in the Vineyards, Sydney, Australia  
Molecular Pharmacology of G Protein-Coupled Receptors, Melbourne, Australia  
Johnson and Johnson Seminar Series, Brussels, Belgium  
Psychiatry Centre of Excellence, GlaxoSmithKline, Harlow, UK  
Sepracor, Inc. Seminar Series, Marlborough, MA  
Plenary Lecture, University of Toronto, Annual GRID (Graduate Research in Progress)  
Symposium, Toronto, Canada  
Keynote Speaker, CNS Drugs Summit - R& D Excellence, Philadelphia, PA  
Plenary Symposium: How Can We Find New Drugs for Bone in the 21st Century? American  
Society for Bone and Mineral Research, Honolulu, HI  
Session chair, International Congress on Schizophrenia Research (ICOSR), Colorado Springs,  
CO  
Department of Neurobiology Seminar Series, University of Alabama Birmingham, Birmingham,  
AL  
Gordon Research Conference on Excitatory Amino Acids, Colby-Sawyer College, New London,  
NH  
Lundbeck Research USA, Paramus, NJ  
The Broad Institute of MIT and Harvard, Boston, MA  
Southern Research Institute, Division of Drug Discovery, Birmingham, AL  
Otsuka Pharmaceuticals, Princeton, NJ

**2008**

Symposium organizer, Novel approaches to treatment of schizophrenia: Beyond the  
monoamines, Annual meeting of the American Society for Pharmacology and  
Therapeutics, San Diego, CA  
Symposium organizer, Drug Discovery in an Academic Setting, Annual meeting of the American  
Society in Biochemistry and Molecular Biology (ASBMB), San Diego, CA  
Meeting co-organizer, Keystone Symposium, G Protein-Coupled Receptors: New Insights in  
Functional Regulation and Clinical Application, Killarney, Ireland  
Life Sciences Institute Seminar Series, University of Michigan, Ann Arbor, MI  
Toronto Western Research Institute Seminar Series, University of Toronto, Toronto, Canada  
Meeting co-organizer for the Sixth International Meeting on Metabotropic Glutamate Receptors,  
Taormina-Sicily, Italy  
Uniformed Services University of the Health Sciences Seminar Series, Bethesda, MD  
Neuroscience Seminar, Harvard Medical School/McLean Hospital, Boston, MA  
Research Seminar Series, Ohio State University, Columbus, OH  
GlaxoSmithKline, Harlow, UK  
Sixth Annual Congress: G Protein-Coupled Receptors in Drug Discovery, Berlin, Germany  
Department of Pharmacology Seminar Speaker University of North Carolina, Chapel Hill, NC  
University of Alabama Birmingham Neuroscience Seminar Series, Birmingham, AL

Advances in G Protein-Coupled Receptor Research Webinar (Science/AAAS), Washington, DC  
Emerging Themes in GPCR Signaling and Drug Discovery, Madison, WI  
Center for Biomedical Science Special Seminar Series, University of Texas, San Antonio, TX  
Satellite Session, Society for Neuroscience Meeting, Washington, D.C.  
Adolor Corporation Seminar Series, Exton, PA

**2009**

Gordon Research Conference on Phosphorylation and G Protein Mediated Signaling Networks, Biddeford, ME  
Distinguished Visiting Professor, Sun Yat-sen University and South China Center for Innovative Pharmaceutics Gunghzhou, China  
Drug Discovery for Neurodegeneration Conference, Washington, DC  
Session chair, Target Discovery World Congress, San Francisco, CA  
Emory Neurosciences DeLong Symposium, Emory University, Atlanta, GA  
Chemical Genomics Meeting, Portland, OR  
GPCR Seminar Series, Abbott Laboratories, Abbott Park, IL  
Chauncey Leake Lecture, University of Texas Medical Branch, Galveston, TX  
10th Annual Great Lakes GPCR Retreat, Rochester, NY  
Bristol Myers Squibb symposium, Non-traditional approaches to Drug Discovery Symposium, Philadelphia, PA  
Drug Development Summit, Phoenix, AZ  
Schizophrenia Brainstorming Meeting, PureTech, Boston, MA  
Keynote address, “Allosteric Modulators of GPCRS as Novel Approach to Treatment of CNS Disorders”, Frontiers in Graduate Pharmacology Research Symposium, Emory University Distinguished Lecturer, Atlanta, GA  
New York Academy of Sciences Parkinson’s Disease Annual Therapeutics Conference, New York, NY  
Symposium on Structure and molecular interaction as a basis for drug action, University of Bonn, Bonn, Germany  
Annual Southeast Technology Transfer Directors’ Meeting, Atlanta, GA  
Panel chair, “Roles of Metabotropic Glutamate Receptor 5 in Regulation of Cognitive Function,” Annual meeting of the American College of Neuropsychopharmacology, Hollywood, FL  
Satellite symposium, Chemical Probes for Neuroscience, Annual Conference of Society for Neurosciences, Chicago, IL

**2010**

Session chair, Symposium, G protein-coupled 7TM receptors: from molecular to physiological function, World Pharma 2010 Congress, Copenhagen, Denmark  
Symposium, New Approaches and Targets in Psychiatry, World Pharma 2010 Congress, Copenhagen, Denmark

Plenary Lecture, “Allosteric Modulators of GPCRS as a Novel Approach to Treatment of Schizophrenia,” Society of Biological Psychiatry Annual Meeting, New Orleans, LA

Axelrod Symposium, Structure and Mechanism in Drug Design, Annual meeting of the American Society for Pharmacology and Therapeutics, Anaheim, CA

Oregon Health and Science University Departmental Seminar, Portland, OR

Broad Institute Stanley Center for Psychiatry Research, Seminar Series, Boston, MA

Plenary Lecture, “Allosteric Modulators of GPCRS as a Novel Approach to Treatment of CNS Disorders,” Eli Lilly and Company, Psychiatric Disorders Group, Indianapolis, IN

Institute of Pharmacology, “Targeting metabotropic glutamate receptors for treatment of schizophrenia,” Krakow, Poland

Annual Ralph J. Cazort Heritage Lecture, “Targeting metabotropic glutamate receptors for treatment of CNS disorders”, Meharry College, Nashville, TN

20th Neuropharmacology Conference: High Resolution Neuropharmacology: Structure changes the paradigm, San Diego, CA

Plenary Lecture, “Diverse Models of Efficacy and Stimulus Bias of Allosteric Modulators of GPCRS” The Allosteric Modulator Drug Discovery Conference, Satellite Session, Society for Neuroscience Annual meeting, San Diego, CA

Bachman-Strauss Dystonia and Parkinson Foundation 2010 Think Tank, Interface between Parkinson’s disease and involuntary movements, “New molecular targets in the treatment of Parkinsonism, dystonia and dyskinesias,” New York, NY

Keynote address, “Diverse modes of efficacy and stimulus bias of allosteric modulators of GPCRS”, Allosteric Modulator Drug Discovery Congress, San Diego, CA

Institute of Medicine Forum on Neuroscience and Nervous System Disorders, Glutamate-related Biomarkers in Drug Development for Disorders of the Nervous System, “Anxiety disorders: glutamate dysfunction, treatments, and need for glutamate biomarkers”, Washington, DC

Institute of Medicine Forum on Neuroscience and Nervous System Disorders, Board on Health Sciences Policy, “Leveraging the Expertise of Academia to Facilitate Drug Development”, Washington, DC

ACNP (American College of Neuropsychopharmacology Panel), Discovery of small molecules for research on neuropsychiatric disorders: Target validation and drug discovery, Miami, FL

ACNP (American College of Neuropsychopharmacology Panel), Recent Advances in Glutamatergic Treatment of Schizophrenia, Miami, FL

NIA Advisory Workshop, “Advancing Preclinical Therapy Development for Alzheimer’s Disease”, Bethesda, MD

**2011**

Keystone Symposium, Evolving Approaches to Early Stage Drug Discovery Snowbird, UT

International Meeting on Metabotropic Glutamate Receptors, Taormina-Sicily, Italy

New York Academy of Sciences Symposium, Advancing Drug Discovery for Schizophrenia, New York, NY

Wake Forest Department of Physiology and Pharmacology Seminar Speaker, Winston Salem, NC

Distinguished Scientist Lecture Series, University of Montreal Seminar Speaker, Montreal, Canada

Association of American Medical Colleges (AAMC), “Translating Science - Making Connections Across Disciplines on Scientific Breakthroughs”, Nashville, TN

Session chair, Motor Systems, IBRO World Congress, “Physiological Roles and antiparkinsonian potential of metabotropic glutamate receptors in the basal ganglia motor circuit” Florence, Italy

Emerging Genetics and Neurobiology of Severe Mental Illness Broad Institute, Cambridge, MA

Keynote Speaker, “GPCR, PAMs, NAMs, and SAMs - a new way to affect GPCR Receptors, American Chemical Society, Medicinal Chemistry Division Symposium, Denver, CO

High Throughput Chemistry and Chemical Biology GRC Conference, “Optimization and functional diversity of allosteric modulators of GPCRs”, Colby Sawyer College, New London, NH

GMP Seminar, Washington University School of Medicine, St. Louis, MO

National Parkinson Foundation Symposium, Washington, DC

Drug Discovery in Academia Conference, Bethesda, MD

Vanderbilt Medical Alumni Associate Board Meeting, Nashville, TN

Keynote Speaker, “Neuromodulatory Roles of Multiple Muscarinic Receptor Subtypes”, NIH MLPCN Steering Committee Meeting Keynote Address, Nashville, TN

## **2012**

Albany Molecular Research, Inc. Discovery Research Department, Albany, NY

Scripps Institute, West Palm Beach, FL

Grand Rounds in Psychiatry, University of Texas Southwestern Medical Center, Dallas, TX  
Department of Pharmacology Seminar Series, University of San Diego, San Diego, CA

Keynote Speaker, 9<sup>th</sup> Annual Mastering Medicinal Chemistry Conference, San Francisco, CA

Keynote Speaker, Great Lakes Chapter, American Society for Pharmacology and Experimental Therapeutics (ASPET) annual meeting, “GPCRs and allosteric modulation: from CNS and beyond”, Chicago, IL

New York Academy of Science symposium on GPCRs, New York NY

Keynote Speaker, Center for Neurodegeneration and Experimental Therapeutics spring retreat, University of Alabama Birmingham, Birmingham, AL

Association of American Medical Colleges, GRAND and GREAT Group 2012 Annual Meeting, Nashville, TN

Medicinal Chemistry GRC annual conference, New London, NH

TedxNashville 2012, “Impact – Making a Difference”, Nashville, TN

HHMI Certificate Program in Molecular Medicine Seminar, Nashville, TN

Osher Lifelong Learning Series, “Drug Discovery”, Nashville, TN

Invited Instructor, Neuroscience School of Advanced Studies (NSAS), “Emerging Therapeutic Targets in Schizophrenia”, Tuscany, Italy

Murray Barr Award and Lecture, Western University, ON, Canada  
Department of Pharmacology, University of Rome, Rome, Italy  
Plenary Speaker, CINP, Stockholm, Sweden  
Psychiatry Grand Rounds Lecture Series, Vanderbilt University, Nashville, TN  
American Society for Pharmacology and Experimental Therapeutics (ASPET) Ray Fuller  
Symposium, San Diego, CA  
Life Sciences Tech Meeting, Nashville, TN

**2013**

Cade Award and Lecture, Mental Health Research Institute, University of Melbourne,  
Melbourne, Australia  
World Congress of Biological Psychiatry, Kyoto, Japan  
Pfizer Global, Cambridge, MA  
Plenary Speaker, American Society for Pharmacology and Experimental Therapeutics (ASPET)  
4<sup>th</sup> GPCR Colloquium, Boston, MA  
Center for Pharmaceutical Biotechnology, UIC – College of Pharmacy, Chicago, IL  
Flexner Dean's Lecture Series, Vanderbilt University, Nashville, TN  
19<sup>th</sup> Annual Arthur H. Briggs Lectureship, University of Texas Science Center, San Antonio, TX  
Graduate Student Symposium, University of Texas Science Center, San Antonio, TX  
23<sup>rd</sup> Neuropharmacology Conference: The Synaptic Basis of Neurodegenerative Disorders, San  
Diego, CA  
Columbia Psychiatry Grand Rounds, Columbia University, New York, NY  
Department of Pharmacology, Columbia University, New York, NY

**2014**

29<sup>th</sup> CINP World Congress, Vancouver, Canada  
Keynote Speaker, Kennedy Center Science Day, Discovery of Breakthrough Medicines for  
Serious Brain Disorders, Vanderbilt Kennedy Center, Nashville, TN  
Frank Standaert Lecture, Department of Pharmacology and Physiology, Georgetown University  
Medical Center, Washington, DC  
American Society for Pharmacology and Experimental Therapeutics (ASPET) Drug Discovery  
and Development Division Symposium: Productive Public Private Partnerships for  
Pharmacological Progress, San Diego, CA  
Grand Challenges in Parkinson's Disease: From Molecules to People, Taking Compounds from  
the Laboratory to the Bedside, Van Andel Research Institute, Grand Rapids, MI  
American Academy of Neurology Meeting, Research and Technology Colloquium: From  
Discovery to Therapy, Philadelphia, PA  
Dystonia Medical Research Foundation, Neurotransmitter Receptors as Targets for Dystonia  
Meeting, Miami, FL (Meeting organizer)  
Keynote Speaker, Chemistry Biology Interface Training Program Symposium, University of  
Michigan, Ann Arbor, MI

Bishop Reynolds Forum Lecture, St. Andrew's-Sewanee School, Sewanee, TN  
Society of Biological Psychiatry Annual Scientific Meeting, New York, NY  
International Meeting on Metabotropic Glutamate Receptors, Taormina-Sicily, Italy  
Simons Foundation, Advancing Autism Spectrum Disorder Therapeutics, New York, NY  
Keynote Speaker, Mid-Atlantic Pharmacology Society (MAPS) Annual Meeting, Temple University, Philadelphia, PA  
V. Sagar Sethi, MD Mental Health Research Award and Lecturer, NC Psychiatric Association, Wrightsville Beach, NC  
Featured Speaker, 12<sup>th</sup> Annual Discovery on Target, Allosteric Modulation and Biased Ligands, Boston, MA

**2015**

New York Academy of Science Symposium, GPCR Drug Discovery, New York, NY  
Circuits and Pathways in Dystonia and Parkinsonism, 5<sup>th</sup> Biennial Workshop on Dystonia and Parkinsonism, Rome, Italy  
Biomedical Sciences Graduate Program Seminar Series, Penn State College of Medicine, Hershey, PA  
Icahn School of Medicine at Mount Sinai, New York, NY  
Keynote Speaker, 16<sup>th</sup> Great Lakes GPCR Retreat, Animal Models and Translational Research in Neurobiology, Hockley Valley, Canada  
The University of Montana, Center for Structural and Functional Neuroscience, Missoula, MT  
2015 Theodore M. Brody Distinguished Lecturer, Michigan State University, Department of Pharmacology & Toxicology, East Lansing, MI  
Michael J. Fox Foundation, Annual Parkinson Disease Therapeutics Conference, New York, NY  
Plenary speaker, 4th biennial Drug Discovery Conference, University of Georgia, Center for Drug Discovery, Athens, GA

**2016**

Winter Conference on Brain Research, Breckenridge, CO  
Keystone Symposium, G Protein-Coupled Receptors: Structure, Signaling and Drug Discovery, Keystone, CO  
JPS – ASPET Special Lecture, The 89th Annual Meeting of the Japanese Pharmacological Society (JPS), Yokohama, Japan  
Keynote Speaker, Academic Drug Discovery Conference, Cambridge, UK  
Plenary speaker, 5th Biennial Schizophrenia International Research Conference, Florence, Italy  
Translational Keynote Lecture - ADK Distinguished Speaker, Center for Translational Neuroscience and Therapeutics, Texas Tech University Health Sciences Center, Lubbock, TX  
National Institute of Mental Health, Brain Camp 2016, Cold Spring Harbor, NY  
Center for Molecular and Behavioral Neuroscience, Department of Neuroscience and Pharmacology, Meharry Medical College, Nashville, TN



Plenary Lecture, 11th symposium on Calcium Signaling, Biophysical Society of China, Zunyi city, Guizhou, China

Huntington's Disease Conference, Radisson Hotel, Nashville, TN

Huntington Study Group Annual Meeting, Gaylord Opryland Hotel, Nashville, TN

Australasian Society of Clinical and Experimental Pharmacologists and Toxicologists (ASCEPT) and the Molecular Pharmacology of G Protein-Coupled Receptors (MP-GPCR), Melbourne, Australia.

## **2017**

Molecular Pharmacology Gordon Conference, Ciocco, Italy

12th International Basal Ganglia Society Meeting (IBAGS), Merida, Yucatan, Mexico

13th World Congress of Biological Psychiatry, Copenhagen, Denmark

International Meeting on Metabotropic Glutamate Receptors, Taormina-Sicily, Italy

Stanley Center for Psychiatric Research of the Broad Institute, Cambridge, MA

Lee University's Winter Commencement Address, Cleveland, TN

## **2018**

Keystone Symposium, GPCR Structure and Function: Taking GPCR Drug Development and Discovery to the Next Level Santa Fe, NM

Graduate Student Invited Seminar Speaker, Department of Neuroscience and Regenerative Medicine (DNRM), Medial College of Georgia, Augusta University, Augusta, GA

Graduate Student Invited Seminar Speaker, Department of Physiology and Pharmacology, Wake Forest School of Medicine, Winston-Salem, NC

6th Biennial Schizophrenia International Research Society Conference, Florence Italy

6th Annual Molecular Psychiatry Meeting, Kauai HI

Philip Portoghese Lecture in Medicinal Chemistry, Department of Medicinal Chemistry, University of Minnesota, Minneapolis, MN

Neuroscience of Movement Disorders, Satellite meeting of the annual meeting of the Society for Neuroscience, San Diego, CA

Distinguished Lecture in Drug Discovery, American Association of Pharmaceutical Scientists, Nashville, TN

## **2019**

Hugh Arthur Pritchard Memorial Lecturer, Program of Neuroscience at the University of Maryland, School of Medicine, Baltimore, MD

7<sup>th</sup> International Conference on Current Trends in Drug Discovery Research (CTDDR), Lucknow, India

Distinguished Lecture, Center for Clinical Pharmacology, Washington University in St. Louis, St. Louis, MO

5<sup>th</sup> World Parkinson Congress (WPC), Kyoto, Japan

SNI Lecture, Invited International Speaker, Department of Pharmacology, Innsbruck Medical University, Innsbruck, Austria

Keynote Speaker, 3<sup>rd</sup> Annual Behavioral Health Conference, Madison, WI

58th Annual Meeting of The American College of Neuropsychopharmacology, Orlando FL

## **2020**

Invited Seminar Speaker, Department of Pharmacology & Therapeutics, The University of Florida, Gainesville, FL

Symposium Organizer, 10<sup>th</sup> International Meeting on Metabotropic Glutamate Receptors, Taormina, Italy

Invited Speaker, 9<sup>th</sup> Summer Course Workshop on Schizophrenia & Related Disorders, Cold Spring Harbor Laboratory, Banbury Conference Center, Long Island NY

Isreal Hanin Lecturer, Loyola University, Chicago, IL

## **Patents**

### **Issued Patents**

1. Hess JW, **Conn PJ**, Warren LE. (2003). Identification of novel polymorphic sites in the human mGluR8 gene and uses thereof. WO/2003/054167.
2. **Conn PJ**, Mallorga PJ, Jacobson MA, Scolnick EM, Sur CS. (2004). Treatment of psychosis with a muscarinic M1 receptor ectopic activator. WO/2004/073639.
3. **Conn PJ**, Marino MJ, Kinney G. (2005). Treatment of movement disorders with a metabotropic glutamate 4 receptor positive allosteric modulator. WO/2005/007096.
4. **Conn PJ**, Rodriguez AL, Jones CK. (2009). Partial mGluR5 antagonists for treatment of anxiety and CNS disorders. US 7,531,541.
5. **Conn PJ**, Lindsley CW, Weaver CD, Rodriguez AL, Niswender CM, Jones CK, Williams R. (2011). Bicyclic mGluR5 positive allosteric modulators and methods of making and using same. US 8,034,806.
6. Lindsley CW, **Conn PJ**, Williams R, Jones CK, Sheffler DJ. (2012). Sulfonyl-azetidino-3-yl-methylamine amide analogs as GlyT1 inhibitors, methods for making same, and use of same in treating psychiatric disorders. US 8,207,155.
7. Lindsley CW, **Conn PJ**, Williams R, Sheffler DJ. (2012). 3.3.0 Bicyclic GlyT1 inhibitors and methods of making and using the same. US 8,211,933.
8. Lindsley CW, **Conn PJ**, Williams R, Jones CK, Sheffler DJ. (2013). Alkylsulfonyl-2,3-dihydrospiro[indene-1,4'-piperidine analogs as GlyT1 inhibitors, methods for making same, and use of same in treating psychiatric disorders. US 8,431,700.
9. Lindsley CW, **Conn PJ**, Williams R, Jones CK, Sheffler DJ. (2013). Sulfonyl-piperidino-4-yl-methylamine amide analogs as GlyT1 inhibitors, methods for making same, and use of same in treating psychiatric disorders. US 8,436,019.
10. Lindsley CW, **Conn PJ**, Williams R, Jones CK, Sheffler DJ. (2013). 3.1.0 bicyclic GlyT1 inhibitors and methods of making and using same. US 8,497,289.

11. **Conn PJ**, Lindsley CW, Emmitte KA, Weaver CD, Rodriguez AL, Felts AS, Jones CK, Bates BS, Chauder BA. (2013). Substituted phenylamine carboxamide analogs as mGluR5 negative allosteric modulators and methods of making and using the same. US 8,501,757.
12. **Conn PJ**, Lindsley CW, Emmitte KA, Weaver CD, Rodriguez AL, Felts AS, Jones CK, Bates BS. (2013). Substituted heteroarylamine carboxamide analogs as mGluR5 negative allosteric modulators and methods of making and using the same. US 8,569,308.
13. **Conn PJ**, Lindsley CW, Stauffer SR, Bartolome-Nebreda JM, Conde-Ceide S, MacDonald GJ, Tong HM, Jones CK, Alcazar-Vaca MJ, Andres-Gil JI, Malosh C. (2013). Bicyclic triazole and pyrazole lactams as allosteric modulators of mglu5 receptors. US 8,592,422.
14. **Conn PJ**, Lindsley CW, Emmitte KA, Weaver CD, Rodriguez AL, Felts AS, Jones CK, Bates BS. (2013). Substituted heteroarylamide analogs as mGluR5 negative allosteric modulators and methods of making and using the same. US 8,598,345.
15. **Conn PJ**, Lindsley CW, Hopkins CR, Weaver CD, Niswender CM, Gogliotti RD, Engers DW. (2014). Substituted 1,1,3,3-tetraoxidobenzo[*d*][1,3,2]dithiazoles as mglur4 allosteric potentiators, compositions, and methods of treating neurological dysfunction. US 8,658,650.
16. **Conn PJ**, Lindsley CW, Wood MR, Gogliotti RD, Niswender CM, Melancon BJ, Lebois EP. (2014). Alkyl 3-((2-amidoethyl)amino)-8-azabicyclo[3.2.1]octane-8-carboxylate analogs as selective M1 agonists and methods of making and using same. US 8,697,691.
17. Lindsley CW, **Conn PJ**, Wood MR, Melancon BJ, Cheung Y-Y. (2014). Substituted (1-(methylsulfonyl)azetididin-3-yl)(heterocycloalkyl)methanone analogs as antagonists of muscarinic acetylcholine M1 receptors. US 8,697,888.
18. **Conn PJ**, Lindsley CW, Jones CK, Stauffer SR, Bartolome-Nebreda JM, MacDonald GJ, Conde-Ceide S, Tong HM. (2014). Substituted pyrazolo[1,5-*a*]pyrazine compounds as allosteric modulators of mGluR5 receptors. US 8,703,946.
19. **Conn PJ**, Lindsley CW, Stauffer SR, Manka J, Jacobs J, Zhou Y, Bartolome-Nebreda JM, MacDonald GJ, Conde-Ceide S, Dawson ES. (2014). Dihydronaphthyridinyl(organo)methanone analogs as positive allosteric mglur5 modulators. US 8,710,074.
20. **Conn PJ**, Lindsley CW, Hopkins CR, Weaver CD, Niswender CM, Engers DW. (2014). Substituted dioxopiperidines and dioxopyrrolidines as mGlu4 allosteric potentiators, compositions and methods of treating neurological dysfunction. US 8,759,377.
21. Lindsley CW, **Conn PJ**, Wood MR, Tarr JC, Bridges TM. (2014). Indole compounds as positive allosteric modulators of the muscarinic receptor. US 8,772,509.
22. **Conn PJ**, Lindsley CW, Hopkins CR, Niswender CM, Gogliotti RD. (2014). mGlu4 allosteric potentiators, compositions and methods of treating neurological dysfunction. US 8,779,157.
23. **Conn PJ**, Lindsley CW, Emmitte KA, Weaver CD, Rodriguez AL, Felts AS, Jones CK, Bates BS. (2014). Substituted benzamide analogs as mGlu5 negative allosteric modulators and methods of making and using the same. US 8,796,295.

24. **Conn PJ**, Lindsley CW, Weaver CD, Rodriguez AL, Niswender CM, Jones CK, Williams R. (2014). Benzamide mGlu5 positive allosteric modulators and methods of making and using same. US 8,853,392.
25. **Conn PJ**, Lindsley CW, Stauffer SR, Manka J, Rodriguez AL, Jacobs J, Zhou Y, Bartolome-Nebreda JM, MacDonald GJ, Conde-Ceide S, Jones CK. (2014). Naphthyridinone analogs as mGlu5 positive allosteric modulators. US 8,853,237.
26. **Conn PJ**, Lindsley CW, Stauffer SR, Bartolome-Nebreda JM, MacDonald GJ, Conde-Ceide S, Jones CK, Martin-Martin ML, Tong HM. (2014). Substituted imidazopyrimidin-5(6H)-ones as allosteric modulators of mGlu5 receptors. US 8,865,725.
27. **Conn PJ**, Lindsley CW, Stauffer SR, Bartolome-Nebreda JM, Macdonald GJ, Conde-Ceide S, Tong HM, Alcazar-Vaca MJ, Andres-Gil JI, Pena-Pinon MA. (2014). Substituted bicyclic alkoxy pyrazole analogs as allosteric modulators of mGluR5 receptors. US 8,901,125.
28. **Conn PJ**, Lindsley CW, Hopkins CR, Weaver CD, Niswender CM, Cheung YY. (2014). Aryl and heteroaryl sulfones as mGluR4 allosteric potentiators, compositions and methods of treating neurological disease. US 8,912,336.
29. **Conn PJ**, Lindsley CW, Hopkins CR, Weaver CD, Niswender CM, Engers DW. (2014). Benzisoxazoles and azabenzisoxazoles as mgluR4 allosteric potentiators, compositions, and methods of treating neurological dysfunction. US 8,916,584.
30. **Conn PJ**, Lindsley CW, Weaver CD, Stauffer SR, Zhou Y, Manka J, MacDonald G, Bartolome-Nebreda JM. (2015). Substituted 6-methylnicotinamides as mGlu5 positive allosteric modulators. US 8,969,389.
31. Lindsley CW, **Conn PJ**, Wood MR, Melancon BJ, Poslunsey MS, Tarr JC. (2015). ‘Substituted 4-(1H-pyrazol-4-yl)benzyl analogues as positive allosteric modulators of mAChR M1 receptors’ US 9,012,445.
32. **Conn PJ**, Lindsley CW, Stauffer SR, Bartolome-Nebreda JM, Conde-Ceide S, MacDonald GJ, Tong HM, Pena-Pinon MA, Alcazar-Vacal MJ, Andres-Gil JI. (2015) ‘Substituted bicyclic alkoxy pyrazole analogs as allosteric modulators of mGlu5 receptors.’ US 9,029,366.
33. Lindsley CW, **Conn PJ**, Wood MR, Melancon BJ, Poslunsey MS. (2015). ‘Substituted 1-benzylindolin-2-one analogues as positive allosteric modulators of muscarinic acetylcholine M1 receptors’ US 9,029,563.
34. Lindsley CW, **Conn PJ**, Wood MR, Salovich JM. (2015) ‘Substituted pyrazolo[3',4':4,5]thieno[2,3-c]pyridazin-3-amine analogs as positive allosteric modulators of the muscarinic acetylcholine receptor M4’US 9,056,875.
35. **Conn PJ**, Lindsley CW, Hopkins CR, Salovich JM, Melancon BJ. (2015) ‘Substituted 1H-pyrazolo[3',4',4,5]thieno[2,3-b]pyridin-3-amine analogs as positive allosteric modulators of the muscarinic acetylcholine receptor M4’ US 9,056,876.
36. Lindsley CW, **Conn PJ**, Wood MR, Hopkins CR, Melancon BJ, Poslusney MS. (2015)‘ Substituted benzylspiroindolin-2-one analogs as positive allosteric modulators of the muscarinic acetylcholine receptor M1’ US 9,073,935.

37. **Conn PJ**, Lindsley CW, Emmitte KA, Rodriguez AL, Felts AS, Jones CK, Bates B, Chauder BA. (2015). '6-alkyl-N-(pyridin-2-yl)-4-aryloxypicolinamide analogs as mGluR5 negative allosteric modulators and methods of making and using the same' US 9,085,562.
38. **Conn PJ**, Lindsley CW, Stauffer SR, Jones CK, Bartolome-Nebreda JM, Conde-Ceide S, Macdonald GJ, Alcazar Vaca MJ. (2015) 'Bicyclic oxazole and thiazole compounds and their use as allosteric modulators of mGluR5 receptors' US 9,090,632.
39. **Conn PJ**, Lindsley CW, Hopkins CR, Niswender CM, Gogliotti RD, Salovich JM, Engers DW, Cheung Y-Y. (2015) 'Pyrazolopyridine, pyrazolopyrazine, pyrazolopyrimidine, pyrazolothiophene and pyrazolothiazole compounds as MGLUR4 allosteric potentiators, compositions, and methods of treating neurological dysfunction' US 9,108,963.
40. **Conn PJ**, Lindsley CW, Hopkins CR, Niswender CM, Gogliotti RD, Salovich JM, Engers DW. (2015). Pyrazolopyridine, pyrazolopyrazine, pyrazolopyrimidine, pyrazolothiophene and pyrazolothiazole compounds as mgluR4 allosteric potentiators, compounds and methods of treating neurological dysfunction. US 9,163,015.
41. **Conn PJ**, Lindsley CW, Hopkins CR, Niswender CM, Gogliotti RD. (2015). 'mGluR4 allosteric potentiators, compositions and methods of treating neurological dysfunction' US 9,180,192.
42. **Conn PJ**, Lindsley CW, Hopkins CR, Niswender CM, Gogliotti RD, Salovich JM, Engers DW, Cheung Y-Y. (2015). 'Heterocyclic sulfone mGluR4 allosteric potentiators, compositions, and methods of treating neurological dysfunction' US 9,192,603.
43. **Conn PJ**, Lindsley CW, Stauffer SR, Bartolome-Nebreda JM, Conde-Deide S, Macdonald G, Tong HM, Jones CK. (2016). 'Substituted pyrazolo[1,5-a]pyrazines as mGlu5 receptor modulators' US 9,255,103.
44. **Conn PJ**, Lindsley CW, Emmitte KA, Felts AS, Bollinger KA. (2016). Negative allosteric modulator of metabotropic glutamate receptor 2' US 9,382,208.
45. Lindsley CW, **Conn PJ**, Wood MR, Melancon BJ, Tarr JC, Salovich JM, Poslusney MS. (2016). 'Substituted 5-aminothieno[2,3-c]pyridazine-6-carboxamide analogs as positive allosteric modulators of the muscarinic acetylcholine receptor M4' US 9,493,481.
46. Lindsley CW, **Conn PJ**, Stauffer SR, Panarese JD. (2017). 'Substituted 1-benzylquinoxalin-2(1H)-one analogs as positive allosteric modulators of muscarinic acetylcholine receptor M1' US 9,527,834.
47. **Conn PJ**, Lindsley CW, Emmitte KA, Felts AS, (2017). 'Substituted bicyclic heteroaryl carboxamide analogs as mGluR5 negative allosteric modulators' US 9,533,982.
48. Lindsley CW, **Conn PJ**, Stauffer SR, Panarese JD (2017). 'Substituted quinazolin-4(3H)-ones, pyrido[3,4-d]pyrimidin-4(3H)-ones, pyrido[3,2-d]pyrimidin-4(3H)-ones and pyrido[2,3-d]pyrimidin-4(3H)-ones as positive allosteric modulators of muscarinic acetylcholine receptor M1' US 9,540,371.
49. Emmitte KA, Lindsley CW, **Conn PJ**, Felts AS, Smith KA. (2017). 'Substituted 6-aryl-imidazopyridine and 6-aryl-triazolopyridine carboxamide analogs as negative allosteric modulators of mGluR5' US 9,550,778.

50. Lindsley CW, **Conn PJ**, Wood MR, Hopkins CR, Melancon BJ, Poslusney MS, Engers DW. (2017). ‘Substituted 2-(4-heterocyclylbenzyl)isoindolin-1-one analogs as positive allosteric modulators of the muscarinic acetylcholine receptor M1’ US 9,586,964.
51. Lindsley CW, **Conn PJ**, Wood MR, Poslusney MS, Tarr JC, Melancon BJ. (2017). ‘Substituted thieno[2,3-c]pyridazine-6-carboxamide analogs as positive allosteric modulators of the muscarinic acetylcholine receptor M4’ US 9,637,498.
52. **Conn PJ**, Lindsley CW, Emmitte KA, Engers JL, Konkol LC. (2017). ‘Substituted pyrazolo[1,5-a]pyrazines as negative allosteric modulators of metabotropic glutamate receptor 3’ US 9,676,782.
53. Lindsley CW, **Conn PJ**, Stauffer SR, Panarese JD. (2017). ‘Substituted 4-benzyl-3,4-dihydro-2H-benzo[B][1,4]oxazine-2-carboxamide analogs as positive allosteric modulators of muscarinic acetylcholine receptor M1’ US 9,708,278.
54. Emmitte KA, Lindsley CW, **Conn PJ**, Felts AS, Rodriguez AL, Smith KA, Jones CK. (2017). ‘Substituted imidazopyridine and triazolopyridine compounds as negative allosteric modulators of mGlu5’ US 9,844,542.
55. Lindsley CW, **Conn PJ**, Wood MR, Melancon BJ, Tarr JC, Salovich JM, Poslusney MS. (2018). ‘Substituted 5-aminothieno[2,3-c]pyridazine-6-carboxamide analogs as positive allosteric modulators of the muscarinic acetylcholine receptor M4’ US 9,868,746.
56. **Conn PJ**, Hopkins CR, Lindsley CW, Niswender CM, Engers DW, Panarese J, Bolinger S, Engers J. (2018). ‘Benzosaxole-substituted compounds as mGluR4 allosteric potentiators, compositions and Methods of treating neurological dysfunction’ US 9,980,945.
57. Lindsley CW, **Conn PJ**, Engers DW, Melancon BJ, Gregro AR. (2019). ‘Positive allosteric modulators of the muscarinic acetylcholine receptor M4’ US 10,189,857.
58. Lindsley CW, **Conn PJ**, Engers DW, Bollinger SB, Tarr JC, Engers JL, Spearing P, Long MF, Bridges TM. (2019) ‘Positive allosteric modulators of the muscarinic acetylcholine receptor M4’ US 10,239,887 B2.
59. **Conn, PJ**, Lindsley CW, Emmitte KA, Han C, Engers JL, Bender AM (2019). ‘Substituted pyrrolo[3,4-e]indolizines, imidazo[1,2-a]pyrrolo[3,4-e]pyridines, pyrrolo[3,4-e][1,2,4]triazolo[1,5-a]pyridines and pyrrolo[3,4-e][1,2,4]triazolo[4,3-a]pyridines as positive allosteric modulators of muscarinic acetylcholine receptor M1’ US 10,221,175.
60. **Conn PJ**, Hopkins CR, Lindsley CW, Niswender CM, Engers DW, Bollinger S (2019). ‘Benzothiazole and benzisothiazole-substituted compounds as mGluR4 allosteric potentiators, compositions, and methods of treating neurological dysfunction’ US 10,221,172.
61. **Conn PJ**, Lindsley CW, Niswender CM, Hopkins CR, Bronson J, Wu Y-J, Emmitte KA, Panarese J, Engers DW, Engers JL, (2019). ‘Isoquiniline and naphthalene-substituted compounds as mGluR4 allosteric potentiators, compositions, and methods of treating neurological dysfunction’ US 10,227,343.
62. **Conn PJ**, Lindsley CW, Felts AS, (2019). ‘Benzomorpholine and benzomorpholine-substituted compounds as mGluR4 allosteric potentiators, compositions, and methods of treating neurological dysfunction’ US 10,294,222.

63. Lindsley CW, **Conn PJ**, Engers DW, Jones CK, Bridges TM, Han C, Felts AS, (2019). ‘Positive allosteric modulators of the muscarinic acetylcholine receptor M4’ US 10,342,782.
64. **Conn PJ**, Lindsley CW, Emmitte KA, Engers JL, Bollinger KA, (2019). ‘Negative allosteric modulators of metabotropic glutamate receptor 3’ US 10,399,948.
65. **Conn PJ**, Lindsley CW, Felts AS, Niswender CM, Capstick RA, Spearing PK, Bollinger SR, (2019). ‘Indazole compounds as mGluR4 allosteric potentiators, compositions, and methods of treating neurological dysfunction’ US 10,508,105.
66. Conn PJ, Lindsley CW, Emmitte KA, Felts AS, Bolinger KA (2020). ‘4,5-Substituted picolinamide and picolinonitrile metabotropic glutamate receptor 2 negative allosteric modulators’ US 10,538,491.

### **Published Patent Applications**

1. **Conn PJ**, Lindsley CW, Weaver CD, Rodriguez AL, Niswender CM, Jones CK, Williams R. (2008). Benzamide derivatives as mGluR5 positive allosteric modulators and their preparation, pharmaceutical compositions and use in the treatment of diseases. WO 151184.
2. Lindsley CW, **Conn PJ**, Kennedy JP, Brogan JT. (2009). Unnatural dispyrin analogues, preparation and uses thereof. WO 0152107.
3. **Conn PJ**, Lindsley, C.W.; Weaver, C.D.; Rodriguez, A.L.; Niswender, C.M.; Jones, C.K.; Williams, R. (2009) ‘Bicyclic mGluR5 positive allosteric modulators and methods of making and using same’ WO 0270362.
4. Lindsley CW, **Conn PJ**, Williams R, Jones CK, Sheffler DJ. (2010). Sulfonyl-azetid-3-yl-methylamine amide analogs as GlyT1 inhibitors, methods for making same, and use of same in treating psychiatric disorders. WO 0261696.
5. Lindsley CW, **Conn PJ**, Weaver CD, Niswender CM, Lebois EP, Bridges TM. (2010). Amidobipiperidinecarboxylate M<sub>1</sub> allosteric agonists, analogs and derivatives thereof, and methods of making and using same. WO 096703.
6. Lindsley CW, **Conn PJ**, Williams, R.; Jones, C.K.; Sheffler, D.J. (2010) ‘Alkylsulfonyl-2,3-dihydrospiro[indene-1,4’-piperidine] analogs as GlyT1 inhibitors, methods for making same and use of same in treating psychiatric disorders’ WO 0249167.
7. Lindsley CW, **Conn PJ**, Williams, R.; Jones, C.K.; (2010) Sheffler, D.J. ‘Sulfonyl-piperidin-4-yl-methylamine amide analogs as GlyT1 inhibitors, methods for making same, and use of same in treating psychiatric disorders’ WO 0256186.
8. **Conn PJ**, Lindsley CW, Hopkins CR, Weaver CD, Niswender CM, Gogliotti RD, Engers DW. (2010). Substituted 1,1,3,3-tetraoxidobenzo[d][1,3,2]dithiazoles as mglur4 allosteric potentiators, compositions, and methods of treating neurological dysfunction. WO 088406.
9. Lindsley CW, **Conn PJ**, Weaver CD, Niswender CM, Williams R, Jones CK, Sheffler DJ. (2010). 3.1.0 GlyT1 inhibitors and methods of making and using the same. WO 0256192.

10. Lindsley CW, **Conn PJ**, Weaver CD, Niswender CM, Williams R, Jones CK, Sheffler DJ. (2010). 3.3.0 GlyT1 inhibitors and methods of making and using the same. WO 0261773.
11. **Conn PJ**, Lindsley CW, Hopkins CR, Weaver CD, Niswender CM, Engers DW. (2011). Substituted dioxopiperidines and dioxopyrrolidines as mGluR4 allosteric potentiators, compositions and methods of treating neurological disease. WO 0124663.
12. **Conn PJ**, Lindsley CW, Hopkins CR, Weaver CD, Niswender CM, Cheung YY. (2011). Aryl and heteroaryl sulfones as mGluR4 allosteric potentiators, compositions and methods of treating neurological disease. WO 057208.
13. **Conn PJ**, Lindsley CW, Hopkins CR, Niswender CM, Gogliotti RD, Salovich JM. (2011). mGlu<sub>4</sub> allosteric potentiators, compositions, and methods of treating neurological dysfunction. WO 050316.
14. **Conn PJ**, Lindsley CW, Hopkins CR, Niswender CM, Gogliotti RD. (2011). mGlu<sub>4</sub> allosteric potentiators, compositions, and methods of treating neurological dysfunction. WO 050305.
15. **Conn PJ**, Lindsley CW, Emmitte KA, Weaver CD, Rodriguez AL, Felts AS, Jones CK, Bates BS. (2011). Substituted benzamide analogs as mglur5 negative allosteric modulators and methods of making and using the same. WO 035209.
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17. **Conn PJ**, Lindsley CW, Emmitte, K.A.; Weaver, C.D.; Rodriguez, A.L.; Felts, A.S.; Jones, C.K.; Bates, B.S. (2011) 'Substituted heteroarylamine carboxamide analogs as mglur5 negative allosteric modulators and methods of making and using the same' WO 035174.
18. **Conn PJ**, Lindsley CW, Emmitte, K.A.; Weaver, C.D.; Rodriguez, A.L.; Felts, A.S.; Jones, C.K.; Bates, B.S. (2011) 'Substituted heteroarylamide analogs as mglur5 negative allosteric modulators and methods of making and using the same' WO 035186.
19. **Conn PJ**, Lindsley CW, Emmitte, K.A.; Weaver, C.D. 'Substituted phenylamine carboxamide analogs as mglur5 negative allosteric modulators and methods of making and using the same' WO 035214.
20. **Conn PJ**, Lindsley CW, Emmitte, K.A.; Weaver, C.D.; Rodriguez, A.L.; Felts, A.S.; Jones, C.K.; Bates, B.S.; Chauder, B.A. (2011) 'Substituted phenylamine carboxamide analogs as mglur5 negative allosteric modulators and methods of making and using the same' WO 0166158.
21. **Conn PJ**, Lindsley CW, Emmitte, K.A.; Weaver, C.D.; Rodriguez, A.L.; Felts, A.S.; Jones, C.K. (2011) 'Substituted benzamide analogs as mglur5 negative allosteric modulators and methods of making and using the same' WO 0152299.
22. **Conn PJ**, Lindsley CW, Hopkins CR, Weaver CD, Niswender CM, Engers DW, Gentry PR, Cheung YY, Salovich JM, Gogliotti RD. (2011). Imidazolidinone derivatives and related compounds as mGluR4 allosteric potentiators, compositions and methods of treating neurological dysfunction. WO 029104.



23. **Conn PJ**, Lindsley CW, Hopkins CR, Weaver CD, Niswender CM, Cheung YY. (2011). Substituted benzoimidazolesulfonamides and substituted indolesulfonamides as mGluR4 potentiators. WO 011722.
24. **Conn PJ**, Lindsley CW, Hopkins CR, Weaver CD, Niswender CM, Engers DW. (2011). Benzisoxazoles and azabenzisoxazoles as mgluR4 allosteric potentiators, compositions, and methods of treating neurological dysfunction. WO 100614.
25. **Conn PJ**, Lindsley CW, Hopkins CR, Weaver CD, Niswender CM, Gogliotti RD, Engers DW. (2011). Substituted 1,1,3,1-tetraoxidobenzo[d][1,3,2]dithiazoles as mGlu4 allosteric potentiators, compositions, and methods of treating neurological dysfunction. WO 146909.
26. Lindsley CW, **Conn PJ**, Wood MR, Tarr JC, Bridges TM. (2011). Indole compounds as positive allosteric modulators of the M<sub>1</sub> muscarinic receptor. WO 163280.
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