

Colleen Marie (Burns) Niswender

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Department of Pharmacology
Warren Center for Neuroscience Drug Discovery
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Education:

- **College:**
 - University of Akron (Akron, Ohio), 1986-1987, Biology
 - University of Toledo (Toledo, Ohio), B.S., Pharmacy with Honors in Pharmacology, 1987-1991
- **Professional or graduate:**
 - Vanderbilt University (Nashville, TN), Ph.D., Pharmacology, 1991-1996
 - “Molecular studies of RNA editing in the mammalian central nervous system”
- **Postgraduate Training:**
 - Postdoctoral Fellow, Pharmacology, Vanderbilt University
 - Senior Fellow, Pharmacology, University of Washington
- **Institutions(s), mentor (for research fellowships), dates**
 - Vanderbilt University, Elaine Sanders-Bush, 1996-1998
 - University of Washington, G. Stanley McKnight, 1998-2003

Academic Appointments:

- Acting Instructor, Pharmacology, University of Washington, 2003-2004
- Research Assistant Professor, Pharmacology, Vanderbilt University
Co-Director of Molecular Pharmacology, Vanderbilt Program in Drug Discovery, 2004-2009
- Research Associate Professor, Pharmacology, Vanderbilt University
Director of Molecular Pharmacology, Vanderbilt Center for Neuroscience Drug Discovery, 2009-2017
- Research Professor, Pharmacology, Vanderbilt University
Director of Molecular Pharmacology, Vanderbilt Center for Neuroscience Drug Discovery, 2017-2020
- Research Professor, Pharmacology, Vanderbilt University
Warren Director (endowed), Warren Director of Molecular Pharmacology, Warren Center for Neuroscience Drug Discovery, 2020-2021
- Associate Professor, tenure-track, Pharmacology, Vanderbilt University
Warren Director (endowed), Warren and Senior Director of Molecular Pharmacology, Warren Center for Neuroscience Drug Discovery, 2021-present

Professional Organizations:

- Phi Kappa Phi, 1991-1996
- Society for Neuroscience, 1991-1996, 2006-present
- American Society for Pharmacology and Experimental Therapeutics, 2007-present
- Academic Drug Discovery Consortium, 2013-present
- Board Member, Academic Drug Discovery Consortium, 2016-2022
- Secretary, Executive Board Member, Academic Drug Discovery Consortium, 2018-2022
- Executive Board Member, Drug Discovery and Development Division, American Society for Pharmacology and Experimental Therapeutics, 2022-present
- President and Executive Board Member, Academic Drug Discovery Consortium, 2022-present

Professional Activities:

- **Intramural**

- Interviewer for Interdisciplinary Graduate Program, Medical Scientist Training Program, Quantitative Cellular Biology Program, 2011-present
- Grant reviewer: Pilot and Feasibility Awards program, Vanderbilt University for Obesity and Metabolism, 2013
- Vanderbilt Institute for Clinical and Translational Research, Accelerating Drug Discovery Repurposing Incubator (2016-2020)
- NRSA reviewer for students in Pharmacology Communications class PHAR 8328
 - Krystian Kozek, 2015
 - Oakleigh Folkes, 2016
 - Mabel Seto, 2017
 - Bretton Nabit, 2020
 - José Zepeda, 2022
 - Zeljika Miletic Lanaghan, 2022
- MSTP Second Look Day Speaker, "Introduction to the Vanderbilt Center for Neuroscience Drug Discovery: Case Study in Rett Syndrome", Vanderbilt University, April 7, 2017
- Dean's Committee on Financial Tools, 2019-2020
- Blog post, "Stealing Magnolias", for Pharmacology Diversity, Equity, and Inclusion blog, regarding life as a scientist with Type 1 diabetes, 2022
- Reviewer of applications for Vanderbilt Summer Science Academy, 2021
- Representative for Research Faculty at the Vanderbilt Liaison Committee for Medical Education site visit, February, 2021
- Interviewer, Psychiatry Department Residency Recruitment, 2021
- Participation in Faculty Workshop to Support Student Mental Health and Awareness, January 19, 2021
- Colleen Niswender Lab presentation, Interdisciplinary Graduate Program introduction to pharmacology labs (selected for presentation among faculty, 2021)
- Vanderbilt Kennedy Center Science Day Planning Committee, 2021
- Colleen Niswender Lab presentation, Interdisciplinary Graduate Program introduction to pharmacology labs (selected for presentation among faculty, 2022)
- Panelist for "Hidden Disabilities" Basic Sciences DEI series, representing individual with diabetes, October 2022
- Faculty Senate, Basic Sciences Representative, 2021-2023
- Qualifying exam committee member:
 - Jose Zepeda, 2022
 - Zeljika Miletic Lanaghan, 2023
 - Emma Webb, 2023
 - Kristine Yoon, 2023
 - Soren Emerson, 2023
 - Montana Young, 2024
 - Kelly Honkanen, 2024
- Medical Scientist Training Program Admission Subcommittee Member, 2021-present
- Diversity, Equity, and Inclusion Committee Member, 2022-present

- **Mentoring Professional Activities**

- Participant in Research Track Faculty lunch seminar to provide feedback to VU, October 10, 2018
- Participant in Workshop to craft an IMSD personal mentoring and diversity statement, October 15, 2019
- Participant in Faculty Workshop to Support Student Mental Health and Awareness, January 19, 2021
- Participant in Culturally Aware Mentoring workshop, December 2021
- Participant in R.C. Stabile presentation on graduate student/trainee mental health resources, April 2022
- CIMER workshop on "Fostering Independence", November 2022

- Presentation for Vanderbilt Responsible Conduct in Research Day, “Collaborations with Industry and Foundations”, May 2022, May 2023, May 2024
- **Extramural**
 - **Editorial service:**
 - Special Guest Editor, *Neuropharmacology*, “The Synaptic Basis of Neurodegeneration”, 2013
 - **Meeting planning and session chairs**
 - Co-organizer, Academic Drug Discovery Conference, Nashville TN, October 2013
 - Co-chair of Autism Spectrum Disorders Speaking Session, 9th International Meeting on Metabotropic Glutamate Receptors, Taormina Italy, October 2017
 - Co-chair of mGlu₇-Focused Speaking Session, 10th International Meeting on Metabotropic Glutamate Receptors, Taormina Italy, October 2021
 - Invited guest panelist, American Society for Pharmacology and Experimental Therapeutics Division for Drug Discovery and Development Town Hall: Drug Development in Academia, April 2022
 - Chair of nanosymposium “Rett syndrome”, Society for Neuroscience, San Diego, CA, November 2022
 - Judging panel for ASPET “Guppy Tank”, 2023
 - Planning committee, International Rett Syndrome Foundation meeting, Co-chair of translational science program, Nashville, TN, June 2023
 - Co-chair, ADDC/ASPET Joint Colloquium, May 2024
 - **Grant reviews**
 - Melanoma Research Foundation, 2006
 - Michael J. Fox Foundation, 2009, 2013
 - Parkinson’s Disease Society of the United Kingdom, 2010
 - Ontario Mental Health Foundation, 2011
 - Multiple Sclerosis Fast Forward Foundation, 2012
 - NIH EUREKA program, 2013
 - Trailblazer Award, Autism Speaks, 2014
 - IWT, Belgian Grant Foundation, 2014
 - Meixner Postdoctoral Fellowship Program, Autism Speaks, 2014, 2015, 2016
 - German Research Foundation, 2019
 - Sapienza, University of Rome Funding Call, 2020
 - **Manuscript reviews**
 - *Journal of Neurochemistry*, 2006
 - *Molecular Pharmacology*, 2007, 2009, 2010, 2012, 2014, 2018
 - *Neuropharmacology*, 2008, 2010, 2012, 2014, 2018, 2020
 - *ACS Chemical Neuroscience*, 2009, 2012, 2017, 2020
 - *Journal of Neuroscience*, 2009
 - *Journal of Pharmacology and Experimental Therapeutics*, 2009, 2014
 - *British Journal of Pharmacology*, 2009, 2010
 - *Neuroscience*, 2010, 2020
 - *Nature Protocols*, 2011
 - *Journal of Biological Chemistry*, 2011, 2023
 - *Proceedings of the National Academy of Sciences*, 2011
 - *The International Journal of Neuropsychopharmacology*, 2011
 - *Expert Opinion on Drug Discovery*, 2012
 - *Pharmacology, Biochemistry, and Behavior*, 2012
 - *Neuropharmacology*, 2012, 2015, 2016, 2017
 - *Frontiers in Neural Circuits*, 2016
 - *Journal of Medicinal Chemistry*, 2017, 2018, 2022, 2023, 2024

- *Journal of Affective Disorders*, 2017
 - *International Journal of Biological Sciences*, 2017
 - *Neuropsychopharmacology*, 2017, 2018
 - *Journal of Physiology*, 2019
 - *ACS Pharmacology and Translational Science*, 2020
 - *Cell Reports*, 2020
 - *Nature Communications*, 2021
 - *Orphanet Journal of Rare Diseases*, 2021
 - *Ageing and Neurodegenerative Diseases*, 2023
- **Other professional activities**
 - WCNDD Team Member contributing to writing and successful Investigational New Drug Application petition to the FDA for VU0467319, which progressed to Phase 1 clinical testing; program licensed to Acadia Pharmaceuticals, May 2020.
 - Biology Team Leader for the development of VU6011472, Licensed to Appello Pharmaceuticals; progressing to phase II clinical testing in 2024/2025.
 - Leadership team for the Boehringer-Ingelheim mGlu₃ positive allosteric modulator program for improvement of cognition impairments in schizophrenia-program has progressed to “Start of Development” and achieved “Start of Lead Op” designation with the fastest timeline in the company’s history.
 - Leadership team for the development of NMRA-266, a positive allosteric modulator of the M₄ muscarinic receptor. Open IND status granted in November, 2023, and first in human testing begun 12/10/2023.
 - **Special awards or recognition for professional activities**
 - Valedictorian, College of Pharmacy, University of Toledo, 1991
 - Phi Kappa Phi Graduate Fellowship, 1991
 - AAPS-AFPE Gateway Scholarship, 1991
 - The Merck-Sharp and Dohme Award in Medicinal Chemistry, 1991
 - The Upjohn Award in Pharmacology, 1991
 - The SmithKline Beecham Award in Clinical Pharmacy, 1991
 - First Place, Vanderbilt University Graduate Student Research Day, 1993
 - First Place, Vanderbilt University Graduate Student Research Day, 1993
 - Grass Foundation Fellowship to attend “Neurobiology of Human Neurological Disease: Mechanisms of Neurodegeneration”, Cold Spring Harbor Laboratory, 1995
 - Travel award to “Obesity and the Regulation of Energy Homeostasis”, Keystone Symposium, Taos, NM, 2000
 - ASPET Scientific Achievement in Drug Discovery and Development, January 2022

Teaching Activities:

As Research Faculty from 2004-2021, I did not have a teaching requirement; however, I did regularly give lectures in various courses at Vanderbilt.

- Discussion leader for Vanderbilt Interdisciplinary Graduate Program Core Course. Kim et al., 2001, *J. Biol. Chem.* “*The role of phosphorylation in D1 dopamine receptor desensitization*”, 2006 and 2008.
- Lecturer in Vanderbilt Neuroscience 345 (now 8345) Course. “*Neuromodulation and metabotropic glutamate receptors*”, 2007 and 2008.
- Discussion leader in Vanderbilt Neuroscience 345 (now 8345) Course. Sansig et al., 2001, *J. Neuroscience.* “*Increased seizure susceptibility in mice lacking metabotropic glutamate receptor 7*”, 2007.

- Discussion leader for Vanderbilt Interdisciplinary Graduate Program Core Course. Ross et al., 1978 J. Biol. Chem. "*Reconstitution of hormone-sensitive adenylate cyclase activity with resolved components of the enzyme*", 2007.
- Discussion leader in Vanderbilt Neuroscience 345 (now 8345) Course. Volk et al., 2007, J. Neuroscience. "*Multiple Gq coupled receptors converge on a common protein synthesis-dependent long term-depression that is affected in fragile X mental retardation*", 2008.
- Lecturer, Vanderbilt Modern Drug Discovery Course PHAR 8320, undergraduate. "*mGlu₄ positive allosteric modulators for the treatment of CNS disorders*". Vanderbilt University, 2012, 2013, 2014, 2015, 2019.
- Lecturer, Vanderbilt Neuroscience 235 (now 3235) Course. "*Drug Discovery in Academia: mGlu₄ positive allosteric modulators for the treatment of CNS disorders*". Vanderbilt University, 2013, 2014, 2015, 2016.
- Lecturer, Vanderbilt Pharmacology and Drug Discovery PHAR 8320 Course, "*Receptors in Action*", Vanderbilt University, August 2021
- Lecturer, Scientific Communications, PHAR 8323 "*Crafting Specific Aims*", Vanderbilt University, September 2021
- Lecturer on the drug discovery process: Development of metabotropic glutamate receptor 4 positive allosteric modulators for the treatment of CNS disorders, Jefferson University, February 24, 2022
- Educational seminar for Warren Center for Neuroscience Drug Discovery Educational Seminar series: Therapeutic potential for mGlu₇ potentiation in neurodevelopmental disorders. February, 2022.
- Lecturer, Drug Discovery and Development TRBIO450 Course: "*Case study in academic drug discovery: development of metabotropic glutamate receptor 4 positive allosteric modulators for the treatment of CNS disorders*". Scripps Florida, March 2, 2022
- Lecturer in ASPIRE Path in Molecular Medicine course: *The Drug Discovery Process: A Case Study for the Treatment of Parkinson's Disease*, April 15, 2022
- Lecturer in Vanderbilt Pharmacology and Drug Discovery 8320 Course: *Receptor Theory 1*, August 31, 2022, 2 contact hours
- Lecturer in Vanderbilt Pharmacology and Drug Discovery 8320 Course: *Receptor Theory 2*, September 1, 2022, 2 contact hours
- Lecturer in Warren Center for Neuroscience Drug Discovery Educational Seminar series: *Receptor Theory 1*, October 24, 2022
- Lecturer in Warren Center for Neuroscience Drug Discovery Educational Seminar series: *Receptor Theory 2*, October 24, 2022
- Lecturer for Introduction to Clinical and Translational Research course. *Case study in academic drug discovery: development of metabotropic glutamate receptor 4 positive allosteric modulators for the treatment of CNS disorders*. April 10, 2023, 1 contact hour
- Lecturer in Vanderbilt Pharmacology and Drug Discovery 8320 Course: *Receptor Theory 1*, September 6, 2023, 2 contact hours
- Lecturer in Vanderbilt Pharmacology and Drug Discovery 8320 Course: *Receptor Theory 2*, September 8, 2023, 2 contact hours
- Lecturer in Vanderbilt Pharmacology and Drug Discovery 8320 Course: *Practical guide to GraphPad Prism for In Vitro Pharmacology data*, September 11, 2023, 2 contact hours
- Lecturer in Vanderbilt Pharmacology and Drug Discovery 8320 Course: *In Vitro Pharmacology review*. September 13, 2023, 2 contact hours
- Lecturer in Vanderbilt Pharmacology and Drug Discovery 8320 Course: *High Throughput Screening*. November 13, 2023, 2 contact hours
- Lecturer in Vanderbilt Pharmacology and Drug Discovery 8320 Course: Review of course materials for qualifying exam preparation, November 17, 2023, 2 contact hours
- Lecturer for Introduction to Clinical and Translational Research course. *Case study in academic drug discovery: development of metabotropic glutamate receptor 4 positive allosteric modulators for the treatment of CNS disorders*. March 29, 2024, 1 contact hour.

Research Supervision

I began independently training students, postdoctoral fellows, and research faculty in 2009. Vanderbilt policy is that research-track faculty must have a tenure-track faculty member serve as a co-mentor; for the individuals listed below, I served/serve as either the primary mentor or on thesis committees. Prior to this point, I functioned primarily within the drug discovery group but also served as a “nonofficial” mentor and advisor to many of Dr. Jeff Conn’s trainees.

Faculty

Rocco Gogliotti, PhD	Vanderbilt University Pharmacology Postdoctoral Fellow (2012-2016), moved to Research Instructor in 2016, to Research Assistant Professor in 2017. Current position, Assistant Professor, tenure track, Loyola University.
Sarika Peters, PhD	Vanderbilt University, Department of Pediatrics, Mentoring committee member (2017-2019), Currently Vanderbilt Kennedy Center Associate Professor with tenure.
Shalini Dogra, PhD	Vanderbilt University Department of Pharmacology, Instructor, (2023-present)
Zixiu Xiang, PhD	Vanderbilt University Department of Pharmacology, Research Assistant Professor, (2023-present)
Shajila Siricilla, PhD	Vanderbilt University Medical Center, Instructor, Department of Pediatric Neonatology (2024-present)

Postdoctoral Fellows

Thomas Utley, PhD	Vanderbilt University pharmacology postdoctoral fellow (2010-2012). Current position, Licensing Agent, Vanderbilt Center for Technology Transfer office.
Julie Field Kropski, PhD	Vanderbilt University pharmacology postdoctoral fellow (2010-2012). Current position, parent.
Nidhi Jalan-Sakrikar, PhD	Vanderbilt University pharmacology postdoctoral fellow (2012-2014). Current position, Assistant Professor, Mayo Clinic.
Branden Stansley, PhD	Vanderbilt University pharmacology postdoctoral fellow (2015-2019), awarded T32 postdoctoral training award and an F32 NRSA, June 2016. Current position, Medical Liaison, Alector.
Xia Lei, PhD	Vanderbilt University pharmacology postdoctoral fellow (2020-present).
Geanne Freitas, PhD	Vanderbilt University pharmacology postdoctoral fellow (2021-present).
Kimberly Holter, PhD	Vanderbilt University pharmacology postdoctoral fellow (starting July 2024).

Graduate Students

Shen Yin	Vanderbilt University Interdisciplinary Graduate Student, Pharmacology. Primary mentor with Jeff Conn as co-mentor, Graduation, 10/2013. Current position, Senior Clinical Scientist, Genentech.
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Rebecca Klar Senter	Vanderbilt University Interdisciplinary Graduate Student, Pharmacology. Primary mentor with Jeff Conn as co-mentor. Graduation, 7/2015. Current position, Vice President, Head of Preclinical R&D at Axial Therapeutics.
Annah Moore	Vanderbilt University Department of Pharmacology. Co-mentor with Dr. David Sweatt from 4/2017-11/2018. Annah changed labs in 2018 after the departure of Dr. Sweatt from Vanderbilt. Graduation, 10/2020. Current position, Health Data Science Fellow, Insight Data Science.
Nicole Fisher	Vanderbilt University Interdisciplinary Graduate Student, Pharmacology. Primary mentor with Jeff Conn as co-mentor. Graduation 10/2020. Current position, Postdoctoral Fellow with Dr. Mark von Zostrow, UCSF.
Christopher Hofmann	Vanderbilt University Interdisciplinary Graduate Student, Pharmacology. Co-mentor with Ron Emeson, then primary mentor with C. David Weaver as co-mentor. Graduation 08/2021. Current position, Medical Writer II at Scientific Pathways.
Sheryl Vermudez	Vanderbilt University Interdisciplinary Graduate Student. Primary mentor with Jeff Conn as co-mentor. Member of Initiative to Maximize Student Diversity. Defense 12/9/2021. Current position, Scientist at Longboard Pharmaceuticals.
Harrison Parent	Vanderbilt University Interdisciplinary Graduate Student. Pharmacology, 2023-present.
Anthony Ferranti	Vanderbilt University Interdisciplinary Graduate Student. Pharmacology, 2023-present.
Niki Harris	Vanderbilt University Neuroscience Direct Admit Graduate Student, 2024-present.

Graduate Student/MSTP Student Thesis Committees

Olivia Veatch	Vanderbilt University genetics graduate student, Johnathan Haines Lab. Thesis committee member, Graduation 8/2013. Current position, Assistant Professor, Psychiatry and Behavioral Sciences, Cell Biology and Physiology, University of Kansas Medical Center
Rachel Crouch	Vanderbilt University pharmacology graduate student, Scott Daniels' Lab. Co-chair of thesis committee. Graduation, 11/2016. Current position, Assistant Professor, Department of Pharmaceutical Science, Lipscomb University.
Nicholas Harris	Vanderbilt University Molecular Physiology and Biophysics MD/PhD Student, Danny Winder Lab. Thesis committee member. Graduation, 08/2018. Current position, resident, University of Pittsburgh Medical Center.
Christian Marks	Vanderbilt University Molecular Physiology and Biophysics Graduate Student, Roger Colbran Lab. Thesis committee member. Graduation, 05/2019. Current position, Health Policy Analyst, GCS Administrators.
Mark Fulton	Vanderbilt University Department of Chemistry, Craig Lindsley Lab. Thesis committee member, Graduation 06/2019. Current position, postdoctoral fellow, Harvard University.
Carson Reed	Vanderbilt University Department of Chemistry, Craig Lindsley Lab. Thesis committee member. Graduation, 06/2019. Current position, Drug Discovery

	Scientist, Warren Center for Neuroscience Drug Discovery, Vanderbilt University.
Sean Moran	Vanderbilt Neuroscience Graduate Student, P. Jeffrey Conn laboratory, thesis committee member. Graduation 5/2020. Current position: Scientist I at Broad Institute.
Bridget Collins	Vanderbilt University School of Medicine, MTSP student, Jeffrey Neul laboratory, thesis committee. Graduation 4/2022. Current position: returned to medical school to finish MD/PhD.
Jacob Kalbfleisch	Vanderbilt University Department of Chemistry, Craig Lindsley Lab. Thesis committee member (current).
Soren Emerson	Vanderbilt Neuroscience Graduate Student, Erin Calipari lab, thesis committee member (current).
Zeljka Miletic Lanaghan	Vanderbilt Pharmacology Graduate Student, Jeffrey Neul lab, thesis committee chair (current).
Emma Webb	Vanderbilt Pharmacology Graduate Student, Heidi Hamm lab. Thesis committee member (current).
Kristine Yoon	Vanderbilt Neuroscience Graduate Student, Erin Calipari lab. Thesis committee member (current).
Montana Young	Vanderbilt Pharmacology Graduate Student, Heidi Hamm lab. Thesis committee chair (current).
Kelly Honkanen	Vanderbilt Pharmacology Graduate Student, Richard Sando lab. Thesis committee chair (current).
Lauren Parr	Vanderbilt Pharmacology Graduate Student, Craig Lindsley lab. Thesis committee member (current).

Medical Students

Caroline Kim	VUMC Emphasis Program for Medical Students, 2007-2008. 'Investigation of type III metabotropic glutamate receptor potentiators using a novel HTS assay using thallium flux through GIRK channels'. Current position, General Surgeon Baytown, Texas.
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Undergraduate Students

Alexander Kane	Vanderbilt University undergraduate. Honors thesis committee member, graduation 5/2008. Current position, Assistant Professor of Clinical Psychology, Weill Cornell Medicine.
Frank Byers	Vanderbilt University Masters in Laboratory Investigation student, Thesis committee member, graduation, 5/2014.
Sanders Pair	Vanderbilt University Undergraduate research mentor (NSC 3861, 2015-2016).

Annalise McDonald	Vanderbilt University Undergraduate Honor's thesis mentor (2017-2018). Currently MD/MBA student at Tufts University School of Medicine.
Susmita Chennareddy	Vanderbilt University Undergraduate Honor's thesis mentor (2018-2020). Currently medical school student at Columbia University.
Hana Badivuku	Vanderbilt University Undergraduate Honor's thesis mentor (2018-2020). Currently Associate Consultant at the Dedham group.
Hemangi Rajpal	Vanderbilt University Undergraduate Honor's thesis mentor (2019-2021). Currently Clinical Research Coordinator at University of Miami.
Jessica Wu	Vanderbilt University Undergraduate researcher (2021-2023). Currently medical assistant at Traceside Dermatology and Allergy.
Kathryn Cooke	Belmont University Undergraduate researcher (2023-present).

Rotation students (past and present, Vanderbilt IGP, Neuroscience or QCB program unless noted)

2004

Yerai Oliveres

2009

Alexander Nakenoff
Michael Nedelcovych
Shen Yin

2012

Rebecca Klar

2014

Sahana Naganhushan Kalburgi
Aparna Shekar

2015

Nicole Fisher
Francis Prael

2017

Nathan Winters
Annah Moore
Sheryl Vermudez
Sarah Naguib

2018

Bretton Nabit

2019

Lindsey Guerin
Katherine Clowes
MinSoo Kim

2020

Jared Phillips

	F31 MH113259 NRSA Predoctoral fellowship	10/2017-09/2020
	<i>“Metabotropic glutamate receptor 7 as a novel therapeutic target for MECP2 Duplication syndrome”</i>	
	Nominated by me and received Vanderbilt Dean’s Award	
Sheryl Vermudez	T32GM007628 Predoctoral Training grant	07/2017-06/2019
	F31 MH119699 NRSA Predoctoral fellowship	08/2019-07/2022
	<i>“Stratifying Rett syndrome patient populations to evaluate the efficacy of genetic and pharmacological treatment interventions”</i>	
	Nominated by me and received Vanderbilt Dean’s Award	
Branden Stansley	T32NS007491 Postdoctoral Training grant	07/2015-06/2016
	F32 MH11124 NRSA Postdoctoral fellowship	07/2016-06/2018
	<i>“The therapeutic potential of mGlu3 modulation in MeCP2-related disorders”</i>	
Rocco Gogliotti	T32MH065215 Postdoctoral Training grant	07/2012-07/2013
	<i>“mGlu₇, a novel target for Rett Syndrome therapeutics”</i>	
	T32GM07628 Postdoctoral Training grant	07/2013-07/2014
	<i>“mGlu₇, a novel target for Rett Syndrome therapeutics”</i>	
	NIH NRSA Postdoctoral Fellowship	07/2014
	(awarded, not accepted)	
	<i>“Temporal Divergence Between Hyperexcitation and Hypoconnectivity in Rett Syndrome”</i>	
	Rettsyndrome.org Mentored Training Fellowship	07/2014-06/2016
	<i>“Temporal Divergence Between Hyperexcitation and Hypoconnectivity in Rett Syndrome”</i>	
	BBRF Young Investigator Award	01/2017-02/2019
	<i>“mGlu₅ and beyond: transcriptional profiling MECP2- and MECP2-autonomous Rett syndrome autopsy samples”</i>	
	MH112983 NIMH K Award	09/2017-06/2021
	<i>“Normalizing E:1 imbalance in Rett syndrome by modulation of late response genes”</i>	

Research Program:

Current Funding

Title: 1R01NS132060 *Impact of metabotropic glutamate receptor heteromerization on signaling and pharmacology* (Javitch JA, **Niswender CM, Multi PI**)

Supporting Agency: NIH/NINDS

Level of funding: \$1,781,745 subcontract

Performance Period: 05/02/2023-03/31/2028

Time commitment:

2023 1.8 calendar months

2024 1.8 calendar months

2025 1.8 calendar months

2026 1.8 calendar months

2027 1.8 calendar months

2028 1.8 calendar months

Title: 5R01MH124671 *Development of mGlu7 receptor allosteric modulators for neurological and psychiatric disorders* (**Niswender CM, Lindsley CW, Multi PI**)

Supporting Agency: NIH/NIMH

Performance Period: 09/21/2020-06/30/2025

Level of funding: \$3,529,256

Time Commitment:

2023 1.92 calendar months
 2024 1.44 calendar months
 2025 1.44 calendar months

Title: 5R01MH062646 *Regulation of Signaling by mGluR5* (Conn PJ, Niswender CM, Multi PI)

Supporting Agency: NIH/NIMH

Performance Period: 09/15/2022-06/30/2027

Level of funding: \$3,005,327 (Total Project)

Time Commitment:

2024 1.80 calendar months
 2025 1.80 calendar months
 2026 1.80 calendar months
 2027 1.80 calendar months

Title: 215154 *The interplay of the heat shock cascade and Rett syndrome* (Gogliotti RG, Niswender CM, Multi PI)

Supporting Agency: International Rett Syndrome/Loyola University sub

Performance Period: 12/01/2021-05/30/2024 (in NCE)

Level of funding: \$150,000 (subcontract total)

Time Commitment:

2023 0.00 calendar months

Title: VUMC98058 *Development of Treatment Responsive Biomarker in RTT* (Neul JL, Niswender CM, Co-I)

Supporting Agency: International Rett Syndrome/VUMC sub

Performance Period: 12/01/2021-11/30/2024 (in NCE)

Level of funding: \$72,387 (total subcontract)

Time Commitment:

2023: 0.12 calendar months

Title: UNIV61555/5R01NS112171 *A precision medicine approach to Rett Syndrome* (Gogliotti RG, PI, Niswender CM, Co-I)

Supporting Agency: NIH/Loyola University

Performance Period: 05/01/2020-04/30/2025

Level of funding: \$72,516 subcontract to date

Time Commitment:

2023 0.60 calendar months
 2024 0.60 calendar months
 2025 0.60 calendar months

Title: R37NS031373 *Functions of Metabotropic Glutamate Receptor Subtypes* (Conn, PI, Niswender Co-I)

Supporting Agency: NIH/NINDS

Performance Period: 05/01/2014-04/30/2026

Level of funding: \$2,424,183

Time Commitment:

2023 1.20 calendar months
 2024 0.60 calendar months
 2025 0.60 calendar months
 2026 0.60 calendar months

Title: 5R01MH119673 *Discovery of mGlu receptor PAMs for treatment of schizophrenia* (Conn PJ, PI, Niswender CM, Co-I, Molecular Pharmacology lead)

Supporting Agency: NIH/NIMH

Performance Period: 02/15/2019-11/30/2024 (in NCE)

Level of funding: \$3,604,256
Time Commitment:
2023 0.96 calendar months

Title: UNIV60543 *Discovery of Novel mGluR3 Positive Allosteric Modulators (PAMs)* (Conn PJ, PI; **Niswender CM, Co-I, Molecular Pharmacology lead, Joint Research Steering Committee**)
Supporting Agency: Boehringer Ingelheim International GmbH
Performance Period: 11/15/2018-12/31/2024
Level of funding: \$10,450,000
Time Commitment:
2023 0.96 calendar months

Title: UNIV61500 *Discovery and Development of Novel M1 Positive Allosteric Modulators (PAMs)*
Supporting Agency: Acadia Pharmaceuticals (Conn PJ, Lindsley CW, PIs; **Niswender CM, Co-I, Molecular Pharmacology lead**)
Performance Period: 03/10/2020-03/10/2024
Level of funding: \$8,848,850
Time Commitment:
2023 0.36 calendar months

Pending

Title: 1R01MH136164-01A1 *Regulation of metabotropic glutamate receptor activity by protein/protein interactions* (**Niswender CM, PI**)
Supporting Agency: NIH/NIMH
Performance Period: 12/01/2024-11/30/2029
Level of funding: \$1,981,250
Time Commitment: 1.8 calendar months
Resubmitted 03/05/2024; original score 24%

Title: 1R01MH138422 *Development of a positive allosteric modulator probe for the CB₂ receptor* (**Niswender CM, PI**)
Supporting Agency: NIH/NIMH
Performance Period: 12/01/2024-11/30/2028
Level of funding: \$3,050,535
Time Commitment: 2.4 calendar months
Submitted 02/05/2024

Title: 1R01MH138342 *Metabotropic glutamate receptor signaling in neuronal circuits under physiological and pathophysiological conditions* (**Niswender, CM, Dogra S, Multi PI**)
Supporting Agency: NIH/NIMH
Performance Period: 12/01/2024-11/30/2029
Level of funding: \$2,667,666
Time Commitment: 2.4 calendar months
Submitted 02/05/2024

Title: *Development of Ligands for the CB₂ Receptor for the Treatment of Schizophrenia* (**Niswender CM, PI**)
Supporting Agency: Vanderbilt University/VUMC Innovation Ignition Fund
Performance Period: 05/01/2024-04/30/2026
Level of funding: \$500,000
Time Commitment: 1.2 calendar months
Submitted 03/28/2024

Completed

Trainee grants

- Pharmaceutical Research and Manufacturers of America Foundation Predoctoral Award in Pharmacology (1994-1996)
- Pharmaceutical Research and Manufacturers of America Foundation Postdoctoral Award in Pharmacology (1997-1998)
- Fellow, Neurobiology and Behavior Training Grant, University of Washington (1999-2000)
- Fellow, National Service Research Award, NIDDK (2000-2003)
- University of Washington Diabetes and Endocrinology Research Center Pilot and Feasibility Award (3/1/2003-02/28/2004)

Faculty grants

Title: 1R03MH076398 *Measurement of GPCR-mediated thallium flux through GIRK. Access grant to Molecular Libraries Screening Center Network (Niswender CM, PI)*

Supporting Agency: NIH/NIMH

Performance Period: 08/1/2005-07/31/2006

Level of Funding: \$3,000 plus access to screening resources

Time Commitment: 0.0 calendar months

Title: 1R21NS053536/3R21NS053536-S1 *A Direct Assay for HTS of Gi/o-linked GPCRs: mGluR7 as the Prototype (Niswender CM, PI)*

Supporting Agency: NIH/NIMH

Performance Period: 09/30/2005-02/28/2008

Level of Funding: \$125,000 plus \$25,000 supplement

Time Commitment: 3.0 calendar months

Title: X01MH077607 *Discovery of novel allosteric agonists of the M4 muscarinic receptor (Niswender CM, PI)*

Supporting Agency: NIH/NIMH

Performance Period: 02/01/2006-01/31/2007

Level of Funding: Access to HTS resources

Time Commitment: 0.0 calendar months

Title: R01NS048334 *Metabotropic Glutamate Receptors in Basal Ganglia. PI during last year of grant (Niswender CM, PI)*

Supporting Agency: NIH/NINDS

Performance Period: 2/01/2004-11/30/2009

Level of Funding: \$1,165,000

Time Commitment: 3.0 calendar months

Title: 2818 Basic Research Award *Metabotropic glutamate receptor 7: a novel therapeutic candidate for Rett Syndrome (Niswender CM, PI)*

Supporting Agency: International Rett Syndrome Foundation

Performance Period: 01/01/2012-12/31/2013

Level of Funding: \$100,000

Time Commitment: 0.0 calendar months

Title: R21NS078262 *Metabotropic glutamate receptors in the basal ganglia (Niswender CM, PI)*

Supporting Agency: NIH/NINDS

Performance Period: 04/01/2012-03/13/2014

Level of Funding: \$420,809

Time Commitment: 3.0 calendar months

Title: UNIV59555/7SFRN33520017 *Toward Obesity Precision Medicine: Promise of the Glucagon-Like Peptide 1 Receptor* (Hasty A, PI)
Supporting Agency: AHA
Performance Period: 04/01/2017-03/31/2021
Level of Funding: \$30,357
Time Commitment: 0.6 calendar months

Title: UH2 NS099066-01 *Development of VU0652957 for the treatment of Parkinson's disease (PD)* (Niswender CM, PI)
Supporting Agency: NIH/NINDS
Performance Period: 09/01/2016-9/29/2021
Level of Funding: \$124,768
Time Commitment: 2.4 calendar months

Title: R21MH102548 *Metabotropic Glutamate Receptor Regulation in MeCP2-Related Disorders.* (Niswender CM, PI)
Supporting Agency: NIH/NIMH
Performance Period: 08/01/2014-07/31/2017
Level of Funding: \$431,476
Time Commitment: 0.36 calendar months

Title: 8766 *Autism Speaks Temporal divergence of hypoconnectivity and excitotoxicity in Rett Syndrome* (Niswender CM, PI)
Supporting Agency: Autism Speaks
Performance Period: 03/01/2014-08/28/2017
Level of Funding: \$449,996
Time Commitment: 1.8 calendar months

Title: 3503/UNIV59315 *Exploration of metabotropic glutamate receptor 3 as a target for MeCP2-related disorders* (Niswender CM, PI)
Supporting Agency: Rettsyndrome.org
Performance Period: 04/01/2017-03/31/2019
Level of Funding: \$150,000
Time Commitment: 1.2 calendar months

Title: 3511 *Tailoring gene replacement therapy for MECP2-related disorders* (Niswender CM, PI)
Supporting Agency: Rettsyndrome.org
Performance Period: 04/01/2018-03/31/2020
Level of Funding: \$68,182
Time Commitment: 0.6 calendar months

Title: R01MH104158 *Molecular and Behavioral Neurobiology of Transcription Factor TCF4* (Niswender CM, PI; grant transferred to me after departure of David Sweatt)
Supporting Agency: NIH/NIMH
Performance Period: 11/01/2018-03/31/2020
Level of Funding: \$392,500
Time Commitment: 0.6 calendar months

Title: R01MH108498 *Development of an mGlu_{2/4} heterodimer-selective allosteric modulator* (Niswender CM/Lindsley CW, Multi PI)
Supporting Agency: NIH/NIMH
Performance Period: 12/10/2015-11/30/2018
Level of Funding: \$1,498,134
Time Commitment: 3.00 calendar months

Title: #23 *Exploring MECP2 overexpression as a potential therapeutic strategy for Pitt-Hopkins syndrome*

(Niswender CM, PI)

Supporting Agency: Pitt Hopkins Research Foundation

Performance Period: 06/01/2020-02/28/2021

Level of Funding: \$34,702

Time Commitment: 0.0 calendar months

Title: R01MH113543 *Development of a metabotropic glutamate receptor 7 positive allosteric modulator*

(Niswender CM/Lindsley CW, Multi PI)

Supporting Agency: NIH/NIMH

Performance Period: 07/01/2017-06/30/2021

Level of Funding: \$1,200,283

Time Commitment: 1.8 calendar months

Title: PR160102/W81XWH-17-1-0266, *The role of metabotropic glutamate receptor 7 in the etiology and treatment of Rett syndrome* **(Niswender CM, PI)**

Supporting Agency: CDMRP/DOD

Performance Period: 08/01/2017-07/31/2022

Level of Funding: \$1,861,186

Time Commitment: 1.80 calendar months

Title: R01 MH073676 *Muscarinic receptor activators as antipsychotic agents* (Conn PJ, **Niswender CM, Co-I**)

Supporting Agency: NIH/NIMH

Performance Period: 03/01/2016-02/28/2021

Level of funding: \$2,591,998

Time Commitment: 0.48 calendar months

Title: VKC Director's Priorities Award *Evaluation of a novel biomarker approach for Rett syndrome therapeutics* **(Niswender CM, Dong H, Multi PI)**

Supporting Agency: Vanderbilt Kennedy Center

Performance Period: 11/01/2021-06/21/2023

Level of Funding: \$50,000

Time Commitment: 0.0 calendar months

Title: *TIPS award: MECP2 targets for ADAR-mediated RNA repair in Rett syndrome* (Emeson RB/**Niswender CM, Multi PI**)

Supporting Agency: Vanderbilt Brain Institute

Performance Period: 02/01/2023-06/30/2023

Level of funding: \$45,379

Time commitment: 0.0 calendar months

Title: VUMC63366 (UL1TR002243) *The Vanderbilt Institute for Clinical and Translational Research (VICTR)***(Bernard, PI)**

Supporting Agency: NIH/VUMC subcontract

Performance Period: 03/01/2022-02/28/2024

Level of funding: \$1,110,551 (Subcontract)

Time Commitment:

2023 0.36 calendar months

Industry/Foundation/NIH Sponsored Drug Discovery Partnerships

Title: LEAPS Award *Discovery of novel allosteric modulators of mGluR4 for treatment of Parkinson's disease* (Conn PJ, PI; **Niswender CM, Co-I, Biology lead, Leadership team**)

Supporting Agency: Michael J. Fox Foundation

Performance Period: 12/01/2007-10/30/2011

Level of funding: \$3,209,590

Time commitment: 4.7 calendar months

Title: *Novel strategies for treatment of Fragile X syndrome* (Conn PJ, PI; **Niswender CM, Co-I, Molecular Pharmacology lead**)

Supporting Agency: Seaside Therapeutics

Performance Period: 11/1/2007-4/31/2011

Level of funding: \$3,094,464

Time commitment: 1.2 calendar months

Title: VUMC34998 *Discovery of mGlu5 PAMs for treatment of Schizophrenia*(Conn PJ, PI; **Niswender CM, Co-I, Molecular Pharmacology lead**)

Supporting Agency: Johnson and Johnson

Performance Period: 12/9/2008 – 12/9/2012

Level of funding: \$4,549,320

Time commitment: 1.2 calendar months

Title: U01 MH087965 *Vanderbilt NCDDDG Discovery of Novel Treatments of Schizophrenia* (Conn PJ, Lindsley CW, Multi PIs, **Niswender CM, Co-I, Molecular Pharmacology lead**)

Supporting Agency: NIH/NIMH

Performance Period: 2/19/2010 – 12/31/2014

Level of funding: \$5,931,948

Time commitment: 1.8 calendar months

Title: VUMC39328 *Discovery and Development of mGlu4 PAMs for treatment of Parkinson's Disease* (Conn PJ, PI; **Niswender CM, Co-I, Molecular Pharmacology and Biology lead**)

Supporting Agency: Bristol Myers Squibb

Performance Period: 9/19/2012 – 1/31/2015

Level of funding: \$7,051,718

Time commitment: 1.2 calendar months

Title: U54MH084659 *Vanderbilt Specialized Chemistry Center for Accelerated Probe Development* (Lindsley CW, PI, **Niswender CM, Co-I**)

Supporting Agency: NIH/NIMH

Performance Period: 9/1/2008-5/31/2015

Level of funding: \$14,592,390

Time commitment: 2.4 calendar months

Title: U19 MH097056 *Development of mGluR5 NAMs for Treatment of Major Depression* (Conn PJ, PI; **Niswender CM, Co-I, Molecular Pharmacology lead**)

Supporting Agency: NIH/NIMH

Performance Period: 1/8/2013 – 11/30/2015

Level of funding: \$2,405,322

Time commitment: 1.2 calendar months

Title: UNIV40457 *Discovery of Novel M4 Positive Allosteric Modulators (PAMs)* (Conn PJ, PI; **Niswender CM, Co-I, Molecular Pharmacology lead**)

Supporting Agency: AstraZeneca

Performance Period: 12/21/2012-12/31/2016

Level of funding: \$3,046,875

Time commitment: 0.72 calendar months

Title: U19MH106839 *Development of an M1 PAM Experimental Therapeutic for Schizophrenia* (Conn PJ, PI; **Niswender CM, Co-I, Molecular Pharmacology lead**)

Supporting Agency: NIH/NIMH

Performance Period: 09/10/2015-06/30/2019

Level of funding: \$5,301,997

Time commitment: 1.2 calendar months

Title: UNIV60006 *Discovery and Development of Novel M4 Positive Allosteric Modulators (PAMs)* (Conn PJ, PI; **Niswender CM, Co-I, Molecular Pharmacology lead**)

Supporting Agency: H. Lundbeck A/S

Performance Period: 12/20/2017-03/20/2020

Level of funding: \$3,512,208

Time commitment: 1.32 calendar months

Title: UNIV60627 *Development of Selective M5 NAMs for Prevention and Treatment of Opioid Use Disorders* (Jones CK/Lindsley CW, Multi PI; **Niswender CM, Co-I, Molecular Pharmacology lead**)

Supporting Agency: Ancora Innovation, LLC

Performance Period: 01/04/2019-01/08/2021

Level of funding: \$2,062,500

Time commitment: 0.6 calendar months

Title: UNIV60623 *Development of selective M4 antagonists for dystonia* (Lindsley CW/Conn PJ, Co-PIs; **Niswender CM, Co-I, Molecular Pharmacology lead**)

Supporting Agency: Ancora Innovation, LLC

Performance Period: 01/04/2019-09/30/2021

Level of funding: \$3,953,125

Time commitment: 0.6 calendar months

Title: W81XWH1910355 *Optimization of selective M4 muscarinic receptor antagonists for treatment of Dystonia* (Conn, PI; **Niswender CM, Co-I, Molecular Pharmacology lead**)

Supporting Agency: CDMRP/DOD

Performance Period: 07/15/2019-07/14/2023

Level of funding: \$4,706,118

Time Commitment: 0.84 calendar months

Title: UNIV60533 *Discovery of Novel mGluR1 Positive Allosteric Modulators (PAMs)* (Conn PJ, PI; **Niswender CM, Co-I, Molecular Pharmacology lead and Joint Steering Committee Leadership team**)

Supporting Agency: Boehringer Ingelheim International GmbH

Performance Period: 11/15/2018-06/14/2021

Level of Funding: \$6,600,000

Time Commitment: 0.96 calendar months

Title: UG3NS116218-01 *Novel mGlu5 negative allosteric modulators as first-in-class non-addictive analgesic therapeutics* (Rook JM/Conn PJ/Lindsley CW/Gereau R; **Niswender CM, Co-I**)

Supporting Agency: NIH/NINDS

Performance Period: 09/30/2019-07/31/2021

Level of Funding: \$1,585,635

Time Commitment: 0.6 calendar months

Title: SRA00000038 *Development of M4 PAM Back-up Program* (Lindsley, PI; **Niswender CM, Molecular Pharmacology lead and Jont Research Steering Committee Leadership Team**)

Supporting Agency: Neumora Therapeutics, Inc.

Performance Period: 02/10/2022-09/30/2023

Level of funding: \$2,867,000

Time Commitment: 0.48 calendar months

Publications and Presentations:

Publications (primary)

1. Hagley, M.T., D.T. Hulisz, **C.M. Burns**, *Hepatotoxicity associated with angiotensin-converting enzyme inhibitors*. *Ann Pharmacother*, 1993. **27**(2): p. 228-31.
2. Rueter, S.M.*, **C.M. Burns***, S.A. Coode, P. Mookherjee, R.B. Emeson, *Glutamate receptor RNA editing in vitro by enzymatic conversion of adenosine to inosine*. *Science*, 1995. **267**(5203): p. 1491-4.
3. **Burns, C.M.**, H. Chu, S.M. Rueter, L.K. Hutchinson, H. Canton, E. Sanders-Bush, R.B. Emeson, *Regulation of serotonin-2C receptor G-protein coupling by RNA editing*. *Nature*, 1997. **387**(6630): p. 303-8.
4. Hinko, C.N., A.M. Crider, M.A. Kliem, C.L. Steinmiller, T.H. Seo, B. Ho, P. Venkatarangan, A.A. el-Assadi, H. Chang, **C.M. Burns**, E.I. Tietz, P.H. Andersen, H. Klitgaard, *Anticonvulsant activity of novel derivatives of 2- and 3-piperidinecarboxylic acid in mice and rats*. *Neuropharmacology*, 1996. **35**(12): p. 1721-35.
5. Herrick-Davis, K., E. Grinde, **C.M. Niswender**, *Serotonin 5-HT_{2C} receptor RNA editing alters receptor basal activity: implications for serotonergic signal transduction*. *J Neurochem*, 1999. **73**(4): p. 1711-7.
6. Backstrom, J.R., M.S. Chang, H. Chu, **C.M. Niswender**, E. Sanders-Bush, *Agonist-directed signaling of serotonin 5-HT_{2C} receptors: differences between serotonin and lysergic acid diethylamide (LSD)*. *Neuropsychopharmacology*, 1999. **21**(2 Suppl): p. 77S-81S.
7. **Niswender, C.M.**, S.C. Copeland, K. Herrick-Davis, R.B. Emeson, E. Sanders-Bush, *RNA editing of the human serotonin 5-hydroxytryptamine 2C receptor silences constitutive activity*. *J Biol Chem*, 1999. **274**(14): p. 9472-8.
8. **Niswender, C.M.**, K. Herrick-Davis, G.E. Dilley, H.Y. Meltzer, J.C. Overholser, C.A. Stockmeier, R.B. Emeson, E. Sanders-Bush, *RNA editing of the human serotonin 5-HT_{2C} receptor. alterations in suicide and implications for serotonergic pharmacotherapy*. *Neuropsychopharmacology*, 2001. **24**(5): p. 478-91.
9. Berg, K.A., J.D. Cropper, **C.M. Niswender**, E. Sanders-Bush, R.B. Emeson, W.P. Clarke, *RNA-editing of the 5-HT_{2C} receptor alters agonist-receptor-effector coupling specificity*. *Br J Pharmacol*, 2001. **134**(2): p. 386-92.
10. **Niswender, C.M.**, R.W. Ishihara, L.M. Judge, C. Zhang, K.M. Shokat, G.S. McKnight, *Protein engineering of protein kinase A catalytic subunits results in the acquisition of novel inhibitor sensitivity*. *J Biol Chem*, 2002. **277**(32): p. 28916-22.
11. **Niswender, C.M.**, B.S. Willis, A. Wallen, I.R. Sweet, T.L. Jetton, B.R. Thompson, C. Wu, A.J. Lange, G.S. McKnight, *Cre recombinase-dependent expression of a constitutively active mutant allele of the catalytic subunit of protein kinase A*. *Genesis*, 2005. **43**(3): p. 109-19.
12. **Niswender, C.M.**, E.P. Lebois, Q. Luo, K. Kim, H. Muchalski, H. Yin, P.J. Conn, C.W. Lindsley, *Positive allosteric modulators of the metabotropic glutamate receptor subtype 4 (mGluR4): Part I. Discovery of pyrazolo[3,4-d]pyrimidines as novel mGluR4 positive allosteric modulators*. *Bioorg Med Chem Lett*, 2008. **18**(20): p. 5626-30.
13. **Niswender, C.M.**, K.A. Johnson, Q. Luo, J.E. Ayala, C. Kim, P.J. Conn, C.D. Weaver, *A novel assay of Gi/o-linked G protein-coupled receptor coupling to potassium channels provides new insights into*

the pharmacology of the group III metabotropic glutamate receptors. Mol Pharmacol, 2008. **73**(4): p. 1213-24.

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15. Hemstapat, K., H. Da Costa, Y. Nong, A.E. Brady, Q. Luo, **C.M. Niswender**, G.D. Tamagnan, P.J. Conn, *A novel family of potent negative allosteric modulators of group II metabotropic glutamate receptors*. J Pharmacol Exp Ther, 2007. **322**(1): p. 254-64.

16. Aldrich, L.N., E.P. Lebois, L.M. Lewis, N.T. Nalywajko, **C.M. Niswender**, C.D. Weaver, P.J. Conn, C.W. Lindsley, *MAOS Is for the general synthesis and lead optimization of 3,6-disubstituted-[1,2,4]triazolo[4,3-b]pyridazines*. Tetrahedron Lett, 2009. **50**(2): p. 212-215.

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142. Lei X, Rodriguez AL, **Niswender CM**. Profiling context-dependent activity of allosteric modulators of mGlu₇. American Society for Pharmacology and Experimental Therapeutics, Saint Louis, MO, May 2023.
143. Lei X, Rodriguez AL, **Niswender CM**. Profiling context-dependent activity of allosteric modulators of mGlu₇. International Rett Syndrome Research Conference. Nashville, TN, June, 2023.
144. Coleman JS, Capstick RA, Rathnayake UA, Parr L, Chang S, Thompson AD, Qi A, **Niswender CM**, Boutaud O, Cho HP, Jones CK, Engers DW, Lindsley CW. Development of potent and selective negative allosteric modulators of the metabotropic glutamate receptor 2 for the potential treatment of Alzheimer's disease. Alzheimer's Association International Conference, Amsterdam, Netherlands, July 2023.
145. Lei X, Rodriguez AL, **Niswender CM**. Activation mechanisms for context-dependent allosteric modulation of the mGlu₇ receptor. Vanderbilt Kennedy Center Science Day. Nashville, TN, November, 2023.
146. Parent HH, Chenareddy S, Taylor A, Fisher NM, Stansley BJ, Freitas GA, Lavieri RR, Shirey-Rice, JK, Pulley JM, Gogliotti RG, **Niswender CM**. Metabotropic glutamate receptor 7 as a modifier of cognitive deficits in Neurofibromatosis Type 1. Vanderbilt Kennedy Center Science Day. Nashville, TN, November, 2023.
147. Bavadekar VM, Melchior JR, Weiss K, Xiang Z, Dogra S, Gogliotti RG, **Niswender CM**. A Goldilocks gene: overexpression of mGlu₇ results in overlapping phenotypes with mGlu₇ knockout mice. Vanderbilt Kennedy Center Science Day. Nashville, TN, November, 2023.
148. Cooke KG, Freitas GA, Vermudez SAD, **Niswender CM**. Regulation of MeCP2 overexpression in a mouse model of PTHS on the expression of suppressors of cytokine signaling in astrocytes. Vanderbilt Kennedy Center Science Day. Nashville, TN, November, 2023.
149. Freitas GA, Cooke KG, Vermudez SAD, Gogliott, RG, **Niswender CM**. Mecp2 upregulation effects on JAK-STAT3 pathway in astrocytes in a Pitt Hopkins syndrome mouse model. Vanderbilt Kennedy Center Science Day. Nashville, TN, November, 2023.

Presentations

I would note that, while I am regularly invited to international conferences, I am a Type I diabetic which does bring challenges to my career. For example, travel is particularly difficult for me. While my diabetes is well-controlled, changes to meals, time zones, and sleep patterns make traveling challenging, and I often decline international invitations, particularly if it means I need to travel alone. This being said, I am vocal about the fact that I have been able to make many accomplishments in my career and personal life despite dealing with insulin-dependent diabetes for 43 years. In fact, I joined the Department of Pharmacology's Diversity, Equity, and Inclusion Committee because I felt I could bring a unique perspective to the issue of diversity because of my disability.

1. Identification and Functional Characterization of Edited Human Serotonin 2c Receptor Isoforms. 4th IUPHAR Satellite Meeting on Serotonin. October 1998.
2. High Throughput Screening and Medicinal Chemistry at Vanderbilt in Support of Drug Discovery for Muscarinic Receptor Ligands. Invite presentation, Vanderbilt Institute for Chemical Biology Retreat.
3. Allosteric modulation of metabotropic glutamate receptor 5, M1, and M4 muscarinic receptors: potential therapeutic directions for schizophrenia. Invited presentation, 27th Annual Meeting of the Southeastern Pharmacology Society. November 2006.
4. High Throughput Screening and Medicinal Chemistry at Vanderbilt: The search for Allosteric Ligands of the M1 and M4 Muscarinic Receptors. Invited presentation, HTS Users Group Meeting, Vanderbilt University. March, 2007
5. Allosteric modulation of mGluR4 as a novel therapeutic direction for the treatment of Parkinson's disease. Invited presentation, American Society for Biochemistry and Molecular Biology, Experimental Biology, San Diego, CA. April, 2008.
6. Allosteric modulation of GCPRs as a novel therapeutic direction for the treatment of CNS disorders. Invited presentation, American Society of Pharmacology and Experimental Therapeutics, Experimental Biology, San Diego, CA, April. 2008.
7. Allosteric modulation of mGluR4 as a novel therapeutic direction for the treatment of Parkinson's disease. Invited presentation, Keystone Symposia; G Protein Coupled Receptors: New Insights in Functional Regulation and Clinical Application, Killarney, Ireland. May, 2008.
8. Allosteric modulation of mGluR4: a novel therapeutic direction for the treatment of Parkinson's disease. Invited presentation, 6th International Meeting on Metabotropic Glutamate Receptors, Taormina, Sicily, Italy. September, 2008.
9. The development of positive allosteric modulators of mGluR4 for the treatment of Parkinson's disease. WFN World Congress on Parkinson's Disease and Related Disorders. Miami, FL. December, 2009.
10. The development of positive allosteric modulators of mGluR4 for the treatment of Parkinson's disease— Invited presentation, Parkinson's Disease Case Study. 4th Annual Drug Discovery for Neurodegeneration Conference. Houston, TX. February, 2010.
11. HTS results from academia: discovery of allosteric modulators of mGluR4 and 5. Metabotropic Glutamate Receptors: Translation from Discovery to Clinical Trials. Invited presentation, The New York Academy of Sciences. New York, NY. February, 2010.

12. Functionally selective and context dependent pharmacology of GPCR allosteric modulators. Pharmacology drive assays for GPCRs and ion channels. Invited presentation, Ninth Annual World Pharmaceutical Congress. Philadelphia, PA, June, 2010.
13. Novel ion channel-based assays: detecting and characterizing 7TM receptor modulators. Invited presentation, Pharmacology drive assays for GPCRs and ion channels. Ninth Annual World Pharmaceutical Congress. Philadelphia, PA, June, 2010.
14. The Development of Positive Allosteric Modulators of Metabotropic Glutamate Receptor 4. Invited presentation, Allosteric Modulator Drug Discovery Congress, San Diego, CA, November, 2010.
15. mGlu4 receptor positive allosteric modulator development for the treatment of CNS disorders. Invited presentation, 7th International Meeting on Metabotropic Glutamate Receptors, Taormina, Italy. October, 2011.
16. mGlu4 positive allosteric modulators for the treatment of CNS disorders. Invited presentation, 45th Annual Winter Conference on Brain Research. Snowbird, Utah, January.
17. mGlu4 positive allosteric modulators for the treatment of CNS disorders. Invited presentation, Guest presentation to Vanderbilt Parkinson's Disease Advisory Board, Vanderbilt University, April 19, 2013.
18. Metabotropic glutamate receptor 7: a novel therapeutic target for MeCP2-related disorders. Invited presentation, Vanderbilt University Rett Syndrome Symposium, October 16, 2013.
19. Metabotropic glutamate receptor potentiation as a therapeutic direction in Rett syndrome. Invited presentation,, International Rett Syndrome Foundation meeting, June 25, 2014.
20. Metabotropic glutamate receptor 7 (mGlu₇): a novel target for the treatment of Rett syndrome. Invited presentation,, 8th International Meeting on Metabotropic Glutamate Receptors, October 2, 2014.
21. Metabotropic glutamate receptor 7 (mGlu₇): a novel target for the treatment of Rett syndrome. Invited presentation, Invited presentation, Multimodal Interventions in IDD from Drug Discovery to Clinical Trials, Vanderbilt Kennedy Center, October 22, 2014.
22. Metabotropic glutamate receptor 7: a new therapeutic target for both Rett and *MECP2* Duplication syndromes. Invited talk, MECP2 Duplication Conference, Houston TX, Sept 2015.
23. Metabotropic Glutamate Receptor 4 Positive Allosteric Modulators for Parkinson's Disease: Impact of Receptor Heterodimerization. Invited presentation, CNS Diseases World Summit. Boston, MA, Sept 12, 2016.
24. Drug Discovery for Autism Spectrum Disorder. Invited presentation, Joint lecture given with Rocco Gogliotti, Belmont University Brain Awareness Week, Nashville, TN, March 2017.
25. Metabotropic Glutamate Receptor 7: A New Therapeutic Target for Neurodevelopmental Disorders. Invited presentation, Vanderbilt University Department of Pharmacology Seminar Series. Nashville, TN. September, 2017.
26. Therapeutic Potential of mGlu₇ in Neurodevelopmental Disorders. Invited Speaker, 9th International Meeting on Metabotropic Glutamate receptors. Taormina, Italy, October 2017.
27. Therapeutic potential of mGlu₇ modulation in *MECP2*-related disorders. Vanderbilt Department of Pharmacology Works in Progress Seminar, Nashville, TN. January, 2018.
28. Drug Discovery for Autism Spectrum Disorder. Invited presentation, Joint lecture given with Rocco Gogliotti, Belmont University Brain Awareness Week, Nashville, TN, March 2018.

29. A Potential Novel therapeutic target for Neurofibromatosis Type 1. Invited presentation, Vanderbilt NF Symposium. Nashville, TN. April 2018.
30. Therapeutic potential of mGlu₇ modulation in Rett syndrome and related neurodevelopmental disorders. Invited presentation, Gatlinburg Conference on Research and Theory in Intellectual and Developmental Disabilities, San Diego, CA. April 2018.
31. Development of new therapeutics for neurodevelopmental disorders at VCND: focus on Pitt Hopkins syndrome. Invited presentation, PTHS Family Conference, Minneapolis, MN, June 2018.
32. Introduction to the Vanderbilt Center for Neuroscience Drug Discovery: focus on New Therapeutics for Rett syndrome. Rett Education Day, Invited presentation, Vanderbilt Kennedy Center, October 2018.
33. Allosteric modulation of metabotropic glutamate receptors for the treatment of neurodevelopmental disorders. Invited presentation, LabRoots presentation, February 2019.
34. Metabotropic glutamate receptor 7 and neurodevelopmental disorders. Invited speaker, Georgetown University. September 2019.
35. Case Study: Commercialization and Perseverance. Invited speaker, Cleveland Clinic 17th Annual Medical Innovation Summit. October 2019.
36. Assessing safety and efficacy of genetically targeting MeCP2 in Rett syndrome. Sheryl Vermudez and Colleen Niswender Works in Progress talk. January 2020.
37. Research Ethics Grand Rounds Lecture: Managing expectations, encouraging hope: sharing the truth in research advertising. Invited presentation, Panelist, February 2020.
38. Development of Novel Pharmacological and Genetic Treatments for Pitt Hopkins Syndrome, Pitt Hopkins Virtual Conference. Invited presentation, June 2020.
39. Target-based approaches to the development of new therapeutics for neurodevelopmental disorders. Vanderbilt Special Seminar. Invited presentation, February 2021.
40. Target-based approaches to the development of new therapeutics for neurodevelopmental disorders. Invited presentation, Uniformed Services University seminar, April 2021.
41. Leveraging human genetics to identify novel treatments for Pitt Hopkins syndrome. Invited presentation, Pitt Hopkins Foundation Conference. June 2021.
42. mGlu₇ in Neurodevelopmental Disorders, Invited presentation, 10th International Meeting on Metabotropic Glutamate Receptors, October 2021.
43. Target-based approaches to the development of new therapeutics for neurodevelopmental disorders. Invited presentation, Invited presentation, Vanderbilt Quantitative and Chemical Biology Program presentation, January 2022.
44. Target-based approaches to the development of new therapeutics for neurodevelopmental disorders. Invited presentation, Scripps Florida, March 2022.
45. ASPET Lecture for Scientific Achievement in Drug Discovery and Development: Case study in academic drug discovery: development of metabotropic glutamate receptor 4 positive allosteric modulators for the treatment of CNS disorders, April 2022.

46. Exploration of group II metabotropic glutamate receptor modulation in mouse models of Rett syndrome and MECP2 Duplication syndrome. Invited presentation, International Rett Syndrome Foundation, April 2022.
 47. Responsible Conduct in Research seminar, "Collaborations with Industry", Invited presentation, Vanderbilt University, May 2022.
 48. Rescue of behavioral phenotypes in *Tcf4*^{+/-} mice by overexpression of MeCP2. Invited presentation, Pitt Hopkins Syndrome Research Foundation, June 2022.
 49. Chair of nanosymposium "Rett syndrome", Society for Neuroscience, San Diego, CA, November 2022.
 50. mGlu₄ modulators for Parkinson's disease, Invited presentation, Southern Research Institute. December 2022.
 51. Responsible Conduct in Research seminar, "Collaborations with Industry", Invited presentation, Vanderbilt University, May 2023.
 52. mGlu₄ modulators for Parkinson's disease, Invited presentation, Vanderbilt Institute for Chemical Biology Seminar Series. September 13, 2023.
 53. mGlu₇ and Rett syndrome. Invited presentation, Biochemistry and Cellular and Molecular Biology Departmental Seminar Series. University of Tennessee Knoxville, October 11, 2023.
 54. mGlu₇ as a therapeutic target in neurodevelopmental disorders. Invited presentation, Vanderbilt Brain Institute Seminar Series. February 1, 2024.
 55. Targeting metabotropic glutamate receptor 7 as a novel treatment for neurodevelopmental disorders. Invited presentation, Department of Physiology and Pharmacology Departmental Seminar Series. Wake Forest University, February 28, 2024.
 56. Targeting metabotropic glutamate receptor 7 as a novel treatment for neurodevelopmental disorders. Invited presentation, Department of Molecular Pharmacology and Neuroscience Departmental Seminar Series. Loyola University of Chicago, April 2, 2024.
- Upcoming presentation at International Meeting on Metabotropic Glutamate Receptors, Invited presentation. Taormina, Italy, October 2024.