

CURRICULUM VITAE

Colleen Marie (Burns) Niswender

Associate Professor of Pharmacology
Warren Director of Molecular Pharmacology
Warren Center for Neuroscience Drug Discovery

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Education

1986-1987	Undergraduate, University of Akron, Akron, Ohio
1987-1991	Undergraduate, University of Toledo, Toledo, Ohio
1991	B.S., Pharmacy with Honors in Pharmacology, University of Toledo, Toledo, Ohio
1991-1996	Graduate Student, Pharmacology, Vanderbilt University
1996	Ph.D., Pharmacology, Vanderbilt University

Professional Training and Experience

1996-1998	Postdoctoral Fellow, Pharmacology, Vanderbilt University
1998-2003	Senior Fellow, Pharmacology, University of Washington
2003-2004	Acting Instructor, Pharmacology, University of Washington
2004-2009	Research Assistant Professor, Pharmacology, Vanderbilt University Co-Director, Molecular Pharmacology, Vanderbilt Program in Drug Discovery
2009-present	Research Associate Professor, Pharmacology, Vanderbilt University Director, Molecular Pharmacology, Vanderbilt Center for Neuroscience Drug Discovery
2017-2020	Research Professor, Pharmacology, Vanderbilt University Director, Molecular Pharmacology, Vanderbilt Center for Neuroscience Drug Discovery
2020-2021	Research Professor, Pharmacology, Vanderbilt University Warren Director (endowed), Molecular Pharmacology, Warren Center for Neuroscience Drug Discovery
2021-present	Associate Professor, tenure-track, Pharmacology, Vanderbilt University Warren Director (endowed), Molecular Pharmacology, Warren Center for Neuroscience Drug Discovery

Professional Organizations

1991-1996	Phi Kappa Phi
1991-1998, 2006-present	Society for Neuroscience
2007-present	American Society for Pharmacology and Experimental Therapeutics
2012-present	rettsyndrome.org
2013-2018	Member, Academic Drug Discovery Consortium

2016-2022	Executive Board member, Secretary, Academic Drug Discovery Consortium
2022-present	President, Academic Drug Discovery Consortium
2022-present	Executive Committee Member, ASPET Drug Discovery and Development Division

Professional Activities-Intramural

Current Committee Membership

- Faculty Senate, Basic Sciences Representative
- Medical Scientist Training Program Admission Subcommittee Member
- Diversity, Equity, and Inclusion Committee Member; responsible for “The Pharmers Market” blog

Other intramural activities

- 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
 - Jose 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, 2020 regarding life as a scientist with Type I diabetes
- 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
- Qualifying exam committee member:
 - Jose Zepeda, 2022
 - Zeljika Miletic Lanaghan, 2023
 - Emma Webb, 2023
 - Kristine Yoon, 2023

Soren Emerson, 2023

Mentoring Professional Activities

- Participation in Research Track Faculty lunch seminar to provide feedback to VU (hosted by Alyssa Hasty, October 10, 2018)
- Participation in Workshop to craft an IMSD personal mentoring and diversity statement, October 15, 2019
- Participation in Faculty Workshop to Support Student Mental Health and Awareness, January 19, 2021
- Participant in Culturally Aware Mentoring workshop, December 2021
- Attended R.C. Stabile presentation on graduate student/trainee mental health resources, April 2022
- Presentation for Vanderbilt Responsible Conduct in Research Day, "Collaborations with Industry and Foundations", May 2022
- CIMER workshop on "Fostering Independence", November 2022
- Presentation for Vanderbilt Responsible Conduct in Research Day, "Collaborations with Industry and Foundations", May 2023

Professional Extramural Activities

Editorial position

- 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.
- Planning committee, 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
- 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
- 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
- Journal of Medicinal Chemistry, 2022
- Ageing and Neurodegenerative Diseases, 2023

Outside PhD thesis review

- Ee Von Moo, "Novel modes of targeting muscarinic acetylcholine receptors", Monash University

Teaching Activities

- Discussion leader for 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 Neuroscience 345 Course. "*Neuromodulation and metabotropic glutamate receptors*", 2007 and 2008.
- Discussion leader in Neuroscience 345 Course. Sansig et al., 2001, J. Neuroscience. "*Increased seizure susceptibility in mice lacking metabotropic glutamate receptor 7*", 2007.
- Discussion leader for 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 Neuroscience 345 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, Modern Drug Discovery Course. "*mGlu₄ positive allosteric modulators for the treatment of CNS disorders*". Vanderbilt University, 2012, 2013, 2014, 2015, 2019.

- Lecturer, Neuroscience 235 Course. “*Drug Discovery in Academia: mGlu4 positive allosteric modulators for the treatment of CNS disorders*”. Vanderbilt University, 2013, 2014, 2015, 2016.
- Lecturer, Pharmacology and Drug Discovery Course, “*Receptors in Action*”, Vanderbilt University, August 2021
- Lecturer, Scientific Communications, “*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, in Drug Discovery 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 course: *Receptor Theory 1*, August 31, 2022, 2 contact hours
- Lecturer in Vanderbilt Pharmacology and Drug Discovery 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

Consultancies

- Appello Pharmaceuticals, 2018-2022

Honors, Leadership, and Distinctions

- 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
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- Grass Foundation Fellowship to attend “Neurobiology of Human, 1995
Neurological Disease: Mechanisms of Neurodegeneration”, Cold Spring Harbor Laboratory
- Travel award to “Obesity and the Regulation of Energy Homeostasis”, Keystone Symposium, Taos, NM, 2000
- WCNDD Team Member contributing to writing and successful Investigational New Drug Application petition to the FDA for VU0467319, currently in Phase 1 clinical trials, licensed to Acadia Pharmaceuticals, May 2020.
- WCNDD Team Member contributing to writing and successful Investigational New Drug Application petition to the FDA for VU6011472, slated to begin clinical trials January 2021
- Boehringer-Ingelheim mGlu3 positive allosteric modulator program for improvement of cognition impairments in schizophrenia has achieved “Start of Lead Op” designation with a funding extension to WCNDD team-fastest declaration of a program for this status in company’s history
- Board of Directors Member, Academic Drug Discovery Consortium, 2017-present
- President, Academic Drug Discovery Consortium, 2022-present
- ASPET Scientific Achievement in Drug Discovery and Development, January 2022

Research Supervision

I began independently training students, postdoctoral fellows, and research faculty in 2009. Vanderbilt policy is that Research-level faculty must have a tenure-track faculty member serve as a co-mentor; for the individuals listed below, however, 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 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 Vanderbilt University, Department of Pediatrics, Vanderbilt Kennedy Center Associate Professor with tenure. Mentoring committee member.

Postdoctoral Fellows

Thomas Utley Vanderbilt University pharmacology postdoctoral fellow (2010-2012). Current position, Licensing Agent, Vanderbilt Center for Technology Transfer office.

Julie Roper-Field Vanderbilt University pharmacology postdoctoral fellow (2010-2012). Current position, Project Manager, VICTR and CTSA Consortium Coordinating Center, Vanderbilt University Medical Center.

Nidhi Jalan-Sakrikar Vanderbilt University pharmacology postdoctoral fellow (2012-2014). Current position, Assistant Professor, Mayo Clinic.

Branden Stansley Vanderbilt University pharmacology postdoctoral fellow (2015-2019), awarded T32 postdoctoral training award and an F32 NRSA, June 2016. Current position, Medical Liaison, Biogen.

Xia Lei Vanderbilt University pharmacology postdoctoral fellow (2020-present).

Geanne Freitas Vanderbilt University pharmacology postdoctoral fellow, (2021-present).

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.

Rebecca Klar Senter Vanderbilt University Interdisciplinary Graduate Student, Pharmacology. Primary mentor with Jeff Conn as co-mentor. Graduation, 7/2015. Current position, Associate Director, Non-clinical and Translational Research, Flexion Therapeutics.

Annah Moore	Vanderbilt University Department of Pharmacology. Co-mentor with Dr. David Sweatt from 4/2017-11/2018. 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: 1/1/2021: Postdoctoral Fellow with Dr. Mark von Zostrow, UCSF.
Christopher Hofmann	Vanderbilt University Interdisciplinary Graduate Student, Pharmacology. Primary mentor with C. David Weaver as co-mentor. Graduation 08/2021. Currently Medical Writer 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.
Harrison Parent	Vanderbilt University Interdisciplinary Graduate Student. Pharmacology, 2023-present.
Anthony Ferranti	Vanderbilt University Interdisciplinary Graduate Student. Pharmacology, 2023-present.
Sydney Thompson	Vanderbilt University Interdisciplinary Graduate Student. Neuroscience, 2023-present.

Graduate Student/MSTP Student Thesis Committees

Olivia Veatch	Vanderbilt University genetics graduate student, Johnathan Haines Lab. Thesis committee member, Graduation 8/2013. "Identifying biological pathways implicated in defined subgroups of phenotypic expression for autism spectrum disorders." Current position, Research Instructor in Neurology, Vanderbilt Kennedy Center.
Rachel Crouch	Vanderbilt University pharmacology graduate student, Scott Daniels' Lab. Co-chair of thesis committee. Graduation, 11/2016. Current position, Assistant Professor, Lipscomb University.
Nick Harris	Vanderbilt University Molecular Physiology and Biophysics MD/PhD Student, Danny Winder Lab. Thesis committee member. Graduation, 08/2018. Current position, MSTP student, Vanderbilt University 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: postdoctoral fellow at Broad Institute.
Bridget Collins	Vanderbilt University School of Medicine, MTSP student, Jeffrey Neul laboratory, thesis committee. Graduation 4/2022. Current position: return 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.
Zeljka Miletic Lanaghan	Vanderbilt Pharmacology Graduate Student, Jeffrey Neul lab, thesis committee chair.
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).

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). Current position, Patient Enrollment Coordinator, Iora Health.
Susmita Chennareddy	Vanderbilt University Undergraduate Honor’s thesis mentor (2018-2020). Current position: Medical school student at Columbia University.

Hana Badivuku	Vanderbilt University Undergraduate Honor's thesis mentor (2018-2020). Current position: Applicant Coordinator, Undiagnosed Disease Network.
Hemangi Rajpal	Vanderbilt University Undergraduate Honor's thesis mentor (2019-2021).
Jessica Wu	Vanderbilt University Undergraduate researcher (2021-2023).
Kathryn Cooke	Belmont University Undergraduate researcher (2023-present).

Rotation students (past and present)

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

2021

Abigael Weit

Alex Contreras, VERTICES Program

Hannah Waterman

Cody Marshall
Jaybree Lopez

2022
Kiera McRae
Kristine Yoon
Nada El Sayed (MSTP)
Meghan Graber
Anthony Ferranti
Kathryn Clarke

2023
Montana Young
Isabella Sirit
Sydney Thompson
Harrison Parent
Claude Albritton

Mentoring of Molecular Pharmacology Group at WCNDD

Present

Research Assistants: Li Peng, Marc Quitallig, Allie Fu, Haley Kling

Research Faculty: Alice Rodriguez, Aidong Qi, James Melchior

Past (beginning in 2004)

Research Assistants: Kari Johnson, Qingwei Luo, Atin Lamsal, Kiran Gogi, Emma Squire, Eileen Engleberg, Jeffrey Adams, Sonia Ajmera, Matthew Jenkins, Katrina Brewer, Shan Liang, Sheridan Carrington, Krishma Hajari, Ashton Hunter, Vincent Luscombe, Natasha Billard, Caroline Baggeroer, Mallory Maurer, Matthew Loch

Drug Discovery Scientists/Research Specialists: Rocio Zamorano, Daryl Venable

Research Faculty: Douglas Sheffler, Meredith Noetzel, Bartholomew Roland, Mohsin Sarwar, Nathalie Schnetz-Boutaud, Paige Vinson

Trainee grants

Rebecca Klar Senter	Weatherstone Predoctoral Fellowship, Autism Speaks	07/2014-07/2016
	<i>"Metabotropic glutamate receptor 7: a novel therapeutic target for Rett syndrome"</i>	
Nicole Fisher	T32GM007628 Predoctoral Training grant	07/2015-06/2017
	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
"Stratifying Rett syndrome patient populations to evaluate the efficacy of genetic and pharmacological treatment interventions"
 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
"The therapeutic potential of mGlu3 modulation in MeCP2-related disorders"

Rocco Gogliotti T32MH065215 Postdoctoral Training grant 07/2012-07/2013
"mGlu7, a novel target for Rett Syndrome therapeutics"

T32GM07628 Postdoctoral Training grant 07/2013-07/2014
"mGlu7, a novel target for Rett Syndrome therapeutics"

NIH NRSA Postdoctoral Fellowship (awarded, not accepted) 07/2014
"Temporal Divergence Between Hyperexcitation and Hypoconnectivity in Rett Syndrome"

Rettsyndrome.org Mentored Training Fellowship 07/2014-06/2016
"Temporal Divergence Between Hyperexcitation and Hypoconnectivity in Rett Syndrome"

BBRF Young Investigator Award 01/2017-02/2019
"mGlu5 and beyond: transcriptional profiling MECP2- and MECP2-autonomous Rett syndrome autopsy samples"

MH112983 NIMH K Award 09/2017-06/2021
"Normalizing E:I imbalance in Rett syndrome by modulation of late response genes"

NS112171 NIMH R01 Award 05/2020-04/2025
"A precision medicine approach to Rett syndrome"

Research Program

Current Funding

R01NS132060 (Javitch JA/Niswender CM, Co-PIs) 04/01/2023-03/31/2028
 NIMH \$1,781,745 subcontract
Impact of metabotropic glutamate receptor heteromerization on signaling and pharmacology

R01MH124671 (Niswender CM/Lindsley CW, Co-PIs) 09/01/2020-06/30/2025
 NIMH \$476,862 direct/year
Development of mGlu7 allosteric modulators for neurological and psychiatric disorders

R01MH062646 (Niswender CM/Conn PJ, Co-PIs) 09/15/2022-06/30/2027
 NIMH \$379,221 directs/year
Regulation of signaling by mGluR5

Directors Priority Award (Niswender CM/Dong H, Co-PIs) 11/01/2021-06/21/2023
 Vanderbilt Kennedy Center \$50,000 direct/year

Evaluation of a novel biomarker approach for Rett syndrome therapeutics

TIPs Award (Emeson RB/**Niswender CM, Co-PIs**) 02/01/2023-06/30/2023
 Vanderbilt Brain Institute \$45,379
MECP2 targets for ADAR-mediated RNA repair in Rett syndrome

IRSF (Gogliotti RG/ **Niswender CM, Co-PIs**) 12/01/2021-11/30/2023
The interplay of the heat shock cascade and Rett syndrome \$137012 direct/year

IRSF (Neul, JL PI; **Niswender CM, Co-I**) 12/01/2021-11/30/2023
Development of a treatment-responsive biomarker for Rett syndrome \$134,661 direct/year

R01NS112171-01A1 (Gogliotti RG; **Niswender CM, Co-I**) 05/01/2020-04/30/2025
 NINDS \$17,294 (subcontract)
A precision medicine approach to Rett Syndrome

R37NS031373-24 (Conn PJ; **Niswender CM, Co-I**) 05/01/2014-04/30/2021
 NIH/NINDS \$320,361 direct/year
Functions of Metabotropic Glutamate Receptor Subtypes

W81XWH1910355 (Conn, PJ; **Niswender CM, Co-I**) 07/01/2019-06/30/2023
 DOD \$2,997,528 direct/year
Optimization of selective M4 muscarinic receptor antagonists for treatment of dystonia

R01MH119673-01 (Conn PJ, PI; **Niswender CM, Mol Pharm lead**) 02/15/2019-11/30/2023
 NIMH \$479,119 direct/year
Discovery of mGlu receptor PAMs for treatment of schizophrenia

UNIV60543 (Conn PJ, PI; **Niswender CM, Mol Pharm lead**) 01/15/2018-11/14/2023
 Boehringer Ingelheim International GmbH \$1,031,250 direct/year
Discovery of Novel mGluR3 Positive Allosteric Modulators (PAMs)

UNIV61500 (Conn, PI, **Niswender CM, Mol Pharm lead**) 03/10/2020-03/09/2023
 Acadia Pharmaceuticals \$1,718,750 direct/year
Discovery and Development of Novel M1 Positive Allosteric Modulators (PAMs)

VUMC63366 (Raghavan/Bernard PIs, **Niswender CM, Co-I**) 03/01/2018-02/28/2022
 NIH/VUMC \$67,142
The Vanderbilt Institute for Clinical and Translational Research (VICTR)

SRA00000038 (Lindsley, PI, **Niswender CM, Mol Pharm lead**) 02/10/2022-06/30/2023
 Neumora \$2,867,000 total
 Development of M4 PAM Back-up Program

Pending

R01NH136164 (**Niswender CM, PI**) 04/01/2023-03/31/2029
 NIMH 1,981,250 total
Regulation of metabotropic glutamate receptor activity by protein/protein interactions

Brain Research Foundation (**Niswender CM, PI**) 01/01/2024-12/31/2025

GRM7 as a modifier locus for cognitive deficits in Neurofibromatosis Type 1

Selected applicant from Vanderbilt/VUMC

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

- | | |
|---|--|
| R03MH076398-01 (Niswender CM, PI)
NIH/NIMH
screening
<i>Measurement of GPCR-mediated thallium flux through GIRK. Access grant to Molecular Libraries Screening Center Network.</i> | 08/1/2005-07/31/2006
\$3,000 plus access to |
| R21NS053536-01/1R21NS053536-01S1 (Niswender CM, PI)
NIH/NIMH
supplement
<i>A Direct Assay for HTS of Gi/o-linked GPCRs: mGluR7 as the Prototype</i> | 09/30/2005-02/28/2008
\$125,000 plus \$25,000 |
| X01MH077607-01 (Niswender CM, PI)
NIH/NIMH
<i>Discovery of novel allosteric agonists of the M4 muscarinic receptor. Access grant to Molecular Libraries Screening Center Network.</i> | 02/01/2006-01/31/2007
HTS resources |
| R01NS048334 (Niswender CM, PI)
NIH/NINDS
<i>Metabotropic Glutamate Receptors in Basal Ganglia. PI during last year of grant.</i> | 2/01/2004-11/30/2009
\$1,165,000 |
| Basic Research Award (Niswender CM, PI)
International Rett Syndrome Foundation
<i>Metabotropic glutamate receptor 7: a novel therapeutic candidate for Rett Syndrome</i> | 01/01/2012-12/31/2013
\$100,000 |
| R21NS078262 (Niswender CM, PI)
NIH/NINDS
<i>Metabotropic glutamate receptors in the basal ganglia.</i> | 04/01/2012-03/13/2014
\$420,809 |
| UNIV59555/7SFRN33520017 (Hasty A, PI)
AHA
<i>Toward Obesity Precision Medicine: Promise of the Glucagon-Like Peptide 1 Receptor</i> | 04/01/2017-03/31/2021
\$30,357 |
| UH2 NS099066-01 (Niswender CM, PI) | 09/01/2016-09/29/2021 |

NINDS	Colleen Niswender CV 06/21/2023
<i>Development of VU0652957 for the treatment of Parkinson's disease (PD)</i>	\$124,768
R21MH102548-01 (Niswender CM, PI)	08/01/2014-07/31/2017
NIMH	\$431,476
<i>Metabotropic Glutamate Receptor Regulation in MeCP2-Related Disorders</i>	
8766 Autism Speaks (Niswender CM, PI)	03/01/2014-08/28/2017
Autism Speaks	\$449,996
<i>Temporal divergence of hypoconnectivity and excitotoxicity in Rett Syndrome</i>	
3503 rettsyndrome.org (Niswender CM, PI)	04/01/2017-03/31/2019
Rettsyndrome.org	\$68,182
<i>Exploration of metabotropic glutamate receptor 3 as a target for MeCP2-related disorders</i>	
3511 rettsyndrome.org (Niswender CM, PI)	04/01/2018-
03/31/2020Rettsyndrome.org	\$68,182
<i>Tailoring gene replacement therapy for MECP2-related disorders</i>	
R01MH104158-06 (Niswender CM, PI)	11/01/2018-03/31/2020
NIMH	\$250,000
<i>Molecular and Behavioral Neurobiology of Transcription Factor TCF4</i>	
R01MH108498-01 (Niswender CM/Lindsley CW, Co-PIs)	12/10/2015-11/30/2018
NIMH	\$295,878
<i>Development of an mGlu_{2/4} heterodimer-selective allosteric modulator</i>	
#23 (Niswender CM, PI)	06/01/2020-02/28/2021
Pitt Hopkins Research Foundation	\$34,702
<i>Exploring MECP2 overexpression as a potential therapeutic strategy for Pitt-Hopkins syndrome</i>	
UNIV60533 (Conn PJ, PI; Niswender CM, Mol Pharm lead)	11/15/2018-05/14/2021
Boehringer Ingelheim International GmbH	\$687,500
<i>Discovery of Novel mGluR1 Positive Allosteric Modulators (PAMs)</i>	
R01MH110389-01 (Niswender CM/Lindsley CW, Co-PIs)	07/01/2017-06/30/2021
NIMH	\$254,504
<i>Development of a metabotropic glutamate receptor 7 positive allosteric modulator</i>	
PR160102/W81XWH-17-1-0266, Department of Defense	08/01/2017-07/31/2022
Niswender CM, PI	\$395,156 direct/year
<i>The role of metabotropic glutamate receptor 7 in the etiology and treatment of Rett syndrome</i>	
Industry/Foundation/NIH Sponsored Drug Discovery Partnerships	
LEAPS Award (Conn PJ, PI; Niswender CM, Biology lead)	12/01/2007 – 10/30/2011
Michael J. Fox Foundation	\$3,209,590
<i>Discovery of novel allosteric modulators of mGluR4 for treatment of Parkinson's disease.</i>	
Seaside Therapeutics (Conn PJ, PI; Niswender CM, Mol Pharm lead)	11/1/2007-4/31/2011
<i>Novel strategies for treatment of Fragile X syndrome</i>	\$3,094,464
VUMC34998 (Conn PJ, PI; Niswender CM, Mol Pharm lead)	12/9/2008 – 12/9/2012

Johnson and Johnson <i>Discovery of mGlu5 PAMs for treatment of Schizophrenia</i>	Colleen Niswender CV 06/21/2023 \$4,549,320
U01 MH087965 (Conn PJ, Lindsley CW, co-PIs, Niswender CM, Mol Pharm lead) NIMH Vanderbilt NCDDDG <i>Discovery of Novel Treatments of Schizophrenia</i>	2/19/2010 – 12/31/2014 \$5,931,948
VUMC39328 (Conn PJ, PI; Niswender CM, Mol Pharm and Biology lead) Bristol Myers Squibb <i>Discovery and Development of mGlu4 PAMs for treatment of Parkinson's Disease</i>	9/19/2012 – 1/31/2015 \$7,051,718
U54MH084659 (Lindsley CW, PI, Niswender CM, Mol Pharm effort) NIH/NIMH <i>Vanderbilt Specialized Chemistry Center for Accelerated Probe Development</i>	9/1/2008-5/31/2015 \$14,592,390
U19 MH097056 (Conn PJ, PI; Niswender CM, Mol Pharm lead) NIMH <i>Development of mGluR5 NAMs for Treatment of Major Depression</i>	1/8/2013 – 11/30/2015 \$2,405,322
UNIV40457 (Conn PJ, PI; Niswender CM, Mol Pharm lead) AstraZeneca <i>Discovery of Novel M4 Positive Allosteric Modulators (PAMs)</i>	12/21/2012-12/31/2016 \$3,046,875
U19MH106839 (Conn PJ, PI; Niswender CM, Mol Pharm lead) NIMH Development of an M1 PAM Experimental Therapeutic for Schizophrenia	09/10/2015-06/30/2019 \$3,377,068
UNIV60006 (Conn PJ, PI; Niswender CM, Mol Pharm lead) H. Lundbeck A/S <i>Discovery and Development of Novel M4 Positive Allosteric Modulators (PAMs)</i>	12/20/2017-03/20/2020 \$3,512,208
UNIV60627 (Jones CK/Lindsley CW, Co-PIs; Niswender CM, Mol Pharm lead) Ancora Innovation, LLC <i>Development of Selective M5 NAMs for Prevention and Treatment of Opioid Use Disorders</i>	01/04/2019-01/08/2021 \$2,062,500
UNIV60623 (Lindsley CW/Conn PJ, Co-PIs; Niswender CM, Mol Pharm lead) Ancora Innovation, LLC <i>Development of selective M4 antagonist for dystonia</i>	01/04/2019-01/04/2019 \$3,953,125
UG3NS116218-01(Rook JM/Conn PJ/Lindsley CW/Gereau R; Niswender CM, Mol Pharm lead) NINDS <i>Novel mGlu5 negative allosteric modulators as first-in-class non-addictive analgesic therapeutics</i>	09/30/2019-07/31/2021 \$613,869 direct/year

Investigational New Drug Applications

1. Member of development team; co-wrote IND for the development of VU0467319, an M₁ receptor PAM for cognitive deficits in Alzheimer's disease and schizophrenia. Open IND status achieved, July 2017, Phase I trial run successfully at Vanderbilt, licensed to Acadia Pharmaceuticals, May 2020.

<https://clinicaltrials.gov/ct2/show/NCT03220295?term=VU319&rank=1>

2. Member of development team, co-wrote IND for the development of VU6011472, an mGlu₄ PAM for treatment of Parkinson's disease. Program was licensed to Appello Pharmaceuticals, Open IND status achieved, November 2020, clinical trial to begin 01/2021.

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7. Johnson, K.A., P.J. Conn, and **C.M. Niswender**, *Glutamate receptors as therapeutic targets for Parkinson's disease*. CNS Neurol Disord Drug Targets, 2009. **8**(6): p. 475-91.
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10. Jones, C.K., D.W. Engers, A.D. Thompson, J.R. Field, A.L. Blobaum, S.R. Lindsley, Y. Zhou, R.D. Gogliotti, S. Jadhav, R. Zamorano, J. Bogenpohl, Y. Smith, R. Morrison, J.S. Daniels, C.D. Weaver, P.J. Conn,

C.W. Lindsley, **C.M. Niswender***, and C.R. Hopkins*, *Discovery, synthesis, and structure-activity relationship development of a series of N-4-(2,5-dioxopyrrolidin-1-yl)phenylpicolinamides (VU0400195, ML182): characterization of a novel positive allosteric modulator of the metabotropic glutamate receptor 4 (mGlu(4)) with oral efficacy in an antiparkinsonian animal model.* J Med Chem, 2011. **54**(21): p. 7639-47.

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53. Qi, A., Quitalig, M.C., Rodriguez A.L., **Niswender, C.M.** *Development of robust in vitro pharmacology assays to detect the activity of allosteric modulators at the CB1 and CB2 cannabinoid receptors*. In preparation.
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Patents

1. Substituted 1,1,3,1-Tetraoxidobenzo{D} {1,3,2}Dithiazoles as mGluR4 Allosteric Potentiators, Compositions, and Methods of Treating Neurological Dysfunction. 8,658,650. Issued 2/25/2014, USA. US 2011-0319429-A1

2. mGluR4 Allosteric Potentiators, Compositions, and Methods of Treating Neurological Dysfunction. 9,180,192. Issued 11/10/2015, USA. 20130040944 A1
3. Aryl and Heteroaryl Sulfones as mGluR4 Allosteric Potentiators, Compositions, and Methods of Treating Neurological Dysfunction. 8,912,336. Issued 12/16/2014, USA. 20120245185 A1
4. Substituted Dioxopiperidines and Dioxopyrrolidines as mGluR4 Allosteric Potentiators, Compositions, and Methods of Treating Neurological Dysfunction. Patent 8,759,377. Issued 6/24/2014, USA. US-2011-0124663-A1
5. Alkyl-3-((2-Amidoethyl)Amino)-8-Azabicyclo[3.2.1]Octane-8-Carboxylate Analogs as M1 Allosteric Agonists and Methods of Making and Using Same. Patent 8,697,691. Issued 4/15/2014, USA. US-2011-0172227-A1
6. Benzisoxazoles and Azabenzisoxazoles as mGluR4 Allosteric Potentiators, Compositions, and Methods of Treating Neurological Dysfunction. Patent 8,916,584. Issued 12/23/2014, USA. 20130079366 A1
7. Pyrazolopyridine, Pyrazolopyrazine, Pyrazolopyrimidine, Pyrazolothiophene and Pyrazolothiazole Compounds as mGluR4 Allosteric Potentiators, Compositions, and Methods of Treating Neurological Dysfunction. Patent 9,163,015. Issued 10/20/2015, USA. 20130096110 A1
8. Heterocyclic Sulfone mGluR4 Allosteric Potentiators, Compositions, and Methods of Treating Neurological Dysfunction. Patent 9,192,603. Issued 11/24/2015, USA. 20130158078 A1
9. Pyrazolopyridine, Pyrazolopyrazine, Pyrazolothiophene and Pyrazolothiazole Compounds as mGluR4 Allosteric Potentiators, Compositions, and Methods of Treating Neurological Dysfunction. Patent 9,108,963. Issued 8/18/2015, USA. 20130065895 A1
10. Benzoisoxazole-Substituted Compounds as mGluR4 Allosteric Potentiators, Compositions, and Methods of Treating Neurological Dysfunction. Patent 9,980,945. Issued 5/29/2018, USA. US-2018-0021213-A1
11. Benzothiazole and Benzisothiazole-Substituted Compounds as mGluR4 Allosteric Potentiators, Compositions, and Methods of Treating Neurological Dysfunction. Patent 10,221,172. Issued 3/5/2019, USA. US-2018-0022744-A1
12. Isoquiniline and Naphthalene-Substituted Compounds as mGluR4 Allosteric Potentiators, Compositions, and Methods of Treating Neurological Dysfunction. Patent 10,227,343. Issued 3/12/2019, USA. US-2018-0022745-A1
13. Positive Allosteric Modulators of the GLP-1 Receptor. Patent 10,487,087. Issued 11/26/2019, USA. US-2019-0010162-A1
14. Indazole Compounds as mGluR4 Allosteric Potentiators, Compositions, and Methods of Treating Neurological Dysfunction. 10,508,105, Issued 12/17/2019, USA. US-2019-0055225-A1
15. Indazole and Azaindazole Substituted Compounds as mGluR4 Allosteric Potentiators, Compositions, and Methods of Treating Neurological Dysfunction. Patent 10,526,323, Issued 1/7/2020, USA. US-2018-0022746-A1
16. Pyridine Quinoline Compounds as mGluR4 Allosteric Potentiators, Compositions, and Methods of Treating Neurological Dysfunction. Filed 6/28/2018, PCT WO 2019/006157

Presentations

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. Vanderbilt Institute for Chemical Biology Retreat.
3. Allosteric modulation of metabotropic glutamate receptor 5, M1, and M4 muscarinic receptors: potential therapeutic directions for schizophrenia. 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. 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. American Society for Biochemistry and Molecular Biology, Experimental Biology, San Diego, CA. April, 2008.
6. Allosteric modulation of GPCRs as a novel therapeutic direction for the treatment of CNS disorders. 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. 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. 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—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. 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. Ninth Annual World Pharmaceutical Congress. Philadelphia, PA, June, 2010.
13. Novel ion channel-based assays: detecting and characterizing 7TM receptor modulators. 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. Allosteric Modulator Drug Discovery Congress, San Diego, CA, November, 2010.

15. mGlu4 receptor positive allosteric modulator development for the treatment of CNS disorders. 7th International Meeting on Metabotropic Glutamate Receptors, Taormina, Italy. October, 2011.
16. mGlu4 positive allosteric modulators for the treatment of CNS disorders. 45th Annual Winter Conference on Brain Research. Snowbird, Utah, January.
17. mGlu4 positive allosteric modulators for the treatment of CNS disorders. 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. Vanderbilt University Rett Syndrome Symposium, October 16, 2013.
19. Metabotropic glutamate receptor potentiation as a therapeutic direction in Rett syndrome. Invited talk, International Rett Syndrome Foundation meeting, June 25, 2014.
20. Metabotropic glutamate receptor 7 (mGlu₇): a novel target for the treatment of Rett syndrome. Invited talk, 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 talk, 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. CNS Diseases World Summit. Boston, MA, Sept 12, 2016.
24. Drug Discovery for Autism Spectrum Disorder. 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. 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. 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. Vanderbilt NF Symposium. Nashville, TN. April 2018.
30. Therapeutic potential of mGlu₇ modulation in Rett syndrome and related neurodevelopmental disorders. 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. 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, Vanderbilt Kennedy Center, October 2018.
33. Allosteric modulation of metabotropic glutamate receptors for the treatment of neurodevelopmental disorders. 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. Panelist, February 2020.
38. Development of Novel Pharmacological and Genetic Treatments for Pitt Hopkins Syndrome, Pitt Hopkins Virtual Conference. June 2020.
39. Target-based approaches to the development of new therapeutics for neurodevelopmental disorders. Vanderbilt Special Seminar. February 2021.
40. Target-based approaches to the development of new therapeutics for neurodevelopmental disorders. Uniformed Services University seminar, April 2021.
41. Leveraging human genetics to identify novel treatments for Pitt Hopkins syndrome. Pitt Hopkins Virtual Conference. June 2021.
42. mGlu₇ in Neurodevelopmental Disorders, 10th International Meeting on Metabotropic Glutamate Receptors, 2021
43. Target-based approaches to the development of new therapeutics for neurodevelopmental disorders. Invited presentation, Vanderbilt Quantitative and Chemical Biology Program presentation, January 2022.
44. Target-based approaches to the development of new therapeutics for neurodevelopmental disorders. 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. The drug discovery Process: A case study for the treatment of Parkinson's disease. APMI Introduction to Clinical and Translational Research, Vanderbilt University, April 2022.
47. Exploration of group II metabotropic glutamate receptor modulation in mouse models of Rett syndrome and MECP2 Duplication syndrome. International Rett Syndrome Foundation, April 2022.

48. Responsible Conduct in Research seminar, “Collaborations with Industry”, Vanderbilt University, May 2022.
49. Rescue of behavioral phenotypes in *Tcf4*^{+/-} mice by overexpression of MeCP2. Pitt Hopkins Syndrome Research Foundation, June 2022.
50. Chair of nanosymposium “Rett syndrome”, Society for Neuroscience, San Diego, CA, November 2022.
51. mGlu4 modulators for Parkinson’s disease, Southern Research Institute. December 2022.
52. Responsible Conduct in Research seminar, “Collaborations with Industry”, Vanderbilt University, May 2023.

Abstracts

(***=Best poster winner)

1. **Burns, CM**, Obermiller PS, Emeson RB. RNA editing of AMPA receptor subunit (GluR-B) mRNA. , Society for Neuroscience Abstracts, 1993.
2. **Burns CM**, Rueter SM, Emeson RB. Molecular mechanisms mediating the editing of glutamate receptor (GluR-B) RNA transcripts. Albany Conference, RNA Editing, 1994.
3. Rueter, SM, **Burns CM** and Emeson RB. *In vitro* editing of glutamate receptor (GluR-B) RNA transcripts. RNA Processing: Cold Spring Harbor Laboratory, 1995.
4. **Burns CM**, Chu H, Rueter SM, Sanders-Bush E, Emeson RB. Identification and characterization of RNA editing within the serotonin 2C receptor. Society for Neuroscience Abstracts, 1996.
5. Chu H, **Burns C**, Canton H, Emeson RB, Sanders-Bush E. Functional characterization of rat serotonin 5-HT_{2C} receptor editing isoforms. Society for Neuroscience Abstracts, 1996.
6. Rueter SM, **Burns CM**, Emeson RB. Characterization of AMPA receptor subunit (GluR-B) RNA editing in rat brain nuclear extracts. Society for Neuroscience Abstracts, 1996.
7. **Burns CM**, Chu H, Rueter SM, Sanders-Bush E, Emeson RB. RNA editing of transcripts encoding the serotonin 2C receptor. EMBO workshop on RNA Editing, 1996.
8. **Burns CM**, Chu H, Rueter SM, Hutchinson LK, Canton H, Sanders-Bush E, Emeson RB. RNA editing of serotonin 2C receptor transcripts. RNA Society Meeting, 1997.
9. **Niswender CM**, Copeland S, Emeson RB and Sanders-Bush E. Identification and Functional Characterization of Edited Human Serotonin 2c Receptor Isoforms. 4th IUPHAR Satellite Meeting on Serotonin, 1998.
10. **Niswender CM**, Copeland SC, Dilley G., Meltzer HY, Overholser JC, Stockmeier CA, Emeson RB, Sanders-Bush E. RNA editing of human serotonin 2C receptor transcripts. Society for Neuroscience Abstracts, 1998.

11. Berg KA, Cropper JD, **Niswender CM**, Sanders-Bush E, Emeson RB, Clarke WP. Activation of PLC and PLA₂ by h5-HT_{2C} receptor RNA-edited isoforms. Society for Neuroscience Abstracts, 1999.
12. **Niswender CM**, McKnight GS. Cre recombinase-mediated expression of a constitutively active form of protein kinase A. Keystone Conference, Obesity and the Regulation of Energy Homeostasis, Taos, NM, 2001.
13. Willis BS, **Niswender CM**, McKnight GS. Cre recombinase-mediated expression of dominant-negative and constitutively active protein kinase A subunits. Society for Neuroscience Abstracts, 2001.
14. **Niswender CM**, Willis BS, Sweet IR, Wallen A, Thompson B, Wu C, Lange AJ, McKnight GS. Expression of a constitutively active PKA holoenzyme in the liver results in glucose intolerance and impaired glucose-stimulated insulin secretion in mice. Keystone Conference, Toward Understanding Islet Biology, Keystone, CO, 2003.
15. **Niswender CM**, Myers KA, Banko JL, Rodriguez AL, Edl J, Zhang Y, Shirey JK, Saleh SA, Weaver CD, Conn PJ. Identification of novel allosteric modulators of group III mGluRs: New tools for the study of synaptic transmission. 5th Meeting on Metabotropic Glutamate Receptors, Taormina, Italy, 2005.
16. Edl J, Rodriguez AL, Tamagnan G, Alagille D, Johnson RL, **Niswender C**, Myers K, Conn PJ. Characterization of structural analogs of a Group III mGluR agonist and mGluR4/5 allosteric modulators. Society for Neuroscience Abstracts, 2005.
17. Myers KA, **Niswender CM**, Williams R, Edl J, Saleh S, Jones CK, Weaver CD, Orton D, Conn PJ. Characterization of novel allosteric antagonists of metabotropic glutamate receptor subtype 7. Society for Neuroscience Abstracts, 2006.
18. Brady AE, Shirey JK, Rodriguez AL, **Niswender CM**, Weaver CD, Conn, PJ. A high throughput functional screen for the identification of selective allosteric ligands of the M1 mAChR. Society for Neuroscience Abstracts, 2006.
19. Edl J, Banko JL, Myers KA, **Niswender CM**, Conn PJ. Developmental differences in group III mGluR regulation of synaptic transmission in area CA1 of the rat hippocampus. Society for Neuroscience Abstracts, 2006.
20. **Niswender CM**, Myers KA, Williams R, Ayala J, Luo Q, Saleh S, Jones CK, Weaver CD, Orton D, Conn PJ. Permissive antagonism induced by novel allosteric antagonists of metabotropic glutamate receptor 7. American College of Neuropsychopharmacology Abstracts, 2006.
21. Conn PJ, Weaver CD, **Niswender C**, Brady A, Shirey J, Edl J. Discovery and characterization of novel allosteric modulators of GPCRs. American College of Neuropsychopharmacology Abstracts, 2006.
22. **Niswender CM**, Jones CK, Weaver CD, Rodriguez AL, Chen Y, Shirey JK, Brady AE, Marlo JE, Luo Q, Xianzhang M, Williams L, Hammond AS, Myers KA, Orton D, Williams R, Days EL, Nalywajko NT, Williams, M, Conn PJ. Allosteric modulation of metabotropic glutamate receptor 5, M1 and M4 muscarinic receptors: potential therapeutic directions for schizophrenia. Southeastern Pharmacology Society Abstracts, 2006.
23. **Niswender CM**, Weaver CD, Lindsley CW, Jones CK, Lewis M, Marlo JE, Shirey JK, Xiang Z, Brady AE, Orton D, Williams R, Rodriguez AL, Yin H, Days EL, Farmer C, Luo Q, Xianzhang M, Myers KA, Ayala JE, Nalywajko NT, Lorsen KA, Williams M, Conn PJ. High Throughput Screening, Medicinal Chemistry,

Physiology, and Behavioral Pharmacology at Vanderbilt in Support of Drug Discovery for Targets Involved in CNS Disorders. 8th Annual Rett Syndrome Symposium, 2007.

24. ***Bridges T, Jones C, Brady A, Marlo J, Rodriguez A, **Niswender C**, Williams R., Kim K., Sheffler D, Grier M, Weaver D, Conn PJ, Lindsley C. Novel allosteric modulation of the M1 muscarinic receptor: agonists and potentiators for the treatment of Alzheimer's disease and schizophrenia. ACS-CNS Medicinal Chemistry Conference, 2007.

25. Myers-Johnson KA, **Niswender CM**, Luo Q, Ayala JE, Rodriguez AL, Marlo JE, Days EL, Nalywajko NT, Lornsen KA, Williams M, Lewis M, Weaver CD, Conn PJ. Discovery, synthesis, and SAR of a series of novel positive allosteric modulators of metabotropic glutamate receptor subtype 4. Society for Neuroscience Abstracts, 2007.

26. ***Shirey, JK, Xiang Z, Orton D, Brady AE, Johnson KA, Williams R, Ayala JE, Rodriguez AL, Wess J Weaver CD, **Niswender CM**, Conn PJ. An allosteric potentiator suggests a role for M₄ muscarinic acetylcholine receptor (mAChR) in modulating excitatory hippocampal synaptic transmission. Experimental Biology/American Society of Pharmacology and Therapeutics Abstracts, 2008.

27. Bridges TM, Jones CK, Brady AE, Sheffler DJ, Marlo JE, **Niswender CM**, Williams R, Williams L, Mulder MJ, Lewis M, Daniels RN, Davis AA, Lah JJ, Levey AI, Weaver CD, Conn PJ, Lindsley CW. Discovery and characterization of novel highly-selective agonists and antagonists of mAChR1: In-vitro and in-vivo profiles relevant to Alzheimer's disease and schizophrenia. American Society of Pharmacology and Experimental Therapeutics Abstracts, 2008.

28. Bridges, TM, Jones CK, Brady AE, Shirey JK, Kennedy JP, Rodriguez AL, **Niswender CM**, Williams R, Orton D, Gentry PR, Williams L, Mulder M, Weaver CD, Conn PJ, Lindsley CW. Subtype-selective allosteric modulation of the M₄ muscarinic acetylcholine receptor. American Chemical Society Meeting Abstracts, 2008.

29. Lewis M, Sheffler D, Williams R, Bridges TM, Kennedy PJ, Brogan JT, Mulder MJ, Williams L, Nalywajko NT, **Niswender CM**, Weaver CD, Conn PJ, Lindsley CW. The discovery and development of a highly selective and centrally active M1 antagonist. American Chemical Society Abstracts, 2008.

30. ***Days, E, Lewis M, Mi D, Luo Q, Dorset D, Bailey S, Farmer C, **Niswender C**, Conn, PJ, Weaver CD. Discovery of novel allosteric modulators of metabotropic glutamate receptor 8 (mGluR8) using thallium flux modulation in high throughput screening. Society for Biomolecular Screening Abstracts, 2008.

31. ***Shirey, JK, Xiang Z, Orton D, Brady AE, Johnson KA, Williams R, Ayala JE, Rodriguez AL, Wess J Weaver CD, **Niswender CM**, Conn PJ. An allosteric potentiator of M₄ muscarinic acetylcholine receptor (mAChR) modulates excitatory hippocampal synaptic transmission. Keystone Conference, G Protein Coupled Receptors: New Insights in Functional Regulation and Clinical Application, Killarney, Ireland, 2008.

32. Conn PJ, Rodriguez AL, Ayala JE, Jones CK, Barrett R, **Niswender CM**, Weaver CD, Jadhav S, Sheffler DJ, Hammond AS, Williams R, Sharma S, Lindsley CW. Allosteric modulators of metabotropic glutamate receptor 5 as a novel approach for the treatment of CNS disorders. 6th International Meeting on Metabotropic Glutamate Receptors, Taormina, Sicily, Italy, 2008.

33. Jones CK, Xiang Z, Jones PJ, Byun NE, Hackler EA, Rodriguez AL, Ayala JE, **Niswender CM**, Jadhav S, Sheffler DJ, Hammond AS, Barrett R, Thompson AD, Williams R, Gore CJ, Weaver CD, Lindsley CW, Conn PJ. Novel allosteric modulators of metabotropic glutamate receptors 2 and 5 for the treatment of schizophrenia. 6th International Meeting on Metabotropic Glutamate Receptors, Taormina, Sicily, Italy, 2008.

34. **Niswender CM**, Johnson KA, Weaver CD, Jones CK, Luo Q, Rodriguez AL, Marlo JE, de Paulis T, Thompson AD, Days E, Nalywajko T, Austin C, Williams M, Ayala JE, Williams R, Lindsley CW, Conn PJ. Allosteric modulation of mGluR4: a novel therapeutic direction for the treatment of Parkinson's disease. 6th International Meeting on Metabotropic Glutamate Receptors, Taormina, Sicily, Italy, 2008.
35. **Niswender CM**, Johnson KA, Luo Q, Williams R, Ayala JE, Saleh S, Orton D, Weaver CD, Conn PJ. Permissive antagonism induced by negative allosteric modulators of mGluR7. 6th International Meeting on Metabotropic Glutamate Receptors, Taormina, Sicily, Italy, 2008.
36. **Niswender CM**, Hopkins CR, Jones CK, Thompson AD, Engers S, Williams R, Zhou S, Salovich JM, Cheung YY, Gogliotti R, Gentry P, Johnson KA, Jadhav S, Menon U, Zamorano R, Days EL, Lindsley CW, Weaver CD, Conn PJ. Recent progress in the development of positive allosteric modulators of mGluR4 for the treatment of Parkinson's disease. Society for Neuroscience Abstracts, 2009.
37. Sheffler CJ, Williams R, Bridges TM, Xiang Z, Kane AS, Byun NE, Mock MM, Zheng F, Lewis LM, Jones CK, **Niswender CM**, Weaver CD, Lindsley CW, Conn PJ. A novel selective muscarinic acetylcholine receptor subtype 1 (M1 mAChR) antagonist reduces seizures without impairing hippocampal dependent learning. Society for Neuroscience Abstracts, 2009.
38. **Niswender CM**, Hopkins CR, Jones CK, Thompson AD, Engers S, Williams R, Zhou S, Salovich JM, Cheung YY, Gogliotti R, Gentry P, Johnson KA, Jadhav S, Menon U, Zamorano R, Days EL, Lindsley CW, Weaver CD, Conn PJ. The development of positive allosteric modulators of mGluR4 for the treatment of Parkinson's disease. International Parkinson's Disease Congress, 2009.
39. Engers DW, Le U, Zhou Y, Jones CK, Thompson AD, Jadhav S, Menon UN, Zamorano R, Daniels JS, Morrison R, Blobaum AL, Weaver CD, Conn PJ, Lindsley CW, **Niswender CM**, Hopkins CR. Discovery and SAR development of a series of *N*-(4-acetamido)- and 4-(2,5-dioxopyrrolidin-1-yl)phenylpicolinamides as Positive Allosteric Modulators of Metabotropic Glutamate Receptor 4: A Novel Approach for the Treatment of Parkinson's Disease. High Throughput Chemistry and Chemical Biology Gordon Conference, Les Diablerets, Switzerland, June 2010.
40. Gogliotti RD, Hopkins CR, Jones CK, Thompson AS, Engers D, Salovich JM, Cheung Y-Y, Williams R, Gentry PR, Zhou Y, Johnson K, Jadhav S, Menon UN, Zamorano R, Lindslye CW, Conn PJ, **Niswender CM**. Discovery and SAR development of positive allosteric modulators of metabotropic glutamate receptor 4: a novel approach for the treatment of Parkinson's Disease. French American Chemical Society, Obernai France, June 2010.
41. Utley TJ, Lebois EP, Bridges TM, Melancon BJ, Wood MR, **Niswender CM**, Lindsley CW, Conn PJ. Identification and characterization of a novel M1 selective muscarinic actylcholine receptor antagonist from an M1 agonist scaffold. Society for Neuroscience Abstracts, 2010.
42. Johnson KA, Sheffler CJ, **Niswender CM**, Xiang Z, Conn PJ. Group II metabotropic glutamate receptor activation induces long-term depression of excitatory transmission in the substantia nigra pars reticulata. Society for Neuroscience Abstracts, 2010.
43. Yin S, Zamorano R, Conn PJ, **Niswender CM**. Histamine: an endogenous allosteric modulator of metabotropic glutamate receptors. Society for Neuroscience Abstracts, 2010.
44. **Niswender CM**, Hopkins CR, Jones CK, Engers D, Thompson AD, Gogliotti RD, Blobaum AE, Jadhav S, Salovich JM, Cheung Y-Y, Morrison RD, Mulder ML, Bolinger J, Dawson ES, Zamorano R, Vinson PN,

Bubser M, Brewer KA, Daniels JS, Lindsley CW, Conn PJ. mGluR4 positive allosteric modulator development for the treatment of CNS disorders. Society for Neuroscience Abstracts, 2010.

45. Thompson AD, Jones CK, Bubser M, **Niswender CM**, Hopkins CR, Engers D, Jadhav S, Lindsley CW, Conn PJ. VU0364770, a potent and systemically active positive allosteric modulator of mGluR4, produces robust efficacy in preclinical rodent models of Parkinson's Disease. Society for Neuroscience Abstracts, 2010.

46. Herman EJ, Gregory KJ, Jones CK, Hammond AS, Stauffer SR, Manka J, Weaver C, **Niswender CM**, Steckler T, Lavreysen H, MacDonald G, Bartolome JM, Mackie C, Lindsley CW, Conn PJ. Optimization of n-aryl piperazines as selectivity mGluR5 potentiators with efficacy in a rodent model predictive of anti-psychotic activity. Society for Neuroscience Abstracts, 2010.

47. Vinson PN, Hammond AS, Rodriguez AL, Townsend SD, **Niswender CM**, Lindsley CW, Conn PJ. Novel allosteric ligands of mGluR5 conduct unique actions by binding to a distinct site. Society for Neuroscience Abstracts, 2010.

48. Noetzel M, Cho HP, Days E, Zhou Y, Rodriguez AL, Steckler T, Lavreysen H, Stauffer SR, **Niswender CM**, Lindsley CW, Weaver CS, Conn PJ. Receptor expression level influences the effect of allosteric modulators at metabotropic glutamate receptor 5. Society for Neuroscience Abstracts, 2010.

49. **Niswender CM**, Jones CK, Hopkins CR, Thompson AD, Bubser M, Engers DW, Gogliotti RD, Blobaum AL, Salovich JM, Cheung YY, Morrison RD, Dawson ES, Zamorano R, Brewer KA, Daniels JS, Lindsley CW, Conn PJ. mGlu4 receptor positive allosteric modulator development for the treatment of CNS disorders. 7th International Meeting on Metabotropic Glutamate Receptors, Taormina, Sicily, Italy, 2011.

50. Blobaum AL, Morrison RD, Jadhav S, Engers DW, Lindsley SR, Zhou Y, Gogliotti RD, Jones CK, **Niswender CM**, Conn PJ, Lindsley CW, Hopkins CR, Daniels JS. Drug metabolism and disposition of a novel N-4-(2,5-dioxopyrrolidin-1-yl)phenylpicolinamide series of positive allosteric modulators of metabotropic glutamate receptor 4: identification of ML182 as an orally efficacious mGluR4-PAM. 7th International Meeting on Metabotropic Glutamate Receptors, Taormina, Sicily, Italy, 2011.

51. Conn PJ, Stauffer SR, Zhou S, Manka J, Williams R, Noetzel MJ, Gregory KJ, Vinson P, **Niswender CM**, Jones CK, Steckler T, MacDonald G, Lindsley CW. Allosteric modulators of metabotropic glutamate receptor 5 for treatment of schizophrenia. 7th International Meeting on Metabotropic Glutamate Receptors, Taormina, Sicily, Italy, 2011.

52. Dawson ES, Smith JA, **Niswender CM**, Hopkins CR, Gogliotti RD, Stauffer SR, Lindsley CW, Conn PJ. Shape-based virtual screens to identify novel group I and III mGlu receptor allosteric modulator chemotypes. 7th International Meeting on Metabotropic Glutamate Receptors, Taormina, Sicily, Italy, 2011.

53. Engers DW, Le UM, Zhou Y, Thompson AD, Jadhav S, Gogliotti RD, Lindsley SR, Bolinger JL, Menon UN, Zamorano R, Daniels JS, Morrison RD, Blobaum AL, Jones CK, Weaver CD, Conn PJ, Lindsley CW, **Niswender CM**, Hopkins CR. Discovery and SAR development of a novel series of N-4-(2,5-dioxopyrrolidin-1-yl)phenylpicolinamides, including ML182, as positive allosteric modulators of metabotropic glutamate receptor 4: a novel approach for the treatment of Parkinson's disease. 7th International Meeting on Metabotropic Glutamate Receptors, Taormina, Sicily, Italy, 2011.

54. Gregory KJ, Dong EN, Reiff SD, Rook JM, Noetzel MJ, Cho HP, Kaufmann KW, Manka JT, Zhou YS, Vinson PN, Stauffer SR, **Niswender CM**, Lindsley CW, Meiler J, Conn PJ. Application of an operational model of allostery to investigate the structural determinants of positive allosteric modulator of metabotropic

glutamate receptor 5. 7th International Meeting on Metabotropic Glutamate Receptors, Taormina, Sicily, Italy, 2011.

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Receptor 7 (mGlu₇) Negative Allosteric Modulators. Vanderbilt Institute of Chemical Biology Research Symposium. Nashville, TN. August 2018.

112. Fisher NM, Luscombe VB, Gogliotti RG, Moore AM, McDonald AJ, Conn PJ, **Niswender CM**. mGlu₇ dysfunction in neurodevelopmental disorders. Vanderbilt Pharmacology Retreat, Nashville, TN, October 2018.

113. Vermudez SD, Gogliotti RG, Stansley BJ, Fisher NM, Engers JJ, Lindsley CW, Conn PJ, **Niswender CM**. Modulating the metabotropic glutamate receptor 3 as a potential therapeutic intervention for MECP2-associated disorders. Society for Neuroscience, 2018.

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115. Moehle MS, Rook JM, Foster DJ, Yohn SE, **Niswender CM**, Lindsley CW, Jones CK, Conn P. Selective antagonists of the M4 muscarinic acetylcholine receptor relieve parkinsonian motor deficits. Society for Neuroscience, 2018.

116. Gogliotti RG, **Niswender CM**. Cross-species expression profiling for improved target selection in Rett syndrome. Drug Discovery and Development Conference, San Francisco, CA. December 2018.

117. Fisher NM, Gogliotti RG, Gould RG, Luscombe VB, Badivuku H, McDonald AJ, Jones CK, Lindsley CW, Conn PJ, **Niswender CM**. mGlu₇ dysfunction as a novel cause of neurodevelopmental disease. Molecular Pharmacology Gordon Conference, Ventura, CA, February 2019.

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119. Gogliotti RG, Fisher NM, Vermudez SA, Arthur B, Conn PJ, **Niswender CM**. RNA-sequencing of Rett syndrome autopsy samples identifies mutation-specific patterns of gene expression. Epigenetics in Human Disease Conference, Banff, AB. March, 2019.

120. Fisher NM, Buch A, Luscombe V, Gogliotti R, Conn PJ, **Niswender CM**. A point mutation associated with developmental delay and epilepsy leads to loss-of-function of the mGlu₇ receptor that can be reversed by positive allosteric modulation. Vanderbilt Kennedy Center Science Day, 2019.

121. Badivuku, H, Chennareddy S, Gould RW, Fisher NM, Gogliotti RG, Jones CK, **Niswender CM**. Characterization of Rett Syndrome Model Mice by Electroencephalography. Vanderbilt Kennedy Center Science Day, 2019.

122. Vermudez SAD, Gogliotti RG, Arthur B, Morales CD, Moxley Y, Buch A, Conn PJ, **Niswender CM**. Evaluating the beneficial and adverse effects of genetically targeting MECP2 in Rett syndrome. Vanderbilt Pharmacology Retreat, October 2019.

123. Vermudez SAD, Gogliotti RG, Buch A, Arthur B, Morales CD, Moxley Y, Rajpal H, Conn PJ, **Niswender, CM**. Investigating the effects of genetically increasing MECP2 dosage in mouse models of typical and atypical Rett syndrome. Society for Neuroscience Connectome, January 2021.

124. Vermudez, S.A.D., A. Buch, K. Weiss, Y. Moxley, H. Rajpal, R.G. Gogliotti, and **C.M. Niswender**. Evaluating the effects of genetically increasing MECP2 dosage in Pitt-Hopkins syndrome model mice. Genetic Modifiers Workshop, 2021.
125. Dong, H.W., K. Weiss, K. Baugh, **C. M. Niswender**, and J. L. Neul. Potentiation of mGluR(7) rescues neurophysiological features in a mouse model of Rett syndrome. Society for Neuroscience, 2021.
126. Dogra, S., B.J. Stansley, Z. Xiang, R. G. Gogliotti, F. Nicoletti, C.W. Lindsley, **C. M. Niswender, M. E. Joffe**, and P. J. Conn. Activating mGlu3 metabotropic glutamate receptors rescues schizophrenia-like cognitive deficits through metaplastic adaptations within the hippocampus. Society for Neuroscience, 2021.
127. Buch, A., N.M. Fisher, S.A.D. Vermudez, K. Weiss, Y. Moxley, R. G. Gogliotti, and **C. M. Niswender**. Understanding the effects of genetically increasing mGlu7 expression in Rett syndrome model mice. Vanderbilt Kennedy Center Science Day, 2021.
128. Lei, X., A. L. Rodriguez, **C. M. Niswender**. Mechanisms of orthosteric agonist and allosteric modulator activation of mGlu₇. Vanderbilt Kennedy Center Science Day, 2021.
129. Barbaro, L. A.L. Rodriguez, A.N. Blevins, J.W. Dickerson, N. Billard, O. Boutaud, J.L. Rook, **C. M. Niswender**, P.J. Conn, D.W. Engers, C.W. Lindsley. Discovery of “molecular switches” within a series of mGlu5 allosteric ligands driven by a “magic methyl” effect affording both PAMs and NAMs with in vivo activity, derived from an M1 PAM chemotype. 10th Meeting on Metabotropic Glutamate Receptors, Sicily, Italy, 2021.
130. Yamada, Y., K. Gilliland, Z. Xiang, D. Haymer, K.E. Crocker, M.T. Loch, M.L. Schulte, A.L. Rodriguez, **C.M. Niswender**, P.J. Conn, C.W. Lindsley, B.J. Melancon. Positive allosteric modulators (PAMs) of the group II metabotropic glutamate receptors: Design, synthesis, and evaluation as ex-vivo tool compounds. 10th Meeting on Metabotropic Glutamate Receptors, Sicily, Italy, 2021.
131. Buch, A., Fisher, N.M., Vermudez S.A.D., Weiss, K., Moxley, Y., Gogliotti, R.G., **Niswender, C.M.** Phenotypic profiling of mGlu₇ overexpressing mice and its implications for neurodevelopmental disorders such as Rett syndrome. American Society of Pharmacology and Experimental Therapeutics meeting. Philadelphia, PA, April, 2022.
132. Freitas, G.A., Vermudez, S.A.D., Gogliotti, R.G., **Niswender, C.M.** Impact of MeCP2 overexpression on myelination defects found in Pitt-Hopkins syndrome model mice. American Society of Pharmacology and Experimental Therapeutics meeting. Philadelphia, PA, April, 2022.
133. Lei X. Rodriguez, A.L., **Niswender C.M.** Mechanisms of orthosteric agonist and allosteric modulator activity at mGlu₇. American Society of Pharmacology and Experimental Therapeutics meeting. Philadelphia, PA, April, 2022.
134. Freitas, G.A., Vermudez, S.A.D., Gogliotti, R.G., **Niswender, C.M.** Effects of Genetic Upregulation of MeCP2 on Defective Myelination Caused by Mutations in Transcription Factor 4. International Rett Syndrome Research Conference. Nashville, TN, April, 2022.
135. Gonzalez, S., Chenareddy, S. Cikowski, J.J., **Niswender, C.M.**, Gogliotti, R.G. Behavioral effect of modulating the heat shock response in a mouse model of Rett syndrome. International Rett Syndrome Research Conference. Nashville, TN, April, 2022.

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137. Buch, A., Fisher, N.M., Vermudez S.A.D., Weiss, K., Moxley, Y., Gogliotti, R.G., **Niswender, C.M.** Investigating the role of mGlu7 receptor subtypes: implications of Rett syndrome and neurodevelopmental disorders. International Rett Syndrome Research Conference. Nashville, TN, April, 2022.
138. Lei X., Rodriguez, A.L., **Niswender C.M.** Mechanisms of mGlu7 activation by different orthosteric agonists and allosteric modulators. International Rett Syndrome Research Conference. Nashville, TN, April, 2022.
139. Lei X., Rodriguez, A.L., **Niswender C.M.** Mechanisms of mGlu7 activation by different orthosteric agonists and allosteric modulators. American Society for Pharmacology and Experimental Therapeutics, Saint Louis, MO, May 2023.
140. Freitas, G.A., Vermudez, S.A.D., Bavadekar, V.M. Gogliotti, R.G., **Niswender, C.M.** Effects of MeCP2 upregulation on astrocyte development in a Pitt Hopkins syndrome mouse model. American Society for Pharmacology and Experimental Therapeutics, Saint Louis, MO, May 2023.
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142. Lei X., Rodriguez, A.L., **Niswender C.M.** 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, A.L., **Niswender C.M.** Profiling context-dependent activity of allosteric modulators of mGlu7. International Rett Syndrome Research Conference. Nashville, TN, June, 2023.
144. Coleman, J.S., Capstick, R.A., Rathnayake, U.A., Parr, L., Chang, S., Thompson A.D., Qi, A., **Niswender C.M.**, Boutaud O., Cho H.P., Jones C.K., Engers D.W., Lindsley C.W. 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.