

CURRICULUM VITAE
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Educational Background

5/94 B.A., Psychology, Cum Laude, Hope College, Holland, MI
4/99 M.A., Behavioral Neuroscience, Wayne State University, Detroit, MI
12/01 Ph.D., Behavioral Neuroscience, Wayne State University, Detroit, MI
7/05 Post-doctoral Research Associate, Department of Anatomy and Cell Biology,
Wayne State University School of Medicine, Detroit, MI

Professional History

9/18-present Director, Integrative Neuroscience Program, Binghamton University, Binghamton, NY
9/14-present Professor, Department of Psychology, Binghamton University, Binghamton, NY
1/11-present Chair, Institutional Animal Care and Use Committee, Binghamton University,
Binghamton, NY
9/15-9/16 Interim Chair, Department of Psychology, Binghamton University, Binghamton, NY
1/13-12/19 Co-Director, Howard Hughes Medical Institute grant for Undergraduate Research at
Binghamton University, Binghamton, NY
1/10-8/14 Associate Professor, Department of Psychology, Binghamton University, Binghamton,
NY
8/09-1/10 Interim Behavioral Neuroscience Graduate Director, Binghamton University,
Binghamton, NY
8/05-12/09 Assistant Professor, Department of Psychology, Binghamton University,
Binghamton, NY
11/01-7/05 Post-doctoral Research Associate, Department of Anatomy and Cell Biology,
Wayne State University School of Medicine, Detroit, MI
9/96- 11/01 Grad. Researcher, Department of Psychology, Wayne State University, Detroit, MI
6/94-9/96 Sleep Research Asst., Henry Ford Hospital, Detroit, MI

Memberships and Advisory Roles

1996- present Society for Neuroscience member
2005- present Member of Integrative Neuroscience Program, Binghamton University
2005- present Member of the Center for Developmental Psychobiology, Binghamton University

2008- present	Movement Disorders Society member
2008- present	Phi Eta Sigma honorary member
2010- present	International Basal Ganglia Society
2010- 2020	Faculty Advisor for Delta Epsilon Mu, Pre-health fraternity
2012- 2018	Handling Editor for ISRN Neuroscience
2012- 2019	Faculty Associate for Mountainview Residential Community
2012- 2014	President's Scholars Mentor
2012- 2014	Dyskinesia Therapeutics Working Group for Michael J. Fox Foundation
2014- 2020	Member of the Center for Affective Sciences, Binghamton University
2017-present	Associate Handling Editor for <i>Journal of Neurochemistry</i>
2019-present	American Society for Neural Therapy and Repair Member
2019-present	Emerging Targets Advisory Board for Michael J. Fox Foundation
2020-present	Editorial Board, <i>Experimental Neurology</i>

Awards

1997, 1998	Spring/Summer Research Assistant Award, Wayne State University
1999	Young Investigator Award (Society for the Study of Ingestive Behavior)
1999	Young Investigator AccuScan Travel Award
2001	Stagner Memorial Award for Outstanding Research, Teaching and Service
2003, 2004	Michigan Chapter Society for Neuroscience Post-doctoral Travel Award Recipient
2008	Phi Eta Sigma Faculty Award
2009	Dean's Research Semester Award for Junior Faculty
2013	Faculty Recognition Award from Service for Students with Disabilities
2018	Chancellor's Award for Excellence in Teaching
2020	Binghamton University Service Recognition Award
2023	Binghamton University Career Champion Award

Grant Review Panels

2008-2009	Michael J. Fox Review Panel on Target Validation for Parkinson's Disease
2009	Ad hoc Reviewer for Michael J. Fox Foundation
2009	Ad hoc Reviewer for New Zealand Neurological Society
2010-2012	Ad hoc Reviewer for Parkinson's Disease Society
2010	Reviewer for NIH Director's Opportunity for Research in 5 Thematic Areas (RC4)
2010	Ad hoc Reviewer for Long Island University Intermural Research Awards
2010	Ad hoc Reviewer for Prinses Beatrix Fonds, Dutch Research Institute
2010	Ad hoc Reviewer for Michael J. Fox Rapid Response Innovation Awards Program
2010-present	Ad hoc Member for NIH Study Section Clinical Neuroplasticity & Neurotransmitters
2011	Chair and Reviewer for NIH Special Emphasis Panel on Brain Injury
2011-present	Assessor/Reviewer for Michael J. Fox Grant Program on Target Validation
2011	Ad hoc Reviewer for Prinses Beatrix Fonds, Dutch Research Institute
2011-2015	Reviewer for Michael J. Fox Grant Dyskinesia Challenge Program
2012	Advisory Board, NIH Udall Parkinson's Disease Center, Michigan State University
2012-present	Reviewer for NIH Study Section Neurobiology 2 (NURE-2)
2012-present	Reviewer/Panelist for Michael J. Fox Foundation Therapeutics Pipeline Initiatives
2014	Reviewer/Panelist for Parkinson's Disease Foundation
2014	Ad hoc Reviewer for Parkinson's Disease UK
2014	Ad Hoc for Cure Parkinson's Disease (PD)

2015	External Assessor for National Health and Medical Research Council (Australia)
2017-present	Ad hoc Member for NIH Study Section Blueprint Neurotherapeutics Network
2018	Reviewer, Department of Defense, Congressionally Directed Research Programs
2018	Reviewer, National Science Centre, Poland
2019-2020	Ad hoc Reviewer, United States Veterans Affairs (NURE)
2020-present	Standing Member, United States Veterans Affairs (NURE)

Manuscript Reviews

Acta Neuropathologica	Brain
Journal of Neuroscience	Journal of Clinical Investigation
Movement Disorders	Journal of Pharmacology & Experimental Therapeutics
Biochemical Pharmacology	British Journal of Pharmacology
Experimental Neurology	Pharmacological Reviews
Synapse	Progress in Neuro-psychopharmacology & Biological Psychiatry
Brain Research	Psychopharmacology
Behavioral Neuroscience	Neuropharmacology
European Journal of Neuroscience	European Journal of Pharmacology
Journal of Neurochemistry	Neurobiology of Disease
Journal of Neurology	Pharmacology Biochemistry & Behavior
Molecular Neurobiology	Pharmacological Reports
FASEB	Neuroscience Letters
Basal Ganglia	Neurochemistry International
Journal of Neuroscience Research	Journal of Parkinson's Disease
Life Sciences	ISRN Neuroscience
ACS Neuroscience	Neuroscience
Central European Journal of Medicine	Brain Stimulation
Progress in Neurobiology	European Neuropsychopharmacology
PLOS-ONE	Neurotoxicology Research
Scientific Reports	Journal of Neural Transmission
Science Advances	Expert Opinion on Drug Metabolism and Toxicology
Gene Therapy	

Patents:

Inventor: **Bishop, C.** WO 2020/087031 A1 "Combination serotonin specific reuptake inhibitor and serotonin 1A receptor partial agonist for reducing L-DOPA-induced dyskinesia". (Filed 4/30/20). Application Pending

Extramural Funding

Current Grants:

MPI/PD: **Bishop, C.** R01 NS122226-01A, NINDS. "Interrogating maladaptive serotonin raphe-striatal plasticity in L-DOPA-induced dyskinesia". The overarching goal is to identify the mechanisms underlying the development of structural and functional maladaptation within the raphe-striatal circuit driving LID, which in turn could lead to novel, optimized targets for intervention. (12/01/2021-11/30/2026).

PI: **Bishop, C.** Michael J. Fox Foundation "Chemogenetic and pharmacological targeting of the raphe cortical pathway to reduce the development and expression of L-DOPA-induced psychosis".

The goal of this grant is to identify the neurocircuits involved in the generation of L-DOPA-induced psychosis and test a novel pharmacological treatment that corrects this treatment related side effect without altering L-DOPA motor efficacy. (9/01/2020-8/31/2023).

Sub-Contract: **Bishop, C.** PI: Salvatore, M. (University of North Texas Health Sciences Center). Department of Defense "Interrogation of nigral tyrosine hydroxylase expression in movement initiation capacity during nigrostriatal neuron loss" The objective of the proposed project is to establish the mechanisms by which exercise modulates motor circuits in toxin and genetic models of Parkinson's disease. (9/1/2019-8/31/2023).

Previous Grants:

PI: **Bishop, C.** SUNY TAF "Re-purposing the multi-target 5-HT anti-depressant Vilazodone with Amantadine to optimize L-DOPA therapy". This SUNY grant seeks to validate a combination therapy for the optimized treatment of Parkinson's disease using a preclinical model. The goal with successful completion of the work is to license this invention currently under patent review for licensing. (1/1/2021-12/31/21).

PI: **Bishop, C.** NSF I-Corp "Repurposing Serotonergic Compounds for Improved Treatment of Parkinson's Disease." This program uses experiential education to help researchers gain valuable insight into entrepreneurship, starting a business or industry requirements and challenges. Our goal to to develop a strategic plan to move a marketable invention, repurposed pharmaceuticals for improved treatment of Parkinson's disease, from concept to product while fostering a startup company. (12/1/2021-5/31/2022).

Sub-Contract: **Bishop, C. R44**, PI: Sortwell (Michigan State University) NINDS. "The Rat Pre-Formed Alpha-Synuclein Fibril Model of Parkinson's Disease". The objective of this research is to determine how seeding synuclein in basal ganglia affects known parameters of dopamine release in a novel rodent model of Parkinson's disease. (8/1/2019-12/31/2020).

Co-PI: **Bishop, C.** Howard Hughes Medical Institute. "Authentic research in STEM undergraduate education". The grant will fund a program that provides authentic STEM research experiences to freshmen undergraduate in the physical sciences, mathematics, computer science and engineering. (8/01/14-7/31/19).

PI: **Bishop, C.** American Parkinson's Disease Association "Targeting cholinergic neurons of the pedunculo pontine tegmental nucleus to improve treatment of Parkinson's disease". The goal of this grant is to validate the pedunculo pontine tegmental nucleus, using chemogenetic and pharmacological techniques, as a target for the improved treatment of Parkinson's disease. Project Grant (9/01/2018-8/30/19).

PI: **Bishop, C.** Michael J. Fox Foundation. "D-512, a novel multifunctional D2/D3 receptor agonist for the treatment of PD". The aim of this work is to determine whether the dopamine agonist D-512 is a useful monotherapy in a preclinical rat model of Parkinson's disease. MJFF Rapid Response Innovation Award Program (10/15/12-10/14/15).

Co-PI: **Bishop, C.** Howard Hughes Medical Institute. "Jumpstarting collaboration, fueling undergraduate research". The grant will fund a program that teams undergraduate majors in the life sciences with students in the physical sciences, mathematics, computer science and engineering to work on collaborative, interdisciplinary research projects in the life sciences. (1/01/10-12/31/14).

- PI: **Bishop, C.** Michael J. Fox Foundation. "Co-targeting of 5-HT_{1A} receptors and serotonin transporters for the treatment of L-DOPA-induced dyskinesia". The aim of this work is to determine whether coincident blockade of the serotonin targets reduces the development and long-term expression of dyskinesia in a rat model of Parkinson's disease. MJFF Dyskinesia Challenge Program (1/01/14-12/30/14).
- PI: **Bishop, C.** National Institute of Neurological Disease and Stroke. "Regulation of L-DOPA-induced dyskinesia by 5-HT_{1A} receptor mechanisms". The aim of the proposed set of experiments will be to test the hypothesis that striatal 5-HT_{1A} receptors represent a viable mechanistic target for the reduction of L-DOPA-induced dyskinesia using a validated in vivo rodent model of PD. 1R01NS059600-01 (5/01/08-4/30/14).
- PI: **Bishop, C.** Michael J. Fox Foundation. "Targeting serotonin transporters for the treatment of L-DOPA-induced dyskinesia". The aim of this work is to determine whether blockade of the serotonin transporter with selective serotonin reuptake inhibitors reduces the development and long-term expression of dyskinesia in a rat model of parkinson's disease. MJFF Dyskinesia Challenge Program (9/01/11-12/30/13).
- Co-PI: **Bishop, C.** SUNY Collaborative Grant, Upstate Medical-Binghamton University. "Non-invasive retinal imaging in animal models of Parkinson's disease". The experiments outlined in this grant aim to determine whether vascular, metabolic and circulatory dynamics in the mammalian retina predict the dopamine cell loss characteristic of idiopathic Parkinson's disease. (8/01/12-12/31/13).
- Co-PI: **Bishop, C.** Michael J. Fox Foundation. "Potential of concomitant targeting of 5-HT_{1A} and 5-HT_{2A} receptors against L-DOPA-induced dyskinesia in the hemiparkinsonian rat model". The goal of this line of inquiry is to examine if concurrent stimulation of 5-HT_{1A} and blockade of 5-HT_{2A} receptors provides interventional efficacy against the expression of L-DOPA-induced dyskinesia in a rat model of parkinson's disease. Rapid Response Innovation Award (12/01/12-11/31/13).
- Collaborator: **Bishop, C.** National Science Foundation. "Mechanisms of central IL-1 responses to stress". The work outlined in this grant aims to determine the mechanisms by which stressor exposure leads to activation of inflammatory pathways in the brain. NSF 0822129 (8/01/08-7/31/12).
- Sub-Contract: **Bishop, C.** National Institute of Neurological Disease and Stroke. "Novel pharmacotherapies for levo-dopa-induced dyskinesia". The aim of the proposed set of experiments will be to test the hypothesis that novel CNS receptors represent a clinical target for the reduction of L-DOPA-related side effects in Parkinson's Disease. SBIR to Skybridge Pharmaceuticals(10/01/09-8/30/10).
- PI: **Bishop, C.** American Parkinson Disease Association. "Dorsal raphe regulation of L-DOPA-induced dyskinesia". The proposed set of experiments investigates the influence of brain stem serotonin neurons on the development and expression of L-DOPA-induced dyskinesia. (9/01/06-8/30/07).
- PI: **Bishop, C.** National Institute of Drug Abuse. "Effects of nicotine on NPY-induced feeding and metabolism". The proposed set of experiments investigated the role of neuropeptide Y in the effects of nicotine and its withdrawal on feeding and body weight. 5F31DA006001-02. (9/01/99-8/30/01).
- Mentor: **Bishop, C.** National Institute of Neurological Disease and Stroke. "5-HT_{1A} receptor-mediated striatonigral activity in the hemiparkinsonian rat". The proposed set of experiments in this mentored fellowship to graduate student Kristin Dupre aim to test the hypothesis that striatal 5-HT_{1A} receptors reduce L-DOPA-induced dyskinesia in part through modulation of glutamate and GABA signaling using a validated in vivo rodent model of PD. 1F31NS066684-01 (9/01/09-8/30/11).

Intramural Funding

Previous Grants:

PI: **Bishop, C.** XCEED Grant, Research Foundation of Binghamton University. "Effects of co-administration of Vilazodone and Amantadine for the treatment of L-DOPA-induced dyskinesia". This pilot grant sought to leverage the effects of new and known therapeutics for optimization of L-DOPA therapy in Parkinson's disease using a preclinical model. (4/1/20-10/31/20).

PI: **Bishop, C.** Binghamton University Bridge Program. "Examining transgenic dopamine D1 receptor-cre rats for improved treatment of Parkinson's disease" The objective of the proposed project is to establish colony of transgenic rats to investigate a causal role for the striatal D1R-D3R heteromer in L-DOPA-induced dyskinesia (LID). (1/01/17-7/31/19).

Co-PI: **Bishop, C.** Transdisciplinary Areas of Excellence Grant, Binghamton University. "Treatment of Parkinson's disease using intranasal delivery via electrospray atomization". Experiments in this proposal aim to optimize intranasal delivery of anti-parkinsonian medication by novel electrospray techniques in a preclinical model of Parkinson's disease. (6/01/15-5/31/16).

Co-PI: **Bishop, C.** Interdisciplinary Collaborative Grant, Binghamton University. "Stress-induced neurodegeneration in Parkinson's disease". The experiments outlined in this grant aim to determine the possible mechanism by which stress exacerbates the cellular and behavioral correlates of Parkinson's disease. (6/01/06-5/31/07).

Training Grants (Contributor)

Contributor: **Bishop, C.** National Institutes of Health. "SUNY Upstate Bridges to Baccalaureate Program". This program aims to identify the appropriate under-represented minority students in their first year at the community college; 2) Support the students in their science courses at the community college; 3) Provide a hands-on research experience in the university setting for these students. 5R25GM056637-05. (6/01/06-present). Direct Costs: \$5,500

Industry Contracts/Collaborations

Collaboration with Melior Pharmaceuticals (Exton, PA). I serve as an advisor to this company developing novel dopaminergic compound for the improved treatment of Parkinson's disease. (4/30/12-present) Direct Costs: Ongoing

Collaboration with Renovo Neural (Cleveland, OH). We provide technical and research services to this company developing novel dopaminergic compound for the improved treatment of Parkinson's disease. (11/30/16-present) Direct Costs: Ongoing

Collaboration with Psychogenics (Tarrytown, NY). Our group is currently contracted to work with this company, providing them with conceptual and technical expertise on the rodent model of dyskinesia for novel pharmaceutical testing. (8/15/2016-present). Direct Costs: Ongoing

Collaboration with Southern Research Institute (Birmingham, AL). We are currently investigating the role of D3 receptors in the development and expression of dyskinesia and treatment efficacy in the Parkinsonian models (11/15/2015-1/1/2020). Direct Costs: N/A.

Collaboration with Neurolinx (San Diego, CA). We are presently examining the neuroanatomical substrates that support the pronounced anti-dyskinetic efficacy of a series of compounds that act as biased agonists at 5-HT receptors in the CNS (8/15/2014-1/1/2021). Direct Costs: N/A.

Collaboration with Eli Lilly (Indianapolis, IN). We developed a line of inquiry with LY compounds that may convey benefit to PD patients with medication-induced side effects. (9/1/2014-1/15/2016). Direct Costs: N/A.

Collaboration with Forest Pharmaceuticals (New York, NY). We are currently testing a novel serotonergic compound for the treatment of L-DOPA-induced dyskinesia. (7/1/13-present) Direct Costs: N/A.

Collaboration with Janssen (Beerse, Belgium). We have been testing a novel anti-inflammatory compound for improved PD treatment. (9/1/14-12/31/2015). Direct Costs: N/A.

Collaboration with Xencor (Monrovia, CA). We tested a new compound with promising characteristics for the reduction of treatment-induced side effects such as dyskinesia (6/1/2014-5/31/15). Direct Costs: N/A.

Collaboration with Epix Pharmaceuticals (Lexington, MA). The supported preclinical work aims to identify a novel glutamatergic compound for the treatment of L-DOPA-induced dyskinesia. (11/01/08-10/31/09) Direct Costs: \$42,283.

Publications (peer reviewed), +denotes graduate student, *denotes undergraduate student

93. Salvatore, M.F., Kasanga, E. A., Soto, M.I., +Centner, A., McManus, R., Shifflet, M.K., Navarrete, W., Parry, C., Han, Y., Richardson, J.R., **Bishop, C.**, Nejtek, V. (2023). Moderate intensity exercise in 6-OHDA-lesioned rats alleviates established motor deficits without obligate increase in striatal dopamine or tyrosine hydroxylase protein expression. (Submitted).
92. +Centner, A., +Del Priore, I., +Chambers, N., *Cohen, S., *Terry, M., Coyle, M., Glinski, J., Sortwell, C., **Bishop, C.** (2023). Characterization of striatal dopamine dynamics in the pre-formed fibril rat model of Parkinson's disease. (Submitted).
91. Kasanga, E.A., *Meadows, S.M., Shifflet, M.K., Geddes, J.W., **Bishop, C.**, Salvatore M.F. Ceftriaxone post-lesion prevents motor decline in hemi-Parkinson's rat model with increased nigral tyrosine hydroxylase expression contralateral, but not ipsilateral to lesion. (Submitted).
90. +Conti-Mazza, M.M., +Centner, A., Werner, D.F., **Bishop, C.** (2023). Striatal serotonin transporter gain-of-function in L-DOPA-treated hemi-parkinsonian rats. *Brain Research Jul 15*. doi: 10.1016/j.brainres.2023.148381. Epub 2023 Apr 29. (PMID: 37127174).
89. +Budrow, C., *Elder, K., Coyle, M., +Centner, A., +Lipari, N., *Cohen, S., Glinski, J., *Kinsonzi, N., *Wheelis, E., +McManus, G., Manfredsson, F.P., **Bishop, C.** (2023). Broad serotonergic actions of Vortioxetine as a promising avenue for the treatment of L-DOPA-induced dyskinesia. *Cells. 12(6):837*. doi: 10.3390/cells12060837. (PMID: 36980178).
88. +Lipari, N., +Centner, A., Glinski, J., *Cohen, S.R., Manfredsson, F.P. and **Bishop, C.** (2022). Characterizing the relationship between L-DOPA-induced dyskinesia and psychosis-like behaviors in a bilateral rat model of Parkinson's disease. *Neurobiology of Disease 176:105965*. (PMID: 36526089).
87. Morenoa, E. Casajuana-Martinb, N., Coyle, M., Campos Campos, B., Galaj, E., Llinas del Torrent, C., Seyediand, A., Read, W., Caid, N-S., Bonifazi, A., Floráne, B., Zheng-Xiong Xi, Z-X., Guitart, X., Casadó, V., Newman, A.H., **Bishop, C.**, Pardo, L., Ferré, S. (2022). Pharmacological targeting of G protein-coupled receptor heteromers. *Pharmacological Research 185:106476* (PMID: 36182040).
86. *Cohen, S.R., *Terry M.L., Coyle, M., *Wheelis, E., +Centner, A., +Smith, S., Glinski, J., +Lipari, N., +Budrow, C., Manfredsson, F.P., **Bishop, C.** (2022). Investigating the anti-dyskinetic effects of co-administered serotonin- and glutamate-acting compounds Vilazodone and Amantadine, in

- hemiparkinsonian rats. *Pharmacology, Biochemistry, and Behavior* May 2;217:173393. doi: 10.1016/j.pbb.2022.173393. (PMID: 35513119).
85. +Smith, S., *Sergio, J., Coyle, M., *Elder, K., +Centner, A., *Cohen, S., *Terry, M., *Wheelis, E., +Lipari, N., Glinski, J., +Budrow, C., **Bishop, C.** (2022). The effects of Vilazodone, YL-0919 and Vortioxetine in hemiparkinsonian rats. *Psychopharmacology* Mar 11. doi: 10.1007/s00213-022-06078-9. (PMID: 35275226).
 84. Salvatore, M.F., Kasanga, E.A., Kelley, P., Venable, K.E., Cantu, M.A., Mcinnis, T.R., Terrebonne, J., +Lanza, K., *Meadows, S.M., +Centner, A., **Bishop, C.**, Ingram, D.K. (2022). Modulation of dopamine signaling mitigate parkinsonian signs of aging: evidence from calorie restriction and modulation of dopamine uptake. *Geroscience*. May 30. doi: 10.1007/s11357-022-00583-7. (PMID: 35635679).
 83. +Lanza, K. and **Bishop C.** (2021). Dopamine D3 Receptor Plasticity in Parkinson's Disease and L-DOPA-Induced Dyskinesia. *Biomedicines* Mar 19;9(3):314. (PMID:33808538).
 82. +Conti Mazza, M., Ngyuen, V., Beilina, A., Karakoleva, E., *Coyle, M., Ding, J., **Bishop, C.**, Cookson, M.R. (2021). Combined knockout of Lrrk2 and Rab29 does not result in behavioral abnormalities *in vivo*. *Journal of Parkinson's Disease* 11(2):569-584. (PMID: 33523017).
 81. Landeck, N., +Conti Mazza, M., Duffy, M., **Bishop, C.**, Sortwell, C.E., Cookson, M.R. (2021). Using stereotaxic intracranial delivery of chemicals, proteins, or viral vectors to study Parkinson's disease. *Journal of Visualized Experiments* Feb 18;(168). (PMID: 3368258).
 80. +Lovejoy, P.C., *Foley, K., +Conti, M.M., *Meadows, S.M, **Bishop, C.** and Fiumera, A.C. (2021). The genetic basis of susceptibility to low dose paraquat and variation between the sexes in *D. melanogaster*. *Molecular Ecology* May;(30;9):2040-2053. (PMID: 33710693).
 79. +Chambers, N.E., *Coyle, M., *Sergio, J., +Lanza, K., *Saito, C., *Topping, B., Clark, S.D., **Bishop, C.** (2021). Pedunculopontine nucleus cholinergic lesion produces gait deficits and decreases dyskinesia in hemiparkinsonian rats. *European Journal of Neuroscience* Apr;53(8):2835-2847. (PMID:33426708).
 78. +Lanza, K., +Centner, A., *Coyle, M., +Di Priore, I., Manfredsson, F.P., **Bishop, C.** (2021) Genetic suppression of the dopamine D3 receptor in striatal D1 cells reduces the development of L-DOPA-induced dyskinesia. *Experimental Neurology* Feb;336:113534. (PMID: 33249031).
 77. Steece-Collier, K., Collier, T.J., Lipton, J.W., Stancati, J.A., Winn, M.E., Cole-Strauss, A., Sellnow, R., +Conti, M.M., Mercad, N.M., Nillni, E.A., Sortwell, C.E., Manfredsson, F.P. and **Bishop, C.** (2020). Striatal nurr1, but not FosB expression links a levodopa-induced dyskinesia phenotype to genotype in Fisher 344 vs. Lewis hemiparkinsonian rats *Experimental Neurology*, Aug;330:113327. (PMID:32387389).
 76. +Kiessling, C.Y., +Lanza, K., *Feinberg, E., **Bishop. C.** (2020). Dopamine receptor cooperativity synergistically drives dyskinesia, motor behavior, and striatal GABA neurotransmission in hemiparkinsonian rats. *Neuropharmacology* Sept. 1; 174:108138 (PMID:32492451).
 75. +Chambers, N.E., +Lanza, K., and **Bishop C.** (2020). Pedunculopontine nucleus degeneration contributes to both motor and non-motor symptoms of Parkinson's disease. *Frontiers in Pharmacology* Jan. 15;10:1494 (PMID: 32009944).
 74. +Lanza, K., Chemakin, K., Lefkowitz, S., Saito, C., Chambers, N. and **Bishop, C.** (2020). Reciprocal cross-sensitization of D1 and D3 receptors following pharmacological stimulation in the hemiparkinsonian rat. *Psychopharmacology*, 237(1), 155-165. (PMID: 31435690).
 73. **Bishop, C.** (2019). Neuroinflammation; fanning the flames of L-DOPA-induced dyskinesia. *Movement Disorders* 34(12):1758-1760. (PMID: 31845761).

72. +Lanza, K., Perkins, A., Deak T. and **Bishop, C.** (2019). Late aging-associated increases in L-DOPA-induced dyskinesia is associated with heightened neuroinflammation in the hemi-Parkinsonian rat. *Neurobiology of Aging* 81:190-199. (PMID: 31306813).
71. +Chambers, N.C., *Meadows, S.M., *Taylor, A., *Sheena, E., +Lanza, K., +Conti, M.M. and **Bishop, C.** (2019). Effects of muscarinic acetylcholine m1 and m4 receptor blockade on dyskinesia in the hemi-parkinsonian rat. *Neuroscience Jun 15;409:180-194* (PMID:31029732).
70. Guitart, X., Moreno, E., Rea, W., Sanchez-Soto, M., Cai, N-S., Bourque, L., **Bishop, C.**, Newman, A.H., Casado, V. and Ferre, S. (2019). Heteromerization with dopamine D3 receptor biases D1 receptor to G protein-independent signaling. Implications for L-DOPA-induced dyskinesia. *Mol Neurobiol.* 56(10):6756-6769. (PMID:30919214).
69. Sellnow, R.C., West, A.R., Steece-Collier, K., Sandoval, I.M., +Chambers, N., Benskey, M.J., **Bishop, C.** and Manfredsson, F.P. (2019). Regulation of dopamine neurotransmission from serotonergic neurons by ectopic expression of dopamine D2 autoreceptors blocks levodopa-induced dyskinesia. *Acta Neuropathologica Communications Jan 15;7(1):8.* (PMID: 30646956).
68. *Meadows, S.M., +Conti, M.M., *Gross, L., +Chambers, N., *Avnor, Y., +Ostock, C.Y., +Lanza, K. and **Bishop, C.** (2018). Combined serotonin transporter inhibition and 5-HT1A receptor stimulation with Vilazodone reduces L-DOPA-induced dyskinesia in hemi-parkinsonian rats. *Movement Disorders* 33(11):1740-1749. (PMID: 30485908)
67. +Lanza, K., *Meadows, S.M., +Chambers, N., *Nuss, E., Deak, M.M., Ferré, S. and **Bishop, C.** (2018). Behavioral and Cellular Dopamine D1 and D3 Receptor-Mediated Synergy: Implications for L-DOPA-Induced Dyskinesia. *Neuropharmacology* 138:304-314. (PMID: 29936243).
66. +Conti, M.M., +Chambers, N. and Bishop, C. (2018). A new outlook on cholinergic interneurons in Parkinson's disease and L-DOPA-induced dyskinesia. *Neuroscience and Biobehavioral Reviews* 92:67-82. (PMID: 29782883).
65. +Ostock, C.Y., Bhide, N., *Goldenberg, A.A., George, J.A. and **Bishop, C.** (2018). Striatal norepinephrine efflux in L-DOPA-induced dyskinesia. *Neurochemistry International* 114:85-98. (PMID: 29371053).
64. +Lanza, K. and **Bishop, C.** (2018). Serotonergic targets for the treatment of L-DOPA-induced dyskinesia. *Journal of Neural Transmission* (<https://doi.org/10.1007/s0070>). (PMID: 29305656).
63. +Lindenbach, D.L., Das, B, +Conti, M.M., *Meadows, S.M., Aloke, D. and **Bishop, C.** (2017). D-512, a novel dopamine D2 / D3 receptor agonist, demonstrates superior anti-parkinsonian efficacy over ropinirole in parkinsonian rats. *British Journal of Pharmacology* 174(18):3058-3071. (PMID: 28667675).
62. Chotibut, T., *Meadows, S., Kasanga, E., McInnis, T., Cantu, M.A., **Bishop, C.** and Salvatore, M.F. (2017). Ceftriaxone reduces L-DOPA-induced dyskinesia severity in 6-OHDA Parkinson's disease model. *Movement Disorders* 32(11):1547-1556. (PMID: 28631864).
61. *Meadows, S.M., +Chambers, N., +Conti, M.M., *Tasber, C., *Sheena, E., Varney, M., Newman-Tancredi, A. & **Bishop, C.** (2017). Characterizing the differential roles of striatal 5-HT1A auto- and hetero-receptors in the reduction of L-DOPA-induced dyskinesia. *Experimental Neurology* 292:168-178. (PMID: 28342749).
60. +Lindenbach, D.L., +Conti, M.M., +Ostock, C., George, J., *Goldenberg, A., *Melikhov-Sosin, M., *Nuss, E. and **Bishop, C.** (2016). The role of primary motor cortex (M1) glutamate and GABA signaling in L-DOPA-induced dyskinesia in Parkinsonian rats. *Journal of Neuroscience* 36(38):9873-87. (PMID: 27656025).

59. +Conti, M.M., *Meadows, S.M., *Melikhov-Sosin, M., +Lindenbach, D., *Hallmark, J., Werner D.F., **Bishop, C.** (2016). Monoamine transporter contributions to L-DOPA effects in hemi-parkinsonian rats. *Neuropharmacology* 110-125-134. (PMID: 27452719).
58. Perkins, A.E., Doremus-Fitzwater, T.L., Spencer, R.L., Varlinskaya, E.I., +Conti, M.M., **Bishop, C.** and Deak, T. (2016). A working model for the assessment of disruptions in social behavior among aged rats: the role of sex differences, social recognition, and sensorimotor processes. *Experimental Gerontology* 76:46-57. (PMID: 26811912).
57. *Goldenberg, A.A., +Conti, M.M., *Kuberka, A., *Mohamed, M., *Eissa, S., +Lindenbach, D.L. and **Bishop, C.** (2016). Effects of tricyclic antidepressants on L-DOPA-induced dyskinesia and motor improvement in hemi-parkinsonian rats. *Pharmacology, Biochemistry and Behavior* 142:64–71. (PMID: 26791104).
56. +Lindenbach, D.L., +Conti, M.M., +Ostock, C.Y., +Dupre, K.B. and **Bishop, C.** (2015). Alterations in primary motor cortex neurotransmission and gene expression in a rat model of Parkinson's disease and drug-induced dyskinesia. *Neuroscience* 310:12-26. (PMID: 26363150).
55. Bhide, N., +Lindenbach, D., +Barnum, C.J., Geroge, J.A., *Surrena, M.A. and **Bishop, C.** (2015). Effects of the beta-adrenergic receptor antagonist Propranolol on dyskinesia and L-DOPA-induced striatal DA efflux in the hemi-parkinsonian rat. *Journal of Neurochemistry*, 134(2):222-32. (PMID: 25866285).
54. +Ostock, C.Y., *Hallmark, J., *Palumbo, N., Bhide, N., +Conti, M. and **Bishop, C.** (2015). Modulation of L-DOPA's antiparkinsonian and dyskinetic effects by α 2-noradrenergic receptors within the locus coeruleus. *Neuropharmacology* 95:215-25. (PMID: 25817388).
53. +Ostock, C.Y. and **Bishop, C.** (2015). The role of the adrenergic system and its receptors in L-DOPA-induced dyskinesia. *Levodopa-Induced Dyskinesia in Parkinson's Disease*, 265-28.
52. +Lindenbach, D.L., *Palumbo, N. +Ostock, C.Y., *Vilceus N., +Conti, M.M. and **Bishop, C.** (2015). Side-effect profile of serotonergic treatments for Parkinson's disease and L-DOPA-induced dyskinesia in rats. *British Journal of Pharmacology* 172(1):119-30. (PMID: 25175895).
51. +Ostock, C.Y., +Lindenbach, D.L. *Goldenberg, A.A. *Kampton, E. and **Bishop, C.** (2014). Effects of noradrenergic denervation by anti-DBH-saporin on behavioral responsivity to L-DOPA in the hemi-parkinsonian rat. *Behavioural Brain Research* 270:75-85. (PMID: 24837745).
50. +Conti, M.M., +Ostock, C.Y., +Lindenbach, D.L., *Goldenberg, A.A., *Kampton, E., +Dell'Isola, R., *Katzman, A. and **Bishop, C.** (2014). Effects of prolonged selective serotonin reuptake inhibition on the development and expression of L-DOPA-induced dyskinesia in hemiparkinsonian rats. *Neuropharmacology* 77:1-8. (PMID: 24067924).
49. +Lindenbach, D.L. and **Bishop, C.** (2013). Critical involvement of the motor cortex in the pathophysiology and treatment of Parkinson's disease. *Neuroscience and Biobehavioral Reviews* 37:2737-2750. (PMID: 24113323).
48. +Lindenbach, D.L., +Dupre K.B., +Eskow-Jaunarajs, K.L., +Ostock, C.Y., *Goldenberg A.A. and **Bishop C.** (2013). Effects of 5-HT1A receptor stimulation on striatal and M1 pERK induction by L-DOPA and a D1 receptor agonist in a rat model of Parkinson's disease. *Brain Research* 1537:327-339. (PMID: 24060645).
47. Blandino, P.J., Hueston, C., +Barnum, C.J., **Bishop, C.** and Deak, T. (2013). The impact of ventral noradrenergic bundle lesions on increased IL-1 in the PNV and hormonal responses to stress in the Sprague-Dawley rat. *Endocrinology* 154(7):2489-500 (PMID: 23671261).

46. +Dupre, K.B., +Ostock C.Y., George, J.A., +Eskow Jaunarajs, K.L., Hueston C.M. and **Bishop, C.** (2013). 5-HT1A receptor stimulation enhances GABAergic activity in the striatonigral pathway in a D1R-mediated model of dyskinesia. *ASC Neuroscience* 15;4(5):747-60. (PMID: 23496922).
45. Bhide, N., Paquette M.A., +Lindenbach, D.L., *Surrena, M.A., *Goldenberg, A.A., Berger S.P. and **Bishop, C.** (2013). BMY-14802, a 5-HT1A receptor agonist attenuates L-DOPA and dopamine agonist-induced dyskinesia without affecting L-DOPA efficacy. *Psychopharmacology* 227(3):533-44. (PMID: 23389756).
44. **Bishop, C.**, George, J.A., *Buchta, W., *Goldenberg, A.A., *Mohamed, M., *Dickinson, S.O., *Eissa, S. and +Eskow-Jaunarajs, K.L. (2012). Serotonin transporter inhibition attenuates L-DOPA-induced dyskinesia without compromising L-DOPA efficacy in hemi-parkinsonian rats. *European Journal of Neuroscience* 36(6):2839-2848. (PMID: 22762478).
43. +Eskow-Jaunarajs, K.L., George, J.A., **Bishop, C.** (2012). L-DOPA-induced dysregulation of extrastriatal dopamine and serotonin and affective symptoms in a bilateral rat model of Parkinson's disease. *Neuroscience* 218, 243-256. (PMID: 22659568).
42. +Barnum, C.J., Bhide, N., +Lindenbach, D., *Surrena, M.A., *Goldenberg, A.A., *Tignor, S., *Klioueva, A., *Walters, H. and **Bishop, C.** (2012). Effects of noradrenergic denervation L-DOPA-induced dyskinesia and its treatment by alpha and beta-adrenergic receptor antagonists in hemiparkinsonian rats. *Pharmacology Biochemistry and Behavior* 100(3), 607-615. (PMID: 21978941).
41. Bhide, N. and **Bishop, C.** (2011). Pathophysiology of non-dopaminergic monoamine systems in Parkinson's disease: Implications for treatment. In: *Parkinson's Disease (Volume 3)*. Rijeka, Croatia: Intech. p. 527-542.
40. Buck, H., Hueston, C., **Bishop, C.** and Deak, T. (2011). Sensitization of the hypothalamic-pituitary-adrenal axis after acute ethanol exposure: possible relationship to ethanol withdrawal. *Psychopharmacology* 218(1), 203-15. (PMID: 21735074).
39. +Ostock, C.Y., +Dupre K.B., +Eskow Jaunarajs, K.L., *Walters, H., Button, T., *Krolewski, D.M., Walker, P.D., and **Bishop, C.** (2011). Role of primary motor cortex in L-DOPA-induced dyskinesia and its modulation by 5-HT1A receptors *Neuropharmacology* 61(4), 753-760. (PMID: 21635907).
38. +Lindenbach, D., +Ostock, C.Y., +Eskow Jaunarajs, K.L., +Dupre, K.B., +Barnum, C.J., Bhide, N. & **Bishop, C.** (2011). Behavioral and cellular modulation of L-DOPA-induced dyskinesia by β -adrenoceptor blockade in the 6-hydroxydopamine-lesioned rat. *Journal of Pharmacology and Experimental Therapeutics* 337(3). 755-765. (PMID: 21402691).
37. +Dupre, K.B., +Ostock C.Y., +Eskow Jaunarajs, K.L., Button, T., Savage, L.M., Wolf, W. and **Bishop, C.** (2011). Local modulation of striatal glutamate efflux by serotonin 1A receptor stimulation in dyskinetic hemiparkinsonian rats. *Experimental Neurology* 229(2), 288-299. (PMID: 21352823).
36. Kuhn, D.M., Sykes, C.E., Geddes, T.J., +Eskow Jaunarajs, K.L. and **Bishop, C.** (2011) Tryptophan hydroxylase 2 aggregates through disulfide Cross-LINKING upon oxidation: Possible Link to Serotonin deficits and non-motor symptoms in parkinson's disease. *Journal of Neurochemistry* 116(3), 426-437. (PMID: 21105877).
35. +Eskow-Jaunarajs, K., Ramirez, M., Kuhn, D.M. and **Bishop, C.** (2011). Potential mechanisms underlying anxiety and depression in Parkinson's disease: consequences of L-DOPA treatment. *Neuroscience and Biobehavioral Reviews* 35(3), 556-564. (PMID: 22762478).
34. +Eskow-Jaunarajs, K.L., +Dupre K.B., +Ostock, C.Y., Button, T., Deak, T., and **Bishop C.** (2010). Behavioral and neurochemical effects of chronic L-DOPA treatment on non-motor sequelae in the hemiparkinsonian rat. *Behavioural Pharmacology* 21(7), 627-637. (PMID: 20838211).

33. +Eskow Jaunarajs, K.L., +Dupre K.B., *Steiniger, A., *Klioueva, A., *Moore, A., *Kelly, C. and **Bishop C.** (2009). Serotonin 1B receptor stimulation reduces D1 receptor agonist-induced dyskinesia. *Neuroreport* 20(14), 1265-1269.
32. +Eskow, K.L., +Dupre, K.B., +Barnum, C.J., *Dickinson, S.O., *Park, J.Y. and **Bishop C.** (2009). The role of the dorsal raphe nucleus in the development, expression and treatment of L-DOPA-induced dyskinesia in hemiparkinsonian rats. *Synapse* 63(7), 610-620.
31. **Bishop C.**, +Krolewski, D.M., +Eskow, K.L., Barnum, C.J., +Dupre, K.B., Deak, T. and Walker, P.D. (2009). Contribution of the striatum to the effects of 5-HT_{1A} receptor stimulation in L-DOPA-treated hemiparkinsonian rats. *Journal of Neuroscience Research* 87(7), 1645-1658.
30. +Dupre, K.B., +Eskow, K.L., +Barnum, C.J. and **Bishop, C.** (2008). Striatal 5-HT_{1A} receptor stimulation reduces D1 receptor-induced dyskinesia and improves movement in the hemiparkinsonian rat. *Neuropharmacology* 55(8), 1321-1328.
29. +Barnum, C.J., +Eskow, K.L., +Dupre, K.B., Blandino, P., Deak, T. and **Bishop, C.** (2008). Exogenous corticosterone reduces L-DOPA-induced dyskinesia in the hemiparkinsonian rat: role for interleukin-1 β . *Neuroscience* 156, 30-41.
28. +Dupre, K.B., +Eskow, K.L., *Steiniger, A., *Klioueva, A., *Negron, G.E., *Lormand, L., *Park, J.Y. and **Bishop, C.** (2008). Effects of coincident 5-HT_{1A} receptor stimulation and NMDA receptor antagonism on L-DOPA-induced dyskinesia and rotational behaviors in the hemiparkinsonian rat. *Psychopharmacology* 199, 99-108.
27. +Dupre, K.B., +Eskow, K.L., *Negron, G. and **Bishop, C.** (2007). The differential effects of 5-HT_{1A} receptor stimulation on dopamine receptor-mediated abnormal involuntary movements and rotations in the hemiparkinsonian rat. *Brain Research* 1158, 135-143.
26. *Eskow, K.L., *Gupta, V., *Alam, S., *Park, J. and **Bishop, C.** (2007). The partial 5-HT_{1A} agonist Buspirone reduces the expression and development of L-DOPA-induced dyskinesia in rats and improves L-DOPA efficacy. *Pharmacology Biochemistry and Behavior* 87(3), 306-314.
25. **Bishop, C.**, Taylor, J.L., *Eskow, K., *Park, J. and Walker, P.D. (2006). MDMA and Fenfluramine reduce L-DOPA-induced dyskinesia in the 6-hydroxydopamine-lesioned rat via 5-HT_{1A} receptor stimulation. *European Journal of Neuroscience* 23, 2669-2676.
24. Taylor, J.L., **Bishop, C.** and Walker, P.D. (2006). Serotonin 5-HT_{2A} receptor antagonism reduces D₁-induced rotations but not L-DOPA-induced abnormal involuntary movements in 6-hydroxydopamine-lesioned rats. *Neuropharmacology* 50, 761-768.
23. Taylor, J.L., **Bishop, C.** and Walker, P.D. (2005). Dopamine D₁ and D₂ receptor contributions to L-DOPA-induced dyskinesia in the dopamine-depleted rat. *Pharmacology, Biochemistry and Behavior* 81(4), 887-893.
22. **Bishop, C.**, Daut, G. and Walker, P.D. (2005). Serotonin 5-HT_{2A} but not 5-HT_{2C} receptor antagonism reduces hyperlocomotor activity induced in dopamine-depleted rats by striatal administration of the D₁ agonist SKF 82958. *Neuropharmacology* 49(3), 350-358.
21. Krolewski, D.M., **Bishop, C.** and Walker, P.D. (2005). Intrastratial dopamine D₁ receptor agonist-mediated motor behavior is reduced by local neurokinin 1 receptor antagonism. *Synapse* 57, 1-7.
20. **Bishop, C.** and Walker, P.D. (2004). Intranigral antagonism of neurokinin 1 and neurokinin 3 receptors reduces intrastratial D₁ receptor-stimulated locomotion in the rat. *Brain Research* 1023(1), 126-133.

19. **Bishop, C.**, Tessmer, J.L., Ullrich T., Rice, K.C. and Walker, P.D. (2004). Serotonin 5-HT_{2A} receptors underlie increased motor behaviors in dopamine-depleted rats by intrastriatal 5-HT_{2A/2C} agonism. *Journal of Pharmacology and Experimental Therapeutics* 310(2), 687-694.
18. **Bishop, C.**, Parker, G.C. and Coscina, D.V. (2004). Systemic nicotine alters whole-body fat utilization in female rats. *Physiology and Behavior* 80(4), 563-567.
17. **Bishop, C.** and Walker, P.D. (2003). Combined intrastriatal dopamine D1 and serotonin 5-HT₂ receptor stimulation reveals a mechanism for hyperlocomotion in 6-hydroxydopamine-lesioned rats. *Neuroscience* 121, 649-657.
16. **Bishop, C.**, Kamdar, D.K. and Walker, P.D. (2003). Intrastriatal serotonin 5-HT₂ receptors mediate dopamine D₁-induced hyperlocomotion in 6-hydroxydopamine-lesioned rats. *Synapse* 50(2), 164-170.
15. **Bishop, C.**, Parker, G.C. and Coscina, D.V. (2003). Nicotine and its withdrawal modify dorsal raphe 8-hydroxy-2-(di-n-propylamino) tetralin feeding. *Pharmacology, Biochemistry and Behavior* 74, 961-967.
14. **Bishop, C.**, Parker, G.C. and Coscina, D.V. (2002). Nicotine and its withdrawal alter feeding induced by paraventricular hypothalamic injections of neuropeptide Y in Sprague-Dawley rats. *Psychopharmacology* 162, 265-272.
13. Parker, G.C., **Bishop, C.** and Coscina, D.V. (2002). Estrous cycle and food availability affect feeding induced by amygdala 5-HT receptor blockade. *Pharmacology, Biochemistry and Behavior* 71, 701-707.
12. Currie, P.J., Coscina, D.V., **Bishop, C.**, Coiro, C., Koob, G.F. and Vale, W. (2001). Hypothalamic paraventricular nucleus injections of urocortin alter food intake and respiratory quotient. *Brain Research* 916, 222-228.
11. Parker, G.C., McKee, M.E., **Bishop, C.** and Coscina, D.V. (2001). Whole body metabolism is modulated by the estrous cycle in female Sprague dawley rats. *Physiology and Behavior* 74(3), 399-403.
10. Coscina, D.V., Currie, P.J., **Bishop, C.**, Parker, G.C., Rollins, B.L. and King, B.M. (2000). Posterodorsal amygdala lesions reduce feeding stimulated by 8-OH-DPAT. *Brain Research* 883, 243-249.
9. **Bishop, C.**, Currie, P.J. and Coscina, D.V. (2000). Effects of three neurochemical stimuli on delayed feeding and energy metabolism. *Brain Research* 865, 139-147.
8. **Bishop, C.**, Rosenthal, L., Folkerts, M., Nykamp, K., Helmus, T., Guido, P., Syron, M.L., Roehrs, T., Rice, M. and Roth, T. (1998). The perception of sleep as a function of the level of daytime sleepiness among patients with obstructive sleep apnea. *Comprehensive Psychiatry* 39(5), 312-317
7. **Bishop, C.**, Roehrs, T., Rosenthal, L. and Roth, T. (1997). Alerting effects of methylphenidate under basal and sleep-deprived conditions. *Experimental and Clinical Psychopharmacology* 5(4), 344-352.
6. Rosenthal, L., **Bishop, C.**, Helmus, T., Roehrs, T.A. and Roth, T. (1997). Frequency of multiple sleep onset REM periods in "control" subjects. – Response. *Sleep* 20(9), 814.
5. Helmus, T., Rosenthal, L., **Bishop, C.**, Roehrs, T., Syron, M.L. and Roth, T. (1997). The alerting effects of short and long naps in narcoleptic, sleep deprived, and alert individuals. *Sleep* 20(4), 251-257.
4. Rosenthal, L., **Bishop, C.**, Guido, P., Syron, M.L., Helmus, T., Rice, F.M. and Roth, T. (1997). The sleep/wake habits of patients diagnosed as having obstructive sleep apnea. *Chest* 111(6), 1494-14993.

3. **Bishop, C.**, Rosenthal, L., Helmus, T., Roehrs, T. and Roth, T. (1996). The frequency of sleep onset REM periods among subjects with no excessive daytime sleepiness. *Sleep* 19(9), 727-730.
2. Rosenthal, L., **Bishop, C.**, Helmus, T., Krstevska, S., Roehrs, T. and Roth, T. (1996). Auditory awakening thresholds in sleepy and alert individuals. *Sleep* 19(4), 290-295.
1. Helmus, T., Rosenthal, L., **Bishop, C.**, Roehrs, T., Krstevska, S. and Roth, T. (1996). Nocturnal sleep latencies among alert, alert-deprived and sleepy subjects. *Electroencephalography and Clinical Neurophysiology* 99, 10-15.

Recent Conference Presentations and Abstracts (+graduate students, *undergraduate students)

180. *Venkatesh, S., *Holden, H., *Kinsonzi, N., +Centner, A., **Bishop, C.** (2023). Optimizing levodopa treatment through treadmill-controlled exercise in a hemiparkinsonian model. Beckman Scholars Research Conference Symposium, Binghamton University, August 4, 2023, UC-Riverside, CA.
179. *Kinsonzi, N., *Holden, H., *Venkatesh, S., +Centner, A., **Bishop, C.** (2023). Optimizing levodopa treatment through treadmill-controlled exercise in a hemiparkinsonian model. *McNair Scholars Virtual Research Day*, July 21, 2023, Buffalo, NY.
178. *Valle, E., *Noor, M., *Sarinick, E., Coyle, M., *Venkatesh, S., **Bishop, C.** (2023). The effects of the serotonin drugs Vortioxetine and Vilazodone on Apomorphine-induced dyskinesia in a rat model of Parkinson's disease. *McNair Scholars Virtual Research Day*, July 21, 2023, Buffalo, NY.
178. *Valle, E., *Noor, M., *Sarinick, E., Coyle, M., *Venkatesh, S., **Bishop, C.** (2023). The effects of the serotonin drugs Vortioxetine and Vilazodone on Apomorphine-induced dyskinesia in a rat model of Parkinson's disease. *Bridges to Baccalaureate Research Day*, July 19, 2023, Binghamton, NY.
176. +Lipari, N., +Centner, A., Manfredsson, F.P., Tseng, K.Y., **Bishop, C.** (2023). The Effects of Chemogenetic Targeting of serotonin-projecting pathways on L-DOPA-induced dyskinesia and psychosis in a bilateral rat model of Parkinson's disease. *International Basal Ganglia Society*, June 13, 2023, Stockholm, Sweden.
175. +Centner, A., +McManus, G., Manfredsson, F.P., **Bishop, C.** (2023). Effects of Interventional genetic knockdown of the serotonin transporter following established L-DOPA-induced dyskinesia in hemiparkinsonian rats. *International Basal Ganglia Society*, June 13, 2023, Stockholm, Sweden.
174. *Holden, H., *Venkatesh, S., *Kinsonzi, N., +Centner, A., **Bishop, C.** (2023). Optimizing levodopa treatment through treadmill-controlled exercise in a hemiparkinsonian model. *Psi Chi and Nu Rho Psi Symposium*, Binghamton University, April 21, 2023, Binghamton, NY.
173. *Wheelis, E., +Lipari, E., **Bishop, C.** (2023). Differential effects of the serotonin 5-HT_{2A/2C} receptor agonist DOI on psychosis-like behavior in naïve and parkinsonian rats. *Psi Chi and Nu Rho Psi Symposium*, Binghamton University, April 21, 2023, Binghamton, NY.
172. *DiRosa, I., *Maslinski, J., *Klayman, E., +Lipari, N., **Bishop, C.** (2023). Motivational properties of levodopa in a bilateral lesion rat model of Parkinson's disease. *Psi Chi and Nu Rho Psi Symposium*, Binghamton University, April 21, 2023, Binghamton, NY.
171. +Chaudhari, S., Navarette-Barahone, W., McManus, R., +Centner, A., **Bishop, C.**, Salvatore, M.F. (2023). The impact of tyrosine hydroxylase loss on dopamine signaling during nigrostriatal neuron loss in a rat model of Parkinson's disease. *University of North Texas Health Science Center Research Symposium*, March, 2023, Fort Worth, TX.
170. *Holden, H., *Nezaria, S., *Venkatesh, S., +Budrow, C., **Bishop, C.** (2022). Effects of L-DOPA on gait, forelimb stepping, and dyskinesia induction in the unilateral 6-hydroxydopamine rat model of Parkinson's disease. *Society for Neuroscience*, November 15, 2022, San Diego, CA
169. *Elder, K., +Budrow, C., +Coyle, M., Glinski, J., *Cohen, S., +Lipari, N., +Centner, A., *Kinsonzi, N., *Wheelis, E., **Bishop, C.** (2022). The Effects of the multimodal serotonin compound Vortioxetine on

L-DOPA induced dyskinesia in a rat model of Parkinson's disease. *Society for Neuroscience, November 15, 2022, San Diego, CA.*

168. *Wheelis, E., *Elder, K., *Klayman, E., *Aslam, R., *Hunt, N., +Lipari, N., **Bishop, C.** (2022). Potential differential effects of the serotonin 5-HT_{2A/2C} receptor agonist DOI on prepulse inhibition in naïve and bilateral parkinsonian rats. *Society for Neuroscience, November 15, 2022, San Diego, CA.*
167. +Lipari, N., +Centner, A., Glinski, J., +Cohen, S., **Bishop, C.** (2022). Characterizing the relationship between L-DOPA-induced dyskinesia and psychosis-like behaviors in a bilateral rat model of Parkinson's disease. *Society for Neuroscience, November 15, 2022, San Diego, CA.*
166. +Budrow, C., *Elder, K., +Centner, A., +Lipari, N., *Wheelis, E., *Nezaria, S., *Coyle, M., Manfredsson, M., **Bishop, C.** (2022). Investigating the pharmacological contributions of the multimodal serotonergic drug Vortioxetine on L-DOPA induced dyskinesia in a hemiparkinsonian rat model. *Society for Neuroscience, November 14, 2022, San Diego, CA.*
165. +Centner, +Chambers, N., *Cohen, S., *Terry, M.L., *Coyle, M., *Mcmanus, R., *Navarrete, W., Salvatore, M.F., **Bishop, C.** (2022). Tracking Extracellular Dopamine Dynamics Following 6-OHDA Lesion of the Nigrostriatal Track. *Society for Neuroscience, November 13, 2022, San Diego, CA.*
164. *Holden, H., *Nezaria, S., +Budrow, C. and **Bishop, C.** (2022). The effect of acute levodopa treatment on gait in a hemiparkinsonian rat model. *Psi Chi Symposium, Binghamton University, May 6, 2022, Binghamton, NY*
163. *Elder, K., *Kinsonzi, N., Coyle, M., Glinski, J., *Cohen, S., +Lipari, N., +Centner, A., *Wheelis, E. and **Bishop, C.** (2022). The Effects of Vortioxetine on L-DOPA-induced dyskinesia in a rat model of Parkinson's disease. *Psi Chi Symposium, Binghamton University, April 29*
162. *Wheelis, E., *Klayman, E., +Lipari, N., and **Bishop, C.** (2022). The effects of the serotonin 5-HT_{2A} agonist DOI on prepulse inhibition in rats. *AXON Conference, Virtual, April 28*
161. *Cohen, S., *Terry, M., Coyle, M., +Centner, A., Glinski, J., *Wheelis, E., +Budrow, C., +Smith, S., Manfredsson, F., **Bishop, C.** (2021). Investigating the anti-dyskinetic effects of co-administered serotonin- and glutamate-acting compounds, Vilazodone and Amantadine, in hemiparkinsonian rats. *Society for Neuroscience, Virtual, October 8-11*
160. +Lipari, N., +Centner, A., *Cohen, S., Glinski, J., **Bishop, C.** (2021). The effects of L-DOPA-induced-motor and non-motor side effects in a bilateral rat model of Parkinson's disease. *Society for Neuroscience, Virtual, October 8-11*
159. Coyle, M., +Centner, A., +Lipari, N., *Cohen, S., *Wheelis, E., +Towner, T., **Bishop, C.** (2021). Characterizing cellular activation following L-DOPA treatment in a hemiparkinsonian LacZ Rat Model. *Society for Neuroscience, Virtual, October 8-11*
158. +Smith, S., *Elder K., *Melnik M., Coyle. M., +Centner A., *Cohen S., +Lipari, N., *Cruz Harris, A., *Sherman, C., **Bishop, C.** (2021). The effects of Vilazodone, YL-0919 and Vortioxetine in L-DOPA treated hemiparkinsonian rats *Society for Neuroscience, Virtual, October 8-11*
157. +Centner, A., +Del Priore, I., Coyle, M., Glinski, J., *Cohen, S., Terry, M., *Chambers, N., Patterson, J., Kemp, C., Stoll, A., Miller, K., Luk, K., Sortwell, C., **Bishop, C.** (2021). Characterization of Striatal Dopamine Dynamics in the Rat Alpha-Synuclein Pre-Formed Fibril Model of Parkinson's Disease. *Society for Neuroscience, Virtual, October 8-11.*
156. Coyle, M., +Centner, A., +Smith, S., Glinski, J., +Lipari, N., Moreno, E., Newman, A., Casado, V., Ferre, S., and **Bishop, C.** (2021). Effects of Dopamine D₃ Receptor Compounds PG01037 and PG01042 on L-DOPA- and D₁ Receptor Agonist-Induced Dyskinesia. *ViDA, Virtual, June, 22-24.*

155. *Cohen, S., *Terry, M., *Wheelis, E., +Smith, S., Coyle, M., Glinski, J., **Bishop, C.**, (2021). Investigating the anti-dyskinetic effects of co-administered serotonin- and glutamate-acting compounds, Vilazodone and Amantadine, in hemiparkinsonian rats. *Research Days, Binghamton University, Binghamton, NY*.
154. +Smith, S., Coyle, M., +Centner, A., *Cohen, S., *Elder, K., *Melnik, M., **Bishop, C.** (2021). The Effects of Vilazodone, YL-0919 and Vortioxetine in L-DOPA- treated hemiparkinsonian rats. *Research Days, Binghamton University, Binghamton, NY*.
153. *D'Almeida, E., +Centner, A., Coyle, M., Glinski, J., *Terry, M., *Cohen, S., **Bishop, C.** (2021). Evaluation of dopamine D₃ receptor antagonists PG01037, PG01042, and VK4-116 against D₁R-induced dyskinesia. *Research Days, Binghamton University, Binghamton, NY*.
152. +Lanza, K., +Kiessling, C. Y., +Centner, A., +Del Priore, I., Manfredsson, F., **Bishop, C.** (2020). Aberrant striatal dopamine receptor cooperativity in dyskinesia. *ViDA Conference, May 21, 2020, Virtual*.
151. *McLune, A., *D'Ameida, E.D., +Lanza, K. and **Bishop, C.** (2020). The effects of 5-HT_{2A} receptor stimulation on psychosis-associated behaviors in naïve and L-DOPA treated hemi-parkinsonian rat. *Research Days, Binghamton University Binghamton, NY*.

Invited Lectures/Symposia/Webinars

42. "Working with the Division of Research" Invited Speaker, Binghamton University, Binghamton, NY, September 21, 2022.
41. "Targeting Serotonin Neuroplasticity to Optimize Treatment of Parkinson's Disease". Invited Speaker, Dopamine 2022, Montreal, Quebec, Canada, May 23, 2022.
40. "Leveraging Serotonin Neuroplasticity to Optimize Treatment of Parkinson's Disease". Invited colloquium Speaker, University of Tennessee Health Science Center, Memphis, TN, September 8, 2021.
39. "Gene therapy to optimize Parkinson's disease treatment" Invited Lecture, Student Psychological Association, Binghamton, NY, May 6, 2021.
38. "Gene therapy to optimize Parkinson's disease treatment" Invited Lecture, WSKG Public Radio, Binghamton, NY, March 10, 2020.
37. "Leveraging serotonin neuroplasticity to optimize Parkinson's disease treatment", Invited Symposium Speaker, American Society for Neural Therapy and Repair, Clearwater, FL, April 26, 2019.
36. "Rat models of Parkinson's disease: searching for novel treatments", Invited Lecture, Student Psychological Association, Binghamton, NY, November 12, 2018.
35. "Brain health: a use it or lose it strategy", Invited Lecture, Student Psychological Association, Vestal, NY, April 26, 2018.
34. "Brain health: a use it or lose it strategy", Invited Lecture, Delta Epsilon Mu, Pre-Health Fraternity, Vestal, NY, April 22, 2018.
33. "Targeting serotonin neuroplasticity to optimize Parkinson's disease treatment", Invited Lecture, National Institutes of Drug Abuse, Baltimore, MD, May 23, 2017.
32. "Targeting serotonin neuroplasticity to optimize Parkinson's disease treatment", Invited Lecture, Stony Brook University, Stony Brook, NY, September 8, 2016.
31. "Targeting serotonin neuroplasticity to optimize Parkinson's disease treatment", Invited Lecture, North Texas Health Sciences Center, Fort Worth, Texas, April 19, 2016.

30. "Dyskinesia: What to Do about Moving Too Much?", Third Thursdays Webinars On Parkinson's Research, Michael J. Fox Foundation, January 21, 2016.
29. "Brain gain, use it or lose it", TIER Talk, Binghamton University Homecoming, Binghamton, NY, October 11, 2015.
28. "Rat models of Parkinson's disease: searching for novel treatments", Binghamton University Student Psychological Association, Binghamton, NY, March, 2015.
27. "Rat models of Parkinson's disease: searching for novel treatments", Invited Lecture, Binghamton University Delta Epsilon Mu Pre-Health Fraternity, Binghamton, NY, October, 2014.
26. "Everything we wanted you to know about graduate school", Invited Lecture, Binghamton University Department of Psychology, Binghamton, NY, October, 2014.
25. "Health Sciences Initiative at Binghamton University", Invited Lecture, Binghamton University, Binghamton Biomedical Conference, Binghamton, NY, April, 2014.
24. "Neuroprotection: a use it or lose it strategy", Invited Lecture, Kopernik Observatory and Science Center, Vestal, NY, March, 2014.
23. "Neuroprotection: a use it or lose it strategy", Invited Lecture, Kopernik Observatory and Science Center, Vestal, NY, May, 2013.
22. "Behavioral sciences: from mind to matter", Invited Lecture, Panel Moderator, Binghamton University Health Care Innovation Day, Binghamton, NY, April, 2013
21. "Serotonin neuroplasticity in Parkinson's disease: novel targets for the treatment of L-DOPA-induced dyskinesia", Invited Lecture, Monitoring Molecules in Neuroscience, London, UK, September, 2012.
20. "Neuroprotection: a use it or lose it strategy", Invited Lecture, Binghamton University Resident Life Series, Dickinson Hall, Binghamton University, Binghamton, NY, April, 2012.
19. "Rat models of Parkinson's disease: searching for novel treatments", Invited Lecture, Binghamton University Student Psychological Association, Binghamton, NY, March, 2012.
18. "Rat models of Parkinson's disease: searching for novel treatments", Invited Lecture, Onondaga Community College, Syracuse, NY, March, 2012.
17. "Serotonin neuroplasticity in Parkinson's Disease: implications for movement and mood", Invited Lecture, Emory University School of Medicine, Atlanta, GA, February, 2012.
16. "Cognitive exercise, a brain protection strategy", Invited Lecture, Binghamton University Resident Life Series, College in the Woods Community, Binghamton University, Binghamton, NY, October, 2011.
15. "Serotonin neuroplasticity in Parkinson's Disease: implications for movement and mood", Invited Lecture, Commonwealth Medical College, Scranton, PA, September, 2011.
14. "If I only had a brain, lessons from someone who's made a few mistakes", Invited Lecture, Binghamton University Neuroscience Club, September, 2011.
13. "If I only had a brain, lessons from someone who's made a few mistakes", Invited Lecture, Binghamton University Student Psychological Association, September, 2011.
12. "The Good, Bad and Ugly of Neuroplasticity in Parkinson's disease:", Invited Lecture, Binghamton University Neuroscience Club, February, 2011.
11. "Serotonin neuroplasticity: implications for the treatment of Parkinson's disease", Invited Lecture, University at Buffalo School of Medicine, Department of Pharmacology, Buffalo, NY, February 2009.

10. "Serotonin neuroplasticity: implications for the treatment of Parkinson's disease", Invited Lecture, Wilson Hospital, Grand Rounds, Binghamton, NY, January 2009.
9. "Serotonin neuroplasticity: implications for the treatment of Parkinson's disease", Invited Lecture, Decker School of Nursing, Binghamton University, Binghamton, NY, October 2008.
8. "Serotonin neuroplasticity in the dopamine depleted basal ganglia: implications for the treatment of Parkinson's disease", Invited Lecture, Hope College, Holland, MI, May 2005.
7. "Serotonin neuroplasticity in the dopamine depleted basal ganglia: implications for the treatment of Parkinson's disease", Invited Lecture, Calvin College, Grand Rapids, MI, May 2005.
6. "The role of serotonin neuroplasticity for the treatment of Parkinson's disease", Invited Lecture, Oakland University, Rochester, MI, February 2005.
5. "Serotonin neuroplasticity in the dopamine depleted basal ganglia: implications for the treatment of Parkinson's disease", Invited Lecture, University of Kansas School of Medicine, Kansas City, KA, January 2005.
4. "Serotonin neuroplasticity in the dopamine depleted basal ganglia: implications for the treatment of Parkinson's disease", Invited Lecture, State University of New York-Binghamton, Vestal, NY, January 2005.
3. "Effects of nicotine on neuropeptide Y- and 8-hydroxy-2-(di-n-propylamino) tetralin-induced induced feeding and metabolism", Invited Lecture, Hope College, Holland, MI, December 2001.
2. "Effects of nicotine on body weight and neuropeptide Y-induced feeding during acute chronic and withdrawal phases", Society for the Study of Ingestive Behaviors Young Investigators Presentation, Clearwater, FL, June 1999.
1. "The frequency of sleep onset REM periods among subjects with no excessive daytime sleepiness", National Meeting for Associated Sleep Professionals Societies, Nashville, TN, June 1996.

Teaching Experience

Wayne State University-

Undergraduate Courses

PSY3070, ***Learning and Memory Laboratory***, 9/96-12/98- Instructor

PSY3120, ***Brain and Behavior***, 1/99-5/99- Co-Instructor

PSY3120, ***Brain and Behavior***, 7/99-8/99- Instructor

Binghamton University-

Undergraduate Courses

PSYC473 (4 credits), ***The Diseased Brain***, 8/05-present- Instructor

PSYC356 (4 credits), ***Experimental Psychology-Learning***, 8/06-present- Instructor

PSYC391 (4 credits), ***Teaching Assistantship***, 8/06-present- Instructor/Mentor

PSYC397 (various credits), ***Movement Disorders Laboratory***, 8/05-present- Mentor

PSYC395 (2 credits), ***Honors Thesis Development***, 8/21-present-Instructor

PSYC498 (previously PSYC395, 2 credits), ***Honors Thesis Development***, 8/21-present-Instructor

Graduate Courses

PSCY609 (2 credits), ***Clinical Neuroscience***, 1/07-present- Instructor

PSYC575/576 (various credits), ***Neurobiology of Disease***, 1/15-present- Instructor

PSYC576 (various credits), ***Neurobiology of Aging***, 8/20-present- Instructor

PSYC592 (various credits), ***Movement Disorders Laboratory***, 8/06-present- Mentor

PHARM580C/PHSC610 (team taught), ***Basis of Human Disease***, 8/22-present- Co-Instructor

References

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