# CURRICULUM VITAE

**Christopher Roy Bishop, Ph.D.**

Updated 5.11.2010

## Current Address

Department of Psychology
Behavioral Neuroscience Program
Binghamton University
Binghamton, NY 13902-6000

Email: cbishop@binghamton.edu
Phone: (607) 777-3410
Fax: (607) 777-4890

## 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

| | |
|---|---|
| 1/10-present | Associate Professor, Department of Psychology, Binghamton University, Binghamton, NY |
| 8/09-present | 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 | Graduate Researcher, Department of Psychology, Wayne State University, Detroit, MI |
| 6/94-9/96 | Sleep Research Assistant, Henry Ford Hospital, Detroit, MI |

## Society and Center Memberships

| | |
|---|---|
| 1996- present | Society for Neuroscience member |
| 2005- present | Member of Psychobiology 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 |

## Awards and Positions

| | |
|---|---|
| 1997 | Spring/Summer Research Assistant Award, Wayne State University |
| 1998 | Spring/Summer Research Assistantship 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 efforts |
| 2003 | Michigan Chapter Society for Neuroscience Post-doctoral Travel Award Recipient |

| | |
|---|---|
| 2004 | Michigan Chapter Society for Neuroscience Post-doctoral Travel Award Recipient |
| 2008 | Michael J. Fox Review Panel on Target Validation for Parkinson's Disease |
| 2008 | Dean's Research Semester Award for Junior Faculty (for Spring 2009) |
| 2008 | Phi Eta Sigma Faculty Award |
| 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 | 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 | Chair of the Institutional Animal Care and Use Committee |

**Manuscript Reviews**

| | |
|---|---|
| Brain | Pharmacology Biochemistry & Behavior |
| Neuroscience | Journal of Pharmacology & Experimental Therapeutics |
| Biochemical Pharmacology | British Journal of Pharmacology |
| Journal of Neuroscience Research | Pharmacological Reports |
| 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 |

**Extramural Funding**

**Current Grants:**

PI: **Bishop, C.** National Institute of Neurological Disease and Stroke. "Regulation of L-DOPA-induced dyskinesia by 5-HT1A 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 (5/01/08-4/30/13). Direct Costs: $875,000

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). Direct Costs: $400,000

Mentor: **Bishop, C.** National Institute of Neurological Disease and Stroke. "5-HT1A receptor-mediated striatonigral activity in the hemiparkinsonian rat". The proposed set of experiments in this mentored fellowship to graduadte 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). Total Costs: $80,318

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). Direct Costs: $46,000

**Previous Grants:**

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). Direct Costs: $43,000

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). Direct Costs: $50,000

**Intramural Funding**

**Previous Grants:**

Co-PI: **Bishop, C.** Interdiscipinary 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). Direct Costs: $10,000

**Training Grants (Ongoing)**

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 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)**

37. Barnum, C.J., Blandino, P., **Bishop, C.** and Deak, T. Acute stress alters striatal and nigral cytokine expression: implications for Parkinson's disease. *(Under Revision).*

36. Krolewski, D.M., **Bishop, C.** and Walker, P.D. Dopamine D1 receptor-mediated motor activity induced by SKF81297 is associated with similar c-fos and arc induction patterns in the striatum and frontal cortex. *Neuroscience (Under revision).*

35. Eskow-Jaunarajs, K. Ramirez, M., Kuhn, D.M. and **Bishop C.** Possible mechanisms underlying anxiety and depression in Parkinson's disease: potential consequences of L-DOPA treatment. *Neuroscience and Biobehavioral Reviews (In Press).*

34. Eskow-Jaunarajs, K.L., Dupre K.B., Ostock, C.Y., Button, T., Deak, T., and **Bishop C.** Effects of L-DOPA treatment on non-motor symptoms in hemiparkinsonian rat. *Behavioural Pharmacology (In press)*

33. Eskow Jaunarajs, K.L., Dupre K.B., Steiniger, A., Kliloueva, 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 essential role of the rostral raphe nuclei in movement control in the L-DOPA-treated hemiparkinsonian rat. *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 striatal 5-HT1A receptors to the cellular and behavioral effects of ±8-OH-DPAT in the L-DOPA-treated hemiparkinsonian rat. *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-1β. *Neuroscience 156, 30-41.*

28. Dupre, K.B., Eskow, K.L., Steiniger, A., Kliloueva, A., Negron, G.E., Lormand, L., Park, J.Y. and **Bishop, C**. (2008). Coincident 5-HT1A receptor stimulation and NMDA receptor antagonism reduces L-DOPA-induced dyskinesia but enhances 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-HT1A 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). Acute and Chronic Buspirone reduces L-DOPA-induced dyskinesia in the 6-hydroxydopamine-lesioned rat via 5-$HT_{1A}$ receptor stimulation. *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 $D_1$–induced rotations but not L-DOPA-induced dyskinesia in 6-hydroxydopamine-lesioned rats. *Neuropharmacology 50, 761-768.*

23. Taylor, J.L., **Bishop, C.** and Walker, P.D. (2005). Dopamine $D_1$ and $D_2$ 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). Intrastriatal serotonin 5-$HT_{2A}$ but not 5-$HT_{2C}$ receptors mediate dopamine $D_1$-induced hyperlocomotion in 6-hydroxydopamine-lesioned rats. *Neuropharmacology 49(3),* 350-358.

21. Krolewski, D.M., **Bishop, C.** and Walker, P.D. (2005). Intrastriatal dopamine $D_1$ 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 intrastriatal $D_1$ 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 abnormal movements induced 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). Nicotine and its withdrawal alter whole body metabolism consistent with changes in body weight. *Physiology and Behavior 80(4),* 563-567.

17. **Bishop, C.** and Walker, P.D. (2003). Co-stimulation of intrastriatal serotonin 5-$HT_2$ and dopamine $D_1$ receptors produces synergistic effects on locomotion. *Neuroscience 121,* 649-657.

16. **Bishop, C.,** Kamdar, D.K. and Walker, P.D. (2003). Intrastriatal serotonin 5-$HT_2$ receptors mediate dopamine $D_1$-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 alter feeding induced by 8-hydroxy-2-(di-n-propyl-amino) tetralin. *Pharmacology, Biochemistry and Behavior 74,* 961-967.

14. **Bishop, C.,** Parker, G.C. and Coscina, D.V. (2002). Nicotine and its withdrawal modulate feeding induced by hypothalamic injections of neuropeptide Y. *Psychopharmacology 162*, 265-272.

13. Parker, G.C., **Bishop, C**. and Coscina, D.V. (2002). Effects of estrous cycle and palatability on 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 injections of urocortin alter energy intake and substrate utilization. *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.

**<u>Conference Presentations and Published Abstracts</u>**

59. Dupre, K.B., Ostock C.Y., Eskow Jaunarajs, K.L., Button, T. and **Bishop, C.** (2010). Striatal 5-HT1A receptor stimulation reduces local L-DOPA-induced striatal glutamate efflux in the hemiparkinsonian rat. *International Basal Ganglia Society Meeting, Long Branch, NJ.*

58. Eskow Jaunarajs, K.L., Angoa-Perez, M., Kuhn, D. and **Bishop, C.** (2010). Effects of chronic L-DOPA on tryptophan hydroxylase-2 expression in the dorsal raphe nucleus in a bilateral rat model of Parkinson's disease. *International Basal Ganglia Society Meeting, Long Branch, NJ.*

57. Mohamed, M.G., Ostock, C., Eskow Jaunarajs, K.L., Dupre, K.B., Surrena, M., Goldenberg, A., Button, T. and **Bishop, C.** (2009). The effects of monoamine depletion on motor performance and L-DOPA-induced dyskinesia in the hemiparkinsonian rat. *Bridges to Baccalaureate Presentation Day, Binghamton University, Binghamton, NY.*

56. Dickinson, S., Feinberg, E., Goldenberg, A., Lui, Y., Salamon, M., Lindenbach, D. and **Bishop C.** (2010). The effects of selective Beta adrenergic receptor antagonists on L-DOPA-induced dyskinesia in the hemiparkinsonian rat. *Department of Psychology Research Colloquia, Binghamton University Binghamton, NY.*

55. Dickinson, S., Feinberg, E., Goldenberg, A., Lui, Y., Salamon, M., Lindenbach, D. and **Bishop C.** (2010). The effects of selective Beta adrenergic receptor antagonists on L-DOPA-induced dyskinesia in the hemiparkinsonian rat. *University Research Symposium, Binghamton University Binghamton, NY.*

54. Barnum, C.J., Walters, H. Tignor, S., Kliqueva, A. and **Bishop, C.** (2009). The anti-dyskinetic potential of alpha and beta adrenergic receptor antagonists in hemiparkinsonian rats. *Society for Neuroscience, Chicago, IL.*

53. Dupre, K.B., Eskow Jaunarajs, K.L., Ostock C.Y., Button, T. and **Bishop, C.** (2009). 5-HT1A receptor stimulation reduces L-DOPA-induced striatal glutamate efflux in the hemiparkinsonian rat. *Society for Neuroscience, Chicago, IL.*

52. Ostock C.Y., Eskow Jaunarajs, K.L., Dupre, K.B., Walters, H. and **Bishop, C.** (2009). 5-HT1A receptor stimulation within the primary motor cortex reduces L-DOPA-induced dyskinesias in the hemiparkinsonian rat. *Society for Neuroscience, Chicago, IL.*

51. Eskow Jaunarajs, K.L., Dupre, K.B., Ostock C.Y., Button, T., Deak, T. and **Bishop, C.** (2009). Non-motor effects of chronic L-DOPA treatment in the unilateral 6-OHDA rat model of Parkinson's disease. *Society for Neuroscience, Chicago, IL.*

50. Button, T., Moore, A., Liu Y, and **Bishop, C.** (2009). Effects of serotonin 1A receptor stimulation on pERK1/2 levels in the dopamine-depleted striatum. *Society for Neuroscience, Chicago, IL.*

49. Jones, S.S., Ryu, E., Lin, J., Kitsos, C., McCauley, D., Jacques, V., Barnum C.J. and **Bishop, C.** (2009). Negative allosteric modulators of mGluR5: treatment of L-DOPA-induced dyskinesia. *Symposium on Etiology, Pathogenesis and Treatment of Parkinson's Disease and Other Movement Disorders, Baltimore, MD.*

48. Banahene, J.A., Eskow Jaunarajs, K.L., Barnum C.J. and **Bishop, C.** (2009). Effects of the beta-adrenergic antagonist propranolol on D1 and D2 receptor-induced behaviors in the hemiparkinsonian rat. *Bridges to Baccalaureate Presentation Day, Binghamton University, Binghamton, NY.*

47. **Bishop, C.,** Dupre K.B., Barnum, C.J., Button T. and Eskow Jaunarajs, K.L. (2009). Chronic L-DOPA treatment modified serotonin function in depression-related structures of the hemiparkinsonian rat brain. *Movement Disorders Society Meeting, Paris, France.*

46. Moore, A., Liu, Y., Button, T. and **Bishop, C.** (2009). pERKed up: ERK1/2 phosphorylation in the dyskinetic brain. *Department of Psychology Research Colloquia, Binghamton University Binghamton, NY.*

45. Walters, H., Tignor S., Kliqueva, A., Barnum, C.J. and **Bishop, C.** (2009). Therapeutic potential of Idazoxan, an Alpha-2-Adrenorecptor antagonist on development of L-DOPA-induced dyskinesia in hemi-parkinsonian rat model. *Department of Psychology Research Colloquia, Binghamton University Binghamton, NY.*

44. Eskow, K.L., Dupre, K.B., Steiniger, A., Kliqueva, A., Negron, G., Lormand, L., Park, J.Y. and **Bishop, C.** (2008). Effects of coincident 5-HT1A receptor stimulation and NMDA receptor antagonism on L-DOPA-induced dyskinesia and rotational behaviors in the hemi-parkinsonian rat. *Society for Neuroscience, Washington D.C.*

43. Dupre, K.B., Eskow, K.L., Barnum, C.J. and **Bishop, C.** (2008). Striatal 5-HT1A receptor stimulation reduces D1 receptor-induced dyskinesia and improves movement in the hemi-parkinsonian rat. *Society for Neuroscience, Washington D.C.*

42. **Bishop, C.,** Dupre, K.B., Barnum, C.J., Deak, T. and Eskow, K.L. (2008). L-DOPA treatment reduces serotonin function in depression-related structures of the hemiparkinsonian rat. *Society for Neuroscience, Washington D.C.*

41. Mora, N., Johnson, K. and **Bishop, C.** (2008). Effects of bilateral 6-hydroxydopamine lesions on motor and non-motor function in rats. *Annual Biomedical Research Conference for Minority Students, Orlando, FL.*

40. Johnson K., Mora, N., Eskow K.L., Dupre, K.B. and **Bishop, C.** (2008). Effects of bilateral 6-hydroxydopamine lesions on motor and non-motor function in rats. *Bridges to Baccalaureate Presentation Day, Binghamton University, Binghamton, NY.*

39. Steiniger, A., Kliloueva, A., Moore, A., Kelly, C. and **Bishop, C.** (2008). The effects of serotonin 5-HT1B receptor stimulation on D1 receptor-mediated dyskinesia in the hemiparkinsonian rat. *Department of Psychology Research Colloquia, Binghamton University Binghamton, NY.*

38. Dupre, K.B., Eskow K.L., Steiniger, A, Kliloueva, A., Moore, A., Kelly, C. and **Bishop, C**. (2008). Effects of coincident 5-HT1A receptor stimulation and NMDA receptor antagonistm on L-DOPA-induced dyskinesia and rotational behaviors in the hemiparkinsonian rat. *Undergraduate Research Fair, Binghamton University, Binghamton, NY.*

37. **Bishop, C.,** Krolewski, D.M., Eskow, K.L., Gupta, V. and Walker, P.D. (2007). Direct striatal 5-HT1A receptor stimulation reduces L-DOPA-induced dyskinesia in the hemiparkinsonian rat. *Society for Neuroscience, San Diego, CA.*

36. Barnum, C.J., Blandino, P., **Bishop, C.** and Deak, T. (2007). The anti-dyskinetic effects of corticosterone are associated with neuroinflammation in the DA-depleted striatum of a hemiparkinsonian rat. *Society for Neuroscience, San Diego, CA.*

35. Dupre, K.B., Eskow K.L., Negron, G. and **Bishop, C.** (2007). The differential effects of 5-HT1A receptor stimulation on abnormal involuntary on dopamine receptor-mediated movements and rotations in the primed hemiparkinsonian rat. *Society for Neuroscience, San Diego, CA.*

34. Eskow, K.L., Dupre, K.B. and **Bishop, C.** (2007). Serotonin 5-HT1A receptor stimulation of the dorsal raphe nucleus decreases L-DOPA-induced dyskinesia in the hemiparkinsonian rat. *Society for Neuroscience, San Diego, CA.*

33. Dickinson, S., Park, J.Y, Eskow K.L., Dupre, K.B. and **Bishop, C.** (2007).The Effects of 5-HT Lesions on the Development of L-DOPA-induced Dyskinesia and Its Reduction by 5-HT1A Receptor Stimulation in the Hemiparkinsonian Rat. *Annual Biomedical Research Conference for Minority Students, Austin, TX.*

32. Dickinson, S., Park, J.Y, Eskow K.L., Dupre, K.B. and **Bishop, C.** (2007).The Effects of 5-HT Lesions on the Development of L-DOPA-induced Dyskinesia and Its Reduction by 5-HT1A Receptor Stimulation in the Hemiparkinsonian Rat. *Bridges to Baccalaureate Presentation Day, Binghamton University, Binghamton, NY.*

31. Eskow K.L., Dupre, K.B., Barnum, C.J. and **Bishop, C.** (2007). Serotonin 5-$HT_{1A}$ receptor stimulation of the dorsal raphe nucleus decreases L-DOPA-induced dyskinesia in the hemiparkinsonian rat. *Biomedical Research Conference, Binghamton, NY.*

30. Dupre, K.B., Eskow K.L. and **Bishop, C.** (2007).The differential effects of 5-HT1A receptor stimulation on dopamine receptor-mediated rotations and abnormal involuntary movements in the hemiparkinsonian rat. *Biomedical Research Conference, Binghamton, NY.*

29. Park, J.Y., Negron, G., Lormand, L., Steiniger, A., Kliloueva, A., Dupre, K.B., Eskow, K.L. and **Bishop, C.** (2007). The NMDA receptor antagonist MK801 decreases abnormal involuntary movements in a parkinsonian rat model of L-DOPA-induced dyskinesia. *Undergraduate Research Fair Binghamton University, Binghamton, NY.*

28. Eskow K.L., Gupta, V., Alam, S.A., Park, J.Y. and **Bishop, C.** (2007). The serotonin 5-HT1A receptor agonist buspirone decreases abnormal involuntary movements in a Parkinsonian rat model of L-DOPA-induced dyskinesia. *Graduate Research Day, Binghamton University, Binghamton, NY.*

27. Dupre, K.B., Eskow K.L. and **Bishop, C.** (2007).The differential effects of 5-HT1A receptor stimulation on dopamine receptor-mediated rotations and abnormal involuntary movements in the hemiparkinsonian rat. *Graduate Research Day, Binghamton University, Binghamton, NY.*

26. **Bishop, C.,** Eskow K.L. and Walker P.D. (2006). MDMA and fenfluramine reduce L-DOPA-induced dyskinesia via indirect 5-HT1A receptor stimulation .

25. Eskow K.L., Gupta, V., Alam, S.A., Park, J.Y. and **Bishop, C.** (2006). The serotonin 5-HT1A receptor agonist buspirone decreases abnormal involuntary movements in a Parkinsonian rat model of L-DOPA-induced dyskinesia. *Society for Neuroscience, Atlanta, GA.*

24. Barnum, C.J., Blandino, P., Deak T. and **Bishop, C.** (2006). Administration of exogenous corticosterone reduces L-DOPA-induced dyskinesia. *Society for Neuroscience, Atlanta, GA.*

23. Garba, A. O., Eskow, K.L., Negron, G.E. and **Bishop, C.** (2006). Behavioral characterization of the rotenone model of Parkinson's disease. *Annual Biomedical Research Conference for Minority Students, Atlanta, GA.*

22. Garba, A. O., Eskow, K.L., Negron, G.E. and **Bishop, C.** (2006). Behavioral characterization of the rotenone model of Parkinson's disease. *Bridges to Baccalaureate Presentation Day, Binghamton University, Binghamton, NY.*

21. **Bishop, C.,** Gupta, V., Alam, S., Eskow, K.L. and Park, J. (2006). The serotonin 5-$HT_{1A}$ receptor agonist Buspirone decreases abnormal involuntary movements in a parkinsonian rat model of L-DOPA-induced dyskinesia. *Biomedical Research Conference, Binghamton, NY*

20. Dowgiert, J.L., Krolewski, D.M., **Bishop,** and Walker P.D. (2004). Enhanced D1 agonist-induced turning in unilateral dopamine depleted rats is reduced by serotonin 5-HT2A receptor antagonism. *Society for Neuroscience, San Diego, CA.*

19. Tessmer, J.L., **Bishop, C.** and Walker P.D. (2004). Receptor mechanisms contributing to L-DOPA-induced dyskinesia in the 6-hydroxydopamine-lesioned rats. *Society for Neuroscience, San Diego, CA.*

18. Walker P.D., **Bishop, C.** Tessmer, J.L. and Krolewski, D.M. (2004). Evidence that serotonin 5-HT2A receptors contribute to excessive motor behaviors in dopamine-depleted rats treated with dopamine D1 receptor agonists. *Society for Neuroscience, San Diego, CA.*

17. **Bishop, C.**, Tessmer, J.L., Ullrich, T., Rice, K.C. and Walker P.D. (2004). Serotonin 5-$HT_{2A}$ receptors underlie increased motor behaviors induced in dopamine depleted rats by 5-$HT_{2A/2C}$ agonism. *Society for Neuroscience, San Diego, CA.*

16. Krolewski, D.M., **Bishop,** and Walker P.D. (2003). Intrastriatal dopamine D1 receptor agonist-mediated locomotion is reduced by neurokinin 1 receptor antagonism. *Society for Neuroscience, New Orleans, LA.*

15. Tessmer, J.L., **Bishop, C.** and Walker P.D. (2003). A role for MAP kinase in the supersensitive motor response to D1 dopamine receptor agonism in the neonatal 6-hydroxydopamine-lesioned rat. *Society for Neuroscience, New Orleans, LA.*

14. **Bishop, C.** and Walker P.D. (2003). Intranigral antagonism of neurokinin 1 and neurokinin 3 receptors reduces intrastriatal $D_1$ receptor-stimulated locomotion in the rat**.** *Society for Neuroscience, New Orleans, LA.*

13. **Bishop, C.** and Walker P.D. (2002). Co-stimulation of intrastriatal serotonin 5-$HT_2$ and dopamine $D_1$ receptors produces synergistic effects on locomotion. *Society for Neuroscience, Orlando, FL.*

12. **Bishop, C.,** Parker, G.C. and Coscina, D.V. (2001). 8-OH-DPAT feeding is modulated by nicotine administration and its withdrawal. *Society for Neuroscience Abstract 26(2),* 1012.

11. **Bishop, C.,** Parker, G.C. and Coscina, D.V. (1999). Effects of nicotine on body weight and neuropeptide Y-induced feeding during acute, chronic and withdrawal phases. *Appetite 33,* 232-233.

10. Currie, P.J., **Bishop, C.,** Lagman, A. and Coscina, D.V. (1998). Spiperone antagonizes the effect of DOI on neuropeptide Y induced feeding and energy substrate utilization. *Society for Neuroscience Abstract 24(1),* 448.

9. Coscina, D.V., **Bishop, C.,** Koob, G.F., Rivier, J. and Currie P.J. (1998). Paraventricular nucleus injections of urocortin suppress feeding and carbohydrate metabolism. *Society for Neuroscience Abstract 24(1),* 704.

8. **Bishop, C.,** Currie, P.J. and Coscina, D.V. (1997). Delayed feeding prevents hypothalamic norepinephrine-induced overeating. *Society for Neuroscience Abstract 23.*

7. Rosenthal, L., Nykamp, K., Guido, P., Syron, M.L., Day, R., Fortier, J., **Bishop, C.,** Rice, M., Roehrs, T.A. and Roth, T. (1997). Compliance with CPAP during the first week of treatment. *Sleep Research 26.*

6. Rosenthal, L., Folkerts, M., **Bishop, C.,** Guido, P., Syron, M., Mickelson, S., Roehrs, T.A. and Roth T. (1996). The level of daytime sleepiness and the perception of sleep on the MSLT. *Sleep Research 25.*

5. Rosenthal, L., **Bishop, C.**, Helmus, T., Roehrs, T. and Roth, T. (1996). The frequency of sleep onset REM periods among subjects with no excessive daytime sleepiness. *Sleep Research 25.*

4. **Bishop, C.,** Rosenthal, L., Guido, P., Mickelson, C., Nasir, I.A., Roehrs, T.A. and Roth, T. (1996). The sleep- wake habits of patients with obstructive sleep apnea. *Sleep Research 25.*1.Guido, P., Rosenthal L., **Bishop, C.,** Roehrs, T.A., Michaelson, S., Syron, M. and Roth T. (1995). The measure of sleepiness in a sleep apnea population. *Sleep Research 24.*

3. Folkerts, M., Helmus, T., **Bishop C.,** Feldkamp, C., Roth, T. and Rosenthal L. (1995). Administration of dexamethasone and its effects on sleep and daytime alertness. Biological Psychiatry 37(9), 611-612.

2. Roehrs, T.A., Rosenthal, L., **Bishop C.,** Farchione, T., Henderson, T. and Roth T. (1995). The alerting effects of methylphenidate under normal and deprived sleep conditions. *Sleep Research 24.*

1. Guido, P., Rosenthal L., **Bishop, C.,** Roehrs, T.A., Michaelson, S., Syron, M. and Roth T. (1995). The measure of sleepiness in a sleep apnea population. *Sleep Research 24*.

**Invited Lectures/Symposia**

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
PSYC392 (various credits), ***Movement Disorders Laboratory***, 8/05-present- Mentor
*Graduate Courses*
PSCY609 (2 credits), ***Clinical Neuroscience***, 1/07-present- Instructor
PSYC592 (various credits), ***Movement Disorders Laboratory***, 8/06-present- Mentor

## Mentoring

**Post-doctoral associates:**
C.J. Barnum (2008-2009) from Binghamton University, currently @ Emory University
Nirmal Bhide (2010-present) from University of Cincinnati

**Doctoral graduate students:**
Karen Eskow (2006-present) from Binghamton University, Received MA 5/2008
Kristin Dupre (2006-present) from LeMoyne University, Received MA 5/2008
Corinne Ostock (2008-present) from Lock Haven University
David Lindenbach (2009-present) from Willamette University

**Undergraduate students:**
Vikas Gupta (2005-2006)- 1 year fellowship at NIH, attending M.D. program @ Pitt
Salmahn Alam (2005-2006)- attending M.D. program @ SUNY-Upstate
John Park (2005-present)- applying to M.D. programs
Karen Eskow (2005-2006)- attending Ph.D. program @ Binghamton University
Giselle Negron (2006-2007)- attending D.D.S. school
Adinoyi Garba (Summer 2006)- attending Biomedicine/Technology program @ SUNY-Upstate
Aimee Steiniger (2006-2008)- attending M.D. program @ University of Albany
Lydia Lormand (2006-2007)- attending to D.O. program @ NYCOM
Anna Kliouеva (2006-2009)- currently research assistant @ NYU
Samantha Schatz (2006-2007)- Peace corps
Sando Dickinson (Summer 2007-present)- currently in lab
Alexander Moore (2007-2009)- applying to graduate school in Biochemistry
Catherine Kelly (2007-2008)- attending D.O. program @ NYCOM
Emma Mohamed (2008)- applying to graduate school in Social Work
Kinra Johnson (Summer 2008)- attending Monroe Community College
Nathalie Mora (Summer 2008)- attending Monroe Community College
Stefanie Tignor (2008-2009)- applying to Clinical psychology programs
Hannah Walters (2008-present)- accepted to M.D. program
Yuchen Liu (2008-present)- currently in lab
John Banahene (Summer 2009)- currently @ Monroe Community College
Maggie Surrena (2009-present)- currently @ University at Buffalo
Sando Dickinson (Summer 2007-present)- currently in lab
Melanie Salamon (2009-present)- currently in lab
Evan Feinberg (2009-present)- currently in lab

Adam Goldberg (2010-present)- currently in lab
Jose Estrella (2010-present)- currently in lab
Mohamed Mohamed (Summer 2010)- currently @ Monroe Community College
Bill Buchta (2010-present)- currently in lab

**Honor's Theses:**

Yee, J. (2006). Recognition of compounds objects parsed on edge properties in pre-school children.
Leschinsky, S. (2006). Temporal coding in the NTS in response simulated taste aversion.
Knight, K. (2007). The effects of the 5-HT3 antagonist Ondansetron on light-induced fos in the SCN of rats during subjective day.
Matthews, C. (2008). Effects of highlighting on word recognition.
Silver, A. (2009). Cross-racial facial features as determinants of attractiveness.
Zaccarini, D. (2009). Characterizing the retinal fibers that innervate regions of the brain the control circadian rhythms.
Seay, K. (2009). Intra-adrenal cascade: a possible explanation for the dissociation between ACTH and corticosterone.
Eberle, J. (2010). The bad neighbor paradigm: a possible model of chronic stress.
Hung, J. (2010). Ontogeny of calbindin-d28k cells in the rat superchiasmatic nucleus.

**Master's Theses:**

Roussin, A. (2006). Response variability in taste cells of the nucleus of the solitary tract of the rat.
Barnum, C.J. (2006). Variable effect of stress paradigms on body temperature and locomotor activity.
Eskow, K.L (2007). The essential role of the rostral raphe nuclei in movement control in the L-DOPA-treated hemiparkinsonian rat.
Dupre, K.B. (2007). Striatal 5-HT1A receptor stimulation reduces D1 receptor-induced dyskinesia and improves movement in the hemiparkinsonian rat.
Linsenbardt, D. (2007). Effects of cannabinoid stimulation on ethanol consumption using the drinking in the dark procedure.
Boycheva, E. (2008). Are all scales created equal? Comparison of two standardized hypnotic suggestibility scales.
Bachman, D. (2008). Review: neurotoxin models of Parkinson's disease.
Anzalone, S. (2008). Cholinergic cortical dysfunction in an animal model of diencephalic amnesia.
Ostock, C. (2010). The role of the motor cortex in the anti-dyskinetic effects of 5-HT1A receptor stimulation in the hemiparkinsonian rat.
Broadwater, M. (2009-2010). Effects of variable ethanol exposure schedules on the development of acute and chronic tolerance in adolescent and male rats. (Proposed)
D'Agostino, A. (2010). Taste mixture coding in the NTS of the behaving rat (Proposed)

**Doctoral Qualifiers:**

Barnum, C.J. (2007-2008)
Blandino, P. (2007-2008)
Eskow, K.L. (2008-2009)
Dupre, K.B. (2008-2009)
Vetreno, R. (2008-2009)
Anzalone, S. (2009-2010)

**Doctoral Committees:**

Crossett, S. (2007-2009)
Hallquist, M. (2007-2009)
Coleman, S. (2008-2009)

Roussin, A. (2009-2010)
Vetreno, R. (2009-2011)
Rosen, A. (2009-2011)
Pan, D. (2009-2011)
Dupre, K. (2010-2011)
Eskow-Jaunarajs, K. (2010-2011)

**Dissertation Defenses:**

Barnum, C.J. (2008). Contribution of IL1 signaling to L-DOPA-induced dyskinesia.
Blandino, P. (2008). Role of noradrenergic innervation on footshock-induced cytokine response.
Pavlides, S. (2009). Molecular and biochemical analysis in two models of pupal diapause.
Hallquist, M. (2009). Role of effortful control in executive inhibition in personality dysfunction.
Crossett, S. (2009). Interpersonal and cognitive risk factors for Postpartum depression.
Coleman, S. (2010). Cognitive inhibition and executive function in the thought suppression task

## References

**Donald V. Coscina, Ph.D.**
Professor, Department of Psychology
Wayne State University
71 W. Warren
Detroit, MI 48202
Phone: 313-577-2810
Fax: 313-577-7636
Email: dcoscina@sun.science.wayne.edu

**Paul D. Walker, Ph.D.**
Professor, Department of Anatomy and Cell Biology
Wayne State University School of Medicine
540 E. Canfield
Detroit, MI 48201
Phone: 313-577-5678
Fax: 313-577-3125
Email: pdwalker@med.wayne.edu

**Terrence Deak, Ph.D.**
Associate Professor, Department of Psychology
Binghamton University
4400 Vestal Parkway East
Binghamton, NY 13902
Phone: 607-777-5918
Fax: 607-777-4890
Email: tdeak@binghamton.edu

**Lisa Savage, Ph.D.**
Professor, Department of Psychology
Binghamton University
4400 Vestal Parkway East
Binghamton, NY 13902
Phone: 607-777-4383
Fax: 607-777-4890
Email: lsavage@binghamton.edu