

Deranda B. Lester, M.S.

Curriculum Vitae

Academic Contact

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EDUCATION

- 2010** **Doctoral Candidate, Experimental Psychology**
The University of Memphis, Department of Psychology
Research Area: Neuroscience
Dissertation: Regulation of Striatal Dopamine Activity by Afferent Projections
to the Substantia Nigra Compacta
Expected Completion: 12/2010 or 5/2011
Chair: Charles D. Blaha, Ph.D.
- 2007** **Master of Science, General Psychology**
The University of Memphis, Department of Psychology
Thesis: Behavioral and Neurochemical Analysis of Two Novel Mutant Mouse
Strains Hyporesponsive to Cocaine
Chair: Charles D. Blaha, Ph.D.
- 2004** **Bachelor of Science**
Millsaps College, Jackson, MS
Major: Psychology
Minors: Biology, Chemistry

RESEARCH EXPERIENCE

- 2004-present** **Research Assistant**
Psychology Department, The University of Memphis
Research Topics Studied: The neurochemistry of the mesoaccumbens and nigrostriatal
dopaminergic systems in relation to drug abuse and Parkinson's disease
Skills and Duties: Handling of mice and rats, stereotaxic surgery, *in vivo* fixed potential
amperometry and chronoamperometry, carbon fiber recording microelectrode construction, drug
microinfusions and lesioning techniques, cryostat histological analyses of stereotaxic
placements of electrodes and cannulae
Supervisor: Charles D. Blaha, Ph.D.
- 2006** **Research Collaborator with the Neurosurgical Unit at the Mayo Clinic**
Rochester, MN
Research Topics Studied: Human stereotaxic brain surgery, specifically for Deep Brain
Stimulation as a treatment for Parkinson's disease and Tourette's syndrome
Duties: Observed Deep Brain Stimulation surgical procedure (implantation of the stimulating
electrodes) in patients with Parkinson's disease and Tourette's syndrome
Supervisors: Kendall Lee, M.D., Ph.D. and Charles D. Blaha, Ph.D.

PEER- REVIEWED PUBLICATIONS

- Lester, D.B.**, Rogers, T.D., & Blaha, C.D. (in press). Acetylcholine-Dopamine interactions in the pathophysiology and treatment of CNS disorders. *CNS Neuroscience & Therapeutics*.
- Lester, D.B.**, Miller, A.D., & Blaha, C.D. (2010). Muscarinic Receptor Blockade in the Ventral Tegmental Area Attenuates Cocaine Enhancement of Laterodorsal Tegmentum Stimulation-Evoked Accumbens Dopamine Efflux in the Mouse. *Synapse*, *64*, 216-223.
- Schmidt, L.S., Miller, A.D., **Lester, D.B.**, Bay-Richter, C., Schulein, C., Frikke-Schmidt, H., Wess, J., Blaha, C.D., Woldbye, D., Fink-Jensen, A., & Wortlein, G. (2010). Increased amphetamine-induced locomotor activity, sensitization, and accumbal dopamine release in M5 muscarinic knockout mice. *Psychopharmacology*, *207*, 547-558.
- Lester D.B.**, Rogers, T.D., Garris P.A., Lee, K.H., Mohseni P., & Blaha C.D. (2009) Neuronal pathways involved in deep brain stimulation of the subthalamic nucleus for the treatment of Parkinson's disease. *Proceedings of the Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, *1*, 3302-3305.
- Lee, K.H., Blaha, C.D., Garris, P.A., Mohseni, P., Horne, A.E., Bennet, K.E., Agnesi, F., Bledsoe, J.M., **Lester, D.**, Kimble, C., Min, H., Kim, Y., & Cho, Z. (2009). Evolution of deep brain stimulation: human electrometer and smart devices supporting the next generation of therapy. *Neuromodulation: Technology at the Neural Interface*, *12*, 85-103.
- Lester, D.B.**, Miller, A.D., Pate, T.D., & Blaha, C.D. (2008). Midbrain acetylcholine and glutamate receptors modulate accumbal dopamine release. *NeuroReport*, *19*, 991-995.

BOOK CHAPTERS

- Miller, A.D., Forster, G.L., **Lester, D.B.**, & Blaha, C.D. (2008). Mesopontine cholinergic and glutamatergic modulation of mesoaccumbens dopaminergic neurotransmission. In HN David (Ed), *The Nucleus Accumbens: Neurotransmitters and Related Behaviours* (pp. 111-136). Philadelphia, PA; Old City Publishing.
- Blaha, C.D., **Lester, D.B.**, Ramsson, E.S., Lee, K.H., & Garris, P.A. (2008). Striatal dopamine release evoked by subthalamic stimulation in intact and 6-OHDA-lesioned rats: Relevance to deep brain stimulation in Parkinson's Disease. In P. Phillips, S. Sandberg, S. Ahn, & A. Phillips (Eds.), *Monitoring Molecules in Neuroscience* (pp. 395-397). Vancouver, Canada.

MANUSCRIPTS SUBMITTED

- Lester D.B.**, Rogers, T.D., Garris P.A., Lee, K.H., Mohseni P., & Blaha C.D. (2010). Candidate pathways mediating dopamine release in the striatum following deep brain stimulation of the subthalamic nucleus. Manuscript submitted to *Neuroscience Letters* for publication.

MANUSCRIPTS IN PROGRESS

- Lester, D.B.**, & Blaha, C.D. (2010). *Substantia nigra compacta cholinergic, glutamatergic, and GABAergic receptors modulate striatal dopamine release evoked by electrical stimulation of the subthalamic nucleus*. Unpublished manuscript.
- Lester, D.B.**, Rogers T.D., & Blaha, C.D. (2010). *Cholinergic and glutamatergic pathways involved in striatal dopamine release evoked by electrical stimulation of the pedunculopontine tegmental nucleus*. Unpublished manuscript.
- Dickson, P.E., Rogers, T.D., **Lester, D.B.**, Goldowitz, D., Mittleman, G., & Blaha, C.D. (2010). *Adolescent nicotine exposure results in a persistent genotype-dependent increase in dopamine transporter uptake efficiency in the nucleus accumbens shell*. Unpublished manuscript.

CONFERENCE PUBLICATIONS

- Rogers, T.D., **Lester, D.B.**, & Blaha, C.D. (2010). Evaluation of parameter changes in deep brain stimulation in a levodopa-treated parkinsonian animal model. Poster session presented at the Student Research Forum at the University of Memphis.
- Lester, D.B.**, Rogers, T.D., Mohseni, P., Garris, P.A., Lee, K.H., & Blaha, C.D. (2009). Neuronal pathways and subthalamic nucleus receptor subtypes involved in striatal dopamine release evoked by stimulation of the pedunculopontine tegmental nucleus. *Society for Neuroscience Abstracts*, 45.12.
- Rogers, T.D., **Lester, D.B.**, Mohseni, P., Lee, K.H., Garris, P.A., & Blaha, C.D. (2009). Evaluation of parameter changes in deep brain stimulation in a levodopa-treated parkinsonian animal model. *Society for Neuroscience Abstracts*, 45.1.
- Dickson, P.E., Rogers, T.D., **Lester, D.B.**, Miller, M.M., Matta, S.G., Chesler, E.J., Goldowitz, D., Kobar, M.S., Blaha, C.D., & Mittleman, G. (2009). Adolescent nicotine exposure results in a persistent genotype-dependent increase in dopamine transporter uptake efficiency in the nucleus accumbens shell. *Society for Neuroscience Abstracts*, 345.16.
- Lester, D.B.**, Pate, T.D., & Blaha, C.D. (2009). Pathways involved in deep brain stimulation of the subthalamic nucleus for treatment of Parkinson's disease. Poster session presented at the Student Research Forum at the University of Memphis.
- Tillery, R., **Lester, D.B.**, & Blaha, C.D. (2009). Contributions of acetylcholine receptors during subthalamic nucleus deep brain stimulation: relevance to Parkinson's disease. Paper presented at the Mid-south Psychology Conference, Lambuth University, Jackson, TN.
- Lester, D.B.**, Pate, T.D., Mohseni, P., Garris, P.A., Lee, K.H., & Blaha, C.D. (2008). Dopamine pathways involved in subthalamic nucleus deep brain stimulation for the treatment of Parkinson's disease. *Society for Neuroscience Abstracts*, 141.5.
- Pate, T.D., **Lester, D.B.**, Miller, A.D., Mittleman, G., & Blaha, C.D. (2008). Midbrain nicotinic and muscarinic acetylcholine and ionotropic glutamate receptors mediate dopamine release in the nucleus accumbens of mice. *Society for Neuroscience Abstracts*, 660.3.
- Blaha, C.D., Lambert, R., **Lester, D.B.**, Pate, T.D., Mohseni, P., Garris, P.A., & Lee, K.H. (2008) Assessment of burst-like and continuous-intermittent stimulation of the nigrostriatal pathway to evoke sustained striatal extracellular concentrations of dopamine: Relevance to deep brain stimulation in Parkinson's disease. *Society for Neuroscience Abstracts*, 640.1.
- Lee, K., **Brewer, D.**, Bledsoe, J., Bennet, K., Mohseni, P., Garris, P., Horne, A., Agnesi, F., & Blaha, C. (2007, November). *Current-isolated burst-patterned deep brain stimulation results in optimization of striatal dopamine release in the rat*. Poster session presented at the 12th Asian Australasian Congress of Neurosurgical Surgeon / World Federation of Neurosurgical Societies, 13th Interim Meeting, Japan.
- Lester, D.B.**, Miller, A.D., Dickson, P.E., Mittleman, G., & Blaha, C.D. (2007). Effects of acute muscarinic receptor blockade on cocaine-induced elevations in laterodorsal tegmentum stimulation-evoked accumbens dopamine levels. *Society for Neuroscience Abstracts*, 272.6.
- Call, S.B., Mittleman, G., **Lester, D.B.**, Buckholdt, K., Goldowitz, D., & Blaha, C.D. (2006). Ethanol self-administration in a schedule-induced polydipsia task is reduced in both genders of dopamine transporter knockout mice. *Society for Neuroscience Abstracts*, 393.1.
- Brewer, D.L.**, Mittleman, G., Goldowitz, D., Call, S.B., & Blaha, C.D. (2006). Neurochemical analysis of a mutant mouse pedigree that shows no sensitization to cocaine. *Society for Neuroscience Abstracts*.
- Brewer, D.L.**, Mittleman, G., Goldowitz, D., Miller, A.D., & Blaha, C.D. (2005). Behavioral and neurochemical analysis of two novel mutants hyporesponsive to cocaine: an update from the TMGC consortium. *Society for Neuroscience Abstracts*, 800.9.

GRANTS AWARDED

- 2009 Graduate Research Grant from Psi Chi National Honor Society**
 “Neuronal pathways involved in mediating dopamine release evoked by stimulation of the subthalamic nucleus for the treatment of Parkinson’s disease”
Principal Investigator: Deranda Lester
Mentor: Charles D. Blaha, Ph.D.
Total Funds: \$1131.40

HONORS

- 2010 Second Place at the Student Research Forum at the University of Memphis**
 Monetary award for Second place in the poster presentation of research in the division of Physical and Applied Sciences
- 2009 Society for Neuroscience Graduate Student Travel Award**
 Monetary award for travel to present research findings at the Society for Neuroscience conference in Chicago, IL
- 2009 First Place at the Student Research Forum at the University of Memphis**
 Monetary award for first place in the poster presentation of research in the division of Physical and Applied Sciences
- 2005-2009 Annual Research Travel Award**
 Monetary award for travel from the Psychology Department at the University of Memphis to present research findings
- 2006 The College of Arts and Sciences Travel Enrichment Award**
 Monetary award for travel from the College of Arts and Sciences Program at the University of Memphis to present research findings at the Society for Neuroscience conference in San Diego, CA

MENTORING EXPERIENCE

- 2006-2009 Trainer and Supervisor of Students in Laboratory Setting**
Duties: Trained 5 undergraduate students in stereotaxic surgery and fixed potential amperometry, assisted students with statistical measures and the writing and defense of their honors theses

TEACHING EXPERIENCE**Instructor**

- 2010 Online Physiological Psychology (undergraduate), 1 Semester
 Class size = 25, Regents Online Degree Program
- 2008-2009 Introduction to Psychology (undergraduate), 3 Semesters
 Class size = 40, The University of Memphis

Teaching Assistant

- 2005-2007 Research Methods (undergraduate), 4 Semesters
Class size = 30, The University of Memphis
Duties: Instructed lab section on research design and writing in APA style, lead analysis sessions using SPSS, graded student research manuscripts
- 2005 Advanced Statistics I (graduate), 1 Semester
Class size = 30, The University of Memphis
Duties: Lead analysis sessions using SPSS, graded homework

Guest Lectures

- 4/2010 “Pathways involved in deep brain stimulation of the subthalamic nucleus for treatment of Parkinson’s disease”
Presentation given at the Student Research Forum, The University of Memphis
- 10/2009 “The nigrostriatal dopaminergic system and movement disorders”
Lecture given in undergraduate Introduction to Psychology class, The University of Memphis
- 9/2008 “Synaptic mechanisms of drugs of abuse”
Lecture given in undergraduate Introduction to Psychology class, The University of Memphis
- 12/2006 “The effects of drugs of abuse on neurotransmitter systems”
Lecture given to psychology students at Dyersburg State Community College, Covington, TN

REFERENCES

Charles D. Blaha, Ph.D.
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Kendall Lee, M.D., Ph.D.
Director, Mayo Neural Engineering Laboratories
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