

August 2017

**Sade M. Spencer, Ph.D.**

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**Current Position**

2012-present Medical University of South Carolina  
Postdoctoral Fellow, Peter W Kalivas Laboratory

**Education**

2012 Ph.D., Neuroscience University of Texas Southwestern Medical Center Dallas, TX  
*Advisor & Committee Chair:* Colleen A. McClung  
*Dissertation Committee:* Matthew S. Goldberg, Michael Lutter, Carla B. Green  
*Dissertation* The role of CLOCK in the regulation of dopamine neurotransmission in the *Clock $\Delta$ 19* mutant mouse model

2006 B.S., Biology University of Alabama Tuscaloosa, AL  
Summa cum Laude

**Grant Support**

**Current**

K99/R00 Pathway to Independence Award – NIDA (DA041462) 05/2016-04/2021  
The role of dopamine in regulating relapse-induced transient synaptic plasticity

Burroughs Wellcome Fund Postdoctoral Enrichment – BWF (1012607) 09/2013-12/2017  
Investigating the role of astrocyte-secreted synaptogenic molecules in cocaine-induced synaptic plasticity and reinstatement behavior

**Completed**

F32 Postdoctoral NRSA Fellowship – NIDA (DA0377220) 05/2014-04/2016  
Role of Alpha2delta-1 in Cocaine Relapse and Gabapentin Mechanisms of Action

Pilot Specialized Center of Research (SCOR) – MUSC (DA016511) 11/2014-10/2015  
SCOR on Sex and Gender Factors Affecting Women's Health  
Sex differences and glutamatergic mechanisms of cannabis addiction

F31 Diversity Predoctoral NRSA Fellowship – NIMH (MH090683) 07/2010 – 03/2012  
The role of dopaminergic transmission in the development of manic-like behaviors

T32 Institutional Training Grant – NIMH (MH76690) 09/2008-06/2010  
Basic science training program in the neurobiology of mental illness, P.I. Carol A. Tamminga

**Awards and Honors**

**Postdoctoral**

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- 2017 Travel Award, Winter Conference on Brain Research Annual Meeting; Big Sky, MT
- 2016 Travel Award, American College of Neuropsychopharmacology Annual Meeting; Hollywood, FL
- 2015 Travel Award, American College of Neuropsychopharmacology Annual Meeting; Hollywood, FL
- 2015 Travel Award, NIDA Diversity Scholars, Society for Neuroscience Annual Meeting; Chicago, IL
- 2014 Travel Award, American College of Neuropsychopharmacology Annual Meeting; Phoenix, AZ
- 2014 Travel Award, NIDA Early Career Investigator poster session, American Psychological Association Annual Meeting; Washington, DC
- 2013 Travel Award, Cold Spring Harbor Cellular Biology of Addiction Course; Cold Spring Harbor, NY

### **Graduate**

- 2011 Travel Award, Carl Storm Underrepresented Minority Fellowship, Gordon Research Conference; Lewiston, ME
- 2011 Philanthropic Educational Organization Scholar Award
- 2010 Dean's Discretionary Award, UT Southwestern Medical Center
- 2009 Graduate Student Organization Poster Award, Honorable mention, UT Southwestern Medical Center

### **Undergraduate**

- 2006 Cleophus Thomas Award, University of Alabama
- 2005 National Society of Collegiate Scholars, University of Alabama
- 2005 Golden Key International Honor Society, University of Alabama
- 2004 Alpha Lambda Delta National Honor Society, University of Alabama
- 2004 Michael L. McDaniel Memorial Scholarship, Department of Biology, University of Alabama
- 2003 Presidential Scholarship, University of Alabama

### **Academic Service**

1. Enhanced orientation, UT Southwestern Medical Center (2008-2009)
2. 'Big Sib' mentor for entering Division of Basic Sciences students, UT Southwestern Medical Center (2008-2010)
3. Student recruitment, UT Southwestern Medical Center (2008-2011)

### **Teaching Experience**

- 2014 Guest Lecturer – Trident Tech Science Summer Camp
- 2013-present Teaching Assistant, MUSC College of Medicine 1<sup>st</sup> Year Neuroanatomy Lab, 2013-2016
- 2012-present Laboratory mentorship:  
Medical University of South Carolina  
1 graduate rotation student, 10 undergraduate research assistants (College of Charleston, Allegheny College, and Mount Holyoke College), 3 bachelor's essays
- 2010-2011 Volunteer, Arlington Park Elementary, Dallas ISD, 6<sup>th</sup> grade science
- 2008-2009 Tutor, University of Texas Southwestern Medical Center, Core Course
- Spring 2006 Teaching Assistant, University of Alabama, BSC 108- Intro Biology for non-majors

### **Professional Memberships**

- 2015- present International Society for Neurochemistry
- 2008- present Society for Neuroscience

### **Journal Review Service**

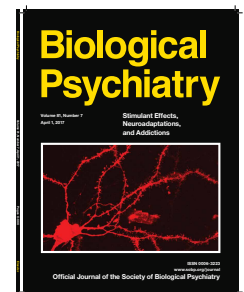
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PLoS ONE, Brain Structure and Function, Brain Research

### **Peer-Reviewed Journal Articles**

1. **Spencer S** and Kalivas PW. Glutamate transport: a new bench to bedside mechanism for treating substance abuse. *International Journal of Neuropsychopharmacology* (In press).
2. Melis M, Frau R, Kalivas PW, **Spencer S**, Chioma V, Zamberletti E, Rubino T, Parolaro D. (2017) New vistas on cannabis use disorder. *Neuropharmacology* (In press) PMID: 28373077.
3. Smith AW, Scofield MD, Heinsbroek JA, Gipson CD, Neuhofer D, Roberts-Wolfe D, **Spencer S**, Stankeviciute N, Smith RJ, Allen A, Lorang M, Griffin III W, Boger HA, Kalivas PW. (2017) Accumbens nNOS interneurons regulate cocaine relapse. *Journal of Neuroscience* 37(4):742-756. PMID: 28123012.
4. **Spencer S**, Garcia-Keller C, Roberts-Wolfe D, Heinsbroek JA, Mulvaney M, Sorrel A, Kalivas PW. (2017) Cocaine use reverses striatal plasticity produced during cocaine seeking. *Biological Psychiatry* 81(7):616-624. PMID: 27837917.

>Featured in “Early Career Investigator Commentary” article: Ferguson, D. (2017) Cocaine mediates the Cellular Mechanisms of Satiating. *Biological Psychiatry* 81(7):e47-e48.



5. Scofield MD, Heinsbroek JA, Gipson CD, Kupchik YM, **Spencer S**, Smith AW, Roberts-Wolfe D, Kalivas PW. (2016) The nucleus accumbens: mechanisms of addiction across drug classes reflect the importance of glutamate homeostasis. *Pharmacological Reviews* 68(3):816-71. PMID: 27363411.
6. Brown RM, Kupchik YM, **Spencer S**, Garcia-Keller C, Spanswick DC, Lawrence AJ, Simonds SE, Schwartz DJ, Jordan KA, Zhou TC, Kalivas PW. (2015) Addiction-like synaptic impairments in diet-induced obesity. *Biological Psychiatry* In press. PMID: 26826876.
7. Garcia-Keller C, Kupchik Y, Gipson C, Brown RM, **Spencer S**, Bollati F, Roberts-Wolfe D, Heinsbroek J, Cancela LM, Kalivas PW. (2015) Glutamatergic mechanisms of comorbidity between acute stress and cocaine self-administration. *Molecular Psychiatry* 21(8):1063-9. PMID: 26821978.
8. Sidor MM, **Spencer SM**, Dzirasa K, Parekh PK, Tye KM, Warden MR, Arey RN, Enwright JF III, Jacobsen JPR, Kumar S, Remillard EM, Caron MG, Deisseroth K, McClung CA. (2015) Daytime spikes in dopaminergic activity drive rapid mood-cycling in mice. *Molecular Psychiatry* 20(11):1406-19. PMID: 25560763.
9. Ozburn AR, Falcon E, Twaddle A, Nugent A, Gillman A, **Spencer SM**, Arey RN, Mukherjee S, Lyons-Weiler JF, Self DW, McClung CA. (2015) Direct regulation of diurnal Drd3 expression and cocaine reward by NPAS2. *Biological Psychiatry* 77(5):425-433. PMID: 25444159.
10. **Spencer S**, Brown RM, Quintero GC, Kupchik YM, Thomas C, Reissner KJ, Kalivas PW. (2014)

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Alpha2delta-1 signaling in nucleus accumbens is necessary for cocaine-induced relapse. *Journal of Neuroscience* 34(25):8605-8611. PMID: 24948814.

>Featured in “Research Highlights” article: Bucci M. (2014) Your channels on Drugs. *Nature Chemical Biology* 10(8):607.

11. Reissner KJ, Thomas CA, Brown RM, **Spencer S**, Tran PK, Kalivas PW. (2014) Chronic administration of the glial modulator propentofylline impairs cue-primed reinstatement to cocaine. *Neuropsychopharmacology* 39(2):499-406. PMID: 23985782.
12. Arey RN, Enwright JF III, **Spencer SM**, Ozburn AR, Falcon E, Ghose S, Tamminga CA, McClung CA. (2014) An important role for Cholecystokinin, a CLOCK target gene, in the development and treatment of manic-like behaviors. *Molecular Psychiatry* 19(3):342-350. PMID: 23399917.
13. Smith RJ, Lobo MK, **Spencer S**, Kalivas PW. (2013) Cocaine-induced adaptations in D1- or D2- expressing accumbens projection neurons: Not synonymous with classical direct and indirect pathways. *Current Opinion in Neurobiology* 23(4):546-552. PMID: 23428656.
14. Ozburn AR, Falcon E, Mukherjee S, Gillman A, Arey RN, **Spencer S**, McClung CA. (2013) Role of CLOCK in Ethanol-Related Behaviors. *Neuropsychopharmacology* 38(12):2393-400. PMID:23722243.
15. **Spencer S\***, Falcon E\*, Kumar J, Krishnan V, Mukherjee S, Birnbaum SG, McClung CA. (2013) Circadian genes *Period 1* and *Period 2* in the nucleus accumbens regulate anxiety-related behavior. *European Journal of Neuroscience* 37(2):242-50. PMID: 23039899.
16. **Spencer S**, Torres-Altora MI, Falcon E, Arey RN, Marvin M, Goldberg MS, Bibb JA, McClung CA. (2012) A mutation in CLOCK leads to altered dopamine receptor function. *Journal of Neurochemistry* 123(1):124-34. PMID: 22757753.
17. Coque L, Mukherjee S, Cao JL, **Spencer S**, Marvin M, Falcon E, Sidor MM, Birnbaum SG, Graham A, Neve RL, Gordon E, Ozburn AR, Goldberg MS, Han MH, Cooper DC, McClung CA. (2011) Specific role of VTA dopamine neuronal firing rates and morphology in the reversal of anxiety-related but not depression-related behavior in the *Clock $\Delta$ 19* mouse model of mania. *Neuropsychopharmacology* 36(7):1478-88. PMID: 21430648.
18. Enwright JF III, Wald M, Paddock M, Hoffman E, Arey RN, Edwards S, **Spencer S**, Nestler EJ, McClung CA. (2010)  $\Delta$ FosB indirectly regulates *Cck* promoter activity. *Brain Research* 1329:10-20. PMID: 20226774.
19. Cameron EM, **Spencer S**, Lazarini J, Harp CT, Ward ES, Burgoon M, Owens GP, Racke MK, Bennett JL, Frohman EM, Monson NL. (2009) Potential of a unique antibody gene signature to predict conversion to clinically definite multiple sclerosis. *Journal of Neuroimmunology* 213 (1-2):123-130. PMID: 19631394.

### **Commentaries**

1. **Spencer S**, Scofield MD, Kalivas PW. (2016) The good and bad news about glutamate in drug addiction. *Journal of Psychopharmacology* 30(11):1095-1098. PMID: 27353027.

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### **Oral Presentations**

The addicted synapse: insights from novel models of addiction and relapse. Invited slide presentation, University of Florida 2017. Gainesville, FL

From salamanders to substance use disorders and circadian rhythms in between: my scientific journey so far. Invited slide presentation, NIDA Diversity Supplement Workshop 2017. North Bethesda, MD

From craving to satiety: using cocaine reverses corticostriatal plasticity produced by cocaine seeking. Panel, Winter Conference on Brain Research 2017. Big Sky, MT.

From mentee to mentor: my journey/From craving to satiety: using cocaine reverses corticostriatal plasticity produced by cocaine seeking. Invited slide presentation, NIDA Diversity Supplement Workshop 2016. North Bethesda, MD.

Developing a rodent model of THC self-administration. Invited slide presentation, Florey Institute of Neuroscience and Mental Health 2015. Melbourne, Victoria- Australia.

Transient synaptic plasticity induced by drug cues is reversed by drug relapse. Symposium, International Society for Neurochemistry 2015. Cairns, Queensland- Australia.

Implicit Bias. Invited slide presentation, Initiative for Maximizing Student Development Program monthly meeting 2014. Medical University of South Carolina, Charleston, SC.

Gelatinase (MMP-2 and MMP-9) activity in nucleus accumbens during cocaine-primed reinstatement. Nanosymposium, Society for Neuroscience 2013. San Diego, CA.

Circadian rhythms, dopaminergic transmission, and psychiatric disease. Invited slide presentation, Southeastern and Central Texas Society for Clocks 2010 (SECTS for Clocks), Texas A&M University, College Station, Texas.