

## Cody Alexander Siciliano

Assistant Professor  
Vanderbilt University  
Department of Pharmacology  
Vanderbilt Center for Addiction Research  
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### EDUCATION

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<i>Graduate</i>	<i>Undergraduate</i>	<i>Undergraduate</i>
2012-2015	2009-2011	2005-2009
Ph.D in Neurosciene	B.A. in Psychology	AA in Liberal Arts with honors
Wake Forest School of Medicine	State University of New York at Binghamton	Sullivan County Community College
Winston-Salem, NC	Binghamton, NY	Loch Sheldrake, NY
Advisor, Sara R. Jones, Ph.D	Graduated Cum Laude	Graduated Magna Cum Laude

### RESEARCH EXPERIENCE

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<i>Principal Investigator</i>	<i>Postdoctoral Training</i>	<i>Graduate Training</i>	<i>Laboratory Technician</i>
2019-Present	2015-2019	2012-2015	2011-2012
Assistant Professor	Postdoctoral Fellow	Student	Research Assistant
Vanderbilt Center for Addiction Research	Picower Institute for Learning and Memory	Department of Physiology and Pharmacology	Department of Psychology
Department of Pharmacology Vanderbilt University	Brain and Cognitive Sciences Massachusetts Institute of Technology Laboratory of Dr. Kay M. Tye	Program in Neuroscience Wake Forest School of Medicine Laboratory of Dr. Sara R. Jones	Binghamton University Laboratory of Dr. Jilla Sabeti

### RESEARCH SUPPORT

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#### Current

K99/R00 DA045103 Pathway to Independence Award (Siciliano, PI), NIDA 05/15/18 – 05/15/23

#### **Defining the role of cortical circuit dynamics in learning and addiction**

NARSAD Young Investigator Award (Siciliano, PI) 01/01/2018 – 12/31/2019

#### **Integrative circuits controlling homeostatic learning mechanisms**

#### Completed

F32 MH111216 (Siciliano, PI), NIMH 07/01/16-05/15/18

Ruth L. Kirschstein National Research Service Award – Postdoctoral Fellowship

#### **Elucidating the role of basolateral amygdala projections to the lateral hypothalamus in associative learning**

F31 DA037710 (Siciliano, PI), NIDA

02/01/15 – 11/16/15

Ruth L. Kirschstein National Research Service Award – Predoctoral Fellowship

#### **Amphetamine administration during a rodent model of cocaine abuse**

T32AA007565-20 (Brian McCool, PI) NIAAA

08/01/2013 – 01/31/15

Ruth L. Kirschstein National Research Service Award – Predoctoral Fellowship

#### **Wake Forest Alcohol Training Grant**

### TALKS

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#### Invited

1. **Siciliano CA** (June, 2019) Anatomical, functional, and transcriptional organization of cortical circuits mediating compulsive drinking. *Research Society on Alcoholism*. Minneapolis, MN.
2. **Siciliano CA** (June, 2019) Cortical-brainstem projections gate compulsive alcohol drinking. *Inscopix East Coast Meeting*. Boston, MA.
3. **Siciliano CA** (June, 2019) A novel model for longitudinal tracking of addiction vulnerability in rodents. *College on Problems of Drug Dependence*. San Antonio, TX.
4. **Siciliano CA** (April, 2019) A novel model for longitudinal tracking of addiction vulnerability in rodents. *Behavioral Pharmacology Society*. Orlando, FL.
5. **Siciliano CA** (February, 2019) Circuit-based activity signatures of maladaptive decision making. *Mount Sinai Seminar Series*. New York, NY.

6. **Siciliano CA** (January, 2019) Cross-species effects of alcohol exposure on kappa-opioid receptor regulation of dopamine signaling. *Winter Conference on Brain Research*. Aspen, CO.
7. **Siciliano CA** (January, 2019) Cortical-brainstem projections gate compulsive alcohol drinking. *Winter Conference on Brain Research*. Aspen, CO.
8. **Siciliano CA** (December, 2018) Cortical-brainstem projections gate compulsive alcohol drinking. *American College of Neuropsychopharmacology*. Hollywood, FL.
9. **Siciliano CA** (October, 2018) Acquisition and analysis pipelines for *in vivo* calcium imaging. *Wake Forest University*. Winston-salem, NC.
10. **Siciliano CA** (October, 2018) Circuit-based activity signatures of maladaptive decision making. *Vanderbilt University*. Nashville, TN.
11. **Siciliano CA** (September, 2018) Cortical-brainstem projections gate compulsive alcohol drinking. *Genetic manipulation of neuronal activity V*. Janella Research Campus, DC.
12. **Siciliano CA** (July, 2018) Cortical-brainstem projections gate compulsive alcohol drinking. *Gordon Research Conference on Optogenetic Approaches to Understanding Neural Circuits and Behavior*. Newry, MA.
13. **Siciliano CA** (June, 2018) Cortical-brainstem projections gate compulsive alcohol drinking. *Research Society on Alcoholism*. San Diego, CA.
14. **Siciliano CA** (March, 2018) Cortical-brainstem projections gate compulsive alcohol drinking. *Alcohol and the Nervous System GRS*. Galveston, TX.
15. **Siciliano CA** (2017, June) Cortical circuit dynamics during punishment-resistant alcohol drinking. *Research Society on Alcoholism*. Denver, CO.
16. **Siciliano CA** (2017, April) Projection-target defined roles of dopamine in motivated behaviors. *Wake Forest School of Medicine*. Winston-Salem, NC.
17. **Siciliano CA** (2017, April) Projection-target defined roles of dopamine in motivated behaviors. *Rutgers University*. Piscataway, NJ.
18. **Siciliano CA** (2016, December) Translating Mesocortical Dopamine Into an Aversive Signal via Specific Downstream Projections. *American College of Neuropsychopharmacology*. Hollywood, FL.
19. **Siciliano CA** (2016, June) Impact of chronic ethanol self-administration on kappa opioid receptor regulation of dopamine signaling in nonhuman primates. *Research Society on Alcoholism*. New Orleans, LA.
20. **Siciliano CA** (2016, April) Cocaine potency at the dopamine transporter controls discrete motivational states during cocaine self-administration. *Behavioral Pharmacology Society Annual Meeting*. San Diego, CA.
21. **Siciliano CA** (2016, April) Impact of Chronic Ethanol Self-Administration on Kappa Opioid Receptor Regulation of Dopamine Signaling in Nonhuman Primates. *American Society for Pharmacology and Experimental Therapeutics*. San Diego, CA.
22. **Siciliano CA** (2015, December) Impact of chronic ethanol self-administration on kappa opioid receptor regulation of dopamine signaling in nonhuman primates. *American College of Neuropsychopharmacology*. Hollywood, FL.
23. **Siciliano CA** (2015, August) More than a replacement therapy: amphetamine treatment reverses the behavioral and neurochemical consequences of long-access cocaine self-administration. *Gordon Research Seminar on Catecholamines*. Newry, ME.
24. **Siciliano CA** (2015, April) Voluntary ethanol intake predicts kappa opioid receptor supersensitivity and regionally distinct dopaminergic adaptations in macaques. *Conference on the Therapeutic Potential of Kappa Opioids in Pain and Addiction*. Chapel Hill, NC.
25. **Siciliano CA** (2015, March) More than replacement therapy: amphetamine treatment rescues the behavioral and neurochemical consequences of cocaine self-administration. *Behavioral Pharmacology Society Annual Meeting*. Boston, MA.
26. **Siciliano CA** (2014, August) Ethanol intake predicts alterations in striatal kappa opioid receptor sensitivity and dopamine terminal function in nonhuman primates. *Monitoring Molecules in Neuroscience 15<sup>th</sup> International Meeting*. Los Angeles, CA.

## HONORS AND AWARDS

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- 2019**    **RSA Memorial Award**, *Research Society on Alcoholism*  
**CPDD Early Career Investigator Travel Award**, *College on Problems of Drug Dependence*  
**Symposium Chair**, *College on Problems of Drug Dependence*  
**Symposium Chair**, *Research Society on Alcoholism*  
**SOBP Travel Award**, *Society for Biological Psychiatry*  
**Symposium Chair**, *Winter Conference on Brain Research*
- 2018**    **Enoch Gordis Award**, *Research Society on Alcoholism*  
**RSA Junior Investigator Award**, *Research Society on Alcoholism*  
**K99-R00 Pathway to Independence Award**, *National Institute of Drug Abuse*
- 2017**    **Infinite Kilometer Award for Outstanding Research**, *MIT*  
**ACNP Best Poster Award**, *American College of Neuropsychopharmacology*  
**NARSAD Young Investigator Award**, *Brain and Behavior Research Foundation*

- RSA Junior Investigator Award**, *Research Society on Alcoholism*  
**Symposium Chair**, *Research Society on Alcoholism*  
**Postdoctoral Travel Award**, *American Society for Pharmacology and Experimental Therapeutics*  
**WCBR Travel Fellowship**, *Winter Conference on Brain Research*
- 2016** **ACNP Travel Award**, *American College of Neuropsychopharmacology*  
**Individual Ruth L. Kirschstein National Research Service Award** (Postdoctoral NRSA; F32 MH111216)  
**Travel Fellowship Award**, *Sixth Annual Aspen Brain Forum*  
**Neuroscience Prize for Outstanding Thesis**, *Wake Forest Neuroscience Program*  
**David K. Sundberg Memorial Award**, *Wake Forest Physiology and Pharmacology Department*  
**RSA Junior Investigator Award**, *Research Society on Alcoholism*  
**Gordon A. Melson Outstanding Doctoral Student Award**, *Wake Forest Graduate School*  
**Postdoctoral Scientist Award Finalist**, *American Society for Pharmacology and Experimental Therapeutics*  
**Daniel T. O'Connor Young Investigator Award**, *Catecholamine Society*  
**Neuropharmacology Postdoctoral Travel Award**, *American Society for Pharmacology and Experimental Therapeutics*
- 2015.** **Trainee Professional Development Award**, *Society for Neuroscience*  
**Wake Forest Alumni Travel Award**, *to attend Gordon Conference on Catecholamines*  
**Student Merit Award**, *Research Society on Alcoholism*  
**International Society for Neurochemistry Travel Grant**, *International Society for Neurochemistry*, Cairns, Australia  
**Behavioral Pharmacology Society Predoctoral Award**; *Behavioral Pharmacology Society*  
**Individual Ruth L. Kirschstein National Research Service Award** (Predoctoral NRSA; F31 DA037710)  
**Graduate Student Travel Award**, *American Society for Pharmacology and Experimental Therapeutics*
- 2014** **Best Poster Award**, *Monitoring Molecules in Neuroscience*  
**Best Abstract Award**, *American Society for Pharmacology and Experimental Therapeutics*  
**Mary A. Bell Award**, *Western North Carolina Society for Neuroscience*  
**Japan Neuroscience Society Travel Award**; *Society for Neuroscience*; Yokohama, Japan  
**Wake Forest Alumni Travel Award**, *to attend American College of Neuropsychopharmacology*  
**Graduate Student Travel Award**, *American Society for Pharmacology and Experimental Therapeutics*
- 2013** **Institutional Ruth L. Kirschstein National Research Service Award** (Predoctoral NRSA; T32 AA007565-20)
- 2009.** **SRS Make a Difference Scholarship**  
**Sullivan Honors Program Full Tuition Scholarship**
- 2008.** **Sullivan Honors Program Full Tuition Scholarship**  
**Sullivan College Foundation Merit Scholarship**
- 2007** **Sullivan Renaissance Scholarship**

## **SERVICE**

### **Outreach/Communication**

- 2019-Present Member of Editorial Board of Addictive Disorders, *Frontiers in Psychiatry*  
 2019 Calcium Imaging Data Analysis Panelist, Inscopix User Group Meeting  
 2019-Present Catecholamine Society Executive Council Member  
 2019 Symposium Chair, *Research Society on Alcoholism*  
 2019 Symposium Chair, *College on Problems of Drug Dependence*  
 2019 Symposium Chair, *Winter Conference on Brain Research*  
 2016 Symposium Chair, *Research Society on Alcoholism*  
 2015 Lecturer for SciTech Outreach Events, *Wake Forest School of Medicine*  
 2014-2015 Neuroscience Graduate Program Admissions Committee Student Representative  
 2013-2015 Lecturer for Kernersville Cares for Kids Scientific Outreach Events, *Wake Forest School of Medicine*  
 2013-2015 Brain Awareness Outreach Presenter, visits to local K-12 schools

### **Student Mentorship / Training**

- 2018-Present Alex Brown, Research Technician, *Massachusetts Institute of Technology*  
 2018-Present Daniel Leible, MD/PhD Student, *Massachusetts Institute of Technology*  
 2017-Present Habiba Noamany, Undergraduate Student, *Massachusetts Institute of Technology*  
 2017-Present Joyce Wang, Graduate Student, *Massachusetts Institute of Technology*  
 2016-2017 Xinhong Chen, Undergraduate, *Massachusetts Institute of Technology*  
 2016-2017 Derek Xu, Undergraduate, *Massachusetts Institute of Technology*  
 2016-2017 Ning Leow, Graduate Student, *Massachusetts Institute of Technology*

2016 Steve Colvin, Graduate Student, Massachusetts Institute of Technology  
 2014-2015 Molly McGinnis, Graduate Student, Wake Forest School of Medicine  
 2014-2015 Joshua Seideman, Graduate Student, Wake Forest School of Medicine

**Reviewer**

<i>Neuropsychopharmacology</i>	<i>Journal of Mental Health &amp; Clinical Psychology</i>	<i>Journal of Visualized Experiments</i>
<i>Drug and Alcohol Dependence</i>	<i>Chemistry Select</i>	
<i>Current Opinion in Neurobiology</i>	<i>Brain Stimulation</i>	

**PUBLICATIONS****Primary Research Articles**

1. **Siciliano CA**, Mauterer MI, Fordahl SC, Jones SR (2019) Modulation of striatal dopamine dynamics by cocaine self-administration and amphetamine treatment in female rats. *European Journal of Neuroscience*. In press.
2. Kutlu MG, Peck EG, Hofford RS, **Siciliano CA**, Kiraly DD, Calipari ES (2018) Granulocyte colony stimulating factor enhances reward learning through potentiation of mesolimbic dopamine system function. *Journal of Neuroscience*. 38(41):8845-8859.
3. Vander Weele CM\*, **Siciliano CA\***, Matthews GA\*, Namburi P, Izadmehr E, Espinel IC, Nieh EH, Schut EHS, Burgos-Robles A, Kimchi EY, Anna Beyeler, Wichmann R, Chang C, Padilla-Coreano N, Tye KM (2018) Dopamine increases signal-to-noise in cortical-brainstem responses to aversive stimuli. *Nature*. 563(7731):397-401.  
\*denotes equal contribution
4. **Siciliano CA**, Kustuv S, Calipari ES, Fordahl SC, Khoshbouei H, Chen R, Jones SR (2018) Amphetamine reverses escalated cocaine intake via restoration of dopamine transporter conformation. *Journal of Neuroscience*. 10;38(2):484-497.
5. **Siciliano CA**, McIntosh JM, Jones SR, Ferris MJ (2017)  $\alpha 6\beta 2$  subunit containing nicotinic acetylcholine receptors exert opposing actions on rapid dopamine signaling in the nucleus accumbens of rats with high- versus low-response to novelty. *Neuropharmacology*. 126:281-291.
6. **Siciliano CA**, Jones SR (2017) Cocaine potency at the dopamine transporter tracks discrete motivational states during cocaine self-administration. *Neuropsychopharmacology*. 42(9):1893-1904.
7. McGinnis MM, **Siciliano CA**, Jones SR (2016) Dopamine D3 autoreceptor inhibition enhances cocaine potency at the dopamine transporter. *Journal of Neurochemistry*. 138(6):821-9.
8. **Siciliano CA**, Locke JL, Mathews TA, Lopez MF, Becker HC, Jones SR (2016) Dopamine synthesis in alcohol drinking-prone and -resistant mouse strains. *Alcohol*. S0741-8329(16)30027-1.
9. **Siciliano CA**, Fordahl SC, Jones SR (2016) Cocaine self-administration produces long-lasting alterations in dopamine transporter responses to cocaine. *Journal of Neuroscience*. 36(30):7807-16.
10. **Siciliano CA**, Calipari ES, Yorgason JT, Mateo Y, Lovinger DM, Jimenez VA, Helms CM, Grant KA, Jones SR (2016) Increased presynaptic regulation of dopamine neurotransmission in the nucleus accumbens core following chronic ethanol self-administration in female macaques. *Psychopharmacology*. 233(8):1435-43.
11. **Siciliano CA**, Calipari ES, Yorgason JT, Mateo Y, Helms CM, Lovinger DM, Grant KA, Jones SR (2015) Chronic ethanol self-administration in macaques shifts dopamine feedback inhibition to predominantly D2 receptors in nucleus accumbens core. *Drug and Alcohol Dependence*. 158:159-63.
12. **Siciliano CA**, Ferris MJ, Jones SR (2015) Cocaine self-administration disrupts mesolimbic dopamine circuit function and attenuates dopaminergic responsiveness to cocaine. *European Journal of Neuroscience*. 42(4):2091-6.
13. **Siciliano CA**, Calipari ES, Cuzon Carlson VC, Helms CM, Lovinger DM, Grant KA, Jones SR (2015) Voluntary ethanol intake predicts kappa opioid receptor supersensitivity and regionally distinct dopaminergic adaptations in macaques. *Journal of Neuroscience*. 35(15):5959-68.
14. Ferris MJ, Calipari ES, Rose JH, **Siciliano CA**, Sun H, Chen R, Jones SR (2015) A single amphetamine infusion reverses deficits in dopamine nerve-terminal function caused by a history of cocaine self-administration. *Neuropsychopharmacology*. 40(8):1826-36.
15. Calipari ES, Ferris MJ, **Siciliano CA**, Jones SR (2015) Differential influence of dopamine transport rate on the potencies of cocaine, amphetamine and methylphenidate. *ACS Chemical Neuroscience*. 6(1):155-62.
16. Calipari ES, **Siciliano CA**, Zimmer BA, Jones SR (2014) Brief intermittent cocaine self-administration and abstinence sensitizes cocaine effects on the dopamine transporter and increases drug seeking. *Neuropsychopharmacology*. 40(3):728-35.

17. **Siciliano CA**, Calipari ES, Jones SR (2014) Amphetamine potency varies with dopamine uptake rate across striatal subregions. *Journal of Neurochemistry*. 131(3):348-55.
18. **Siciliano CA**, Calipari ES, Ferris MJ, Jones SR (2014) Biphasic mechanisms of amphetamine action at the dopamine terminal. *Journal of Neuroscience*. 34(16):5575-82.
19. Calipari ES, Ferris MJ, **Siciliano CA**, Zimmer BA, Jones SR (2014) Intermittent cocaine self-administration produces sensitization of stimulant effects at the dopamine transporter. *Journal of Pharmacology and Experimental Therapeutics*. 349(2):192-8.

#### Review Articles and Commentaries

20. Lopez AJ, **Siciliano CA**, Calipari ES. Activity-dependent epigenetic remodeling in addiction. *Handbook of Experimental Pharmacology*. In press.
21. **Siciliano CA** (2019) Capturing the complexity of sex differences requires multidimensional behavioral models. *Neuropsychopharmacology*. In press.
22. Vander Weele CM\*, **Siciliano CA**\*, Tye KM. Dopamine in the prefrontal cortex orchestrates aversive processing. *Brain Research*. In press.  
\*denotes equal contribution
23. **Siciliano CA**, Mills F, Tye KM. Double threat in striatal dopamine signaling. *Nature Neuroscience*. 21(10):1296-197.
24. **Siciliano CA**<sup>†</sup>, Tye KM<sup>†</sup>. Leveraging calcium imaging to illuminate circuit dysfunction in addiction. *Alcohol*. 74:47-63.  
<sup>†</sup> co-corresponding author
25. **Siciliano CA**, Karkhanis A, Holleran KM, Melchior JR, Jones SR (2018) Cross-species alterations in synaptic dopamine regulation after chronic alcohol exposure. *Handbook of Experimental Pharmacology*. In Press.
26. **Siciliano CA**<sup>†</sup>, Calipari ES, Ferris MJ, Jones SR (2015) Adaptations of presynaptic dopamine terminals induced by psychostimulant self-administration. *ACS Chemical Neuroscience*. 6(1):27-36.  
<sup>†</sup> corresponding author

#### Preprints and Manuscripts Under Review at Peer-Reviewed Journals

1. Wichmann R, Vander Weele CM, Yosafat AS, Schut EH, Verharen JP, Sridharma S, **Siciliano CA**, Izadmehr EM, Ferris KM, Wildes CP, Kimchi E, Tye KM. Stress alters dopamine-mediated social interaction behavior in female mice. Under revision. **Preprinted at bioRxiv 168492.**
2. Namburi P, Hitora-Imamura N, Olson JM, Beyeler A, Calhoon GG, Choudhury SR, Shi X, Felix-Ortiz AC, King HO, Borio M, Izadmehr E, Silvestre M, **Siciliano CA**, McCulloch KM, Ressler K, Zhang F, Tye KM. Neurotensin governs valence-specific plasticity underlying associative learning. Under revision.
3. Calhoon GG, Sutton AK, Chang C, Libster AM, Guber GF, Lévesque CL, Murphy GD, Namburi P, Leppla CA, **Siciliano CA**, Wildes CP, Kimchi EY, Beyeler A, Tye KM. Acute Food Deprivation Rapidly Modifies Valence-Coding Microcircuits in the Amygdala. Under revision. **Preprinted at bioRxiv 285189.**
4. Shemesh OR, Linghu C, Piatkevich KD, Goodwin D, Gritton HJ, Romano MF, **Siciliano CA**, Gao R, Yu CJ, Tseng H, Bensussen S, Narayan S, Yang CT, Freifeld L, Gupta I, Noamany H, Pak N, Yoon YG, Ullmann J, Guner-Ataman B, Sheinkopf Z, Park WM, Asano S, Keating AE, Timmer JS, Reimer J, Tolias A, Tye KM, Han X, Ahrens MB, Boyden ES. Precision calcium imaging of dense neural populations via a cell body-targeted calcium indicator. Under revision. **Preprinted at bioRxiv 773069.**
5. **Siciliano CA**, Noamany H, Chang C, Chen X, Leible D, Brown AR, Lee JJ, Wang J, Vernon AM, Vander Weele CM, Kimchi EY, Heiman M, Kay M, Tye. A Cortical-Brainstem Circuit Predicts and Governs Compulsive Alcohol Drinking. Under revision.
6. Kutlu MG, Zachary JE, Brady LJ, Melugin PR, Sanders C, Tat J, Johnson AR, Thibeault KC, Lopez AJ, **Siciliano CA**, Calipari ES. A novel multidimensional reinforcement task in mice elucidates sex-specific behavioral strategies. Under revision.
7. Lopez AJ, Johnson AR, Kunnath AJ, Zachary JE, Thibeault KC, Kutlu MG, **Siciliano CA**, Calipari ES. An optimized procedure for robust volitional drug intake in mice. Under review. **Preprinted at bioRxiv 786616.**

#### **PROFESSIONAL MEMBERSHIPS**

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2016 – Present	Behavioral Pharmacology Society
2015 – Present	Catecholamine Society
2015 – Present	International Society for Neurochemistry
2014 – Present	Research Society on Alcoholism
2014 – Present	Japan Neuroscience Society
2014 – Present	International Behavioral Neuroscience Society

2013 – Present American Society for Pharmacology and Experimental Therapeutics  
2013 – Present Monitoring Molecules in Neuroscience  
2013 – Present Society for Neuroscience  
2013 – 2016 Western North Carolina Society for Neuroscience  
2007 – 2009 Phi Theta Kappa International Honors Society, *Chapter Historian*

**PROFESSIONAL REFERENCES**

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**Kay M. Tye, Ph.D.**

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Picower Institute for Learning and  
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**Sara R. Jones, Ph.D.**

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**Linda J. Porrino, Ph.D.**

Chair, Department of Physiology and  
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