

# CURRICULUM VITAE

Southern Illinois University – School of Medicine

**NAME:** Richardson, Ben

**DATE:** July 7, 2020

**RANK OR TITLE:** Assistant Professor

**DEPARTMENT:** Pharmacology

**OFFICE LOCATION AND MAILING ADDRESS:**

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**DATE OF FIRST EMPLOYMENT AT UI:** July 6, 2020

**DATE OF TENURE:** Untenured

**DATE OF PRESENT RANK OR TITLE:** July 6, 2020

**EDUCATION BEYOND HIGH SCHOOL:**

PhD, Southern Illinois University – School of Medicine, Springfield, Illinois, 2012, Pharmacology/Neuroscience  
BS, Illinois College, Jacksonville, Illinois, 2008, Psychology

**EXPERIENCE:**

**Teaching, Extension and Research Appointments:**

Asst Professor, Pharmacology, Southern Illinois University – School of Medicine, 2020-Present  
Asst Research Professor, Medical Education/Biological Engineering, University of Idaho, 2017-2020  
Affiliate Asst Professor, Pharmacology, University of Washington, 2018-2020  
Postdoctoral Associate, Integrative Physiology and Neuroscience, Washington State University, 2014-2017  
Postdoctoral Associate, Department of Neuroscience, University of Florida, 2012-2014

**TEACHING ACCOMPLISHMENTS:**

**Areas of Specialization:**

Pharmacology, pharmacodynamics, pharmacokinetics, ion channels, neuroscience, electrophysiology, synaptic physiology, neural coding, cerebellum, thalamus, sensory processing, alcohol use and abuse

**Courses Taught:**

WWAMI – University of Idaho, lecture and problem-based small groups (2017-Present):

Circulatory System (Pharmacology), MEDS 529, Spring 2019-2020

Topics: Autonomic vascular control, cardiac electrophysiology, heart failure, antiarrhythmics, ischemic heart disease, COPD, diuretics, hypertension

Energetics & Homeostasis (Pharmacology), MEDS 550, Spring 2019-2020

Topics: Type I and II Diabetes, anti-emetics, prokinetics, gastric acid modifiers, hyperlipidemia

Molecular and Cellular Basis of Disease (Pharmacology), MEDS 510, Fall 2017-2019

Topics: PD, PK, pharmacogenomics, autonomic, NMJ

Invaders and Defenders (Pharmacology), MEDS 519, Fall 2017-2019

Topics: antibiotics, antivirals, antifungals, antiparasitics, immunosuppressants,

Mind, Brain and Behavior (Pharmacology), MEDS 560, Fall 2017-2019

Topics: Circuits/Synapses/NTs, Movement disorders, MS, antiepileptics, opioids

Lifecycle and Reproduction (Pharmacology), MEDS 570, Fall 2017-2019

Topics: sex hormones, labor and delivery, contraceptives, menopause, polypharmacy, aging

Biological Engineering – University of Idaho (2017-Present):

Neurobiology, BIOL 461, Fall 2018 (Lecturer)

Biological Engineering Directed Study, BE 499, Spring and Fall 2018-Present  
 Biological Engineering Graduate Seminar, BE 501, Spring 2019

### Students Advised:

#### Undergraduate Students:

Elizabeth Cabrera, B.S., Biology, University of Florida, 2013-2014  
 Meher Farooq, B.S., Biology, University of Florida, 2013-2014  
 Marshall Mitchell, B.S., Biochemistry and Microbiology, Washington State University, 2016  
 Megan Dimmler, B.S., Pre-Pharmacy, Washington State University, 2016-2017  
 Allison Ellingson, B.S., Electrical Engineering, University of Idaho, 2017-2019  
 Jake Varney, B.S., Biological Engineering, University of Idaho, 2017-2019  
 Rob Litz, B.S. Movement Sciences, University of Idaho, 2018-2019  
 Ahmer Iqbal, B.S., Chemistry, University of Idaho, 2019  
 Ramona Hyde B.S., Biology, University of Idaho, 2018-2020  
 Katie Farris, B.S., Biological Engineering, University of Idaho, 2018-2020  
 Ethan Overfelt, B.S., Biological Engineering, University of Idaho, 2018-2020

#### Graduate Students:

##### Major Professor

Mohammadali Nezakiesmaelizadeh, M.Engr., Biological Engineering, University of Idaho, 2020

##### Dissertation Committee Member

Sophia Theodossiou, Ph.D., Biological Engineering, University of Idaho, 2020  
 Joseph Schmalz, Ph.D., Chemical Engineering, University of Idaho, 2019-  
 Madan Ghirime, Ph.D., Pharmacology, SIU-School of Medicine, 2020-

#### Medical Students:

Ethan Hansen, M.D., University of Idaho/University of Washington, 2018  
 Tate Cowley, M.D., University of Idaho/University of Washington, 2019

### Honors and Awards:

Early Career Faculty Teaching Excellence, University of Idaho – WWAMI Medical Education, 2018  
 Hemal Vahkaria Memorial Award, Southern Illinois University – School of Medicine, 2011  
 Summa Cum Laude, Illinois College, 2008  
 Phi Beta Kappa, Illinois College, 2008

## SCHOLARSHIP ACCOMPLISHMENTS:

### Publications, Exhibitions, Performances, Recitals:

#### Peer Reviewed Publications:

1. **Richardson BD**, Sotille S, Caspary DM. (2020) "Mechanisms of GABAergic and cholinergic neurotransmission in auditory thalamus: Impact of aging." Hearing Research.
2. Rossi DJ and **Richardson BD**. (2018) "The Cerebellar GABA<sub>A</sub>R System as a Potential Target for Treating Alcohol Use Disorders." The Neural Circuitry of Alcohol. Eds. David Lovinger and Kathy Grant.
3. Sambo D, Lin M, Owens W, Lebowitz J, **Richardson B**, Jagnarine D, Madhur S, Rodriguez M, Alonge T, Ali M, Katz, J, Yan L, Febo M, Henry K, Bruijnzeel A, Daws L., Khoshbouei, H. (2017) The Sigma-1 receptor modulates methamphetamine dysregulation of dopamine neurotransmission. Nat Commun. 8(1):2228.
4. McClendon E, Shaver D, Degener-O'Brien K, Gong X, Nguyen T, Hoerder-Suabedissen A, Molnar A, Mohr C, **Richardson BD**, Rossi D, and Back SA. (2017) Transient Hypoxemia Chronically Disrupts Maturation of Preterm Fetal Ovine Subplate Neuron Arborization and Activity J Neurosci. 37(49): 11912-11929.

5. **Richardson BD**, Rossi DJ. (2017) Ethanol enhances synaptic inhibition of cerebellar unipolar brush cells via pre- and postsynaptic mechanisms. *J Neurophys.* 118(1): 267-279.
6. Sirohi S, **Richardson BD**, Vancleef A, Rossi DJ, Davis JF. (2017) Impact of Roux-en-Y gastric bypass surgery on appetite, alcohol intake behaviors, and midbrain ghrelin signaling in the rat. *Obesity.* 25: 1228-1236.
7. Arguello AA, **Richardson BD**, Hall JL, Wang R, Hodges MA, Mitchell MP, Stuber GD, Rossi DJ, Fuchs RA. (2017) Role of lateral orbital frontal cortex-basolateral amygdala circuit in cue-induced cocaine-seeking behavior. *Neuropsychopharm.*42(3): 727-735.
8. Cai R, **Richardson BD**, Caspary DM. (2016) Responses to predictable vs. random temporally complex stimuli form single units in auditory thalamus: impact of aging and anesthesia. *J Neurosci.* 36(41): 10696-10706.
9. Kaplan JS, Nipper M, **Richardson BD**, Jensen J, Finn DA, Rossi DJ. (2016) Pharmacologically counteracting a phenotypic difference in cerebellar GABA<sub>A</sub> receptor response to alcohol prevents excessive alcohol consumption in high alcohol consuming rodent genotype. *J Neurosci.* 36(35): 9019-9025.
10. **Richardson BD**, Saha K, Krout D, Cabrera E, Felts B, Henry LK, Swant J, Zou MF, Newman AH, Khoshbouei H. (2016) Membrane potential shapes regulation of dopamine transporter trafficking at the plasma membrane. *Nature Comm.* 7(10423).
11. Saha K, Sambo D, **Richardson BD**, Lin LM, Butler B, Villarroel L, Khoshbouei H. (2014) Intracellular methamphetamine prevents the dopamine-induced enhancement of neuronal firing. *J Biol Chem.* 289(32):22246-57.
12. **Richardson BD**, Hancock KH, Caspary DM. (2013) Single unit novelty detection in auditory thalamus of awake rat. *J Neurophys.* 110(8):1892-902.
13. **Richardson BD**, Ling LL, Uteshev VV, Caspary DM. (2013) Reduced GABA<sub>A</sub>R-mediated tonic inhibition in aged rat auditory thalamus. *J Neurosci.* 33(3). 1218-1227.
14. **Richardson BD**, Brozoski TJ, Ling LL, Caspary DM. (2012) Targeting inhibitory neurotransmission in tinnitus. *Brain Res.* 1485:77-87.
15. **Richardson BD**, Ling LL, Uteshev VV, Caspary DM. (2011) Extrasynaptic GABA<sub>A</sub> receptors and tonic inhibition in rat auditory thalamus. *PLoS ONE.* 6(1):e16508.
16. Brozoski TJ, Caspary DM, Bauer CA, **Richardson BD**. (2010) The effect of supplemental dietary taurine on tinnitus and auditory discrimination in an animal model. *Hear Res.* 270(1-2): 71-80.

#### Manuscripts In Preparation:

1. Higginbotham J, **Richardson BD**, Shiina H, Rossi DJ, Fuchs RA. "Cannabinoid Type 1 Receptor-Mediated Effects on Cocaine Memory Reconsolidation and Subsequent Drug Context-Induced Cocaine-Seeking Behavior." Under Review with *J Neurosci*.
2. Shiina H, **Richardson BD**, Rossi DJ. "Nicotine enhances depolarizing GABA<sub>A</sub>R synaptic currents and signal transmission through the developing cerebellar cortex."
3. Erikson C, **Richardson BD**, Shiina H, Rossi DJ. "Cerebellar sensitivity to ethanol in C57Bl/6N mice."
4. **Richardson BD**, Nezakatiasmaeilzadeh M, Shiina H, Kinlein S, Karatsoreos I, Rossi DJ. "Ethanol enhances signal gain in parallel fiber-Purkinje cell circuit."
5. Overfelt E, **Richardson BD**\*. "Increased perinatal stress reactivity induces hyperactive behavior in adult mice."
6. Cowley T, **Richardson BD**\*. "Antibiotic surveillance program in a rural primary care hospital."

#### Presentations and Other Creative Activities:

1. **Richardson BD**, Caspary DM. Targeting Inhibitory Amino Acid Neurotransmission in Animal Models of Tinnitus. 5th International TRI Tinnitus Research Conference, August 2011. Buffalo, NY.
2. **Richardson BD**, New Roles for cerebellar circuits: alcohol use disorder. Texas Tech University, Department of Biological Sciences Seminar, April 18, 2018. Lubbock, TX.
3. **Richardson BD**, New Roles for cerebellar circuits: alcohol use disorder. SIU-School of Medicine, Department of Pharmacology Seminar, 2020. Springfield, IL.

#### Professional Meeting Abstracts:

1. Erikson CM, Mohr C, Shina H, **Richardson BD**, Rossi DJ. *Compared to C57BL/6J mice, C57BL/6N exhibit reduced ethanol consumption, increased cerebellar nNOS and opposite polarity ethanol modulation of tonic GABA<sub>A</sub>R currents*. Research Society on Alcoholism, 2019, Minneapolis, MN.
2. Hansen EJ, **Richardson BD**. *Atypical afferents of the thalamic reticular nucleus*. Society for Neuroscience Meeting, 2019, Chicago, IL.
3. Hyde R, **Richardson BD**. *Assessment of Shank3 expression at excitatory synapses in cerebellar cortex*. Society for Neuroscience Meeting, 2019, Chicago, IL.
4. Iqbal A, McGowan CP, **Richardson BD**. *Anatomical coupling of locomotor and auditory neurons in desert kangaroo rats (dipodomys deserti)*. University of Idaho Undergraduate Research Symposium, 2019, Moscow, ID.
5. Hansen EJ, **Richardson BD**. *Direct monosynaptic projections from the cerebellar nuclei to thalamic reticular nucleus*. Idaho INBRE Statewide Research Conference, 2018, Moscow, ID.
6. Ellingson AJ, **Richardson BD**. *Improving tissue preparation to preserve inhibition in adult cerebellar brain slices*. University of Idaho Engineering Expo, 2018, Moscow, ID.
7. Rossi DJ, Shiina H, Kinlein SA, **Richardson BD**. *10mM alcohol has genotype selective impacts on cerebellar processing, cerebellar output to VTA, and cerebellar dependent behavior*. Research Society on Alcoholism, 2018, San Diego, CA.
8. **Richardson BD**, Shiina H, Kinlein SA, Davis J, Karatsoreos IN, Rossi DJ. *10mM alcohol alters signal propagation through the cerebellum, which has direct excitatory synaptic connections to the ventral tegmental area (VTA)*. Research Society on Alcoholism, 2017, Denver, CO.
9. Mohr C, **Richardson BD**, Jensen JP, Nipper MA, Finn DA, Rossi DJ. *Hippocampal mIPSC frequency is reduced and neurosteroid enhanced mIPSC frequency is lost during ethanol withdrawal in withdrawal seizure prone mice*. Research Society on Alcoholism, 2017, Denver, CO.
10. Kaplan JS, Nipper MA, **Richardson BD**, Jensen J, Finn DA, Rossi DJ. *Counteracting a difference in cerebellar GABA<sub>A</sub> response to alcohol prevents excessive alcohol consumption in a high alcohol consuming rodent genotype*. Research Society on Alcoholism, 2016, New Orleans, LA.
11. **Richardson BD**, Rossi DJ. *Physiologically relevant ethanol enhances glycinergic and GABAergic synaptic inhibition of cerebellar unipolar brush cells*. Gordon Research Conference – Cerebellum, 2015, Lewiston, ME.
12. **Richardson BD**, Rossi DJ. *Ethanol enhances both glycinergic and GABAergic synaptic inhibition of cerebellar unipolar brush cells*. Research Society on Alcoholism, 2015, San Antonio, TX.
13. **Richardson BD**, Cartier E, Saha K, Swant J, Khoshbouei H. *Voltage-Dependent Regulation of Dopamine Transporter Trafficking*. BBC: Translational Research in Addiction, 2015, San Antonio, TX.
14. Caspary DM, **Richardson BD**, Kalappa B, Ling LL, Sametskiy E. *Differential Plasticity of Sensory Thalamic GABA<sub>A</sub> Receptors: Aging vs. Tinnitus*. Society for Neuroscience Satellite Meeting, 2014, Pentagon City, VA.
15. Cai R, **Richardson BD**, Caspary DM. *Responses to SAM Stimuli in Auditory Thalamic Neurons of Young and Aged Awake Rats*. ARO Midwinter Meeting, 2014, San Diego, CA.
16. **Richardson BD**, Cartier E, Saha K, Swant J, Khoshbouei H. *Voltage-Dependent Regulation of Dopamine Transporter Trafficking*. Society for Neuroscience. 2013, San Diego, CA.
17. Tignor E, **Richardson BD**, Ling L, Sametskiy E, Caspary DM. *Dendritic Extent in Aged Auditory Thalamus*. ARO Midwinter Meeting, 2013, Baltimore, MD.
18. **Richardson BD**, Hancock K, Caspary DM. *Stimulus Specific Adaptation in the Auditory Thalamus of Awake Rats*. ARO Midwinter Meeting, 2013, Baltimore, MD.
19. **Richardson BD**, Ling LL, Uteshev VV, Caspary DM. *Age-related changes in GABA<sub>A</sub>Rs in the medial geniculate body*. Society for Neuroscience Meeting, 2011. Washington, D.C.
20. **Richardson BD**, Caspary DM. *In vitro and in vivo studies of GABA<sub>A</sub> mediated inhibition in rat medial geniculate body*. ARO Midwinter Meeting, 2010. Anaheim, CA.
21. **Richardson BD**, Ling LL, Uteshev VV, Caspary DM. *Presence and function of extrasynaptic GABA<sub>A</sub> receptors in the medial geniculate body*. Society for Neuroscience Meeting, 2009. Chicago, IL.

#### Grants and Contracts Awarded:

1. **Richardson BD (PI)**, National Institutes of Health NIDCD, *Network modulators of auditory thalamocortical feedback inhibition*, 8/3/2020-7/31/2023, \$442,500.
2. **Richardson BD (PI)**, University of Idaho ORED Advancing Collaborative Efforts Grant - *Sensitivity*

- of the cerebellar circuit to Autism-linked factors*, 7/01/19-05/31/20, \$25,001.
3. **Richardson BD (PI)**, Idaho INBRE Pilot Grant (NIGMS P20 GM103408) – *Network modulators of auditory thalamocortical feedback inhibition*, 05/01/2019-05/01/2020, \$50,000.
  4. **Richardson BD (PI)**, Idaho INBRE Technology Access Grant - *Shank3 and cerebellar granule cell glutamatergic transmission*, 08/29/18-03/30/19, \$2,700.
  5. **Richardson BD (PI)**, University of Idaho Seed Grant - *Identifying neural circuits coding alcohol reward*, 7/01/18-08/31/19, \$11,986.
  6. **Richardson BD (PI)**, Grass Foundation Research Fellowship – *Cerebellar contributions to alcohol use disorder*, 05/29/17-09/02/17. \$N/A
  7. **Richardson BD (PI)**, Washington State University ADARP Postdoc Grant – *The role of neuronal nitric oxide synthase in stress-induced alcohol consumption*, 1/01/15-06/30/16, \$15,000
  8. **Richardson BD (PI)**, Washington State University ADARP Postdoc Grant – *Contributions of cerebellar unipolar brush cells to genetic risk for alcohol abuse*, 1/01/17-06/30/18, \$15,000

#### **Honors and Awards:**

Outstanding Research Mentor Award, University of Washington – WWAMI, 2019  
 Grass Foundation Fellow, Marine Biological Laboratory, 2017  
 Outstanding Poster, Behavior, Biology and Chemistry: Translational Research in Addiction, 2014  
 Postdoctoral Travel Award, Behavior, Biology and Chemistry: Translational Research in Addiction, 2014  
 Graduate Student Travel Award, Society for Neuroscience, 2011

#### **SERVICE:**

##### **Major Committee Assignments:**

National Science Foundation Graduate Research Fellowship Program Review Panel, 2020  
 National Institutes of Health, NTRC Study Section Reviewer (ad hoc), 2020  
 Journal Referee (Euro J Neurosci, J Neurosci), 2020-Present  
 University of Idaho Position Search Committee (2x), Member, 2018, 2019  
 University of WWAMI Faculty 3<sup>rd</sup> Year Review Committee, Member, 2018  
 University of WWAMI Faculty Recognition Awards Committee, Member, 2018  
 University of Idaho Optical Imaging Core Advisory Committee, Member, 2018-2020

##### **Professional and Scholarly Organizations**

Association for Research in Otolaryngology (ARO)  
 Society for Neuroscience (SfN)  
 Research Society on Alcoholism (RSA)

##### **Outreach Service:**

*“Science and Narrative” - CALS Speaker Series, University of Idaho*, Invited Panelist, April 5, 2018

#### **PROFESSIONAL DEVELOPMENT:**

##### **Teaching:**

##### **Scholarship:**

*Mentoring Master Class: Maximizing Trainee Success in Career Transitions*,  
 -Society for Neuroscience, March 27, 2019.