Mitchell Morningstar, M.S.

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Personal Statement

I am a current graduate student at IUPUI that hopes to obtain a post-doctoral position wherein I can continue utilizing *in vivo* electrophysiological techniques in order to determine acute and chronic effects of alcohol exposure on cognition.

Education

- **PhD**, Addiction Neuroscience 2017-
  Indiana University-Purdue University, Indianapolis (IUPUI)
- **Master of Science,** Psychology 2017-2019
  IUPUI
- **Bachelor of Science,** Neuroscience 2012-2016
  Indiana University
  Honors
- **Bachelor of Arts,** Cognitive Science 2012-2016
  Indiana University

Major Research Experience

Graduate Student, IUPUI (PI: Christopher Lapish, PhD) 2017 -

- Identification of the acute effects of alcohol on awake-behaving rodent prefrontal cortex utilizing *in vivo* electrophysiological techniques.
- High-density silicon electrode *in vivo* recordings during a rodent delayed discounting task.
- Characterizing the acute effects of clozapine-n-oxide in rodent prefrontal cortex with *in vivo* electrophysiology.
- Spikesorting *in vivo* electrophysiology data using Mountainsort, spyking-circus, and Kilosort.
- High dimensional data analysis for spike trains.
- Data analysis for local field potentials (LFPs).
- Behavioral characterization of rodent first-time alcohol use with a chocolate Ensure-Alcohol mixture.
- Microdialysis quantifying brain EtOH concentration during first-time alcohol use in freely behaving rodents drinking a chocolate Ensure-Alcohol mixture.
- Proficiency in R, Python, and MATLAB.

Lab Manager, IU (PI: Laura Hurley, PhD) 2016 – 2017

- Utilized immunohistochemical techniques to quantify serotenergic fibers within the inferior colliculus of socially housed versus socially isolated mice. This included high-quality microscopy and imaging as well as staining.
- Estrous determination using histology and microscopy.
- Mouse dominance testing
- Built and tested carbon fiber microelectrodes for voltammetry.
- Performed surgeries for voltammetry implants.

- Assisted in mouse ultrasonic vocalization (USV) work in both mouse social situations as well as in response to artificial stimuli.

Undergraduate Researcher, IU (PI: George Rebec, PhD) 2013 – 2016

- Designed and performed an undergraduate honor's thesis wherein we tested the effects of 2,5-Dimethoxy-4-iodoamphetamine (DOI) on cocaine-induced conditioned place preference as well as novel object recognition.
- Assisted in graduate student work which included operant shaping, food restriction maintenance, and general handling.
- Learned to code in MedPC and then implemented a delayed non-match to sample task that failed to shape animals.

Publications

Published

1. **Morningstar, M. D.,** Barnett, W. H., Goodlett, C. R., Kuznetsov, A., & Lapish, C. C. (2021). Understanding ethanol's acute effects on medial prefrontal cortex neural activity using state-space approaches. *Neuropharmacology*, 198, 108780.
2. De Falco, E, White, SM, **Morningstar, M.D.**, et al. (2021), Impaired cognitive flexibility and heightened urgency are associated with increased alcohol consumption in rodent models of excessive drinking. *Addiction Biology.*
3. **Morningstar, M.D.,** Linsenbardt, D.N. and Lapish, C.C. (2020), Ethanol Alters Variability, But Not Rate, of Firing in Medial Prefrontal Cortex Neurons of Awake-Behaving Rats. *Alcohol Clin Exp Res.*
4. Keesom SM, **Morningstar M.D.$^{+}$,** Sandlain R, Wise BM, Hurley LM. (2018). Social isolation reduces serotonergic fiber density in the inferior colliculus of female, but not male, mice. *Brain Research.*

+ Co-First Authored Publications

Conference Poster Abstracts

1. **M.D. Morningstar,** N.M. Timme, C.C. Lapish. (2022). Rodents Deploy Flexible Strategies in a Pavlovian Conditioned Alcohol Seeking Task. *Research Society for Alcoholism.*
2. Starski, P., **Morningstar, M.,** Sandler, R., Sergio, T. D. O., Lapish, C., & Hopf, F. (2021). Anterior Insular Cortex Activity Encodes Aversion-Resistant Alcohol Consumption. *Neuropsychopharmacology*.
3. **M.D. Morningstar**, C.C. Lapish. (2020). Differential Effects of Ethanol on Neural Activity in Medial Prefrontal Cortex of Behaving Versus Anesthetized Rats. *Research Society for Alcoholism.*
4. S.M. White, E. De Falco, **M.D. Morningstar**, D.N. Linsenbardt, C.L. Czachowski, C. C. Lapish. (2020). Prospective Strategies in Dorsal Medial Prefrontal Cortex Population Activity of Wistar Rats During Delay Discounting. *Research Society for Alcoholism.*
5. E. de Falco, **M. Morningstar**, S. M. White, D. N. Linsenbardt, C. C. Lapish. (2019). Neural population activity in the rat medial prefrontal cortex underlying proactive behavior in a delay discounting task. *Society for Neuroscience.*
6. **M.D. Morningstar**, C.C. Lapish. (2019). Impact of Acute Ethanol Injections on Medial Prefrontal Cortex Neural Activity. *Society for Neuroscience.*

7. **Morningstar M.D.,** Keesom S.M., Hurley L.M. (2018). Sex Difference in Inferior Colliculus Serotonin Fibers in Response to Varying Social Housing Conditions. *Animal Behavior Conference.*
8. **Morningstar, M.D.,** Rebec, G.V. (2016). The Effects of the Hallucinogen DOI on the Novel Object Recognition Task and Conditioned Place Preference Within the Rat Model. *Indiana University Honors Thesis Banquet and Poster Session.*

Teaching

1. **Graduate Student Instructor, IUPUI** Spring 2019
   Course: Statistics Lab
2. **Graduate Teaching Assistant, IUPUI** Spring 2019
   Course: Ethics and Diversity in Psychology
3. **Graduate Teaching Assistant, IUPUI** Spring 2018
   Course: Capstone in Psychology
4. **Graduate Teaching Assistant, IUPUI** Fall 2017
   Course: Capstone in Neuroscience
5. **Undergraduate Discussion Leader, IU** Spring 2015
   Course: Human Sexuality

Honors & Awards

1. **Paul J. McKinley Award**, IUPUI 2022
2. **Student Merit Award**, Research Society on Alcoholism 2019
3. **Honors in Neuroscience,** IU 2016
4. **Executive Dean's List,** IU 2014 - 2016
5. **Diversity Program of the Month**, RLAC, IU 2015
6. **Resident Assistant of the Month,** IU 2013
7. **IU Excellence Scholarship,** IU 2012
8. **National German Examination – Silver Medal,** ATG 2010

Related Professional Experience

1. **Community Manager, IU Bloomington** 2015 - 2016
2. **Resident Assistant, IU Bloomington** 2013 - 2015

Professional Associations

- Research Society on Alcoholism
- Society for Neuroscience

References

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