

# Mitchell Morningstar, PhD

University of New Mexico  
MMorningstar@salud.unm.edu

## Education

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- **PhD**, Addiction Neuroscience 2019-2023  
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

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### Postdoctoral Researcher, UNM

(PI: David Linsenbardt, PhD; Fernando Valenzuela, PhD)

2023 –

- Assessing anterior thalamus spatial encoding in rodent models of fetal alcohol spectrum disorder
- Analysis of functional Fos networks following fear conditioning in rodent models of fetal alcohol spectrum disorder
- Designed and implemented optical tomography methods based on existing open-source designs
- Analysis of rodent EEG data in mouse model of Alzheimer's
- Behavioral testing in spontaneous location recognition task
- Design and implementation of data processing pipelines for high throughput *in vivo* electrophysiology
- Design and implementation of Bonsai workflows for managing multiple streams of data

### Graduate Student, IUPUI (PI: Christopher Lapish, PhD)

2017 – 2023

- 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 of 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.

- Gained proficiency in R, Python, and MATLAB.

#### Lab Manager, IU (PI: Laura Hurley, PhD)

2016 – 2017

- Utilized immunohistochemical techniques to quantify serotonergic 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.

#### 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 basic work which including operant learning, food restriction maintenance, and general handling. Built electrode bundles, learned basics of Plexon, DOS, electrophysiology surgeries, and histology.
- Learned to code in MedPC and then implemented a delayed non-match to sample task.

## Publications

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### *Published*

1. Bryant, K. G., Swygart, D., Yin, Y., Bauer, M. R., **Morningstar, M. D.**, Timme, N. M., Barnett, W. H., McGonigle, C. E., Engleman, E. A., Sheets, P. L., & Lapish, C. C. (2025). Acute alcohol in prefrontal cortex is characterized by enhanced inhibition that transitions to excitation. *iScience*, 112920. <https://doi.org/10.1016/j.isci.2025.112920>
2. Ardinger, C. E., **Morningstar, M. D.**, Lapish, C. C., & Linsenbardt, D. N. (2025). Repeated alcohol drinking in mice is associated with bidirectional alterations in corticostriatal coherence. *Neuropharmacology*, 277, 110522. Advance online publication. <https://doi.org/10.1016/j.neuropharm.2025.110522>
3. **Morningstar, M. D.**<sup>+</sup>, Lopez, K. M., Mayfield, S. S., Almeida-Mancero, R. N., Marquez, J., Flores, A. M., Hafer, B. R., Estrada, E., Holtzman, G. A., Goranson, E. V., Reid, N. M., Aldrich, A. R., Ghatalia, D. V., Patel, J. R., Padilla, C. M., Chavez, G. J., Kelly-Roman, J., Bhakta, P. A., Valenzuela, C. F., & Linsenbardt, D. N. (2024). Connectivity of the neuronal network for contextual fear memory is disrupted in a mouse model of third-trimester binge-like ethanol exposure. *Alcohol, clinical & experimental research*, 10.1111/acer.15503.
4. White, S. M., **Morningstar, M. D.**, De Falco, E., Linsenbardt, D. N., Ma, B., Parks, M. A., Czachowski, C. L., & Lapish, C. C. (2024). Impulsive Choices Emerge When the Anterior Cingulate Cortex Fails to Encode Deliberative Strategies. *eNeuro*, 11(11), ENEURO.0379-24.2024.
5. **Morningstar, M. D.**, Timme, N. M., Ma, B., Cornwell, E., Galbari, T., & Lapish, C. C. (2024). Proactive Versus Reactive Control Strategies Differentially Mediate Alcohol

Drinking in Male Wistars and P Rats. *eNeuro*, 11(3), ENEURO.0385-23.2024.  
<https://doi.org/10.1523/ENEURO.0385-23.2024>

6. Starski, P., **Morningstar, M. D.**, Katner, S. N., Frasier, R. M., De Oliveira Sergio, T., Wean, S., Lapish, C. C., & Hopf, F. W. (2024). Neural Activity in the Anterior Insula at Drinking Onset and Licking Relates to Compulsion-Like Alcohol Consumption. *The Journal of neuroscience : the official journal of the Society for Neuroscience*, 44(9), e1490232023.
7. **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.
8. 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*.
9. **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*.
10. Keesom SM, **Morningstar M.D.**<sup>+</sup>, 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*.

### ***In Prep***

1. **Morningstar, M.D.**, Acosta, G., Valenzuela, C.F., Clark, B.J., Linsenbardt, D.N. (2025) Unsupervised Phenotyping Reveals Disrupted Neural Firing Characteristics in the Anterior Thalamus and Surrounding Brain Regions Following Third-Trimester Equivalent Alcohol Exposure in Mice. *bioRxiv : the preprint server for biology*, <https://doi.org/10.1101/2025.06.02.657410>
2. Seamans, J. K., White, S., **Morningstar, M. D.**, Emberly, E., Linsenbardt, D., Ma, B., Czachowski, C. L., & Lapish, C. C. (2024). Neural basis of cognitive control signals in anterior cingulate cortex during delay discounting. *bioRxiv : the preprint server for biology*, 2024.06.07.597894.

+ Co-First Authored Publications

### **Invited Talks**

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1. Third trimester equivalent prenatal alcohol exposure leads to impaired contextual conditioning paralleled by blunted activity of the anteroventral thalamus. *CBRR Preclinical Core User Meeting*. University of New Mexico, Health Sciences Center. Albuquerque, NM. 12/02/2024.
2. Third trimester equivalent prenatal alcohol exposure leads to impaired contextual conditioning paralleled by blunted activity of the anteroventral thalamus. *Research Society on Alcohol*. Minneapolis, MN. 06/24/2024.
3. Low-dimensional neural features are critical intermediaries for understanding alcohol intoxication. University of New Mexico, Health Sciences Center. Albuquerque, NM. 09/15/2022.

4. Ethanol Alters Variability, But Not Rate, of Firing in Medial Prefrontal Cortex Neurons of Awake-Behaving Rats. *Alcohol Research Center Trainee Day*. Zoom. 09/19/2021.

## Conference Poster Abstracts

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1. **M.D. Morningstar**, G. Acosta, C.F. Valenzuela, B. Clark, D. N. Linsenbardt. (2025). Unsupervised Phenotyping Reveals Disrupted Neural Firing Characteristics in the Anterior Thalamus and Surrounding Brain Regions Following Third-Trimester Equivalent Alcohol Exposure in Mice. *Society for Neuroscience*.
2. **M.D. Morningstar**, G. Acosta, C.F. Valenzuela, B. Clark, D. N. Linsenbardt. (2025). Developmental alcohol exposure disrupts allocentric cue encoding by anterior thalamus neural activity and modulation of open field behavior in a mouse model of third-trimester alcohol exposure. *Research Society for Alcohol*.
3. **M.D. Morningstar**, G. Acosta, C.F. Valenzuela, B. Clark, D. N. Linsenbardt. (2025). Developmental alcohol exposure disrupts allocentric cue encoding by anterior thalamus neural activity and modulation of open field behavior in a mouse model of third-trimester alcohol exposure. *Brain and Behavioral Health Institute*.
4. **M.D. Morningstar**, D.N. Linsenbardt, K.M. Lopez, C.F. Valenzuela. (2024). Third Trimester Equivalent Prenatal Alcohol Exposure Leads to Impaired Contextual Conditioning Paralleled by Blunted Activity of the Anteroventral Thalamus. *Research Society for Alcohol*.
5. **M.D. Morningstar**, D.N. Linsenbardt, K.M. Lopez, C.F. Valenzuela. (2024). Third Trimester Equivalent Prenatal Alcohol Exposure Leads to Impaired Contextual Conditioning Paralleled by Blunted Activity of the Anteroventral Thalamus. *GRC. Alcohol and the Nervous System*.
6. **M.D. Morningstar**, N.M. Timme, C.C. Lapish (2023). Proactive versus Reactive Control Strategies Differentially Mediate Alcohol Drinking in Wistar and P rats. *Research Society for Alcoholism*.
7. **M.D. Morningstar**, N.M. Timme, C.C. Lapish. (2022). Rodents Deploy Flexible Strategies in a Pavlovian Conditioned Alcohol Seeking Task. *GRC. Alcohol and the Nervous System*.
8. **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*.
9. 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*.
10. **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*.
11. 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*.
12. 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*.
13. **M.D. Morningstar**, C.C. Lapish. (2019). Impact of Acute Ethanol Injections on Medial Prefrontal Cortex Neural Activity. *Society for Neuroscience*.
14. **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*.

15. **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*.

## Workshops

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1. **Spikesorting with SpikeInterface** – University of New Mexico (07/26/2024; leader)
2. **Allen Brain Institute Neuropixels Workshop** – Allen Brain Institute (06/2024; attendee)
3. **Nencki School of Ideas in Neuroscience** – Nencki Institute of Experimental Biology (06/2022; attendee)
4. **MountainSort User Workshop** – Center for Computational Biology, Flatiron Institute (05/2018; attendee)

## Professional Service & Volunteering

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1. *In vivo electrophysiology journal club*. 2024 – Present
  - a. Lead and manage a journal club for the University of New Mexico's Neurosciences Department focused on *in vivo* electrophysiology techniques and analyses.
2. New Mexico Brain Bee 2025 – Present

## Teaching

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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

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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

## **Funding Support**

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| 1. <b>Training Grant on Genetic Aspects of Alcoholism - T32AA007462</b> | 2020-2023 |
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## **Related Professional Experience**

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| <b>1. Community Manager, IU Bloomington</b>  | 2015 – 2016 |
| a. Managed a building of 120 student residents. Provided enrichment opportunities and programming according to IU Bloomington's 4 pillars of residential life. These include personal development, community development, academic development and exploring beliefs.  |             |
| <b>2. Resident Assistant, IU Bloomington</b>   | 2013 – 2015 |
| a. Managed a building of 70 student residents. Provided enrichment opportunities and programming according to IU Bloomington's 4 pillars of residential life. These include personal development, community development, academic development and exploring beliefs. Predominately worked with Freshman in order to ensure smooth transitions into collegiate life as well as resolving conflicts and emergencies. |             |

## **Professional Associations**

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- Research Society on Alcohol
- Society for Neuroscience