

Samantha Gayle Malone

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Education

- 2014 – 2017** **B.S.**, Psychology: Behavioral Neuroscience, East Tennessee State University
Honors: Summa cum laude (GPA: 3.98)
Minor: Biology
Senior Honors Thesis: Positive Modulation of Adenosine A2A Receptors Reduces Nicotine Self-Administration in Rats.
Mentors: Dr. Matthew Palmatier and Dr. Gerald Deehan
- 2018 – 2020** **M.S.**, Experimental Psychology, University of Kentucky
Concentration: Cognitive Neuroscience (GPA: 4.0)
Graduate Certificates: Applied Statistics (GPA: 4.0)
Thesis: Escalation and Reinstatement of Fentanyl Self-Administration in Male and Female Rats
Mentor: Dr. Michael T. Bardo
- 2021 –** **Ph.D. (Graduation: 12/2023)**, Experimental Psychology, University of Kentucky
Concentration: Cognitive Neuroscience (GPA: 4.0)
Graduate Certificates: Biostatistics (GPA: 4.0)
Other Certifications: KY Science Policy Advocate (KAS)
Dissertation: Calcium Imaging of the Central Amygdala after Fentanyl Escalation
Mentors: Dr. Michael T. Bardo and Dr. Pavel I. Ortinski

Career Statement

After obtaining my doctoral degree, I plan to advance towards a career in science advocacy and outreach with a focus on science engagement, policy, communication, and writing. Through this career path, I aspire to connect people with science, making science more easily accessible to the public, improving science literacy in Appalachia, and creating opportunities in STEM-related fields for diverse and disadvantaged populations. I'm also excited to utilize the knowledge and training I've accumulated throughout my academic career and university service experience to enrich my community in ways that make science and education more approachable by creating programs that promote the inclusion of women and other underrepresented groups in STEM. I similarly hope to utilize my policy background to improve access to science education in my area by promoting science-backed changes in local, state, and federal policy.

Research Statement

My research is focused on developing novel and effective preclinical models of opioid use disorder (OUD), with a concentration on escalation, withdrawal, relapse, sex differences, and the intricate social factors involved in OUD. I am fascinated by the impact of escalated intake on relapse and withdrawal in OUD, and the overlapping brain areas associated with these factors. I am also interested in using statistics to inform treatment development and policy. Through my research, I hope to further improve the understanding of OUD by creating rodent models that better translate to the human condition.

Research Experience

- 2015 – 2018** **Undergraduate Research Assistant**
Palmatier Associative Pharmacology Laboratory, Psychology Dept., ETSU
Description: I studied the role of incentive motivation in mediating drug dependence. My work examined the incentive amplifying effects of nicotine and other drugs of abuse, with a focus on understanding the neural and behavioral mechanisms underlying this phenomenon.
- 2016 – 2018** **Undergraduate Research Assistant**
Deehan Pharmacology of Addiction Laboratory, Psychology Dept., ETSU
Description: I studied the effects of alcohol on neurotransmitter levels and on the development of neural circuitry during adolescence.
- 2018 –** **Graduate Research Assistant**
Bardo Laboratory, Psychology Dept., University of Kentucky
Description: I am working to determine how environmental factors and patterns of opioid use, such as social context and escalation, confer vulnerability to opioid use disorder (OUD), heightened withdrawal, and relapse. I am currently interested in understanding whether the escalation of fentanyl intake, a model of the loss of control over intake seen in OUD, has an impact on

susceptibility to stress-, drug-, and cue-induced reinstatement, and how the central amygdala becomes dysregulated during abstinence following fentanyl use.

Undergraduate mentees: Rebecca Buster, Emily Punzal, Alexia Milligan, Luke Sawyers, & Joshua Hales **High School mentees:** Joyce Yang & Ben Haase

Publications

*Indicates co-first authorship

1. **Malone, S.G.**, Keller, P.S., Hammerslag, L.R., & Bardo, M.T. (2021). Escalation and reinstatement of fentanyl self-administration in male and female rats. *Psychopharmacology*, 238(8), 2261–2273. <https://doi.org/10.1007/s00213-021-05850-7>
2. Bardo, M.T., Hammerslag, L.R., & **Malone, S.G.** (2021). Effect of early life social adversity on drug abuse vulnerability: Focus on corticotropin-releasing factor and oxytocin. *Neuropharmacology*, 191, 108567. doi: <https://doi.org/10.1016/j.neuropharm.2021.108567>
3. ***Malone, S.**, *Custodio, L., Bardo, M.T., & Turner, J.R. (2021). Nicotine and Opioid Co-Dependence: Findings from Bench Research to Clinical Trials. *Neuroscience and biobehavioral reviews*, S0149-7634(21)00578-9. <https://doi.org/10.1016/j.neubiorev.2021.12.030>
4. Hammerslag, L.R., Humburg, B.A., **Malone, S.G.**, Beckmann, J.S., Saatman, K.E., Grinevich, V., & Bardo, M.T. (2022). Peer-induced cocaine seeking in rats: Comparison to nonsocial stimuli and role of paraventricular hypothalamic oxytocin neurons. *Addiction biology*, 27(5), e13217. <https://doi.org/10.1111/adb.13217>
5. ***Malone, S.G.**, * Shaykin, J.D., Stairs, D.J., & Bardo, M.T. (2022). Neurobehavioral effects of environmental enrichment and drug abuse vulnerability: An updated review. *Pharmacology, biochemistry, and behavior*, 221, 173471. <https://doi.org/10.1016/j.pbb.2022.173471>
6. **Malone, S.G.**, Hammerslag, L.H., Carbone, M., & Bardo, M.T. (in preparation). Peer-induced reinstatement of remifentanyl seeking.
7. **Malone, S.G.**, Ortinski, P.I. & Bardo, M.T. (in preparation). Calcium Imaging of Central Amygdala Activity After Escalation of Fentanyl Self-Administration.
8. Tavakoli, N., **Malone, S.G.**, Anderson, T., Ortinski, P. (in preparation). Astrocyte Activity in the Dorsal Striatum Regulates Cue-Induced Reinstatement of Cocaine Seeking.

Illustrations

1. *Figure 2: Neurobiological Changes Associated with Enrichment in Rodents.*
Published in ***Malone, S.G.**, * Shaykin, J.D., Stairs, D.J., & Bardo, M.T. (2022). Neurobehavioral effects of environmental enrichment and drug abuse vulnerability: An updated review. *Pharmacology, biochemistry, and behavior*, 221, 173471. <https://doi.org/10.1016/j.pbb.2022.173471>

Poster Presentations

*Indicates student mentees

1. Smith, A.L., Williams, E.A., Bradley, C.A., **Malone, S.G.**, Patterson, A.K., Sanders, E.M., & Palmatier, M.I. (2016). *Tobacco flavor additives established as conditioned reinforcers promote nicotine self-administration in rats.* Poster presentation at SfN, San Diego, CA.
2. Bradley, C.A., Sanders, E.M., Patterson, A.K., **Malone, S.G.**, & Palmatier, M.I. (2017, June). *Mechanisms of caffeine self-administration in rats.* Poster presentation at CPDD, Montreal, Quebec.
3. Golson, J.M., Patterson, A.K., Sanders, E.M., **Malone, S.G.**, Bradley, C.A., Palmatier, M.I. (2017, June). *Effect of adolescent caffeine self-administration on adult nicotine self-administration in rats.* Poster presentation at CPDD, Montreal, Quebec.
4. Bradley, C.A., Patterson, A.K., Smith, A.L., **Malone, S.G.**, & Palmatier, M.I. (2017, November). *Mechanisms of the reinforcement enhancing effects of caffeine in rats.* Poster presentation at SfN, Washington D.C.
5. Smith, A.L., Bradley, C.A., Patterson, A.K., Sanders, E.M., Goldson, J.M., Bailey, C.S., **Malone, S.G.**, & Palmatier, M.I. (2017, November). *Flavor conditioned reinforcers promote dependence-like behavior in rats self-administering nicotine.* Poster presentation at SfN, Washington D.C.
6. Deehan, G.A., Patterson, A.K., Smith, A.L., Bradley, C.A., **Malone, S.G.**, Brown, R.W., & Palmatier, M.I. (2017, November). *The effect of flavor conditioned reinforcers and nicotine on extracellular dopamine levels in the nucleus accumbens following nicotine self-administration.* Poster presentation at SfN, Washington D.C.
7. Bailey, C.S., Patterson, A.K., Bradley, C.A., **Malone, S.G.**, & Palmatier, M.I. (2017, November). *Investigating the temporal relationship between chronic mild stress and alcohol intake in rats.* Poster presentation at SfN, Washington D.C.
8. **Malone, S.G.**, Golson, J.M., Bradley, C.A., Brown, R.W., Bailey, C.S., & Palmatier, M.I. (2017, November). *Positive modulation of adenosine A2A receptors reduces nicotine self-administration in rats.* Poster presentation at SfN, Washington D.C.

9. **Malone, S.G.**, Bradley, C.A., Brown, R.W., Bailey, C.S., & Palmatier, M.I. (2018, February). *Positive modulation of adenosine A2A receptors reduces nicotine self-administration in the neonatal quinpirole model of schizophrenia*. Poster presentation at the SRNT, Baltimore, MD.
10. **Malone, S.G.**, Hammerslag, L.R., & Bardo, M.T. (2019, March). *Escalation and reinstatement of fentanyl seeking in rats*. Poster presentation presented at SURE, Lexington, KY.
11. **Malone, S.G.**, *Buster, B.R., Hammerslag, L.R., & Bardo, M.T. (2019, April). *Escalation and reinstatement of fentanyl seeking in rats*. Poster presentation presented at BGSFN, Lexington, KY.
12. **Malone, S.G.**, Hammerslag, L.R., & Bardo, M.T. (2019, October). *Escalation and reinstatement of fentanyl seeking in male and female rats*. Poster presentation at SfN, Chicago, IL.
13. **Malone, S.G.**, *Punzal, E.B., Hammerslag, L.R., & Bardo, M.T. (2019, November). *Escalation and reinstatement of fentanyl seeking in male and female rats*. Poster presentation presented at the TODD Symposium, Lexington, KY.
14. **Malone, S.G.**, *Punzal, E.B., Hammerslag, L.R., & Bardo, M.T. (2020, March). *Escalation and reinstatement of fentanyl seeking in male and female rats*. Poster presentation presented at SURE, Lexington, KY.
15. *Punzal, E.B., **Malone, S.G.**, & Bardo, M.T. (2021, June). *Escalation and footshock-induced reinstatement of fentanyl seeking in male and female rats*. Poster presentation at SURE, Online.
16. **Malone, S.G.**, Hammerslag, L.R., & Bardo, M.T. (2021, June). *Escalation and footshock-induced reinstatement of fentanyl seeking in male and female rats*. Poster presentation at CPDD, Online.
17. **Malone, S.G.**, Hammerslag, L.R., Dimeo, S., Carbone, M., & Bardo, M.T. (2021, November). *Peer-Induced Reinstatement of Remifentanil Seeking*. Poster presentation at SfN, Online.
18. **Malone, S.G.**, Hammerslag, L.R., Dimeo, S., Carbone, M., & Bardo, M.T. (2022, June). *Peer-Induced Reinstatement of Remifentanil Seeking*. Poster presentation at EBPS, Rome, Italy.
19. Tavakoli, N., **Malone, S.G.**, Anderson, T., Ortinski, P. (2023, March). *Astrocyte Activity in the Dorsal Striatum Regulates Cue-Induced Reinstatement of Cocaine Seeking*. Poster presentation at CCTS, Lexington, KY.
20. Tavakoli, N., **Malone, S.G.**, Anderson, T., Ortinski, P. (2023, March). *Astrocyte Activity in the Dorsal Striatum Regulates Cue-Induced Reinstatement of Cocaine Seeking*. Poster presentation at SURE, Lexington, KY.
21. **Malone, S.G.**, Ortinski, P.I. & Bardo, M.T. (2023, June). *Calcium Imaging of Central Amygdala Activity After Escalation of Fentanyl Self-Administration*. Poster presentation at CPDD, Denver, CO.

Oral Presentations

*Indicates student mentees

1. **Malone, S.G.**, *Buster, B.R., Hammerslag, L.R., & Bardo, M.T. (2019, April). *Escalation and reinstatement of fentanyl seeking in rats*. 1-minute poster pitch presented at CCTS, Lexington, KY.
2. **Malone, S.G.**, Hammerslag, L.R., & Bardo, M.T. (2019, June). *Escalation and reinstatement of fentanyl seeking in rats*. Oral presentation at CPDD, San Antonio, TX.
3. **Malone, S.G.**, Hammerslag, L.R., & Bardo, M.T. (2020, June). *Escalation and reinstatement of fentanyl seeking in male and female rats*. Oral presentation at CPDD, Online.
4. **Malone, S.G.**, Keller, P.S., Hammerslag, L.R., & Bardo, M.T. (2021, March). *Escalation and reinstatement of fentanyl seeking in male and female rats*. Data blitz presentation at SURE, Online.
5. **Malone, S.G.** (2021, April). *Outstanding graduate teaching assistants: The roles we fill and the challenges we face*. Keynote presentation at the NAGPS Midwest Regional Conference, Online.
6. **Malone, S.G.**, Hammerslag, L.R., Dimeo, S., Carbone, M., & Bardo, M.T. (2022, March). *Peer-Induced Reinstatement of Remifentanil Seeking*. Data blitz at SURE, Lexington, KY.
7. **Malone, S.G.**, Keller, P.S., Hammerslag, L.R., & Bardo, M.T. (2023, March). *Escalation and reinstatement of fentanyl seeking in male and female rats*. Oral presentation at SURE, Lexington, KY.

Research and Training Grants

- 2020-2021** Substance Use Priority Research Area (SUPRA) Super Students Grant (\$6,000), UKY
2020-2022 NIDA T32 DA035200: Research Training in Drug Abuse Behavior, PI-Dr. Craig Rush, UKY
2021-2022 SUPRA Graduate/Professional Student Grant (\$6,000), UKY
2022-2023 NIDA F31 DA057050: Calcium Imaging of the CeA after Fentanyl Escalation, UKY

Other Honors and Awards

- 2014-2017** Dean's List, ETSU
2014-2015 Amy Hull Ransdell Scholarship (\$1000), ETSU
2014-2015 Ruritan National Foundation Scholarship (\$600), ETSU
2014-2017 Dean's Academic Performance Scholarship (\$3,000), ETSU
2014-2017 Tennessee Grocer's Association Scholarship (\$1,250), ETSU
2017 Psychology Honors-In-Discipline Scholarship (\$1,0000), ETSU
2020 Featured on UKNOW: UK's Substance Use Research Day Highlights Work of UK Faculty and Students

2020	Featured on SUPRA Student Spotlight, UKY
2020	Spring GSC Travel Award (\$300), UKY
2021	Outstanding Cognitive Neuroscience Graduate Student Award, UKY
2021	Wildcat Style Event Grant (\$250), UKY
2021	Spring GSC Travel Award (\$500), UKY
2021	GSC Pillar Award for Academic Success, UKY
2023	P.E.O. Scholars Award (\$20,000), UKY
2023	Early Career Poster Finalist, CPDD

Professional Affiliations and Roles

2014-2017	Student Affairs, ETSU	Undergraduate Assistant
2014-2017	International Buccaneer Buddies	Undergraduate Guide
2015-2016	Quidditch Sports Club, ETSU	Treasurer
2016-2017	Quidditch Sports Club, ETSU	President
2016-2023	Society for Neuroscience (SfN)	Student Member
2017-2023	College on Problems of Drug Dependence (CPDD)	Member In-training
2018-2021	Bluegrass Society for Neuroscience (BGSFN)	Student Member
2018-2023	Substance Use Research Event (SURE)	Student Member
2018-2021	Center for Clinical and Translational Science Conference (CCTS)	Student Member
2019	Life After UK Conference	Panelist
2020	Women in Neuroscience Club	Grad. Student Advisor
2020-2023	Graduate Student Congress (GSC)	Program Representative
2020-2023	GSC: Professional Development and Networking Committee	Committee Member
2020	Future Graduate and Professional Student Leaders Conference	Organizer
2020	Life After Grad School Conference	Organizer
2021	National Association of Graduate and Professional Students (NAGPS)	Assistant Director of Outreach
2021	NAGPS Midwest Regional Conference	Keynote Speaker
2021	GSC: Mental Health Awareness Committee	Committee Member
2021	UKY Mental Health Awareness Week	Organizer
2021	Life After Grad School Conference	Organizer
2022-2023	American Statistical Association (ASA)	Student Member
2022-2023	American Association for the Advancement of Science (AAAS)	Student Member
2022	Psychology Department Chair Advisory Appointment Committee	Grad. Student Representative
2022-2023	S-Stem Scholarship Program	Grad. Student Mentor
2022-2023	Kentucky Advocates for Science Policy and Research (KASPR)	Secretary
2023	Graduate School Application Workshop Series	Organizer and Panelist
2023	Lexington Living Arts and Sciences Center	Intern and STEM-Educator

Teaching Experience

Teaching Assistant – University of Kentucky

Fall 2018	Behavioral Genetics	Neuropharmacology: Drugs and Behavior
Spring 2019	Behavioral Genetics (<i>class prep.</i>)	Neuropharmacology: Drugs and Behavior
Summer 2019	Behavioral Genetics (<i>class prep.</i>)	
Fall 2019	Behavioral Neuroscience Lab	
Spring 2020	Behavioral Genetics	Neuropharmacology: Drugs and Behavior

Intern and STEM-Educator– Lexington Living Arts and Science Center, KY

Spring 2023	K-8 Curriculum Development	K-8 Camp, Field Trip, and Course Instruction
Summer 2023	K-8 Curriculum Development	K-8 Camp, Field Trip, and Course Instruction

Software and Programming Experience

Software/Tools: SAS; Prism; Med-PC; RStudio; JMP; SPSS; Clip Studio Paint; HCLImage Live; OBS Studio; ImageJ; Matlab; Visual Studio; Anaconda; Jupyter Notebook; Git Hub; Galaxy; Bitwise; Canva.

Programming/Languages: SAS; R; SPSS; Med-PC

Professional References

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