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EDUCATION AND RESEARCH EXPERIENCE

Research Assistant Professor	**Brown University** Department of Neuroscience	**Dec 2024-**
Post-Doc Fellow	**Brown University** Department of Neuroscience, Advisor: Dr. Karla Kaun	**2019 - 2024**
Ph.D.	**University of Massachusetts - Amherst** Neuroscience & Behavior Program, Advisor: Dr. David Moorman	**2012-2019**
M.Sc.	**Texas A&M University – Corpus Christi** Biology Department, Advisor: Dr. Riccardo Mozzachiodi	**2010-2012**
B.Sc.	**Texas A&M University – Corpus Christi** Pre-Professional Biomedical Sciences**,** Advisor: Dr. Riccardo Mozzachiodi	**2006-2010**

SCIENTIFIC EXPERIENCE

Dr. Karla Kaun lab **September 2019-**

In the lab of Dr. Karla Kaun I am leveraging the molecular and genetic tools available in the fruit fly, *Drosophila melanogaster*, to examine individual variability in behavioral, circuit and physiological mechanisms underlying drug and natural reward preference that precedes substance use disorders. Specifically, I am developing an operant behavioral paradigm to examine the variability in complex/subtle behavioral features and the circuit mechanisms underlying escalation of drug and natural reward selfadministration. Additionally, I am employing optogenetic, thermogenetic and 2-photon calcium imaging techniques to better understand how drug preference manifests in the well-characterized nervous system of *Drosophila*. The goal of my research is to develop circuit and molecular-based interventions to disrupt or abolish escalation of drug self-administration in flies. We have identified a simple circuit consisting of a dopamine and cholinergic neuron that contribute to alcohol avoidance and preference, respectively. We are also examining the transcriptional changes that underlie the development of alcohol preference to identify targets to potentially modulate alcohol preference. I am developing a new research program in Dr. Kaun's lab examining how long-term shock stress influences circuit and molecular function to influence operant response for alcohol. My long-term goals are to use transcriptomics approaches to understand the molecular changes that underlie stress-induced enhancement of alcohol preference in order to develop interventions to suppress the early emergence of alcohol.

Dr. David Moorman lab **May 2014 – August 2019**

In the lab of Dr. David Moorman, I utilized awake-behaving electrophysiology, pharmacology and chemogenetics to examine the necessity of the orbitofrontal cortex (OFC) in encoding and expressed alcohol preference in male and female rats. Through my Ph.D. training, I learned to develop my programming to examine learning, decision-making and operant behavior, how to conduct survival brain surgery, produce electrode array, immunohistochemistry and broad statistical and graphical analyses using MATLAB. This work contributes to the scientific community by showing that the OFC encodes general preference for alcohol and is necessary for cue-induced reinstatement of alcohol seeking in rats.

Dr. Luke Remage-Healey lab **Summer 2013**

In the lab of Dr. Luke Remage-Healey I gained experience in stereological surgery and extracellular recordings of the auditory cortex to examine the effects of estradiol on auditory perception.

Dr. Jeffrey Blaustein **August 2012- May 2014**

In the lab of Dr. Jeffrey Blaustein, I developed behavioral paradigms to examine how an immune challenge or alcohol exposure during puberty in female CD1 mice impacts cognitive and sex behavior in adulthood. Specifically, I examined how 17-β estradiol (normally pro-cognitive) impacts females that experienced an immune challenge or binge-drank during puberty. Our preliminary data suggested that both immune challenges and alcohol binge-drinking during puberty results in 17-β estradiol inducing maladaptive behavior in adulthood.

PUBLICATIONS

Hernandez, J.S., Le, N., Azanchi, R., Mei, N., Long, A.T., Robertson, M.R., Cook, O.M., Dacks, A.M., Kaun, K.R. Multisensory integration shapes operant learning in *Drosophila melanogaster* (Submitted to *Journal of Experimental Biology March 2025).*

Chan, I.C., Chen, N., **Hernandez, J**., Meltzer, H., Park, A., Stahl, A. Future avenues in *Drosophila* mushroom body research. Learning and Memory, June 2024, 31(5):a053863.

Kaminska, B., **Hernandez, J.S.**, Rodberg, E., den Hartog, C., Bladino, K.L., Vazey, E.M., Moorman, D.

Hernandez, J.S., Brown, T.M., Kaun, K.R. Drosophila reward circuits. *Oxford Research Encyclopedia of Neuroscience*, 2023.

Hernandez, J.S., and Kaun, K.R. Alcohol, neuronal plasticity, and mitochondrial trafficking. *Proceedings of the National Academy of Sciences of the United States of America*. *119*(29) e2208744119. https://doi.org/10.1073/pnas.2208744119.

Hernandez J, Binette A, Rahman T, Tarantino J, Moorman D. (2020) Chemogenetic inactivation of orbitofrontal cortex decreases cue-induced reinstatement for ethanol and sucrose in male and female Wistar rats. *Alcoholism: Clinical and Experimental Research*.

Hernandez J, Moorman D. (2020) Orbitofrontal cortex encodes preference for alcohol. *eNeuro*.

Hernandez J, Wainwright M, Mozzachiodi R (2017) Effects of aversive stimuli on nondefensive neural circuits in *Aplysia*: Increase in Na^+-dependent firing threshold in a neuron critical for feeding serves as a biophysical substrate for memory. *Learning and Memory*, 24: 257-261.

Shields-Johnson M, **Hernandez J**, Torno C, Adams K, Wainwright M, Mozzachiodi R. (2013) Effects of aversive stimuli beyond defensive neural circuits: reduced excitability in an identified neuron critical for feeding in *Aplysia*. *Learning and Memory*, 20:1-5.

POSTER PRESENTATIONS AND CONFERENCE TALKS

Hernandez, J.S., Moges, S., Le, N., Azanchi, R., Kaun, K.R. Developing a model to understand individuality in motivated response in *Drosophila*. Conference talk at the International and Behavioral Neural Genetics Society at Yanuca Island, Fiji. May 19-22, 2025.

Hernandez, J.S., Le, N., Azanchi, R., Glenn, E., Kaun, K.R. A dopaminergic circuit for escalation of alcohol use in *Drosophila*. Conference talk at the International and Behavioral Neural Genetics Society at London, Ontario, Canada. June 1-6, 2024.

Hernandez, J.S., Ray, M., Pavuluri, A., Waterman, A., Haskie, M., Azanchi, R., O'Connor-Giles, K., Larschan, E., Kaun, K.R. Single nuclei transcriptomics of the *Drosophila* mushroom body. Conference talk at the National Institute of Drug Abuse (NIDA) Genetics and Epigenetics Cross-Cutting Research Team Meeting on May 23-24, 2024.

Hernandez, J.S., Kaun, K.R. The circuit basis for ethanol motivation in *Drosophila melanogaster*. Talk given at the NIDA-NIAAA Neuroscience Workgroup's Webinars by Early Career Investigators in Addiction Neuroscience. February 14, 2024.

Hernandez, J.S., Glenn, E., Mei, N., Azanchi, R., Kaun, K.R. The circuit basis of individuality in motivated operant response for ethanol. Poster given at Alcohol & the Nervous System Gordon Research Conference. February 11-16, 2024.

Hernandez, J.S. Developing survey methods for understanding and enhancing outreach impacts for historically marginalized student populations. Talk given at the Research Society on Alcohol conference in Bellevue, Washington. June 24-28, 2023.

Hernandez, J.S., Le, N., Azanchi, R., Glenn, E., Kaun, K.R. A dopaminergic circuit for escalation of alcohol use in *Drosophila*. Poster given at the International and Behavioral Neural Genetics Society at Galway, Ireland. May 22-25, 2023.

Brown, T.M., Petruccelli, E., **Hernandez, J.S.**, Gratz, S.G., Waterman, A.G., Nuñez, K., O'Connor-Giles, K., Kaun, K.R. Alcohol-induced alternative splicing in *Drosophila* memory circuits. Society for Neuroscience. November 12-16, 2022, San Diego, CA.

Le, N., **Hernandez, J.S.,** Mei, N.J., Azanchi, R., Kaun, K.R. Operant responses to appetitive and aversive odors in *Drosophila*. Society for Neuroscience. November 12-16, 2022, San Diego, CA.

Hernandez, J.S., Glenn, E., Mei, N., Azanchi, R. and Kaun, K.R. The circuit basis of operant selfadministration for ethanol in *Drosophila Melanogaster*. Alcohol and the Nervous System (GRS) Gordon Research Conference, October 22-23, 2022.

Hernandez, J.S., Glenn, E., Mei, N., Azanchi, R. and Kaun, K.R. The circuit basis of operant selfadministration for ethanol in *Drosophila Melanogaster*. 63rd *Drosophila* Research Conference hosted by Genetics Society of America. April 6-10, 2022, San Diego, CA.

Glenn, E., **Hernandez, J.S.**, Mei, N., Catalano, J., Azanchi, R., Kaun, K.R. Open "bar": An operant paradigm to examine variability in alcohol self-administration in *Drosophila melanogaster*, Society for Neuroscience Global Connectome: A Virtual Event, January 11-13, 2021.

Hernandez, J.H., Glenn, E., Kaun, K.R. Open Bar Assay: A new operant paradigm for examining motivated responses and substance abuse in *Drosophila Melanogaster*, American College of Neuropsychopharmacology virtual meeting, December 6-9, 2020.

Hernandez, J.H., Glenn, E., Catalano, J., Kaun, K.R. Open Bar Assay: A new operant paradigm for examining motivated response and substance abuse in *Drosophila Melanogaster*. International Behavioral & Neural Genetics Society Virtual Trainee Symposium, September 23, 2020.

Hernandez, J.H. and Kaun, K.R. Examining how individuality in alcohol preference manifests. Boston Area Drosophila virtual conference, June 2020.

Hernandez, J.H., Moorman, D.E., Neuronal activity in the Orbitofrontal cortex reflects individual preference during alcohol seeking. Minneapolis, Minnesota. Research Society on Alcoholism, 2019.

Hernandez, J.H., Binette, A., Moorman, D.E., Selective effects of chemogenetic inhibition of orbitofrontal cortex on operant ethanol seeking. Washington, D.C., Society for Neuroscience, 2017. Online **Hernandez, J.**, Siegal, R., Moorman, D.E., Neurons in the orbitofrontal cortex encode relative preference during alcohol and sucrose seeking. San Diego, CA, Society for Neuroscience, 2016. Online.

Siegal, R., **Hernandez, J.S.**, Moorman, D.E., Orbitofrontal cortex neurons fire in response to both 10% and 20% alcohol. NEURON Conference, 2016.

Hernandez, J.S., Moorman, D.E. Orbitofrontal cortical neuron signaling during alcohol and sucrose selfadministration. Chicago, IL: Society for Neuroscience, 2015. Online.

Hernandez J.S., Wainwright M.L. and Mozzachiodi R. Long-term sensitization training *in Aplysia* decreases the excitability of a decision-making neuron critical for feeding through a sodium-dependent mechanism. Program No. 193.19. *2013 Neuroscience Meeting Planner*. San Diego, CA: Society for Neuroscience, 2013. Online.

Hernandez J.S., Torno C, Adams K.M., Shields-Johnson M., Wainwright M. and Mozzachiodi R. Suppression of feeding induced by long-term sensitization training in *Aplysia*: temporal dynamics and role of serotonin. Program No. 297.05. *2011 Neuroscience Meeting Planner*. Washington, DC: Society for Neuroscience, 2011. Online.

Hernandez J.S., Adams K.M., Wainwright M.L. and Mozzachiodi R. Exogenous serotonin does not mimic the suppression of feeding induced by sensitization training in *Aplysia californica*. Sigma Xi Annual Meeting and International Research Conference, Raleigh, NC, November 1114, 2010.

Adams K.M., **Hernandez J.S.**, Wainwright, M.L. and Mozzachiodi R. Using emetine to characterize the relationship between the behavioral changes associated with long-term sensitization in *Aplysia californica*. Sigma Xi Annual Meeting and International Research Conference, The Woodlands, Texas. November 1215, 2009.

Hernandez J.S., Adams K.M., Wainwright, M.L. and Mozzachiodi R. The use of emetine as a pharmacological tool to examine the behavioral changes associated with long-term sensitization in *Aplysia californica*. Ninth Annual Local Sigma Xi Undergraduate Symposium, TAMU-CC, October 10, 2009.

INVITED TALKS

"Using *Drosophila* to understand the circuit and molecular basis of individuality in motivated operant response for ethanol" to be presented at the University of Maryland Baltimore County's Department of Biological Sciences on April 23, 2025.

"A circuit motif for individuality in motivated operant response for ethanol" to be presented at the NYU Seminars by Postdocs in Neuroscience: Extramural Series; SPiNES) on December 12, 2024.

"A circuit structure for individuality in motivated operant response for ethanol" presented at the International Behavioral and Neural Genetics "Genes, Brain and Behavior" 2024 meeting. March 2024.

"The circuit basis of individuality in motivated operant response for ethanol" presented at Alcohol & the Nervous System Gordon Research Seminar. February 10-11, 2024.

"Using student feedback to better outreach approaches for historically marginalized students" presented at the Research Society on Alcohol's annual meeting. June 24, 2023.

"The circuit basis of ethanol motivation in *Drosophila melanogaster*" presented at the University of Mount Union in Ohio. October 5, 2023.

"The circuit basis of ethanol motivation in *Drosophila melanogaster*" presented at the Alcohol and the Nervous System Gordon Research Conference, October 22-23, 2022.

"The circuit basis of operant self-administration for intoxicating doses of ethanol in *Drosophila melanogaster*" presented to the University of Wyoming Department of Family and Consumer Sciences October 13, 2022.

AWARDS AND HONORS

Travel award to attend the International Behavioral and Neural Genetics "Genes, Brain and Behavior" 2024 meeting **March, 2024**
Best poster presentation at Gordon Research Conference **February, 2024**
Best poster presentation at Gordon Research Conference **October, 2022**
Society for Neuroscience's Neuroscience Scholars Associate **2015-2017**
Honorable mention Ford Foundation Fellowship **September 2014**
1st place and $100 for poster at Graduate Scholarly Works Symposium hosted by ELITE graduate program at Texas A&M University – Corpus Christi **April 22, 2011**
Awarded commemorative medal and highest ranking ("Superior) for poster at 2010 Sigma Xi Annual Meeting and International Research Conference at Raleigh, North Carolina **November 12, 2010**
Received "Excellent" rating for poster at Sigma Xi Annual Meeting and International Student Research Conference at The Woodlands, Texas **November 14, 2009**
Dean's List Spring 2009 at Texas A&M University – Corpus Christi **October 11, 2009**

FUNDING AND PROFESSIONAL DEVELOPMENT

Awarded 2 years of mentorship and funding support through the Advancing Research Career (ARC) Scholar program through the Carney Institute for Brain Science **March 2022-2024**
Research Society on Alcoholism (RSA) Junior Investigator Meeting Travel Award to attend the annual RSA conference **April 2022**
Attended Nemonic *"Designing and using advanced multiphoton imaging systems in Neuroscience"* **February 23-25, 2022**

Postdoctoral NRSA entitled "Open bar assay: A novel operant paradigm for examining motivated response and substance abuse in *Drosophila melanogaster"* co-sponsored by Drs. Karla Kaun (Brown University and Benjamin de Bivort (Harvard University) supported by NIA **July 2021- 2024** Funded to attend Preparing the Next Generation of Neuroscience Leaders **July 17-18, 2017**
NIH BRAIN Initiative computational neuroscience course: "Models and Neurobiology" **June 6-17, 2016**
USDA Career Preparation Institute & American Association of Hispanics in Higher Education (AAHHE) in San Antonio awarded for Master's thesis work **March 26-30, 2013** Northeast Alliance for Graduate Education and the Professoriate **Awarded September 2012** Summer stipend ($3,300) through Office of Research & Graduate Studies at Texas A&M University – Corpus Christi **Awarded May 24, 2011**
Funding to attend Sigma Xi Annual Meeting and International Research Conference at Raleigh, North Carolina **November 12, 2010**
Received travel funding from 2009 Ninth Annual South Texas Sigma Xi Symposium at Texas A&M University – Corpus Christi to attend 2009 International Sigma Xi Annual Meeting **October 11, 2009**

SERVICE and OUTREACH/MENTORSHIP

OUTREACH/MENTORSHIP:

Society for Neuroscience **July 2020 - 2022**

Brown University

Inducted to be a mentor through Society for Neuroscience's Neuroscience Scholars Program (NSP) where I am mentoring Ph.D. trainee Thibaut Pardo-Garía, a neuroscience trainee earning his Ph.D. in Dr. Monica Dus's lab at University of Michigan. Through this mentorship program, I will work with Thibaut Pardo-García to develop his networking skills, aide in his developing professional documents (e.g., CV, personal statement, Biosketch, etc.,) and work with him to develop and hone his research questions.

University of Massachusetts – Amherst **August 2012 – August 2018**

I was the chair of the Neuroscience outreach group (2016-2018) in the Neuroscience and Behavior program at the University of Massachusetts - Amherst and recently created an underrepresented community outreach group in the Neuroscience and Behavior program. We are currently working with many schools, including Paolo Friere Charter School in Holyoke, Springfield Renaissance School, High School of Commerce, Chestnut Street Middle school and Greenfield High School, Greenfield Middle School and Deerfield Elementary School. We plan to expand our outreach to include communities with large underrepresented populations and all communities at large. Our goal is to increase awareness of neuroscience research and to provide student communities with hands-on learning about the nervous system and its role in the body. Additionally, we provide a diverse graduate student and post-doctoral teaching group that allows students to see that people of all ethnicities, ages and background can participate in the sciences.

Laboratory of Dr. Riccardo Mozzachiodi **May 2011 – July 2012**

Hosted educational outreach for many schools (sponsored by the college of Education at Texas A&M University – Corpus Christi; TAMU-CC) from the Corpus Christi and surrounding areas (elementary – high school levels) to learn the fundamentals of neuroscience and science research. In this respect, I facilitated coordination of biological preparations, prepared speeches for the students, answered questions and provided access to hands-on experience for students to grasp concepts in the neurosciences. I also was part of an outreach endeavor (sponsored by the TAMU-CC Café con Leche USDA-HIS grant) to teach Texas high school students about neuroscience and related research. Finally, as part of my Master's, I volunteered and judged science projects at the Corpus Christi regional Science Olympiad at TAMU -CC and acted as a judge at the Costal Bend Science Fair.

MENTEES:

Daniela Garrod (Rotational Ph.D. student in Dr. Karla Kaun's lab) **2024-**
Megan Wang (Undergraduate at Brown in Dr. Karla Kaun's lab) **2023-**
Selam Moges (Undergraduate at Brown in Dr. Karla Kaun's lab) **2023-**
Nelson Le (Postbaccalaureate PREP student at Brown in Dr. Karla Kaun's lab) **2022-2023**
Gabriel Reyes (M.S. trainee at Columbia University in Dr. Daphna Shohamy lab; M.U.S.E. mentee) **2020-2021**
Thibaut Pardo-Garcia (Ph.D. trainee University of Michigan Ann Arbor in Dr. Monica Dus lab) **2020-21**
Eve Glenn (Undergrad research at Brown University; Dr. Karla Kaun lab) **2019-21**
Marcy Saldivar (Undergrad researcher at Washington & Jefferson College; M.U.S.E mentee) **2019-21**
Olivia Medina (Undergrad researcher in Dr. Healther Lehman lab; M.U.S.E mentee) **2019-20**
Taryn Rahman (Undergrad trainee University of Massachusetts – Amherst in Moorman lab) **2017-19**
Jeffrey Tarantino (Research & Project Coordinator at Boston University) **2017-19**
Annalise Binette (Ph.D. trainee in Dr. Jun Wang lab, Texas A&M College Station) **2016-17**
Frida Corona (Ph.D. trainee at UC Irvine in Dr. Sarah Mednick lab) **2016-17**
Sarah Winokur (Ph.D. trainee in Dr. Mariana Pereira lab; NSB 1st year mentee) **2015-16**
Jonathan Woodson (Ph.D. trainee in Dr. Joseph Bergan lab; NEAGEP mentee) **2015-16**
Kathy Tran (Technical Associate I in Graybiel lab at MIT) **2015-16** Kyra Schapiro (Graduate trainee in Dr. Joshua Gold lab UPenn) **2014-15** Rachel Siegal (Clinical Research Assistant at University of Maryland) **2014-15**

UNIVERSITY SERVICE:

Poster judge for Brown Biology Undergraduate Poster Day **April 12, 2023**
Graduate Community Coordinator: "Out" in STEM (oSTEM) Brown local chapter **2020-21**
Executive Committee Member: Post-docs in Brain Sciences **2019-21**
Neuroscience & Behavior Program Outreach committee **2012-18**
- Outreach Chair **2016-18**

Participated in outreach at University of Massachusetts – Amherst for Girls Inc of the Valley **2016-19**

ACADEMIC SERVICE:

Professional Service

Invited to act as a postdoctoral reviewer to assess the Carney Graduate Awards **Apr, 2023**
Invited to speak with University of California Riverside Neuroscience graduate students for Professional Development Series **Feb, 17, 2023**

Invited to speak about my work for a guest lecture for Dr. Karla Kaun for Introduction to Neurogenetics (NEUR 1040) **April 12, 2022**

Professional Society Committees:
Research Society on Alcoholism Committee Post-Doc Member **2020-**

Scientific journal reviewing in Dr. Karla Kaun lab: *Nature Communications, Nature*

PROFESSIONAL MEMBERSHIPS

The American College of Neuropsychopharmacology 2020-
International Behavioral & Neural Genetics Society 2020-
Research Society on Alcoholism 2019-
American Society of Cell Biology 2015-2017
Society for Behavioral Neuroendocrinology 2013-2014
Society for Neuroscience 2011-
Alpha Epsilon Delta 2008-2010

Pre -Professional Health Society 2006-2009

TEACHING EXPERIENCE

University Course Teaching

University of Massachusetts – Amherst Teaching

BIOL 494: *Life After Biology*	2020
PSYCH 241: *Methods in Statistics/Experimentation*	2016
PSYCH 330: *Behavioral Neuroscience*	2014
BIOL 153: *Biological Laboratories*	2014,16,19

Texas A&M University Teaching

Biology 2401*: Human Anatomy and Physiology*	2010
Biology 3430*: Physiology*	2011