

Eamonn P. Duffy
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Education

University of Colorado Boulder	Boulder, CO
Ph.D., Neuroscience	In Progress
Ph.D., Integrative Physiology	
Certificate, Behavioral Genetics	

Indiana University	Bloomington, IN
Bachelor of Science, Neuroscience	May 2020
Minor, Biology	
Honors: <i>Summa cum laude</i> , Departmental honors	

Research Experience

Graduate Research Assistant, University of Colorado Boulder	08/2020 - present
Genetics of Substance Use Laboratory, Bachtell Laboratory	
Mentors: Dr. Marissa Ehringer & Dr. Ryan Bachtell	
Dissertation research project investigates multidirectional relationships between host genetics, the gut microbiome, and Opioid Use Disorder (OUD). We are using the Hybrid Rat Diversity Panel (HRDP) to identify genetic variants and gene networks that contribute to several OUD-related behavioral phenotypes. In select strains from the HRDP, we are examining how interactions between genetic background, sex, and intravenous oxycodone self-administration influence the fecal and cecal microbiome.	

Undergraduate Research Assistant, Indiana University	05/2019 - 05/2020
Demas Lab, Department of Biology	
Primary Investigator: Dr. Greg Demas	
Work in this lab was used for an honors thesis in the Department of Psychological and Brain Sciences. Project investigated the effects of antibiotic treatment on hormonal signaling and gut microbiome composition in maternal Siberian hamsters (<i>Phodopus sungorus</i>).	

Undergraduate Research Assistant, Indiana University	09/2018 - 12/2019
Cognition and Action Neuroimaging Lab	
Primary Investigator: Dr. Karin James	

Project investigated the developmental aspects of category learning. As part of a team of undergraduate research assistants, I designed stimuli, ran behavioral tests, and collected and analyzed fMRI data. Work during Fall 2019 went towards the completion of a Capstone project.

Undergraduate Research Assistant, Indiana University

08/2017 - 09/2018

Lu Laboratory

Primary Investigator: Dr. Hui-Chen Lu

Collected and analyzed data for a project investigating FGFR3 hyperfunction in mice. Cryosectioned embryonic neural tissue, conducted immunohistochemical staining, conducted fluorescence imaging, and counted neural cells.

Publications

Duffy, E.P., Sterrett, J.D., Hale, L.H., Ward, J.O., Brown, K.T., Kwilasz, A.J., Mehrhoff, E.A., Frank, D.N., Saba, L.S., Bachtell, R.K., Ehringer, M.A. [Manuscript in preparation]. Oxycodone self-administration alters the gut microbiome in two genetically divergent rat strains.

Duffy, E.P., Hale, L.H., Ward, J.O., Brown, K.T., Kwilasz, A.J., Mehrhoff, E.A., Saba, L.S., Bachtell, R.K., Ehringer, M.A. [Manuscript in preparation]. Characterization of intravenous oxycodone self-administration in select rat strains of the Hybrid Rat Diversity Panel.

Duffy, E.P., Hale, L.H., Brown, K.T., Kwilasz, A.J., Saba, L., Ehringer, M.A., Bachtell, R.K. (2024). Characterization of thermal and mechanical sensitivity in select strains of the Hybrid Rat Diversity Panel. *Genes, Brain and Behavior*, 23(2), e12894.

Duffy, E.P., Ehringer, M.A., Bachtell, R.K. (2023). Opioid Trail: Tracking Contributions to Opioid Use Disorder from Host Genetics to the Gut Microbiome. *Neuroscience & Biobehavioral Reviews*, 105487.

Duffy, E.P., Morrison, E.A., Demas, G.E. (2020). Effects of antibiotic administration on hormonal signaling in maternal Siberian hamsters (*Phodopus sungorus*) [Unpublished bachelor's thesis]. Indiana University

Jui-Yen, H., Baumgarten, K. B., Miskus, M. L., Lin, R. M., **Duffy, E. P.**, Graf, J. M., Hui-Chen, L. (2020). Enhanced FGFR3 activity in postmitotic principal neurons during brain development results in cortical dysplasia and axonal tract abnormality. *Scientific Reports (Nature Publisher Group)*, 10(1).

Conference Poster Presentations

- Duffy EP**, Hale L, Ward J, Brown K, Kwilasz AJ, Frank DN, Saba L, Bachtell RK, Ehringer MA. "Characterization of the gut microbiome and oxycodone use disorder phenotypes in select rat strains of the Hybrid Rat Diversity Panel," Psychoneuroimmunology Annual Meeting, CO, June 2023.
- Duffy EP**, Hale L, Ward J, Brown K, Kwilasz AJ, Frank DN, Saba L, Bachtell RK, Ehringer MA. "Characterization of the gut microbiome and oxycodone use disorder phenotypes in select rat strains of the Hybrid Rat Diversity Panel," Genes, Brain, and Behavior Annual Meeting, Republic of Ireland, May 2023.
- Duffy EP**, Hale L, Brown K, Kwilasz AJ, Saba L, Ehringer MA, Bachtell RK. "Characterization of thermal and mechanical sensitivity in select strains of the Hybrid Rat Diversity Panel," NIDA Genetics and Epigenetics Cross-Cutting Research Team Annual Meeting, NIH, MD, May 2023.
- Duffy EP**, Hale L, Ward J, Brown K, Kwilasz AJ, Frank DN, Saba L, Bachtell RK, Ehringer MA. "Characterization of the gut microbiome and oxycodone use disorder phenotypes in select rat strains of the Hybrid Rat Diversity Panel," Front Range Microbiome Symposium 2023, Colorado State University, CO, April 2023.
- Duffy EP**, Hale L, Hall L, Brown KT, Kwilasz AJ, Saba L, Ehringer MA, Bachtell RK. "Characterization of oxycodone use disorder phenotypes in select rat strains of the Hybrid Rat Diversity Panel," Genes, Brain, and Behavior Annual Meeting, University of Tennessee Health Science Center, TN, May 2022.
- Duffy EP**, Hale L, Hall L, Brown KT, Kwilasz AJ, Saba L, Ehringer MA, Bachtell RK. "Characterization of oxycodone use disorder phenotypes in select rat strains of the Hybrid Rat Diversity Panel," NIDA Genetics and Epigenetics Cross-Cutting Research Team Annual Meeting, Virtual Meeting, April 2022.
- Duffy EP**, Hale L, Hall L, Brown KT, Kwilasz AJ, Saba L, Ehringer MA, Bachtell RK. "Implementing an oxycodone self-administration paradigm using the Hybrid Rat Diversity Panel," Front Range Neuroscience Group Annual Meeting, Colorado State University, CO, December 2021.
- Duffy EP**, Huang JH, Lu HC. "The Impact of dysregulated FGFR3 hyperfunction in cortical development," Greater Indiana SFN Meeting, Purdue University, IN, March 2018.

Graduate Awards

Carol Becker Lynch Award For Excellence in Behavior Genetics Research	2024
Jackson Laboratory Workshop Travel Award	2023
CU Boulder Graduate School Travel Award	2023

CU Boulder Integrative Physiology Travel Award	2022, 2023
IBANGS Travel Award	2022, 2023, 2024
NIDA T32 Appointment (DA017637)	2022, 2023

Teaching Assistant (TA) Experience

Graduate TA: Physiology Laboratory (IPHY 3435)	Fall 2020
Undergraduate TA: Introductory Psychology	Spring 2020
Undergraduate TA: Drugs and the Nervous System	Fall 2019
Undergraduate TA: Molecular Biology	Summer 2019

Society Membership

International Behavioural and Neural Genetics Society	2021 - present
Nu Rho Psi	2020 - present
Phi Beta Kappa	2019 - present
Psi Chi	2018 – present

Graduate Service

Lead Student at IBG	09/2022 - present
IBG Diversity and Inclusivity Committee, Member	09/2022 - present
CU Graduate School Peer Mentor	08/2021 - present
IBG Peer Mentor	08/2023 - present

Students and Trainees Mentored

Caleb Hodges, secondary mentor	2024
Safa Vaseemuddin, secondary mentor	2024
Elizabeth Engelbrecht; secondary mentor	2021
Aisha Yunes; secondary mentor	2021
China Dix; secondary mentor	2021

Undergraduate Grants, Honors, and Awards

Hutton Research Grant	Spring 2020
Senior Thesis Award	Spring 2020
Executive Dean's List	2016 - 2020
Founder's Scholar	2016 - 2020
IU College of Arts and Sciences Direct Admit Scholarship	Fall 2016
Jim and Betty Dye Scholarship	Fall 2016
Kohl's Kids Who Care Scholarship	Fall 2016
Lake Central Penny Wars and PTO Scholarship	Fall 2016

Michele Tyler Memorial Scholarship
Provost's Scholarship

Fall 2016
Fall 2016

Training Courses

JAX Short Course on the Genetics of Addiction
QIIME2 Amplicon Sequencing Workshop
DnA Short Read Workshop

Fall 2023
Summer 2023
Summer 2021