**CURRENT INFORMATION**

Dr. Erik R. Duboué, Ph.D. Email: eduboue@fau.edu
Associate Professor Office: (561) 799-8054
Wilkes Honors College Lab Phone:  (561) 799-8069
Florida Atlantic University Cell Phone\*: (504) 380-2578
5353 Parkside Drive \*preferred
Jupiter, FL 33458

**EDUCATION AND TRAINING**

2000-2006 B.A., Philosophy, Tulane University, New Orleans, LA

2000-2006 B.S., Neuroscience, Tulane University, New Orleans, LA

2006-2007 M.S., Neuroscience, Tulane University, New Orleans, LA

2007-2012 Ph.D., Biology, New York University, New York, NY

 Focus: Neuroscience

 Advisor: Dr. Richard Borowsky, Ph.D.

Thesis: Evolutionary Convergence on Sleep loss in Cavefish Populations

2012-2017 Postdoctoral Associate, Carnegie Institution for Science, Baltimore, MD

 Advisor: Dr. Marnie E. Halpern, Ph.D.

**EMPLOYMENT AND POSITIONS**

2003-2005 Undergraduate research Louisiana State University, Health Science Center

 Advisor: Dr. William Claycomb, Ph.D.

2005-2006 Undergraduate research University of Memphis (During Hurricane Katrina)

 Advisor: Dr. Charles Blaha, Ph.D.

2006-2007 Masters research Tulane University

 Advisor: Dr. Fiona Inglis, Ph.D.

2007 Research internship Université Bordeaux II

 Advisor: Dr. Dionysia Theodosis, Ph.D.

2007-2011 Teaching Assistant New York University

2011-2012 Teaching Adjunct New York University

2017- Assistant Professor Wilkes Honors College, Florida Atlantic University

2017- Faculty Member Jupiter Life Science Initiative, Florida Atlantic University

2018- Faulty Member Stiles-Nicolson Brain Institute

**PUBLICATIONS**

1. Keene, A. C., **Duboué, E. R.**, McDonald, D. M., Dus, M., Suh, G. S., Waddell, S., & Blau, J. (2010). Clock and cycle limit starvation-induced sleep loss in Drosophila. Curr Biol, 20(13), 1209-1215.
2. **Duboué, E. R.**, Keene, A. C., & Borowsky, R. L. (2011). Evolutionary convergence on sleep loss in cavefish populations. Curr Biol, 21(8), 671-676.
3. **Duboué, E. R.**, & Borowsky, R. L. (2012). Altered rest-activity patterns evolve via circadian independent mechanisms in cave adapted balitorid loaches. PLoS One, 7(2), e30868.
4. **Duboué, E. R.**, Borowsky, R. L., & Keene, A. C. (2012). β-adrenergic signaling regulates evolutionarily derived sleep loss in the Mexican cavefish. Brain Behav Evol, 80(4), 233-243.
5. Yoshizawa, M., Robinson, B. G., **Duboué, E. R.**, Masek, P., Jaggard, J. B., O'Quin, K. E., Borowsky, R. L., Jeffery, W. R., & Keene, A. C. (2015). Distinct genetic architecture underlies the emergence of sleep loss and prey-seeking behavior in the Mexican cavefish. BMC Biol, 13, 15.
6. **Duboué, E. R.**, & Keene, A. C. (2015). Investigating the Evolution of Sleep in the Mexican Cavefish. In A. C. Keene, M. Yoshizawa, & S. E. McGaugh (Eds.), Biology and Evolution of the Mexican Cavefish.
7. Facchin, L., **Duboué, E. R.**, & Halpern, M. E. (2015). Disruption of Epithalamic Left-Right Asymmetry Increases Anxiety in Zebrafish. J Neurosci, 35(48), 15847-15859.
8. **Duboué, E. R.**, & Halpern, M. E. (2017). Genetic and Transgenic Approaches to Study Zebrafish Brain Asymmetry and Lateralized Behavior. In L. J. Rogers (Ed.), Lateralized Brain Function: Methods in Human and Non-Human Species (1 ed., Vol. 122, pp. 553-589). Humana Press.
9. **Duboué, E. R.**, Hong, E., Eldred, K. C., & Halpern, M. E. (2017). Left Habenular Activity Attenuates Fear Responses in Larval Zebrafish. Curr Biol, 27(14), 2154-2162.e2153.
10. Chin, J. S. R., Gassant, C. E., Amaral, P. M., Lloyd, E., Stahl, B. A., Jaggard, J. B., Keene, A. C., & **Duboué, E. R.** (2018). Convergence on reduced stress behavior in the Mexican blind cavefish. Dev Biol, 441(2), 319-327.
11. Lloyd, E., Olive, C., Stahl, B. A., Jaggard, J. B., Amaral, P., **Duboué, E. R.**, & Keene, A. C. (2018). Evolutionary shift towards lateral line dependent prey capture behavior in the blind Mexican cavefish. Dev Biol, 441(2), 328-337.
12. Jaggard, J. B., Stahl, B. A., Lloyd, E., Prober, D. A., **Duboué, E. R.**, & Keene, A. C. (2018). Hypocretin underlies the evolution of sleep loss in the Mexican cavefish. Elife, 7.
13. Keene, A. C., & **Duboué, E. R.** (2018). The origins and evolution of sleep. J Exp Biol, 221(Pt 11).
14. Stahl, B. A., Peuß, R., McDole, B., Kenzior, A., Jaggard, J. B., Gaudenz, K., Krishnan, J., McGaugh, S. E., **Duboué, E. R.**, Keene, A. C., & Rohner, N. (2019). Stable transgenesis in Astyanax mexicanus using the Tol2 transposase system. Dev Dyn, 248(8), 679-687.
15. Chin, J. S. R., Albert, L. T., Loomis, C. L., Keene, A. C., & **Duboué, E. R.** (2019). Behavioral Approaches to Studying Innate Stress in Zebrafish. J Vis Exp(147).
16. Jaggard, J. B., Lloyd, E., Lopatto, A., **Duboué, E. R.**, & Keene, A. C. (2019). Automated Measurements of Sleep and Locomotor Activity in Mexican Cavefish. J Vis Exp(145).
17. Loomis, C., Peuß, R., Jaggard, J. B., Wang, Y., McKinney, S. A., Raftopoulos, S. C., Raftopoulos, A., Whu, D., Green, M., McGaugh, S. E., Rohner, N., Keene, A. C., & **Duboué, E. R.** (2019). An Adult Brain Atlas Reveals Broad Neuroanatomical Changes in Independently Evolved Populations of Mexican Cavefish. Front Neuroanat, 13, 88.
18. Stahl, B. A., Jaggard, J. B., Chin, J. S. R., Kowalko, J. E., Keene, A. C., & **Duboué, E. R.** (2019). Manipulation of Gene Function in Mexican Cavefish. J Vis Exp(146).
19. Chin, J. S. R., Loomis, C. L., Albert, L. T., Medina-Trenche, S., Kowalko, J., Keene, A. C., & **Duboué, E. R.** (2020). Analysis of stress responses in Astyanax larvae reveals heterogeneity among different populations. J Exp Zool B Mol Dev Evol, 334(7-8), 486-496.
20. Jaggard, J. B., Lloyd, E., Yuiska, A., Patch, A., Fily, Y., Kowalko, J. E., Appelbaum, L., **Duboué, E. R.**, & Keene, A. C. (2020). Cavefish brain atlases reveal functional and anatomical convergence across independently evolved populations. Sci Adv, 6(38).
21. Paz, A., McDole, B., Kowalko, J. E., **Duboué, E. R.,** & Keene, A. C. (2020). Evolution of the acoustic startle response of Mexican cavefish. J Exp Zool B Mol Dev Evol, 334(7-8), 474-485.
22. Choi, J. H., **Duboué, E. R.**, Macurak, M., Chanchu, J. M., & Halpern, M. E. (2021). Specialized neurons in the right habenula mediate response to aversive olfactory cues. Elife. Dec 8;10:e72345
23. Zaupa, M., Naini, S. M. A., Younes, M. A., Bullier, E., **Duboué, E. R.**, Le Corronc, H., Soula, H., Wolf, S., Candelier, R., Legendre, P., Halpern, M. E., Mangin, J. M., & Hong, E. (2021). Trans-inhibition of axon terminals underlies competition in the habenulo-interpeduncular pathway. Curr Biol, 31(21), 4762-4772.e4765.
24. Coffman, J. A., Burman, M. A., & **Duboué, E. R.** (2022). Editorial: Early Life Stress and Developmental Programming of Immune and Nervous System Responsivity. Front Cell Dev Biol, 10, 897251.
25. Chin, J. S. R., Phan, T.-A. N., Albert, L. T., Keene, A. C., & **Duboué, E. R.** (2022). Long lasting anxiety following early life stress is dependent on glucocorticoid signaling in zebrafish. Sci Rep. Jul 27;12(1):12826.
26. Lloyd, E., McDole, B., Privat, M., Jaggard, J. B., **Duboué, E.R.**, Sumbre, G., & Keene, A. (2022). Blind cavefish retain functional connectivity in the tectum despite loss of retinal input. Curr Biol. Sep 12;32(17):3720-3730.e3.
27. O'Gorman, M., Thakur, S., Imrie, G., Moran, R. L., Choy, S., Sifuentes-Romero, I., Bilandžija, H., Renner, K. J., **Duboué, E.R.**, Rohner, N., McGaugh, S. E., Keene, A. C., & Kowalko, J. E. (2021). Pleiotropic function of the oca2 gene underlies the evolution of sleep loss and albinism in cavefish. Curr Biol, 31(16), 3694-3701.e3694.
28. Oliva, C., Hinz, N. K., Robinson, W., Barrett Thompson, A. M., Booth, J., Crisostomo, L. M., Zanineli, S., Tanner, M., Lloyd, E., O’Gorman, M., McDole, B., Paz, A., Kozol, R., Brown, E. B., Kowalko, J. E., Fily, Y., **Duboué, E. R.**, & Keene, A. C. (2022). Characterizing the genetic basis of trait evolution in the Mexican cavefish. Evol Dev. Sep;24(5):131-144.
29. Patch, A., Paz, A., Holt, K. J., **Duboué, E. R.**, Keene, A. C., Kowalko, J. E., & Fily, Y. (2022). Kinematic analysis of social interactions deconstructs the evolved loss of schooling behavior in cavefish. PLoS One, 17(4), e0265894.
30. **Duboué E.R.**, Kowalko J.E., Keene A.C. (2022). Course-based undergraduate research experiences (CURES) as a pathway to diversify science. Evol Dev. Sep;24(5):127-130.
31. Rodriguez-Morales, R., Gonzalez-Lerma, P., Yuiska, A., Han, J. H., Guerra, Y., Crisostomo, L., Keene, A. C., **Duboué, E. R.,** & Kowalko, J. (2022). Convergence on reduced aggression through shared behavioral traits in multiple populations of Astyanax mexicanus. BMC Ecol Evol. Oct 14;22(1):116
32. Paz A, Holt KJ, Clarke A, Aviles A, Abraham B, Keene AC, **Duboué ER**, Fily Y, Kowalko JE. (2023) Changes in local interaction rules during ontogeny underlie the evolution of collective behavior. iScience. 2023 Jul 20;26(9):107431.
33. Kozol, R. A., Conith, A. J., Yuiska, A., Cree-Newman, A., Tolentino, B., Banesh, K., Paz, A., Lloyd, E., Kowalko, J. E., Keene, A. C., Albertson, R. C., & **Duboué, E. R.** (2023). A brain-wide analysis maps structural evolution to distinct anatomical modules. Elife. Jul 27;12:e80777
34. Kozol, R.A., et al. (2023) Standardized Husbandry Protocols for Astyanax. Zebrafish. Apr;20(2):86-94.
35. Lloyd E, Privat M, Sumbre G**, Duboué ER,** Keene AC. (2023) A protocol for whole-brain Ca2+ imaging in Astyanax mexicanus, a model of comparative evolution. STAR Protoc. 2023 Dec 15;4(4):102517.
36. Gallman K, Rastogi A, North O, O'Gorman M, Hutton P, Lloyd E, Warren W, Kowalko JE, **Duboué ER**, Rohner N, Keene AC. (2024) Postprandial sleep in short-sleeping Mexican cavefish. *Journal of Experimental Zoology Part A*, 341(10):1084-1096
37. Kozol, RA, Canavan, A, Tolentino, B, Keene, A.C., Kowalko, JE, **Duboué, E.R.** (2024) Evolution of a central dopamine circuit underlies adaptation of light-evoked sensorimotor response in the blind cavefish, Astyanax mexicanus. bioRxiv
38. Lloyd, E, Xia, F, Moore, K, Zertuche, C, Rastogi, A, Kozol, RA, Kensior, O, Warren, W, Appelbaum, L, Moran, RL, Zhao, C, **Duboué, E.R.**, Rohner, N, Keene, AC. (2024) Elevated DNA Damage without signs of aging in the short-sleeping Mexican Cavefish. bioRxiv. doi:10.1101/2024.04.18.590174
39. Shennard, D, Sifunetes-Romero, I, Amboise, R, Abdelaziz, J, **Duboué, E.R.**, and Kowalko, JE. (2004). The rx3 gene contributes to the evolution of eye loss in the cavefish Astyanax mexicanus, *bioRxiv*, doi.org/10.1101/2024.12.11.628050
40. Padmanaban, N, Ambosie, R, Choy, S, Marcus, S, Nilsson, SRO, Keene, AC, Kowalko, JE, and **Duboué, E.R.** (2025). Automated behavioral profiling using neural networks reveals differences in stress-like behavior between cave and surface-dwelling Astyanax mexicanus. *bioRxiv*, doi.org/10.1101/2025.01.30.635725

**ABSTRACTS, POSTERS, AND INVITED TALKS**

1. **Duboué, E.R.**, Mittleman, G., Chesler, E.J., Klebig, M. and Blaha, C.D. (2006) Mutation in Clathrin-Assembly *Picalm* Gene Alters Striatal Dopamine Synaptic Regulatory Mechanisms, Annual Mtg. Society for Neuroscience*,* Atlanta GA.
2. **Duboué, E.R.**, Keene, A.C., and Borowsky, R. (2010) Evolutionary convergence on sleep loss in Cavefish Populations. Gordon Research Conference, Ventura, CA.
3. **Duboué, E.R.**, Keene, A.C., and Borowsky, R. (2011) Evolutionary convergence on sleep loss in Cavefish Populations. 3rd Astyanax International Meeting, Ciudad Valles, Mexico.
4. **Duboué, E.R.**, Katrikh A.Z., Halpern M.E., (2012) The role of epithalamic asymmetry in modulating stress, Greater Baltimore Society for Neuroscience, Baltimore, MD.
5. **Duboué, E.R.**, Katrikh A.Z., Halpern M.E. (2013) Brain asymmetry and the stress response, Mid-Atlantic Regional Zebrafish Meeting, Carnegie Institution for Science, Baltimore, MD
6. **Duboué, E.R.** and Halpern, M.E. (2013) Reversal of directional asymmetry of the brain leads to increased stress. European Zebrafish Meeting, Barcelona, Spain.
7. **Duboué, E.R.** and Halpern, M.E. (2013) Stress and the asymmetric brain. Mid-Atlantic Regional Zebrafish Meeting, Princeton, NJ.
8. **Duboué, E.R.** and Halpern, M.E. (2014) Behavioral recovery from an aversive stimulus corresponds with left habenular activity. 11th International Conference on Zebrafish Development and Genetics, Madison, WI
9. **Duboué, E.R.** and Halpern, M.E. (2014) Quantifying the response to an aversive stimulus in larval zebrafish. Emerging Techniques in Neural Circuit Analysis workshop, 11th International Conference on Zebrafish Development and Genetics, Madison, WI
10. **Duboué, E.R.** and Halpern, M.E. (2014) Neuronal activation in the left dorsal habenula precedes recovery from electric shock, 3rd Imaging Zebrafish Neuronal Circuits symposium, Paris, France
11. **Duboué, E.R.** and Halpern, M.E. (2015) Lateralized habenular activity precedes recovery from an aversive stimulus in larval zebrafish. Mid-Atlantic Regional Zebrafish Meeting, Albert Einstein College of Medicine, New York City.
12. **Duboué, E.R.** and Halpern, M.E. (2015) Probing neural circuits that mediate stress using larval zebrafish. Harvard University Medical School, Dept. of Neuroscience.
13. **Duboué, E.R.**, Hong, E, Muto, A., Kawakami, K, and Halpern, M.E. (2016) Lateralized habenular activity expedites recovery from fear. 1st Annual Allied Genetics Society of America meeting, Orlando, FL
14. Chin J.S.R., and **Duboué, E.R.** (2018) Measuring fear and anxiety in small fish models. 12th International Conference on Zebrafish Development and Genetics, Madison, WI
15. Chin J.S.R., and **Duboué, E.R.** (2018) Early life stress in zebrafish potentiates neuronal and physiological mechanisms underlying fear. University of Miami, Miami, FL
16. Chin, J.S.R, Loomis, C, **Duboué, E.R.** (2019) Dissection of neuronal circuits underlying evolutionary derived reductions in stress. 7th Astyanax International Meeting, Querétaro, Mexico
17. **Duboué, E.R.** (2019) The Evolution of sleep in the blind Mexican Cavefish. 21st International Neuroscience Winter Conference, Sölden, Austria
18. **Duboué, E.R.** (2020) Enhanced anxiety following early-life-stress is mediated by potentiation of the hypothalamic-pituitary-interrenal axis leads to enhanced anxiety following early-life-stress. FAU
19. Kozol, R. and **Duboué, E.R**. (2022) A brain-wide neuroanatomical atlas reveals evolution in distinct modules. Astyanax International Meeting, 2020
20. **Duboué, E.R.** (2022) A brain-wide neuroanatomical atlas reveals evolution in distinct modules. 17th International Zebrafish Meeting, 2022
21. **Duboué, E.R.** (2022) Evolution of a neural circuit in Astyanax mexicanus. Dartmouth Geisel Medical School, Dartmouth College, Hanover, NH
22. **Duboué, E.R.** (2023) Phototaxis in cavefish is driven by evolution of the thalamus. Gordon Conference Neuroethology
23. **Duboué, E.R.** (2024) Dopaminergic regulation of phototaxis in cavefish, Dept. Seminar, Lehigh University
24. **Duboué, E.R.** (2024) Dopaminergic regulation of phototaxis in cavefish, Dept. Seminar, Tulane University School of Medicine
25. **Duboué, E.R.** (2024) A midbrain dopaminergic circuit drive evolutionary changes in light-evoked behavior in blind cavefish. Aquatic Models of Human Disease, San Antonio, TX
26. **Duboué, E.R.** (2025) Studying brain wide circuits and their function in pathological and adaptive states. Tulane University School of Medicine, New Orleans, LA
27. **Duboué, E.R.** (2025) Studying brain wide circuits and their function in pathological and adaptive states. West Virginia University Morgantown, WV

**AWARDS AND HONORS**

2006 Faculty for Undergraduate Neuroscience Research Award, Society for Neuroscience

2007-2011 Henry M. MacCracken Fellowship, New York University

2011 Society for Developmental Biology travel award, *Astyanax* International meeting

2011 Steven Kazianis Research Award, for a “*senior doctoral student who presented the best*

*research with the greatest potential to have a significant impact in their field.*”

**SERVICE**

2007-2009 Teaching Assistant New York University, General Biology Laboratory

 Supervisor: Dr. Nikolai Kirov

2009-2010 Teaching Assistant New York University, Molecular Biology Laboratory

 Supervisor: Dr. Claude Desplan

2010-2011 Teaching Adjunct New York University, Statistics (R programming) Supervisor: Dr. Mary Killilia

2010-2012 Mentor New York University, Masters Student

2011 Organizer New York University, Student annual symposium

2012 Outreach USA Science and Engineering Festival Nifty-Fifty Program

2012 Mentor Carnegie Institution, Johns Hopkins Undergraduate

2012 Speaker Carnegie Summer Lecture Series for Undergraduates

2013 Organizer Carnegie, 100th year anniversary symposium

2013 Mentor Carnegie Institution, Johns Hopkins PhD rotation student

2014 Outreach Bio-Eyes, CTY Family Day

2014 Mentor Carnegie Institution, Johns Hopkins PhD rotation student

2015 Mentor Carnegie Institution, Johns Hopkins PhD rotation student

2016 Speaker Carnegie Summer Lecture Series for Undergraduates

2016 Mentor Carnegie Institution, Johns Hopkins PhD rotation student

2016-2017 Postdoc association rep. Carnegie Institution for Science

2017-2018 Member Wilkes Honors College Biology Faculty Search Committee

2017 Member Wilkes Honors College Symposium Speaker Selection Committee

2018-2020 Voting Member Max Planck Honors Program: oversite committee

2018-2020 Voting Member Max Planck Honors Program: admissions committee

2018-2019 Chair Wilkes Honors College Symposium Committee

2018-2019 Member Palm Beach State College Business Partnership

2018-2019 Voting Member FAU Scholars day

2018 Reviewer Reviewer for NSF Graduate Research Fellow Program

2019- Voting Member FAU Cell Imaging Core Advisory Committee

2019-2020 Member Wilkes Honors College Biology Dean Search Committee

2019- Director PTC-FAU Science Scholars Program

2019 Member Wilkes Honors College Dean Search Committee

2019 Judge Southeastern Regional Zebrafish Meeting, Poster Judge

2019 Reviewer Reviewer for NSF Graduate Research Fellow Program

2019-2021 Mentor Chair FAU NSF-SINE Program

2020-2021 Mentor FAU URISE Program

2020-2021 Member FAU P&T Guideline Review Committee

2020-2021 Member FAU Academic Advisory Committee

2020-2021 Co-organizer FAU NIH-URISE Program

2021 Reviewer Reviewer for NASA NSPIRES Grant Panel

2021 Guest Editor Guest Editor for *Frontiers in Cell and Dev. Biology* Special Topics

2021- Director FAU NIH-URISE Program

2021-2022 Member WHC Instructor Search Committee

2021-2022 WHC Representative FAU Undergraduate Research Curriculum Committee

2021-2022 Member FAU College of Science Faculty Search Committee

2022 Co-Organizer International Astyanax Meeting, San Antonio

2022 Member Reviewer for NIH’s Neurobiology of Motivated

Behavior study section.

2023 Member Reviewers for NIH’s R15 study section

2023 Member Reviewer for NIH’s BRAIN Initiative study section

2024 Member Reviewer for NIH’s K99/R00 MOSIC study section

2024 Member Reviewer for NSF Study Section

2024-2025 Member Wilkes Honors College Biology Search Committee

2025 Member Reviewer for NIH’s BRAIN Initiative study section

2025 Member Reviewer for NIH’s NMB study section

**PEER REVIEW**

*Biology Open*

*BMC Biology*

*BMC Neuroscience*

*Current Biology*

*Journal of Neuroscience Methods*

*Journal of Visualized Experiments*

*eLife*

*eNeuro*

*Experimental Results*

## *Journal of Experimental Zoology Part A: Ecological and Integrative Physiology*

*Journal of Experimental Zoology Part B: Molecular and Developmental Evolution*

*Scientific Reports*

*Symmetry*

*Nature*

*Proceedings of the National Academy of Sciences*

**INSTRUCTION**

|  |  |  |
| --- | --- | --- |
| Semester & Year | Course No. | Title |
| Fall 2017 | BSC 3063 | Honors Genetics |
| Spring 2018 | BSC 4915 | Honors Dir Ind Research |
| Spring 2018 | BSC 4970 | Honors Thesis in Biology |
| Spring 2018 | BSC 4930 | Honors Systems Neuroscience |
| Spring 2018 | PCB 3063 | Honors Genetics |
| Summer 2018 | ISC 4947 | Honors Internship |
| Fall 2018 | BSC 4915 | Honors Dir Ind Research |
| Fall 2018 | BSC 4970 | Honors Thesis in Biology |
| Fall 2018 | PCB 3063 | Honors Genetics |
| Spring 2019 | BSC 4915 | Hon Dir Ind Res |
| Spring 2019 | BSC 4970 | Hon Thesis in Biol |
| Spring 2019 | BSC 4930 | Hon Dev Neurobiology |
| Spring 2019 | IDS 3932 | Hon Science Writing (Team Taught with Rachel Luria) |
|
| Spring 2019 | ISC 4947 | Hon Int Science and Math |
|
| Spring 2019 | BSC 6905 | Master’s Thesis Proposal |
|
| Spring 2019 | BSC 6971 | Master’s Thesis |
|
| Spring 2019 | BSC 6936 | Dev Neurobiology |
|
| Summer 2019 | BSC4 915 | Hon Dir Ind Res |
| Summer 2019 | BSC 6905 | Master’s thesis defense |
| Summer 2019 | BSC 6971 | Master’s Thesis |
| Summer 2019 | ISC 4947 | Hon Int Science and Math |
| Fall 2019 | BSC 4915 | Hon Dir Ind Res |
| Fall 2019 | PCB 3063 | Hon Genetics |
| Spring 2020 | BSC 4915 | Honors Dir Ind Res in Biology |
| Spring 2020 | BSC 4930 | Honors Systems Neuroscience |
| Spring 2020 | BSC 4970 | Honors Thesis in Biology |
| Spring 2020 | ISC4 947 | Honors Internship Science |
| Summer 2020 | BSC 4915 | Honors Dir Ind Res in Biology |
| Summer 2020 | ISC 4947 | Honors Internship Science |
| Fall 2020 | BSC 4915 | Honors Dir Ind Res in Biology |
| Fall 2020 | BSC 7978 | Adv Research in Neuroscience |
| Fall 2020 | ISC 4947 | Honors Internship Science |
| Fall 2020 | PCB 3063 | Honors Genetics |
| Spring 2021 | BSC 4915 | Honors Dir Ind Research Bio |
| Spring 2021 | BSC 4970 | Honors Thesis in Biology |
| Spring 2021 | BSC 7978 | Adv Res Integrative Bio |
| Spring 2021 | ISC 4947 | Honors Internship -science |
| Summer 2021 | ISC 4947 | Honors Internship - science |
| Summer 2021 | ISC 4947 | Honors Internship - science |
| Fall 2021 | BSC 4915 | Honors Dir Ind Research Bio |
| Fall 2021 | BSC 6975 | Master’s Def Seminar |
| Fall 2021 | BSC 7978 | Adv Res Integrative Bio |
| Fall 2021 | BSC 7980 | Dissertation |
| Spring 2022 | BSC 4915 | Honors Dir Ind Res in Biology |
| Spring 2022 | BSC 4930 | CURE: Honors Principles of Behavioral Evolution |
| Spring 2022 | BSC 4930 | Honors Grant Writing |
| Spring 2022 | BSC 6917 | ELS and Feeding in Zebrafish |
| Spring 2022 | BSC 7978 | Adv. Research in Int Biology |
| Summer 2022 | BSC 7980 | Dissertation |
| Summer 2022 | IDS 4970 | Honors Thesis |
| Summer 2022 | ISC 4947 | Honors Internship in Science and Math |
| Fall 2023 | BSC 3936 | Honors Genetics |
| Spring 2024 | BSC 4930 | Honors Evolution of Human Behavior |
| Fall 2024 | BSC 4930 | Honors Sensory Systems |
| Spring 2025 | PCB 3036 | Honors Genetics |

**MENTORSHIP**

*Postdoctoral Fellows*

2017-2020 Dr. Jacqueline Chin (Currently Senior Scientist in Michael Meaney Lab, Singapore)

2018-2024 Dr. Robert Kozol (Currently Assistant Professor St. John’s University)

2020-2021 Dr. Itzel Sifuentes-Romero (Currently Research Scientist, Iowa State)

*Graduate Students (PhD and Masters)*

2018-2020 Cody Loomis (Currently at Max Planck) (Masters)

2018-2020 Ji-Heon “John” Han (PhD)

2020-2021 Anders Yuiska (Masters)

2020-2023 Alexandra Paz (PhD)

2021-2022 Bethany O’Donnell (PhD)

2023- Peter Igwilo

2024- Kat Sankey (rotation)

2024- Isabelle Origlio (rotation)

*Undergraduate students working in the lab*

2017-2018 Claude Gassant\*

2017-2018 Daniel Whu\*

2017-2018 Courtney Olive (OURI Grant awarded)\*

2017-2018 Austin Raftopoulos\*

2017-2018 Steven Raftopoulos\*

2017-2019 Shirley Mendina-Trenche\*

2017-2020 Anders Yuiska\*

2018-2019 Lydia Albert\*

2018-2019 Charles Shi (MPHP)

2018-2019 Leonardo Peon Chang (Presented at ABRCMS Conference)

2018-2019 Rina Raad

2018-2019 Anh Phan\*

2019-2020 Princess Abdul-Akbar

2019-2020 Kelly-Anne Peart

2019-2021 Alexia Cree-Newman\*

2020-2021 Ana Chacon (OURI Grant awarded)

2020-2021 Ghabrielle Alemedia

2020-2022 Samantha Zaninelli\* (Barry Goldwater Recipient)

2020-2022 Lina Cristisimo\*

2020-2022 Julianna Booth\*

2020-2022 Jannatul Begum (OURI Grant awarded)

2023- Naresh Padmanaban (submitted)\*

2023- Pranav Jambalugim

2023- Serena Amara

2024- Kristina Boutros

2024- Keisha Bansal

\* Indicates this student was an author in a peer reviewed publication

**Thesis Committees**

2018 Claude Gassant Primary Reader

2018 Daniel Whu Primary Reader

2018 Austin Raftopoulos Primary Reader

2018 Steven Raftopoulos Primary Reader

2018 Calren Moore Secondary Reader

2018 Joshua Torres Secondary Reader

2019 Lydia Albert Primary Reader

2019 Leonardo Peon Chang Primary Reader

2019 Alianis Tirado Primary Reader

2019 Elise Gonzalez Primary Reader

2019 Luis Rivero Primary Reader

2020 Shirley Mendina-Trenche Primary Reader

2020 Kelly-Anne Peart Primary Reader

2020 Abigail Chavez Secondary Reader (Max Planck Honors Program defense)

2020 Laura Paez Secondary Reader

2021 Ewa Barnas Secondary Reader

2021 Joelle Dwek Secondary Reader

2021 Anh Phan Primary Reader

2021 Olivia Curtis Secondary Reader

2022 Ana Chacon Primary Reader

2022 Ghabrielle Alemedia Primary Reader

2022 Austin Stratt Secondary Reader

2022 Jannatul Begum Primary Reader

2022 Ari Aviles Secondary Reader

2022 Alexia Cree-Newman Primary Reader

2024 Emily Serano Secondary Reader

2024 Emily Pereza Secondary Reader

2024 Naresh Padmanaban Primary Reader

**GRANTS**

*Current Funding*

5T34GM136486-03 PI: **Duboué, ER**, co-PI Murphy, Fraizer 04/2020 – 03/2025

**U-RISE at Florida Atlantic University**

This is a program grant that is aimed at giving underrepresented minority students a unique educational experience focused on primary research, and prepare them for Graduate School. The program as of Fall 2022 has 12 students.

BSF 2019262 PIs: **Duboué, E.R.,** and Gothilf, Y. 11/2020-10/2025

**The effect of early-life stress on the regulation of appetite in zebrafish.**

The goal of the project is to understand how neuronal circuits that modulate stress can alter feeding systems. The project uses zebrafish, Danio rerio, and examines the role of AgRP in stress-induced hypophagia. This is a collaboration with Dr. Yoav Gothilf (Tel Aviv University).

### NIH 1 R15 MH132057-01 PI: Duboué, ER 10/2022 – 10/2025

**Determining the impact of early adversity on the developing vertebrate brain**

### The goal of this study is to examine how early life stress alters the developing brain in zebrafish. Using a zebrafish model that my lab developed at FAU, we will assess how whole-brain anatomy and function at multiple developmental stages associates with enhanced stress following chronic stress exposure in early larval stages, how hormonal signaling alters the developing brain, and which genetic mechanisms may be contributing to these differences, potential opening therapeutic targets.

*Past Support*

NSF1923372 PI: **Duboué, E.R.** 09/01/2019 – 08/31/2023

**EDGE CT: NSF-BSF: Functional Genotype-Phenotype Mapping in the Mexican Blind Cavefish, Astyanax mexicanus**

The goal of the project is to develop genetic technology, including tissue-specific transgenic lines and lines with targeted mutations in specific genes, in the blind Mexican cavefish and their surface conspecifics.

NIH R21NS105071-01A1 PI: Keene, A.C.; co-PI: **Duboué, E.R.** 03/01/2018 - 02/28/2020

**Development of genetic tools for functional analysis of sleep in cavefish**

The goal of the project is to generate tools for the functional dissection of behaviors, principally sleep, in an emerging model system, the Mexican cavefish. Tools proposed include transgenic technologies, and the development of a brain-wide neuroanatomical atlas in several cavefish populations

FAU-Israeli Pilot Award PI: **Duboué, E.R.**, co-PI: Gothilf, Y. 02/01/2020-01/31/2021

**Dissection of the genetic and neuronal systems underlying early life stress-induced hyperphagia**

The goal of the project is to elucidate the neuronal modulators of feeding during times of stress. The proposal is a collaboration between the Duboué and Gothilf (Tel Aviv University), and will focus on the effects of a disrupting AgRP-neurons, and on transcription profiling of these neurons during chronic stress.

NIH R15MH118625-01 PI: **Duboué, E.R.** 09/24/2018 - 09/23/2022

**Functional dissection of brain-wide circuits modulating recovery from stress**

The goal of the project is to examine a recently identified forebrain to midbrain circuit important for restoring baseline states of behavior and physiology following a stressful event, and to further identify anatomical areas that act upstream and downstream of this identified circuit.

FAU JLSI/iHEALTH SEED PI: **Duboué, E.R.** and Fontenas, L 01/2024 – 12/2024

**Determining evolutionary divergence of glia cells in neuronal processing**

The goal of the study is to deduce what changes in glia composition and make up drive differences in behavioral adaptation. The study will focus on the blind cavefish, Astyanax mexicanus as a model, and will use a combination of state of the art imaging, staining of molecularly defined glia subtypes, functional interrogation, and functional imaging.

NIH R13OD036186 PI: **Duboué, E.R.** (lead), Kowalko, Keene, and Rohner 02/2024-12/2024

**Enhancing Diversity at the 8th Astyanax International Meeting (AIM)**

This award funded the 8th annual Astyanax International Meeting. The project facilitated collaboration, highlighted recent advances, and promote diversity in the scientific community, with a particular focus on underrepresented groups from Mexico and Latin America.

*Submitted Awards*

NIH 1R15DK144843 PI: **Duboué, E.R.**

**Decoding the role of naturally occurring variation in genetic and neural regulation of feeding and energy homeostasis.**

The goal of this study is to investigate how feeding changes evolve, with a flocus on the melanocortin system.

NIH 1R01EY035998 PI: Kowalko, JE & **Duboué, E.R.** Previous Impact score = 38

**Uncovering the developmental and functional effects of eye loss on brain development in a natural model of eye degeneration**

The goal of this study is to determine how eye loss alters the anatomy and function of the brain. We use a combination of whole-brain mapping, snRNA-seq, and functional neural activity monitoring in the Astyanax model

NIH R01NINDSXXXXX PI: **Duboué, E.R.**, co-I: Kowalko, JE

**Decoding the genetic and neural mechanisms of sensorimotor circuit variation using Astyanax mexicanus**

The goal of this study is to understand how flexible sensorimotor circuits change in novel environments. The study aims to understand both neuronal and genetic mechanisms underlying sensorimotor flexibility.

*Pending/to Submit*

iOS-NSF PI: **Duboué, E.R.** Score: *Excellent/ Excellent/ Excellent/Good*

**Elucidating the neuronal mechanisms underlying the evolution of stress in the blind Mexican cavefish, Astyanax mexicanus**

The goal of the project is study the evolution of stress in the blind Mexican cavefish. The study will examine how brain anatomy and neural function associates and underlying evolutionarily derived change in stress, examine how population specific polymorphisms in the neuroendocrine stress receptors alters stress and brain development, and examine how polymorphisms in stress related genes leads to altered stress.

 \*Resubmitting as an iOS 04/2025

NSF EDGE PI; **Duboué, E.R.**, Kowalko, JE, McGaugh, SE

**EDGE FGT: Gene regulation in the developing brain of highly-diverged ecotypes**

The goal of this study is to use Astyanax to understand how cis-regulatory changes modify the brain across evolutionary time.

NSF iOS PI: Horstick, EC & **Duboué, E.R.**