**Erik R. Duboué, Ph.D.**

**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.

2017- Assistant Professor Wilkes Honors College, Florida Atlantic University

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

2019 - Faculty, Group leader International Max Planck Research Schools

**PUBLICATIONS**

Keene A. C, **Duboué, E. R**, McDonald D. M, Dus M, Suh G. S, et al. (2010) Clock and cycle limit starvation-induced sleep loss in Drosophila. *Curr Biol* 20: 1209–1215.

**Duboué, E.R.**, Keene, A.C., and Borowsky, R. (2011) Evolutionary convergence on sleep lose in Cavefish Populations. *Curr Biol* 21: 671-6.

**Duboué, E.R.** and Borowsky, R.L. (2012) Altered Rest-Activity patterns evolve via circadian independent mechanisms in cave adapted balitorid loaches. *PLoS One,* 7(2):e30868.

**Duboué, E.R.**, Borowsky, R.L., and Keene, A.C. (2012) β-adrenergic signaling regulates evolutionarily derived sleep loss in the Mexican Cavefish. *Brain Behavior and Evolution,* 80(4): 233-43.

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 Biology, 13-15.

Facchin, L\*, **Duboué, E.R**.\*, Halpern, M.E. (2015) Disruption of epithalamic left-right asymmetry increases anxiety in zebrafish. *Journal of Neuroscience*. 35(48):15847-59 (Featured as Editor’s Choice in *Science* Jan 1., 2016: Vol. 351, Issue 6268, pp. 38).

**Duboué, E.R.** and Keene A.C. (2016) Investigating the Evolution of Sleep in the Mexican Cavefish. In *Biology and Evolution of the Mexican Cavefish*, Academic Press, pages 291-308, ISBN 9780128021484

**Duboué, E.R.** and Halpern M.E. (2017) Genetic and transgenic approaches to study laterality in zebrafish. In *Lateralized Brain Functions*, Eds. Lesley Rogers and Giorgio Vallortigara, pp. 553-589. New York, NY: Humna Press, Springer.

**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.e3.

Jaggard, J.B., StahlB.A., Lloyd, E., Prober, D.A., **Duboué, E.R.**, and Keene, A.C. (2018) Hypocretin underlies the evolution of sleep loss in the Mexican cavefish. *eLife*. 7: pii: 32637, doi: 10.7554/eLife32637

Lloyd, E., Olive, C°, Stahl, BA, Jaggard, J.B., Amaral, P., **Duboué, E.R.,** Keene, A.C. (2018) Evolutionary shift towards lateral line dependent prey capture behavior in the bind Mexican cavefish. *Dev Biol*. Pii: s0012-1606(18)30119-2.

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*. Pii: s0012-1606(18)30124-6.

Keene, A.C. and **Duboué, E.R.** (2018) The origins and evolution of sleep. J Exp Biol. 221(Pt 11) pii: jeb159533

Chin, J.S.R., Albert, L.T.°, Loomis, C.L., Keene, A.C., and **Duboué, E.R.** (2019) Behavioral approaches to studying innate stress in zebrafish. *Journal of Visualized Experiments* (147): doi: 10.3791/59092.

Stahl, B.A., Jaggard, J.B., Chin, J.S.R., Kowalko, J.E., Keene, A.C., and **Duboué, E.R.** (2019) Manipulation of gene function in Mexican cavefish. *Journal of Visualized Experiments (146):* doi: 10.3791/59093.

Jaggard, J.B., Lloyd, E., Lopatto, A.°, **Duboué, E.R.**, and Keene, A.C. (2019). Automated measurements of sleep and locomotor activity and Mexican cavefish. *Journal of Visualized Experiments (145):* doi: 10.3791/59198.

Stahl, B.A., Peuß R, McDole B, Kenzior A, Jaggard JB, Gaudenz K, Krishnan J, McGaugh SE, **Duboué E.R.**, Keene AC, Rohner N. (2019) Stable transgenesis in Astyanax mexicanus using the Tol2 transposase system. *Developmental Dynamics*, doi: 10.1002/dvdy.32.

Loomis, C., Pueß, R., Jaggard, J.B., Raftopoulos, S.°, Raftopoulos, A.°, Whu, D.°, Green, M.°, McGaugh, S., Rohner, N, Keene, A.C., and **Duboué., E.R.** (2019). An adult brain atlas reveals broad neuroanatomical changes in independently evolved populations of Mexican cavefish. *bioRxiv* doi.org/10.1101/648188

\* indicates authors contributed equally

° indicates undergraduate student

**ABSTRACTS AND INVITED TALKS**

**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.

**Duboué, E.R.**, Keene, A.C., and Borowsky, R. (2010) Evolutionary convergence on sleep loss in Cavefish Populations. Gordon Research Conference, Ventura, CA.

**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.

**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.

**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

**Duboué, E.R.** and Halpern, M.E. (2013) Reversal of directional asymmetry of the brain leads to increased stress. European Zebrafish Meeting, Barcelona, Spain.

**Duboué, E.R.** and Halpern, M.E. (2013) Stress and the asymmetric brain. Mid-Atlantic Regional Zebrafish Meeting, Princeton, NJ.

**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

**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

**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

**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.

**Duboué, E.R.** and Halpern, M.E. (2015) Probing neural circuits that mediate stress using larval zebrafish. Harvard University Medical School, Dept. of Neuroscience.

**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

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

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

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

**Duboué, E.R.** (2019)The Evolution of sleep in the blind Mexican Cavefish. 21st International Neuroscience Winter Conference, Sölden, Austria

**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, TEACHING AND MENTORING**

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 - Postdoc association rep. Carnegie Institution for Science

2017- Mentor Wilkes Honors College Undergraduate

2017- Mentor Wilkes Honors College Undergraduate

2017- Mentor Wilkes Honors College Undergraduate

2017- Mentor Wilkes Honors College Undergraduate

2017-2018 Member Wilkes Honors College Biology Faculty Search Committee

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

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

2018-2019 Chair Wilkes Honors College Symposium Committee

2018- Member Palm Beach State College Business Partnership

**FUNDING**

*Ongoing*

R21NS105071-01A1 PI: Keene, A.C.; co-PI: **Duboue, 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

R15MH118625-01 PI: **Duboue, E.R.** 09/24/2018 - 09/23/2021

**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.