

## KATHLEEN M. MUNLEY

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**Current Position:** Postdoctoral Fellow, University of Houston (2022-Present)

### **EDUCATION:**

- 2022 Ph.D. **Evolution, Ecology, and Behavior, Indiana University**  
Minor: Neuroscience  
*Mentor: Gregory Demas*
- 2013 B.S. **Marine Science/Biology, University of Miami**  
Minor: Chemistry  
*Mentor: Martin Grosell*
- 2013 B.A. **Creative Writing, University of Miami**

### **RESEARCH INTERESTS:**

- Neural and hormonal regulation of social behavior
- Physiological mechanisms underlying seasonal changes in behavior
- Role of extra-gonadal steroids (e.g., adrenal steroids and neurosteroids) in modulating the nervous system and behavior

### **PROFESSIONAL APPOINTMENTS:**

- 2022-Present **Postdoctoral Fellow**; Department of Psychology and Texas Institute for Measurement, Evaluation, and Statistics (T.I.M.E.S.), University of Houston.  
Project Title: "Neuroendocrine and molecular mechanisms underlying social ascent in the African cichlid fish, *Astatotilapia burtoni*." *Mentor: Beau Alward.*
- 2016-2022 **Graduate Research Associate**; Department of Biology, Indiana University.  
Dissertation: "Melatonin as a neuroendocrine regulator of seasonal aggression in Siberian hamsters (*Phodopus sungorus*)." *Mentor: Gregory Demas.*
- 2013-2016 **Graduate Research Assistant**; Department of Biological Sciences, Louisiana State University.  
Project Title: "Regulation of polyamine and GABA production in the gills of killifish (*Fundulus* sp.) during acute hypoosmotic challenge." *Mentor: Fernando Galvez.*
- 2010-2013 **Undergraduate Research Assistant**; Department of Marine Biology and Ecology, University of Miami.  
Undergraduate Honors Thesis: "Growth inhibition in early life-stage tests predicts full life-cycle toxicity effects of lead in the freshwater pulmonate snail, *Lymnaea stagnalis*." *Mentor: Martin Grosell.*

### **PUBLICATIONS:**

Google Scholar h-index: 7; i10-index: 7; total citations: 165

\* denotes mentored undergraduate students

### **Submitted, In Review, or In Revision (1)**

**Munley, K. M.**, Trinidad, J. C., & Demas, G. E. (*in review*). Sex-specific endocrine regulation of seasonal aggression in Siberian hamsters. *Proceedings of the Royal Society B: Biological Sciences*.

**Peer-Reviewed Manuscripts (13)**

- Munley, K. M.**, Dutta, S., Jasnow, A. M., & Demas, G. E. (2022). Adrenal MT<sub>1</sub> melatonin receptor expression is linked with seasonal variation in social behavior in male Siberian hamsters. *Hormones and Behavior*, *138*, 105099.
- Munley, K. M.**, Han, Y., Lansing, M. X., & Demas, G. E. (2022). Winter madness: Melatonin as a neuroendocrine regulator of seasonal aggression. *Journal of Experimental Zoology Part A: Ecological and Integrative Physiology*, In Press.
- Munley, K. M.**, Wade, K. L., & Pradhan, D. S. (2022). Uncovering the seasonal brain: Liquid chromatography-tandem mass spectrometry (LC-MS/MS) as a biochemical approach for studying seasonal social behaviors. *Hormones and Behavior*, *142*, 105161.
- Munley, K. M.**, Liu, D., & Galvez, F. (2021). Increased polyamine levels and maintenance of  $\gamma$ -aminobutyric acid (Gaba) homeostasis in the gills is indicative of osmotic plasticity in killifish. *Comparative Biochemistry and Physiology - Part A: Molecular & Integrative Physiology*, *257*, 110969.
- Munley, K. M.**, Trinidad, J. C., Deyoe, J. E., Adaniya, C. H.\*, Nowakowski, A. M.\*, Ren, C. C.\*, Murphy, G. V.\*, Reinhart, J. M.\*, & Demas, G. E. (2021). Melatonin-dependent changes in neurosteroids are associated with increased aggression in a seasonally breeding rodent. *Journal of Neuroendocrinology*, *33*, e12940.
- Munley, K. M.**, Deyoe, J. E., Ren, C. C.\*, & Demas, G. E. (2020). Melatonin mediates seasonal transitions in aggressive behavior and circulating androgen profiles in male Siberian hamsters. *Hormones and Behavior*, *117*, 104608.
- Ren, C. C.\*, Sylvia, K. E., **Munley, K. M.**, Deyoe, J. E., Henderson, S. G.\*, Vu, M. P.\*, & Demas, G. E. (2020). Photoperiod modulates the gut microbiome and aggressive behavior in Siberian hamsters. *Journal of Experimental Biology*, *223*, jeb212548.
- Rendon, N. M., Petersen, C. L., **Munley, K. M.**, Amez, A. C., Boyes, D. L., Kingsbury, M. A., & Demas, G. E. (2020). Seasonal patterns of melatonin alter aggressive phenotypes of female Siberian hamsters. *Journal of Neuroendocrinology*, *32*, e12894.
- Munley, K. M.**, Rendon, N. M., & Demas, G. E. (2018). Neural androgen synthesis and aggression: insights from a seasonally breeding rodent. *Frontiers in Endocrinology*, *9*, 136.
- Heuer, R. M., **Munley, K. M.**, Narsinghani, N., Wingar, J., Mackey, T. M., & Grosell, M. (2016). Changes to intestinal transport physiology and carbonate production at various CO<sub>2</sub> levels in a marine teleost, the Gulf toadfish (*Opsanus beta*). *Physiological and Biochemical Zoology*, *89*, 402-416.
- Stickle, W. B., Lindeberg, M., Rice, S. D., **Munley, K. M.**, & Reed, V. (2016). Seasonal changes in the thermal regime and gastropod tolerance from the rocky intertidal zone in southeast Alaska. *Journal of Experimental Marine Biology and Ecology*, *482*, 56-63.
- Munley, K. M.**, Brix, K. V., Panlilio, J., Deforest, D. K., & Grosell, M. (2013). Growth inhibition in early life-stage tests predicts full life-cycle toxicity effects of lead in the freshwater pulmonate snail, *Lymnaea stagnalis*. *Aquatic Toxicology*, *128-129*, 60-66.
- Brix, K. V., Esbaugh, A. J., **Munley, K. M.**, & Grosell, M. (2012). Investigations into the mechanism of lead toxicity to the freshwater pulmonate snail, *Lymnaea stagnalis*. *Aquatic Toxicology*, *106-107*, 147-156.

**Invited Book Chapters (1)**

- Jalabert, C., **Munley, K. M.**, Demas, G. E., & Soma, K. K. (2018). Aggressive behavior. In M. K. Skinner (Ed.), *Encyclopedia of Reproduction* (2<sup>nd</sup> ed., Vol. 1, pp. 242-247). Amsterdam: Elsevier.

**Works in Progress (1)**

**Munley, K. M.**, Sinkiewicz, D. M., Szwed, S. M.\*, & Demas, G. E. (*anticipated submission: May 2022*). Neural steroid sensitivity predicts seasonal plasticity in territorial aggression in Siberian hamsters (*Phodopus sungorus*). Target journal: *Journal of Experimental Biology*.

**Dissertation and Thesis**

**Munley, K. M.** (2022). Melatonin as a neuroendocrine regulator of seasonal aggression in Siberian hamsters (*Phodopus sungorus*). *Ph.D. Dissertation, Indiana University, Bloomington, IN. 286 pp.*

**Munley, K. M.** (2013). Growth inhibition in early life-stage tests predicts full life-cycle toxicity effects of lead in the freshwater pulmonate snail, *Lymnaea stagnalis*. *Undergraduate Honors Thesis, University of Miami, Coral Gables, FL. 7 pp.*

**PRESENTATIONS:**

† denotes mentored high school students

**Invited Conference Presentations and Seminars (9)**

**Munley, K. M.** (2022). Winter madness: Melatonin as a neuroendocrine regulator of seasonal aggression in Siberian hamsters. *Session: New Investigator Symposium. Society for Behavioral Neuroendocrinology, Atlanta, GA.*

**Munley, K. M.** (2022). Winter madness: Melatonin as a neuroendocrine regulator of territorial aggression in a seasonally breeding rodent. *Department of Psychology and Department of Biology and Biochemistry, University of Houston, Houston, TX.*

**Munley, K. M.**, Trinidad, J. C., & Demas, G. E. (2022). Adrenal and neural steroidogenic enzyme activity track seasonal changes in territorial aggression in Siberian hamsters (*Phodopus sungorus*). *Session: Division of Comparative Endocrinology Best Student Presentation - Aubrey Gorbman Award. Society for Integrative and Comparative Biology, Phoenix, AZ [withdrawn and presented virtually at SICB+ due to COVID-19 pandemic].*

**Munley, K. M.** (2021). Winter madness: Melatonin as a key regulator of steroid hormones and territorial aggression in a seasonally breeding rodent. *Annual Seasonality Symposium, virtual presentation.*

**Munley, K. M.** (2021). Winter madness: Melatonin as a key regulator of steroid hormones and territorial aggression in a seasonally breeding rodent. *Department of Integrative Biology, University of Wisconsin-Madison, Madison, WI.*

**Munley, K. M.** (2021). Winter madness: Melatonin as a key regulator of steroid hormones and territorial aggression in a seasonally breeding rodent. *Arctic Seasonal Timekeeping Initiative Seminar Program, The Arctic University of Norway, virtual presentation.*

**Munley, K. M.** (2021). Fighting around the clock: Unwinding the role of melatonin in regulating aggressive behavior in a seasonally breeding rodent. *Current Topics in Neurobiology Seminar Series, University of Oklahoma Cellular & Behavioral Neurobiology Graduate Program, virtual presentation.*

**Munley, K. M.**, Deyoe, J. E., Adaniya, C. H.\*, Nowakowski, A. M.\*, Ren, C. C.\*, Murphy, G. V.\*, Reinhart, J. M.\*, & Demas, G. E. (2020). Melatonin modulates seasonal changes in neurosteroid levels and territorial aggression in male Siberian hamsters (*Phodopus sungorus*). *Session: Division of Comparative Endocrinology Best Student Presentation - Aubrey Gorbman Award. Society for Integrative and Comparative Biology, Austin, TX.*

**Munley, K. M.** (2019). Aggression and the seasonal clock: Unwinding the actions of melatonin on aggressive behavior in a seasonally breeding rodent. *Evolution, Ecology, and Behavior Brown Bag Seminar Series, Indiana University, Bloomington, IN.*

### **Contributed Conference Presentations (22)**

**Munley, K. M.**, Trinidad, J. C., & Demas, G. E. (2022). Sex-specific regulation of steroidogenic enzymes and seasonal aggression in Siberian hamsters. *Animal Behavior Conference, Bloomington, IN.*

Szwed, S. M.\*, **Munley, K. M.**, Sinkiewicz, D. M., & Demas, G. E. (2022). Seasonal plasticity in neural steroid sensitivity and territorial aggression in Siberian hamsters. *Animal Behavior Conference, Bloomington, IN.*

**Munley, K. M.**, Trinidad, J. C., & Demas, G. E. (2021). Seasonal and sex-specific regulation of 3 $\beta$ -hydroxysteroid dehydrogenase (3 $\beta$ -HSD) activity and aggressive behavior in Siberian hamsters. *Society for Behavioral Neuroendocrinology, virtual presentation.*

**Munley, K. M.**, Dutta, S., Jasnow, A. M., & Demas, G. E. (2021). Adrenal melatonin 1a receptor (Mel1aR) signaling is linked with seasonal variation in social behavior in male Siberian hamsters. *Animal Behavior Conference, virtual presentation.*

**Munley, K. M.**, Dutta, S., Jasnow, A. M., & Demas, G. E. (2021). Adrenal melatonin 1a receptor (Mel1aR) signaling regulates territorial aggression in male Siberian hamsters (*Phodopus sungorus*). *Society for Integrative and Comparative Biology, virtual presentation.*

**Munley, K. M.**, Dutta, S., Jasnow, A. M., & Demas, G. E. (2020). The role of peripheral melatonin signaling in regulating aggression in male Siberian hamsters. *Animal Behavior Society, virtual presentation.*

**Munley, K. M.**, Dutta, S., Jasnow, A. M., & Demas, G. E. (2020). The potential role of peripheral melatonin 1a receptor (Mel1aR) signaling in regulating territorial aggression in male Siberian hamsters. *Society for Behavioral Neuroendocrinology, Atlanta, GA* [canceled due to COVID-19 pandemic].

**Munley, K. M.**, Trinidad, J. C., Deyoe, J. E., Adaniya, C. H.\*, Nowakowski, A. M.\*, Ren, C. C.\*, Murphy, G. V.\*, Reinhart, J. M.\*, & Demas, G. E. (2020). Melatonin-induced changes in neurosteroid synthesis elevate aggressive behavior in a seasonally breeding rodent. *Animal Behavior Conference, Bloomington, IN* [canceled due to COVID-19 pandemic].

**Munley, K. M.**, Deyoe, J. E., Adaniya, C. H.\*, Nowakowski, A. M.\*, Ren, C. C.\*, Murphy, G. V.\*, Reinhart, J. M.\*, & Demas, G. E. (2019). Melatonin regulates seasonal variation in neurosteroid profiles and aggressive behavior in male Siberian hamsters. *Neuroscience 2019, Chicago, IL.*

**Munley, K. M.**, Deyoe, J. E., Adaniya, C. H.\*, Nowakowski, A. M.\*, Ren, C. C.\*, Murphy, G. V.\*, Reinhart, J. M.\*, & Demas, G. E. (2019). Melatonin facilitates seasonal changes in steroidogenesis and aggressive behavior in male Siberian hamsters. *Society for Behavioral Neuroendocrinology, Bloomington, IN.*

Morrison, E. A., **Munley, K. M.**, Shortridge, A. L.\*, Canabal, D. N.\*, & Demas, G. E. (2019). Fecal transplantation alters circulating cortisol of male and female Siberian hamsters. *Society for Behavioral Neuroendocrinology, Bloomington, IN.*

Morrison, E. A., **Munley, K. M.**, Shortridge, A. L.\*, Canabal, D. N.\*, & Demas, G. E. (2019). Fecal transplantation alters circulating cortisol of male and female Siberian hamsters. *Purdue University Microbiome Symposium, West Lafayette, IN.*

- Munley, K. M.**, Deyoe, J. E., Ren, C. C.\*, & Demas, G. E. (2019). Rising to the challenge: Melatonin modulates circulating androgens and aggression in a seasonally breeding rodent. *Animal Behavior Conference, Bloomington, IN.*
- Munley, K. M.**, Deyoe, J. E., Ren, C. C.\*, & Demas, G. E. (2019). Melatonin mediates seasonal transitions in circulating androgen profiles and aggression in male Siberian hamsters. *Society for Integrative and Comparative Biology, Tampa, FL.*
- Munley, K. M.**, Deyoe, J. E., Jalabert, C., Ma, C., Ren, C. C.\*, Soma, K. K., & Demas, G. E. (2018). Effects of melatonin on seasonal shifts in androgen levels and aggression in male Siberian hamsters. *International Congress of Neuroendocrinology, Toronto, Canada.*
- Munley, K. M.**, Deyoe, J. E., Jalabert, C., Ma, C., Ren, C. C.\*, Soma, K. K., & Demas, G. E. (2018). Effects of melatonin on seasonal shifts in androgen levels and aggression in male Siberian hamsters. *Animal Behavior Conference, Bloomington, IN.*
- Ren, C. C.\*, Deyoe, J. E., Sylvia, K. E., **Munley, K. M.**, & Demas, G. E. (2018). Photoperiod modulates gut microbiome and behavior in Siberian hamsters (*Phodopus sungorus*). *Animal Behavior Conference, Bloomington, IN.*
- Munley, K. M.**, Whitehead, A., Liu, D., & Galvez, F. (2017). Upregulation of polyamine biosynthesis and  $\gamma$ -aminobutyric acid (GABA) production is indicative of osmotic plasticity in killifish (*Fundulus* sp.). *Animal Behavior Conference, Bloomington, IN.*
- Munley, K. M.**, Liu, D., & Galvez, F. (2014). The roles of glutamate and putrescine in  $\gamma$ -aminobutyric acid (GABA) synthesis in *Fundulus heteroclitus* during osmotic stress. *American Physiological Society Intersociety Meeting: Comparative Approaches to Grand Challenges in Physiology, San Diego, CA.*
- Heuer, R. M., **Munley, K. M.**, Narsinghani, N., Wingar, J., Mackey, T., & Grosell, M. (2014). Changes to intestinal transport physiology at varying levels of hypercapnia in the Gulf toadfish (*Opsanus beta*). *American Physiological Society Intersociety Meeting: Comparative Approaches to Grand Challenges in Physiology, San Diego, CA.*
- Heuer, R. M., **Munley, K. M.**, Narsinghani, N., & Grosell, M. (2014). Influence of hypercapnia on intestinal transport and calcium carbonate formation in the Gulf toadfish. *International Congress on the Biology of Fish, Edinburgh, Scotland.*
- Munley, K. M.** (2013). Growth inhibition in early life-stage tests predicts full life-cycle toxicity effects of lead in the freshwater pulmonate snail, *Lymnaea stagnalis*. *Atlantic Coast Conference Meeting of the Minds, Winston Salem, NC.*

### **Other Presentations (10)**

- Lansing, M. X., Han, Y., **Munley, K. M.**, & Demas, G. E. (2022). Timed melatonin injections induce seasonal gonadal regression and body mass reduction in female Siberian hamsters. *Indiana University Biotechnology Graduate Program Poster Session, Bloomington, IN.*
- Funkhouser, L. K.\*, **Munley, K. M.**, Deckard, T. E.\*, Proffitt, M. R., & Demas, G. E. (2021). Seasonal and sex-specific regulation of neural arginine vasopressin (AVP) and aggressive behavior in Siberian hamsters. *Indiana University Science, Technology, and Research Scholars (STARS) Spring Research Symposium, Bloomington, IN.*
- Munley, K. M.**, Trinidad, J. C., & Demas, G. E. (2021). Seasonal and sex-specific regulation of  $3\beta$ -hydroxysteroid dehydrogenase ( $3\beta$ -HSD) activity in Siberian hamsters. *Center for Behavioral Neuroscience Brains & Behavior Retreat, virtual presentation.*

- Cole, K. A.<sup>†</sup>, **Munley, K. M.**, & Demas, G. E. (2019). Sex differences in seasonal aggression in male and female Siberian hamsters. *Jim Holland Summer Science Research Program Poster Session, Bloomington, IN.*
- Canabal, D. N.\*, **Munley, K. M.**, Morrison, E. A., & Demas, G. E. (2018). Fecal transplantation and the role of the gut microbiome in aggressive behavior. *Center for the Integrative Study of Animal Behavior Research Experience for Undergraduates Capstone Presentations, Bloomington, IN.*
- Shortridge, A. L.\*, **Munley, K. M.**, Morrison, E. A., & Demas, G. E. (2018). Regulation of anxiety by the gut microbiome in Siberian hamsters. *Center for the Integrative Study of Animal Behavior Research Experience for Undergraduates Capstone Presentations, Bloomington, IN.*
- Ren, C. C.\*, Deyoe, J. E., Sylvia, K. E., **Munley, K. M.**, & Demas, G. E. (2018). Photoperiod modulates gut microbiome and behavior in Siberian hamsters (*Phodopus sungorus*). *Indiana University Hutton Honors College Research Symposium, Bloomington, IN.*
- Munley, K. M.**, Liu, D., & Galvez, F. (2015). From salinity to behavior: the effect of osmotic stress on GABA production in the killifish, *Fundulus heteroclitus*. *Louisiana Environmental Education Symposium, Baton Rouge, LA.*
- Goins, D. A.<sup>†</sup>, Caple, G., & **Munley, K. M.** (2015). Whodunnit: Investigations into the eating preferences of carnivorous plants. *Louisiana State University EnvironMentors Program Poster Session, Baton Rouge, LA.*
- Munley, K. M.**, Liu, D., & Galvez, F. (2014). The roles of glutamate and putrescine in  $\gamma$ -aminobutyric acid (GABA) synthesis in *Fundulus heteroclitus* during osmotic stress. *Louisiana State University BioGrads Symposium, Baton Rouge, LA.*

### **RESEARCH GRANTS AND FELLOWSHIPS (\$116,275)**

2021	College of Arts and Sciences Dissertation Research Fellowship (1 yr.), Indiana University (\$20,000)
2020	Indiana Clinical and Translational Sciences Institute Pilot Grant for Research Use of Core Facilities (2 yrs., co-PI with Dr. Gregory Demas): " <i>Steroidogenic Enzyme Regulation of Aggression</i> " (\$10,000)
2020	Animal Behavior Society Student Research Grant (\$2,000)
2020	Louise Constable Hoover Fellowship (1 sem.); Department of Biology, Indiana University (\$2,000)
2020	Center for the Integrative Study of Animal Behavior Predoctoral Fellowship (2 sem.), Indiana University (\$15,383)
2019	Indiana University Graduate and Professional Student Government Research Award (\$1,000)
2019	Indiana Academy of Science Senior Research Grant (\$3,000)
2019	Society for Integrative and Comparative Biology Grant-in-Aid of Research (\$1,000)
2018	NIH Ruth L. Kirschstein NRSA Institutional Predoctoral Fellowship (NICHD T32HD049336 – "Common Themes in Reproductive Diversity," 2 yrs.): " <i>Neuroendocrine modulation of seasonal aggression in Siberian hamsters</i> " (\$48,192)
2016	Department of Biology Research Recruitment Fellowship (1 sem.), Indiana University (\$12,500)
2014	Louisiana Environmental Education Commission University Research Grant, Louisiana Department of Wildlife and Fisheries (\$1,200)

### **HONORS, AWARDS, AND SCHOLARSHIPS:**

2022	New Investigator Award, Society for Behavioral Neuroendocrinology
2022	Hanna Kolodziejski Fellowship, Center for the Integrative Study of Animal Behavior, Indiana University (\$750)

2022	Nominee, Yolanda Treviño Service Award, Indiana University Graduate and Professional Student Government
2022	Honorable Mention, Division of Comparative Endocrinology Aubrey Gorbman Award for Best Student Oral Presentation, Society for Integrative and Comparative Biology
2022, 2020	Charlotte Mangum Student Support Program Award, Society for Integrative and Comparative Biology
2021	Nominee, Philanthropic Educational Organization Scholar Award
2020	Nominee, Division of Comparative Endocrinology Aubrey Gorbman Award for Best Student Oral Presentation, Society for Integrative and Comparative Biology
2019, 2018	Center for the Integrative Study of Animal Behavior Travel Grant, Indiana University (\$1,250)
2019, 2018	Provost's Travel Award for Women in Science, Indiana University (\$1,200)
2018	Trainee Travel Award, International Neuroendocrine Federation (\$485)
2018	College of Arts and Sciences Fall Travel Award, Indiana University (\$200)
2018	Enrichment Travel Award; Department of Biology, Indiana University (\$250)
2014	Travel Grant; Graduate Student Association, Louisiana State University (\$200)
2013	Graduated <i>cum laude</i> with departmental honors distinction in Marine and Atmospheric Science Program (B.S.) and <i>summa cum laude</i> in Creative Writing Program (B.A.), University of Miami. Made Provost's Honor Roll and/or Dean's List for 7 out of 8 semesters (B.S. GPA = 3.516, B.A. GPA = 4.000, cumulative GPA = 3.628).
2009-2013	University Scholarship, University of Miami (\$24,000/yr.)

### **RESEARCH SKILLS:**

- **Animal behavior**
  - Sampling techniques: focal individuals and time
  - Assays: resident-intruder paradigm and open field test
  - Types of behavior: aggression, investigation, scent marking, self-grooming, submissive behaviors, and anxiety-like behaviors
- **Husbandry** – maintain and breed colony of Siberian hamsters, maintain fish and aquatic invertebrate aquaria, and develop IACUC protocols and standard operating procedures
- **Surgical experience** – stereotaxic surgery, microinjections into adrenal glands, and perfusions in rodents
- Rodent and fish handling and live sampling
- Perform necropsies and collect blood and tissue samples from rodents, fishes, and aquatic invertebrates at various life-history and developmental stages
- **Tissue processing** – brain sectioning (cryostat and freezing microtome) and micropunching
- **In vitro laboratory assays** – enzyme immunoassays, enzymatic activity assays, steroid hormone extraction from blood, serum, and tissue samples (solid phase extraction using OMIX C18 pipette tips and C18 columns), liquid chromatography-tandem mass spectrometry, high-performance liquid chromatography, atomic absorption spectrophotometry, anion chromatography, and fluorescence spectroscopy
- **Molecular biology** – qPCR, RNA extraction (TRIzol and automated extraction methods) and quantification, cDNA synthesis, primer design, PCR, gel electrophoresis, and western blotting
- **Histology and microscopy** – immunohistochemistry, fluorescence microscopy and quantitative image processing, and Nissl staining
- **Statistical analysis**
  - Programs: R, SigmaPlot, and PoloPlus
  - Analyses: generalized linear models, generalized linear mixed models, univariate and multivariate analyses of variance, permutational analysis of variance, simple and multiple linear regressions, t-tests, non-parametric tests of group differences (Mann-Whitney U test, Kruskal-Wallis one-way ANOVA on ranks, Friedman test), and principal component analysis

**TEACHING EXPERIENCE:****Guest Lectures in University Courses**

- 2022 **Department of Biology, Indiana University** – Presented guest lecture on the pineal gland and biological rhythms in Endocrinology (BIOL-Z 466) undergraduate course.
- 2021 **Department of Biological Sciences, University of Pittsburgh** – Participated in Q&A session with students in Animal Behavior (BIOSC 0370) undergraduate course about the role of melatonin in modulating circulating androgen levels and aggression in Siberian hamsters.
- 2020 **Department of Zoology, Ohio Wesleyan University** – Participated in Q&A session with students in Behavioral Endocrinology (ZOO 300) undergraduate course about the role of melatonin in regulating neurosteroids and aggression in Siberian hamsters.
- 2015 **Department of Biology, University of Washington** – Presented guest lecture on renal physiology in Survey of Physiology (BIOL 118) undergraduate course.

**Associate Instructor and Teaching Assistant Positions**

- 2021 **Associate Instructor; Walter Center for Career Achievement, Indiana University** – Arts & Sciences Internship (ASCS-X373) undergraduate course for the ScIU blog.
- 2018 **Associate Instructor; Center for the Integrative Study of Animal Behavior, Indiana University** – Research and Professional Ethics for the Bio-behavioral Sciences (ABEH-A 502) graduate course.
- 2016-2017 **Associate Instructor; Department of Biology, Indiana University** – Integrative Human Physiology (BIOL-P 451) and Biology Laboratory (BIOL-L 113) undergraduate courses.
- 2013-2016 **Teaching Assistant; Department of Biological Sciences, Louisiana State University** – Vertebrate Physiology Laboratory (BIOL 4161) and Marine Communities Laboratory (BIOL 4263) undergraduate courses.
- 2013 **Instructor, High School Careers in Medicine Workshop; Miller School of Medicine, University of Miami** – Designed and taught Introduction to Physiology course to rising high school seniors from underrepresented backgrounds in the Miami-Dade County Public School system.

**Tutoring Programs**

- 2014 **Content Tutor; Cox Communications Academic Center for Student-Athletes, Louisiana State University** – General Biology (BIOL 1001), General Chemistry I (CHEM 1201), General Chemistry II (CHEM 1202), and Introduction to Oceanography (OCS 1005) undergraduate courses. Received College Reading & Learning Association 1 certification.

**MENTORING EXPERIENCE:****Undergraduate Supervised Research**

- 2018 Desirée Nieves Canabal (University of Puerto Rico at Mayagüez), *Research Experience for Undergraduates Program in Animal Behavior, Center for the Integrative Study of Animal Behavior, Indiana University*  
Project Title: “Fecal transplantation and the role of the gut microbiome in aggressive behavior”
- 2018 Ayley Shortridge (Michigan State University), *Research Experience for Undergraduates Program in Animal Behavior, Center for the Integrative Study of Animal Behavior, Indiana University*  
Project Title: “Modulation of the HPA axis and anxiety-like behavior following fecal transplantation in Siberian hamsters”
- 2017-2019 Clarissa Ren (Hutton Honors College Research Program), *Department of Biology, Indiana University*  
Project Title: “Photoperiod modulates the gut microbiome and behavior in Siberian hamsters”



**High School Supervised Research**

- 2019 Kennedi Cole (Hammond Academy of Science and Technology), *Jim Holland Summer Science Research Program, Department of Biology, Indiana University*  
Project Title: "Sex differences in seasonal aggression in male and female Siberian hamsters"
- 2014-2015 De'Marcus Goins (Scotlandville Magnet High School), *EnvironMentors Program, College of the Coast & Environment, Louisiana State University*  
Project Title: "Whodunnit: Investigations into the eating preferences of carnivorous plants"  
 \*Awarded 1<sup>st</sup> place at the LSU EnvironMentors Science Fair and 3<sup>rd</sup> place at the EnvironMentors National Science Fair in Washington, D.C., earning himself an \$800 college scholarship.

**Undergraduate Research Assistants**

- 2021-2022 Sydney Szwed, *Indiana University*
- 2020-2022 Lizbeth Funkhouser (Science, Technology, and Research Scholars Program), *Indiana University*
- 2019-2021 Taylor Deckard, *Indiana University*
- 2019-2020 Eamonn Duffy (Hutton Honors College), *Indiana University*
- 2019 Caroline McCord (Hutton Honors College), *Indiana University*
- 2019 Molly Pendergast (Hutton Honors College), *Indiana University*
- 2018-2019 Andi Nowakowski (Hutton Honors College), *Indiana University*
- 2018-2019 Grace Murphy (Hutton Honors College), *Indiana University*
- 2018-2019 John Reinhart, *Indiana University*
- 2018-2021 Kate Adaniya (Cox Scholars Program), *Indiana University*
- 2017-2019 Sarah Henderson (Cox Scholars Program), *Indiana University*
- 2017-2019 Cameron Logan, *Indiana University*
- 2015-2016 Ryan Hoffman (Roger Hadfield Ogden Honors College), *Louisiana State University*
- 2015-2016 Brittney Keosayasing, *Louisiana State University*
- 2015-2016 Christina Rubio (Roger Hadfield Ogden Honors College), *Louisiana State University*
- 2014-2016 Jamie Drummond, *Louisiana State University*
- 2014-2016 Veronica Rubio (Initiative for Maximizing Student Development), *Louisiana State University*

**PROFESSIONAL DEVELOPMENT:****Professional Development Workshops**

- 2022 Graduate Skills and Competencies: What Have I Really Learned, Center for the Integration of Research, Teaching, and Learning, Indiana University
- 2021 Evolution, Ecology, and Behavior Disciplinary Writing Workshop, Department of Biology, Indiana University
- 2020 Preparing Future Faculty Conference, Indiana University
- 2020 Transitions in Science Careers, Society for Integrative and Comparative Biology
- 2019 Science Communication Symposium, Indiana University
- 2019 Funding Your Research Through Foundations and Federal Agencies, Society for Behavioral Neuroendocrinology
- 2019 How to Thrive as a Woman in Neuroscience, Neuroscience 2019
- 2018 Science Communication Symposium, Indiana University
- 2018 What Glass Ceiling, International Congress of Neuroendocrinology

**Teaching and Mentoring Workshops**

- 2018 Mentoring Workshop, Research Experience for Undergraduates Program in Animal Behavior, Indiana University
- 2016 Associate Instructor Training, Department of Biology, Indiana University

**Diversity, Equity, and Inclusion Workshops**

- 2021 ADVANCEGeo Workshop – Equity and Inclusion in Field Research

- 2021 LISTEN: Creating Supportive and Inclusive Environments to Retain Underrepresented Groups, Society for Behavioral Neuroendocrinology
- 2019 Can We Talk? Difficult Conversations with Underrepresented People of Color: Sense of Belonging and Obstacles to STEM Fields, Society for Integrative and Comparative Biology

### **PUBLIC ENGAGEMENT AND SCIENCE COMMUNICATION:**

- 2021 **Social Media Chair; SciU Blog, Indiana University** – Supervises the SciU Social Media Undergraduate Internship program, in which undergraduate students learn how scientists use social media to distill information about primary research articles; and coordinates the publication of social media posts on Facebook, Instagram, and Twitter for SciU: Conversations in Science at Indiana University, a graduate student-run blog on the Indiana University Bloomington campus. Website: <https://sciu.indiana.edu/>.
- 2019-Present **Volunteer, Skype a Scientist** – Speaks with elementary, middle, and high school students from across the United States about research and career as a scientist via Skype.
- 2018-2020 **Recruitment Chair and Writer; SciU Blog, Indiana University** – Organized and coordinated events to recruit new writers and editors for the SciU blog and wrote bimonthly posts about cutting-edge science and science-related current events taking place at Indiana University.
- 2017-2022 **Copy Editor and Associate Editor; SciU Blog, Indiana University** – Edits posts about cutting-edge science and science-related current events for the SciU blog.
- 2017-2019 **Abstract Judge, Outstanding Junior Scientist Competition; Indiana Junior Academy of Science** – Evaluated abstracts submitted by high school students from across the state of Indiana that conducted independent research projects.
- 2017-2018 **Instructor, Foundations in Science and Mathematics Program; College of Arts and Sciences, Indiana University** – Designed and taught two-week Zoology (Animal Diversity) course to local middle and high school students in the greater Bloomington area.
- 2017 **Guest Speaker; STEM Research Bootcamp, Indiana University** – Lead workshop on writing abstracts and giving poster presentations to undergraduate students at the STEM Research Bootcamp program, which was hosted by the Groups and Hudson & Holland Scholars programs.
- 2016-2020 **Volunteer, Science Fest; College of Arts and Sciences, Indiana University** – Organized and led hands-on activities and demonstrations for children and adults in the greater Bloomington community.
- 2014 **Graduate Mentor, Biology Intensive Orientation for Students; College of Science, Louisiana State University** – Mentored incoming freshman undergraduate students during a summer biology boot camp program, which helps students make the transition to the expectations of college prior to the start of their first semester.
- 2014 **Volunteer, Ocean Commotion; Louisiana Sea Grant** – Organized and led hands-on activities for children and adults in the greater Baton Rouge community.

### **SCIENCE WRITING AND SELECTED RESEARCH PRESS:**

- 2020 *“Expert or poser? Debunking the psychology behind imposter syndrome,”* SciU: Conversations in Science at Indiana University.
- 2020 *“What’s in a name? How the Black Lives Matter movement is reshaping bird taxonomy,”* SciU: Conversations in Science at Indiana University.
- 2019 *“Melatonin and seasonal aggression in hamsters,”* Endocrine Disruptors podcast.
- 2019 *“The early bird gets the worm, part II: how behavioral ecology is connecting the dots between early-life stress and aging,”* SciU: Conversations in Science at Indiana University.
- 2019 *“Winter makes me SAD: the biological story behind seasonal affective disorder and its potential treatments,”* SciU: Conversations in Science at Indiana University.
- 2019 *“The early bird gets the worm, part I: what can behavioral ecology tell us about female aggression and its underlying mechanisms?”* SciU: Conversations in Science at Indiana University.
- 2018 *“Not your typical summer school: an IU program engages high school students in the wonders of science,”* SciU: Conversations in Science at Indiana University.

- 2018 *"Fatherhood in the animal kingdom and its intricate relationship with aggression,"* SclU: Conversations in Science at Indiana University.
- 2018 *"A gut feeling: Demas lab explores how microbiome influences social behavior,"* SclU: Conversations in Science at Indiana University.

### **ACADEMIC SERVICE AND LEADERSHIP:**

#### **Peer Review**

*Brain, Behavior, and Immunity*  
*Hormones and Behavior*  
*Journal of Experimental Zoology Part A: Ecological and Integrative Physiology*  
*Journal of Mammalogy*  
*Physiology & Behavior*  
*Proceedings of the Royal Society B: Biological Sciences*

#### **Professional Society Service**

- 2022-Present Division of Comparative Endocrinology Student/Postdoc Representative, Society for Integrative and Comparative Biology
- 2022-Present Member, Society for Integrative and Comparative Biology Student/Postdoctoral Affairs Committee
- 2022-Present Moderator, Society for Integrative and Comparative Biology's Division of Comparative Endocrinology Twitter account
- 2019 Session Chair, Society for Integrative and Comparative Biology Annual Meeting – "Hormones & Behavior II: Everything but the Birds"

#### **Departmental, College, and University Service**

- 2021-2022 Co-Chair, Evolution, Ecology, and Behavior Organization Representing Graduate Students; Department of Biology, Indiana University
- 2021-2022 Program Committee Member, Animal Behavior Conference
- 2021-2022 Organizer and Speaker, Graduate Recruitment Weekend Evolution, Ecology, and Behavior Discussion Panel; Department of Biology, Indiana University
- 2021 Moderator, Graduate Student COVID-19 Town Hall; Graduate and Professional Student Government, Indiana University
- 2021 Session Moderator, Animal Behavior Conference – "Social Communication"
- 2020-2022 Member, COVID-19 Ad Hoc Committee; Graduate and Professional Student Government, Indiana University
- 2020-2021 Member, Diversity Advocacy Committee; Graduate and Professional Student Government, Indiana University
- 2019-2022 Moderator, Indiana University Evolution, Ecology, and Behavior Twitter account
- 2019-2022 Social Media Coordinator, Evolution, Ecology, and Behavior Organization Representing Graduate Students; Department of Biology, Indiana University
- 2019-2022 Undergraduate Poster Judge, Animal Behavior Conference
- 2019-2021 Graduate Student Representative, Department of Biology; Graduate and Professional Student Government, Indiana University
- 2019 Founding Member, Evolution, Ecology, and Behavior Organization Representing Graduate Students; Department of Biology, Indiana University
- 2019 Session Moderator, Animal Behavior Conference – "Physiological Effects of Stress"
- 2018-2022 Hospitality Committee Chair, Animal Behavior Conference
- 2018-2019 Science Communication Symposium planning committee; SclU Blog, Indiana University
- 2018 Session Moderator, Animal Behavior Conference – "Sex Differences in the Brain and Behavior"
- 2017-2021 Poster Judge, Animal Behavior (BIOL-Z 460) undergraduate course; Department of Biology, Indiana University
- 2017-2020 Graduate Recruitment Weekend planning committee; Department of Biology, Indiana University
- 2017 Hospitality Committee Member, Animal Behavior Conference

**Professional Society Memberships**

2019-Present Animal Behavior Society  
2019-Present Society for Neuroscience  
2018-Present Society for Behavioral Neuroendocrinology  
2018-Present Society for Integrative and Comparative Biology  
2018-2021 Indiana Academy of Science  
2015-2019 Sigma Xi, the Scientific Research Honor Society  
2014-2017 Graduate Women in Science  
2014-2017 American Physiological Society