

KELLY J. WALLACE, PH.D

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EDUCATION & PROFESSIONAL APPOINTMENTS

2021— Postdoctoral Fellow, NSF Postdoctoral Research Fellowship in Biology
Emory University

Sponsor: Dr. Aubrey Kelly (*thekellylab.org*)

2021 Doctor of Philosophy in Ecology, Evolution, and Behavior

University of Texas at Austin

PhD Advisors: Dr. Hans Hofmann (*cichlid.biosci.utexas.edu*) & Dr. Michael Ryan

2015 Bachelor of Science in Biological Sciences, Minor in Music

Cornell University

Undergraduate Research Advisor (2013-2015): Dr. Alex Ophir (*ophirlab.com*)

RESEARCH INTERESTS

My research investigates how the social environment influences individual behavior and cognition. I integrate ecological, behavioral, physiological, and neuromolecular perspectives.

Keywords: cognitive ecology, social neuroscience, individual variation, neural gene expression, cortisol, testosterone, dopamine, vasopressin, oxytocin, *Microtus ochrogaster*, *Gambusia affinis*, *Astatotilapia burtoni*, *Meriones unguiculatus*, *Acomys cahirinus*

MAJOR AWARDS

Postdoctoral Research Fellowship in Biology, 2020

The National Science Foundation, \$138,000

Ford Foundation Predoctoral Fellowship, 2017

The National Academies of Sciences, Engineering, and Medicine \$72,000

ADDITIONAL AWARDS

Postdoctoral Poster Award (Society for Behavioral Neuroendocrinology, \$250) 2021

Travel Award (Society of Behavioral Neuroendocrinology) 2020

University Graduate Continuing Fellowship (University of Texas at Austin, \$44,000) 2020

Broadening Participation Award (Society for Integrative & Comparative Biology, \$500) 2020

Junior Scientist Workshop Award (Howard Hughes Medical Institute) 2019

BEACON Student Travel Fund Award (BEACON Center for Evolution in Action, \$500) 2019

First Place Student Poster Award (Ecological Integration Symposium, Texas A&M, \$100) 2019

IB Doctoral Dissertation Improvement Grant (University of Texas at Austin, \$8,000) 2019

IB Joint Graduate Program Travel Award (University of Texas at Austin, \$580) 2018

Best Student Presentation Award (7th Meeting of Poeciliid Biologists) 2017

EcoLabs Research Grant (Texas EcoLabs, \$2,100) 2017

Graduate School Continuing Fellowship (University of Texas at Austin, \$8,000) 2017

Diversity Travel Award (Animal Behavior Society, \$300) 2016

EEB Startup Fellowship (University of Texas at Austin, \$2,000) 2016

Graduate School Mentoring Fellowship (University of Texas at Austin, \$36,000) 2015

Charles H. Turner Award (Animal Behavior Society) 2014

PUBLICATIONS

JA Gonzalez Abreu, A Rosenberg, BA Fricker, **KJ Wallace**, AW Seifert, AM Kelly (2022) Species-typical group size differentially influences reward, but not social, neural circuitry during nonreproductive social interactions. *iScience* **25**(5): 104230 (doi.org/10.1016/j.isci.2022.104230)

KJ Wallace, KD Choudhary, LA Kuty, DH Le, MT Lee, K Wu, HA Hofmann (2021) Social ascent changes cognition, behavior, and physiology in a highly social cichlid fish. *Philosophical Transactions of the Royal Society B* **377**: 20200448 (doi.org/10.1098/rstb.2020.0448)

KJ Wallace & HA Hofmann (2021) Decision-making in a social world: integrating cognitive ecology and social neuroscience. *Current Opinion in Neurobiology* **68**:152-158 (doi.org/10.1016/j.conb.2021.03.009)

KJ Wallace & HA Hofmann (2021) Equal performance but distinct behaviors: *Astatotilapia burtoni* sex differences in a novel object recognition task and spatial maze. *Animal Cognition* **24**:1057–1073 (doi.org/10.1007/s10071-021-01498-0)

KJ Wallace* & JM York* (2020) A systems change framework for evaluating academic equity and inclusion in an Ecology and Evolution Graduate Program. *Ecology & Evolution* **10**(20): 10922-10929 (doi.org/10.1002/ece3.6817) (*authors contributed equally to this work)

KJ Wallace, RT Rausch, ME Ramsey, ME Cummings (2020) Sex differences in cognitive performance and style across domains in mosquitofish (*Gambusia affinis*). *Animal Cognition* **23**: 655–669 (doi.org/10.1007/s10071-020-01367-2)

MA Rice, LE Hobbs, **KJ Wallace**, AG Ophir (2017) Cryptic sexual dimorphism in spatial memory and hippocampal oxytocin receptors in prairie voles (*Microtus ochrogaster*). *Hormones and Behavior* **95**: 94–102 (doi.org/10.1016/j.yhbeh.2017.08.003)

MANUSCRIPTS

AM Kelly, BA Fricker, **KJ Wallace**. Protocol for multiplex fluorescent immunohistochemistry in free-floating vertebrate tissue (*in press at STAR Protocols*)

KJ Wallace*, EK Chun*, AG Ophir[†], AM Kelly[†]. Comparing patterns of neural activity in the social behavior network across distinct social and nonsocial contexts in prairie voles (*Microtus ochrogaster*) (*in review at Hormones & Behavior*) (*[†]authors contributed equally to this work)

JM Powell, K Inoue, **KJ Wallace**, AW Seifert, LJ Young, AM Kelly. Distribution of vasopressin 1a and oxytocin receptor protein and mRNA in the basal forebrain and midbrain of the spiny mouse (*Acomys cahirinus*) (*in review at Brain Structure and Function*)

KJ Wallace, S Dupeyron, M Li, AM Kelly. Long-term effects of early life social complexity on neural gene expression and behavior in the spiny mouse *Acomys cahirinus* (*in prep*)

PS Queller, Y Shirali, **KJ Wallace**, RS DeAngelis, V Yurt, LP Reding, ME Cummings. Development of female personality and behavioral syndromes varies by mating environment complexity (*in prep*)

TK Solomon-Lane, **KJ Wallace**, RM Butler, HA Hofmann. Social behavioral consistency over development and across contexts in a highly social cichlid fish (*in prep*)

SOFTWARE

KJ Wallace (2020) Cowlogdata: an R package to analyze and visualize observations generated by the event logging software CowLog (github.com/kellyjwallace/cowlogdata)

REVIEWED WORKS

Hormones & Behavior, Behavioral Ecology, Scientific Reports, Trends in Cognitive Sciences, International Journal of Avian Science, Marine & Freshwater Behaviour and Physiology

AFFILIATIONS

Society for Advancement of Chicanos/Hispanics and Native Americans in Science, Society for Integrative & Comparative Biology, Animal Behavior Society, Society for Behavioral Neuroendocrinology, BEACON Center for Evolution in Action, Ford Fellows Foundation, American Society of Naturalists

MENTORSHIP

I have mentored 38 undergraduate students and three high school students on topics including experimental design, behavioral data collection, computer coding, animal husbandry, brain tissue processing, electronic circuitry, and statistical analysis in R.

Undergraduate Trainees Supervised

* denotes supervision at Emory, all other students were supervised at UT Austin

‡ denotes co-author on a published or in prep peer-reviewed manuscript

§ denotes honors thesis mentee

¶ denotes trainee poster presenter for which I was the primary supervisor

Camille Akin	Matt Armstrong	Jeffrey Alliston	Lauren Borland
Connor Bianchi	Kavyaa Choudhary‡	Rahi Dakwala	Solanch Dupeyron*§‡¶
Rachel Ellerd	Marisa Farjado	Caleb Fleischer	Lily Guevara
Daniel Hauser	Randa Kabbani	Sam Kagel	Kathryn Kaihlanen
Amogh Kashyap	Rachel Koeter	Layla Kutty‡¶	Don Le‡¶
Matthew Lee‡¶	Mark Li*‡¶	Presley Mackey	Claire Mayorga
Jessika McFarland	An Nguyen	Lily Parsi	Huynh Pham
Adam Redmer	Albert Reyes	Remedy Rule	Vishaal Sakthivelnathan
Eduardo Saucedo	Madison Schumm	Jennifer Schlauch	Benjamin Whelan
Anirudh Yerrapragada	Karleen Wu‡¶		

High School Students Supervised (Crockett High School Mentorship Program)

Isaac Carroll, Gabe Rocha, Isaac Munoz

Navigating the Academic Mentor-Mentee Relationship, 2020

Talk, University of Texas at Austin Department of Integrative Biology

Passport to UT Mentorship Program, 2017-2019

I have mentored three international students (China, Ghana) during their transition to the United States and to the University of Texas at Austin.

Capital of Texas Undergraduate Research Conference Judge, 2018**University of Texas at Austin CNS Undergraduate Research Forum Judge, 2016****TEACHING
EXPERIENCE &
CERTIFICATION****Emory PSYC 385: Think Like an Animal– Decision-Making in the Wild! Fall 2022**

As instructor of record I am currently teaching this 30-student course. I independently designed the entirely new syllabus and will be assessing student performance via online polling, a creative written paper (where they “discover a new animal”), and collaborative oral presentations.

Emory FIRST IRACDA Program Associate, 2021

As an IRACDA Associate I participated in pedagogical coursework where I co- designed and co-taught a course titled “Death and Biology.” In Spring 2022 am partnering with a faculty mentor at Agnes Scott College to teach a Neuroscience Lab course. Agnes Scott College is a traditionally women’s college and emerging minority-serving institute.

Teaching Assistant: Bio370 Evolution (H. Ochman & T. Juenger, UT Austin)

I led weekly discussion sections (~30 students) on readings and material to supplement lectures.

Teaching Assistant: Bio 359K Animal Behavior (M. Cummings, UT Austin)

I organized semester-long group research projects in which students attended weekly sections to collect behavioral data, perform statistical analyses, write a final report, incorporate feedback I provided, and present their work orally.

R Analysis for Behavioral Data, 2019

I developed a tutorial on R for behavioral data which was presented to 92 students in Bio359K.

Grading Assistant: Bio 373 Ecology (L. Gonzalez, UT Austin)**Emory CFDE Inclusive Assessment Workshop, 2022****Emory CIMER Entering Mentoring Certificate (10-workshop series), 2021****UT Austin Advanced Teaching Preparation Series Certificate, 2019**

INVITED TALKS

- EEBOB Bio Seminar, Kennesaw State, 2022** (Invitation by Dr. Sarah Guindre-Parker)
Cognition and behavior in the social world of cichlid fish
- Frontiers in Biology Seminar Series, Duke University, 2022** (Dr. Steve Nowicki)
Cognition in a social world: integrating cognitive ecology and social neuroscience
- Biopsychology Colloquium Series, University of Michigan, 2022** (Dr. Jill Becker)
Cognition in a social world: integrating cognitive ecology and social neuroscience
- EEB Seminar Series, Texas A&M University, 2021** (Dr. Gil Rosenthal)
A systems change framework for evaluating academic equity and inclusion in an EEB Program
- Neuro II: Systems Course, Claremont McKenna College, 2020** (Dr. Tessa Solomon-Lane)
Learning in a dynamic social world
- Animal Cognition Graduate Course, University of Cincinnati, 2020** (Dr. Elizabeth Hobson)
*Equal performance but distinct behaviors: *Astatotilapia burtoni* sex differences in a novel object recognition task and spatial maze*
- Animal Behavior Course, University of Texas at Austin, 2020** (Dr. Felicity Muth)
Fish are smarter than we think!
- Osher Lifelong Learning Institute, University of Texas at Austin, 2020** (Dr. Larry Gilbert)
Fish are smarter than we think!

ORAL PRESENTATIONS

- Annual Meeting of the Animal Behavior Society, Costa Rica, 2022**
Cognition in the social world of cichlid fish
- Research Across Psychology, Emory University 2021**
The influence of the early life social environment on cognitive style
- Society for Integrative & Comparative Biology, Virtual Meeting 2021**
*Decision-making in a social world: sex and status differences in cognition in *A. burtoni**
- Brain Behavior, and Evolution Seminar, University of Texas at Austin, 2020**
Cognition in a dynamic social world
- Annual Meeting of the Animal Behavior Society, Virtual Meeting, 2020**
*Sex differences in cognition in the highly social cichlid fish *Astatotilapia burtoni**
- Brain Behavior, and Evolution Seminar, University of Texas at Austin, 2020**
Neuroendocrine basis of social competence & cognition in a highly social cichlid fish
- Janelia Junior Scientist Workshop on Mechanistic Cognitive Neuroscience, HHMI, 2019**
Neuroendocrine basis of social competence & cognition in a highly social cichlid fish
- Brain Behavior, and Evolution Seminar, University of Texas at Austin, 2018**
*Sex differences in Cognitive Style and Domain Relationships in Mosquitofish (*G. affinis*)*
- Conference of Ford Fellows, National Academy of Sciences, 2018**
*Sex differences in cognitive style across domains in mosquitofish (*Gambusia affinis*)*
- Annual Meeting of the Animal Behavior Society, University of Wisconsin, 2018**
*Sex differences in cognitive style across domains in mosquitofish (*Gambusia affinis*)*
- Brain Behavior, and Evolution Seminar, University of Texas at Austin, 2018**
*Comparative cognition in *Gambusia affinis**
- 7th Meeting of Poeciliid Biologists, Oklahoma University, 2017** *award winner
*Investigating individual variation in cognition and behavior in *Gambusia affinis**
- Brain Behavior, and Evolution Seminar, University of Texas at Austin, 2017**
Investigating individual variation in cognition
- Integrative Biology Graduate Research Symposium, University of Texas at Austin, 2016**
Stress and cognition: an improvement on a numerosity learning assay

POSTER PRESENTATIONS

Society for Behavioral Neuroendocrinology, Atlanta GA, 2022

*The influence of early life social complexity on adult behavior in the Spiny Mouse (*A. cahirinus*)*

Society for Integrative & Comparative Biology, Virtual Meeting 2022

A novel method for examining neural responses at two timepoints within an individual

Society for Behavioral Neuroendocrinology, Virtual Meeting 2021 *award winner

*Cognition in a social world: assessing cognitive variation by sex and dominance status in the social cichlid fish *Astatotilapia burtoni**

Society for Integrative & Comparative Biology, Virtual Meeting 2021

A systems change framework for evaluating academic equity and inclusion in an ecology and evolution graduate program

Society for Integrative & Comparative Biology, Austin TX, 2020

Neuroendocrine basis of social competence & cognition in a highly social cichlid fish

Janelia Junior Scientist Workshop on Mechanistic Cognitive Neuroscience, HHMI, 2019

Neuroendocrine basis of social competence & cognition in a highly social cichlid fish

Society for Behavioral Neuroendocrinology, Indiana University, 2019

Neuroendocrine basis of social competence & cognition in a highly social cichlid fish

Spring Symposium in Behavioral Epigenetics, University of Texas at Austin, 2019

Social Competence & Cognition in Dynamic Communities of a Highly Social Cichlid Fish

Ecological Integration Symposium, Texas A&M University, 2019 *award winner

Social Competence & Cognition in Dynamic Communities of a Highly Social Cichlid Fish

Conference of Ford Fellows, National Academy of Sciences, 2018

*Comparative Cognition in *Gambusia affinis**

Spring Symposium in Behavioral Epigenetics, University of Texas at Austin, 2018

*Comparative Cognition in *Gambusia affinis**

BEACON Congress, Michigan State University, 2016

Stress and cognition: an improvement on a numerosity learning assay

Annual Meeting of the Animal Behavior Society, University of Missouri, 2016

Stress and cognition: an improvement on a numerosity learning assay

Evolution Meeting, University of Texas at Austin, 2016

Stress and cognition: an improvement on a numerosity learning assay

Cornell Undergraduate Research Board Fall Forum, Cornell University, 2014

Sex differences in spatial memory, hippocampal volume, and OTR Expression

Annual Meeting of the Animal Behavior Society, Princeton University, 2014

Sex differences in spatial memory, hippocampal volume, and OTR Expression

SKILLS**Computer Programming**

R/RStudio, Python, SPSS, ffmpeg, HTML, Command Line, Jenkins, ImageJ, basic electronic circuitry, Github, Alibi Security, BORIS, CowLog, CellProfiler, QuantStudio, Unity

Laboratory Techniques

Immunohistochemistry, Tissue microdissection, IP injections, animal perfusion, blood hormone collection, ELISA, RNA extraction (Maxwell), qPCR, light & fluorescence microscopy

Behavioral Procedures

VIE & Bead Tagging, husbandry and facility care (fish, rodents), mate choice, scototaxis, sociality task, Morris water maze, detour reaching task, shuttlebox, novel object recognition task, open field task, color discrimination task, simple spatial maze

Statistical Analyses

linear modeling, hierarchical clustering analysis with bootstrapping, t-tests, analysis of variance, heatmap visualization, covariance matrices, model-averaged importance of terms analysis, principal component analysis, discriminant function analysis, model selection, permutation tests

MEDIA & COMMUNICATION
UT “Choose Texas” Promotional Video, 2019 (<https://vimeo.com/343679289>)

I was one of three graduate students across the University interviewed in a promotional video for the Graduate School at the University of Texas at Austin.

Long-View Micro School Outreach Presentation, 2019

Talk: *Fish are smarter than we think!*

Science Under the Stars, 2018 (<https://scienceunderthestars.org/>)

Science Under the Stars is an organization run by graduate students in the Integrative Biology Department at UT that hosts monthly outdoor talks with children’s activities, tours, and local wildlife displays. I presented an outdoor talk designed for the general public titled “*Fish are smarter than we think!*”

They Blinded Me With Science Radio Presentation, 2017

I presented my research and background on fish cognition and behavior on the weekly radio show (KVRX 91.7), hosted by UT graduate students.

DIVERSITY & INCLUSION
SBN Professional Development Panelist, 2022

Hosted by the Society for Behavioral Neuroendocrinology, I spoke on a panel titled “*Leveraging privilege to improve racial equity in academia: examples and insights from the SBN community*”

NextProf Science Workshop, 2021 (<https://sites.lsa.umich.edu/nextprof-science/>)

Hosted by the University of Michigan, *NextProf Science* is a workshop aimed at future faculty from underrepresented backgrounds designed to promote the benefits of a career in academia.

CNS Action Team on Racial Justice, 2020

I was invited by the College of Natural Sciences Dean Goldbart to join a 15-member action team that assessed needs and priorities in response to a college-wide request for action.

UT College of Natural Sciences Diversity and Inclusion Committee, 2019-2020

I was selected to serve on the college’s D&I committee (<https://cns.utexas.edu/diversity/d-i-committee>) which has organized initiatives such as the “You Belong Here” Campaign.

Integrative Biology Diversity and Inclusivity Committee, 2017-2020

I am one of three founding student representatives of the Integrative Biology Department Diversity and Inclusivity Committee.

Natural Sciences Council Scholarship Committee Reviewer, 2020

I was recruited as an outside reviewer to help assess ~40 student applications to the Scholarship Committee’s Diversity and Inclusion Award (award value of \$5,000)

Equitable and Inclusive Recruitment Practices/ Sexual Harassment in Field Research 2019

I co-developed and led two seminars and discussions (~40 attendees)

Article Contributor– Chronicle of Higher Education, 2018

In 2018 I was interviewed and photographed by reporters for the Chronicle of Higher Education for a piece on efforts by the graduate students in the Integrative Biology Department at UT to improve cultural issues in the department and academia as a whole, specifically as it relates to addressing racial insensitivity and sexism.

African American Pioneers in Evolutionary Science: The Untold Story, 2017

I participated in a BEACON-funded project to develop scholarly publications on the history/ sociology of African American scientists in evolution.

Black History Month: Celebrating Black Scientists, 2016

I collaborated with the UT Austin EEB Program to run a social media campaign. This work inspired an additional program highlighting Hispanic-American scientists in September 2017.

**PROGRAM
DEVELOPEPMENT
& SCIENCE
POLICY**

EEB Graduate Student Representative, 2018-2019

As the student representative, I attended faculty meetings and disseminated information. I organized town hall events, designed and administered a survey on the graduate student curriculum, developed a student writing group, and advocated for student concerns.

EEB Program Mentorship Plan, 2019

As the EEB Graduate Student Representative I implemented a Mentoring Plan designed to clarify expectations/responsibilities between incoming students and their advisors. The Mentoring Plan is a survey-like document that the student and advisor complete together soon after the student arrives. This plan is also being used as a template for the UT CMB (Cell & Molecular Biology) Graduate Program.

Course Offering Survey, 2019

I developed and administered a survey taken by students across six cohorts of EEB Graduate Students that provided insight on which topics students feel need to be taught, are currently being taught, number and types of courses required for graduation, and prior training undertaken.

Graduate Student Panelist– First Year Subject and Skills Course, 2019 & 2020

I presented with three other senior graduate students on topics including how to begin research projects, TA responsibilities, mentorship, and on-campus resources for graduate students.

Graduate Student Writing Group, 2019

I organized a weekly writing group for students in the EEB graduate program.

Austin Science Advocates, 2017-2020 (<https://austinscienceadvocates.wordpress.com/>)

Austin Science Advocates promotes science communication and science policy awareness. I am on the planning team which organizes guest speaker events, skills workshops, and “contact your local representative” sessions.

**LANGUAGES
REFERENCES**

English (*native*), Spanish (*basic competency*)

Available upon request