

Allie M. Graham

UNIVERSITY OF KANSAS
DEPARTMENT OF MOLECULAR BIOSCIENCES + CENTER FOR GENOMICS

ACADEMIC POSITIONS (LAST 10 YEARS)

2024 - present	Assistant Professor in Genomics, University of Kansas
2022 - 2024	NIH K99/R00 Pathway to Independence Fellow, University of Utah
2021	Postdoctoral Research Associate, University of Utah
2020 - 2021	NIH T32 Hematology Training Fellow, University of Utah
2018 - 2020	NSF Postdoctoral Research Fellow (PRFB - Broadening Participation)
2017 - 2018	Postdoctoral Scholar, Oregon State University
2012 - 2017	Maytag Fellow, University of Miami
2012 - 2013	Graduate Teaching Assistant, University of Miami

EDUCATION

Ph.D.	2017	Biology	University of Miami
M.S.	2009	Biology	University of North Carolina at Greensboro (UNC-Greensboro)
B.S.	2007	Biology	Randolph-Macon Woman's College (R-MWC)

FUNDING

EXTERNAL GRANTS: ACTIVE

- **Funded 2022 - 2027 NIH K99/R00 (NIGMS) - Plasticity and Nitric Oxide Signaling: Identifying the Novel Adaptive Mechanisms Associated with Response to Hypoxia** (PI: AM Graham) - total \$1,000,000 (\$250,000 - K99 / \$750,000 - R00)

GRANTS (EXTERNAL, INTERNAL): COMPLETED

- **Funded 2021 - 2024 NSF BIO IOS (PSS): Evolutionary Genetics of an Alternative Molecular Mechanism of Hypoxia Response in Metazoans** (PI: FS Barreto - cowrote/collaborator) - \$598,439
- **Funded 2020 - 2021 NIH T32 in Hematology: Assessing Genomic and Molecular Adaptations to Hypoxia in Organisms Occupying Extreme Habitats** - \$68,000 stipend + \$2,500 research
- **Funded 2018 - 2020 NSF BIO: Population Divergence and Adaptation to Hypoxia in An Intertidal Copepod** (PI: AM Graham - NSF Postdoctoral Fellowship in Biology) - \$138,000

OTHER FELLOWSHIPS/FUNDING

\$5,000	Graduate Summer Research Award, (2016) University of Miami
\$4,900	University of Miami Internal Graduate Student Grants: Savage Fund and Kushlan Fund
\$1,000	Society for Integrative and Comparative Biology (2013) Graduate Student Grant-in-Aid
\$1,500	Student Research Support (2008, 2009), University of North Carolina at Greensboro

AWARDS & SCHOLARSHIPS

2023	Young Investigator Travel Award - Society for Molecular Biology and Evolution
2021	Best Student Paper of 2021, Heredity - Genetics Society UK
2019	Postdoctoral Scientist Award, Phi Kappa Phi - OSU Chapter

2017	Award of Academic Merit, University of Miami, Graduate School
2012-2017	Maytag Fellowship, University of Miami
2013	Outstanding Teaching Assistant, University of Miami
2005-2007	National Science and Mathematics Access to Retain Talent (SMART) Grants, R-MWC
2003-2007	Randolph-Macon Grant Award, R-MWC
2003-2007	Jack Scholarship, R-MWC

PUBLICATIONS

* CO-FIRST AUTHOR, ♠ UNDERGRAD; H-INDEX/I-10 INDEX 8; TOTAL CITATIONS 313

1. **Graham AM**, P Lavretsky, RE Wilson, and KG McCracken. High altitude adaptation is accompanied by strong signatures of purifying selection in the mitochondrial genomes of three Andean Waterfowl. [PLOS One](#)
2. **Graham AM**, M Bustos♠ et al (2023). Rapid reduction of Paraoxonase expression followed by inactivation across semiaquatic mammals suggests adaptive benefit of gene loss. [Molecular Biology and Evolution](#)
3. Lucas S, **AM Graham**, JS Presnell and N Clark (2023). Highly Dynamic Gene Family Evolution suggests changing roles for PON genes within Metazoa. [Genome Biology and Evolution](#)
4. **Graham AM**, FS Barreto. Parasitic cnidarians (Myxozoa) do not retain key genomic oxygen-sensing and homeostasis tool-kit genes (2023). [Genome Biology and Evolution](#)
5. **Graham AM**, JL Peters, M Muñoz-Fuentes, AJ Green, D Dorfsman, RE Wilson, T Valqui and KG McCracken (2021). High-altitude adaptive introgression of beta-globin in two Andean waterfowl. [Heredity](#). 127, 107-123. *Awarded Best 2021 Student Paper in [Heredity - Genetics Society UK](#)*
6. **Graham AM** and FS Barreto (2020). Independent losses of the Hypoxia-Inducible Factor (HIF) pathway within Crustacea. [Molecular Biology and Evolution](#). 37.5: 1342-1349.
7. **Graham AM** and FS Barreto. (2019) Loss of the HIF pathway in an abundant intertidal crustacean. [Proceedings of the National Academy of Sciences \(PNAS\)](#). 116 (26) 12913-12918.
8. **Graham AM** and FS Barreto (2019). Novel microRNAs are associated with population divergence in transcriptional response to thermal stress in an intertidal copepod. [Molecular Ecology](#) 28(3): 584-599
9. **Graham AM** and KG McCracken (2019). Convergent evolution on the hypoxia-inducible factor (HIF) pathway genes EGLN1 and EPAS1 in high-altitude ducks. [Heredity](#). 122, 819-832.
10. **Graham AM**, P Lavretsky, M Muñoz-Fuentes, AJ Green, RE Wilson, and KG McCracken (2017). Migration-selection balance drives genetic differentiation associated with adaptation to high-altitude environments in the speckled teal (*Anas flavirostris*). [Genome Biology and Evolution](#). 1;10(1):14-32.
11. **Graham AM*** and JS Presnell* (2017) HIF transcription factor family expansion, diversification, divergence, and selection in eukaryotes. [PLOS One](#). 12(6), e0179545.
12. **Graham AM**, JD Merrill, SE McLaugh, and MAF Noor (2012) Geographic selection in the small heat shock gene complex differentiating populations of *Drosophila pseudoobscura*. [Journal of Heredity](#). 103(3): 400-407.
13. **Graham AM**, M Munday♠, O Kaftanglu, RE Page, GV Amdam, and O Rueppell (2011) Support for the Reproductive Ground Plan Hypothesis of Social Evolution and Major QTL for Worker Ovary Size,

Ovary Asymmetry and Ovary Activation in Honey Bee (*Apis mellifera* L.) BMC Evolutionary Biology. 11:95.

14. Stanley A, **AM Graham**, R Wagner, E Morton, and MD Schug (2011) Characterization of 10 polymorphic microsatellite markers for the Eastern Purple Martins, *Progne subis*. Conservation Genetics Resources. 3(3): 577-579.

CONTRIBUTED PRESENTATIONS (FIRST AUTHOR ONLY - LAST 10 YEARS)

- 2024 - The Allied Genetics Conference (talk)
2023 - Society for Molecular Biology and Evolution (poster)
Symposium Organizer: Genomics of Adaptations to Extreme Environments
2022 - Evolution (talk)
2022 - Population Genetics Group Meeting (talk - Invited Speaker)
2021 - Society for Molecular Biology and Evolution (poster)
2020 - Society for Molecular Biology and Evolution (talk) - *Cancelled due to COVID19*
2019 - OSU CGRB Fall Conference (poster - Awarded "Best Postdoc Poster")
2019 - Evolution (talk)
2019 - Society for Integrative and Comparative Biology (talk and poster)
2018 - EVO-WIBO (Evolution in Washington, Idaho, British Columbia, and Oregon; poster)
2017 - Ornithological Congress of the Americas (talk - Invited Speaker)
2015, 2016, 2017 - Society for Integrative and Comparative Biology (talk and poster)
2014 - Evolution (poster)

INVITED SEMINAR SERIES (FR: FACULTY RECRUITMENT)

- 2024 - Ohio State University: Department of Evolution, Ecology and Organismal Biology (FR)
2024 - Harvard University: Department of Ecology and Evolutionary Biology (FR)
2024 - University of Indiana - Bloomington: Department of Biology (FR)
2024 - University of Kansas: Department of Molecular Biosciences/Department of Biology (FR)
2024 - University of California Santa Barbara: Department of Biology (FR)
2024 - Iowa State University: Department of Ecology and Evolution (FR)
2024 - Fordham University: Department of Biology (FR)
2024 - Wake Forest University: Department of Biology (FR)
2024 - University of Alabama at Birmingham: Department of Biology (FR)
2024 - Columbia University: Department of Ecology, Evolution and Environmental Biology (FR)
2024 - Auburn University: Department of Biology (FR)
2024 - University of British Columbia: Department of Zoology (FR)
2023 - University of Wyoming: Department of Molecular Biology (FR)
2023 - Dartmouth College: Department of Biology (FR)
2023 - University of Mississippi: Department of Biology (FR)
2023 - UC San Diego - Scripps Oceanography Institute (FR)
2022 - Snow College: Convocation Series
2022 - University of Cincinnati: Department of Biology
2021 - CSU Long Beach: Department of Biology

2021 - CSU Sacramento: Graduate Student Ecology, Evolution, and Conservation Seminar Series
2021 - University of Utah Health: Hematology Faculty Conference Series
2021 - CSU Fresno: Department of Biology
2021 - Clarkson University: Department of Biology
2020 - University of Denver: Department of Biological Sciences (FR)
2020 - University of Southern California: Department of Marine and Environmental Biology (FR)

TEACHING EXPERIENCE

RESEARCH MENTORSHIP (* AUTHORSHIP ON A PUBLICATION)

Undergraduate: Tacy Christensen (nee' Peterson)* (2022 - USU/UUtah GSRM), Marisol Bustos* (2021 - UTSA/UUtah GSRM), Lisa Roerk (2018 - OSU), Nicolette Baker (2018, LSAMP - OSU)
Graduate (UUtah): Dwon Jordana (2021 - 2023), Sarah Lucas (2020 - present), Ping Guo (2021)

UNDERGRADUATE LABORATORY COURSES (TEACHING ASSISTANT)

HHMI Authentic Biology Research Lab (University of Miami/Miami-Dade College) - 2016
HHMI Authentic Genetics Research Lab (University of Miami/Miami-Dade College) - 2015
HHMI Authentic Chemistry Research Lab (University of Miami/Miami-Dade College) - 2015
Genetics Lab: Regular and Honors (University of Miami) - 2013, 2014
Introduction to Genetics and Evolution Lab (Duke University)- 2011, 2012
Introduction to Biology Lab I/II (University of North Carolina at Greensboro) - 2007, 2008, 2009
Introduction to Cellular and Molecular Biology Lab (Randolph-Macon Woman's College) - 2006

GUEST LECTURES

- *Oregon State University* (2020) in "Invertebrate Zoology" Laboratory Course - Arthropods, Barcoding and BLAST; Extended Project - Identifying mystery Arthropods and Wolbachia strains
- *University of Miami* (2014-2015) in "Genetics" Lecture Course - Genetic Mapping in Eukaryotes; Extensions of Mendelian Principles; Human Evolution; DNA Mutation and Repair; Studying the Evolution of the Domesticated Dog through Population Genetics, and Bioinformatics

OUTREACH

- Genomics Summer Research for Minorities (GSRM) - Hosted an undergraduate student in the Clark lab; mentored the student in bioinformatics/genomics projects for 10 weeks; presented work at local and national conferences, project resulted in a coauthored publication (Summer 2021, 2022).
- Society for Comparative and Integrative (SICB) Broadening Participation Mentoring Program - Met with an undergraduate and PhD students to discuss various topics related to graduate school, postdoctoral fellowships and beyond. Introduced students to collaborators, went to students talks/posters. (January 2019)
- NSF PRFB Outreach Activities @ Oregon State University - Coordinating outreach activities through the Integrative Biology Department for minority serving groups at Oregon State University, ie. Louis Stokes Alliances for Minority Participation (LS-AMP) Oregon Alliance for Minority Participation (OR-AMP) - Including LSAMP BRIDGE program participation (September 2018, 2019) and a series of Lab Skills Workshops (February 2019, October 2019)

- Creator/Organizer/Coordinator - Girl Scout Naturalist Badge Day for Juniors, and Brownies at the University of Miami/Gifford Arboretum - total of 150 girls. (March 2014, April 2015, April 2016)

SERVICE

Grant Proposal Reviewer (3 total): (*ad hoc*) National Science Foundation - Division of Environmental Biology, & Division of Integrative Organismal Systems

Journal Reviewer (23 total): Ornithological Advances, BMC Biology, Genome Biology and Evolution, EMBO reports, eLife, Proceedings of the National Academy of Sciences (PNAS), Nature Ecology and Evolution, Molecular Ecology, Molecular Ecology Resources, Journal of Comparative Physiology A, Global Change Biology, Ecology and Evolution, Journal of Experimental Biology, European Journal of Haematology, Geobiology, Genetics Selection Evolution, Scientific Reports

Professional Development: Next Wave of Faculty in Genomics Postdoctoral Symposium (2023), MBL Zebrafish Genetics and Development Course (2022), Boston University's Emerging Scholars program (2021), MBL Molecular Evolution Course (2015)