

MICHAEL T. J. HAGUE

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Division of Biological Sciences
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PROFESSIONAL APPOINTMENTS

- 2019– Postdoctoral Researcher, University of Montana, MT
Principal Investigator: Brandon S. Cooper
- 2018 Distinguished Teaching Fellow, University of Virginia, VA
- 2011 Adjunct Instructor, Everest College, UT

EDUCATION

- 2018 Ph.D. in Biology
University of Virginia, Charlottesville, VA
Advisor: Edmund D. Brodie III
- 2013 M.S. in Ecology, Evolution, and Conservation Biology
San Francisco State University, San Francisco, CA
Advisor: Eric J. Routman
- 2009 B.A. in Biology and Environmental Studies
Whitman College, Walla Walla, WA

PUBLICATIONS (*denotes undergraduate mentee)

- Radousky, YA, **MTJ Hague**, S Fowler, E Paneru, A Codina, C Rugamas, G Hartzog, BS Cooper, W Sullivan. Distinct *Wolbachia* localization patterns in oocytes of diverse host species reveal multiple strategies of maternal transmission. In review (*bioRxiv*: <https://doi.org/10.1101/2022.10.28.514302>).
- del Carlo, RE, JS Reimche, HA Moniz, **MTJ Hague**, SR Agarwal, ED Brodie III, ED Brodie, Jr., N Leblanc, CR Feldman. Coevolution with toxic prey produces functional trade-offs in sodium channels of predatory garter snakes. In review.
- Hague, MTJ**, LE Miller*, AN Stokes, CR Feldman, ED Brodie, Jr., ED Brodie III. Conspicuous coloration of toxin-resistant predators implicates additional trophic interactions in a predator-prey arms race. *Molecular Ecology*, in press.
- Hague, MTJ**, JD Shropshire, CN Caldwell*, JP Statz, KA Stanek, WR Conner, BS Cooper. 2022. Temperature effects of cellular host-microbe interactions explain continent-wide endosymbiont prevalence. *Current Biology*, 32: 878-888.
- Profiled in *Current Biology* Dispatch: Stuckert, AMM, DR Matute. 2022. Evolution: Environmental conditions determine how *Wolbachia* interacts with hosts. *Current Biology*, 32: R178–R180.
- Gendreau, KL, AD Hornsby, **MTJ Hague**, JW McGlothlin. 2021. Gene conversion facilitates the adaptive evolution of self-resistance in highly toxic newts. *Molecular Biology and Evolution*, 38: 4077-4094.

- Hague, MTJ**, HA Woods, BS Cooper. 2021. Pervasive effects of *Wolbachia* on host activity. *Biology Letters*, 17: 20210052.
- Hague, MTJ**, CN Caldwell*, BS Cooper. 2020. Pervasive effects of *Wolbachia* on host temperature preference. *mBio*, 11: e01768-20.
- Hague, MTJ**, H Mavengere, DR Matute, BS Cooper. 2020. Environmental and genetic contributions to imperfect wMel-like *Wolbachia* transmission and frequency variation. *GENETICS*, 215: 1117-1132.
- Hague, MTJ**, AN Stokes, CR Feldman, ED Brodie, Jr., ED Brodie III. 2020. The geographic mosaic of arms race coevolution is closely matched to prey population structure. *Evolution Letters*, 4: 317-332.
- Gendreau, KL, **MTJ Hague**, CR Feldman, ED Brodie, Jr., ED Brodie III, JW McGlothlin. 2020. Sex linkage of the skeletal muscle sodium channel gene (*SCN4A*) explains apparent deviations from Hardy-Weinberg equilibrium of tetrodotoxin-resistance alleles in garter snakes (*Thamnophis sirtalis*). *Heredity*, 124: 647-657.
- Featured on the *Heredity* podcast: “Resistance is female” (June 10, 2020).
- Hague, MTJ**, G Toledo, SL Geffeny, CT Hanifin, ED Brodie, Jr., ED Brodie III. 2018. Large-effect mutations generate trade-off between predatory and locomotor ability during arms race coevolution with deadly prey. *Evolution Letters*, 2: 406-416.
- Profiled in *Evolution Letters* Editor's Blog: “Trading off resistance and speed in a deadly arms race” (July 30, 2018).
- Hague, MTJ**, CR Feldman, ED Brodie, Jr., ED Brodie III. 2017. Convergent adaptation to dangerous prey proceeds through the same first-step mutation in the garter snake *Thamnophis sirtalis*. *Evolution*, 71: 1504-1518.
- Profiled in *Evolution* Digest: Davies, KTJ. 2017. Know your poison: Predictable molecular changes confer toxin resistance in snakes? *Evolution*, 71: 1728-1729.
- Hague, MTJ**, LA Avila, CT Hanifin, WA Snedden, AN Stokes, ED Brodie, Jr., ED Brodie III. 2016. Toxicity and population structure of the Rough-Skinned Newt (*Taricha granulosa*) outside the range of an arms race with resistant predators. *Ecology & Evolution*, 6: 2714-2724.
- Hague, MTJ**, EJ Routman. 2015. Does population size affect genetic diversity? A test with sympatric lizard species. *Heredity*, 116: 92-98.
- Eads, DA, **MTJ Hague**, CG Zoubek. 2012. American badger (*Taxidea taxus*) uses covert reconnaissance from tire-ruts to ambush a black-tailed prairie dog (*Cynomys ludovicianus*). *Southwestern Naturalist*, 57: 463-464.

TEACHING EXPERIENCE

- 2021 Guest Lecturer, *Host-Microbe Interactions* (BIOM 420, University of Montana)
- 2020 Journal Club Leader, *Advanced Topics in Evolution* (BIOB 596, University of Montana)
- 2018 Instructor, *Is Evolution Predictable?* (BIOL 4585, University of Virginia)
- Received a Distinguished Teaching Fellowship award.
 - Completed an intensive week-long course design institute at the UVA Center for Teaching Excellence.
 - Designed and taught this discussion-based seminar debating the predictability of evolution (class website: https://wordpress.its.virginia.edu/18F_BIOL4585_PREDICT/).

- 2016 Enrolled Student, *Teaching Science in Higher Education* (BIOL 7110, University of Virginia)
- Learned to integrate learning theory and student engagement strategies into college STEM classes.
 - Developed an undergraduate biology lab focused on inquiry-driven learning.
 - Received in-classroom teaching assessments from undergraduates, peers, and a faculty supervisor. Assessment data were statistically analyzed and synthesized in a final report.
- 2016, 13 Teaching Assistant, *Introduction to Biology: Cell Biology & Genetics* (BIOL 2030, University of Virginia)
- 2015, 14 Teaching Assistant, *Introduction to Biology: Organismal and Evolutionary Biology* (BIOL 2040, University of Virginia)
- 2015, 14 Teaching Assistant, *Human Anatomy & Physiology* (BIOL 3410, University of Virginia)
- 2013 Teaching Assistant, *Herpetology* (BIO 475, San Francisco State University)
- 2012 Teaching Assistant, *Introduction to Biology* (BIO 230, San Francisco State University)
- 2012, 11 Teaching Assistant, *Human Biology* (BIO 101, San Francisco State University)
- 2011 Instructor, *Environmental Science* (EVS 1001, Everest College)

STUDENTS MENTORED

- 2022– Bailey Underwood
- 2021–22 Liz Heaton
- 2020–21 John Statz (graduate rotation student), Erin Markham
- 2019–20 Chelsey Caldwell
- 2019 Isaac Humble, Liz Jurado, Paighton Noel
- 2018–19 Lauren Miller
- Graduated in the UVA Distinguished Major Program. Senior thesis: “Resistant predator turned toxic prey: do garter snakes that eat toxic newts exhibit aposomatic coloration?”
- 2017–18 Josh Eiland
- 2016 Simone Stratton, Priyanka Aytoda

FUNDING & FELLOWSHIPS

- 2017–18 Jefferson Dissertation Year Fellowship, Jefferson Scholars Foundation, University of Virginia, \$21,500
- 2017 Summer Research Grant, Society of Fellows, University of Virginia, \$2,000
- 2016 Doctoral Dissertation Improvement Grant, National Science Foundation, \$19,979
- 2015 Rosemary Grant Award, Society for the Study of Evolution, \$2,450
- Theodore Roosevelt Memorial Grant, American Museum of Natural History, \$3,484
- Grant-in-Aid of Research, Society for Integrative and Comparative Biology, \$950
- 2012 Biology Arthur Nelson Graduate Scholarship, San Francisco State University, \$1,500
- 2011 IRA Student Research Grant, San Francisco State University, \$350

HONORS & AWARDS

- 2020 JF Crow Institute for the Study of Evolution Early Career Scientist Seminar Award, University of Wisconsin, Madison
- 2019 Andrew Fleming Prize for Outstanding Dissertation in Biology, University of Virginia
- 2018 Best Oral Presentation, Southeastern Population Ecology and Evolutionary Genetics (SEPEEG) meeting
- 2018 2nd Place Oral Presentation, Huskey Graduate Research Exhibition, University of Virginia
- 2016–17 Junior Fellow, The Society of Fellows, University of Virginia

INVITED SEMINARS

- 2022 University of Virginia, Charlottesville, VA
- 2021 University of Wisconsin, Madison, WI
- 2020 University of Montana, Missoula, MT
- 2019 University of North Carolina, Chapel Hill, NC
- 2018 James Madison University, Harrisonburg, VA
- 2017 Hopland Research & Extension Center, Hopland, CA

CONFERENCE PRESENTATIONS (**denotes undergraduate mentee as primary presenter*)

- 2021 **Hague, MTJ**, JD Shropshire, CN Caldwell, JP Statz, BS Cooper (talk). Evolution, virtual.
Gendreau, KL, AG Hornsby, **MTJ Hague**, JW McGlothlin (talk). Evolution, virtual.
Markham E*, JD Shropshire, **MTJ Hague**, BS Cooper (talk). University of Montana Conference for Undergraduate Research, Missoula, MT
Hague, MTJH, CN Caldwell, JD Shropshire, JP Statz, WR Conner, BS Cooper (poster). Drosophila Research Conference, virtual.
Shropshire, JD, R Rosenberg, E Markham, **MTJ Hague**, BS Cooper, SR Bordenstein (talk). Drosophila Research Conference, virtual.
- 2020 Caldwell, CN*, **MTJ Hague**, BS Cooper (poster). University of Montana Conference for Undergraduate Research, Missoula, MT
Hague, MTJ, BS Cooper (talk). Big Sur *Wolbachia* Meeting, Big Sur, CA
- 2019 **Hague, MTJ**, BS Cooper (talk). UNVEIL, Lincoln, NE
Hague, MTJ, AN Stokes, CR Feldman, ED Brodie, Jr., ED Brodie III (talk). Evolution, Providence, RI
Hague, MTJ, BS Cooper (talk). Big Sur *Wolbachia* Meeting, Big Sur, CA
- 2018 **Hague, MTJ**, AN Stokes, CR Feldman, ED Brodie, Jr., ED Brodie III (talk). SEPEEG, Mountain Lake Biological Station, VA

- 2018 **Hague, MTJ**, ED Brodie, Jr., ED Brodie III (talk). SICB, San Francisco, CA
Hague, MTJ, CR Feldman, ED Brodie, Jr., ED Brodie III (talk). JMIH, Rochester, NY
del Carlo, RE, JS Reimche, **MTJ Hague**, ED Brodie, Jr., N Leblanc, CR Feldman
(posters). JMIH, Rochester, NY
Hague, MTJ (talk). Huskey Graduate Research Exhibition, Charlottesville, VA
- 2016 **Hague, MTJ**, CR Feldman, ED Brodie, Jr., ED Brodie III (talk). Evolution, Austin, TX
- 2016 **Hague, MTJ**, ED Brodie, Jr., ED Brodie III (talk). SICB, San Francisco, CA
- 2014 **Hague, MTJ**, EJ Routman (talk). Evolution, Raleigh, NC
Hague, MTJ, T Ren, M Wu (poster). Huskey Graduate Research Exhibition,
Charlottesville, VA
- 2013 **Hague, MTJ**, EJ Routman (poster). SEPEEG, Mountain Lake Biological Station, VA
Hague, MTJ, EJ Routman (poster). Graduate Research and Creative Works Showcase,
San Francisco, CA

ACADEMIC SERVICE

- 2022– Member of the Community of Support for Native Students, University of Montana
- 2022 Sentinel High School Outreach Fair Volunteer, Missoula, MT
- 2017–18 Volunteer Science Judge, Virginia Regional Science Fairs
- 2017 After School Program Volunteer, Boys & Girls Club of Central Virginia
Guest on *The Ecology Hour*, KZYX Mendocino County Public Radio, CA
- 2016 Career Day Presenter, William Monroe High School, Stanardsville, VA
- 2015 Vice President of Communications, Graduate School of Arts and Sciences Student
Council, University of Virginia
Publicity Chair, Robert Huskey Graduate Research Exhibition, University of Virginia

REFeree FOR PROFESSIONAL PUBLICATIONS

Biological Journal of the Linnean Society, BMC Research Notes, Current Biology, Ecology and
Evolution, Environmental Microbiology, Evolution, G3, Genome Biology and Evolution, ISME, PLoS
Neglected Tropical Diseases, PLoS Pathogens

PROFESSIONAL MEMBERSHIPS

AAAS, American Society for Microbiology, Genetics Society of America,
Society for Integrative and Comparative Biology, Society for the Study of Evolution