Randy Klabacka | curriculum vitae

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Education

Ph.D. Candidate in Biological Sciences **anticipated 2022**
Department of Biological Sciences, Auburn University
Advisors: Drs. Jamie Oaks & Tonia Schwartz

B.S. in Biology **2016**
Department of Biology, Brigham Young University
Advisors: Drs. Jack Sites & Chad Hancock

Grants, Fellowships, and Scholarships

2020: EECG Research Award (American Genetics Association) *$8,000*
Genomic and bioenergetics costs of asexuality in a vertebrate system (*Aspidoscelis*)

2017: CMB Peaks of Excellence Research Fellowship (Auburn University) *$4,500*
Mitonuclear distancing: The baggage of an asexual reproductive strategy

2017: Meredith Birchfield Endowed Fund for Excellence (Auburn Univ Museum of Natural History) *$1500*
Examining species boundaries in *Draco maculatus*

2016: Office of Research & Creative Activities Grant (BYU) *$1,500*
Phylogeny and species boundaries in spotted flying lizards (*Draco maculatus*)

2012-15: Undergraduate Academic Scholarships (BYU) *$11,987*

Awards

2019: COSAM Travel Award (Auburn University) *$300*
Funding to present research at 9th World Congress of Herpetology

2019: 1st Place - Henri Seibert Competition Systematics & Evolution Category (SSAR) *$200*
Riverine barriers as potential drivers of biodiversification in /textitDraco maculatus

2019: Trees in the Desert Workshop (NSF - University of Arizona) *$1,000*
funded workshop (covering travel, lodging, food, and workshop

2017: NSF Travel Grant (Society of Systematics Biology Meeting) *$500*
Funding to present research at 2017 SSB meeting

2015: 3rd Place - HBLL College of Life Sciences Poster Competition (BYU) *$300*
Phylogeny and species boundaries in spotted flying lizards (*Draco maculatus*)

2015: College of Life Sciences Dean's List (BYU)

2014: REU Supplement Recipient (BYU) *$3,000*
Phylogeny and biogeography of New World leaf-toed geckos (*Phyllodactylus*)

Peer-reviewed Publications

Westfall, Aundrea K, Rory S Telemeco, Mariana B Grizante, Damien S Waits, Amanda D Clark, Dasia Y Simpson, **Klabacka, Randy L**, Alexis P Sullivan, George H Perry, Michael W Sears, et al. (2021). "A chromosome-level genome assembly for the Eastern Fence Lizard (*Sceloporus undulatus*), a reptile model for physiological and evolutionary ecology." In: *GigaScience*.

Klabacka, Randy L, Perry L Wood Jr, Jimmy A McGuire, Jamie R Oaks, L Lee Grismer, Jesse L Grismer, Anchalee Aowphol, and Jack W Sites Jr (2020). "Rivers of Indochina as potential drivers of lineage diversification in the spotted flying lizard (*Draco maculatus*) species complex." In: *Molecular Phylogenetics and Evolution*, p. 106861.

Gangloff, Eric J, Tonia S Schwartz, **Klabacka, Randy L**, Natalie Huebschman, Ang-Yu Liu, and Anne M Bronikowski (2020). "Mitochondria as central characters in a complex narrative: Linking genomics, energetics, and pace-of-life in natural populations of garter snakes." In: *Experimental Gerontology*, p. 110967.

Grismer, L Lee, Jr PL Wood, Shahrul Anuar, Marta S Grismer, ES Quah, Matthew L Murdoch, Mohd Abdul Muin, Hayden R Davis, Cesar Aguilar, **Klabacka, Randy L**, et al. (2016). "Two new Bent-toed Geckos of the *Cyrtodactylus pulchellus* complex from Peninsular Malaysia and multiple instances of convergent adaptation to limestone forest ecosystems." In: *Zootaxa* 4105.5, pp. 401–429.

Davis, Hayden R, L Lee Grismer, **Klabacka, Randy L**, Mohd Abdul Muin, Evan SH Quah, Shahrul Anuar, Perry L Wood Jr, and JW Sites Jr (2016). "The phylogenetic relationships of a new Stream Toad of the genus *Ansonia* Stoliczka, 1870 (Anura: Bufonidae) from a montane region in Peninsular Malaysia." In: *Zootaxa* 4103.2, pp. 137–153.

Manuscripts In-review

Klabacka, Randy L, Hailey A Parry, Kang Nian Yap, Ryan A Cook, Tori A Herron, L. Miles Horne, Jose A Maldonado, Jamie R Oaks, Andreas N Kavazis, Matthew K Fujita, and Tonia S Schwartz (submitted May 2021). "Reduced mitochondrial respiration in hybrid asexual lizards." In: *in-review with American Naturalist*.

Invited Seminars

2019: Museum of Natural Science Seminar Series — *Louisiana State University*

Riverine barriers as drivers of biodiversification in terrestrial fauna of Southeast Asia

2021: Workshop on Fostering Idealogical Awareness — *Auburn University*

Teaching evolution to students of faith: How instructors can help students overcome barriers

Presentations

Klabacka, Randy, Hailey Parry, Jeff Yap, Ryan Cook, Tori Herron, L Miles Horne, José Maldonado, Guillermo Álvarez, Andreas N Kavazis, Jamie R Oaks, Matthew K Fujita, and Tonia S Schwartz (2021). "Reduced endurance and mitochondrial respiration in hybrid asexual lizards (genus: *Aspidoscelis*)." In: *SICB 2021*. Virtual Conference (talk).

Klabacka, Randy, Anne Bronikowski, Suzanne McGaugh, Dawn Reding, Daniel Nettleton, Andrew Lithio, Laurie Stevison, Jessica Judson, and Tonia Schwartz (2021). "Genomic and phenotypic evolution of targeted genenetworks in divergent garter snake ecotypes." In: *EVOLUTION 2021*. Virtual Conference (talk).

Klabacka, Randy, Hailey Parry, Jeff Yap, Ryan Cook, Tori Herron, L Miles Horne, José Maldonado, Guillermo Álvarez, Andreas N Kavazis, Jamie R Oaks, Matthew K Fujita, and Tonia S Schwartz (2020). "The powerhouse of asexual cost? Endurance and mitochondrial efficiency in parthenogenetic whiptail lizards (genus *Aspidoscelis*)." In: *9th Annual World Congress of Herpetology*. University of Otago; Dunedin, NZ (talk).

Klabacka, Randy, P L Wood Jr, Jimmy A McGuire, Jamie R Oaks, L Lee Grismer, Jesse L Grismer, Anchalee Aowphol, and Jack W Sites Jr (2019). "Riverine barriers as potential drivers of biodiversification in the *Draco maculatus* species complex of Indochina." In: *Joint Meeting of Ichthyologists and Herpetologists*. Snowbird, UT (talk) *1st place in Henri Seibert Competition (Systematics & Evolution Category).

Schwartz, Tonia S, Dawn Reding, **Klabacka, Randy**, Stephen Sephick, Laurie Stevison, and Anne M Bronikowski (2019). "Population genetics of the electron transport chain in snake populations exhibiting divergent resting metabolic rates." In: *Society for Integrative and Comparative Biology Meeting*. Tampa, FL (poster).

Klabacka, Randy, José Maldonado, Andreas N Kavazis, Hailey Parry, Jamie R Oaks, Matthew K Fujita, and Tonia S Schwartz (2019). "Comparative examination of mitochondrial function in parthenogenetic whiptail lizards genus (*Aspidoscelis*)." In: *American Genetics Association Presidential Symposium*. Portland, OR (poster).

Klabacka, Randy, P L Wood Jr, Jimmy A McGuire, Jamie R Oaks, L Lee Grismer, Jesse L Grismer, Anchalee Aowphol, and Jack W Sites Jr (2018). "Bayes factor delimitation supports population structure in Southeast Asian species complex of Agamid lizard." In: *Society for Systematic Biologists Meeting*. The Ohio State University; Cleveland, OH (poster).

Schwartz, Tonia S, Dawn Reding, **Klabacka, Randy**, Stephen Sephick, Laurie Stevison, and Anne M Bronikowski (2017). "Targeted sequence capture for functional population genomics of genetic networks: Mapping approaches for non-model organisms." In: *Joint Meeting of Ichthyologists and Herpetologists*. Austin, TX (poster).

Klabacka, Randy, P L Wood Jr, Jimmy A McGuire, L Lee Grismer, and Jack W Sites Jr (2017). "Speciation or isolated diversification: The hidden variation of *Draco maculatus*." In: *Society for Systematic Biologists Meeting*. Louisiana State University; Baton Rouge, LA (talk).

Klabacka, Randy, P L Wood Jr, and Jack W Sites Jr (2016). "Phylogeny and species boundaries in the "flying dragons" of the *Draco maculatus* species complex (family Agamidae)." In: *Utah Conference on Undergraduate Research*. University of Utah; Salt Lake City, UT (poster).

Klabacka, Randy, P L Wood Jr, L Lee Grismer, Jimmy A McGuire, and Jack W Sites Jr (2016). "Hidden Dragons: The molecular composition of the *Draco maculatus* species complex." In: *South Eastern Population Ecology and Evolutionary Genetics Meeting*. Madison, FL (talk).

Klabacka, Randy, P L Wood Jr, and Jack W Sites Jr (2015). "Phylogeny and species boundaries in the "flying dragons" of the *Draco maculatus* species complex (family Agamidae)." In: *HBLL BYU Poster Competition*. University of Utah; Salt Lake City, UT (poster) *3rd Place.

Klabacka, Randy, César Aguilar, Aaron M Bauer, Alessandro Catenazzi, Eli Greenbaum, Jack W Sites Jr, F Faldez, Perry L Wood Jr, Ryan Wilkes, and Tony Gamble (2015). "Phylogeny and biogeography of New World leaf-toed geckos, *Phyllodactylus* (Phyllodactylidae: Gekkota)." In: *Society for the Study of Amphibians and Reptiles Meeting*. University of Kansas; Lawrence, KA (poster).

Mentorship

I have mentored seven undergraduate students in field biology, physiology, and molecular lab work. Current positions of these students include veterinary school, lab/field tech, M.S. evol/ecol student, undergraduate research assistant, and working on manuscripts for peer-reviewed publications.

Teaching Experience

Instructor of Record

- **2021**: Genetics (BIOL 3000) — *Online and Asynchronous*

Guest Lectures — Instructor(s)

- **2021**: Mitonuclear Ecology (BIOL 6750) — *The evolution of sex*
- **2021**: Scripting for Biologists (BIOL 7180) — *Creating python classes & using random number generators*
- **2021**: Scripting for Biologists (BIOL 7180) — *Implementing regular expressions*
- **2021**: Scripting for Biologists (BIOL 7180) — *Introduction to Biopython*
- **2019**: Vertebrate Biodiversity (BIOL 4020) — *Amphibian Life History Strategies*
- **2018**: Functional Genomics (BIOL 5850/6850) — *Using high-throughput sequencing for targeted genes*
- **2018**: Evolution and Systematics (BIOL 3030 — *Early evolutionary ideas- Tree thinking*
- **2016**: Principles of Biology — *The domains of life*
- **2016**: Principles of Biology — *The central dogma of biology*

Teaching Assistantships — Instructor(s)

- **2021**: BIOL 7180: Scripting for Biologists — *Jamie Oaks*
- **2020**: BIOL 4020: Vertebrate Biodiversity Lab — *Dan Warner*
- **2020**: BIOL 5740/6740: Herpetology Lab — *Jamie Oaks & Dan Warner*
- **2019**: BIOL 4020: Vertebrate Biodiversity Lab — *Joshua Hall*
- **2018**: BIOL 5240/6240: Animal Physiology Lab — *Ray Henry*
- **2017-2019**: BIOL 5600/6600: Biomedical Physiology Lab — *Mary Mendonca*
- **2016**: BIOL 2501: Anatomy and Physiology Lab — *Shobnom Ferdous*
- **2013-2016**: BIO 130: Principles of Biology — *Instructors: Keoni Kauwe & Byron Adams)*

Professional Development

- **2020**: Inroduction to Discipline-Based Education Research - graduate course — *Instructor: Cissy Ballen*
- **2018**: Creating an active learning classroom - professional workshop — *Host: AU Biggio Center*

Research Assistantships

Research Focus — Principle Investigator(s)

- **Summer 2021**: Phylogenetics and Functional Genomics — *Jamie Oaks and Tonia Schwartz*
- **Summer 2020**: Phylogenetics — *Jamie Oaks*
- **Summer 2019**: Phylogenetics — *Jamie Oaks*
- **Summer 2018**: Functional Genomics — *Tonia Schwartz*
- **2013-2016**: Phylogenetic Systematics — *Jack Sites*
- **2013-2016**: Metabolic Physiology and Bioenergetics — *Chad Hancock*

Field Experience

2021: Assisted with animal capture and respirometry of *Thamnophis elegans* in CA — *10 days*

2021: Assisted with animal capture processing of 8 *Anolis* species in FL *5 days*
2020: With team of 3 collected 200 live *Anolis sagrei* for lab breeding colony *2 days*
2019: Led team of five in NM and TX and collected 50 live *Aspidoscelis* of five species *1 month*
2018: Led team of four in NM and TX and collected 210 *Aspidoscelis* of 12 species *2 months*
2017: Led team of two to validate potential *Aspidoscelis* collection localities *3 weeks*
2016: Collected various herpetofauna for BYU Bean LS Museum in Thailand and Malaysia *3 weeks*
2015: Collected morphological data from live *Crotalus oreganus lutosus* *1 day*
2014: Participated in neotropical biology and geology field course in Costa Rica *2 weeks*
2013: Counted egg masses & recorded localities for *Rana luteiventris* habitat restoration *1 day*

Relevant Research Skills

Computational

- Proficiently code in Python, C++, Bash, R, LaTeX, HTML
- Develop genomic pipelines for read cleaning, assembly, mapping, and variant calling
- Execute computational tools for functional genomics (e.g., gene expression), population genetics, and phylogenetics with genomic datasets
- 22 graded credit hours of Computer Science, Bioinformatics, and Computational Statistics

Molecular

- Perform DNA sequencing techniques (extraction, optimizing quality/quantity for genomic sequencing, PCR, PCR cleanup, big-dye sequencing, will be performing RNA-seq in 2020)
- Perform mitochondrial isolation, tissue homogenization (for physiology), mitochondrial respirometry, enzyme activity assays, protein assays, and reactive oxygen species assays.

Organismal and Museum Collection

- Capture and formalin fix herpetofauna and maintain ethanol-preserved collection (curate teaching collection while teaching Vertebrate Biodiversity and Herpetology, which contains over 1000 ethanol-preserved fish, amphibians, and reptiles)
- Isolate blood from lizards (using post-orbital cavity) and perform general animal necropsy and dissection, flash-preserving tissues in liquid nitrogen.

Field and Additional

- Fluently speak Spanish
- Established inter-institutional field research in TX and NM
- Led multiple collection- and research-based field trips in TX, NM, and AZ

Outreach, Community Service, and Relevant Positions

2020-: QuickGRITS podcast *Creator & host*
2021: Safe techniques for handling snakes: Instructor *E. W. Shell Fisheries, Auburn University*
2020: Chief Science Officers "Zoom In On Science" Guest *SciTech Institute; Kenya*
2020: Chief Science Officers "Zoom In On Science" Guest *SciTech Institute; Sonora, Mexico*
2019: Volunteer Field Ornithology TA *UTEP-IMRS Field Biology Course*
2019: STEM Discovery Day instructor *Auburn University*
2018-: Grad Chair - Dept. of Biol. Sciences Seminar Series *Auburn University*
2018-: Member of the Snake Response Team *Auburn University*
2018: Volunteer Field Herpetology TA *UTEP-IMRS Field Biology Course*
2016: Reptile and Amphibian Studies Scout Merit Badge Instructor *Boy Scouts of America*

2016-2018: Natural History Museum Open House Representative *Auburn University*
2015-2016: Co-president/founder of Life Sciences Pre-Graduate Student Club *BYU*
2015: Host for the BYU-sponsored "Night at the Museum" *Monte L. Bean Life Science Museum*
2014: Tour guide for LSB opening- President's Leadership Council dinner *Brigham Young University*

Professional Memberships

Society for the Study of Amphibians and Reptiles (SSAR)
Society for Integrative and Comparative Biology (SICB)
Society of Systematic Biologists (SSB)
Society for the Study of Evolution (SSE)
American Genetics Association (AGA)
Sigma Xi

Scholarly Reviews

Molecular Ecology
Biological Journal of the Linnean Society
Herpetologica
Entomology, Ornithology, & Herpetology: Current Research