

CLARE HILARY SCOTT CHIALVO

Department of Biological Sciences
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EDUCATION

- 2014 – Present** Postdoctoral Training, Metabolomics, Department of Biological Sciences, University of Alabama, Tuscaloosa, AL. Laura K. Reed (Supervisor).
- 2013 – 2014** Postdoctoral Training, Phylogenomics and Metabolomics, Department of Entomology, Purdue University, West Lafayette, IN. Jennifer Zaspel (Supervisor).
- 2012** Ph.D., Department of Entomology and Nematology, University of Florida, Gainesville, FL. Marc A. Branham (Chair).
- 2007** B.S.E.S. Entomology, B.S. Genetics (Both with High Honors), University of Georgia, Athens, GA. Graduated *Magna Cum Laude*.

PROFESSIONAL EXPERIENCE

- Summer 2017** *Instructor: University of Alabama*
- Led Genetics summer session, an upper-level undergraduate course for biology majors.
 - Presented 105-minute lectures on topics related to introductory genetics (e.g., Central Dogma, Mendelian genetics, gene expression) 5 days a week for 4 weeks. Developed syllabus, lectures, problem sets, and exams.
 - Led Ecology and Evolution summer session, an upper-level undergraduate course for biology majors.
 - Presented 105 minute lectures on topics related to ecology, evolutionary biology, and the intersection of the two topics (e.g., behavioral ecology, adaptations, demography) 5 days a week for 4 weeks. Developed syllabus, lectures, problem sets, and exams.
- Spring 2017** *Full-Time Temporary Instructor: University of Alabama*
- Led two sections of Laboratory Biology I, an undergraduate course for biology majors.
 - Led students through hands on lab activity (2 hours and 50 minutes) once a week.
 - Presented background material on weekly topic, proctored quizzes, and graded resulting lab write-ups.
- Spring 2015** *Substitute Instructor: University of Alabama*
- Led Evolution, a Graduate/Undergraduate Course, for the remaining four weeks while the primary instructor was on maternity leave.
 - Presented 50 minute lectures twice a week on topics related to evolutionary biology (e.g., speciation, fossil record, human evolution), led weekly discussion group activities, proctored quizzes, and developed a review lecture on topics covered throughout the course.
- 2014 – Present** *Postdoctoral Research Associate: University of Alabama*
- Responsible for investigating the physiological mechanism(s) that confer tolerance to the mushroom toxin α -amanitin in mushroom feeding *Drosophila* in Dr. Laura Reed's lab.

- Working to expand publicly available metabolic databases for *Drosophila* species to facilitate the goals of the International Drosophila Metabolomics Curation Consortium.
- Fall 2013** *Guest Lecturer: Purdue University*
- Developed and presented two lab exercises in the Systematics and Phylogenetic Methods Laboratory, a Graduate Course.
 - Exercises were designed to:
 - Identify best partitioning schemes and models of evolution using the programs PartitionFinder and jModelTest
 - Conduct maximum likelihood analyses in RAxML and use the CIPRES scientific gateway for conducting large analyses
- 2013 – 2014** *Postdoctoral Research Associate: Purdue University*
- Responsible for investigating the evolution of lichen feeding using transcriptomic and metabolomic data in Dr. Jennifer Zaspel's lab.
 - Trained graduate and undergraduate students in molecular methods (e.g., DNA extraction, PCR, GC-MS, and LC-MS).
- 2011 – 2012** *SPICE (Science Partners in Inquiry-based Collaborative Education) Fellowship: University of Florida*
- Held a competitive fellowship in an NSF-Funded GK-12 program.
 - Responsible for introducing students at a low-income middle school (>50% of the population received either free or reduced price lunches) to a broader range of sciences.
 - Co-taught 6th, 7th, and 8th grade earth and space, life science, and physical science courses (respectively) at Mebane Middle School in Alachua, FL with Gloria Bonilla.
 - Developed and implemented interactive lectures and hands-on laboratory activities for each grade level.
- 2010 & 2011** *Guest Lecturer: University of Florida*
- Developed and presented a lecture on *Lepidoptera and Trichoptera Identification* for Insect Classification, a Graduate/Undergraduate Course.
- 2008 – 2009** *Graduate Teaching Assistant: University of Florida*
- Taught labs for Principles of Entomology, a Graduate/Undergraduate Course for majors and non-majors.
 - Responsible for introductory lectures, supervising lab activities (e.g., collections and practical labs on Biological Control and Mark-Release-Recapture), and grading.
- 2007 – 2011** *Alumni Graduate Fellowship: University of Florida*
- Held a competitive fellowship from the University of Florida.
 - Responsible for full-time research towards my dissertation.
- 2006 – 2007** *Independent Undergraduate Research: University of Georgia*
- Conducted independent research in Dr. John Wares' Lab in the Department of Genetics.
 - Extracted DNA and used PCR to amplify gene fragments of the yellowfin shiner fish, which served as the basis for my honors thesis and Scott *et al.* 2009.
- 2006 – 2007** *Independent Undergraduate Research: University of Georgia*
- Conducted independent research in Dr. Joseph McHugh's Lab in the Department of Entomology.
 - Created a photographic dichotomous key of all species in Sphindidae (Coleoptera).
- Summer 2006** *Lab assistant: Clemson University*
- Worked as a summer assistant in Dr. Simon Scott's lab.

- Troubleshoot a protocol for extracting viral dsRNA, extracted viral RNA, and amplified fragments of viral RNA using PCR.

GRANTS

- 2017-2022** Division of Evolutionary Biology, National Science Foundation, (Co-PI; PI: Laura K. Reed), Dimensions: Collaborative Research: *Integrating phylogenetic, genetic, and functional approaches to dissect the role of toxin tolerance in shaping Drosophila biodiversity* (\$968,436; DEB-1737869).
- 2016** Metabolomic Society's Early Career Member Travel Award (\$500)
- 2015** NIH Common Fund Pilot & Feasibility Grant through the Southeast Center for Integrated Metabolomics, (Co-PI; PI: Laura K. Reed University of Alabama; Co-PI: Thomas Werner Michigan Technological University), *Characterizing the metabolism of a deadly mushroom toxin in Drosophila* (\$17,500).
- 2013** Purdue University Showalter Trust Fund for Bioinformatics Analysis, (Co-PI; PI: Jennifer Zaspel), *Branching out the tiger moth tree: systematics of the lichen moths (Lepidoptera: Erebiidae: Lithosiini)* (\$8,000).
- 2013** Division of Evolutionary Biology, National Science Foundation, (Co-PI; PI: Jennifer Zaspel), Preliminary Proposal: *Branching Out the Tiger Moth Tree: Systematics and the Evolution of Chemical Defense in the Lichen Moths (Lepidoptera: Erebiidae: Lithosiini)*, (Proposal Number 1328479), Invited to submit full proposal.
- 2011** University of Florida Graduate Student Council Travel Grant (\$350)
- 2010** Museum of Comparative Zoology, Ernst Mayr Travel Grants in Animal Systematics, *Revision and review of the generic limits of the lichen moth genus Lycomorpha (Lepidoptera: Noctuidae: Arctiinae)* (\$1,500)
- 2010** Entomological Society of America's Systematics, Evolution, and Biodiversity Section's Student Travel Award (\$874)

HONORS AND AWARDS

- 2011 – 2012** SPICE (Science Partners in Inquiry-based Collaborative Education) Fellowship, University of Florida, NSF-Funded
- 2007 – 2011** University of Florida Alumni Fellowship
- 2003 – 2007** Robert C. Byrd Honors Scholarship
University of Georgia National Merit Scholarship
University of Georgia Charter Scholarship

PUBLICATIONS (* indicates undergraduate co-authors)

- Scott Chialvo, C.H.**, P. Chialvo, J.D. Holland, T.J. Anderson, J.W. Breinholt, A.Y. Kawahara, X. Zhou, S. Liu, and J.M. Zaspel. 2017 A phylogenomic analysis of lichen-feeding tiger moths uncovers evolutionary origins of host chemical sequestration. *Submitted: Molecular Phylogenetics and Evolution*.
- Scott Chialvo, C.H.**, R. Che, D. Reif, A. Motsinger-Reif, and L.K. Reed. 2016. Eigenvector metabolite analysis reveals dietary effects on the association among metabolite correlation patterns, gene expression, and phenotypes. *Metabolomics* 12: 167. doi: 10.1007/s11306-016-117-3
- Zaspel, J., **C.H. Scott**, S.R. Hill, V.S. Kononenko, R. Ignell, and S.J. Weller. 2014. Population structure and geographically-based differential feeding behaviors in the fruit-piercing and skin-piercing blood feeding moth *Calyptra thalictri* Borkhausen (Insecta: Lepidoptera: Erebiidae). *Journal of Parasitology* 100: 583-591.

4. **Scott, C.H.**, J.M. Zaspel, P. Chialvo*, and S.J. Weller. 2014. A preliminary molecular phylogenetic assessment of the lichen moths (Lepidoptera: Erebidae: Arctiinae: Lithosiini) with comments on palatability and chemical sequestration. *Systematic Entomology* 39: 286-303.
3. **Scott, C.H.** and M.A. Branham. 2012. A preliminary phylogeny of the lichen moth tribe Lithosiini (Lepidoptera: Erebidae: Arctiinae) using morphological characters. *Insect Systematics and Evolution* 43: 321-369.
2. Bybee, S.M., J.M. Zaspel, K.A. Beucke, **C.H. Scott**, B.W. Smith, and M.A. Branham. 2010. Are molecular data supplanting morphological data in modern phylogenetic studies? *Systematic Entomology* 35: 2-5.
1. **Scott, C.H.**, M. Cashner, G.D. Grossman, and J.P. Wares. 2009. An awkward introduction: phylogeography of *Notropis lutipinnis* in its 'native' range and the Little Tennessee River. *Ecology of Freshwater Fish* 18: 538-549.

OTHER PUBLISHED MATERIAL

3. **Scott, C.** 2010. Black and yellow lichen moth (suggested common name) *Lycomorpha pholus* (Drury) (Insecta: Lepidoptera: Noctuidae: Arctiinae: Lithosiini). EDIS. <http://edis.ifas.ufl.edu/in865>
2. **Scott, C.** and P.E. Kaufman. 2010. Buck moth *Hemileuca maia* (Drury). EDIS. <http://edis.ifas.ufl.edu/IN834>
1. Photographer for Title Illustrations, 2010, TREE OF LIFE web project, Sphindidae Cryptic slime mold beetles, <http://tolweb.org/Sphindidae/9143>

INVITED PRESENTATIONS

5. **Scott Chialvo, C.** Characterizing the metabolic fate of a deadly mushroom toxin using tolerant *Drosophila*. Research Presentation, Isotope Tracers in Metabolic Research: Principles and Practice of Kinetic Analysis 8th Annual Course, Cleveland, OH, November 2015.
4. **Scott, C.H.** α -amanitin tolerance in *Drosophila*. EDGE (Enthusiasts of Diversity, Genetics, and Evolution) Seminar, University of Georgia, February 2015.
3. **Scott, C.H.** Systematics and chemical defense in the lichen moths. Research Talk, Moczek Lab, Indiana University, April 2014.
2. **Scott, C.H.** Systematics of the lichen moth tribe Lithosiini (Lepidoptera: Erebidae: Arctiinae) including a review of the genus *Lycomorpha* Harris. Department of Entomology Weekly Seminar, Purdue University, August 2013.
1. **Scott, C.H.** Systematics of the lichen moth tribe Lithosiini (Lepidoptera: Erebidae: Arctiinae) including a review of the genus *Lycomorpha* Harris. Eco-Lunch Seminar, Purdue University, January 2013.

(INTER)NATIONAL ORAL PRESENTATIONS (*undergraduate co-authors, #presenting author)

7. **Scott Chialvo, C.H.**[#], O. Sorrel*, L.H. Griffin*, and L.K. Reed. Examining the genetic structure and physiological mechanisms underlying an evolutionarily novel, complex biochemical trait, mycotoxin tolerance, in a *Drosophila tripunctata* population. Annual Meeting of the Society for the Study of Evolution, Portland, OR June 2017.
6. **Scott, C.**[#], S.J. Weller, and J. Zaspel. Transcriptome phylogeny and evolution of host chemical sequestration within the lichen moths (Insecta: Lepidoptera: Erebidae). Annual Meeting of the Society for the Study of Evolution, Raleigh, NC June 2014.
5. **Scott, C.**[#], S.J. Weller, and J. Zaspel. Preliminary study of the transcriptomes and metabolite profiles of the lichen moth tribe Lithosiini (Lepidoptera: Erebidae: Arctiinae). Entomological Society of America Annual Meeting, Austin, TX November 2013.
4. **Scott, C.**[#], J. Zaspel, S.J. Weller, and M.A. Branham. A molecular phylogeny of the lichen moth tribe Lithosiini (Lepidoptera: Erebidae: Arctiinae) with a preliminary assessment of lichen phenolic sequestration. Entomological Society of America Annual Meeting, Knoxville, TN November 2012.

3. **Scott, C.H.**[#], E. Phillipi*, P. Chialvo*, J. Zaspel, S.J. Weller, and M.A. Branham. A preliminary phylogeny of the lichen moth tribe Lithosiini (Lepidoptera: Erebiidae: Arctiinae) with an assessment of the subtribal relationships using molecular data. Entomological Society of America Annual Meeting, Reno, NV November 2011.
2. **Scott, C.H.**[#] and M.A. Branham. A preliminary phylogenetic analysis of the lichen moth subtribe Cisthenina and its position within the tribe Lithosiini (Lepidoptera: Noctuidae: Arctiinae): using morphological data. Entomological Society of America Annual Meeting, San Diego, CA December 2010.
1. **Scott, C.H.**[#] and M.A. Branham. The contribution of morphology to a phylogenetic analysis of *Lycomorpha* (Lepidoptera: Noctuidae: Arctiinae): a preliminary investigation. Entomological Society of America Annual Meeting, Indianapolis, IN December 2009.

(INTER)NATIONAL POSTER PRESENTATIONS (*undergraduate co-authors, [#]presenting author)

8. **Scott Chialvo, C.**, F. Tayyari, T. Werner, A. Edison, and L. Reed[#]. Characterizing the metabolism of the deadly mushroom toxin α -amanitin in mushroom-feeding *Drosophila*. 2016 NIH Common Fund Metabolomics Meeting, Bethesda, MD September 2016.
7. **Scott Chialvo, C.**[#], F. Tayyari, T. Werner, A. Edison, and L. Reed. Characterizing the metabolism of the deadly mushroom toxin α -amanitin in mushroom-feeding *Drosophila*. International Conference of the Metabolomics Society, Dublin, Ireland June 2016.
6. **Scott, C.**[#], R. Che, D. Reif, A. Motsinger-Reif, and L. Reed. Dietary effects on the association between metabolite and gene expression using eigenvector metabolite analysis. International Conference of the Metabolomics Society, San Francisco, CA June 2015.
5. **Scott, C.**[#], R. Che, D. Reif, A. Motsinger-Reif, and L. Reed. Dietary effects on the association between metabolite and gene expression using eigenvector metabolite analysis. 56th Annual Drosophila Research Conference, Chicago, IL March 2015.
4. **Scott, C.** and **J. Zaspel**[#]. Transcriptome phylogeny and evolution of host chemical sequestration within the lichen moth tribe (Insecta: Lepidoptera: Erebiidae: Arctiinae: Lithosiini). Entomological Society of America Annual Meeting, Portland, OR November 2014.
3. Zaspel, J.[#], **C.H. Scott**, S.R. Hill, R. Ignell, and S.J. Weller. Geographic distribution and differential feeding behaviors of the fruit-piercing and skin-piercing moth, *Calyptra thalictri* Borkhausen (Lepidoptera: Erebiidae). Entomological Society of America Annual Meeting, Austin, TX November 2013.
2. Chialvo, P.*[#], **C.H. Scott**, and M. Branham. A preliminary phylogenetic analysis of the lichen moth genus *Lycomorpha* (Lepidoptera: Erebiidae: Arctiinae: Lithosiini) using molecular data. Entomological Society of America Annual Meeting, Reno, NV November 2011.
1. **Scott, C.H.**[#] and M.A. Branham. A preliminary phylogenetic analysis of the lichen moths of the genus *Crambidia* (Lepidoptera: Noctuidae: Arctiinae). Entomological Society of America Annual Meeting, Reno, NV November 2008.

REGIONAL ORAL PRESENTATIONS (*undergraduate co-authors, [#]presenting author)

3. Griffin, L.H.[#], O. Sorrell*, **C.H. Scott Chialvo**, and L.K. Reed. Effect of gut microbiota on α -amanitin tolerance in mycophagous *Drosophila*. 2017 Annual Southeastern Population Ecology and Evolutionary Genetics Meeting, Laurel Hill, NC October 2017.
2. **Scott Chialvo, C.H.**[#], O. Sorrell*, F. Tayyari, T. Werner, A. Edison, K. Dyer, and L.K. Reed. Natural history of toxin tolerance in mushroom-feeding *Drosophila*. 2016 Annual Southeastern Population Ecology and Evolutionary Genetics Meeting, Madison, FL October 2016.
1. **Scott, C.H.**[#] and M.A. Branham. A phylogenetic analysis of the higher-level relationships of the lichen moth tribe Lithosiini (Lepidoptera: Erebiidae: Arctiinae). Entomological Society of America North-Central Branch Meeting, Minneapolis, MN March 2011.

INSTITUTIONAL POSTER PRESENTATIONS (*undergraduate co-authors, #presenting author)

2. Griffin, L.H. *#, O. Sorrell*, **C.H. Scott Chialvo**, and L.K. Reed. Characterizing the role of detoxification genes in resistance to the mushroom toxin α -amanitin in *Drosophila tripunctata*. 2017 Undergraduate Research and Creativity Activity Conference, Tuscaloosa, AL March 2017.
1. Sorrell, O.*#, **C. Scott Chialvo**, and L.K. Reed. Characterizing mechanisms of resistance to the mushroom toxin α -amanitin in local mycophagous *Drosophila tripunctata*. 2016 Undergraduate Research and Creativity Activity Conference, Tuscaloosa, AL March 2016.

STUDENT MENTORING (*underrepresented minority; #military)

9. Olivia Fish, Fall 2017 – Present, undergraduate student, University of Alabama
 - Training: Maintenance of mycophagous *Drosophila*, measuring adult phenotypes to assess impact of toxins in larval diet on adult fitness, and design and completion of oviposition preference assays in mycophagous *Drosophila*.
8. Logan Griffin#, May 2017 – Present, Master's student (University Scholar), University of Alabama.
 - Training: Extraction and analysis of the gut microbiome, PCR, and characterizing impact of gut microbiome on toxin tolerance.
 - Presented at 2017 Annual Southeastern Population Ecology and Evolutionary Genetics Meeting, Laurel Hill, NC October 2017
7. Logan Griffin#, Summer 2016 – May 2017, undergraduate student, University of Alabama.
 - Training: Maintenance of mycophagous *Drosophila*, production of larval samples for NMR analysis, and examining impact of gene inhibition on toxin tolerance in larvae.
 - Presented at Undergraduate Research and Creativity Activity Conference, Tuscaloosa, AL March 2017.
 - Award: Undergraduate Research and Creativity Activity Grant (\$600)
6. Olivia Sorrell*, Spring 2015 – Fall 2016, undergraduate student, University of Alabama.
 - Training: Maintenance of mycophagous *Drosophila*, examining variance in toxin tolerance, and assessing the function of different genes in tolerance.
 - Presented at Undergraduate Research and Creativity Activity Conference, Tuscaloosa, AL March 2016.
 - Award: Undergraduate Research and Creativity Activity Grant (\$1000)
 - Present Position: Student in the University of Alabama – Birmingham Dental School.
5. Andrew Schwitzgebel, Fall 2015 – Spring 2016, undergraduate student, Computer Based Honors Program, University of Alabama.
 - Training: Development of Pathway Genome Databases for *Drosophila* to be hosted on metacyc.com
4. Tim Anderson, Spring 2013 – Summer 2014, doctoral student, Purdue University.
 - Training: Study design for phylogenetic analyses including morphological character coding and PCR, extraction of metabolites, and analysis of metabolomic data obtained using HPLC-MS and GC-MS.
3. Keith Gerber, Fall 2012, undergraduate student, University of Florida.
 - Training: PCR and PCR troubleshooting.
2. Pablo Chialvo*, Spring 2011 – Summer 2012, undergraduate student, University of Florida.
 - Training: DNA extraction, PCR, sequencing, and phylogenetic analysis of molecular data
 - Presented at the Entomological Society of America's Annual Meeting, Reno, NV November 2011.
 - Co-author on Scott *et al.* 2014.
 - Present Position: Instructor of Biology, Lander University.
1. Liset Perez*, Spring 2011, undergraduate student, University of Florida.

- Training: scientific illustration

SERVICE TO THE COMMUNITY

Judge for oral and poster presentations, Graduate and Undergraduate Student Competitions, 2016 Annual Southeastern Population Ecology and Evolutionary Genetics Meeting, Madison, FL October 2016.

Entomological Society of America's Membership Committee, Elected representative of the Systematics and Evolutionary Biology section, 2014 – Present.

Educational outreach at Middle Schools in Tuscaloosa, AL Spring 2015 – Present.

Judge for oral papers, Graduate Student Competition, Annual Meeting of the Entomological Society of America, Austin, TX November 2013.

Helped to organize the holdings of Erebidae at the University of Wisconsin – Madison based on the most recent phylogenetic hypothesis, 2013.

Judge for Alachua County Regional Science and Engineering Fair, Middle School Division, Gainesville, FL 2011.

Board of Directors for the Center of Systematic Entomology, Elected member, Gainesville, FL 2009 – 2011.

Peer reviewer for journals including: *Molecular Phylogenetics and Evolution*, *Zootaxa*, *Evolution*, and *PLoS ONE*.

PROFESSIONAL TRAINING

November 2015 *Isotope Tracers in Metabolic Research: Principles and Practice of Kinetic Analysis 8th Annual Course.*

- Weeklong course that provided training in the design, execution, and analysis of metabolomic studies that use isotope markers.
- Topics: differences between different mass isotopomers (e.g., stable and radioactive isotopes), applications of mass isotopomers in addressing different questions (e.g., pathway regulation, pathway discovery, and metabolic flux), and potential pitfalls in experiments using isotope markers.
- Hosted by the Mouse Metabolic Phenotyping Center Consortium in Cleveland, OH.

September 2014 *International Summer Sessions in Metabolomics.*

- Two-week course that provided training in the design, execution, and analysis of metabolomic studies.
- Topics: selection of optimal platform for experimental question (e.g., GC-MS, LC-MS, and NMR), preparation of samples, analysis of metabolomics data, and potential pitfalls in metabolomics experiments.
- Hosted by the West Coast Metabolomics Center at University of California – Davis.

June 2014 *Phylogenomics Symposium and Software School.*

- Received training and hands-on experience in new software tools designed to address large datasets produced by Next Generation Sequencing (e.g., ASTRAL).
- Hosted by University of Texas and Society for Systematic Biology.

October 2013 Hands-on Workshop: *Differential Gene Expression using RNA-Seq.*

- Received training in differential gene expression analyses using Illumina reads.
- Hosted by Bioinformatics Core, Purdue University.

September 2013 Hands-on Workshop: *Basic UNIX for Biologists.*

- Received training in basics of using UNIX: basic UNIX commands, file manipulation techniques, and running programs/submitting jobs on a computing cluster.

- Hosted by Bioinformatics Core, Purdue University.
- May 2013** *Workshop in Next Generation Sequencing (WiNGS).*
- Received training in visualization and analysis of high-throughput data from genomics and metabolomics.
 - Hosted by Department of Bioinformatics and Genomics, UNC Charlotte.

PROFESSIONAL ORGANIZATIONS

International Metabolomics Society
Genetics Society of America
Society for the Study of Evolution
Entomological Society of America

PERSONAL REFERENCES

- Dr. Laura Reed:** Associate Professor (Postdoctoral Advisor), Department of Biological Sciences, University of Alabama, P.O. Box 870344, Tuscaloosa, AL 35487-0344, phone: (205) 348-1345, lreed1@ua.edu
- Dr. Kelly Dyer:** Associate Professor (Collaborator), Department of Genetics, University of Georgia, Life Sciences Building, 120 Green Street, Athens, GA 30602-7223, phone: (706) 542-3154, kdye@uga.edu
- Dr. Marc Branham:** Associate Professor (Ph.D. Advisor), Department of Entomology and Nematology, University of Florida, Natural Area Drive, P.O. Box 110620, Gainesville, FL 32611-0620, phone: (352) 273-3915, marcbran@ufl.edu