Seth M. Bybee

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CURRENT POSITION

Asst. Prof.	2012-present	Brigham Young University Provo UT	Department of Biology

EDUCATION

Postdoc	2010-2012 Advisor:	Brigham Young University Keith A. Crandall	Vision transcriptomes/ Phylogenomics
Postdoc	2009 Advisor:	University of California-Irvine Adriana D. Briscoe	Insect vision/ Behavioral ecology
Ph.D.	2005-2008 (4 years) Advisor:	University of Florida Marc A. Branham	Entomology/ Molecular systematics
B.A.	2004 Major Professor:	Brigham Young University Michael F. Whiting	Conservation Biology

HONORS

2010 **-Snodgrass Memorial Research Award**, national award for outstanding dissertation research in insect systematics/evolution, Entomological Foundation of America

2009-10 -**Postdoctoral Fellow Faculty Institute for Reforming Science Teaching**, National Science Foundation

2008 -**Graduate Student Mentor**, Howard Hughes Medical Institute

2007 -**Graduate Student Scholarship**, Florida Entomological Society ($500)

2006 -**President's Prize for Best Student Paper runner-up**, National Meetings of the Entomological Society of America.
-**Stan Beck Fellowship**, Entomological Foundation/ Entomological Society of America ($1,100)

2005 -**Honorable Mention, NSF Graduate Student Fellowship**
-**Gahan Scholarship**, Department of Entomology and Nematology, University of Florida
-**Photography Award**, Microptics Inc.

2004 -**BioQuip Undergraduate Scholarship**, Entomological Foundation ($2,000)

2003 -**Stan Beck Fellowship**, Entomological Foundation/Entomological Society of America ($2,000)

2003 -**President's Prize for Best Student Paper runner-up**, National Meetings of the Entomological Society of America.

GRANTS AWARDED

2013 -**NSF DEB.** *Phylogenomics, classification and visual system evolution of the dragonflies and damselflies (Odonata: Insecta),* IOS-1265714. 02/2013-01/2018. (PIs: S. Bybee, M. Whiting, M. Clement and A. Nel, $778,416)

-David M. Kennedy Center Faculty Travel Award. *Establishing conservation baselines and providing taxonomic training to locals in some of the most isolated forests on earth*. (PI: S. Bybee, $5,000).

2012 -**David O. McKay Grant**, Assessing the importance of accurate LDS doctrine in the classroom: undergraduate perceptions of evolution (PIs: S. Bybee & J. Jensen, $20,000)

-**Roger & Victoria Sant Grant for the Education of a Sustainable Environment**, *Establishing Conservation Baselines and Priorities for Land above the LDS Temple in Laie, Hawaii: In Search of the Giant Hawaiian Dragonfly*. (PIs: M. Whiting & S. Bybee, $9,500)

2011 -**Franklin Research Grant**, Insect Visual Transcriptomics, American Philosophical Society ($12,000)

2010 -**NSF EAGER Award**, *Developing genomic tools for integrative biology research*, Senior Collaborator (PIs T. Oakley & K. Crandall, $300,000)

2009 -**UC MEXUS Postdoctoral research grant**, University of California Institute for Mexico and the United States ($1,500; declined)

2008 -**Doctoral Dissertation Improvement Grant (DEB 0807979)**, National Science Foundation ($11,900)

-Howard Hughes Medical Institute Grant, G.A.T.O.R University of Florida. ($1,000)

-**Undergraduate Mentorship Grant,** Howard Hughes Medical Institute ($3,500)

-**Dean of Research Graduate Student Travel Grant**, University of Florida ($600)

-**IFAS/CALS Graduate Student Travel Grant**, University of Florida ($250)

2007 -**Exploration Fund Grant**, The Explorer's Club ($1,200)

-**Systematic Research Fund**, the Systematics Association and the Linnean Society of London ($2,300)

-**IFAS/CALS Graduate Student Travel Grant**, University of Florida ($250)

-**Entomology and Nematology Travel Grant**, University of Florida ($400)

2006 -**Graduate Student Award for Systematic Research**, Society of Systematic Biologists ($1,400)

2006 -**IFAS/CALS Graduate Student Travel Grant**, University of Florida ($250)
-**Entomology and Nematology Travel Grant**, University of Florida ($400)

2005 -**IFAS/CALS Graduate Student Travel Grant**, University of Florida ($250)
-**Entomology and Nematology Travel Grant**, University of Florida ($400)

2004 -**Original Research and Creative Activities Research Grant**, BYU ($1,800)
-**Travel Award**, BYU, Department of Integrative Biology ($350)

2003 -**Research Experience for Undergraduates**, Whiting laboratory of Insect Genomics ($3,500)
-**Travel Award**, BYU of Integrative Biology ($350)

2002 -**Original Research and Creative Activities Research Grant**, BYU ($1,500)
-**Travel Award**, BYU, Department of Integrative Biology ($350)

PUBLICATIONS

Ware, J. and **S.M. Bybee.** 2013. Where do we go from here? The status of Odonata Systematics. (Accepted in November 2013).

Dijkstra, K.-D.B., G. Bechly**, S.M. Bybee,** R.A. Dow, H.J. Dumont, G. Fleck, R.W. Garrison, M. Hämäläinen, V.J. Kalkman, H. Karube, M.L. May, A.G. Orr, D. Paulson, A.C. Rehn, G. Theischinger, J.W.H. Trueman, J. van Tol, N. von Ellenrieder & J. Ware. 2013. The classification and diversity of dragonflies and damselflies (Odonata). In: Zhang, Z.-Q. (Editor). Animal biodiversity: An outline of higher-level classification and survey of taxonomic richness. *Zootaxa*. 3703(1): 036-045 *Partial Cover Page*

Bybee, S.M., F. Yuan, M.D. Ramstetter*, J. Llorente Bousquets , R.D. Reed, D. Osorio, A.D. Briscoe. 2012. UV photoreceptors and UV-yellow wing pigments in *Heliconius* butterflies allow a color signal to serve both mimicry and intraspecific communication. *The American Naturalist*. 179: 38-51

Bybee, S.M., K.K. Johnson*, E.J. Gering, M.F. Whiting, K.A. Crandall. 2012. All the better to see you with: A review of odonate color vision and transcriptomic insight into the odonate eye. *Organisms Diversity and Evolution*. 12: 241-250.

Ingley, S.J.*, **S.M. Bybee,** M.A. Branham, M.F. Whiting. Wings, evolution and oviposition: Phylogenetics of the helicopter damselflies (Odonata: Pseudostigmatidae). *Zoologica scripta*. 41(6): 637-650.

Bybee, S.M., H. Bracken-Grissom, B. Haynes*, R. Hermansen*, R. Byers, M. Clement, E. Wilcox, J. Udall, K.A. Crandall. 2011. Targeted amplicon sequencing (TAS): A scalable next-gen approach to multi-locus, multi-taxa phylogenetics. *Genome Biology and Evolution*. doi: 10.1093/gbe/evr106

Bybee, S.M., H. Bracken-Grissom, R. Hermansen*, M. Clement. K.A. Crandall, D. Felder. 2011. Directed next generation sequencing for phylogenetics: An example using Decapoda. *Zoologischer Anzeiger*. 250(4): 4796-506

Edwards, T.M., B. Smith, D.L. Watts, C.C. Germain-Aubrey, A.M. Roark, **S.M. Bybee,** C.E. Cox, H.J. Hamlin, L.J. Guillette. 2011. Group-Advantage Training of Research (GATOR): Metamorphosis of mentorship. *BioScience*. 61(4): 301-311

Capa, M., D.R. Bybee, **S.M. Bybee**. 2010. Establishing species and species boundaries for Sabellastarte Krøyer, 1856 (Sabellidae: Annelida): an integrative approach. *Organisms Diversity and Evolution* 10(5): 351-371

Briscoe, A.D., **S.M. Bybee**, G. Bernard, F. Yuan, M. Sison-Mangus, R. Reed, A. Warren, J. Llorente-Bousquets, C.C. Chiao. 2010. Positive selection of a duplicated ultraviolet-sensitive visual pigment coincides with wing pigment evolution in *Heliconius* butterflies. *Proceedings of the National Academy of Sciences*. USA 107: 3628-3633

Briscoe, A.D., **S.M. Bybee**, G. Bernard, F. Yuan, M. Sison-Mangus, R. Reed, A. Warren, J. Llorente-Bousquets, C.C. Chiao. 2010. Reply to Nozawa et al.: Complementary statistical methods support positive selection of a duplicated UV opsin gene in *Heliconis*. *Proceedings of the National Academy of Sciences*. USA 107:E97

Bybee, S.M., J.M. Zaspel, K.A. Beuke, C.H. Scott, M.A. Branham. 2010. Is molecular data supplanting morphological data in modern phylogenetic studies? *Systematic Entomology*. 35: 2-5 *Among most downloaded papers of 2010*

Nel, A., G. Fleck, R. Garrouste, J. Japeyrie, **S.M. Bybee,** J. Prokop. 2009. Revision of Permo-Carboniferous griffenflies (Insecta: Odonatoptera: Meganisoptera) based upon new species and redescription of selected poorly known taxa from Eurasia. *Palaeontographica Abteilung A-Palaozoologie-Stratigraphie*. 289 (4-6): 89-121

Bybee, S.M., T.H. Ogden, M.A. Branham, M.F. Whiting. 2008. Molecules, Morphology and Fossils: A Comprehensive Approach to Odonate Phylogeny and the Evolution of the Odonate Wing. *Cladistics*. 24: 477-514

Bybee, S.M. and K.J. Tennessen. 2008. Description of the female and nymph of *Philogenia mangosisa* from southern Ecuador (Odonata: Megapodagrionidae). *Zootaxa*. 1787: 63-68

Bybee, S.M. and M.A. Branham. 2008. Scanning rocks for data. *American Entomologist*. 54(2): 214-217.

Bybee, S.M. Phylogenetics. 2008. *In*: Capinera, J.L. *Encyclopedia of Entomology*. 2nd ed. Kluwer Academic Press. 2863-2868

Nearns, G.H., M.A. Branham, **S.M. Bybee**. 2006. Cerambycidae (Coleoptera) types of the Fernando de Zayas collection, Havana, Cuba. *Zootaxa*. 1270: 1-17

Bybee S. (August 2005). Dragonflies and Damselflies (Insecta: Odonata). *UF/IFAS Featured Creatures*. EENY-355. http://edis.ifas.ufl.edu/IN632
http://creatures.ifas.ufl.edu/misc/odonata/odonata_french.htm
http://creatures.ifas.ufl.edu/misc/odonata/odonata_spanish.htm

Bybee, S.M.*, S.D. Taylor*, C.R. Nelson, M.F. Whiting. 2004. A Phylogeny of Robber Flies (Diptera:Asilidae) at the Subfamilial Level: Molecular Evidence. *Molecular Phylogenetics and Evolution*. 30(3): 789-797

Publications In revision, Submitted or Manuscript form:

Speiser, D., K. Zigler, A. Rivera, M. Porter, S. Pankey, **S.M. Bybee**, B. Battelle, J. Breinholt, S. Zaharoff, K.A. Crandall, T. Oakley. Phylogenetically-informed annotation (PIA) of transcriptome sequence data. *BMC Biology. Manuscript form*

Bybee, S.M., H. Wightman, D. Morris*, K. K. Johnson*, B. Buckman. An Updated Phylogeny of Odonata: Thinking forward to define, approach, and solve the current problems in odonate higher-level phylogeny. *Molecular Phylogenetics & Evolution, Manuscript form*

Martin, G., M.A. Branham, **S.M. Bybee.** A review of color vision in a bioluminescent, sexual signaling, terrestrial animal (Lampyridea): transcriptomic data and what it adds. *Annual Review of Entomology, Manuscript form*

Manwaring, K.F., M.F. Whiting, **S.M. Bybee.** What colors can a panorpid see? *Molecular Biology and Evolution, Manuscript form*

Bybee, S.M., H. Bracken-Grissom, A. Clover*, M.L. Porter, Leo Bercal, A. Buckner, R. Wetzner, T. Oakley, M.F. Whiting, K.A. Crandall. Phylogeny of Pancrustacea: pulling together the usual suspects from traditional and next-gen sequencing for a comprehensive phylogenetic estimate. *BMC Biology. Manuscript form*

Mugleston, J., H. Song, S.M. Bybee, M.F. Whiting. Ancestral form of the katydid wing and common patterns of diversification toward leaf-like wings across Orthoptera. *Plos One. Manuscript Form*

INVITED PRESENTATIONS

Bybee, S.M. (2013) Towards the final tree. International Congress of Odonataology, Freising, Germany

Bybee, S.M. (2013) Thinking forward: defining, approaching, and solving the current Problems in odonate higher level phylogeny using next generation techniques. International Congress of Odonataology, Freising, Germany

Bybee, S.M. (2012) Evolution of wings, color and color vision in butterflies & dragonflies. Eastern Connecticut State University, Willimantic CT.

Bybee, S.M. (2011) Evolution of wings, color and color vision (Odonata & Heliconiinae). Smithsonian Institute, Washington D.C.

Bybee, S.M. (2010) Mixing Fossils with Modern Phylogenetics: An example from an ancient winged insect group. Northeastern Symposium on Evolutionary Divergence Time. Rutgers University at New Brunswick

Bybee, S.M. (2009) The evolution of complex characters in insects: wings, color and vision. Section of Integrative Biology, University of Texas at Austin

Bybee, S.M., M.A. Branham. (2007) Fossil imaging: Much more than scratches on rocks. *In*: Symposium: From Field to Screen: Digital Imaging Technology in Entomology. Annual meeting of the Entomological Society of America

Bybee, S.M. (2007) Fossilized Behavior: Holodonata. University of Florida Department of Entomology and Nematology

Bybee, S.M., T. H, Ogden, M. F. Whiting. (2004) Odonate Phylogeny: a preliminary molecular estimate. University of Florida, Department of Entomology and Nematology

PRESENTATIONS

Wightman, H.C., **S.M. Bybee**, M.F. Whiting, D. Morris*. (Nov. 2013). Past, present and future: phylogeny of *Odonata.* Annual meeting of the Entomological Society of America

Aira, M. J. Olcina, P. Cabezas, **S.M. Bybee,** M. Perez-Losada, J. Dominguez. (July 2013) Is there a "core" bacteriome in the earthworm *Eisenia andrei*? Annual meeting of the Society of Evolution.

Martin, G.J., M. Swindle*, M.A. Branham, M.F. Whiting, **S.M. Bybee**. (July 2013)
A phylogeny of Lampyridae with insight into firefly visual system evolution. Annual meeting of the Society of Evolution.

Manwaring, K., **S.M Bybee,** J. Jensen. (July 2013). Evolutionary Theory vs. Religious Doctrine: A case study demonstrating that misconceptions about religious doctrines may be limiting student engagement towards evolution. Annual meeting of the Society of Evolution.

Morris, D.J.*, K.K. Johnson*, **S.M. Bybee**. (July 2013). Ordering Odonata: Current and Future Directions of Odonate Phylogeny. Annual meeting of the Society of Evolution.

Johnson, K.K.*, Y. Pacheco*, D. Houston, S. Jordan, R. Englund, M.F. Whiting, **S.M. Bybee.** (July 2013). Exploring the genetic structure within and among populations of the endemic giant Hawaiian dragonfly Anax strenuus. Annual meeting of the Society of Evolution.

Naegle, M.A*., **S.M. Bybee**, J. Mugleston, C. Girod, M.F. Whiting. (July 2013) Deciphering Dermapteran Ectoparasitic Evolution. Annual meeting of the Society of Evolution.

*Johnson, K.K., M.F. Whiting, **S.M. Bybee** (Nov 2012). Eyeing the evolution of Odonate color vision. Student Competition for Undergraduates, Annual meeting of the Entomological Society of America

Martin, G.J., **S.M. Bybee**, M.F. Whiting, M.A. Branham (Nov 2012). Using novel loci to form a preliminary phylogeny of fireflies (Coleoptera: Lampyridae). Annual meeting of the Entomological Society of America

Louton, J.E., M.A. Branham, **S.M. Bybee** (Nov 2012) A phylogeny of Hetaerina Hagen (Odonata: Calopterygidae) based on morphological data with an examination of potential correlated evolution between sexually selected characters. Annual meeting of the Entomological Society of America

Manwaring, K.F., M.F. Whiting, **S.M. Bybee** (Nov 2012) Ancient eyes and scorpionflies: Evolution of panorpid visual systems (Mecoptera:Panorpidae). Annual meeting of the Entomological Society of America

Bybee, S.M. (Nov 2011) Odonata phylogenetics: where are we and where should we go? Symposium on Odonata, annual meeting, Entomological Society of America

Fager, K., M.F. Whiting, **S.M. Bybee** (Nov 2011) An investigation of the opsin gene complex in scorpionflies (Mecoptera:Panorpidae). Annual meeting of the Entomological Society of America

Johnson, K.K.*, **S.M. Bybee**, M.F. Whiting. (Nov 2011) The evolution of color vision in

dragonflies and damseflies (Odonata). Annual meeting of the Entomological Society of America

Bybee, S.M., S.E. Seeley*, M.A. Branham, M.F. Whiting, K.A. Crandall. (December 2010) Phylogenty of Holodonata: Can DNA inform more than 300 million years of morphology? Contributed paper, annual meeting of the Entomological Society of America

Bybee, S.M., R. Hermansen*, H. Bracken-Grissom, M. Porter, L. Blanco-Bercial, T.Oakley, R.Wetzer, A.C. Bucklin, M.F. Whiting, K.A. Crandall. (June 2010) Novel methods with the usual suspects provides interesting results: pancrustacean phylogeny. Oral presentation at the national meetings of the Evolution Society.

Ingley, S.J.*, **S.M. Bybee**, M.A. Branham, M.F. Whiting. (January 2010) Life on the Fly: Evolution and Ecology of the Endangered Helicopter Damselflies (Odonata: Pseudostigmatidae). Oral Presentation at the national meetings of the Society of Integrative and Comparative Biology.

Ingley, S.J.*, **S.M. Bybee**, M.A. Branham. (March 2009) Wings, Oviposition and Spider-Feeding: Evolution and Ecology of the Endangered Helicopter Damselflies (Odonata: Pseudostigmatidae). Oral presentation Southeastern Ecology and Evolution Conference **Undergraduate first author*

Bybee, S.M., J.M. Zaspel, K.A. Beuke, C.H. Scott, M.A. Branham. (Nov. 2008). Is molecular data supplanting morphological data in modern phylogenetic studies? poster presentation (student competition) annual meeting of the Entomological Society of America.

Ingley, S.J.*, **S.M. Bybee**, M.A. Branham. (Nov. 2008). Wings, evolution and oviposition: Phylogenetics of the helicopter damselflies (Odonata: Pseudostigmatidae). Oral presentation (student competition) annual meeting of the Entomological Society of America. **Undergraduate first author*

Fogarty, F.M.*, **S.M. Bybee**, M.A. Branham. (Nov. 2008). Phylogenetic relationships of Central and South American flatwing damselfies (Odonata: Zygoptera: Megapodagrionidae): An examination of monophyly in a convoluted group. poster presentation (student competition) annual meeting of the Entomological Society of America. **Undergraduate first author*

Bybee, S.M., M.A. Branham. (Dec. 2007). Fossil imaging: Much more than scratches on rocks. *In*: Symposium: From Field to Screen: Digital Imaging Technology in Entomology. Annual meeting of the Entomological Society of America.

Bybee, S.M., M.A. Branham, A.C. Rehn, M. F. Whiting. 2006. *Winging-it through the ages: What fossils tell us about the evolution of flight in Odonata*. Oral presentation (student competition) annual meeting of the Entomological Society of America

Bybee, S.M., M.A. Branham, A.C. Rehn, M. F. Whiting. 2006. *Toward a Phylogeny of Holodonata: getting down and dirty with the fossil record and missing data*. IFAS, Collage of Agriculture and Life Sciences Graduate Research Symposium, University of Florida

Bybee, S.M., M.A. Branham, A.C. Rehn, M. F. Whiting. 2005. *Toward a Phylogeny of Holodonata: getting down and dirty with the fossil record and missing data*. Oral

presentation (student competition) annual meeting of the Entomological Society of America

Bybee, S.M.*, T. H, Ogden, A.C. Rehn, M. F. Whiting. 2004. *Odonate Phylogeny: morphological and molecular evidence*. Oral presentation (student competition) annual meeting of the Entomological Society of America

Bybee, S.M.*, T. H, Ogden, M. F. Whiting. 2004. *Odonate Phylogeny: molecular evidence*. Oral presentation, annual meetings of the Dragonfly Society of the Americas

Bybee, S.M.*, T. H, Ogden, M. F. Whiting. 2003. *Odonate Phylogeny: a preliminary molecular estimate*. Oral presentation (student competition) annual meeting of the Entomological Society of America

Bybee, S.M.*, T. H, Ogden, M. F. Whiting. 2003. *Odonate Phylogeny: a preliminary molecular estimate*. Oral presentation (student competition) annual meeting of the Willi Hennig Society

Ogden, T.H., **S.M. Bybee*,** M. F. Whiting. 2003. *Odonate Phylogeny: molecular evidence*. Oral presentation, annual meetings of the Dragonfly Society of the Americas

Taylor, S.D.*, **S.M. Bybee***, C. R. Nelson, M. F. Whiting. 2003. *A phylogeny of robber flies (Diptera: Asilidae) at the subfamilial level: molecular evidence*. Oral presentation (student competition) annual meeting of the Willi Hennig Society

Taylor, S.D.*, **S. M. Bybee***, C. R. Nelson, and M. F. Whiting. 2002. *Phylogeny of Robber Flies (Diptera: Asilidae): Preliminary Molecular Analysis*. Poster presentation (student competition) annual meetings of the Entomological Society of America

EMPLOYMENT & RESEARCH EXPERIENCE

2005-2008	**Gahan Teaching Scholarship**, Department of Entomology and Nematology, University of Florida
2005-Present	**Research Associate**, Florida State Collection of Arthropods
2004	**Research Associate & Laboratory Manager**, Whiting Laboratory of Insect Genomics, BYU
2004	**Research Experience for Undergraduates**, BYU, Whiting laboratory of Insect Genomics
2002-2004	**Molecular Lab Technician/Research Assistants**, Whiting Laboratory of Insect Genomics BYU, Dept. of Integrative Biology, BYU
2002	**Field Research Assistant**, Dr. Jerrant T. Flinders, BYU
1997-1998	**Research Assistant,** Dr. Clayton White, BYU
1996	**Fisheries Field Technician**, Department of Wildlife Resources, Juneau, Alaska

RELEVANT SKILLS

Molecular:

-Targeted Amplicon Sequencing/metagenomics (454 pyrosequencing)
-Transcriptomics of visual tissues (454 & Illumina)
-RNA extraction, cDNA synthesis, cloning
-DNA extraction, PCR, sequencing reactions, DNA sequencing, primer design

Morphological/Phenotypic:
-Measurement and analysis of colors (reflectance spectra)
-Fossil digital imaging and data basing
-Morphological homology assessment and coding

Bioinformatics/Molecular Phylogenetics:
-Next-gen data manipulation (e.g., transcritpome assembly, quality control, gene homology, targeted amplicon filtering and sorting)
-DNA contig assembly, sequence editing and alignment, DNA sequence analysis
-DNA analysis software: (e.g., Galaxy, PAUP, MrBayes, TNT, RAxML)
-Comparative methods/Tests of selection: (e.g., Mesquite, MacClade)

Language:
-French, near native speech and writing skills.

WORKSHOPS ATTENDED/TAUGHT

2013	NESCent workshop contributor (June 2013) Generation and Analysis of High-Throughput Sequencing Data for Phylogenetics and Phylogeography. Transcriptomics & RAD-seq data generation and analysis, Raleigh, North Carolina.
2012	MSU/NIH Next-Gen Sequence Analysis Workshop, Kellogg Biology Field Station, MI.
2009 & 2010	FIRST IV, Teaching workshop, National Science Foundation, Oregon Institute of Marine Biology, Coos Bay, OR.
2007	IFAS Grantsmanship Training Workshop, University of Florida
2006	First Annual Gator/Seminole Phylogenetics Chomp n' Chop Symposium, Cedar Key, FL.
2005	Workshop in Phylogenetic Systematics, The Ohio State University, Columbus, OH.

TEACHING

Instructor, Brigham Young University
-Biology 100 (for non-majors), Fall 2011 & 2013; Winter 2012 & 2013.

Co-Instructor, Brigham Young University:
-**Evolution**, Spring 2010

Teaching Assistant, University of Florida:

-**Behavioral Ecology and Systematics of Insects**, Spring 2005 & 2007
-**Insect Classification**, Spring 2005
-**Immature Insects**, Summer 2005-2007

ONLINE TEACHING MATERIALS

Branham M.A. and **S.M. Bybee**. Tutorials on Evolution (TOE): Patterns of Relatedness
http://branhamlab.com/default.asp?action=show_tutorial

The purpose for developing the "Tutorial on Evolution" (TOE) is to provide a self-guided tutorial for non-scientists to learn about the process of evolution through examples generated from real biological studies. At this stage the TOE is focused on three specific areas: (1) phylogeny, (2) descent with modification and (3) extinction. The TOE will use dragonfly and damselfly examples to explore these three areas in order to demonstrate how this lineage of organisms has been shaped by evolutionary processes. Tutorials are presented in two formats, an online version and a PDF version to facilitate flexibility for classroom use. The Phylogeny Tutorial (Tutorial #1) presents both concepts and terminology that will be built upon in the subsequent tutorials.

POSTDOCTORAL SCHOLAR MENTORSHIP/ RESEARCH ADVISOR

Nathan Lord, Ph.D. University of New Mexico
Derek Houston, Ph.D. University of Nevada Las Vegas
Patricia Cabezas, Ph.D. University of Vigo

GRADUATE MENTORSHIP/ RESEARCH ADVISOR

Haley Wightman, Ph.D. Student, Department of Biology, Brigham Young University
Aton Suvorov, Ph.D. Student, Department of Biology, Brigham Young University
Jessica Louton, Ph.D. Student, Department of Entomology and Nematology, University of Florida
Perry Wood, Ph.D. Student, Department of Biology, Brigham Young University
Derek Tucker, Ph.D. Student, Department of Biology, Brigham Young University
Gavin Martin, M.S. Student, Department of Biology, Brigham Young University
Katie Manwaring, Ph.D. Student, Department of Biology, Brigham Young University
Rebecca Buckman, M.S. Student, Department of Biology, Brigham Young University

UNDERGRADUATE & GRADUATE MENTORSHIP/ RESEARCH ADVISOR

Brooke Viiga, Department of Physiology and Developmental Biology, Brigham Young University
Yelena Pacheco, Department of Biology, Brigham Young University
Mike Swindle, Department of Biology, Brigham Young University
Preston Arnold, Department of Biochemistery, Brigham Young University
Dasom Kim, Department of Plant and Wildlife Sciences, Brigham Young University
Kelsy Kaihilei Johnson, Department of Physics, Brigham Young University

Robert Beck, Department of Biology, Brigham Young University
Holly Waddel, Department of Biology, Brigham Young University
Alan Clover, Department of Computer Science, Brigham Young University
Benjamin Haynes, Department of Computer Science, Brigham Young University
Sarah Seeley, Department of Geology, Brigham Young University
Jouber Calixto, Department of Biology, Brigham Young University
Russel Hermansen, Department of Computer Science & Molecular Biology, BYU
Monica Ramstetter, Department of Mathematics, University of California-Irvine
Spencer Ingley*, Department of Wildlife Ecology and Conservation, University of Florida *NSF GRFP recipient
Frank Fogarty, Department of Zoology, University of Florida
Montana Atwater, Department of Wildlife Ecology and Conservation, University of Florida
Mark Goodman, Department of Integrative Biology, Brigham Young University
Jonathan Osborn, Department of Integrative Biology, Brigham Young University
Daniel Fenn, Department of Integrative Biology, Brigham Young University
Matt Moulton, Department of Integrative Biology, Brigham Young University
Marc Terry, Department of Integrative Biology, Brigham Young University
Adam Hojberg, Department of Integrative Biology, Brigham Young University
Charity Garza, Department of Integrative Biology, Brigham Young University

FIELDWORK

Domestic:

2013	**New Mexico**, BYU, Insect Fieldwork
2013	**Arizona**, BYU, Insect Fieldwork
2002-04, 2010-13	**Utah,** BYU, Whiting Laboratory, Insect fieldwork
2004-2008	**Florida,** UF, Branham Laboratory, Insect fieldwork
2006, 2013	**Texas**, UF, Branham Laboratory, Insect fieldwork
2003	**Iowa,** BYU, Whiting Laboratory, Insect fieldwork

International:

2013	**Vietnam,** BYU, Insect fieldwork (Anticipated, September 2-17, 2013)
2013	**Rwanda**, BYU, Insect fieldwork
2011	**Peru**, BYU, Crandal Laboratory, Insect fieldwork
2006 & 2009	**Ecuador**, UF, Branham Laboratory, Insect fieldwork
2006	**Cuba**, UF, Branham Laboratory, Museum research
2005	**South Africa**, BYU, Whiting Laboratory, Insect fieldwork
2004	**Bolivia,** BYU, Whiting Laboratory, Insect fieldwork
2003	**Malaysia, Sabah**, BYU, Whiting Laboratory, Insect fieldwork
1995	**Costa Rica,** BYU, Monte L. Bean Museum, Insect fieldwork

MUSEUM COLLECTIONS STUDIED

2010-2011	**The Monte L. Bean Museum,** Brigham Young University, Provo, Utah

2009	**Staatliches Museum fur Naturkunde**, (Fossil Holodonata in amber), Stuttgart, Germany
2008	**Le Museum National d'Histoire Naturelle**, (Fossil Holodonata) Paris, France
2007	**The Natural History Museum** (Fossil Holodonata and extant Pseudostigmatidae), London, England.
	Палеонтологический институт (Paleontological Institute of Russian Academy of Sciences), Moscow, Russia
2006	**Instituto de Ecologia y Systematica**, Havana, Cuba
	Fernando de Zayas Collection (Private), Havana, Cuba
2005	**Museum of Comparative Zoology** (Fossil Holodonata), Harvard University Cambridge, Massachusetts
2004-2009	**International Odonata Research Institute,** Florida State Collection of Arthropods, Gainesville, Florida

PROFESSIONAL SERVICE

2013	**NESCent workshop contributor**, Generation and Analysis of High-Throughput Sequencing Data for Phylogenetics and Phylogeography. Transcriptomics & RAD-seq data generation and analysis, Raleigh, North Carolina.
2011	**Symposium** Organizer, An overlooked insect group. Dragonflies and damselflies (Odonata), model organisms for systematics, ecology and evolutionary biology studies, Entomological Society of America
2007-2008	**Chair, Departmental Seminar Speaker Committee Member**, Department of Entomology and Nematology, University of Florida
2006-2008	Board of Directors for the Center of Systematic Entomology, *Elected member*, Gainesville, Florida
2006	**CALS Teaching and Advising Awards committee;** university- wide Doctoral Dissertation Advisor/Mentoring Award
2005-2008	**Departmental Seminar Speaker Committee Member**, Department of Entomology and Nematology, University of Florida

REVIEWER FOR THE FOLLOWING JOURNALS & GRANTING AGENCIES

National Science Foundation
National Geographic Society
Systematic Biology
Molecular Biology and Evolution
Molecular Phylogenetics and Evolution
Journal of Biogeography
Molecular Ecology Resources
Biological Journal of the Linnean Society
Palaeodiversity
PloS ONE
GeoBios
Entomological Science
Zoologica Scripta
Acta Ethologica
Acta Biomaterialia
Organisms, Diversity and Evolution
Zootaxa
Insecta Mundi
Journal of Paleontology
Journal of Natural History

African journal of Biotechnology
Acta Ethologica
Systematic Entomology
International Journal of Odonatology
Molecular Ecology Resources

POPULAR NEWS MEDIA INTERVIEWS AND/OR PUBLISHED PHOTOGRAPHS

BBC Nature
BBC Natural History Unit
BYU Magazine
BYU Radio
Science Daily
St. Petersburg Times
Lab Spaces
Miami Harold
Daily Universe
Deseret News
Daily Harold
Pinellas News
Palm Beach Post
Palm Beach Post Radio

VOLUNTEER WORK & OUTREACH ACTIVITIES

2006-2008	-**Student Volunteer,** National meeting of the Entomological Society of America
2005-2008	-**International Odonata Research Institute**, Florida State Collection of Arthropods
	-**Departmental Outreach**, Florida State Fair, University of Florida
	-**Hurricane Katrina Disaster Relief**, Gulf Port, Mississippi
	-**Student Volunteer**, National meeting of the Entomological Society of America
	-**Student Volunteer**, Entomological Collections Network Meeting
2003-2004	-**Mentored High School students**, insect collection and curation
	-**Student Volunteer**, National meeting of the Entomological Society of America
2002	-**Utah Olympic Games**, First Responder, American Red Cross
	-**Student Volunteer**, National meeting of the Entomological Society of America
2001-2002	-**First Responder**, American Red Cross
2000-2002	-**Foreign Language Teacher**, Church of Jesus Christ of Latter-Day Saints
1998-2000	-**Missionary**, LDS Church, Marseille, France

EXTRACURRICULAR ACTIVITIES

2007-present	Florida Entomological Society, member
2006-present	Center for Systematic Research, member
2005-present	Society of Systematic Biologists, member
2002-Present	Entomological Society of America, member
2006-2008	Willi Hennig Society, member
2000-2001	French Club, BYU, member
1997	Eagle Scout
1996-1998	Bred and raised exotic pheasants and other birds
1996-Present	Scuba diving, Surfing, and Travel