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FIELDS OF EXPERTISE

Evolutionary Developmental Biology, Structure-Function Relationships, Maternal Effects, Physiology, Systematics, Taxonomy, Natural History Collections, Botany, Bryology (mosses), Science Communication.

ACADEMIC APPOINTMENTS

August 2016 - Present: **Assistant Professor & Herbarium Director**, Univ. of Tennessee, Knoxville, TN

June - July 2016: **Research Assistant Professor**, University of Tennessee, Knoxville, TN

POSTDOCTORAL EXPERIENCE

2013 - 2016: **Katherine Esau Postdoctoral Research Fellow**, University of California - Davis

2011 - 2012: **Postdoctoral Researcher**, University of Connecticut, Storrs, CT

EDUCATION

2011 **Ph.D. Ecology and Evolutionary Biology**, University of Connecticut, Storrs, CT

2005 **M.S. Botany**, University of Connecticut, Storrs, CT

2003 **B.S. Botany**, Miami University, Oxford, OH

PUBLICATIONS

Lewis RA, **Budke JM**. *In prep*. Bryophyte herbarium organization and storage systems: A survey of staff practices and user preferences. *The Bryologist* 000:000-000.

Patel NR, **Budke JM**. *In prep*. Morphological evolution of the Fissidentaceae. *Molecular Phylogenetics and Evolution* 000:000-000.

Whitaker KR*, **Budke JM**. *In review*. Moss sporophyte transpiration rates are higher when calyptra are removed. *Evansia* 000:000-000. (*undergraduate student collaborator)

Peer Reviewed (22)

2020 Benoit AD**, Oliver MG, Vichich RJ*, **Budke JM**. Noteworthy Collections: First record of the non-native plant *Portulaca amilis* (Portulacaceae) in Tennessee. *Castanea* 85: 343-347. (**graduate student collaborator, *undergraduate student collaborator)

2020 Bainard JD, Newmaster SG, **Budke JM**. Genome size and endopolyploidy evolution across the moss phylogeny. *Annals of Botany* 125: 543-555. (Editor's Choice – Bryophyte Highlight)

2019 Patel NR, Fawcett S, Sundue MA, **Budke JM**. Evolution of Perine Morphology in Thelypteridaceae. *International Journal of Plant Sciences* 180: 1016-1035.

2019 **Budke JM**. The moss calyptra: A maternal structure influencing offspring development. *The Bryologist* 122: 471-491. (Featured on the cover: Volume 122, Issue 3.)

2018 Miller CN**, Brabazon H, Ware IM**, Kingsley NH*, **Budke JM**. Bringing an historic collection into the modern era: curating the J. K. Underwood seed collection at the University of Tennessee Herbarium (TENN). *Collection Forum* 32: 14-30. (**graduate student collaborator, *undergraduate student collaborator)

- 2018 Korotkin HB, Swenie RA, Miettinen O, **Budke JM**, Chen K, Lutzoni F, Smith ME, Matheny PB. Stable isotope analyses reveal previously unknown trophic mode diversity in the Hymenochaetales. *American Journal of Botany* 105: 1869-1887.
- 2016 **Budke JM**, Goffinet B. Comparative cuticle development reveals taller sporophytes are covered by thicker calyptra cuticles in mosses. *Frontiers in Plant Science* 7: 832.
- 2016 Busta L, **Budke JM**, Jetter R. The moss *Funaria hygrometrica* has cuticular wax similar to vascular plants, with distinct composition on leafy gametophyte, calyptra and sporophyte capsule surfaces. *Annals of Botany* 118: 511-522.
- 2016 Busta L, **Budke JM**, Jetter R. Identification of β -hydroxy fatty acid esters and primary, secondary-alkanediol esters in cuticular waxes of the moss *Funaria hygrometrica*. *Phytochemistry* 121: 38-49.
- 2016 Ranjan A¹, **Budke JM**¹, Rowland SD¹, Chitwood DH, Kumar R, Ichihashi Y, Zumstein K, Maloof JN, Sinha NR. eQTL regulating Transcript Levels Associated with Diverse Biological Processes in Tomato. *Plant Physiology* 172: 328-340. (¹ equal co-first authors)
- 2013 **Budke JM**, Goffinet B, Jones CS. Dehydration protection provided by a maternal cuticle improves offspring fitness in the moss *Funaria hygrometrica*. *Annals of Botany* 111: 781-789.
- 2013 Liu Y, Forrest LL, Bainard JD, **Budke JM**, Goffinet B. Organellar genome, nuclear ribosomal DNA repeat unit, and microsatellites isolated from a small-scale of 454 GS FLX sequencing on two mosses. *Molecular Phylogenetics and Evolution* 66: 1089-1094.
- 2012 Wynne MA*, **Budke JM**. Examining the ability of calyptrae to produce protonema in *Funaria hygrometrica*. *Evansia* 29: 61-64. (* undergraduate student collaborator)
- 2012 **Budke JM**, Goffinet B, Jones CS. The cuticle on the gametophyte calyptra matures before the sporophyte cuticle in the moss *Funaria hygrometrica* (Funariaceae). *American Journal of Botany* 99: 14-22. (Winner of the 2013 Grady L. Webster Publication Award.)
- 2012 Liu Y, **Budke JM**, Goffinet B. Phylogenetic inference rejects sporophyte based classification of the Funariaceae (Bryophyta): rapid radiation suggests rampant homoplasy in sporophyte evolution. *Molecular Phylogenetics and Evolution* 62: 130-145.
- 2011 **Budke JM**, Goffinet B, Jones CS. A hundred-year-old question: is the moss calyptra covered by a cuticle? A case study of *Funaria hygrometrica*. *Annals of Botany* 107: 1259-1277.
- 2011 Goffinet B, **Budke JM**, Newman LC*. Micromitriaceae: A new family of highly reduced mosses. *Taxon* 60: 1245-1254. (* undergraduate student collaborator)
- 2011 Wickett NJ, Forrest LL, **Budke JM**, Shaw B, Goffinet B. Frequent pseudogenization and loss of the plastid-encoded, sulfate transport gene *cysA* throughout the evolution of liverworts. *American Journal of Botany* 98: 1263-1275.
- 2009 Larraín J, Herrera F, **Budke JM**, Goffinet B. Phylogenetic affinities and conservation status of the Chilean endemic *Costesia spongiosa* (Bryophyta: Gigaspermaceae). *The Bryologist* 112: 279-286.
- 2007 **Budke JM**, Jones CS, Goffinet B. Development of the enigmatic peristome of *Timmia megapolitana* (Timmiaceae; Bryophyta). *American Journal of Botany* 94: 460-467.
- 2006 **Budke JM**, Goffinet B. Phylogenetic analysis of Timmiaceae (Bryophyta: Musci) based on nuclear and chloroplast sequence data. *Systematic Botany* 31: 633-641.
- 2005 **Budke JM**, Hickey RJ, Heafner KD. Analysis of morphological and anatomical characteristics of *Isoetes* using *Isoetes tennesseensis*. *Brittonia* 57: 167-182.
- 2003 Luebke NT, **Budke JM**. *Isoetes tennesseensis* (Isoëtaceae), an Octoploid Quillwort from Tennessee. *American Fern Journal* 93: 184-190.

Invited Reviews

- 2020 Oliver MG, **Budke JM**. Featured Herbarium: University of Tennessee, Knoxville Herbarium – TENN (U.S.A.). *The Vasculum* 15(2):20-27.
- 2018 **Budke JM**, Bernard EC, Gray DJ, Huttunen S, Piechulla B, Trigiano RN. Introduction to the Special Issue on Bryophytes. *Critical Reviews in Plant Sciences* 37:102-112.
- 2013 **Budke JM**. Common Mosses of the Northeast and Appalachians. *Plant Science Bulletin* 59(3): 131-132.

Point of View

- 2015 **Budke JM**. Postdocs: Improving our Visibility in the Research Workforce. *Plant Science Bulletin* 61(2): 40-44.
- 2014 Cain B¹, **Budke JM**¹, Wood KJ, Sweeney NT, Schwessinger B. How postdocs benefit from building a union. *eLife* 3: e05614. (¹ equal co-first authors)

RESEARCH FUNDING

- 2021-present **NSF CAREER DEB-2046467, Systematics & Biodiversity Sciences** - Integrating natural history collections to explore the functional morphology and evolution of the parent-offspring conflict in mosses. **Budke JM**. (\$1,441,660)
- 2020-present **NSF Digitization TCN DBI-2001500** - Collaborative: *Building a global consortium of bryophytes and lichens: keystones of cryptobiotic communities (GLOBAL)*. Twenty-five collaborating institutions. **Lead PI: Budke JM**. (\$3,684,610 total, \$609,365 to UTK)
- 2017 Technology Fee Funding Award for Teaching Microscopes, Univ. of Tenn. (\$49,490)
- 2009 International Association of Bryologists: Stanley Greene Award (\$1,100)
Botanical Society of America: Graduate Student Research Award (\$500)
American Microscopical Society: Graduate Student Research Award (\$700)
Henry N. Andrews Endowment Fund: University of Connecticut EEB (\$1,000)
- 2007 Ronald Bamford Endowment Fund: University of Connecticut EEB (\$800)
- 2006 Ronald Bamford Endowment Fund: University of Connecticut EEB (\$1,100)
- 2004 Ronald Bamford Endowment Fund: University of Connecticut EEB (\$1,275)
- 2002 Academic Challenge Fund: Miami University Botany (\$1,030)
W. S. Turrell Travel Grant: MU Herbarium, #181 *co-author C. Craig* (\$1,319)
- 2001 W. S. Turrell Travel Grant: MU Herbarium, #179 *co-author K. Gustafson* (\$695)

FELLOWSHIPS

- 2013 Katherine Esau Postdoctoral Research Fellowship, Univ. of Calif. – Davis (\$151,181)
- 2011 Graduate Summer Research Fellowship, Univ. of Conn. Graduate School (\$2,274)
- 2010 Doctoral Dissertation Fellowship Award, Univ. of Conn. Graduate School (\$2,000)
- 2008 East Asia Pacific Summer Institute Fellowship - EAPSI, NSF (\$10,000)
NIBB, Okazaki, Japan - *Hosts: Dr. M. Hasebe and Dr. Y. Hiwatashi*

AWARDS

- 2020 Faculty Academic Outreach Teaching Award, College of Arts & Sciences, UTK

- 2014 Postdoctoral Scholar Association Travel Award to International Association of Bryology World Conference in Cape Horn Biosphere Reserve, Chile (\$400)
- 2013 Grady L. Webster Structural Botany Publication Award - "For the most outstanding paper published in the *American Journal of Botany* in the field of structural and developmental botany over the two-year period prior to the award year." (\$1,000)
- 2011 Vernon I. Cheadle Student Travel Award, Botanical Society of America (\$500)
- 2010 Katherine Esau Award for the Best Student Paper in Developmental & Structural Botany, Botanical Society of America: *Beneath the calyptra's veil: Exploring cuticle anatomy during moss sporophyte development* (\$500)
- 2010 Developmental & Structural Section Student Travel Award, BSA (\$150)
- 2007 Conant Botanical Images Student Travel Award: Second Place (\$250)
- 2005 Graduate Research Fellowship, National Science Foundation: Honorable Mention
- 2003 Young Botanist Award, Botanical Society of America: Special Achievement
Outstanding Woman Senior in Science, Engineering, and Technology, Miami Valley Association for Women in Science (AWIS)

COLLABORATIONS

N.R. Patel (U of Connecticut) – Fissidentaceae systematics & morphological evolution.
 R.A. Lewis (HWS Colleges) & P. Raposo (U of Twente) – Bryophyte herbarium organization & storage.
 L. Busta (U of Minnesota Duluth), K. Mocko (CSU Fullerton) & M. Staton (UTIA) – Moss water relations.
 J.C. Brinda (Missouri Botanical Garden) – Relationships between North American & Asian *Bryocrumia*.
 G. Harrison (Appalachian State University) & E. Shershen (UTK) – Bryophyte & cliff ecology, M.S. project

SCIENTIFIC CONSULTING

***Calyptra - Video Installation* by the artist Elitsa Ganeva, from Veliko Tarnovo, Bulgaria.**

Shown at the 2017 Nakanojo Biennale art festival in Japan.

<http://www.elitsaganeva.com/calyptranakanojobiennale.html>

SOFTWARE & COMPUTATIONAL SKILLS

R (statistical computing & graphics) – MrBayes – Garli – RaxML – Mesquite – Geneious – DNA Subway

RESEARCH EXPERIENCE

2015 – 2016: Curatorial Assistant, University of California – Davis, JM Tucker & B Crampton Herbaria
 - **Identifying bryophyte collections of ecologist Dr. Jack Major from AK, CA, CO, OR, & UT.**
 - **Identifying moss collections of KM Stevenson from the Center for Ecological Health Research's plant diversity surveys of the Lake Tahoe Basin, CA.**

2015, Spring: mRNAseq workshop for non-model organisms, University of California – Davis
Denovo transcriptome assembly on the Amazon Cloud.

2014, Summer: DNA Subway Workshop at the Botany 2014 annual meeting, Boise, ID
Genomics, DNA barcoding, and RNA-seq. Bringing cutting-edge biology into the classroom.

2009 – 2011: Research Assistant, University of Connecticut
Culturing Funariaceae for DNA extraction and morphological character scoring.
 NSF Grant, B. Goffinet and C. S. Jones: Reduction and reversal in the Funariaceae

2008, Summer: Laboratory Workshop on *Physcomitrella patens*, NIBB, Okazaki, Japan
Developmental processes, gene targeting, bioimaging, and bioinformatics.

2008, Spring: *Physcomitrella* Genome Workshop, University of Freiburg, Germany
Sequence analysis using the *Physcomitrella* genome browser and BLAST tools.

2007, Spring: Research Assistant, University of Connecticut
Surveying for the presence/absence of *cysA* and *cysT* across liverworts.
 NSF Grant (ATOL), B. Goffinet: Assembling the Liverwort Tree of Life

2004, Summer: Research Assistant, University of Connecticut
Establishing a protocol to grow dung moss (*Splachnaceae*) from spore isolates.
 NSF Grant, B. Goffinet: Phylogenetic and geographic patterns in moss diversity

2002 - 2003: Dean's Scholar in the College of Arts and Science, Miami University
Screening ISSR markers to examine population genetics in *Isoetes canadensis*.
 Advisors: Dr. Linda E. Watson and Dr. R. James Hickey

2002, Summer: Howard Hughes Internship, Miami University
Using PCR to isolate a single copy gene (*cycloidea*) across the *Asteraceae*.
 Advisor: Dr. Linda E. Watson

UNDERGRADUATE STUDENT MENTORING

University of Tennessee, Knoxville

Budke Laboratory

Identifying moss collections from the GSMNP in collaboration with PhD student Eric Shershen.

Susanna Diamond - Major: Biology; Concentration: EEB	Sept 2020 – Present
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Examining maternal-offspring interactions in mosses.

Julian Broughton - Major: Biology; Concentration: Undeclared	Sept 2020 – Present
Amy Okafor - Major: Biology; Concentration: Undeclared	Sept 2020 – Present
Haddy Salem - Major: Biology; Concentration: Undeclared	Sept 2020 – Present
Abygale Dixon - Major: Biology; Concentration: Microbiology	Sept 2020 – Present
Nathan Pace - Major: Biology; Concentration: EEB	Sept 2019 – Present

2020 Awarded Summer Undergraduate Research Internship Program funding

Katherine Whitaker - Major: Biology; Concentration: EEB	Aug 2018 – Present
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*Using herbarium specimens for molecular phylogenetic analyses of *Fissidentaceae* mosses.*

Daniel Kirk - Major: Biology; Concentration: BCMB	Jan 2018 – May 2019
Victoria Beard - Major: Biology; Concentration: Microbiology	Sept 2017 – Dec 2018
Chelsea Carr - Major: Art History	May 2018 – Aug 2018
Nathan Kingsley - Major: Biology; Concentration: EEB	Jan 2017 – Jan 2018

Subsequently: Research Support Specialist, Lyon Arboretum, University of Hawai'i

Sarah Wike - B.S. Catawaba College, Post-bac in EEB at UTK	Jan 2017 – Apr 2017
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TENN Herbarium Curation Technicians & Interns

30 students trained in databasing & curating plant biodiversity specimens. Fall 2016 – Present
 Spring 2018 - Team of nine students curated Dr. Marie Hicks Liverwort collection.
 Spring 2017 - Team of five students reorganized moss collection of 150,000 specimens.

University of California, Davis

4 students trained in molecular & developmental biology pf mosses.	Feb 2013 – Dec 2015
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PLANTS Program - Botanical Society of America (Preparing Leaders and Nurturing Tomorrow's Scientists: Enhancing Diversity in Plant Science), Junior Mentor – 2012

University of Connecticut

7 students trained in molecular systematics, microscopy, and sterile culture. Jan 2008 – Dec 2012

GRADUATE STUDENT SUPERVISION

Eric Shershen, Ph.D. student - *Exploring moss ecophysiology and conservation.* Aug 2019 – Present

Alex Aromin, M.S. student - *Studying calyptra cuticle anatomy in mosses.* Aug 2018 – Present

GRADUATE STUDENT COMMITTEE MEMBER

Alex Faidiga, Ph.D. student - *Exploring pollination biology in Viola.* Apr 2020 – Present

Harmony Yomai, Ph.D. student - *Breeding systems of flowering plants in Chuuk.* Aug 2016 – Present

Margaurete Romero, Ph.D. student - *Exploring grad student scientific outreach.* May 2018 – Dec 2019

Hailee Korotkin, M.S. student - *Stable isotopes, phylogenetics, and experimental data indicate a unique nutritional mode for Rickenella fibula, a bryophyte-associate in the Hymenochaetales.* Aug 2016 – Jul 2017

POSTDOCTORAL RESEARCHER SUPERVISION

Dr. Nikisha R. Patel - *Analyzing spore morphological evolution in ferns and generating preliminary moss physiology data for grant applications.* Feb – Dec 2018

INVITED PRESENTATIONS

- 2020 Seminar – Department of Plant Sciences, Univ. of Tennessee
- 2019 Paul Burton Seminar Series – Department of Biology, Western Carolina University
- 2018 Seminar – Department of Biology, University of Florida
- 2016 Ronneberg Lecture Series Seminar – Department of Biology, Denison University
- 2016 Seminar – Department of Plant Biology, University of Minnesota
- 2016 Seminar – Department of Ecology and Evolutionary Biology, Univ. of Tennessee
- 2016 Seminar – Department of Biology, University of West Georgia
- 2015 Lester Newman Seminar Series – Department of Biology, Portland State University
- 2013 Postdoctoral Research Seminar Series – University of California, Davis
- 2008 Connecticut Outdoor Environmental Education Association Annual Conference
Miniature Mosses Workshop: Teaching environmental educators how to integrate moss biology into their outdoor education programs.

CONFERENCE PRESENTATIONS (Presenting author underlined)

- 2020 Whitaker K, **Budke JM**. Exploring sporophyte transpiration rates in mosses. Botanical Society of America (BSA) Annual Meeting. **Honorable Mention for A.J. Sharp Award**
- 2020 **Budke JM**, Oliver MG. TENN Herbarium Excursions to Evaluate Historic Populations of Seedless Plants. Tennessee Plant Conservation Alliance Annual Meeting.
- 2019 **Budke JM**, Patel NR, Wienhold MD. Exploring relationships in the moss genus *Fissidens* using molecular data generated from herbarium specimens. BSA Annual Meeting. **Invited colloquium speaker**
- 2018 **Budke JM**, Wienhold MD. Exploring relationships in the moss genus *Fissidens* using molecular data generated from herbarium specimens. American Bryological and Lichenological Society (ABLS) Annual Meeting

- 2018 Patel NR, Fawcett S, Sundue MA, **Budke JM**. A Phylogenetic Perspective on Perispore Morphology of Thelypteridaceae. BSA Annual Meeting
- 2016 Medina R, Johnson M, Liu Y, **Budke JM**, Wilding N, Hedderson T, Wickett N, Goffinet B. Zooming in on the rapid radiation of the Funariaceae. BSA Annual Meeting
- 2015 **Budke JM**. Comparative cuticle development in morphologically divergent mosses of the Funariaceae. BSA Annual Meeting
- 2015 Busta L, **Budke JM**, Jetter R. Cuticular waxes from the gametophyte, sporophyte, and calyptra of the moss *Funaria hygrometrica*. BSA Annual Meeting
- 2015 **Budke JM**, Busta L, Jones CS, Goffinet B. Beneath the veil of the calyptra: exploring cuticle anatomy during moss sporophyte development in the Funariaceae. International Association of Bryologists Conference
- 2013 Busta L, **Budke JM**, Jetter R. Cuticular Waxes from the Gametophyte, Sporophyte, and Calyptra of the Moss *Funaria hygrometrica*. Phytochemical Society of North America Annual Meeting (**Awarded Best Student Presentation**)
- 2013 Liu Y, Medina R, Wilding N, **Budke JM**, Hedderson T, Goffinet B. The evolutionary history of *Physcomitrella patens*: phylogenetic inferences from 4 loci within the Funariidae. BSA Annual Meeting
- 2012 **Budke JM**, Jones CS, Goffinet B. Sporophyte development and calyptra cuticle function in *Funaria hygrometrica*. MOSS 2012
- 2012 Goffinet B, Liu Y, Wilding N, **Budke JM**. Phylogenetic inferences in the Funariaceae: inferences from 10 versus 4 loci. 3rd International Symposium on Molecular Systematics of Bryophytes
- 2011 **Budke JM**, Goffinet B, Jones CS. Experimental manipulation of the moss calyptra: The effect of cuticle removal and desiccation on sporophyte development in *Funaria hygrometrica*. BSA Annual Meeting
- 2011 Liu Y, **Budke JM**, Goffinet B. Phylogenetic inference rejects sporophyte-based classification of the Funariaceae (Bryophyta): a rapid radiation suggests rampant homoplasy in sporophyte evolution. BSA Annual Meeting
- 2011 Liu Y, **Budke JM**, Goffinet B. Phylogenetic inference suggests rampant homoplasy in sporophyte evolution in the Funariaceae. MOSS 2011
- 2010 **Budke JM**. Examining the gametophytic calyptra and its role in moss sporophyte development using the cord moss (*Funaria hygrometrica*). Society for Integrative and Comparative Biology Annual Meeting
- 2010 **Budke JM**, Goffinet B, Jones CS. Beneath the calyptra's veil: Exploring cuticle anatomy during moss sporophyte development. BSA Annual Meeting
- 2010 Liu Y, **Budke JM**, Goffinet B. Phylogenetic relationships of *Physcomitrella* and other Funariaceae based on inferences from 10 genes. BSA Annual Meeting
- 2007 **Budke JM**, Wickett NJ, Goffinet B. Multiple losses of the *cysA* gene from the chloroplast genome of liverworts (Marchantiophyta). BSA Annual Meeting
- 2006 **Budke JM**, Goffinet B. Phylogenetic analyses of Timmiaceae (Bryophyta: Musci) inferred from nuclear and chloroplast sequence data. BSA Annual Meeting

- 2005 **Budke JM**, Jones CS, Goffinet B. Peristome development in *Timmia megapolitana* in relation to systematics and evolution of the Bryophyta. BSA Annual Meeting
- 2004 **Budke JM**. Peristome development in *Timmia megapolitana*. Northeast Ecology and Evolution Conference
- 2003 **Budke JM**, Hickey RJ, Heafner KD. Morphological characterization of North America's first octoploid *Isoetes*. BSA Annual Meeting
- 2003 **Hickey RJ**, **Budke JM**. 2003. The sella and its derivatives in *Isoetes*. BSA Annual Meeting
- 2002 **Budke JM**, Hickey RJ, Heafner KD. Morphological characterization of North America's first octoploid quillwort. Association of Southeastern Biologists Annual Meeting

TEACHING

Assistant Professor: *University of Tennessee – Knoxville*

- EEB 330/602 – Field Botany Falls, 2017 – Present
- EEB 496/607 – Natural History Collections Research, Seminar Falls, 2018 – Present

Adjunct Lecturer: *University of California - Davis*

- Everybody Eats: Investigating Biological Threats to your Favorite Foods Fall 2014 & Spring 2015
Designed and taught an original course as instructor of record for ACCESS-R.
A UC Davis program to improve retention of first-generation to college and students from underrepresented groups in the sciences. Team-taught with Dr. H. Atamian, Spring 2015.
Awarded a \$500 mini-grant for supplies, both quarters.

Guest Lectures

University of Tennessee – Knoxville

- Theory & Methods in EEB – Topic: Analyzing Scientific Research Spring 2020
- Introductory Plant Biology – Topic: Plant Biodiversity Collections Fall 2016 & 2017
- Wildlife, Vegetation, and Habitat – Topic: Plant Biodiversity Collections Fall 2016
- Field Botany – Topic: Plant Biodiversity Collections Fall 2016

University of California - Davis

- Graduate Seminar – Topic: Preparing for the NSF GRFP Fall 2014 & 2015
- Graduate Course in Plant Development – Topic: Moss Developmental Genetics Winter 2015
- iAMSTEM summer orientation program – Topic: Science Communication Summer 2014

Western Connecticut State University, Biological and Environmental Sciences

- Genetics – Topic: Transformation of Non-Model Species Spring 2014

University of Connecticut, Cooperative Extension Center, Master Gardener Program

- Biology and Identification of Mosses and Liverworts Oct 2012

University of Connecticut, Ecology and Evolutionary Biology

- The Summer Flora – Topic: Bryophytes, Summer 2011; Plant Anatomy – Topic: Shoot apical meristems, Fall 2010; Bryology and Lichenology – Topic: Morphogenesis, Spring 2006.

TRAINING IN EDUCATION

Virtual Vol Bootcamp, Online Education Workshop

Summer 2020

University of Tennessee – Knoxville, Teaching & Learning Innovation & the Office of the Provost

“Mobile” Summer Institutes (MoSI) on Undergrad STEM Education Workshop

May 13-16, 2019

University of Tennessee – Knoxville, Division of Biology, Biological Sciences Teaching and Learning

College Teaching Seminar

Winter 2014

University of California - Davis, Center for Excellence in Teaching and Learning

TEACHING MATERIALS

Peer reviewed brochure to teach plant biology concepts to students using mosses.

Swanson J, **Budke JM**, and Goffinet B. 2012. A visit to the miniature forest: insights into the biology and evolution of bryophytes in Northeastern Connecticut. Available through the *PlantED Digital Library*.

Peer reviewed laboratory exercises to teach the concept of chemical competition in plants.

Swanson J, **Budke JM**, and Goffinet B. 2012. Chemical competition in plants using the moss *Sphagnum*. *PlantED Digital Library*. <http://planted.botany.org/> Featured in the *Plant Science Bulletin* 60(4): 198, 2014.

Moss Culturing Protocol for high school teacher workshop at MOSS 2012 conference.

Mosses and the Plant Life Cycle by LE Parker*, **JM Budke**, and B Goffinet. (* undergraduate collaborator)

Biology Textbook Image - Invited

Scanning electron micrograph of moss peristome teeth by **JM Budke**, in *Introduction to Plant Biology*, 4th-6th editions by JD Mauseth, non-vascular plants chapter.

FIELD BOTANY EXPERIENCE

Botanical Outreach

Spring Wildflower Pilgrimage Springs 2016 – 2019

Great Smoky Mountains National Park: Fern and Moss Walk Leader

Outdoor Presentations on Mosses (12 total) and Ferns (1) Summers 2005 – 2012

Leading botanical explorations at local nature centers and state parks in Connecticut.

Connecticut Bioblitz Summers 2005, 2007, 2009

24-hour biological survey of a park with scientists, students, and the public.

All Taxa Biodiversity Inventory (ATBI) Summers 2001 – 2003

Great Smoky Mountains National Park: Fern Foray Participant

Plant Collection Trips

Herbarium Excursions sponsored by the Breedlove, Dennis Fund at the TENN Herbarium

Hiwassee River, Polk Co., Tennessee, USA Two weekends in Aug & Sept 2019

Evaluating populations of the TN endemic *Isoetes tennesseensis* with M Oliver, undergraduate students (J Huntoon, H Law, A Raney, R Vichich), and volunteer L Davis.

Rock Island State Park Tennessee, USA May 18, 2019

Searching a historical collection site for extant populations of the moss

Palamocladium leskeoides with K McFarland, M Oliver, T Crabtree, R Harpe (undergrad).

Multiple locations in North & South Carolina near Lake Jocassee, USA Dec 19-22, 2016

Searching for extant populations of *Bryocrumia* mosses with J C Brinda & K McFarland.

Multiple locations in eastern Kansas and central Missouri, USA Mar 12-16, 2012

Collecting developing sporophytes of ephemeral mosses with B Allen & J Atwood.

Limestone Rise Nature Preserve, Knox, New York, USA 2004 – 2005

Visited every two weeks to collect phenology data for the moss *Timmia megapolitana*.

Vermont, New York, USA & Quebec, Canada Oct 19-28, 2003

Collecting *Timmia megapolitana* for systematic analyses of the Timmiaceae.

PowWow Pond, East Kingston, New Hampshire, USA May 3-8 & Jun 27-29, 2002

Collecting *Isoetes canadensis* for population genetic analysis with M Barker & C Craig.

Hiwassee River, Polk Co., Tennessee, USA Three weekends in Jun & Jul 2001

Collecting new species of aquatic quillwort *Isoetes tennesseensis* Luebke & Budke
with P Cox, J Shaw, E Lickey, K Gustafson, & K Heafner.

Bryology Forays

SoBeFree: Spring Outing; Botanical Excursion; Foray, Retreat, & Escape to the Environment
Multiple sites across California 2014, 2015, & 2016

A. Leroy Andrews Foray, Woodstock Valley, Connecticut Sept 18-20, 2009
Blomquist Foray, Haywood County, North Carolina Oct 4-6, 2002

Field Course Participation

Ecotourism with a Hand Lens in the Cape Horn Biosphere Reserve Jan 10, 2015
Tropical Ferns and Lycophytes, Organization for Tropical Studies Jan 10-23, 2008
Tropical Flora of the Bahamas, Miami University May 11-23, 2002

PUBLIC AND COMMUNITY OUTREACH

SciComm Celebration Day at Botany 2020 July 27, 2020
Featured science communicator for Moss Plants and More blog and @UTKHerbarium outreach.

Outside/In – A Podcast from New Hampshire Public Radio May 21, 2020
Featured guest expert for *Mold and Moss* episode - <http://outsideinradio.org/shows/moldandmoss>

Knoxville Botanical Garden – Presentation on Mysterious Mosses 2019 – 2020
Once to twice annual evening talk to the public about moss plant biology.

Expanding Your Horizons STEM Activity Day Nov 9, 2019
Plant specimen mounting activity at the TENN Herbarium for ~45, 5th-8th grade girls.

Moss Plants and More: Commentary on All Things Bryological Oct 2007 – May 2016
Monthly updated online bryology blog. Communicating science to the public.
<http://mossplants.fieldofscience.com>
Featured in Plant Cuttings: News in Botany. *Annals of Botany* 10: iv-vi, 2012.
On Twitter @MossPlants = 1,594 followers

University of Tennessee Science Forum Sept 30, 2016
Talking to the public about biodiversity collections and herbaria.

University of California – Davis, Biodiversity Museum Day Feb 13, 2016
In collaboration with four undergraduate students, we led members of the public through four hands-on activities exploring mosses using herbarium specimens.

Kindergarten class at American Lakes School, Sacramento, California Apr 10, 2014
In collaboration with S. Komar, we designed and led students through two hands-on classroom activities exploring the relationships between plant structures & functions.

Discovery Museum Science & Space Center – Volunteer with AWIS Feb 22, 2014
Helping families navigate activities about dinosaurs, fossils, rocks, and crystals.

PROFESSIONAL SERVICE

Manuscript Reviewer: *American Fern Journal, American Journal of Botany, Annals of Botany, Biological Invasions, Castanea, Cryptogamie-Bryologie, Frontiers in Plant Science, Herzogia, Journal of Biogeography, Journal of Bryology, New Phytologist, Plant Biology, Plant Cell, Plant Physiology, Protoplasma, The Bryologist.*

Panel Discussion Participant:

Postdoctoral Fellowship Writing: Learning from Colleagues

Feb 25, 2014

Sponsored by the postdoc union (UAW 5810) at the University of California - Davis

Service:

2020 - Present Botanical Society of America, Cheadle Award Committee: Chair
2020 - Present Botanical Society of America, Developmental and Structural Section: Chair
2020 Social Media Team Member for the SPNHC/NATHIST Virtual Conference
2019 - Present Society of Herbarium Curators: Member-at-Large
2018 - Present Tennessee Rare Plant Scientific Advisory Committee: Voting Member
2017 - 2018 Proposal Review (panel and ad hoc): NSF & American Society of Plant Taxonomists
2013 - 2019 American Bryological and Lichenological Society: Member-at-Large
2017 Prince Claus Fund for Culture and Development in the Netherlands, Reviewer
2019 - 2020 Judging Committee - ASPT Graduate Student Awards
2016 & 2018 Judging Committee - A. J. Sharp Award, Am. Bryological and Lichenological Society
2015 - 2016 Postdoctoral Union - UAW 5810: Sergeant-At-Arms, Executive Board Member
2015 Judging Committee - Grady L. Webster Award, Botanical Society of America
2013 - 2015 Judging Committee - Esau Award (Chair in 2015), BSA Conference

Member: Association for Women in Science, American Fern Society, American Society of Plant Taxonomists, American Bryological and Lichenological Society, Botanical Society of America, International Association for Plant Taxonomy, International Association of Bryologists, Microscopy Society of America, Society for the Preservation of Natural History Collections, Society of Herbarium Curators, Tennessee Native Plant Society.