

# JACKIE E. SHAY

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## EDUCATION

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- Doctor of Philosophy** 2016–2021  
Quantitative and Systems Biology: Ecology and Evolutionary Biology  
*University of California, Merced*  
Advised by Dr. A. Carolin Frank & Dr. Jason P. Sexton  
Dissertation title: Adaptation, symbiosis, and performance in response to change: Lessons from monkeyflowers, microbiomes, and microbiology.
- Master of Science** 2012–2016  
Ecology, Evolution, and Conservation Biology  
*San Francisco State University*  
Advised by Dr. Dennis E. Desjardin  
Thesis title: Biodiversity and phylogeny of *Marasmius* (Basidiomycota, Agaricales) from Madagascar
- Bachelor of Science** 2005–2009  
Biological Sciences: Molecular and Cellular Biology  
*University of California, Merced*

## PUBLICATIONS

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- Shay, JE**, Pohan, C (2021) Resilient Instructional Strategies: Helping Students Cope and Thrive in Crisis. *Journal of Microbiology and Biology Education*. (in press)
- Shay, JE**, Solis, R, García-Ojeda, ME (2020) Tackling real-world environmental paper pollution: a problem-based microbiology lesson about carbon assimilation. *Frontiers in Microbiology* 11: 588918. doi: 10.3389/fmicb.2020.588918
- Wang Z, Ho H, Egan R, Yao S, Kang D, Froula J, Sevim V, Schulz F, **Shay JE**, Macklin D, McCue K, Orsini R, Barich DJ, Sedlacek CJ, Li W, Morgan-Kiss RM, Woyke T, Sloncsewski JL (2019) A new method for rapid genome classification, clustering, visualization, and novel taxa discovery from metagenome. *bioRxiv*. doi.org/10.1101/812917
- Grace CL, Desjardin DE, Perry BA, **Shay JE** (2019) The genus *Marasmius* (Basidiomycota, Agaricales, Marasmiaceae) from Republic of São Tomé and Príncipe, West Africa. *Phytotaxa* 414(2): 055–104. doi.org/10.11646/phytotaxa.414.2.1
- Frank AC, Saldierna Guzmán JP, **Shay JE** (2017). Transmission of Bacterial Endophytes. *Microorganisms* 5(4): 70. doi:10.3390/microorganisms5040070
- Desjardin DE, Perry BA, **Shay JE**, Newman DS, Randrianjohany E (2017) The Type species of *Tetrapyrgos* and *Campanella* (Basidiomycota, Agaricales) are redescribed and epitypified. *Mycosphere* 8(8): 977–985. doi 10.5943/mycosphere/8/8/1
- Sexton JP, Montiel J, **Shay J**, Stephens M, & Slatyer R (2017). Evolution of Ecological Niche Breadth. *Annual Review of Ecology, Evolution, and Systematics* 48(1): 183-206. doi.org/10.1146/annurev-ecolsys-110316-023003
- Shay JE**, Desjardin DE, Grace CL, Perry BA, Grace CL, Newman DS “Biodiversity and Phylogeny of *Marasmius* (Basidiomycota, Agaricales) from Madagascar.” (2017) *Phytotaxa* 292(2): 101–149. doi.org/10.11646/phytotaxa.292.2.1

## EMPLOYMENT & PROFESSIONAL EXPERIENCE

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### **Associate Director, Center for Engaged Teaching and Learning** 2020–present

*University of California, Merced*

- Design and implement new programs in professional development in pedagogy and effective communication practices
- Collaborate with campus partners to foster a culture of learning and teaching
- Develop and deliver services and programs including orientations for new hires, workshops on course design and assessment, and inclusive teaching strategies
- Serve as a contact for individual instructors seeking advice on matters related to teaching, including creating hybrid and/or online courses, individual faculty coaching, and effective delivery of class material

### **Graduate Student Researcher, Co-Instructor, and Teaching Assistant** 2016–present

*University of California, Merced*

- Investigating the endophytic communities of native endemic flowering plants in light of drought from climate change using molecular, bioinformatics, and field-based techniques
- Co-creating course learning outcomes and curriculum for flipped/hybrid course environments
- Facilitating engaging active learning strategies in microbiology and general biology classes
- Responsible for lab safety in two labs as dual lab safety coordinator
- Mentor to four underrepresented undergraduate student women in science

### **Graduate Student Researcher, Harry D. Thiers Herbarium Assistant Curator, and Teaching Assistant** 2012–2016

*San Francisco State University*

- Studied systematics and phylogeny of wood-decomposing fungi from tropics using molecular, morphological, and field-based techniques
- Performed herbarium curating duties including accessioning, labeling, digitizing, organizing, and confirming stored specimens
- Taught botany, biology, and active learning strategies with mostly first and second year students

### **Youth Development and Health Educator** 2010–2012

*Peace Corps, Demnat and Tiznit, Morocco, Africa*

- Built peer health education program with local nurses and teacher
- Established and maintained volunteer support network
- Created and demonstrated engaging hygiene education course for local schools

### **Undergraduate Teaching Assistant for Evolution and Biology Tutor** 2005–2009

*University of California, Merced*

- Facilitated small group discussions in anatomy, genetics, evolution, and biology
- Co-authored student tutor teaching manual with learning staff
- Developed course curriculum and materials with faculty advisors

## FUNDING

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2020	UC Merced Academic Senate Faculty Research Grant; Sexton & Frank (\$10,000)
2019	Sonoma Count Mycological Society Graduate Scholarship (\$1,500)
2019	Northern California Botanist Research Scholarship (\$1,000)
2019	Southern California Edison Fellowship (\$13,065)
2018	Sonoma County Mycological Society Graduate Scholarship (\$2,500)

- 2018 Mycological Society of America Translational Research Award (\$1,250)  
 2018 California Native Plant Society Bristlecone Chapter Mary DeDecker Grant (\$1,000)  
 2016 UC Merced Quantitative and Systems Biology Recruitment Award (\$20,106)  
 2015 Sonoma County Mycological Association Graduate Scholarship (\$2,500)  
 2015 Mushrooms of Madagascar *Kickstarter* Campaign (\$7,682)  
 2014 Mycological Society of San Francisco Graduate Scholarship (\$1,000)  
 2014 SFSU College of Science and Engineering Scholarship (\$2,500)  
 2013 Robert W. Maxwell Scholarship (\$4,000)

#### HONORS & AWARDS

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- 2020 UC President's Award for Outstanding Student Leadership (Awarded to RadioBio)  
 2020 UC Merced Outstanding Teacher Award (\$1000)  
 2020 UC Merced QSB Dissertation Incentive Award (\$580)  
 2019 UC Merced Outstanding Graduate Student Leadership Award  
 2019 Northern California Botanist Symposium Poster Competition First Place Award (\$200)  
 2016 UC Merced School of Natural Sciences Dean's Relocation Award (\$400)  
 2009 UC Merced Distinguished Leadership Award  
 2007 UC Merced Distinguished Student Volunteer Award

#### INVITED TALKS & REVIEWS

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- 2020 Shay, J.E. "Symbiosis and Climate Change". *Biology Seminar*, Invited Talk, San Francisco State University, San Francisco, CA  
 2020 Shay, J.E., Brooks, L., Kaze, M., Frank, C.A., Sexton, J.P., Siström, M. "Endophyte communities in the cut-leaf monkeyflower (*Erythranthe laciniata*) respond differently to drought conditions above and belowground" *Northern California Botanist Symposium*, Invited talk and session organizer for Plant-Biotic Interactions. Chico, California.  
 2019 Invited as reviewer for the journal of Plant Systematics and Evolution  
 2019 Shay, J.E. "Fungus Among Us", Invited Talk, *Camp Trip Music Festival*, Weldon, CA  
 2019 Shay, J.E., Brooks, L., Kaze, M., Frank, C.A., Sexton, J.P., Siström, M. "Endophytes shift in response to drought in monkeyflowers (*Erythranthe laciniata*) from native soil" *Symbiosis*, Yosemite National Park, CA  
 2017 Shay, J.E., Newman, D.S., Grace, C., Perry, B.A., Desjardins, D. "Biodiversity and Phylogeny of *Marasmius* (Basidiomycota, Agaricales) from Madagascar" *Marin County Mycological Society*, CA  
 2017 Shay, J.E., Newman, D.S., Grace, C., Perry, B.A., Desjardins, D. "Biodiversity and Phylogeny of *Marasmius* (Basidiomycota, Agaricales) from Madagascar" *Mycological Society of San Francisco*, CA  
 2015 Shay, J.E. "A Mushroom Adventure Collecting in Madagascar." *Mycological Society of San Francisco*, CA

#### PRESENTATIONS & POSTERS

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- 2020 Garcia-Ojeda, M., Shay, J.E., Zimmerman, J., Schuchardt, A., Durazo, A. "Underrepresented women students close the achievement gap in a flipped class delivered in a TEAL classroom" *Society for the Advancement of Biology Education Research*, UC Irvine, CA  
 2019 Shay, J.E., Brooks, L., Kaze, M., Frank, C.A., Sexton, J.P., Siström, M. "Endophytes shift in response to drought in monkeyflowers (*Erythranthe laciniata*) from native soil" *Mycological Society of America*, Minneapolis, MN

- 2019 Shay, J.E., Brooks, L., Kaze, M., Frank, C.A., Sexton, J.P., Siström, M. “Endophytes shift in response to drought in monkeyflowers (*Erythranthe laciniata*) from native soil” *Northern California Botanists Symposium, Chico, CA*
- 2018 Shay, J.E., Pennington, L., Toews, D., Sexton, J.P. “Climate adaptation and fitness variation is greatest near the leading edge of a species range” *Climate Change: Ranges and Phenology, Ecological Society of America, New Orleans, LA*
- 2017 Shay, J.E., Newman, D.S., Grace, C., Perry, B.A., Desjardins, D. “Biodiversity and Phylogeny of *Marasmius* (Basidiomycota, Agaricales) from Madagascar” *Fungal Genetics, Asilomar, Pacific Grove, CA*
- 2016 Shay, J.E. “Do microbiomes influence host evolution?” Quantitative and Systems Biology Topics Final Project. *University of California Merced*
- 2016 Shay, J.E., Newman, D.S., Grace, C., Perry, B.A., Desjardins, D. “Biodiversity and Phylogeny of *Marasmius* (Basidiomycota, Agaricales) from Madagascar” M.Sc. Thesis Defense. *San Francisco State University*
- 2015 Shay, J.E., Newman, D.S., Desjardin, D. “A preliminary monograph of *Marasmius* (Basidiomycota, Agaricales) from Madagascar.” Conference Research Poster. *BOTANY 2015, Edmonton, Alberta, Canada*
- 2013 Shay, J.E. “Termitomyces and Macrotermitinae: Masters of Efficiency, an Exploration of Fungal Symbioses.” *San Francisco State University*
- 2013 Shay, J.E. “The Understory Story: Mycoheterotrophy of Ericacea.” *San Francisco State University*

## TECHNICAL SKILLS & WORKSHOPS

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- 2020 UC Merced Graduate Division Dissertation Boot Camp
- 2019 Regional Summer Institute on Scientific Teaching, UC San Diego
- 2019 Collaborative Institutional Training Initiative Social-Behavioral-Educational Course
- 2019 Illumina Metagenomic Sequencing Workshop, UC Merced
- 2018 Data Carpentry Workshop, UC Merced
- 2018 Introduction to Computation Workshop, UC Merced
- 2018 Botanical Illustration Workshop, California Native Plant Society Meeting
- 2017 NSF Interdisciplinary Computational Graduate Education Program, UC Merced
- 2017 Joint Genome Institute Summer Internship Program
- 2015 Science Education Partnership and Assessment Laboratory Summer Institute, SFSU
- 2015 Macro nature photography summer course, SFSU Sierra Nevada Field Campus
- 2014 Fungi of Sierra Nevada summer course, SFSU Sierra Nevada Field Campus

## TEACHING EXPERIENCE

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### General Microbiology BIO 120

Fall 2018–Spring 2020

*University of California, Merced*

- Co-instructor with resident faculty
- Developing flipped classroom curriculum and recording lecture content
- Engaging students with active learning teaching strategies both online and in-class
- Trained on Learning Glass™ technology
- Trained on Camtasia lecture video creation and editing
- Created higher order learning outcomes aligned with course goals

### CBEST Summer Bridge Program for Elementary School

Summer 2019

*University of California, Merced*

- Developed an interactive class discussing plant biology for 3<sup>rd</sup> and 4<sup>th</sup> grade students
- Worked closely with undergraduate interns to facilitate this summer class
- Shared materials for future class activities

**Contemporary Biology BIO 001** Fall 2016, 2017

*University of California, Merced*

- Guest lectured for fungal and plant sections of the course
- Facilitated weekly discussion with original activities, learning outcomes, and reviews
- Submitted dozens of activities, assessments, and review sessions for future course use

**Flora of California BIO/ESS 133** Spring 2017

*University of California, Merced*

- Guided students through plant identification, anatomy, and field trip excursions
- Demonstrated correct use of the Jepson Guide to California Flora
- Collected plant material for identification based on plant family
- Guest lectured for soil ecology and symbiosis lectures

**General Botany BIO 220** Fall 2015

*College of San Mateo*

- Co-instructed students with resident faculty
- Developed assessment based approach to active learning
- Collected and presented data from course to SEPAL Summer Institute

**Introduction to Biology II BIO 240** Spring 2014–Spring 2016

*San Francisco State University*

- Taught discussion, lab, and supplemental courses
- Assisted students in lab and discussion sections component of class
- Facilitated mini-lectures, lab activities, and discussions for deeper engagement
- Supplemented learning for a portion of students by working strictly on active learning strategies, grow mindset, and high order learning

**World of Plants BIO 150** Fall 2012–Fall 2013

*San Francisco State University*

- Guided students through lab experiments and field trips
- Created mini-lectures to pair with lab activities
- Shared materials with future teaching assistants for this course

**SERVICE & SYNERGISTIC EXPERIENCES**

**COVID-19 Emergency Remote Learning Transition Training for GTAs** 2020

*University of California, Merced*

- Developed and lead emergency remote training sessions to assist fellow graduate teaching assistants as they transition their classes to online learning
- Coordinated with campus resources to schedule and advertise trainings
- Taught 30 graduate students and 3 faculty in six different hour-long sessions
- Interviewed about increasing engagement in emergency remote learning  
<https://cetl.ucmerced.edu/node/14081>

**Session Chair for Northern California Botanist Symposium 2020 Meeting** 2020

*California State University, Chico*

- Invited by board members to chair the session
- Coordinated speakers for the *Plant-Biotic Interactions* Session
- Established a growing interest in microbe-associated plant interactions

**RadioBio Podcast** 2017–2021

*University of California, Merced*

- Pioneered RadioBio, a graduate student-led biology-themed podcast that discusses biology from molecules to ecosystems

- Develop and execute all major events associated with the RadioBio podcast including community outreach events, science showcases, and art exhibitions
- Facilitate interviews, editing, and production podcasts every two weeks

**Teaching Intern, Center for Engaged Teaching and Learning** 2017–2018

*University of California, Merced*

- Encouraged the university community to adopt active teaching strategies
- Participated in teacher training workshops to enhance my practice
- Lectured to peers on teaching strategies for large classrooms

**University Committees and Other Services**

- Executive Committee of the Quantitative Systems Biology Group 2017–2020
- Research Week Planning Committee 2017–2020
- Search Committee for the Executive Vice Chancellor and Provost 2018
- Vice President and Board Member UC Merced Alumni Association 2012–2018
- Search Committee for Dean of School of Natural Sciences 2017
- Review Board for the Office of the Vice Chancellor of Student Services 2017
- UC Merced W-STEM Member and Mentorship Program Participant 2016–2017
- Vice President and Chair of Annual Fungus Fair 2014–2017

*Mycological Society of San Francisco, San Francisco*

**Acting and Stage Presence**

- Performed in, created, or directed over a dozen plays and musicals 1999–2016
- Induction to the International Thespian Society 2004
- Meisner Technique Acting Classes 2002–2003

*The Ruskin School of Acting, Santa Monica, California*

**CURRENT PROFESSIONAL MEMBERSHIPS**

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- 2019 Society for the Advancement of Biology Education Research
- 2018 Ecological Society of America
- 2015 Mycological Society of America
- 2013 California Native Plant Society

**RESEARCH INTERESTS**

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Biodiversity | Fungi | Microbiome | Ecology | Evolution | Taxonomy | Systematics Endophytes  
 Climate Change | Herbaria | Symbiosis | Pedagogy | Graduate Student Professional Development