Curriculum Vitae — Emily S. Bellis (née Weiss)

NSF Postdoctoral Research Fellow in Biology
Department of Biology
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Education and Appointments

2019-Present	Research Assistant Professor of Bioinformatics, Arkansas State University, Jonesboro, AR
2018-2019	NSF NPGI Postdoctoral Research Fellow, Pennsylvania State University, State College, PA
2017	Postdoctoral Research Associate in Bioinformatics, Reed College, Portland, OR
2011-2017	Ph.D., Integrative Biology, Oregon State University, Corvallis, OR
2011-2016	NSF Graduate Research Fellow, Oregon State University, Corvallis, OR
2006-2010	B.S., Biochemistry and Genetics, Texas A&M University, College Station, TX

Publications

2019	L. Lopez, **E.S. Bellis,** E. Wafula, S. Hearne, L. Honaas, P. Ralph, N. Unachukwu, C.W. dePamphilis, and J.R. Lasky. Transcriptomics of host-specific interactions in natural populations of the parasitic plant *Striga hermonthica. Weed Science.*
2018	**E.S. Bellis**, R.B. Edlund, H.K. Berrios, H.A. Lessios, and D.R. Denver. Molecular signatures of host specificity linked to habitat specialization in a symbiotic sea anemone. *Ecology & Evolution* 8: 5413-5426.
2017	**E.S. Bellis** and D. R. Denver. Natural variation in responses to acute heat and cold stress in a sea anemone model system for coral bleaching. *Biological Bulletin* 233: 168-181. (Cover article).
2016	**E.S. Bellis**, D.K. Howe, and D.R. Denver. Genome-wide polymorphism and signatures of selection in the symbiotic sea anemone *Aiptasia*. *BMC Genomics* 17: 160.
2015	W.S. Phillips, A.L. Coleman-Hulbert, **E.S. Weiss**, D.K. Howe, S. Ping, R.I. Wernick, S. Estes, and D.R. Denver. Selfish mitochondrial DNA proliferates in small, but not large, experimental populations of *Caenorhabditis briggsae*. *Genome Biology and Evolution* 7: 2023-2037.
2014	A. Emblem, S. Okkenhaug, **E.S. Weiss**, D.R. Denver, B.O. Karlsen, T. Moum, and S.D. Johansen. Sea anemones possess dynamic mitogenome structures. *Molecular Phylogenetics and Evolution* 75: 184-193.

Preprints/Submitted

In revision	**E.S. Bellis,** V.L. Deleo, E.A. Kelly, C.M. Lorts, G. Rouhan, A. Budden, G.B. Bhaskara, Z. Hu, R. Muscarella, T.E. Juenger, M.P. Timko, G.P. Morris, C.W. dePamphilis, and J.R. Lasky. Genomics of sorghum local adaptation to a parasitic plant. *bioRxiv.* doi: https://doi.org/10.1101/633529
Submitted	R.M. Gutaker, S.C. Groen, **E.S. Bellis**, J.Y. Choi, I.S. Pires, R.K. Bocinsky, E. Slayton, O. Wilkins, C.C. Castillo, S. Negrao, M.M. Oliveira, D.Q. Fuller, J.A. d'Alpoim Guedes, J.R.

Lasky, and M.D. Purugganan. Genomic history and ecology of the geographic spread of rice. *bioRxiv*. doi: https://doi.org/10.1101/748178

Submitted — M. Staton, C. Addo-Quaye, [and 29 others, including **E.S. Bellis**]. The Chinese chestnut genome: a reference for species restoration. *bioRxiv*. doi: https://doi.org/10.1101/615047

Submitted — W. Zhou, **E.S. Bellis**, J. Stubblefield, J. Causey, J. Qualls, K. Walker, and X. Huang. Minor QTLs mining through the combination of GWAS and machine learning feature selection.

Fellowships and Research Grants

$207,000 — E.S. Bellis. NSF Postdoctoral Research Fellowship in Biology, Plant Genome Research Program, 2017-2020
Genomics of adaptation to agriculture in *Striga hermonthica*, a plant parasite of cereals.

$18,000 — E.S. Bellis, K. Dziedzic, N. Kirk, and E. Meyer. Coral Reef Alliance Coral Adaptation Challenge, 2016
Coral adaptation by 2100: A trait-based, evolutionary quantitative genetic approach.

$3,000 — E.S. Bellis. Smithsonian Tropical Research Institute Short Term Fellowship, 2014
Evolution and ecology of a model sea anemone mutualism in Caribbean and Pacific mangroves of Panama.

$121,500 — E.S. Bellis. NSF Graduate Research Fellowship, 2011

$30,000 — E.S. Bellis. Oregon State University Provost's Distinguished Fellowship, 2011

$75,000 — E.S. Bellis. Texas A&M University President's Endowed Scholarship, National Merit Recognition Award, Director's Excellence Award, and Non-Resident Competitive Scholarship Tuition Waiver, 2006

Awards

2019	iEvoBio "Enabling the Next Generation of Computational Biologists" Travel Award	$200
2017	OSU Paul and Mary Roberts Fellowship for the Study of Evolution	$2,500
2016	University of Washington Summer Institute in Statistical Genetics Scholarship (Courses: Bayesian Statistics for Genetics, MCMC for Genetics)	$900
2015	OSU Graduate Student Travel Award	$1,000
2015	Society for the Study of Evolution (SSE) Student Travel Award	$500
2014	OSU Zoology Research Award	$400
2013	OSU Graduate Internationalization Grant	$1,200
2013	Society for Integrative and Comparative Biology (SICB) Libbie H. Hyman Memorial Scholarship (declined)	$1,500
2009	First Place in Taxonomy, Texas A&M Student Research Week	$300
2008	University Undergraduate Research Fellowship	$300
2008	Herman F. Heep Scholarship	$1,000
2006	National Merit Scholarship	$2,500

Presentations (*invited)

2019 Penn State Ecology Seminar, State College, PA, Sep. 13
*Talk: Evolution of intimate species interactions across complex environments

2019 NSF PGRP Awardee Meeting, Washington D.C., Sep. 4-6
*Talk: Evolution of crop-parasite interactions in complex agroecosystems

2019 Society of Herbarium Curators Annual Meeting, Tucson, AZ, Aug. 1
*Talk: Herbarium-enabled ecological modeling predicts host specialization and resistance

2019 15th World Congress on Parasitic Plants, Amsterdam, The Netherlands, June 30-July 5

Poster: Genomics of sorghum local adaptation to a parasitic plant

2019 Evolution, Providence, RI, June 21-25
Talk: Adaptation of sorghum landraces across gradients of parasitic plant occurrence

2019 International Plant and Animal Genome Conference, San Diego, CA, Jan. 11-16
Poster: Genomics of sorghum local adaptation to parasitic plant occurrence

2018 University of Arkansas for Medical Sciences Career Day, Little Rock, AR, Oct. 18
*Talk: Evolution of a computational biologist: embracing unexpected discoveries during a Ph.D.

2018 GLS Symposium: Plant-environment interactions across scales, Ann Arbor, MI, Sep. 27-28
Poster: Integrating environmental niche modeling and genomics to understand evolution to agriculture in a parasitic weed

2018 NSF PGRP Awardee Meeting, Washington D.C., Sep. 5-7
*Poster: Integrating environmental niche modeling and genomics to understand evolution to agriculture in a parasitic weed

2018 Workshop on Genomics Tools for *Striga* management, Nairobi, Kenya, June 22-30
*Talk: Genetic variation in sorghum hosts and *S. hermonthica* parasites across scales

2017 Reed College Biology Department Seminar, Oct. 27
*Talk: Genomic evidence for a tropical hotspot of coevolution in a symbiotic marine invertebrate

2017 Evolution, Portland, OR, June 23-27
Talk: Population genomics of cryptic species in Caribbean Panama supports habitat specialization by symbiotic sea anemones

2017 Coral Reef Alliance Coral Adaptation Challenge Workshop, San Francisco, CA, April 17-18
*Talk: Coral adaptation by 2100: A trait-based, evolutionary quantitative genetic approach

2016 Yosemite Symbiosis Workshop, Yosemite National Park, CA, May 6-8
Talk: Evolutionary dynamics of *Aiptasia-Symbiodinium* symbioses in Caribbean Panama

2016 American Society of Naturalists Stand-Alone Meeting, Asilomar, CA, Jan. 10-14
Talk: My own worst anemone: Natural variation in symbiosis breakdown under two thermal stress regimes

2015 Evolution, Guarujá, Brazil, June 26-30
Talk: Genome evolution in *Aiptasia*: High heterozygosity and scans for selection in a symbiotic sea anemone

2014 CGRB Spring Conference, Corvallis, OR, April 7
Poster: Minimalist Genomics: Detecting signatures of selection in a model symbiotic sea anemone with low coverage and no reference

2012 CGRB Fall Conference, Corvallis, OR, Sep. 12
Poster: Selfish elements in sea anemone mitogenomes have elevated rates of evolution

2012 Evolutionary Biology in the Pacific Northwest (EVO-WIBO), Port Townsend, WA, April 20-22
Poster: Modeling the evolution of phenotypic plasticity in Anthozoa: Temperature and bleaching response in corals and sea anemones

2009 Texas A&M University Student Research Week, College Station, Texas
Poster: Size, Solubility, and the Serotonin-gated Ion Channel Receptor: In Search of an Improved Extracellular Domain Model. **Awarded First Place in student competition**

Teaching

2017 Lead Instructor, Z362, Invertebrate Biology Laboratory
- Taught one 3.5-hour weekly laboratory course in experimental invertebrate biology including field work

2016 CIRTL (Center for the Integration of Research, Teaching and Learning) Certification, Associate Level

- Completed 12 credit hours of graduate level coursework in teaching and learning theory, course design and methods, inclusivity training, and science communication.

2016 Lead Instructor, MCB525, Techniques in Molecular and Cellular Biology
- Developed course content and instructional materials for 2-week intensive "Sea Anemone Population Genomics" module in summer course focused on training 24 incoming graduate students in laboratory procedures for genomic library preparation and bioinformatic analysis of population genomic data.

2016 Curriculum Development Assistantship, BI213, Principles of Biology
- Developed active learning activities focused on improving quantitative reasoning skills using problems from genetics and evolution

2014 Teaching Assistant, BI311, Genetics
- Taught five one-hour long recitation sections per week for ~150 undergraduate students.

2013-2014 Teaching Assistant, BI211 and BI212, Principles of Biology
- Taught three-hour weekly laboratory sessions, each involving ~40 students.

Student Mentoring

2019 T. Xia, Undergraduate Research Scholar: Genetic variation in *S. hermonthica* germination rate

2018-2019 C. Yim, Undergraduate Research: Species distribution modeling for *A. thaliana* in R

2018-2019 C. Kudla-Williams, Undergraduate Research: Development of high-throughput assays for phenotyping sorghum root exudate profiles

2016- 2017 E. Kramer, Undergraduate Research Assistant: Bioinformatic assembly of *Symbiodinium* chloroplast and mitochondrial genomes from genome sequencing data of symbiotic sea anemones.

2014-2016 R. Edlund, Undergraduate Research Scholar: Development of PCR banding assay to easily genotype *Symbiodinium* symbiotic with *Aiptasia* sea anemones; fieldwork in Panama.

2013-2014 A. Vercruyssen, Work Study Student: Sequencing and analysis of selfish genetic elements present in the mitochondrial DNA of three species of Oregon coast sea anemones.

2013 B. VerWey, Volunteer Research: Molecular genetic techniques and sea anemone husbandry.

2011-2014 J. Seng, Work Study Student: Molecular genetic techniques and sea anemone husbandry.

Professional Service

2019 Guest Editor for *Molecular Ecology Resources* Special Issue 'Ancient DNA studies of evolution in the Anthropocene'; Reviewer: *Marine Biology*

2015 Graduate Student Representative, Hiring Committee for Quantitative Systems Biologist
- Nominated position. Worked with group of 5 faculty members to select candidates from applicant pool for on-campus interviews.
- Organized graduate student interactions with interview candidates and synthesized feedback from graduate students to share at the faculty meeting.

2012-2015 Graduate Council Member (2012-2015) and Chair (2014-2015), American Society of Naturalists
- Nominated position. Served on the ASN Workshop Committee (2012-2013, 2014-2015) and the Student Awards Committee (2013-2014). Led effort for initiation of ASN Grads website (www.asngrads.com). Coordinated the ASN Student-Faculty Mixer at Evolution 2015 in Brazil. Graduate Student Representative at the ASN Executive Council meeting at Evolution 2015, where I proposed a $10k budget for student outreach that was approved in its entirety by voting members of the council.

2014-2015 Invited Speaker Committee, Integrative Biology Department, Oregon State University
- Worked with a group of 3 other students to select, invite, and coordinate the visit of the 2015 Graduate Student Invited Speaker.

Outreach

2018 Invited speaker and participant in panel discussion for Career Day at University of Arkansas for Medical Sciences attended by ~160 undergraduate and graduate students from Arkansas and surrounding states.

2018 Lesson on evolutionary ecology and plant biology to ~30 STEM undergraduates involved in the URISE program at Penn State (Feb. 14)

2015 Developed and led 2-hour short course entitled 'From Primordial Soup to the Earth du Jour: Best Recipes for the Beginning of Life' for ~60 members of the Academy of Lifelong Learners in Corvallis, OR (Jan. 15)

2014 Led 1-hour session on separating high-throughput sequencing reads from different organisms for the Bioinformatics Users Group (BUG) in Corvallis, OR.

2012 Developed sea anemone activity for 16 3rd-5th grade girls for the AWSEM club at Garfield Elementary, Corvallis, OR; presentation included live animals.

2012 Coordinated laboratory activity for 48 11th graders participating in the GEAR-UP Natural Resources Camp, Corvallis, OR; activity included live animals.

2012 Led evolution activity for 15 high school students for Darwin's Legacy, an event on the OSU campus led by Zoology graduate students.

Relevant International Experience

2018 Nairobi, Kenya and Kisumu, Kenya: Population genomics of parasitic weeds

2015 Bocas del Toro, Galeta, and Panama City, Panama: Population and ecological genomics of *Aiptasia*

2015 Guarujá, Brazil: Presented research at Evolution 2015; coordinated ASN Student/Faculty Mixer at sponsoring hotel

2013 Bocas del Toro, Panama: Exploratory research for sea anemone population genetics project

2009 St. Croix, U.S. Virgin Islands: Engaged in four-month long paid internship focused on research and conservation fieldwork of sea turtles.

2006 Castiglion Fiorentino, Italy, Texas A&M Champe Fitzhugh International Honors Leadership Seminar

Additional Skills

- Working knowledge of Spanish and French
- PADI Advanced Open Water Diver
- Maintenance of saltwater aquaria
- Proficient in R, perl, UNIX/LINUX, and working in cluster computing environments
- Species distribution modeling, population genetic simulations, evolutionary quantitative genetic simulations, least cost path resistance modeling, generalized linear models, genome assembly, genome-wide association analysis