

Emily R Ebel

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Education

Stanford University

Sept 2014 - Sept 2020

PH.D. – BIOLOGY – ECOLOGY AND EVOLUTION

- Advised by Dr. Dmitri Petrov
- Thesis: Evolutionary genomics of malaria hosts and parasites

Boston University

Sept 2012 - Aug 2014

MA – BIOLOGY

- Advised by Dr. Sean Mullen
- Thesis: Genomic and ecological diversification of neotropical *Adelpha* butterflies

University of Oregon

Sept 2008 - Dec 2011

BS – BIOLOGY, CHEMISTRY MINOR

- *summa cum laude*
- Advised by Dr. Patrick Phillips
- Thesis: Quantitative genetic mapping of sexual conflict in *C. remanei*

Professional Experience

- present **NSF Postdoctoral Research Fellow in Biology**, Stanford University, Sonnenburg Lab
- 2020-2021 **Postdoctoral Scholar**, Stanford University, Egan Lab
- 2019-2020 **CEHG Predoctoral Research Fellow**, Stanford University
- 2016-2019 **Graduate Research Assistant**, Stanford University
- 2013-2016 **NSF Graduate Research Fellow**, Boston University, Stanford University
- 2012-2013 **Dean's Fellow**, Boston University
- 2011-2012 **Adjunct Research Associate**, University of Oregon
- 2008-2011 **Presidential Scholar**, University of Oregon

Publications

- Ebel, ER**, FA Kuypers, C Lin, DA Petrov, ES Egan. 2021. Common host variation drives malaria parasite fitness in healthy human red cells. *eLife* 10(e69808).
- Ebel, ER**, F Reis, DA Petrov, S Beleza. 2021. Historical trends and new surveillance of *Plasmodium falciparum* drug resistance markers in Angola. *Malaria Journal* 20(175).
- Nguetse CN, N Purington, **ER Ebel**, B Shakya, TP Velvan, ES Egan. 2020. A common polymorphism in the mechanosensitive ion channel PIEZO1 is associated with protection from severe malaria in humans. *PNAS* 117(16): 9074-9081.
- Ebel, ER**, N Telis, S Venkataram, DA Petrov, D Enard. 2017. High rate of adaptation in mammalian proteins that interact with *Plasmodium* and other parasites. *PLoS Genetics* 13(9): e1007023.
- Venkataram S, B Dunn, Y Li, A Agarwala, J Chang, **ER Ebel**, K Geiler-Samerotte, L Herrisant, J Blundell, SF Levy, SD Fisher, G Sherlock, DA Petrov. 2016. A comprehensive genotype- fitness map of adaptation-driving mutations in yeast. *Cell* 166(6): 1585-96.
- Ebel, ER**, PC Phillips. 2016. Intrinsic differences between males and females determine sex-specific consequences of in-breeding. *BMC Evolutionary Biology* 16(36).
- Marcus AW, **ER Ebel**, DA Friedman. 2015. Commentary on "Portuguese crypto-Jews: the genetic heritage of a complex history." *Frontiers in Genetics* 6:261.

Ebel, ER, J DaCosta, M Sorenson, RI Hill, AD Briscoe, KR Willmott, SP Mullen. 2015. Rapid diversification associated with ecological specialization in Neotropical *Adelpha* butterflies. *Molecular Ecology*, 24(10):2392-2405.

Awards, Fellowships, & Grants

2021	Postdoctoral Research Fellowship in Biology , NSF	\$ 138,000
2021	Outstanding Poster Presentation Award , Stanford Pediatrics Retreat	
2020	Young Investigator Travel Award , SMBE (canceled due to COVID-19)	\$ 2,500
2019	Predoctoral Research Fellowship , Stanford CEHG	\$ 40,000
	OGE Travel Award , Stanford University	\$ 1,000
	Best Poster Award , GRS Red Cells	\$ 125
	Excellence in Teaching Award , Stanford University Department of Biology	
2018	OGE Travel Award , Stanford University	\$ 1,000
	BioX Travel Award , Stanford University	\$ 500
	Lieberman Fellowship Nominee for the Department of Biology , Stanford University	
2017	Pilot Early Career Award (with E. Egan) , Stanford CHRI	\$ 35,000
	OGE Travel Award , Stanford University	\$ 1,000
2016	Seed Grant , Stanford CEHG	\$ 18,000
	OGE Travel Award , Stanford University	\$ 1,000
	Registration Award , SMBE	\$ 400
	BioX Travel Award , Stanford University	\$ 500
	Excellence in Teaching Award , Stanford University Department of Biology	
2015	Dimensions of Biodiversity Travel Award , NSF	\$ 2,000
	Excellence in Teaching Award , Stanford University Department of Biology	
2012	Graduate Research Fellowship , NSF	\$ 134,000
	Dean's Fellowship , Boston University	\$ 72,000
	Aaron Novick Award for a Distinguished Thesis in Science , University of Oregon	
2008	Presidential Scholarship , University of Oregon	\$ 26,000

Selected Presentations

- July 2021. **International Society for Evolution, Medicine, and Public Health (ISEMPH) 2021**. Virtual. *Revisiting the malaria hypothesis in the genomic era*. **Invited talk**.
- May 2021. **University of Georgia Center for Tropical and Emerging Global Diseases (CTEGD) Symposium**. Virtual. *Ultra-long Nanopore sequencing reveals hyper-mutation of antigenic var genes in *P. falciparum**. Contributed talk.
- Aug 2020. **NIH Webinar: Bioinformatic Exploration of Hematology Cohorts**. Virtual. *Common genetic variation in human red blood cells drives growth rate variation in *P. falciparum* parasites*. Contributed talk.
- Aug 2020. **Molecular Parasitology Meeting (MPM) XXXI**. Virtual. *Common genetic variation in human red blood cells drives fitness variation in *P. falciparum* parasites*. Contributed talk.
- Jul 2020. **Society for Molecular Biology and Evolution (SMBE) 2020**, Quebec City, QC, Canada. *Recurrent duplication and structural mutation generates novel antigenic genes in the malaria parasite *P. falciparum**. Accepted talk (canceled due to COVID-19).
- Feb 2020. **Ecology and Evolution of Infectious Disease (EEID)**, Berkeley, CA. *Common variation in healthy human red cells impacts the fitness of malaria parasites*. **Invited seminar**.

- Jul 2019. **Gordon Research Seminar (GRS): Red Cells**, Newport, RI. *Genetic variation predicts red cell phenotypes and malaria resistance in donors with African ancestry*. Poster (**Best Poster Award**).
- Jun 2019. **Bay Area Population Genomics (BAPG) XVII**, Stanford, CA. *Novel variants in red blood cell proteins are associated with sickle-like phenotypes and malaria resistance*. Contributed talk.
- May 2018. **Population, Evolutionary, and Quantitative Genetics (PEQG)**, Madison, WI. *PacBio sequencing reveals structural mutations in malaria parasites concentrated in immune-evasion proteins*. Contributed talk (**Conference Opener**).
- Feb 2018. **Computational, Evolutionary, and Human Genomics (CEHG) Symposium**, Stanford, CA. *PacBio sequencing reveals targeted mutation of immune-evasion genes in the malaria parasite*. Contributed talk (**Conference Opener**).
- Jul 2016. **Society for Molecular Biology and Evolution (SMBE) 2016**, Gold Coast, Qld, Australia. *Malaria parasites drive adaptation in mammalian genomes*. Contributed talk.
- Feb 2016. **Bay Area Population Genomics (BAPG) XII**, Berkeley, CA. *Malaria parasites drive adaptation in host genomes*. Contributed talk.
- Jun 2014. **Evolution 2014**, Raleigh, NC. *Novel mimicry types and host plant shifts: phylogenetic correlates of adaptive radiation in *Adelpha* butterflies*. Contributed talk.

Teaching Experience

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| Sept 2020 | Bing Honors College , Teaching Assistant | Stanford, CA |
| Winter 2019 | Writing a Senior Honors Thesis , Teaching Assistant (teaching award) | Stanford, CA |
| Winter 2018 | Fundamentals of Molecular Evolution , Guest Lecturer | Stanford, CA |
| Spring 2017 | Intro to Problem Solving in Biology , Teaching Assistant (helped design new course) | Stanford, CA |
| Winter 2016 | Fundamentals of Molecular Evolution , Teaching Assistant (teaching award) | Stanford, CA |
| Winter 2015 | Fundamentals of Molecular Evolution , Teaching Assistant | Stanford, CA |
| Winter 2015 | Athletic Academic Resource Center , Group Tutor | Stanford, CA |
| Fall 2015 | Ecology and Evolution Lab , Teaching Assistant (teaching award) | Stanford, CA |
| Fall 2012 | Chemistry Lab , Writing Tutor | Boston, MA |
| 2010-2011 | Introductory Biology , Peer Tutor | Eugene, OR |
| Jul 2011 | Introductory Chemistry , Teaching Assistant | Eugene, OR |

Professional Service & Outreach

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| 2021 | Synopsys Championship Science and Technology Fair , Volunteer Judge | Virtual |
| 2021 | Evolution, Medicine, and Public Health , Peer Reviewer | |
| 2020 | Molecular Biology and Evolution , Peer Reviewer | |
| 2020 | Genome Biology and Evolution , Peer Reviewer | |
| 2014-2019 | Stanford NSF GRFP Program , Peer Mentor (mentees: 2 awards, 2 honorable mentions) | Stanford, CA |
| 2019 | CalAcademy NightLife , Presenter | San Fran, CA |
| 2017-2019 | Escondido School Science Fair , Volunteer Judge | Palo Alto, CA |
| 2017-2018 | Synopsys Championship Science and Technology Fair , Team Leader and Volunteer Judge | San Jose, CA |
| 2015-2018 | Stanford Biosciences , Graduate Student Mentor | Stanford, CA |
| 2016-2017 | Biology Department Security Committee , Student Representative | Stanford, CA |
| 2015-2016 | Eco-Evo Department Lunch , Coordinator | Stanford, CA |
| 2015 | Natural Bridges Monarch Festival , Presenter | Santa Cruz, CA |
| 2012-2014 | BioBUGs , Volunteer Teacher | Boston, MA |
| 2013 | Boston Museum of Science , Volunteer | Boston, MA |