

# EDWIN SOLARES

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## EDUCATION

**Ph.D. in Ecology and Evolutionary Biology**, University of California, Irvine, CA **August 2021**  
**M.S. in Biology**, University of California, Irvine, CA **February 2019**  
**B.S. in Biomedical Computing (Computer Science)**, University of California, Irvine, CA **June 2014**

## FELLOWSHIPS & SCHOLARSHIPS

**University of California President's Postdoctoral Fellowship (Evo & CS Dept)** **2021 - 2023**  
**University of California President's Pre-Professoriate Fellowship** **2020 - 2021**  
**National Science Foundation Graduate Research Fellowship Program** **2017 - 2020**  
**National Science Foundation Bridge to the Doctorate Fellowship** **2015 - 2017**  
**IMSD-MBRS Summer Scholar** **2015**  
**Southern California Edison Scholarship** **2011 - 2013**

## GRANTS & AWARDS

NSF ACCESS Discover Allocation: Species Rescue and Rapid Low Cost Assembly of Food for Structural Variant Detection using Artificial Intelligence **2023 - 2024**  
XSEDE Start-up Allocation Renewal: Rapid Low Cost Assembly of Food Crops and Drosophila for Structural Variant Detection using Intelligent Systems **2020 - 2023**  
XSEDE Research Allocation: A genetic and population analysis of *Persea americana* local cultivars: Understanding the Genetic and Structural landscape of Avocados **2019 - 2020**  
XSEDE Start-up Allocation Renewal: Rapid Low Cost Assembly of Food Crops and Drosophila for Structural Variant Detection **2019 - 2020**  
XSEDE Start-up Allocation: Rapid Low Cost Assembly of Food Crops and Drosophila for Structural Variant Detection **2018 - 2019**  
Plant and Animal Genomics Conference: Asia Travel Award **2017**  
Seoul National University Travel Award **2018**  
Department of Ecology and Evolutionary Biology Travel Award **2017**  
Pacific Biosciences Travel Award PAG & ASHG **2014**  
Broad Institute RNASeq Workshop Travel Award **2014**  
Undergraduate Research Opportunities Program Travel Award **2014**  
Information and Computer Science Excellence in Research **2014**  
Information and Computer Science Honors **2014**  
FASEB MARC Travel Award **2012**

## PUBLICATIONS

### • PUBLISHED (IF FIRST AUTHOR)

- (8) Martin, G., **Solares, E. A.**, Muyle, A., Guardado-Mendez, J., Bousios, A., Gaut, B. S. (2023). miRNA-like secondary structures in maize (*Zea mays*) genes and transposable elements correlate with small RNAs, methylation, and expression. *Genome Research*, gr.277459.122. <https://doi.org/10.1101/gr.277459.122>
- (7) Chan, G., Gracey, A.Y., **Solares, E. A.**, Wherle, B., Connor, K.M. Cycle of Heat Exposure Elevate Metabolic Enzyme Genes and Alters Digestion in Mussels. *Frontiers* (2023) <https://doi.org/10.3389/fmars.2023.1120695>
- (6) Chakraborty, M., Guadalupe Lara, A., Dang, A., McCulloch, K. J., Rainbow, D., Carter, D., **Solares, E. A.**, Said, I., Corbett-Detig, R., Gilbert, L. E., Emerson, J. J., Briscoe, A. D. (2023). Sex-linked gene traffic underlies the acquisition and loss of sexually dimorphic UV color vision in *Heliconius* butterflies. *PNAS* (2023) <https://doi.org/10.1073/pnas.2301411120>
- (5) **Solares, E.**, Morales-Cruz, A., Figueroa Baldera, R., Focht, E., Ashworth, V. E. T. M., Minio, A., Cantu, D., Arpaia, M.L., Gaut, B. S. Insights into the domestication of avocado and potential genetic contributors to heterodichogamy. *G3* (2022) <https://doi.org/10.1101/2022.03.30.486474>

- (4) **Solares, E. A.**, Tao, Y., Long, A. D., Gaut, B. S. HapSolo: An optimization approach for removing secondary haplotigs during diploid genome assembly. *BMC Bioinformatics* 22, 9 (2021) <https://doi.org/10.1186/s12859-020-03939-y>
- (3) Zhou, Y., Minio, A., Massonnet, M., **Solares, E. A.**, Lv, Y., Beridze, T., Cantu, D., Gaut, B. S. The population genetics of structural variants in grapevine domestication. *Nat. Plants* 5, 965–979 (2019) <https://doi.org/10.1038/s41477-019-0507-8>
- (2) **Solares, E. A.**, Chakraborty, M., Miller, D. E., Kalsow, S., Hall, K., Perera, A. G., ... Hawley, R. S. (2018). Rapid Low-Cost Assembly of the *Drosophila melanogaster* Reference Genome Using Low-Coverage, Long-Read Sequencing. *G3: Genes, Genomes, Genetics* (2018) 8(10), 10 3143–3154. <https://doi.org/10.1534/g3.118.200162>
- (1) Clifton, B. D., Librado, P., Yeh, S.-D., **Solares, E. S.**, Real, D. A., Jayasekera, S. U., ... Ranz, J. M. (2017). Rapid Functional and Sequence Differentiation of a Tandemly Repeated Species-Specific Multigene Family in *Drosophila*. *Molecular Biology and Evolution*. <https://doi.org/10.1093/molbev/msw212>

## PRESENTATIONS

### • CONFERENCE TALKS

- (9) *"Insights into the genetic contributors of flowering and recent clonal variants in avocado for creation of a more sustainable avocado"*  
University of California Santa Cruz: Next Wave of Faculty in Genomics Invited Speaker **2023**
- (8) *"Technology for the future: Leveraging Automation and Machine Learning for a better future"*  
Avocado Brainstorm Conference: Brisbane, AUS Invited Speaker **2023**
- (7) *"The genetics of Avocado Flowering"*  
Avocado Brainstorm Conference: Brisbane, AUS Invited Speaker **2023**
- (6) *"HapSolo: leveraging artificial intelligence for haplotype classification"*  
Computational Genomics Summer Institute Short Talk **2022**
- (5) *"Persea americana. Origin, history, population structure and heterodichogamy."*  
Plant Genomes Online Conference Selected Talk
- (4) *"Persea americana. Insights into the domestication of avocado and potential contributors to heterodichogamy."*  
Academic Spring Retreat for President's and Chancellor's Postdoctoral Fellowship Programs **2022**
- (3) *"Avocados: An investigation in Persea americana."*  
Avocado Genetics Group Invited Speaker **2021**
- (2) *"Genome assembly methods: from millions to \$1k"*  
University of California, Irvine Winter Ecology and Evolutionary Biology Graduate Student Symposium **2019**
- (1) *"Transcriptomic and structural variation analysis in natural populations of a major malaria vector, Anopheles arabiensis"*  
University of California, Irvine Winter Ecology and Evolutionary Biology Graduate Student Symposium **2017**

### • INVITED TALKS

- (7) *"My Journey: I also dream of becoming an Astronaut, but also an Assistant Professor at a UC"*  
IDEA Center with NSBE, OSTEM, WIC, SWE, SHPE - Professional Evening with Industry – Invited Keynote **2024**
- (6) *"Leveraging AI to Tackle Food Insecurity and Disease"*  
AI Student Collective Invited Speaker **2023**
- (5) *"Applying for the UC Presidential Postdoctoral Fellowship Program"*  
SACNAS Grad and Postdoc Chapter Invited Speaker **2023**
- (4) *"HapSolo: An optimization approach for removing secondary haplotigs during diploid genome assembly and scaffolding."*  
Vertebrate Genome Project Invited Speaker **2020**
- (3) *"Rapid low-cost assembly of Drosophila melanogaster reference genome using low-coverage, Long-Read Sequencing"*  
Seoul National University Departmental Seminar: Invited Speaker **2018**
- (2) *"Why we matter, why we should strive to get degrees and how I was able to do it as a single father from the hood"*  
Los Angeles Communities Advocating for Unity, Social Justice, and Action, Charter School Invited Speaker **2017**
- (1) *"Applying High Performance Computing in Research"*

California Alliance for Minority Participation High Performance Computing and Research Seminar

2017

### SERVICE

Society for Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS) University of California Davis Grad Chapter – **Postdoctoral Representative**

2021 - 2023

Society for Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS) University of California Davis Undergrad Chapter – **Postdoctoral Advisor**

2021 - 2023

California Alliance for Minority Participation, Undergraduate & Research Center at the University of California Davis – **Postdoctoral Advisor**

2021 - 2023

School of Biological Science NSF GRFP Writing Workshop – University of California, Irvine – **Writing Tutor**

2017 - 2019

Society for Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS) University of California Irvine Grad Chapter – **Outreach Chair**

2017 - 2018

Society for Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS) – University of California, Irvine Grad Chapter – **Co-founder**

2017 - 2018

California Alliance for Minority Participation UC Irvine Orientation, Graduate School and Research QA – **Panelist**

2017 - 2018

Los Angeles Communities Advocating for Unity, Social Justice, and Action (LA CAUSA) STEM – **Outreach, Curriculum Advisor and Orientation Speaker**

2017 - 2018

Compton Unified School District and 1 Day Paint and Body Corp – Linux PC Setup and Donation – **Coordinator and Project Lead**

2013

### TEACHING

#### • LECTURES

Data Science 232R – Big Data Analytics Using Spark – **Lecturer** – Spring 2024

Engineering & Computer Science 151A – Machine Learning: Learning Algorithms – **Lecturer** – Winter 2024

Computer Science & Engineering 015L – Software Tools & Techniques – **Lecturer** – Winter & Spring 2023

Engineering & Computer Science 032A – Introduction to Programming – **Lecturer** – Fall 2023 & Spring 2024

First-Year Aggie Connect – We Search Research – **Facilitator** – Winter 2023

Engineering & Computer Science 171 – Machine Learning – **Lecturer** – Fall 2022

Computer Science 171 – Introduction to Artificial Intelligence – **Guest Lecturer** – 11 Lectures – 2018 through 2020

Computer Science 184A – Introduction to Bioinformatics – **Lecturer** – Fall 2017 & Fall 2018

Computer Science 184B – Advanced Topics in Bioinformatics – **Lecturer** – Winter 2018 & Winter 2019

Computer Science 189– Project in Bioinformatics – **Lecturer** – Spring 2018 & Spring 2019

#### • MENTORSHIP

**Undergraduate Students (Bolded for Completed Honors Thesis):** Eunbi Yang, Miguel Escobar\*, Kathleen Leon He, Carolina Rojas\*, **Khalid El Assad\***, Jeanelle Guardado-Mendez<sup>4</sup>, **Agnes Jang\***, Jacky Dai, Zexi Sun, Eric Gamarra, Jose Eduardo Corona, Joshua Arias, Kai Chang, **Anastasia Miles\***, Sabrina Will\*, Beoung Lee<sup>1</sup>, Ashlyn Kimura, Jiadong Yang<sup>3</sup>, Ran Duan<sup>2</sup>, Renhao Luo<sup>3</sup>, Chinmay Raut<sup>1</sup>, Vama Jhumkhwala<sup>2</sup>, Joshua Costa, Youjia Yang, Yuting Lu\*, Metzli Montero, Lennyn Morales\*, Mansi Agrawal\*, Prashansa Goel\*, Gordon Feliz\*, Nicole Keer Ni, Tracey Ngo, Jose Ballesteros, Kevin Jacob, Camila Xu, Sadrac Santacruz, Andrew Pan, Anthony Tong, Ben Xia, Cynthia Wang, Hamza Mohiuddin, Kayne Manti, Run Wang, Tarun Murugan, Veeva Gathani, Shreya Velaga, Edward Tang, Gavin Simmons, Nichole, Brianna Sanchez, Katelyn Vu, Pedro Castaneda, Shirely Bian, Sidhant Rohatgi, Yashil Vora, Yasushi Oh.  
*High School Students:* Vineet Disay, Joseph Kim

<sup>\*3 Bioinformatic methods projects with possibility of publication</sup>

**University of California, Irvine Published Thesis Projects:**

*Anastasia Miles: Assembly of Individual Haplotypes with One Known Parent; A Programmatic Approach Utilizing k-mer Counting, Set Theory, and Alignment (Currently at Google, Irvine Campus)*

*Khalid el Assad: Minimizing Space Usage of High-Volume Genomic Overlap Detection with Python (Currently at Tableau Software)*

**Paired Bioinformatics Projects:**

<sup>1</sup>Project in Comparative Genomics: [https://github.com/beoung/CS189\\_project](https://github.com/beoung/CS189_project)

<sup>2</sup>Project in Differential Expression: <https://github.com/Hard-To-Name/Differential-Expression-Analysis/>

<sup>3</sup>Project in Comparative Genomics: [https://github.com/RenhaoL/Yeast\\_genome\\_assembly\\_CS199/](https://github.com/RenhaoL/Yeast_genome_assembly_CS199/)

<sup>4</sup>Published

30 Undergraduate Students (22 URM), 3 Undergraduate Honors Thesis Students, 2 High School Students