
EDUCATION

Ph.D. in Biology, Evolution and Ecology

Palo Alto, CA

Stanford University, Advisor: Professor Moisés Expósito-Alonso

Sept. 2022 – Present

- Developing tools to understand plant adaptation & estimate genetic diversity loss to changing climates.

B.Sc in Biochemistry

Montreal, QC

McGill University

Sept. 2015 – Dec. 2018

- BL21 Research Scholar: Research Grant for Independent Student Researchers
- Yale Hackathon Award
- Chemistry Grant for Exceptional Students in Chemistry

EXPERIENCES

Graduate Student

Palo Alto, CA

Carnegie Institute of Science, Advisor: Professor Moisés Expósito-Alonso

April. 2021 - Present

- Disentangling genotype-phenotype differences (such as drought tolerance and root growth) in the Brassicaceae family using deep learning algorithms.

Research Assistant

Palo Alto, CA

Stanford University, Advisor: Professor Jesse Engreitz

April. 2019 - Present

- Curated CRISPR-FlowFISH, GWAS and eQTL datasets to benchmark the performance of existing cCRE-gene linking prediction methods.
- Generated an atlas of cCRE-gene linking maps across 200 celltypes and tissues using DNase, ATAC and Histone data on ENCODE.

ENCODE Consortium Team Lead

Palo Alto, CA

Stanford University, Advisors: Professor Anshul Kundaje and Professor Jesse Engreitz

April. 2019 - Present

- Organized multiple bioinformatics challenge days to foster community collaboration and analysis in the field of Distal Regulation.
- Investigated the transcription factor landscape and mechanistic behavior of chromatin modifiers using deep learning algorithms.
- Organized and lead discussion groups of 30 interdisciplinary scientists to foster effective collaboration.
- Developed a comprehensive resource of enhancer-gene linking tools across 300 cell types and tissues for analyzing disease risk in humans.

Research Assistant

Berkeley, CA

University of California, Berkeley, Advisor: Professor Montgomery Slatkin

April. 2019 - April 2020

- Developed an analytical solution to estimating coalescence probabilities and population divergence times from SNP data in Neanderthals.

PUBLICATIONS

1. Exposito-Alonso, M. *et al.* Power and limitations of the mutations-area relationship to assess within-species genetic diversity targets for post-2020 Sustainable Development Goals. *EcoEvoRxiv* (2022).
2. **Mualim, K.**, Theunert, C. & Slatkin, M. Estimation of coalescence probabilities and population divergence times from SNP data. *Heredity* **127** (2021).
3. Nasser, J. *et al.* Genome-wide enhancer maps link risk variants to disease genes. *Nature* **593**, 1–6 (2021).
4. **Mualim, K.** *et al.* A Computational Validation of Enhancer-Gene Linking. *ENCODE Consortium* (2019).

LEADERSHIP EXPERIENCE

Community Organizer

Palo Alto, CA

Sunrise Movement

- Spearheaded a compensation fellowship program focused on supporting under-served community leaders doing electoral work.
- Collaborated on defining 2020 Sustainability Goals and Passed new building reach codes in Palo Alto

Event Coordinator

Montreal, CA

Roots: Mental Health Alliance

- Collaborated with local organizations to plan art showcase events focused on elevating artists living with mental health issues, featured in Documentary by Green Lion Films.
- Initiated awareness programs and facilitated panel discussions to discuss mental health with experts

Finance Director

Montreal, CA

BranchOut Mentorship

- Developed after-school art, cooking, woodworking programs for underfunded high schools
- Fund-raised and managed for resources, supplies for art programs

PROJECTS/AWARDS

- **Scenes from the Anthropocene:** \$25k seed grant to develop projects focussed on bringing community voices to conservation issues
- **Improving building accessibility with Machine Learning:** An app to advise cities on inclusive building accessibility standards. Awarded most innovative use of Machine Learning for Social Good.
- **Rising Voices Youth Award:** Awarded by the Sierra Club for our work on Alameda County Green New Deal and improving equity issues in the Bay Area.
- **Team Contribution Award:** Awarded a team that made an outstanding effort in the ENCODE Consortium
- **B21 Scholar:** Awarded to students with innovative research ideas
- **Tomlinson Engagement Award for Mentoring Award:** Awarded to one of the best students in class