

Zach Eliason

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EDUCATION

BRIGHAM YOUNG UNIVERSITY, COLLEGE OF LIFE SCIENCES

B.S. Bioinformatics, Minor in Computer Science
GPA: 3.99/4.0, Major GPA: 4.0/4.0

Dec. 2023

Provo, UT

Honors: 2022 Amgen Scholar, Washington University St. Louis
Recipient of 4-year, merit-based, full-tuition university scholarship
College of Life Sciences Dean's List (recognizes students in the top 5% of the college)

Courses: **CS:** Deep Learning, Machine Learning, Algorithm Design & Analysis, Data Structures, Discrete Structures
Biology: Computational Cancer Biology, Genetics, Molecular Biology, Evolutionary Biology, Chemistry
Math: Linear Algebra, Calculus, Methods of Proofs, ANOVA, Biostatistics/Biological Data Science

EXPERIENCE

BIOINFORMATICS RESEARCH ASSISTANT; Dr. Sam Payne

Sep 2023—Present

BYU

Provo, UT

- Conducting simulations to test limitations of experiments in spatial proteomics to advance future biological discovery
- Writing review on single-cell spatial proteomics furthering awareness of best practices in field

BIOINFORMATICS INTERN

May 2023—Aug. 2023

Zayt Bioscience

Berlin, Germany

- Developed 100+ novel synthetic DNA promoters using custom VAE architecture enhancing gene expression experiments
- Built custom BLAST-guided gene alignment pipeline to facilitate comparative analysis across 100+ species

BIOINFORMATICS RESEARCH ASSISTANT; Dr. Jin Zhang

Jun. 2022—Aug. 2022

Washington University

St. Louis, MO

- Designed and implemented novel HLA genotyping tool using EM algorithm achieving over 90% accuracy
- Led team of 3 on HLA genotyping research project improving clinical cancer treatment options
- Conducted literature review to compile paper for publication

BIOINFORMATICS RESEARCH ASSISTANT; Dr. Stephen Piccolo

Apr. 2021—Apr. 2022

BYU

Provo, UT

- Built and tested Docker containerized, web-based system for evaluating coding assignments used by 5 BYU courses
- Oversaw manuscript for publication, created data visualizations, and ran analyses using R
- Led team of 10 in study of publication trends to further pedagogical methods

DATA MANAGER & RESEARCH ASSISTANT; Dr. Ben Abbott

Jan. 2021—Apr. 2022

BYU

Provo, UT

- Performed quality assurance & control on hydrology time series spanning 3+ years to advance conservation efforts
- Designed and implemented data cleaning and correction tools for large datasets in use by 12+ research assistants
- Trained and oversaw 10+ computational assistants to maintain relational SQL database integrity

SKILLS & CERTIFICATIONS

- Python (scipy, numpy, biopython)
- R (tidyverse, Seurat)
- C++
- Docker
- Unix
- Version control (Git)
- Pipelining (Snakemake)
- SQL/NOSQL (MongoDB)
- Web programming (HTML, js, Node)
- BLAST
- Genome assembly
- Spatial transcriptomics (Seurat)
- Proteomics
- Cancer immunology
- PyTorch (CNN, VAE, transformers)

- SciKit Learn (MLP, KNN, Bayesian ML)
- Parametric/nonparametric testing
- Linear modeling
- Probability and inference
- Familiarity with Russian Language
- Adobe Suite

PUBLICATIONS & PRESENTATIONS

Piccolo, S., Tufts, E., Tatlow, P. J., **Eliason, Z.**, & Stephenson, A. (*Under Review*). CodeBuddy: A programming assignment management system for short-form exercises

Eliason, Z., et al. (*In Progress*). *HLA-EM: an Accurate HLA Genotyping Algorithm*

Nitz, A., **Eliason, Z.**, Giraldez, J., & Payne, S. (*In Progress*). Are we there yet? Assessing the readiness of single-cell proteomics to answer biological hypotheses

Eliason, Z. (2022, November 12). *Srinivasa Ramanujan: Prodigy of Dual Cultures* [Conference presentation]. 2022 Asian Studies Symposium, BYU, Provo, UT, United States

Eliason, Z. (2022, August 5). *HLA-EM: an Accurate HLA Genotyping Algorithm* [Conference presentation]. 2022 Amgen Scholars Poster Conference, Washington University in St. Louis, MO, United States

INTERESTS

Printmaking (lithography, screen printing), film photography, hiking, piano performance, gardening, ice skating