

# Zach Eliason

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## EDUCATION

### BRIGHAM YOUNG UNIVERSITY, COLLEGE OF LIFE SCIENCES

Dec. 2023

B.S. Bioinformatics, Minor in Computer Science

Provo, UT

GPA: 3.98/4.0, Major GPA: 4.0/4.0

**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, Biological Data Science

## EXPERIENCE

### BIOINFORMATICS RESEARCH ASSISTANT; Dr. Sam Payne

Aug. 2023—Dec. 2023

BYU

Provo, UT

- Conducted simulations to test limitations of experiments in spatial proteomics to advance future biological discovery
- Wrote 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
- Managed cloud computing resources (AWS) necessary for tool validation
- 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

### 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

### Programming & Scripting

- Python (scipy, biopython), R, C++, Docker, Unix, Git, cloud computing (AWS), pipelining (Snakemake), SQL/NOSQL (MongoDB), web programming

### Omics & Oncology Research

- BLAST, genome assembly, spatial transcriptomics, proteomics analysis, cancer immunology

### Artificial Intelligence & Machine Learning

- **Deep Learning:** PyTorch, CNN, VAE, transformers
- **Machine Learning:** Scikit-learn, random forests, XGBoost, KNN, Bayesian ML

### Statistical Methods

- Parametric/nonparametric hypothesis testing, linear modeling, probability and inference