ELISE CUTTS

DOCTORAL RESEARCHER
GEOBIOLOGY

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SUMMARY

Doctoral student with research experience in bioinformatics and in laboratory microbiology including anaerobic cell culture. Familiarity with Python and R. Background in biology and Earth science. Strong communication skills with 15 months of teaching experience and more than 10 pieces of science writing. International experience.

LANGUAGES

English
German
Danish

N C2 C1 B2 B1 A2 A1

SKILLS

EARTH & LIFE SCIENCE

Microbiology • Biogeochemistry • Geology • Laboratory Skills • Research • Microbial Cell Culture

DATA ANALYSIS

Bioinformatics • Phylogenomics • Genomic Databases (NCBI, IMG) • Python • R • Bash • Linux • Git

COMMUNICATION

Academic Writing • Teaching • Science Communication • ESL Tutoring • Grammar

OTHER SKILLS

Markdown • JavaScript • CSS • HTML • IDL • ENVI • InDesign • Photoshop

AWARDS

Graduate Research Fellowship
2020 // National Science Foundation

EDUCATION

Massachusetts Institute of Technology (MIT)
PhD Geobiology // Cambridge, Massachusetts // Anticipated 2025

California Institute of Technology (Caltech)
BS Geobiology // GPA 3.8 // Pasadena, California // 2019

University of Edinburgh
Study Abroad // Edinburgh, Scotland // 2018

RESEARCH

Doctoral Researcher in Geobiology
MIT // Cambridge, Massachusetts // 2020–present

Analyzing 84 metagenome-assembled genomes to study links between polysaccharide metabolism and mineralization in microbial mats. Streamlining gene tree construction using Jupyter Notebooks and Python/Bash scripts. Modifying and implementing open-source bioinformatics pipelines written in Python and R to locate hundreds of gene clusters related to polysaccharide degradation in our data.

Fulbright Denmark
University of Southern Denmark // Odense, Denmark // 2019–2020

Performed laboratory cell-culture experiments to investigate effects of low oxygen concentrations on carbon isotope fractionation by cyanobacteria. Solved problem of maintaining constant oxygen levels in oxygen-producing cultures by designing new experimental setup.

Undergraduate Researcher (Geobiology)
Caltech // Pasadena, California // April–August 2019

Maintained ~25 anaerobic enrichment cultures, assessed culture health and purity using fluorescence microscopy, and designed database for cruise, culture, and sample data using FileMaker Pro.

Ida M. Green Fellowship
2020 // MIT

Fulbright Grant (Denmark)
2019 // Fulbright US Student Program

Fritz B. Burns Prize in Geology
2018 // Caltech

James J. Morgan Undergraduate Research Fellowship
2018 // Caltech

Howard Reynolds Memorial Prize in Geology
2017 // Caltech

Mary Vodopia Undergraduate Research Fellowship
2017 // Caltech

Summer Undergraduate Research Fellowship
2016 // Caltech

Bonnie Cashin Prize for Imaginative Thinknig
2015 // Caltech

CERTIFICATES

Introduction to Linear Models and Matrix Algebra
January 2021 // HarvardX

Introduction to Computer Science and Programming Using Python
April 2020 // MITx

Statistics and R
May 2020 // HarvardX

SELECTED SCIENCE COMMUNICATION

Science Writing

The California Tech
Learning to Craft Handmade Scientific Tools in the Automated Age (2019)

Caltech News
Newly Discovered Giant Planet Slingshot Around Its Star (2019) • Q&A: Creating a Virtual Seismologist (2019) • Electron Tomography Database Changes The Game (2019) • Cracking Open a Cold One with the Flies (2018)

Podcasting

Strange New World: a Science and Star Trek Podcast // Co-Host // 2017-2018

Undergraduate Researcher (Planetary Science)
Caltech // Pasadena, California // 2017–2018

Characterized mineral composition of 57 Martian meteorite samples by adapting remote sensing methods to hand-sample analysis. Wrote spectral parameters in IDL for use with the geospatitial analysis software ENVI. Created largest imaging spectroscopy dataset of Martian samples at time of writing. Wrote 2 conference abstracts:

E. Cutts, B. Ehlmann, R. Greenberger, J. Beckett, E. Stolper (2018), LPSC XLIV, Abstract # 2749 • J. Miura, B. Ehlmann, R. Greenberger, **E. Cutts** (2020), LPSC LI, Abstract # 2969

Summer Undergraduate Research Fellow
NASA Jet Propulsion Laboratory // La Cañada Flintridge, California // July–September 2016

Modeled Europa's carbonate system using the PHREEQC model.

EDUCATION & COMMUNICATION

English Second Language Tutoring
Cambly // Online // 2021

Tutoring 5-10hr weekly with a focus on students, researchers, and professionals learning English for careers in science or technology.

Science Writing Intern
Caltech Office of Strategic Communications // Pasadena, California // 2018-2019

Wrote 15 articles covering science and university events for Caltech's web and print publications and helpd target media to young readers.

Teaching Assistant
Caltech // Pasadena, California // 2017-2019

Principles of Biology // Spring 2018, 2019
Contributed to complete re-design of biology course covering evolution, cell theory, and molecular biology. Wrote lessons and problem sets, lead recitation lectures, and worked 1-on-1 with students.

Astrobiology // Winter 2018, 2019
Delivered 2 hour-length guest lectures on redox chemistry and anoxygenic photosynthesis, graded, and advised student research projects.

Frontiers in Geological & Planetary Science // Winter 2018, 2019
Coordinated weekly seminar connecting students with faculty.

Introduction to Planetary Science // Spring 2017
Graded exams and assignments, engaged with learners following the online course, and worked with students during weekly office hours.

Yearbook Editor-in-Chief
Caltech Yearbook // Pasadena, California // 2016-2019

Revived student publication by recruiting entirely new staff. Edited, mentored staff, and contributed to book. See http://bigt.caltech.edu.