MICHAEL C. HOFFERT

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PROFILE

I am an inquisitive ecologist with an excellent work ethic, diverse research experience, and outstanding scientific skills. I'm passion about answering theoretical questions about the environmental and interspecific forces that drive assembly of biological communities and their evolution over time, especially in climate change amd disturbance regimes. My values include hard work, curiosity, a sense of humor, openness to feedback and a desire to improve and learn.

EDUCATION

Carleton College June 2018
B.A. in Biology, GPA 3.62

Relevant Coursework

· Senior Thesis: Predicting the influence of stochastic and deterministic variables on hydrothermal vent communities after eruptions. Advised by Professor Rika Anderson, 2018
· Biology: Bioinformatics & Genomics, Evolution, Grassland Ecology, Genetics, Biochemistry, Microbiology
· Computer Science: Computational Biology, Algorithms, Math and Data Structures, Human-Computer Interaction

RESEARCH EXPERIENCE

Finch Therapeutics Group June 2018 - present
Bioinformatics Research Associate II - promoted from Research Associate I in March 2020 *Somerville, MA*

· Orchestrated multiple meta-analyses of cross-sectional and interventional metagenomic datasets to identify elements of the gut microbiome disrupted by inflammatory bowel disease and create a comprehensive understanding of compositional, functional, and immunological differences between the diseased and healthy human gut microbiome.

· Independently designed, implemented, and validated NGS data pipelines with high-performance computing architecture from Google and AWS platforms, while ensuring completed pipelines were sufficiently documented and user-friendly to form the foundation of Finch's computational discovery platform.

· Performed compositional analysis of gut microbiome samples for an array of development projects, from optimizing experimental protocols to predicting strain diversity and growth media viability for isolates cultured from human stool.

· Developed hypotheses about the mechanisms driving microbial differential abundance across patient subpopulations and visualized phylogenetic, functional, and other biological data available on microbes to test these hypotheses.

Anderson Lab - Carleton College Biology Dept. April 2017 - June 2018
PI: Rika Anderson - Research Assistant *Northfield, MN*

· Conducted self-directed analysis of evolutionary dynamics in *Methanothermoccus* archaea populations using single-cell genomes and metagenomic samples from multiple ultra-deep hydrothermal vent sites on the Mid-Cayman Rise.

· Deduced relationship between vent geochemistry and emergence of variants in functional loci by annotating ORFs and aligning metagenomic data to genomes, building SNV profiles for each strain under various geochemical conditions.

· Discovered CRISPR loci and phage DNA in genomes to quantify where selective forces are imposed by viral predation.

· Advanced bioinformatics skills in pursuit of defining ecological interactions and relating patterns of emerging variation to environmental conditions while building a reproducible analysis framework to document this process.

Oesper Lab - Carleton College Computer Science Dept. April - September 2016
PI: Layla Oesper - Research Assistant *Northfield, MN*

· Compared efficiency and accuracy of algorithms for clonal tumor phylogeny inference from ultra-deep sequencing data.

· Defined methodology for computationally linking biological identity of variant loci in phylogenies to functional annotations of genes, enabling reconstruction of the biological process of oncogenesis based on inferred phylogenies.

· Designed web-based visualization scheme in Python and Cytoscape.js to enable visualization of trees with superimposed functional information and dynamic exploration of these trees while generating hypotheses about oncogenesis.

SKILLS

Summary

I have spent thousands of hours analyzing biological data and developing pipelines in Unix environments with extensive use of Python, GitHub, and Jupyter utilities to ensure my work is reproducible and version-controlled.

Bioinformatics & Genomics	HUMAnN2, QIIME1&2, vsearch, bowtie2, fastx-toolkit, bash, CCMetagen
Pipelines & HPC	AWS ParallelCluster, WDL / Cromwell, Google Pipelines API, Snakemake
Lab Techniques	Blotting, Electrophoresis, Immunoprecipitation, DNA/Protein extraction, PCR
Data Presentation	Presented data at many team meetings, AGU 2017, and Carleton symposiums

TEACHING AND ADDITIONAL EXPERIENCE

Carleton College Academic Support Center March 2017 - June 2018
Student Prefect *Northfield, MN*

· Classes supported: Biochemistry (80 students), Energy Flow in Biological Systems (100 students)

· Facilitated student engagement with course topics in biochemistry, ecology, and cell biology by running biweekly hour-long review sessions based on the Supplemental Instruction academic support model.

· Collaborated with faculty to construct practice exams and review sheets while encouraging student cooperation.

Carleton College Biology Stockroom September 2014 - March 2017
Stockroom Assistant *Northfield, MN*

· Prepared biological reagents, media, and cultures for faculty teaching and research labs.
· Sanitized, maintained, inventoried and organized lab equipment and tools.

EXTRACURRICULAR ACTIVITIES

Finch Therapeutics Diversity, Equity, and Inclusion Initiative February 2020 - present
Co-founding member and team co-lead

· Book and Media Club Administrator: Voluntary co-leader of Media Club, which distributes materials that address social justice and DEI issues in America and the workplace, hosting monthly discussions of these media with coworkers.

· DEI Training Initiative co-lead: Volunteer for group assembled to design a DEI curriculum for Finch as part of new employee onboarding and ongoing efforts to tackle bias and awareness issues in the workplace.

NCAA DIII Cross Country, Indoor and Outdoor Track & Field September 2014 - June 2018
Co-captain 2017-2018

· Trained 20+ hours per week and attended meets 49 weeks per year, often running over 70 miles per week.
· Organized practices, provided academic and emotional support for teammates, and resolved conflicts as a team captain.

Carleton College Biology Department September 2017 - June 2018
Student Departmental Advisor

· One of two Biology majors representing the Biology department at information sessions and department events.
· Provided advice about pre-requisites, courses, and registration information to prospective majors and Biology students.

Student Athlete Advisory Committee March 2016 - June 2018
Team Representative

· Engaged in biweekly meetings to vote on NCAA legislation and engage peers in the athletic department
· Planned awards ceremonies, fundraising events, and outreach programs for Carleton athletes in Northfield.

HONORS

2020	Promoted from Bioinformatics Research Associate I to Bioinformatics Research Associate II
2019	Finch Pin Award: Excellence in pursuit of Finch Therapeutics core values
2018	Distinction, Senior Thesis: scientific synthesis and communication skills in top 10% of students
2018	Sigma Xi Research Honor Society, Elected Associate Member
2017	Towsley Endowment Support for Summer Research, $1, 800
2016	Exemplary Writing Portfolio: Sophomore writing portfolio quality in top 10% of Carleton students
2015 - 2018	MIAC Conference Championship qualifier: top 30 performances in 1 mile, 3k, 5k, and 10k races