Kiersten Campbell

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Personal Website
Google Scholar

Education

Present	PhD Student, Computer Science & Informatics, **Emory University**, Atlanta GA
2021	BA, Biology (Highest Honors) and Computer Science**, Williams College**, Williamstown MA
2019	Study Abroad, Computer Science**, Budapest University of Technology & Economics,** Hungary

Research Experience

2024-present

Graduate Researcher, Department of Biomedical Informatics, *Emory University*
Principal Investigator: Matthew Reyna, PhD

- Developing a patient subgroup-aware mutual exclusivity test for cancer driver gene identification, including software implementation and statistical theory
- Using natural language processing to explore trends in cancer patient recruitment and enrollment in randomized controlled trials
- Supporting the annual George B. Moody PhysioNet Challenge, a computational cardiology competition that engages a global community of developers and inspires novel, open-source machine learning solutions

2021-2023

Post-baccalaureate IRTA Fellow, Bioinformatics & Scientific Programming Core**,** NICHD, *National Institutes of Health*
Principal Investigator: Ryan Dale, PhD

- Collaborated with eight labs across NICHD and contributed to the core's software infrastructure (ex: common assay pipelines & development utilities)
- Implemented bioinformatics pipelines, ranging from bulk/single-cell differential expression analysis, proteomics-based biomarker discovery, and differential methylation analysis
- Designed a publicly available teaching tool to explain the behavior of DESeq2

2018-2021

Undergraduate Researcher, Department of Biology, *Williams College*
Principal Investigator: Claire Ting, PhD
Title: *Characterizing the Pangenomes of Key Oceanic Microbiome Community Members*

- Conducted novel inter and intra-genera proteomic comparisons with *Prochlorococcus marinus,* a prominent marine cyanobacteria, and other abundant marine microbes
- Helped to direct project trajectory over multi-year period, including follow-up metagenomic analyses
- Project culminated in senior honors thesis

2019

Research Fellow, TECBio REU, *University of Pittsburgh*
Principal Investigator: Dennis Kostka, PhD

- Developed a machine learning tool (variational autoencoder network) to remove noise and identify doublets in scRNA-seq data
- Mentored high school researchers hosted by the department

2018-2019 **Undergraduate Researcher**, Department of Computer Science, *Williams College*
Principal Investigator: Daniel Barowy, PhD

- Designed the parser for SWELL, a programming language with simplified syntax utilized in a pilot Computer Science education platform for young students
- Trained undergraduate peers to teach Hour of Code workshops and oversaw educational field study in local middle schools

Publications

Reyna, MA, Deepanshi, Weigle J, Koscova Z, **Campbell K**, Seyedi S, Elola A, Rad AB, Shah AJ, Bhatia NK, Clifford GD, Sameni R. Digitization and Classification of ECG Images: The George B. Moody PhysioNet Challenge 2024. Computing in Cardiology, 2024. https://doi.org/10.22489/CinC.2024.011

Reyna MA, Deepanshi, Weigle J, Koscova Z, **Campbell K**, Shivashankara KK, Saghafi S, Nikookar S, Motie-Shirazi M, Kiarashi Y, Seyedi S, Clifford GD, and Sameni R. ECG-Image-Database: A Dataset of ECG Images with Real-World Imaging and Scanning Artifacts; A Foundation for Computerized ECG Image Digitization and Analysis. arXiv (preprint), 2024. https://doi.org/10.48550/arXiv.2409.16612

Campbell K*, Cawley NX*, Luke R, et al. Identification of Cerebral Spinal Fluid Protein Biomarkers in Niemann-Pick Disease, type C1. Biomarker Research, 2023. https://doi.org/10.1186/s40364-023-00448-x
[* = co-first author]

Dang Do AN, Sleat DE, **Campbell K**, Johnson NL, Zheng H, Wassif CA, Dale RK, Porter FD. Cerebrospinal Fluid Protein Biomarker Discovery in CLN3. J Proteome Research, 2023.
https://doi.org/10.1021/acs.jproteome.3c00199

Sharma VK, **Campbell K**, Yang X, Dale R, Loh YP. Characterization of serotonin-5-HTR1E signaling pathways and its role in cell survival. FASEB, 2023. https://doi.org/10.1096/fj.202300128R

Piña JO, Raju R, Roth DM, Winchester EW, Chattaraj P, Kidwai F, Faucz FR, Iben J, Mitra A, **Campbell K**, Fridell G, Esnault C, Cotney JL, Dale RK, D'Souza RN. Multimodal Spatiotemporal Transcriptomic Resolution of Embryonic Palate Osteogenesis. Nature Communications, 2023. https://doi.org/10.1038/s41467-023-41349-9

Anbazhagan R, Kavarthapu R, Dale R, **Campbell K**, Faucz FR, Dufau ML. miRNA Expression Profiles of Mouse Round Spermatids in GRTH/DDX25-Mediated Spermiogenesis: mRNA-miRNA Network Analysis. Cells, 2023. https://doi.org/10.3390/cells12050756

Do Q, **Campbell K**, Hine E, Pham D, Taylor A, Howley I, Barowy DW. Evaluating ProDirect Manipulation in Hour of Code. Proceedings of 2019 ACM SIGPLAN SPLASH-E Symposium, 2019.
https://doi.org/10.1145/3358711.3361623

Presentations

ParDoub: Parallelized Doublet Detection for scRNA-seq
Atlanta Workshop on Single-Cell Omics, Atlanta, GA, 2024. [Oral Presentation]

DESeq2 Interactive Teaching Tool
International Society of Computational Biology (ISCB), Madison, WI, 2022. [Poster]
NIH Postbac Poster Day, Bethesda, MD, 2022. [Poster]

CLN3 Biomarker Discovery
CLN3 Annual Meeting, NIH-wide summit, Bethesda, MD, 2021. [Oral Presentation]

Doublet Detection in scRNA-seq Data using Variational Autoencoders
Duquesne Undergraduate Research Symposium, Pittsburgh, PA, 2019. [Poster]

Teaching Experience

2024 **Teaching Associate & Course Developer**, Department of Computer Science, Emory University
CS312: Computing, AI, Ethics, and Society (Fall 2024)

2023 **Teaching Assistant**, Department of Computer Science, Emory University
CS170: Introduction to Computer Science I (Fall 2023)

2022-2023 **Co-Instructor,** Foundation for Advanced Education in the Sciences, Bethesda MD
BIOF 475: Introduction to Data Science (Summer & Fall 2022; Spring & Summer 2023)

2022 **Teaching Assistant,** Foundation for Advanced Education in the Sciences, Bethesda MD
BIOF 544: High Resolution Analysis of Transcriptomes (Spring 2022)

2020-2021 **Teaching Assistant**, Department of Computer Science, Williams College
CSCI 334: Principles of Programming Languages (Spring 2020, Spring 2021)
CSCI 256: Algorithm Design and Analysis (Fall 2020)

Awards and Honors

2025 Ashish Sharma Mentorship & Teaching Award, Department of Biomedical Informatics, Emory University

2023-present Robert W. Woodruff Fellowship, Emory University

2023-present Women in Natural Sciences Fellowship, Emory University

2022 CRA-E Research Highlight Series, featured in February 2022 edition

2021 NICHD Collaboration Award, National Institutes of Health

2021 Frederick Eugene Stratton Fellowship in Biology, awarded by Williams College

2021	Fulbright Open Research Grant Hungary Awardee; declined to pursue NIH fellowship
2020	Computing Research Association Outstanding Undergraduate Researcher, Finalist
2018-2021	Clare Booth Luce Scholar, Williams College cohort
2020	Student Attendance Scholarship, for Richard Tapia Conference
2019	Programming Languages Mentorship Workshop (PLMW) Travel Grant, SPLASH 2019
2019-2020	Department of Biology 1960's Scholar, Williams College
2018-2019	Department of Computer Science 1960's Scholar, Williams College

Leadership and Outreach Experience

2024-present	Laney Graduate School EDGE Ambassador, supports recruitment and community programming for graduate students across all graduate degree programs
2023-present	OpenBMI member, volunteer projects to promote community involvement in biomedical informatics & STEM
2022-2023	Direct mentor to visiting undergraduate researcher, NIH Summer Internship Program
2020-2021	Peer Mentor, Underrepresented Identities in Computer Science, Williams College
2017-2020	Conference Delegate, for Williams College at three national First-Generation conferences
2018	First-Generation Orientation Leader, Williams College
2018	Student Housing Coordinator, Office of Student Life, Williams College

Academic Service

2025-present	Computer Science & Informatics PhD Program Ambassador
2024-present	Computing in Cardiology Program Committee
2024-present	Woodruff Student-Alumni Committee, Community Programming Subcommittee
2025	RECOMB CCB subreviewer
2024	Biomedical Informatics Department Awards Committee, Emory University
2020	Dean Selection Committee, Williams College
2018-2020	Computer Science Student Advisory Committee, Williams College