

Bryn Marie Reimer

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Education

University of Massachusetts — Amherst

PhD student, Computer Science

Focus: Computational biology, genomics, AI/ML

Research Supervisor: Prof Anna Green, UMass Amherst

Amherst, MA

2024 – present

Massachusetts Institute of Technology

Graduate student, Electrical Engineering and Computer Science

Focus: AI planning, discrete-space ML

Research Supervisor: Dr Una-May O'Reilly, MIT

Cambridge, MA

2019 – 2021

University of Cambridge

Dr Herchel Smith Fellow

Master of Philosophy in Computational Biology (Half-taught, half-research)

2017

Dissertation title: Differential methylation in female multiple sclerosis cases

Research Supervisor: Prof Lisa Barcellos, UC-Berkeley

Master of Philosophy in Chemistry (Degree by Research)

2016

Dissertation title: Computational studies on the mechanism of homogeneous gold catalysis

Research Supervisor: Prof Jonathan M Goodman, University of Cambridge

Cambridge, UK

Williams College

B.A. in Chemistry, Magna Cum Laude, Phi Beta Kappa

Williamstown, MA

2011 – 2015

Research and Work Experience

Senior Expert I, Data Science

Novartis Institutes of BioMedical Research

Cambridge, MA

2021 – 2024

- Developed in-house tool for predicting covalently-modifiable cysteine residues using structural information alone (publication in revision)
- Created an in-house pipeline for predictive modeling of ternary complexes with bifunctional linkers
- Assessed workflows for protein-protein interaction prediction with coevolution, physics-based methods

Data Scientist

Massachusetts General Hospital

Prof Vamsi Mootha (Harvard Medical School)

Boston, MA

2017 – 2019

- Elucidated mitochondrial metabolism through computational genomics, metabolomics, and proteomics, working with small teams on multi-disciplinary projects
- Contributed several algorithms and pipelines that remain in use in the lab (open-source natural isotope correction; bioinformatic analysis of RNA sequencing data)
- Organized and led small symposia on statistics and hypothesis testing specifically for working biologists

Summer Intern: Software Development

Meta (now Diffeo)

Boston, MA

Summer 2015

- Worked with small team to develop in-house natural language processing (NLP) pipeline to tag files with content-appropriate, text-extracted concepts (Python)

Tutoring and Teaching Assistanceships

Williamstown, MA

Williams College

- TA, Philosophy 203: Logic and Language (Prof Keith McPartland, Spring 2015)
- Physics tutor for Office of Student Life (Jan 2014 – Jun 2015)
- Private mathematics tutor (Mar 2014 – Jun 2015)

Teaching Assistanceship

Cambridge, UK

University of Cambridge, Chemistry Department

- Lab Demonstrator for Part 1A chemistry, natural sciences tripos (2015 – 2016)

Summer Research: Computer vision & chem-informatics

San Jose, CA

IBM - Almaden Research Center

Summer 2014

Dr Hans Horn

- Successfully collaborated on image recognition software (P-OSRA) for identifying bond-line polymer structures, developing a database and database injection system using Hibernate and Maven, resulting in a functional website to field user inputs and requests to the polymer database.
- Talk on P-OSRA presented at ACS 2015

Summer Research: Structural biology

Fairfax, VA

George Mason University

Summer 2012

Dr Amarda Shehu

- Developed data analysis pipeline to determine whether the presence of supersecondary structural motifs in a protein could be inferred from the geometry of the secondary structure alone.
- Work resulted in a poster at the Grace Hopper Celebration for Women in Computing

Papers, Posters, and Presentations

(in revision) **Reimer, B.**, ..., Hornak, V., Predicting selective covalently-modifiable cysteines using protein structure and interpretable machine learning.

Gopal, R., ... **Reimer, B.**, ..., Mootha, V.K., Effectors enabling adaptation to mitochondrial complex I loss in H urthle cell carcinoma. *Cancer Discovery* **2023**

Shi, X.*, **Reinstadler, B.***, ... Shen, H., Combinatorial GxGxE CRISPR screening and functional analysis highlights SLC25A39 in mitochondrial GSH transport. *Nature Communications*, **2022**

Springer, J.*, **Reinstadler, B.***, O'Reilly, U., STRATA: Simple, Gradient-Free Attacks for Models of Code. *KDD'21 AdvML Workshop*

Sharma, R., **Reinstadler, B.**, ..., Mootha, V.K., Discovery of circulating biomarkers of mitochondrial disease severity and mechanism. *The Journal of Clinical Investigation* **2021**

“STRATA: Building Robustness with a Simple Method for Generating Black-box Adversarial Attacks for Models of Code”

Poster presented at Women in Machine Learning Workshop at NeurIPS, **2020**

Wang, L.W.*,... **Reinstadler, B.**, ..., Gewurz, B.E. Epstein-Barr Virus Induced One-Carbon Metabolism Drives B-Cell Transformation. *Cell Metabolism* **2019**

“Using clustering, meQTLs and DMR analysis to prove differences in MS cases”

Poster presented at American Society of Human Genetics (ASHG) Orlando, 2017

“P-OSRA: Polymer Optical Structure Recognition Application”

Poster presented at ACS Boston in Sci-Mix Poster Presentation, 2015

Oral presentation given at ACS Boston in CINF division, 2015

“Supersecondary Structure Motifs and De Novo Protein Structure Predictions”

Poster presented at the Grace Hopper Celebration of Women in Computing, 2012

Mentorship and Volunteering

Volunteering

Women in Ringing (Central Council of Church Bell Ringers)

- Designed and executed data analysis and visualizations emphasizing the historical and present role of women in a traditionally male-dominated space
- Collaborated to raise awareness and introduce new initiatives supporting women in ringing, resulting in several articles, workshops, and a website full of stories: <https://www.womeninringing.info/>

Virtual

2020–2021

Mentorship

India Science Month Online (ISMO)

- Mentored a PhD scholar at IISER Mohali, advising on presentation style, content, and clarity for a virtual “Talk Your Thesis” event; she went on to win second place.

Virtual

Winter 2020–2021

Undergraduate supervision

- Mentored an incoming PhD student, Jake Springer, through a machine learning project that resulted in a publication in the KDD’21 AdvML Workshop.

2020–2021

Volunteering & Mentorship

Women in Machine Learning (NeurIPS workshop)

- Mentored an undergraduate student, giving technical feedback and advice through the poster process and about graduate school applications
- Volunteered to help organize conference, including coordination responsibilities overseeing a large group of volunteers

Virtual

Fall 2020

Technical Skills

Programming Languages + Related: R and RShiny, Python (scikitlearn, pytorch), git, LaTeX, Unix/Linux, bash. Some experience: Java, Scala, golang, Haskell.

Broader Skills: Traditional statistical modeling (regression & classification), natural language processing, AI/ML, algorithm design and implementation, exploratory data analysis, data visualization

Computational Biology: RNAseq/DNAseq, proteomics, metabolomics, combinatorial screens (CRISPR)

Computational Chemistry: Molecular dynamics, virtual screening

Academic Awards, Fellowships, and Scholarships

Dr Herchel Smith Fellow at University of Cambridge

2015 – 2017

James F. Skinner Prize in Chemistry

June 2015

Phi Beta Kappa Membership

Spring 2015

American Physics Society / IBM Internship scholarship

Summer 2014

CRA-W (Computing Research Association – Women) DREU scholarship

Summer 2012