NASHIRA H. RIDGEWAY, PH.D.

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Postdoctoral researcher in bioinformatics leveraging metagenomics to study antimicrobial resistance. Ph.D. in Biology and Bioinformatics with an extensive background in applying machine learning (ML) and artificial intelligence (AI) to large biological datasets. Time spent in industry, and over a decade of coding expereince. Proficient in Python, linux, and R, experienced in developing bioinformatic pipelines for multi-omic analysis. Seeking a challenging collaborative role to leverage my expertise in applying computational techniques to genomic and proteomic discovery.

Education

2019 – 2024

Carleton University, Ottawa ON

Ph.D. in Biology – Supervised by Dr. Kyle Biggar

Thesis: *Insights into enzyme-substrate network discovery: Applying machine learning to high-throughput techniques*.

2014 – 2017

Carleton University, Ottawa ON

B.Sc. Honours in Computational Biochemistry

Professional History

2025 - present

Lab of Dr. Alex Wong, Carleton University, Ottawa ON

Postdoctoral Researcher

- Applying metagenomic analysis to detect antimicrobial resistance (AMR) in the ICUs of hospitals with the CUBE-Ontario group.
- Performing the genomic analysis of AMR gene inheritance in bacteria across a broad variety of species and environments.
- Holding weekly coding workshops with a bioinformatic focus for fellow lab members that wish to learn bash, Python, and Snakemake.

2019 – 2024

Lab of Dr. Kyle Biggar, Carleton University, Ottawa ON

Research Assistant and Teaching Assistant

- Developed ML algorithms for protein-protein interaction prediction.
- Created ProteoML, a desktop application for enzyme-substrate prediction (full-stack development), found substrates over 19X faster.
- Conducted wet lab techniques in protein expression, purification, and high-throughput proteome investigation.
- Supervised several students in various bioinformatic projects.

2014 – 2019

Amika Mobile, Ottawa ON

Software Developer

- Developed a data analytics component with Python, integrated into Java codebase for emergency communication software.
- Completed client-facing HTML projects with the development team.

Recent Publications

2025 | **Ridgeway, N. H.**, *et al*. (2025). Machine learning-based exploration of enzyme-substrate networks: SET8-mediated methyllysine and its changing impact within cancer proteomes. *Nature Communications Chemistry (currently under review).*

2025 | **Ridgeway, N. H.** and Biggar, K. K. (2025). Uncovering enzyme-specific post-translational modifications: An overview of current methodologies. *Proteomes (currently under review).*

2025 | **Ridgeway, N. H.**, *et al*. (2025). Spatially and temporally resolved monitoring of microbial communities in hospital intensive care units: Insights into colonization and antimicrobial resistance [Poster presentation]. *Conference on the Canadian Society of Microbiologists (CSM 2025) "Microbiology for society"*. Montreal, Quebec, Canada.

2025 | **Ridgeway, N. H.** and Wong, A. (2025). Conservation and loss of essential genes across the bacterial phylogeny [Poster presentation]. *Intelligent Systems for Molecular Biology/European Conference on Computational Biology (ISMB/ECCB) 2025*. Liverpool, England, United Kingdom.

Selected Awards and Honours

Training Award
Canadian Bioinformatics Hub, 2025.

Best Poster Award and Travel Award
The Canadian Epigenetics, Environment and Health Research Consortium (CEEHRC) 9th Canadian Conference on Epigenetics, 2023.

Teaching Assistant Excellence Award
Carleton University, 2021 - 2022.

Key Skills

- Coding Languages: Python, Java, R, bash/zsh, SQL, and HTML
- IDEs: Jupyter Notebooks, Visual Studio Code, and eclipse
- Bioinformatic Tools: FastQC, Trimmomatic, Kraken2, Bracken, CARD, etc.
- Data Science Libraries (Python): Pandas, NumPy, SciPy, Seaborn, etc.
- Python-based ML Libraries: Biopython, sci-kit learn, TensorFlow, etc.
- Cloud Computing Environments: Google Colab
- Analytical Workflow Management: Snakemake
- Full-Stack Development of Python-based Desktop Applications: PyQT
- Scientific Communication: Conferences, Scientific Publications

Additional Information

References and full publication list available upon request.