**Zachary Kileeg,** PhD candidate, MSc

linkedin.com/in/zachary-kileeg-694769165 | zachary.kileeg@mail.utoronto.ca | 905-269-6709

Professional Objective

PhD candidate with experience in a variety of bioinformatic disciplines, genetics, biochemistry, plant immunity, and machine learning. Seeking to increase experience related to computational fields and to learn and apply skills in a professional environment.

Experience

**Research Assistant** Scarborough, ON

*University of Toronto* 2019 – Present

* Designed and implemented pipelines in a cloud computing environment to assemble and evaluate long-read sequenced genomes
* Predicted gene structure using RNA-seq, HMM profiles, and machine-learning inferences
* Used a variety of phylogenetic tools to analyze genome structure and characteristics

**Teaching Assistant; Biochemistry and Human Physiology** Scarborough & Oshawa, ON

*University of Toronto & Ontario Tech University* 2019 – Present

* Managed timelines and expectations to complete marking assignments
* Acted as a bridge between professor and students
* Planned and managed multiple tutorial sessions distilled from complex weekly lectures

**Research Assistant** Port hope, ON

*Frontier Agri-Science* 2017 - 2018

* Consulted with researchers to create theoretical protein models and herbicide mechanisms
* Investigated neural networks for the discovery of novel chemical herbicides

Education and Certifications

**Doctoral Candidate,** *University of Toronto, Scarborough* 2019 – Present

*Research:* pan-genome assembly using bioinformatic long-read sequencing and transcriptome data to identify plant immune receptors

**SciNet Education,** *SciNet HPC Consortium, Toronto*

*Data Science Certificate* 2023

* Neural networks (evaluating machine learning models, reinforcement learning, GANs, variational autoencoders, etc.)
* R, python, bash scripting, best coding practices, git hub and version control

**Master of Applied Bioscience,** *Ontario Tech University*  2016 – 2018

*Research:* RNA-seq analysis and protein modelling to discover herbicide mode of action

Skills

Skills

*Computational:* R, Python, Command line (bash, powershell, etc.), cloud computing, DNA and RNA-seq (designing and implementing pipelines), phylogenetics, evolution, statistics, proteomics (protein modeling and analysis), TensorFlow frameworks, database parsing and file retrieval (NCBI, GEO, Phytozome, ENA, etc.), version control (git)

*Lab-related:* Molecular biology, DNA/RNA/Protein isolation, microbiology, plant immune assays, genetics, genomics

*General:* oral and written communication, organization, time-management, fast-learner

Research Contributions

**Publications**

2024 **Kileeg, Z.**, Wang, P., & Mott, G. A. (2024). Chromosome-Scale Assembly and Annotation of Eight Arabidopsis thaliana Ecotypes. Genome Biology and Evolution, 16(8). <https://doi.org/10.1093/gbe/evae169>

2023 **Kileeg, Z**., Haldar, A., Khan, H., Qamar, A., & Mott, G. A. (2023). Differential expansion and retention patterns of LRR‐RLK genes across plant evolution. Plant Direct, 7(12). https://doi.org/10.1002/pld3.556

2018 Shim, I., Law, R., **Kileeg, Z.,** Stronghill, P., Northey, J.G.B., Strap, J.L., and Bonetta, D.T. (2018). Alleles Causing Resistance to Isoxaben and Flupoxam Highlight the Significance of Transmembrane Domains for CESA Protein Function. *Front. Plant Sci.* <https://doi.org/10.3389/fpls.2018.01152>.

**Conference Proceedings**

2024 **Kileeg, Z**., and Mott, G.A. Investigating the pan-RLK landscape of Arabidopsis thaliana. **Oral presentation,** CAGEF Symposium, Canada.

2024 **Kileeg, Z**., and Mott., G.A. **Phylogenetic Analysis of** Plant **Species Reveals Differential Expansion in Stress-Related Leucine-Rich Repeat Receptor-like Kinases.** **Poster presentation,** Plant and Animal Genomes, International Conference, U.S.A.

2023 **Kileeg, Z**., Haldar, A., Khan, H., Qamar, A., and Mott, G.A. Sightless but not blind – plants expand receptor kinase families related to stress adaptation. **Oral presentation,** CSPB Eastern Regional Meeting, Canada.

2022 **Kileeg, Z.,** Haldar, A., Khan, H., Qamar, A., and Mott, G.A. This way or that: plants have preferentially expanded specific stress-related receptor kinases. **Poster presentation,** CSB Research Day, Canada.

2021 **Kileeg, Z.,** and Mott, G.A. Defense of the Plants – leveraging natural variation in *Arabidopsis thaliana* to identify stress-related receptor kinases. **Poster presentation,** CSPB Eastern Regional Meeting, Canada.

2021Haldar, A**.,** **Kileeg, Z.,** Khan, H., Qamar, A., and Mott, G.A. Investigation into the evolution and expansion of a malectin containing leucine-rich repeat receptor kinase family in land plants. **Oral presentation**, Regional conference, Canada.

2020 **Kileeg, Z.,** Haldar, A., Khan, H., Qamar, A., and Mott, G.A. Guardians of the Apoplast: Investigation of stress-responsive leucine-rich repeat receptor kinases in plants. **Poster presentation,** CSPB Annual General Meeting, Regional conference, Canada.

Awards

2021 Honourary mention for poster presentation at CSPB Eastern Regional Meeting.

2021 **$14,000** Dr. Clara Winifred Fritz Memorial Fellowship in Plant Pathology

2019 - Present **$22,507**, University of Toronto Fellowship

2019 - Present   **$3,300**, Faculty of Arts & Science Fellowship

General Experience

**Governing Council,** Scarborough, ON 2023 – 2024

*Graduate Student Representative*

* Acted as a liaison between graduate students and the governing council
* Heard and voted on complex issues surrounding allocation of funds, budget, and enrollment statistics
* Judged and voted on issues brought forth by student unions

**No Frills,** Cobourg, ON 2013 – 2016

*Grocery Clerk*

* Worked as a part of a team and as an individual to solve problems and complete tasks
* Fulfilled roles and duties of an assistant manager, including maintaining item quality, controlling stock prices, and facilitating effective team work
* Communicated with customers and acted to rectify any problems or concerns

**Volunteer Work**

*St. John’s Ambulance*

* Acted as a Junior Medical First Responder
* Gathered information on medical problems/emergencies and relayed these to First Responders and Paramedics

*Northumberland Hills Hospital*

* Provided support and empathy to dementia patients
* Cooperated with care givers to help meet patient needs