Cait Harrigan, MSc.

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I am a graduate student at the University of Toronto supervised by Quaid Morris and Kieran Campbell. I'm a graduate researcher at the Vector Institute and Doctoral Fellow at the UofT Data Sciences Institute. I use machine learning to understand cancer genomics by modelling the evolutionary constraints that underlie how mutations occur in DNA. I'm passionate about open science, and promoting great mentorship in the sciences.

EDUCATION

PhD in Computer Science, University of Toronto   01/21 - present
Supervised by Quaid Morris and Kieran Campbell

MSc. in Computer Science, University of Toronto   09/19 - 03/21
Supervised by Quaid Morris

BSc. in Computational Biology, University of Toronto   09/15 - 06/19
Awarded with distinction

RESEARCH EXPERIENCE

Visiting Graduate Researcher, Memorial Sloan Kettering Cancer Center   06/23 - present
Hosted by Quaid Morris

Visiting Graduate Researcher, Memorial Sloan Kettering Cancer Center   05/21 - 09/21
Hosted by Quaid Morris

Undergraduate Research Assistant, SickKids Hospital   05/17 - 09/17
Supervised by Michael Wilson and Anna Goldenberg

PEER REVIEWED PUBLICATIONS

* Indicates equal contribution

1. Caitlin Timmons, Quaid Morris, and **Caitlin F. Harrigan**. "Regional mutational signature activities in cancer genomes". En. In: *PLOS Computational Biology* 18.12 (Dec. 2022), p. e1010733.

2. Agata A. Bielska, **Caitlin F. Harrigan**, Yeon Ju Kyung, Quaid Morris, Wilhelm Palm, and Craig B. Thompson. "Activating mTOR mutations are detrimental in nutrient-poor conditions". Eng. In: *Cancer Research* (Jul. 2022).

3. **Caitlin F. Harrigan**, Yulia Rubanova, Quaid Morris, and Alina Selega. "TrackSigFreq : subclonal reconstructions based on mutation signatures and allele frequencies". In: *Pacific Symposium on Biocomputing* 25 (Jan. 2020), pp. 238-249.

4. Yulia Rubanova, Ruian Shi, **Caitlin F. Harrigan**, Roujia Li, Jeff Wintersinger, Nil Sahin, Amit Deshwar, and Quaid Morris. "Reconstructing evolutionary trajectories of mutation signature activities in cancer using TrackSig". In: *Nature Communications* 11.1 (Feb. 2020), pp. 1-12.

OTHER PUBLICATIONS

1. **Caitlin F. Harrigan***, Gabriella Morgenshtern*, Anna Goldenberg, and Fanny Chevalier. "Considerations for Visualizing Uncertainty in Clinical Machine Learning Models". Realizing AI in Healthcare: Challenges Appearing in the Wild, Workshop at CHI 2021 Online Virtual Conference, May. 2021.

FELLOWSHIPS & AWARDS

Vector Institute Research Grant — 03/20 - present
Vector Institute, Toronto, Canada

NSERC Postgraduate Scholarship - Doctoral — 09/22 - present
University of Toronto

DSI Doctoral Student Fellowship Award — 09/22 - present
Data Science Institute, University of Toronto

Queen Elizabeth II Graduate Scholarship in Science & Technology — 07/22
(respectfully declined)

Ontario Graduate Scholarship — 09/21 - 09/22
Department of Computer Science, University of Toronto

ACM SIGHPC Computational & Data Science Fellowship — 07/20 - 07/22
Special Interest Group on High Performance Computing of the Association for Computing Machinery

JXTX foundation Genome Informatics Scholarship — 08/21
James P. Taylor Foundation for Open Science

General Motors Women in Science and Mathematics Award — 09/20
University of Toronto

NIH Conference Travel Fellowship — 11/19
International Society for Computational Biology

The Audrey Taylor Award — 07/17
New College, University of Toronto

TALKS

Mutational Signautres for DNA Damage and Misrepair — 05/23
Mathematical Methods in Cancer Biology, Evolution and Therapy (BIRS 23w5084)
Invited talk

DAMUTA: Dirichlet allocation of mutations as a function of both damage and DNA repair — 11/21
Cold Spring Harbour Laboratory Meeting: Genome Informatics
Selected Talk

TrackSigFreq: subclonal reconstructions based on mutation signatures and allele frequencies — 01/20
Pacific Symposium on Biocomputing
Selected Talk, Poster

RESEARCH MENTORSHIP

Fedir Zhydok — 09/22 - 12/22
Undergraduate Student, National University of Kyiv-Mohyla Academy
Topic: Identifying metastatic tumours from mutational signatures

Caitlin Timmons — 05/21 - 08/22
Undergraduate Student, Memorial Sloan Kettering Cancer Center
Topic: Modelling spatial distribution of mutational signatures in cancer genomes.

Haritha Lakshmanan — 05/20 - 11/20
Highschool Student, Memorial Sloan Kettering Cancer Center
Topic: Automatic discovery of mutations predictive of survival in breast cancer patients