

Cait Harrigan, MSc.

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I am a graduate student at the University of Toronto supervised by [Quaid Morris](#) and [Kieran Campbell](#), and a graduate researcher at the [Vector Institute](#). I did my undergraduate studies at the University of Toronto, in Computational Biology and Statistics. In my PhD work, I use machine learning to understand cancer genomics by modelling the evolutionary constraints that underlie how mutation events occur in DNA. I'm passionate about open science, and promoting great mentorship in the sciences.

MEMBERSHIPS & AFFILIATIONS

Doctoral Fellow Data Science Institute, University of Toronto	Jul 2022 — present
Graduate Researcher Ontario Institute for Cancer Research	May 2020 — present
Graduate Researcher Vector Institute, Toronto, Canada	Sep 2019 — present

EDUCATION

PhD in Computer Science University of Toronto	Jan 2021 — present
MSc in Computer Science University of Toronto	Sep 2019 — Mar 2021
Honours BSc. Awarded with distinction University of Toronto	Sep 2015 — Jun 2019

WORK EXPERIENCE

Visiting Graduate Researcher Memorial Sloan Kettering Cancer Center	May 2021 — Sep 2021
Undergraduate Research Assistant Terrence Donnelly Centre for Cellular and Biomolecular Genetics	Sep 2018 — May 2019
Undergraduate Research Assistant SickKids The Hospital for Sick Children	May 2017 — Sep 2017
Intern Eviviz Vancouver	May 2016 — Sep 2016

PUBLICATIONS

1. 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).
2. Caitlin Timmons, Quaid Morris, and Caitlin F. Harrigan. "[Regional mutational signature activities in cancer genomes](#)". En. In: *PLOS Computational Biology* 18.12 (May. 2022), p. e1010733.
3. **Caitlin F Harrigan**, Gabriella Morgenshtern, Anna Goldenberg, and Fanny Chevalier. "[Considerations for Visualizing Uncertainty in Clinical Machine Learning Models](#)". Workshop: Realizing AI in Healthcare: Challenges Appearing in the Wild, CHI 2021 Online Virtual Conference (originally Yokohama, Japan), May. 2021.
4. **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.
5. 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.

TALKS

DAMUTA: Dirichlet allocation of mutations as a function of both damage and DNA repair Cold Spring Harbour Laboratory Meeting: Genome Informatics Selected Talk	Nov 2021
TrackSigFreq: subclonal reconstructions based on mutation signatures and allele frequencies Pacific Symposium on Biocomputing Selected Talk, Poster	Jan 2020

POSTERS

Dirichlet Allocation of Mutations Captures the Action of DNA Damage and Misrepair Processes	Jul 2022
Intelligent Systems for Molecular Biology	
Dirichlet Allocation of Mutations in Cancer Genomes	Nov 2021
Machine Learning in Computational Biology	
TrackSigFreq: subclonal reconstructions based on mutation signatures and allele frequencies	Dec 2019
Machine Learning in Computational Biology	

GRANTS & AWARDS

NSERC Postgraduate Scholarship - Doctoral	Sep 2022 — present
DSI Doctoral Student Fellowship Award	Sep 2022 — present
Queen Elizabeth II Graduate Scholarship in Science & Technology	Jul 2022
Ontario Graduate Scholarship	Sep 2021 — Sep 2022
ACM SIGHPC Computational & Data Science Fellowship	Jul 2020 — Jul 2022
JTX foundation Genome Informatics Scholarship	Aug 2021
General Motors Women in Science and Mathematics Award	Sep 2020
NIH Conference Travel Fellowship	Nov 2019
The Audrey Taylor Award	Jul 2017

SERVICE

Peer review: Genome Biology, iScience, Genome Medicine
Conference program committee: Machine Learning in Computational Biology (2019),
 Pacific Symposium on Biocomputing (2020)

TEACHING

Unless otherwise noted, school is University of Toronto

JSC370: Data Science II	Jan 2023 — May 2023
JSC270: Data Science I	Jan 2023 — May 2023
STA313: Data Visualization	Sep 2022 — Dec 2022
JSC370: Data Science II	Jan 2022 — May 2022
PRISM: Undergraduate Research Program	Jan 2022 — May 2022
CSC197: What, Who, How: Privacy in the Age of Big Data Collection	Sep 2021 — Dec 2021
STA4273: Minimizing Expectations	Jan 2021 — May 2021
CSC197: What, Who, How: Privacy in the Age of Big Data Collection	Sep 2020 — Dec 2020
JSC270: Data Science I	Jan 2020 — May 2020
CSC373: Algorithm Design, Analysis & Complexity	Sep 2019 — Dec 2019

EVENT/CONFERENCE ORGANIZATION

Volunteer Coordinator	Mar 2020
Grad Visit Day, Department of Computer Science, University of Toronto	
Event chair: BioHacks	Mar 2018
Bioinformatics and Computational Biology Hackathon	

PROGRAM ADMINISTRATION

Program Organizer	Sep 2021 — present
Graduate Application Assistance Program, Department of Computer Science, University of Toronto	
Project Manager STEMHub Foundation	Oct 2020 — May 2021
Founder and treasurer	May 2018 — May 2019
Bioinformatics and Computational Biology Student Union, University of Toronto	