Yo Akiyama

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Education

Massachusetts Institute of Technology — Cambridge, MA
Ph.D. student in Electrical Engineering and Computer Science — Starting September 2023

Williams College — Williamstown, MA
Bachelor of Arts with Honors in Computer Science — June 2020

Research Experience

Associate Computational Biologist II — July 2022 – Present
The Broad Institute of MIT and Harvard — Gad Getz Lab — Cambridge, MA

- Leading a Clinical Proteomics Tumor Analysis Consortium (CPTAC) project investigating the genetic regulation of proteins and post-translational modifications (PTMs) in cancer and normal tissues
- Constructed the computational framework for a novel sequencing-based assay that simultaneously measures gene expression and DNA repair capacities at a single-cell resolution

Associate Computational Biologist I — June 2020 – June 2022
The Broad Institute of MIT and Harvard — Gad Getz Lab — Cambridge, MA

- Co-led a national, multi-institutional CPTAC collaboration investigating the patterns and regulation of proteins and PTMs in cancer
    - Spearheaded analyses of the DNA damage response which revealed therapeutically relevant insights into subtypes of DNA repair deficient cancers
- Contributed to CPTAC data generation efforts by devising strategies to correct for major batch effects in transcriptomic data and filter genomic data artifacts
- Adapted software for Bayesian non-negative matrix factorization to extract sample-level patterns of somatic mutations
    - Software development: SignatureAnalyzer (https://github.com/getzlab/SignatureAnalyzer)

Honors Thesis in Computer Science — September 2019 – June 2020
Williams College — Williamstown, MA

- "The Design and Implementation of the Space Reclamation Framework for a NAND-based Log-Structured File System" – Advisor: Tom Murtagh
- Implemented the first working version for the garbage collection and memory allocation processes for a novel log-structured file system and benchmarked the performance of various space-reclamation algorithms

Undergraduate Research Fellow — February 2019 – August 2019
Williams College — Williamstown, MA

- Manipulated the F2FS Linux file system to include various space-reclamation algorithms
- Designed workflows to benchmark the performance and behaviors of these heuristics under different stresses

Teaching experience

Computer Science Teaching Assistant — September 2019 – December 2019
Williams College Computer Organization (CSCI 237) — Williamstown, MA

- Dedicated 10 hours per week to hold office hours and proctoring labs
- Coursework focused on machine-level code and its generation, performance evaluation and optimization, computer arithmetic, and memory organization and management

Publications

(*co-first authors)

- Geffen, Y.*, Anand, S.*, **Akiyama, Y.***, Yaron, T.*, Song, Y.* *et al.* (2023). Pan-cancer analysis of post-translational modifications reveals shared patterns of protein regulation. *Cell.* https://doi.org/10.1016/j.cell.2023.07.013
- Li, Y. *et al.* (2023). Pan-Cancer Proteogenomic Impacts of Oncogenic Drivers. *Cell.* https://doi.org/10.1016/j.cell.2023.07.014
- Li, Y. *et al.* (2023). Proteogenomic data and resources for pan-cancer analysis. *Cancer Cell.* https://doi.org/10.1016/j.ccell.2023.06.009.
- Ravi, A. *et al.* (2023). Genomic and transcriptomic analysis of checkpoint blockade response in advanced non-small cell lung cancer. *Nature Genetics.* 10.1038/s41588-023-01355-5
- Wang, Y. *et al.* (2016). Novel ALK inhibitor AZD3463 inhibits neuroblastoma growth by overcoming crizotinib resistance and inducing apoptosis. *Sci Rep* 6, 19423. 10.1038/srep19423

Conference abstracts and presentations

- **Akiyama, Y.*** *et. al.* (2023). "The genetic regulation of proteins and post-translational modifications across tissues and cancer." The Biology of Genomes (poster).
- Anand, S. *et. al.* (2023). "Abstract 3132: CLUMPS-PTM: Spatial Clustering of Post-Translational Modifications Across Cancer Types.", Submitted to AACR Annual Meeting (poster). 10.1158/1538-7445.AM2023-3132
- Ravi, A. *et. al.* (2023). "Abstract 3468: Immunoproteasome expression and checkpoint blockade response in advanced non-small cell lung cancer." AACR Annual Meeting (poster). 10.1158/1538-7445.AM2023-3468
- **Akiyama, Y.*** *et al.* (2022). "Abstract 794: Pan-cancer proteogenomic analysis reveals functional mechanisms underlying DNA repair deficiencies." AACR Annual Meeting (poster). 10.1158/1538-7445.AM2022-794.
- Geffen, Y. *et al.* (2021). "Abstract 16: Patterns and regulation of post translational modifications in cancer." AACR Annual Meeting (talk). 10.1158/1538-7445.AM2021-16.

Skills

Programming Languages: Python, C, Java, R, Bash, Hand-coded Assembly x86, F#, WDL
Frameworks: Linux, Docker, .NET

Leadership

Williams College Wrestling September 2016 – June 2020
Williams College Williamstown, MA

- 2019 - 2020 team captain and four year starter for the NCAA DIII varsity wrestling team
- 2018 & 2020 National Wrestling Coaches Association (NWCA) Scholar All-American