Justin Cyril Sing

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EDUCATION

University of Toronto [Jan. 2019 – To Date]
Doctorate of Science, Computational Biology, Supervisor: Dr. Hannes Röst
Research areas: Proteomics, Multi-Omics, Personalized Medicine, Algorithmic and Software Development, Machine Learning

McMaster University [Sept. 2012 – June 2017]
Bachelor of Technology, Specialization in Biotechnology

RESEARCH EXPERIENCE

University of Toronto, Toronto, Canada [Jan. 2019 – To Date]
Ph.D. Researcher in Dr. Hannes Röst's Lab, Ph.D., Department of Molecular Genetics
- Implement methods for consistent quantification of post-translational modifications in large-scale mass spectrometry, resulting in a 21% increase in quantified phosphopeptides and maintaining a 97% consistent identification rate.
- Developed data analysis and prediction pipelines for multi-omic personalized medicine collaborations, with a focus on investigating Chronic Fatigue Syndrome (CFS) and Glioblastoma tumor recurrence.

Flora Bioworks Inc., Toronto, Canada [Feb 2021 – April 2023]
Co-Founder, Chief Research and Development
- Co-founded a startup in 2021 developing a rapid, non-invasive microbiome-centric toolkit for coronary artery disease screening, achieving one-week results and best-in-class sensitivity, enhancing patient risk assessment and saving lives.
- Played a pivotal role in business development, shaping commercialization plans and conducting competitor analyses.
- Led product development and R&D efforts, guiding Cardiome from concept to prototype and securing $15K CAD through pitch competitions.

The Hospital for Sick Children, Toronto, Canada [May 2017 – Aug. 2018]
Junior Researcher, Dr. Ran Kafri's Lab, Department of Molecular Genetics
- Contributed to the development of an experimental assay aimed at studying signaling pathways involved in coordinating cellular growth rate and cell size.
- Collaborated with Daniel Snyder, to develop a computational framework for image-analysis segmentation.

Selected Publications

Equal contributions and co-authorship is denoted by asterisk (*)

1. Jahanbani, F., ***Sing, J. C.****, et. al. (2024) Longitudinal Cytokine and Multi-Modal Health Data of an Extremely Severe ME/CFS Patient with HSD Reveals Insights into Immunopathology, and Disease Severity. Frontiers in Immunology. doi.org/10.3389/fimmu.2024.1369295
2. **Sing, J.C.***, Charkow, J., AlHigaylan, M., Horecka, I., Xu, L., Röst, H. (2024) *MassDash: A web-based dashboard for targeted mass spectrometry visualization.* BioRxiv [Preprint]. doi:10.1101/2024.01.15.575772
3. Cosenza-Contreras, M., Schäfer, A., **Sing, J.**, *et al.* (2024) Proteometabolomics of initial and recurrent GBM highlights an increased immune cell signature with altered lipid metabolism, *Neuro-Oncology*. doi.org/10.1093/neuonc/noad208
4. Gupta, S., **Sing, J.C.*** and Röst, H.L. (2023) Achieving quantitative reproducibility in label-free multisite DIA experiments through multirun alignment, Communications Biology, 6(1). doi:10.1038/s42003-023-05437-2
5. **Sing, J.***, Whitley, O., and Davis, S. (2023). Diagnostic potential of microbiome metagenomics sequencing for cardiovascular disease risk stratification. BioRxiv [Preprint]. doi.org/10.1101/2023.10.02.560614.
6. Jahanbani, F., Maynard, R., **Sing, J.**, … , Snyder, M. (2022) Phenotypic characteristic of peripheral immune cells of ME/CFS via Transmission Electron Microscopy: a pilot study. PLOS ONE. doi.org/10.1371/journal.pone.0272703
7. Srinivasan, A., **Sing, J.***, Gingras, AC., and Röst, H. (2022). Improving phosphoproteomics profiling using data-independent mass spectrometry. Journal of Proteome Research. doi.org/10.1021/acs.jproteome.2c00172

TEACHING EXPERIENCE

- **MMG1004: Basic Computational Biology (2020 – 2023W)**
- **MGY441: Bioinformatics (2022 – 2023F)**

PRESENTATIONS

HUPO, Enhancing Consistent Quantification of Site-Localized PTMs in Large-Scale DIA-MS Experiments	[Sept. 2023]
Research To The People Symposium, Proteomics for Personalized Cancer Care	[June. 2023]
MGY441 Guest Lecture, Life as a Bioinformatician in Graduate School	[Dec. 2022]
Molecular Genetics Retreat, Towards Consistent Quantification of PTMs	[Sept. 2022]
ASMS, Consistent Quantification of PTMs in Large-Scale DIA-MS	[June. 2022]