

Lisa-Monique Edward, B.M.Sc.

607-386 Yonge St, Toronto, ON, M5B 0A5

647-388-9507

lisam.edward@gmail.com

EDUCATION

UNIVERSITY OF WESTERN ONTARIO

London, ON

**(Hons) Bachelor of Medical Sciences in Computational Biochemistry,
Western Scholars, with distinction**

Sept 2016 – June 2019

- GPA: 87% (Completed requirements for 4-year degree program in 3 years)
- Honors: Dean's Honor List, Scholars' Electives (relinquished)
- Thesis: Application of a Novel Visualization Tool to Assess Diversity in Next-Generation Sequence Data (Rossiter Award recipient)

SIR ARTHUR LEWIS COMMUNITY COLLEGE

Castries, St. Lucia

Associate of Natural Science, Caribbean Advanced Proficiency Examinations

Aug 2013 – Nov 2015

- GPA: 3.86/4.00; Biology – Grade I; Chemistry – Grade I; Pure Mathematics – Grade II
 - Honors: Dean's List
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HONORS/AWARDS

Rossiter Award for Research Excellence, Department of Biochemistry, Schulich School of Medicine & Dentistry (1 of 1)

June 2019

Graduation Distinction, Department of Biochemistry, Schulich School of Medicine & Dentistry (A average with no grade below 70% in program)

June 2019

Generation Google Scholarship, Google (1 of 15, \$5,000)

July 2018

Undergraduate Special Caribbean Scholarship, Organization of American States (1 of 8, \$15,000 USD)

July 2018

International President's Entrance Scholarship, University of Western Ontario (1 of 3, \$50,000)

Sept 2016

RESEARCH INTERESTS

- Cancer Biology
 - Bioinformatics and Computational Biology
 - Genetics, Genomics, Epigenomics, Transcriptomics and Multi-omics Studies
 - Translational Medicine; Precision Medicine
 - Race, Ethnicity and Genomics; Genetic Predisposition/Ethnology; Health Disparities
 - Tumour Evolution and Heterogeneity; Tumorigenesis
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RESEARCH EXPERIENCE

THE HOSPITAL FOR SICK CHILDREN Bioinformatician (prev. Research Technologist)

Toronto, ON
Aug 2019 – Present

- Supervisor: Dr. Adam Shlien, Associate Director, Translational Genetics, DPLM; Scientist, Genetics and Genome Biology; co-Director, KiCS cancer sequencing program
- Conduct genomic and transcriptomic analyses of clinical cases as part of SickKids Cancer Sequencing (KiCS) precision oncology program.
- Maintain and improve existing analysis pipelines and developed novel pipelines as necessary to meet lab's research goals e.g. increased InDel variant calling sensitivity and precision, modularized and containerized multiple pipelines for cloud deployment, and developed pipeline to identify Internal Tandem Duplication mutations in whole genome and cancer gene panel sequencing data.
- Provide technical expertise and assistance to students, fellows and researchers including managing data transfers and storage for collaborations both internally within the SickKids Research Institute and externally with local, regional, national and international groups.
- Act as liaison with Research IT-High Performance Computing team to ensure HPC environment is meeting the needs of lab members.

This work has resulted in 1 publication in Nature and 1 other manuscript currently under revision for resubmission.

Summer Research Student

May 2018–Aug 2018

- Supervisor: Dr. Adam Shlien, Associate Director, Translational Genetics, DPLM; Scientist, Genetics and Genome Biology; co-Director, KiCS cancer sequencing program
- Developed Python and R scripts to analyse and correlate Illumina 450K DNA methylation data and the output of RNAmP, a novel computational method developed by a member of the research group capable of measuring the transcriptional output of primary human cancer cells.
- Identified a variety of pan-cancer and tissue type-, subtype- and genomic region-specific associations between DNA methylation levels and transcriptional output in a large dataset of over 450,000 DNA probes and over 5,000 cancer samples spanning 31 cancer types. Demonstrated novel subgroup of IDH mutant co-deletion type low-grade gliomas which exhibits high transcriptional output, hypomethylation and poor prognosis.

This work resulted in a manuscript currently under review.

THE UNIVERSITY OF WESTERN ONTARIO Honors Thesis Student

London, ON
Sept 2018–Apr 2019

- Supervisor: Dr. Art Poon, Associate Professor, Department of Pathology & Laboratory Medicine
- Developed R package ("highlineR") to visualize diversity in Next Generation Sequence Data.
- Visualized 139 NGS datasets (patient derived viral sequences) using highlineR to gain insight into HIV genetic diversity including features not easily identifiable via summary statistical measures (e.g. presence of predominant genetic sequences and potential recombination/superinfection events).

THE UNIVERSITY OF WESTERN ONTARIO
Research Student

London, ON
Jan 2018–Apr 2018

- Supervisor: Dr. Gregory Gloor, Professor; Chair, Department of Biochemistry
- Utilized simulated RNA-Seq experiments to study the relationship between effect size, power and sample size using the R programming language.
- Demonstrated the improved statistical power of using effect size as a measure of significance for differential expression analysis in comparison to traditional tests of statistical significance involving often irreproducible p-values.

This work resulted in a preprint published on arXiv.

THE UNIVERSITY OF WESTERN ONTARIO
Research Student

London, ON
Sept 2017–Apr 2018

- Supervisor: Dr. David Litchfield, Professor; Vice Dean, Research & Innovation, Schulich School of Medicine & Dentistry
- Using bioinformatics analyses and biochemical studies, demonstrated Protein Kinase CK2-dependant changes in the proteome and phospho-proteome of HeLa cells exposed to DNA damaging agent.

PRESENTATIONS

Poster presentations:

Edward, L.-M., & Poon, A. F. Y. (2019). highlineR: A Novel Visualization Tool for Assessing Diversity in NGS Data. (*Poster Presented at the Harold B. Stewart Research Showcase*).

Edward, L.-M., Shlien, A., & Zatzman, M. (2018). Investigating the Relationship between Transcriptional Amplification & DNA Methylation in over 5,000 Cancers. (*Poster Presented at the SickKids Summer Research Program Symposium Day*).

Panels:

Edward, L.-M. (2020). Bridging the Generational Gap through Youth Empowerment. (*Invited Panelist at the Inaugural Event of the Saint Lucian Young Leaders in Canada*).

PUBLICATIONS

Published in peer-reviewed journals:

Nakamori, M., Panigrahi, G. B., Lanni, S., Gall-Duncan, T., Hayakawa, H., Tanaka, H., Luo, J., Otabe, T., Li, J., Sakata, A., Caron, M.-C., Joshi, N., Prasolava, T., Chiang, K., Masson, J.-Y., Wold, M. S., Wang, X., Lee, M. Y. W. T., Huddleston, J., ... Pearson, C. E. (2020). A slipped-CAG DNA-binding small molecule induces trinucleotide-repeat contractions in vivo. *Nature Genetics*, 52(2), 146–159.
<https://doi.org/10.1038/s41588-019-0575-8>

Published in non-peer-reviewed journals:

Fernandes, A. D., Vu, M. T. H. Q., **Edward, L.-M.**, Macklaim, J. M., & Gloor, G. B. (2019). A reproducible effect size is more useful than an irreproducible hypothesis test to analyze high throughput sequencing datasets. *arXiv preprint arXiv:1809.02623*.

Submitted manuscripts:

Villani, A., Davidson, S., Kanwar, N., Lo, W., Li, Y., Cohen-Gogo, S., Fuligni, F., **Edward, L.-M.**, Light, N., Harripaul, R., Waldman, L., Gallinger, B., Comitani, F., Layeghifard, M., Brunga, L., Hayes, R., Anderson, N. D., Ramani, A. K., Yuki, K. E., ... Shlien, A. (n.d.). The clinical utility of genomics in childhood cancer extends beyond targetable mutations. (*Under Revision*).

Zatzman, M., Fuligni, F., Suwal, T., Ripsman, R., **Edward, L.-M.**, Denroche, R., Ho Jang, G., Notta, F., Gallinger, S., Hellman, M., Tabori, U., Huang, A., & Shlien, A. (n.d.). Widespread hypertranscription in aggressive human cancers. (*Revised Manuscript under Review at Science Advances*).

PROFESSIONAL EXPERIENCE

FACULTY OF SCIENCE, UNIVERSITY OF WESTERN ONTARIO

London, ON

Web Designer

Oct 2017-Apr 2018

- Employed as part of the University of Western Ontario's work-study program.
- Created Jekyll templates for research group websites in the Faculty of Science in order to modernize the Faculty's online presence to align with the University's rebranding initiative.

EZRA LONG LABORATORY, VICTORIA HOSPITAL

Castries, St. Lucia

Summer Intern

July 2017

- Employed as part of the Government of Saint Lucia's Summer Employment Program.
- Performed various laboratory tests (e.g. CBC, PT, PTT, INR, ESR, and blood films) and operated various laboratory equipment (e.g. centrifuges, Cell-DYN Ruby system, and coagulation analysers).

PHYSIOTHERAPY DEPARTMENT, VICTORIA HOSPITAL

Castries, St. Lucia

Summer Intern

June 2017

- Employed as part of the Government of Saint Lucia's Summer Employment Program.
- Coordinated and maintained records of patient appointments and treatments and observed/assisted with treatment administration including paraffin wax treatments, interferential therapy, ultrasound therapy and spinal decompression/traction therapy.

OTHER EXPERIENCE

BLACK WINGS HACKS, REWRITING THE CODE

Toronto, ON

Judge

Feb 2021

- Worked with team of technical professionals and researchers to judge hackathon submissions based on scoring rubric and provide technical feedback to attendees.

**WESTERN CRAFTING FOR A CURE, UNIVERSITY OF
WESTERN ONTARIO**

London, ON
Feb 2019 – Apr 2019

Boys & Girls Club Volunteer

- Lead craft workshops once a week with groups of children aged 4-13 years old.

**STUDENTS SUPPORTING UNIVERSITY HEALTH NETWORK
(SSUHN), UNIVERSITY OF WESTERN ONTARIO**

London, ON
Aug 2018 – Apr 2019

VP Human Resources

- Founding executive member. Lead member recruitment and assisted in club ratification process.

**MEDHACKS, JOHN'S HOPKINS HOSPITAL
Campus Ambassador & Hackathon Participant**

Baltimore, MD, USA
Apr 2018 – Sept 2018

- Acted as a point of contact for MedHacks at Western University and promoted the event through social media and other means.
- Worked with 3-person team to build "Nurture" web app designed to address racial inequity in maternal mortality rates. Won top 10 in Health Equity track.

**WOMEN IN TECHNOLOGY SOCIETY, UNIVERSITY OF
WESTERN ONTARIO**

London, ON
Sept 2017 – Apr 2018

Communications Director

- Produced promotional material, graphics (including logos), and newsletters using primarily Adobe Photoshop and Illustrator. Increased average post reach and page views by over 300% and 400% respectively and grew the society's mailing list by 35%.

SheHacks II Organizer

Dec 2017 – Mar 2018

- Managed hackathon social media and website and designed marketing material and event programming material including presentations and signage.

**SCHOLARS' PUBLICATIONS HOUSE, UNIVERSITY OF
WESTERN ONTARIO**

London, ON
Apr 2017 – Apr 2018

Print Editor-in-Chief

- Directed the team of editors and other executive members and worked with the university administration to lead the production of the program's print productions.
- Lead meetings with the program members as well as senior body and assisted with the hiring process for the 2017 and 2018 academic years.

Artistic Director

Oct 2016 – Apr 2017

- Led team of artistic contributors and liaised with senior leadership body to realise the program's artistic vision for publications.

**EZRA LONG LABORATORY, VICTORIA HOSPITAL
Medical Laboratory Volunteer**

Castries, St. Lucia
Nov 2015 – Aug 2016

- Developed, implemented, retrospectively populated and maintained Saint Lucia's first National Cancer Register and presented findings to Government of Saint Lucia's Ministry of Health's Epidemiology Department.
- Shadowed Pathologist and witnessed/participated in over 30 post-mortem examinations.
- Observed/assisted in various departments including Cytology, Histology, Clinical Chemistry, Haematology, Microbiology and Specimen Collection