**DATE OF PREPARATION**

March 31, 2018

**CONTACT**

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**PROFILE**

A PhD student at Queen’s University, Department of Pathology and Molecular Medicine, with a skillset combining *in silico* computational genomics analysis with biochemistry and molecular biology research including experience with the Hospital for Sick Children, the University of Toronto, the Oakville Trafalgar Memorial Hospital, and St John’s Ambulance/Toronto EMS.

**EDUCATION**

**Doctor of Philosophy (Pathology and Molecular Medicine) 2016 –**

**Queen’s University, (Kingston, Canada)**

**Bachelor of Science (Honours, Biochemistry) 2011 – 2015**

**Queen’s University, (Kingston, Canada)**

**RESEARCH EXPERIENCE**

**Research Assistant / PhD candidate 2018 –**

**Queen’s University, Department of Pathology and Molecular Medicine (Kingston, Canada)**

Supervisor: Dr. Neil Renwick

* Identification of key biomarkers in neuroendocrine tumours via high throughput (next-gen) sequencing and statistical analysis
* Investigation of miRNA oncogenes and tumour suppressors with lentiviral transfection and CRISPR-Cas9

**Research Assistant / MSc candidate 2016 – 2018**

**Queen’s University, Department of Pathology and Molecular Medicine (Kingston, Canada)**

Supervisors: Dr. Tomas Babak, Dr. Neil Renwick

* Identification of potentially imprinted genes using GTEx and RNA-seq databases
* Data analysis with computational genomics tools as well as custom Python and Perl scripts
* Continuation of work done in undergraduate thesis
* Upgraded to PhD via the mini-Master’s route

**Research Assistant / Undergraduate Honours Thesis Student 2015**

**Queen’s University, Department of Biochemistry / Department of Biology (Kingston, Canada)**

Supervisor: Dr. Tomas Babak

* Undergraduate thesis investigating genomic imprinting on the X chromosome
* Used computational genomics tools and created custom Python and Perl scripts to analyse gene expression

**Research Student 2015**

**The Hospital for Sick Children, Department of Neurosciences and Mental Health (Toronto, Canada)**

Supervisor: Dr. Agnes MF Wong

* Perception study regarding the effect of luminance on simultaneity judgement and how latency of signal relates to perception in amblyopia
* Created visual stimuli using Python, MATLAB, PsychToolbox, and PsychoPy programming tools

**Research Student 2014**

**The Hospital for Sick Children, Department of Neurosciences and Mental Health (Toronto, Canada)**

Supervisor: Dr. Agnes MF Wong

* Assistant researcher in ongoing amblyopia and strabismus studies
* Independent project analysing efficiency in ophthalmology clinics

**Research Student 2013**

**Banting and Best Diabetes Centre, University of Toronto (Toronto, Canada)**

Supervisor: Dr. Farid H Mahmud

* Collection, analysis, and processing of data in studies involving treatment of asymptomatic celiac disease, and comorbidity of vitamin D deficiency and type I diabetes mellitus
* Independent project developing and evaluating use of multimedia in recruitment for clinical trials

**Volunteer Research Assistant 2009**

**The Hospital for Sick Children, Neonatal Neuroimaging (Toronto, Canada)**

Supervisor: Dr. Margot J Taylor

* Preparation of MRI and fMRI scans for analysis in a study comparing the neurological development of children born prematurely and those born at term
* Meta analysis study of response to visual stimuli
* Compiled neonatal study database

**Teaching EXPERIENCE**

**Teaching Assistant 2016 –**

**Queen’s University (Kingston, Canada)**

* Path 828 – Bioinformatics for Cancer Research (Jan. 2018 – Apr. 2018)
* Path 499 – Research Projects in Pathology (Sept. 2016 – Apr. 2017)
* Biol 205 – Mendelian and Molecular Genetics (Sept. 2016 – Dec. 2016)

**Education Exec Team Member 2012 – 2014**

**Queen’s Genetically Engineered Machine Team (Queen’s University) (Kingston, Canada)**

* Organized and led group sessions for discussion of genetic engineering techniques and future research
* Taught basic genetic engineering concepts and techniques
* Assisted in creation of grant proposal and 4-month action plan

**Academic supervision**

*Teaching assistantships*

Christopher Bon, Bchm 422, Research Project in Biochemistry 2018-

* Supervisor: Dr. Neil Renwick
* Research Project: *Methods of extraction and sequencing plasma miRNA for clinical research*
* Current Position: BScH (Biochemistry) candidate, Queen’s University

David Xie, Bchm 421, Research Project in Biochemistry 2017-

* Supervisor: Dr. Neil Renwick
* Research Project: *Understanding lung neuroendocrine tumors through expression profiling*
* Current Position: BScH (Biochemistry) candidate, Queen’s University

Allison Dorbeck-Jacobi, Research Volunteer 2017-

* Supervisors: Dr. Neil Renwick and Dr. Alastair Ferguson
* Research Project*: Identifying the anatomic basis of the diffuse neuroendocrine system*
* Current Position: Strengthening graduate school application

Mary Goodwin, Research Volunteer 2017-

* Supervisor: Dr. Neil Renwick
* Research Project: *Updating the human miRNA expression atlas*
* Current Position: BScH (Life Sciences) candidate, Queen’s University (Kingston, ON)

Adrianna Majewski, Path 499, Research Project in Pathology 2016 - 2017

* Supervisor: Dr. Neil Renwick
* Research Project: *miRNA-guided diagnostics for neuroendocrine tumors*
* Current Position: Strengthening medical school application

Mareena Mallory, Cisc 499, Research Project in Computer Science 2016 - 2017

* Supervisors: Dr. Kathrin Tyryshkin and Dr. Neil Renwick
* Research Project: *Macaque miRNA curation and reannotation*
* Current Position: MSc Candidate, Health Informatics, University of Toronto

**Presentations and posters**

**Department of Pathology and Molecular Medicine Research Seminar Series September 19, 2017**

**Queen’s University, Department of Pathology and Molecular Medicine (Kingston, Canada)**

* Oral presentation in seminar series:

Computational analysis to evaluate asymmetric gene expression and genomic imprinting on the human X chromosome

**High Performance Computing Symposium (International) June 7, 2017**

**The Centre for Advanced Computing (Kingston, Canada)**

* Oral presentation and submission of abstract:

Identifying genomic imprinting through next-generation sequencing and high-performance computing

**Department of Pathology and Molecular Medicine Research Seminar Series November 1, 2016**

**Queen’s University, Department of Pathology and Molecular Medicine (Kingston, Canada)**

* Oral presentation in seminar series:

Byte - ing into the X chromosome: Identifying and characterizing genomic imprinting on the human X chromosome through data mining and big data techniques

**Molecular & Cellular Integrative Biology Seminar October 4, 2016**

**Queen’s University, Department of Biology (Kingston, Canada)**

* Oral presentation in seminar series:

Chromosomes and bytes of code: A computational genomics approach to identify imprinted genes on the human X chromosome

**Queen’s University 3 Minute Thesis (Finalist) March 30, 2016**

**Queen’s University, (Kingston, Canada)**

* Oral presentation about Master’s thesis:

When Mom’s DNA Fights Dad’s DNA: A big data approach to the search for genomic imprinting

**SickKids Summer Research Program (SSuRe) symposium August 10, 2015**

**The Hospital for Sick Children (Toronto, Canada)**

* Poster presentation and submission of abstract:

Luminance and Latency: Simultaneity judgement with dichoptic luminance as a technique to investigate perceptual phenomena in amblyopia

**SickKids Summer Research Program (SSuRe) symposium August 12, 2014**

**The Hospital for Sick Children (Toronto, Canada)**

* Poster presentation and submission of abstract:

Optimizing Ophthalmology: Using Lean principles to maximize the efficiency of patient scheduling in an Ophthalmology clinic

**Charles Hollenberg Summer Student Mini-Conference August 6, 2013**

**University of Toronto, MaRS Centre (Toronto, Canada)**

* Oral presentation and submission of abstract:

Impact of a portable touch tablet and video to introduce clinical research and facilitate patient recruitment

**ADDITIONAL EXPERIENCE**

**Cooperative Education Student 2010**

**Oakville Trafalgar Memorial Hospital (Oakville, Canada)**

* Observed and assisted in minor procedures (CBC/RBC/WBC, physiotherapy, taking blood samples, centrifuge, inserting/ removing catheters, inserting/ removing IVs, ultrasound, echocardiogram, taking patient history, enema, auscultation, dressing and packing wounds, MRI screening, etc)

**Advanced Medical First Responder (AMFR) 2010- 2014**

**St John’s Ambulance (Oakville / Toronto, Canada)**

* Primary first responder at various events requiring medical supervision
* Provided basic and advanced onsite medical care
* Collaborated and coordinated with Toronto EMS to provide onsite care at Canadian National Exhibition
* Received Commendation for Service

**Professional Extension**

Ontario HPC Summer School, High Performance Computing training July 31, 2017– August 4, 2017

The Centre for Advanced Computing (Kingston, ON)

Canadian Bioinformatics Workshop, Bioinformatics for Cancer Genomics May 29, 2017 – June 5, 2017

MaRS Building (Toronto, Canada)

**Professional affiliations and activities**

**Member, Ontario Molecular Pathology Research Network November 11, 2016 -**

**Awards**

**The Jeremy Nesheim Graduate Travel Award (competitive) 2016**

* Travel grant awarded to select graduate students in the Department of Pathology and Molecular Medicine at Queen’s University
* Awarded to support travel to the Rockefeller University (New York City, USA) for collaboration with the Laboratory of RNA Molecular Biology (Tuschl Lab)
* Funds awarded: $5,793 (CAD)

**SickKids Summer Research Grant (competitive) 2015**

* Grant awarded to select students conducting research at the Hospital for Sick Children
* Funds awarded: $6366.36 (CAD)

**SickKids Summer Research Grant (competitive) 2014**

* Grant awarded to select students conducting research at the Hospital for Sick Children
* Funds awarded: $6052.47 (CAD)

**Charles Hollenberg Summer Studentship Award (competitive) 2013**

* Grant awarded to 15 students conducting diabetes-related research at the University of Toronto
* Funds awarded: $2517 (CAD)

**Queen’s University Excellence Scholarship 2011**

* Scholarship awarded to students whose high school average is greater than 90%
* Funds Awarded: $2000 (CAD)

**St John’s Ambulance Commendation 2011**

* Award for Advanced Medical First Responders who have demonstrated outstanding service

**skills - Molecular and Cellular Biology**

General biochemistry / molecular biology lab techniques:

* Western and Southern blots, Agilent 2100 Bioanalyzer, mass spectrometry, ELISA, SDS-PAGE, PCR, affinity chromatography, DNA and protein purification etc.

Basic tissue culture techniques:

* Media preparation, sub-culturing, and splitting of MCF7 breast cancer cell lines

**skills - Programming, computation, and bioinformatics**

Programming Languages:

* Python2, 3 (Advanced)
* MATLAB, Shell Scripting / UNIX, Perl (Functional)
* R, Java, Julia, HTML5, CSS (Basic Knowledge)

NGS- and Bioinformatics-specific software:

* SAMtools
* bedtools
* plink
* SHAPEIT & IMPUTE2
* GTOOL
* SRA Toolkit
* Bowtie / Bowtie 2

**skills - additional skills AND CERTIFICATIONS**

* Medical Terminology certificate
* Canadian Red Cross Infection Control training
* WHMIS
* Nonviolent Crisis Intervention
* Standard first aid with CPR-B

**Languages**

* English (oral and written) – Native
* French (oral and written) – Certificate of bilingualism

**EXTRACURRICULAR**

* Music (Violin, Saxophone, Guitar, Piano)
* Dancing (Swing dance instructor: Lindy Hop, Charleston, Jive)
* Writing (Published article in Life Beat newspaper)
* Fencing / Martial Arts (Queen’s University Varsity Fencing Team, 2011-2015)
* Power Tumbling Gymnastics (2007 Youth Level National Power Tumbling Champion, 2009 Senior Level National Power Tumbling Medalist)