

# Daniella F. Lato

HBSc, PhD Candidate

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GitHub

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## EDUCATION

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*McMaster University, Hamilton, ON*

**Doctor of Philosophy Candidate in Bioinformatics**

Sep 2015 - Present

Thesis Title: Spatial Patterns of Molecular Trends in Bacterial Genomes

**Honours Bachelor of Science in Mathematics and Biology**

Sep 2011 - Apr 2015

Honours Thesis Title: Substitution Rates in Relation to Position on the Replicons of *Sinorhizobium*

## RESEARCH/WORK EXPERIENCE

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**PhD in Bioinformatics and Bacterial Genomics**

Sep 2015 - Present

*McMaster University, Hamilton, ON*

- Development and innovative application of advanced R and Python algorithms, analysis pipelines and other computational techniques to research phenomenon in molecular evolution and genomics.
- Familiarization with bioinformatics tools and experimental design related to data visualization, statistics, genomic data analysis, genetics, sequence annotation, molecular evolution, gene expression, and genome assembly.
- Create detailed documentation on operating procedures for computational pipelines.
- Considerable training in implementing Bayesian methods in high performance computing and programming (Unix/Linux), data visualization, statistical analysis, big data storage, and software tool development (Bio-Conductor libraries) and version control (Git).
- Independently designed and implemented experimental tools for bio-statistical testing and analytical processes using R, Python, and Perl, resulting in two first author publications [2, 1].
- Collaborated with students, professors and other academics from the Anthropology, Health Sciences, Mathematics, and Statistics departments to complete complex projects related to microbial evolution, infectious disease, and ancient DNA in a timely and reliable manner.
- Managed undergraduate student research projects by providing vision and direction regarding experimental design, research, and task distribution resulting in a successful projects.
- Concisely communicated scientific research to field specific, public audiences, and funding agencies of up to 230 people at 4 international conferences, culminating in overwhelming positive oral and poster presentation feedback.
- Awarded National and local funding for research by editing and writing grants outlining the proposed and completed research on bacterial genomic evolution.
- Generated progress reports for funding agencies tracking research projects, cost and inventory of research materials, and summary of the investigation, resulting in renewal of grants.

**Surgical Oncology**

2013

*University of Toronto, Toronto, ON*

- Completed extensive clinical/health data and literature reviews in the surgical oncology field.

**Motherisk**

2012

*The Hospital for Sick Children, Toronto, ON*

- Acquisition and analysis of clinical/health administrative data from Primary Care Electronic Medical Record, datasets, and surveys to determine the impacts of maternal genetic testing and adverse infant effects resulting in a publication [3].

## PUBLICATIONS

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- [1] Lato, D. F. and Golding, G. B. (2020a). Spatial Patterns of Gene Expression in Bacterial Genomes. *J Mol Evol*, 88:510–520.
- [2] Lato, D. F. and Golding, G. B. (2020b). The Location of Substitutions and Bacterial Genome Arrangements. *In Review: Genome Biol Evol*.
- [3] Moretti, M. E., Lato, D. F., Berger, H., Koren, G., Ito, S., and Ungar, W. J. (2017). A cost-effectiveness analysis of maternal CYP2D6 genetic testing to guide treatment for postpartum pain and avert infant adverse events. *Pharmacogenomics J*.

## CODING AND HIGH PERFORMANCE COMPUTING

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R	Git/GitHub	Perl
R-shiny	Unix/Linux	tcsh
Python	Bio-Conductor	bash
BioPython	L <sup>A</sup> T <sub>E</sub> X	zcsch

## OTHER WORK EXPERIENCE

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<b>Tour Guide</b> <i>McMaster University, Hamilton</i>	Apr 2017 - Present
<b>Teaching Assistant</b> <i>McMaster University, Hamilton</i>	Sep 2014 - Present
Department of Biology	
<b>Introduction to Bioinformatics</b>	Sep 2015 - Present
<b>Genetics</b>	Sep 2015 - Present
Department of Mathematics and Statistics	
<b>Differential Equations</b>	May - Aug 2014
<b>Guest Lecture: Molecular Evolution</b> <i>McMaster University, Hamilton</i>	Mar 2018
<b>Workshop Leader</b> <i>McMaster University, Hamilton</i>	Mar 2017
<b>High School Plant Molecular Biology Lab Workshop</b>	Mar 2017
Department of Biology	
<b>Software Carpentry Leader</b>	Mar 2017
Command line, Git, and R	

## SELECT VOLUNTEER EXPERIENCE

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<b>McMaster Synchronized Swimming Varsity Team</b>	Sep 2014 - Apr 2020
<i>McMaster University, Hamilton</i>	
<b>Novice Program Coach</b>	Sep 2019 - Apr 2020
Assist swimmers in establishing individual goals, prepare them for competition and foster a positive environment by developing and facilitating practice plans, workouts and comprehensive competition packages for a range of swimming abilities, including those who are new to the sport. The team is ranked 2nd in Eastern Canada and 6th Nationally.	
<b>Vice President</b>	Sep 2014 - Sep 2015, Sep 2018 - Sep 2019
Assist and advise President on delegating, organizing competition registration, travel and accommodations, practices, uniforms, and participation fees by researching and completing administrative tasks.	
<b>President</b>	Sep 2015 - Sep 2018
Responsible for 84 competitive athletes and 8 coaches resulting in a successful and healthy 4 years as an varsity organization which can be seen by the steady registration rate and over 20 medals and podium finishes. This was implemented through the organization of competition registration, diligent record-keeping, travel and accommodations, practices, uniforms, and club budget.	
<b>Meet Manager</b>	Nov 2016

Organized, scheduled, and executed the Canadian University Synchronized Swimming League National Competition at McMaster University, with a total of 22 Universities and 450 athletes and coaches from all over Canada in attendance.

**SNAP (Special Needs Assistance Program)**

Sep 2016 - Apr 2019

*McMaster University, Hamilton*

Assist community members who have cognitive and/or physical disabilities in completing physical exercise by providing creative physical assistance, personalized workout plans, and emotional support which resulted in a 77% increase in gross motor capabilities.