

# Daniella F. Lato

HBSc, PhD Candidate

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## EDUCATION

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### Doctor of Philosophy Candidate in Bioinformatics

Sep 2015 - Present

*McMaster University, Hamilton, ON*

Thesis Title: Spatial Patterns of Molecular Trends in Bacterial Genomes

### Honours Bachelor of Science in Mathematics and Biology

Sep 2011 - Apr 2015

*McMaster University, Hamilton, ON*

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 functions, simulations, data analysis and other computational techniques to research phenomenon in molecular evolution and bacterial 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 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, **R-shiny** interactive graphics and **Python**, resulting in two first author publications [2, 1].
- Collaborated with students, professors and other academics from the Anthropology, Health Sciences, Mathematics, and Statistics departments on completing complex projects related to infectious disease, ancient DNA, and microbial evolution in a timely and reliable manner.
- Managed undergraduate student research projects by providing vision and direction regarding working process, research, and task distribution resulting in a successful project.
- Concisely communicated scientific research to field specific and public audiences of up to 230 people at 4 international conferences, culminating in overwhelming positive oral 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 investigation resulting in renewal of grants.

## 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*.
- [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

## SELECT VOLUNTEER EXPERIENCE

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<b>Let's Talk Science</b>	Sep 2017 - Present
<i>McMaster University, Let's Talk Science, Hamilton</i>	
Educate students aged 4-18 in science, technology, engineering, and math (STEM) by delivering interactive experiments and activities accessibly to the Hamilton youth.	
<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.	
<b>SNAP (Special Needs Assistance Program)</b>	Sep 2016 - Apr 2019
<i>McMaster University, Hamilton</i>	
Assist community members who have cognitive and/or physical disabilities complete physical exercise by providing creative physical assistance, personalized workout plans, and emotional support which resulted in a 77% increase in gross motor capabilities.	
<b>Judge for Biology Undergraduate Symposium (BUS)</b>	Sep 2017 - Sep 2018
<i>Department of Biology, McMaster University, Hamilton, ON</i>	
Critically judge final year Theses and Projects of undergraduate STEM students by reviewing the literature and asking thought provoking questions of the participants, analyzing a total of 187 studies.	

## SELECT HONORS AND AWARDS

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<b>Dr. Edna Guest Award for Graduating Athlete of the Year</b>	Apr 2020
<i>Annual Athletic Awards, McMaster University</i>	
<b>All Canadian Award for Outstanding Average</b>	
<b>While on a Competitive University Sports Team</b>	Sep 2012 - Apr 2020
<i>Canadian University Synchronized Swimming League (CUSSL)</i>	

<b>Therese Quigley Award of Excellence for Graduate Student Leadership in Athletics</b> <i>Graduate Student Recognition Awards, McMaster University</i>	Sep 2018 - Apr 2019
<b>Monica Scarabello Memorial Bursary</b> <i>McMaster University</i>	Apr 2016 and Apr 2018
<b>RTO/ERO Graduate Scholarship</b> <i>Retired Teachers of Ontario (RTO)</i>	Apr 2017
<b>Robert John Morris Graduate Studies Bursary</b> <i>McMaster University</i>	Apr 2016

## 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> Department of Biology	Sep 2014 - Present
<b>Introduction to Bioinformatics</b>	Sep 2015 - Present
<b>Genetics</b> Department of Mathematics and Statistics	Sep 2015 - Present
<b>Differential Equations</b>	May - Aug 2014
<b>Guest Lecture: Molecular Evolution</b> <i>Department of Biology, 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> Department of Biology	Mar 2017
<b>Software Carpentry Leader</b> Command line, Git, and R	Mar 2017

## CONFERENCES/PANEL DISCUSSIONS

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<b>Poster Presentation: Mutation Rate Evolution</b> <i>Society for Molecular Biology and Evolution Conference</i>	Manchester, UK 2019
<b>Oral Presentation: Evolutionary Biology Molecular Evolution</b> <i>McMaster University, Ontario Ecology, Ethology, and Evolution Colloquium</i>	Hamilton, ON 2019
<b>Oral Presentation: Evolution and Comparative Genomics COSI</b> <i>Intelligent Systems for Molecular Biology Conference</i>	Chicago, IL 2018
<b>Panellist: EngSci Girl</b> <i>McMaster University, Women In Science and Engineering (WISE)</i>	Hamilton, ON 2018