Daniella F. Lato

HBSc, PhD Candidate

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EDUCATION

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

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`, `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.

PUBLICATIONS

[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

R	**Git/GitHub**	**Perl**
R-shiny	**Unix/Linux**	**tcsh**
Python	**Bio-Conductor**	**bash**
BioPython	**LaTeX**	**zcsh**

SELECT VOLUNTEER EXPERIENCE

Let's Talk Science Sep 2017 - Present

McMaster University, Let's Talk Science, Hamilton

Educate students aged 4-18 in science, technology, engineering, and math (STEM) by delivering interactive experiments and activities accessibly to the Hamilton youth.

McMaster Synchronized Swimming Varsity Team Sep 2014 - Apr 2020

McMaster University, Hamilton

Novice Program Coach 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.

Vice President 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.

President 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.

Meet Manager 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.

Judge for Biology Undergraduate Symposium (BUS) Sep 2017 - Sep 2018

Department of Biology, McMaster University, Hamilton, ON

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

Dr. Edna Guest Award for Graduating Athlete of the Year Apr 2020

Annual Athletic Awards, McMaster University

All Canadian Award for Outstanding Average
While on a Competitive University Sports Team Sep 2012 - Apr 2020

Canadian University Synchronized Swimming League (CUSSL)

Therese Quigley Award of Excellence for Graduate Student Leadership in Athletics Sep 2018 - Apr 2019
Graduate Student Recognition Awards, McMaster University

Monica Scarabello Memorial Bursary Apr 2016 and Apr 2018
McMaster University

RTO/ERO Graduate Scholarship Apr 2017
Retired Teachers of Ontario (RTO)

Robert John Morris Graduate Studies Bursary Apr 2016
McMaster University

OTHER WORK EXPERIENCE

Tour Guide Apr 2017 - Present
McMaster University, Hamilton

Teaching Assistant Sep 2014 - Present
McMaster University, Hamilton
Department of Biology
Introduction to Bioinformatics Sep 2015 - Present
Genetics Sep 2015 - Present
Department of Mathematics and Statistics
Differential Equations May - Aug 2014

Guest Lecture: Molecular Evolution Mar 2018
Department of Biology, McMaster University, Hamilton

Workshop Leader Mar 2017
McMaster University, Hamilton
High School Plant Molecular Biology Lab Workshop Mar 2017
Department of Biology
Software Carpentry Leader Mar 2017
Command line, `Git`, and `R`

CONFERENCES/PANEL DISCUSSIONS

Poster Presentation: Mutation Rate Evolution Manchester, UK 2019
Society for Molecular Biology and Evolution Conference

Oral Presentation: Evolutionary Biology Molecular Evolution Hamilton, ON 2019
McMaster University, Ontario Ecology, Ethology, and Evolution Colloquium

Oral Presentation: Evolution and Comparative Genomics COSI Chicago, IL 2018
Intelligent Systems for Molecular Biology Conference

Panellist: EngSci Girl Hamilton, ON 2018
McMaster University, Women In Science and Engineering (WISE)