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| **Sara Matthews** | 1155, rue Pasteur  Brossard, QC J4W 2B5  sara\_matthews@hotmail.ca  Cell : 705-987-2172 |

**Highlights of Technical Skills and Experience**

* 5 + years laboratory experiences in various fields, including 2+ years in molecular biology and biochemistry labs
* Fluent in English and French.
* Strong communication skills from presenting my research at student events and conferences
* Experienced with standard lab equipment including analysis and top-loading balances, pH meters, pipettes, centrifuges, incubators, etc.
* Experienced with several specialized pieces of equipment including spectrophotometer, various microscopes (i.e. stereomicroscope, confocal laser microscope, scanning electron microscope, hyperspectral microscope), 3D light sheet imaging, PCR machines, and NanoDrop.
* Worked independently on molecular biology-based research projects, following and adapting complex protocols for protein expression in bacteria and using standard kits to obtain reproducible and reliable results.
* Headed my own research project during my Master’s, which included designing and performing experiments, ordering materials and training/supervising 2 summer students in mini sub-projects.
* Collaborated with group members to assist on other projects

**Education**

**Master of Engineering - Chemical Engineering (Sept. 2018 – Dec. 2020)**

McGill University – Montreal, QC

* Was awarded 4 scholarships including NSERC Canada Graduate Scholarship, Ulmer-Lamothe Graduate Award, CREATE Scholarship and EcotoQ Excellence Scholarship.

**Bachelor of Science with Honours, Nanoscience with minor in Biochemistry (June 2018)**

University of Guelph – Guelph, ON

* Was awarded 6 scholarships over the course of my degree and was awarded the College of Engineering and Physical Science Graduation Prize for having the highest cumulative average from an Honours program in the college.

**Research Experience**

**Dept. of Civil, Geological and Mining Engineering, Polytechnique Montréal (Sept. 2020 - current)**

* Optimized method for the concentration and detection of novel SARS-CoV-2 virus in wastewater samples to monitor prevalence of disease in Montreal.
* Implemented and/or adapted protocols for using commercial RNA extraction and qPCR kits.
* Processed and analyzed samples efficiently to deliver results in a timely fashion.

**Dept. of Chemical Engineering, McGill University (Sept. 2018-current)**

* Studied and compared the effects of micro- and nanoplastic exposure infruit flies, by measuring changes in mortality, motility, reproduction, and gene expression.
* Managed and ordered materials for project and general lab activities for the research group.
* Trained and supervised two undergraduate students in related projects over the summer, one winning an award for her project at the end of the summer.
* Assisted other research group members in other research projects in microplastic detection and toxicity assessment with other animal models (i.e. zebrafish, water fleas and tadpoles).

**Dept. of Molecular and Cellular Biology, University of Guelph (May-Dec. 2017)**

* Studied the outside structure of *B. pertussis*, the causative agent of whooping cough, to aid in the development of new vaccines.
* Prepared stocks of standard solutions for gel electrophoresis, bacterial cultures and western blots.
* Performed laboratory maintenance tasks such as sterilization, general cleaning and calibration of analytical balances and pH meters.

**Material Science and Engineering, Massachusetts Institute of Technology (May 2016-Aug. 2016)**

* Annotated scientific articles and wrote computer programs to extract synthesis methods from papers and formatted the information for predictive machine learning algorithms.
* Learned and used Python programming language.

**Xerox Research Centre of Canada (Jan. 2016-April 2016)**

* Designed and synthesized materials for imaging technologies, successfully optimizing three types of imaging materials in four months.
* Presented project progress to colleagues in bi-weekly project meetings
* Worked independently on research, organizing experiment schedule and material resources in order to reach project goals on time.

**Hydrogen Isotope Technology branch,** **Canadian Nuclear Laboratories (May 2015-Aug. 2015)**

* Used an experimental test rig in a highly secure nuclear research facility to perform research on new proprietary catalytic material destined for hydrogen safety applications
* Trained two high school students to safely use experimental rig and taught them related scientific concepts to complete their own project.

**Clubs and Organizations**

**Society of Women Engineers - VP Finance (2019-present)**

* Managed the club budget and bank accounts, ensuring all the paperwork was in order for funding applications, reimbursements and audits.
* Successfully applied for club funding from McGill University.

**The Nanoscience Club (2016-2018)**

* Organized outreach activities at local schools to promote science and engineering programs.
* Ran social events on campus to promote the club.