Delaney Smith

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EDUCATION

University of Waterloo — Waterloo, ON
MMath student in Applied Mathematics (Mathematical Medicine and Biology) | GPA: 96% | Advisor: Anita Layton — Sep. 2020 –

McGill University — Montreal, QC
BSc in Physiology and Mathematics | GPA: 4.00 — Sep. 2016 – Apr. 2020

RESEARCH AND TEACHING EXPERIENCE

Graduate Research Assistant — Waterloo, ON
University of Waterloo (Faculty of Mathematics) | Advisor: Anita Layton — May 2020 –

- Created a compartmental-ODE model of the renal RAS in hypertension, simulated anti-hypertensive drugs using PBPK methods
- Developed a delay-differential-equation model of ligand-induced hormone release in renal epithelial cells

Lead Graduate Teaching Assistant — Waterloo, ON
University of Waterloo (Faculty of Mathematics) – Linear Algebra for Engineering — Sep. 2021 –

- Oversaw the work of 20+ teaching assistants, provided detailed feedback on solution and marking errors

Undergraduate Research Assistant — Montreal, QC
McGill University (Faculty of Science) | Advisor: Anmar Khadra — May 2019 – Apr. 2020

- Developed and analysed an ODE model of purinergic receptor interactions and calcium dynamics in osteoblasts

Tomlinson Engagement Awards for Mentoring and Change — Montreal, QC
McGill University (Faculty of Science) – Intermediate and Advanced Calculus, Introductory Physiology Lab — 2018 – 2020

- Proctored exams, taught lectures, collaborated with course coordinators to improve curriculum and assessment procedures

Undergraduate Research Trainee — Montreal, QC
McGill University (Faculty of Science) | Advisor: Gil Bub — May 2018

- Participated in the creation, control, and recording of electrical waves in cardiac monolayers using optogenetic techniques

PUBLICATIONS

Smith, D., Layton, A. (2021). The intrarenal renin-angiotensin system in hypertension: Insights from mathematical modelling. *Journal of Mathematical Biology* (submitted).

Abo, S., **Smith, D**., Stadt, M., & Layton, A. (2021). Modelling female physiology from head to toe: Impact of sex hormones, the menstrual cycle, and pregnancy. *Journal of Theoretical Biology* (submitted).

Mikolajewicz, N., **Smith, D**., Komarova, S. V., & Khadra, A. (2021). High-affinity P2Y2 and low-affinity P2X7 receptor interaction modulates ATP-mediated calcium signaling in murine osteoblasts. *PLOS Computational Biology*, *17*(6), e1008872.

AWARDS

2021 – 2022	Ontario Graduate Scholarship | UW Presidents Graduate Scholarship
2020 – 2021	NSERC Canada Graduate Scholarship – Master's | UW Presidents Graduate Scholarship
2019 – 2020	McGill Alumnae Society Prize | Dr. Kathleen Terroux prize in physiology | Robert Bruce Scholarship in Science
2016 – 2019	McGill Faculty of Science Scholarships (3), Dean's Honours List

MISCELLANEOUS

- **Quantitative skills:** PBPK modelling, nonlinear compartmental DE modelling and numerical methods, parameter estimation and sensitivity analysis, data visualization and pre-processing, data classification using statistical learning techniques (neural networks, SVMs, decision trees), multi-time scale systems and slow-fast analysis, bifurcation theory and analysis
- **Programming languages:** MATLAB, XPPAUT, Python, Mathematica, LaTeX
- **Spoken languages:** English (native), French (conversational, Ontario French Immersion and DELF B1(2017) certification)
- **Workshops:** Quantitative Systems Pharmacology Approaches to Problems in the Pharmaceutical Industry (2021), Computational Modelling of Cancer Biology and Treatments (2021), School on Nonlinear Dynamics in Life Sciences (2019)