Hailey Sae Hyun Ahn

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EDUCATION

McGill University, *Montreal, QC, Canada* *Sept 2021-Present*

- Master of Science, Medical Physics (GPA: 4.00/4.00)
- Anticipated graduation: April 2023

University of British Columbia (UBC), *Vancouver, BC, Canada* *Sept 2017-April 2021*

- Bachelor of Science, Honours in Biophysics (GPA: 3.88/4.00)

RESEARCH & WORK EXPERIENCE

McGill University / Jewish General Hospital – Enger Lab

Master's Student – Radiochemistry detector development for PET radionuclide production *May 2022–Present*

- Development of a low-cost, portable, multichannel radiation detector to follow the transfer of radioactivity during the automated synthesis of positron emission tomography (PET) radionuclides.
- Used inexpensive plastic scintillating fibers, silicon photomultipliers, a micro-surface-mount printed circuit board, and a microprocessor to construct a prototype detector.
- Performed Geant4 Monte Carlo simulations on various detector constructions to test the efficiency of the detector components and determine the optimal detector configuration.

UBC / BC Cancer Research Centre – QURIT Lab

Honours Thesis Student – Tumor Growth Modeling for PET imaging *Aug 2020–Aug 2021*

- Developed a simulation algorithm for solid tumor growth, considering realistic biological parameters such as oxygen & glucose diffusion coefficient in tissue, metabolic rates, and alterations in tumor vasculature.
- Development of a translation tool to convert simulated images to PET images (maps of pseudo standardized uptake values) for radiomic features analysis with tumor growth.
- Demonstrated that our model can produce distinct tumor phenotypes with realistic growth rates by adjusting tumor tissue microparameters, and that tumor heterogeneity can be captured via radiomic analysis on PET images.

UBC Life Sciences Institute – Van Petegem Lab

Undergraduate Research Assistant in Biochemistry and Molecular Biology *Sept 2019–April 2020*

- Assisted the study of the regulation of Ryanodine receptors and their role in cardiac arrythmia by preparing cell cultures, then extracting and purifying proteins such as Calmodulin.
- Utilized databases such as ExPASy and various research tools to search for vector DNA sequences and designed new primers for use in cell transformation.
- Communicated and discussed recent findings on Calcium Dependent Activation/Inhibition of cardiac ion channels in the weekly lab journal club.

UBC Department of Mathematics / Physics
MATH100, PHYS119 Teaching Assistant *Sept–Dec 2019, Jan–April 2021*

- Facilitated workshops by reviewing concepts in calculus, and asked thought-provoking questions to recognize what each student was struggling with and to help students develop their own ways of solving a question.

Private Tutor
High school physics, math, and chemistry *Dec 2016–June 2019*

- Adapted to each student's needs and found effective ways of communicating with individuals who have different personalities, capabilities, and interests.
- Demonstrated professionalism by preparing the materials for each tutoring session and took responsibility in teaching until students showed clear signs of understanding.

CONFERENCE PROCEEDINGS & PRESENTATIONS

Society of Nuclear Medicine and Molecular Imaging (SNMMI) 2022 Conference [Poster]
I. Klyuzhin, H. Ahn, A. Rahmim. **Selection of optimal radiomics features for tumor phenotype differentiation using stochastic tumor growth modeling.** Journal of Nuclear Medicine 2022, 63 (supplement 2) 3178.

Society of Nuclear Medicine and Molecular Imaging (SNMMI) 2021 Conference [Oral presentation]
H. Ahn, Y. Oloumi, A. Rahmim, I. Klyuzhin. **Linking radiomic PET features with metabolic tissue parameters using a hybrid mathematical model of tumor growth.** Journal of Nuclear Medicine 2021, 62 (supplement 1) 114.

University of British Columbia, Radiology Research Day 2021 [Oral presentation]
H. Ahn, Y. Oloumi, A. Rahmim, I. Klyuzhin. **Linking radiomic PET features with metabolic tissue parameters using a hybrid mathematical model of tumor growth.** Burrard Medical Imaging Non-Clinical Trainee Research Award.

SKILLS

Programming:
- Languages: Python, Java, C++, HTML, CSS, SQL (basic)
  - Tumor growth modeling project developed in Java
  - Geant4 simulations for the radiochemistry detector using C++/Python
  - Personal webpage: https://hailey-ahn.github.io/My-Web-Page/home.html

Laboratory:
Biochemistry, Molecular Biology
- PCR, SDS-PAGE, Agarose gel electrophoresis, Transformation, Protein crystallization, Fast protein liquid chromatography, Bradford assay, PyMOL

Physics, Electronics
- Microcontroller, AC/DC Circuitry, Oscilloscope, Digital Multimeters

LEADERSHIP EXPERIENCE

McGill University

Medical Physics Student Council (MPSC): Friday Morning Talk Coordinator *Sept 2022–Present*

- Coordinated the Friday Morning Talk seminar series for all students in the department where each student presents their research in a friendly environment to practice and gain presentation skills.
- Organized and moderated the meetings at the Jewish General Hospital by setting up the systems prior to the meeting and introducing the speakers at the beginning of the talk.
- Communicated to the speakers, the administrator, and the Medical Physics Unit about the upcoming presentations each week.

University of British Columbia

Science Undergraduate Society (SUS): Associate Vice President, Administration *May–Dec 2019*

- Assisted the vice president of administration with various tasks including organizing the Clubs Commissioners meetings and interviewing students for various roles within the student society.
- Took meeting minutes at the Science Undergraduate Society's council meeting and compiled them for publication after councillors' approvals.
- Held one-on-one meetings with each science club representative to discuss how SUS can support each club.

Science Undergraduate Society: Events Coordinator & Sports Working Group *June 2018–May 2019*

- Planned events and summarized weekly meetings using Excel spreadsheets, Gantt charts, and documents for effective communication within the working group.
- Established sponsorships from various organizations and scheduled meet up times with the vendors for the smooth operation/transition between events.

UBC PHAS Outreach Program: Metro Vancouver Physics Circle *Sept 2018–Nov 2019*

- Prepared challenging physics problem sets for high school students to invoke curiosity and creativity during the bi-weekly problem-solving sessions.
- Guided students through the problem sets by explaining any unfamiliar concepts and encouraged group discussions to share each other's approach to a question.

Imagine Day Orientation Leader *Mar–Nov 2018*

- Communicated effectively with the newly admitted UBC students and introduced the campus to a group of students to foster a welcoming environment.
- Made appropriate recommendations to the resources available on campus throughout their transition into university.

AWARDS & SCHOLARSHIPS

- CIHR Canada Graduate Scholarships – Master's Program (2021-2022)
- McGill Graduate Excellence Fellowship (2021)
- 2nd place presentation award, UBC Radiology Research Day, Burrard Medical Imaging Non-Clinical Trainee Research Award (2021)
- UBC Science Scholar (2017-2018)
- UBC Dean's Honour List (2017-2020)
- UBC Trek Excellence Scholarship (2018)
- UBC Dean of Science Scholarship (2018)
- British Columbia Achievement Scholarship (2017)