Sambina Islam Aninta

+1-778-325-2733 sambina.islam@gmail.com linkedin.com/in/sambina-islam-aninta
github.com/saninta0212

EDUCATION

University of British Columbia 2025 – Present
PhD in Biomedical Engineering

University of British Columbia 2018 – 2023
Bachelor of Science in Combined Honours Computer Science and Biology *Average: 90%*

- Graduated with distinction and Co-operative education (Co-op Fall 2020 - Fall 2021)

RESEARCH EXPERIENCE

Research Assistant/ Research Technican III January 2024 – Present
de Boer Lab, School of Biomedical Engineering

- Developing **multi-modal machine learning** pipeline to study variant effect in T-cells for autoimmune diseases using **ATAC-seq and MPRA data to predict chromatin accessibility and expression**
- Leading project to study how variant position modulates functional impact in MPRA *(manuscript in progress)*
- Developing a framework to comprehensively evaluate and benchmark interpretability of deep neural networks for genomics
- Developing a generative deep learning model to predict single fiber chromatin accessibility from DNA sequence

Undergraduate Research Assistant September 2022 – May 2023
Tam Lab, School of Biomedical Engineering

- Led an independent research study as part of Honours Thesis at Dr. Roger Tam's lab to develop and analyze **Supervised Learning** models to predict severity of exacerbation for COPD patients

Data Informatics/Molecular Biology Co-op May 2021 – December 2021
Amgen

- Developed and tested novel methodologies to support *in vitro* and *in vivo* human antibody discovery platforms
- Performed laboratory tasks such as RNA extraction, RNA purification, cDNA synthesis and gene amplification from a variety of sources such as single B cells, cultured B cells and hybridomas
- Designed and built a **Dash web app** to visualize immune repertoire containing thousands of sequences and deployed it in **Kubernetes** that increased efficiency of sequence discovery platforms

Bioinformatics Technology Lab Co-op September 2020 – April 2021
Birol Lab, Canada's Michael Smith Genome Sciences Centre at BC Cancer

- Co-developed an *in silico* pipeline to discover novel antimicrobial peptides (AMPs) from amphibian and insect transcriptomic data that can work as antibiotic alternatives
- Implemented scripts in **Bash, Python and R** to develop tools to assemble bulk RNA-seq reads, translate and cleave sequences to reflect post-translational modifications of AMPs and test the pipeline on 84 datasets on a remote **HPC** server
- Using **R and Bash**, tested whether the predicted AMPs from the pipeline were differentially expressed in amphibians when exposed to pathogens

AWARDS

Award	Year(s) received
President's Academic Excellence Initiative PhD Award	2025-2026
KM International Leader of Tomorrow (KMILOT) Award *Full-ride scholarship for undergraduate studies awarded to **34** incoming international students annually for outstanding leadership skills (~ 250k CAD)*	2018-2019, 2019-2020, 2020-2021, 2021-2022, 2022-2023
UBC Trek Excellence Scholarship *Top 5% of Faculty, Year and School (6000 CAD)*	2019-2020, 2022-2023
UBC Science Scholar *Above 90% Average*	2018-2019, 2021-2022, 2022-2023
UBC Dean's Honour List *Above 80% GPA*	2018-2019, 2019-2020, 2021-2022, 2022-2023
UBC J Fred Muir Memorial Scholarship in Science *Faculty recommendation for academic excellence (350 CAD)*	2019-2020
UBC Clayton Person Memorial Scholarship in Biology *Awarded to the student having the highest standing in BIOL 234/335 (Genetics) and faculty recommendation (750 CAD)*	2021-2022
UBC Charles and Jane Banks Scholarship *Faculty recommendation for academic excellence (270 CAD)*	2022-2023
UBC Faculty of Science International Student Scholarship *Students with strong academic achievement (7700 CAD)*	2021-2022, 2022-2023
Department of Computer Science Scholarship for vGHC *Selected from the department to attend virtual Grace Hopper Celebration, the largest conference for Women in Computing*	2021

PUBLICATIONS AND TALKS

Publications

- Aninta SI, Tewhey R, de Boer C. Variant Position Modulates Functional Impact in Massively Parallel Reporter Assays *(in prep.)*
- Lin D, Sutherland D, **Aninta SI**, et al. Mining Amphibian and Insect Transcriptomes for Antimicrobial Peptide Sequences with rAMPage.*Antibiotics (Basel).* 2022;11(7):952. **doi:10.3390/antibiotics11070952.**
- Li C, Sutherland D, Salehi A, Lin D, **Aninta SI**, et al. Mining the UniProtKB/Swiss-Prot database for antimicrobial peptides. Protein Science. 2025;18(5):34. **doi:10.1101/2024.05.24.595811.**

Poster Presentation

- **Aninta SI**, Tewhey R, de Boer C. Variant Position Modulates Functional Impact in Massively Parallel Reporter Assays. Presented at: **Biology of Genomes, CSHL; 2025.**
- **Aninta SI**, Rafi AM, de Boer C. How does data leakage from genomics foundational models inflate downstream model performance? Presented at: **Biological Data Science, CSHL; 2024.**
- **Aninta SI**, Rafi AM, de Boer C. How much of transfer learning is actually cheating? Presented at: **MLCB; 2024.**

- **Aninta SI**, Rafi AM, de Boer C. Predicting variant effects using multimodal deep neural networks in autoimmune diseases. Presented at: **SynBio6.0; 2024.**
- Lin D, Nip KM, **Aninta SI**, Li C, Warren RL, Helbing C, Hoang L, Birol I. rAMPage: Rapid antimicrobial peptide annotation and gene estimation. Presented at: **Intelligent Systems for Molecular Biology 2021 (ISMB); 2021.**

REVIEWING

Cell Genomics 2025

TEACHING EXPERIENCE

Teaching Assistant for Applied Machine Learning (CPSC 330) May 2023 – June 2023
University of British Columbia

- Selected by the instructor to TA for scoring a very high grade (94%)
- Delivered weekly tutorials, held office hours and monitored Piazza to assist students with programming assignments, understanding foundations of ML and setting up programming environments

AMS Tutoring Supervisor September 2019 – April 2021
Alma Mater Society University of British Columbia

- Effectively tutor students in both one-on-one and group settings for first and second year Science courses

LEADERSHIP EXPERIENCE

BC Director of Communications - Nucleate Canada June 2024 - May 2025
Nucleate Canada, British Columbia

- Spearheading the regional communications team to organize the Nucleate Activator program in BC, which aims to provide **equity-free, pre-IP** support to graduate students interested in translating their academic research into life sciences and sustainability ventures
- Facilitated cross-disciplinary team matching and coordinated 1-on-1 venture-building workshops with industry mentors, leading to a national pitch competition sponsored by Canada-wide partners
- Nucleate is the largest global student-led organization of academic trainees empowering tomorrow's biotech leaders and since 2019, it has contributed to the success of over 200 student-founded biotech companies, with program alumni raising $> 370M$ **USD** and **creating** > 250 **jobs**

President March 2021 – May 2023
UBC STEM Fellowship

- Led the UBC STEM Fellowship club with a team of 10 other executives
- Coordinated and organized the annual **Research Exploratory Opportunities (REO) program**, providing high school students from **underrepresented groups in STEM** with hands-on research experience in UBC labs.
- Led the coordination and organization of **STEMpowerment**, a student-led mentorship program that pairs youth from underrepresented groups in STEM with UBC student mentors.

Reading Week Student Leader September 2019 – April 2020
University of British Columbia

- Collaborated with diverse stakeholders to plan and implement community engagement project for residents of Lookout Housing Society [residents there includes recovering drug addicts, people with chronic health and mental disorders such as AIDS/HIV]