

HAOYANG (HERBERT) YAO

Vancouver, BC V6T 1Z2 | 613-583-2676 | herbert.yao@ubc.ca

EDUCATION

on-going

Doctor of Philosophy: Genome Science and Technology
The University of British Columbia — Vancouver, BC

- Thesis: Universal Gene Regulatory Network Inference
- Supervisor: Prof. Nozomu Yachie
- Four Year Doctoral Fellowship (4YF) recipient

05/2023

Master of Applied Science: Chemical Engineering
Queen's University — Kingston, ON

- Thesis: Applications of protein-constrained genome-scale modelling for strain design and context-specific metabolic prototyping in synthetic biology
- Supervisor: Prof. Laurence Yang
- GPA: 4.23/4.3
- 2022-23 R.S McLaughlin Fellowship recipient

04/2021

Bachelor of Applied Science: Chemical Engineering
Queen's University — Kingston, ON

- Thesis: Genome-scale metabolic model of *Pseudomonas aeruginosa* biofilm
- Supervisor: Prof. Laurence Yang
- GPA: 3.52/4.3 (Graduation with First Class Honors)
- Dean's Honor List recipient (2018, 2020, 2021)

RESEARCH INTERESTS

- Computational biology
- Systems biology and genome-scale modelling (GEM)
- Machine learning (ML) in biological systems
- Omics data analysis
- Optimization and system control

EXPERIENCE

05/2021 to 05/2023 **MASc Student**

Queen's University — Kingston, ON

- Investigated *Chlamydomonas reinhardtii* lipid overproduction using GEM
 - ⇒ Proposed and completed the project
 - ⇒ Suggested and published a novel GEM workflow on MATLAB
- Unveiling *Pseudomonas aeruginosa* antimicrobial resistance (AMR)

- mechanism by ML and GEM with wet-lab validation (in-progress)
- ⇒ Scoping to reduce pathogenic *P. aeruginosa* AMR in infection treatments
- ⇒ Collaborating with partners to obtain wet-lab trainings and results
- Simulating commercially feasible plastic biodegradation methods (in-progress)
- ⇒ Collaborating with lab members to build microbial and financial models

05/2020 to 09/2020 Undergraduate Research Assistant

Queen's University – Kingston, ON

- Completed on a case study of APRILE by suggesting the mechanisms behind certain polypharmacy reverse effects
- Contributed to APRILE development

09/2018 to 04/2023 Teaching Assistantship

Queen's University – Kingston, ON

- APSC 143: Introduction to Computing Programming for Engineers (marking)
- CHEE 330: Heat and Mass Transfer (tutorial and marking)
- CHEE 340: Biomedical Engineering (tutorial and marking)

PUBLICATIONS

Yao, H., Dahal, S., & Yang, L. (2023). Novel context-specific genome-scale modelling explores the potential of triacylglycerol production by *Chlamydomonas reinhardtii*. *Microbial Cell Factories*, 22(1), 1-16.

Xu, H., Sang, S., **Yao, H.**, Herghelegiu, A. I., Lu, H., Yurkovich, J. T., & Yang, L. (2021). APRILE: Exploring the Molecular Mechanisms of Drug Side Effects with Explainable Graph Neural Networks. *bioRxiv*, 2021-07. (Preprint)

CONFERENCE

2022

RECOMB/ISCB Conference on Regulatory & Systems Genomics (Poster)

MEMBERSHIP

2022 – 2024

Member, International Society for Computational Biology

SKILLS

Programming:

- Machine learning in Python
- Data analysis in MATLAB, Python, and R using common packages
- Source control through Git
- Other programming languages: C, C++, Java
- Using Windows, Mac, and Linux OS

Engineering and Math: process control, numerical methods, complex analysis, linear algebra, calculus

Lab: undergraduate-level lab training in chemistry and biology

Language: English (full professional), Chinese (native), Japanese (limited)