

Ruoxian (Scarlet) Wu

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EDUCATION

University of Toronto

Sep 2023 – Jun 2024

Bachelor of Science (Honours)

Physiology Specialist and Statistic Minor

CERTIFICATION

Python specialization (offered by Coursera)

The Specialization built on the success of the Python for Everybody course and introduced me to fundamental programming concepts including data structures, networked application program interfaces (APIs), and databases, all through the Python programming language.

TECHNICAL SKILLS

Lab Techniques: Western blots, bacterial culture, immune cell isolations, animal tissue histology, cytotoxicity (LDH assay), immunofluorescent staining, organ injury scoring, virology, genetics and sequence design, bioinformatics.

Software: SQL, Python, R Studio, GitHub, Power BI, and Prism Graphpad.

RESEARCH EXPERIENCE

Unity Health (Ori Rotstein Lab, University of Toronto)

Sep 2023 – Present

Research Assistant

- Research the mechanisms of liver ischemic injury and potential therapeutic interventions for damage mitigation.
- Lead an independent project investigating C3-CRIG interaction for mitochondrial protection by assessing the role of C3-coated microbeads as mitochondrial substitutes and their implications in hepatoprotection and immune modulation.
- Hands-on experience with animal tissue histology (H&E staining) and liver injury scoring (Suzuki method).
- Extensive involvement in literature searches and contributions to manuscript writing for publication.

Biomedical Incubator Capstone (Erwinia-Phage Therapy, University of Toronto)

Sep 2023

– Present

Independent Research Project Contributor

- Design and conduct experiments to develop potential bacteriophage cocktails against current fire blight outbreaks under the supervision of Dr. Rebecca Laposa.
- Contribute to a novel phage cocktail spray by formulating antibiotics and phages.
- Identify research gaps and commercialization potential.
- Act as the financial lead and by managing the project budget.
- Practice teamwork skills, networking skills, time management, and leadership.

Unity Health (Haibo Zhang Lab, University of Toronto)

May 2023 – Aug 2023

Research Assistant

- Research COVID-19 mechanisms, therapeutics, and vaccine development in the context of pulmonary health with a focus on inhalation of ACE2 as a therapeutic target against SARS-CoV-2 infection.
- Extensive experience with western blots, animal tissue histology, cytotoxicity (LDH assay), and immunofluorescent staining experiments on tissue samples.
- Construct electronic archives of experimental material storage and attend lab and research meetings.

PREVENT Project (Karim Keshavjee Lab, University of Toronto)
Jul 2023 – Sep 2023

Project Volunteer

- Contributed to the development of diabetes prevention software with possible integration of AI in disease prevention.
- Enhanced an understanding of the development of predictive models and analytical tools for improved comprehension of how the body functions at both macro and micro levels in interpreting clinical data meaningfully.
- Extensively integrated complex biological data with patient health records using existing clinical data to create predictive models and perform pattern analysis to help detect health status changes.

Chinese State Key Lab (Zijie Zhang Lab, Yunnan University)

Jun 2021 – Aug 2021

Research Assistant

- Investigated the molecular responses to COVID-19 vaccines by recruiting volunteers at vaccination sites for blood samples and performing immune cell extractions from these samples by isolating peripheral blood mononuclear cells (PBMCs) from whole blood.
- Improved communication, teamwork, and problem-solving skills through regular interactions with a diverse group including researchers, graduate students, medical staff, and the public.

PUBLICATIONS

Manuscript:

- Manuscript Title: CRIG-dependent capture of transplanted mitochondria by Kupffer cells prevents liver ischemia/reperfusion-induced injury and inflammation
- Status: Has been submitted to the Science Immunology in March, 2024.
- Author:
 - Avinash Naraiah Mukkala, Bruna Araujo David, Menachem Ailenberg, Jady Liang, Chirag Manoj Vaswani, Danielle Karakas, William Barbour, Rachel Goldfarb, Avishai Gasner, **Ruoxian Wu**, Kushal Joshi, Raluca Petrut, Sabrina Yang, Colin Graham, Mirjana Jerkic, Eno Hysi, Marc Jeschke, Ana Andreazza, Heyu Ni, Claudia dos Santos, Haibo Zhang, Andras Kapus, Paul Kubes, Ori David Rotstein. "Exogenous mitochondria are phagocytosed by ischemic Kupffer cells, in vivo, to prevent liver injury and inflammation."

EXTRACURRICULAR ACTIVITIES

University of Toronto Life Sciences Connection (UTLSC) Club

Sep 2022 – Present

Vice Minister

- Responsible for some publicity work in the club, such as making electronic posters, which enabled me to use related computer software, such as Microsoft Office set.

University of Toronto Skule Orchestra Club

Sep 2021 – May 2023

Cellist

- Rehearse and ensemble symphonic music to improve my teamwork ability, provide opportunities to communicate with other students with similar interests, and enrich my overall college life.

Mama Pack Organization

Jun 2019

Volunteer

- Packed food for children suffering from famine worldwide.

AWARDS

University of Toronto

Experiential Learning Bursary

Fall 2023