

WAJEEHA ZAHEER

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EDUCATION

Doctor of Philosophy, Laboratory Medicine and Pathobiology
University of Toronto – The Hospital for Sick Children

Sep. 2023 -
Present

Master of Science, Medical Sciences
McMaster University – Thrombosis and Atherosclerosis Research Institute (TaARI)

- Specialization: Blood and Vasculature
- GPA: 3.95

Sep. 2021 –
Aug. 2023

Bachelor of Science, Honours Biochemistry Co-operative Program
University of Waterloo

Sep. 2016 –
Apr. 2021

RESEARCH EXPERIENCE

Masters Project
McMaster University – Faculty of Health Science
Supervisor: Dr. Anthony Chan

Sep. 2021 –
Aug. 2023

- Designed experiments to induce immune tolerance to factor VIII in a Hemophilia A murine model
- Conducted ELISA and flow cytometry to quantify cytokines and autoantibodies from plasma
- Cultured primary immune cells to investigate the underlying mechanisms of tolerance
- Led pharmacokinetic studies on recombinant FVIII drugs in various murine bleeding models

Fourth Year Thesis Project – Biochemistry
University of Waterloo – Department of Chemistry
Supervisor: Dr. Thorsten Dieckmann

Sep. 2020 –
Apr. 2021

- Elucidated the binding kinetics of aptamers and Kanamycin using Isothermal Titration Calorimetry
- Analyzed ITC thermograms to determine thermodynamic parameters such as K_d , N , ΔH and ΔS
- Optimized aptamers by developing truncated sequences, for use in an antibiotic detecting biosensor

Research Assistant (Co-op) – Microbiology & Bacterial Molecular Genetics
University of Waterloo – Department of Biology
Supervisor: Dr. Trevor Charles

Jan. 2018 –
Aug. 2020

- Designed and executed cell culture experiments to isolate 8 novel bacterial strains capable of degrading the carbon compound Glyphosate that is found in herbicides
- Engineered bacteria to metabolize lactose and synthesize bioplastic polymers as a byproduct
- Cloned genes to manipulate methanotrophic bacteria into using glycerol as their sole carbon source

Research Assistant (Co-op) – Mass Spectrometry and Proteomics
University of Toronto – Department of Physiology & Ted Rogers Center for Heart Research
Supervisor: Dr. Anthony Gramolini

Jan. 2020 –
Apr. 2020

- Developed a multiplexed MS-based assay that simultaneously detects 15 protein biomarkers linked to early and late stage heart failure for use in both cardiac research and clinical settings
- Directed LC-MS experiments and analyzed mass spectra using proteomics software resulting in the successful selection of the strongest peptide candidates for each protein in the assay

Research and Development Assistant (Co-op) – Analytical Chemistry

Labstat International Inc.

Supervisor: Dr. Angel Rodriguez

- Designed GC-MS experiments to quantify pesticides found in medical cannabis achieving over 85% recovery
- Ran extraction experiments, organized MS data and optimized methods to maximize analyte yield

May 2019 –
Aug. 2019

Research Assistant (Volunteer) – Molecular Biology

University of Waterloo – Department of Biology

Supervisor: Dr. David Spafford

- Ran DNA extractions, purifications and cloning experiments to study voltage-gated ion channels
- Performed general lab upkeep - running the autoclave, filling pipette boxes and labelling samples

Jan. 2017 –
Apr. 2017

LABORATORY SKILLS AND INSTRUMENTATION EXPERIENCE

- **Animal Handling:** perfusion, subcutaneous/intraperitoneal/retro-orbital injection, cardiac/facial vein/retro-orbital blood collection, gas anesthesia, euthanasia, breeding, mouse colony maintenance
- **Molecular Biology:** mammalian cell culture, cloning, ELISA, immunofluorescence, electrophoresis
- **Biochemistry:** western blot, protein purification, FPLC, gel staining, enzyme activity assay, Bradford assay
- **Microbiology:** bacterial cell culture, PCR, transposon mutagenesis, bacterial conjugation, media/plate prep
- **Analytical Chemistry:** GC-MS, LC-MS, HPLC, SPE, fluorimetry

PUBLICATIONS

- Sadat-Afjeh, N., Zaheer, W., & Rangunayakam, N. (2023). The sex-dependent and lasting effects of neonatal antibiotic exposure: A gut wrenching truth. *The Journal of Physiology*.
- Zaheer, W., Sadat-Afjeh, N., & Rangunayakam, N. (2022). Characterizing the effects of type I collagen alterations on respiratory function in mouse models with varying severity of osteogenesis imperfecta. *The Journal of Physiology*.
- Zaheer, W. (2021). Blood pressure in the chronically hypoxaemic fetus is regulated by α -adrenergic receptors on the peripheral vasculature. *The Journal of Physiology*.

PRESENTATION CONFERENCES

International Society of Thrombosis and Hemostasis (ISTH) Congress – Montreal, Qc

June 2023

- Oral presentation: “Low dose FVIII injections as a potential treatment to prevent inhibitor formation in Hemophilia A – an in vivo study” (Presenting author)

International Society of Thrombosis and Hemostasis (ISTH) Congress – Montreal, Qc

June 2023

- Oral presentation: “Exploring the Hemostatic properties of extravascular Factor IX in a hemophilia B mouse model” (Second Author)

International Society of Thrombosis and Hemostasis (ISTH) Congress – Montreal, Qc

June 2023

- Poster presentation: “FVIII/anti-FVIII immune complexes prevent FVIII-specific activation of B-cells in a hemophilia A mouse model” (Second Author)

Association of Hemophilia Clinical Directors of Canada (AHCDC) Symposium – Niagara Falls, ON

May 2023

- Oral presentation: “Low dose FVIII injections as a potential treatment to prevent inhibitor formation in Hemophilia A – an in vivo study” (Presenting author)

McMaster Medical Sciences Research Day – Hamilton, ON

Apr. 2023

- Presented graduate research in the form of a Science Communication video at McMaster University

Association of Hemophilia Clinical Directors of Canada (AHCDC) Symposium – Toronto, ON **May 2022**
• Oral presentation: “Administering low doses of FVIII may induce immune tolerance to FVIII in Hemophilia A Mice” (Presenting author)

Mar. 2021

Thesis Project Symposium – Waterloo, ON

- Presented final year thesis to peers and faculty in the Department of Chemistry obtaining the highest grade of 97%

University of Toronto Co-op Research Presentation – Toronto, ON

May 2020

- Presented my translational research conducted in Dr. Gramolini’s lab to a team of cardiologists from Toronto General Hospital and staff from the University of Toronto – received “Excellent” final standing for co-op term

BioTEC - Biotechnology and Bioengineering Conference – Waterloo, ON

Dec. 2018

- Designed and presented a scientific poster at Canada’s largest undergraduate biotechnology conference based on the Glyphosate degradation research conducted under the supervision of Dr. Trevor Charles

Scinapse Undergraduate Science Case Competition – London, ON

Apr. 2017

- Advanced to the final round of a science case competition for a research proposal on ZIKA Virus
- Presented a research poster at the University of Western Ontario to 200+ attendees

Teaching experience

Laboratory Mentor

Jan 2018 – Present

- Trained lab volunteers and thesis students on equipment such as an autoclave, laminar flow hood, thermal cycler, spectrophotometer, centrifuge, analytical balance and incubator
- Taught proper aseptic technique and lab skills such as pipetting, media/plate preparation, streak plating, cell culturing, serial dilutions and preparing glycerol cell stocks
- Educated volunteers on how to document their work in a lab notebook and enter their data online in spreadsheets

Private French Tutor

2016 – 2020

- Provided speaking, reading and writing support to students of all levels (elementary up to university level) in the French language, resulting in a drastic increase in the student’s French grade
- Aided in homework and conducted assessments to ensure students were grasping new concepts

HONOURS AND AWARDS

Early Career Travel Award - International Society of Thrombosis and Hemostasis (ISTH) Congress **June 2023**

- Awarded to select abstracts of outstanding quality, \$500 USD

Travel Award - Medical Sciences

June 2023

- Awarded to select students attending a conference to present their research (\$1000 CAD)

Travel Award - Graduate Student Association

June 2023

- Awarded to select students presenting their work as an oral conference presentation (\$500 CAD)

Travel Award - Association of Hemophilia Clinical Directors of Canada (AHCDC)

May 2023

- Awarded to members presenting their research as an oral conference presentation (\$950 CAD)

- Trainee Research Award – AHCDC Symposium** **May 2023**
- Selected amongst 50+ candidates to give an oral presentation on my graduate research at the annual Association of Hemophilia Clinical Directors of Canada (AHCDC) scientific symposium 2023
 - Won the Trainee Research award for my work on Low dose FVIII injection as a potential treatment to prevent inhibitor formation in Hemophilia A (\$150)
- People’s Choice Award – McMaster Medical Sciences Research Day** **Apr. 2023**
- Presented my graduate research in the form of a one-minute science communication video at the annual McMaster Medical Sciences Research Day
 - Won the people’s choice award for best video, as selected by attendee votes (\$250 value)
- Best Research Abstract Award – AHCDC Scientific Symposium** **May 2022**
- Selected amongst 50+ candidates to give an oral presentation on my master’s research at the annual Association of Hemophilia Clinical Directors of Canada (AHCDC) scientific symposium 2022
 - Won the Best Research Abstract award for my work on immunotherapy for Hemophilia A treatment (\$150 value)
- Term Distinctions** **Dec. 2020**
Apr. 2021
- Awarded term distinction for the Fall 2020 and Winter 2021 Term for obtaining an overall average of 80% or higher
- Canadian Society for Chemistry Accreditation Certificate** **Apr. 2021**
- Awarded to students who have successfully completed a recognized degree program with a strong foundation in chemistry, including 6.0 credits in chemistry and 1000 hours of lab and course work
- DELF Diploma** **May 2016**
- DELF (Diplôme d'Etudes en Langue Française) diploma awarded by the French Ministry of Education after completing a comprehensive four-part reading, writing, listening and oral French examination
 - Certified French bilingual with a level B2 French proficiency