EMILY HASHIMOTO-ROTH, M.SC.

PH.D. STUDENT

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in emilyhashimotoroth

EDUCATION

Ph.D. in Molecular Genetics (Computational Biology track)   Sept 2022 – present
University of Toronto

M.Sc. in Biochemistry specializing in Bioinformatics   Sept 2019 – Dec 2021
Defended December 1st, 2021
University of Ottawa

H.B.Sc. in Biopharmaceutical Science (Genomics option)   Sept 2015 – Apr 2019
University of Ottawa

EXPERIENCE

Front-end Developer (part-time, remote)   January 2024 – present
Faculty of Medicine, University of Ottawa
- Supervised by Dr. Steffany Bennett
- Create the graphical user interface for bioinformatics tools developed by members of the Neural Regeneration Laboratory.
- Update the Neural Regeneration Lab and CompLiMet (Computational Lipidomics and Metabolomics) websites.

Developer (part-time, remote)   Sept 2022 – Dec 2023
Faculty of Medicine, University Ottawa
- Supervised by Dr. Steffany Bennett
- Contribute to ongoing bioinformatics projects.
- Update the Neural Regeneration Lab and CompLiMet (Computational Lipidomics and Metabolomics) websites.

Junior Research Technician   May 2022 – Aug 2022
Faculty of Medicine, University of Ottawa
- Supervised by Dr. Mathieu Lavallée-Adam and Dr. Steffany Bennett
- Implemented a command-line tool for human plasma protein-protein interaction confidence assessment.
- Developed the website for CompLiMet, a suite of omics data analysis tools.
  - Website: https://www.complimet.ca

- Developed (ongoing) the website for LipidManifold, a lipid annotation and mass spectrometry fragmentation database.
  - Website: in development.

Graduate Student Research Assistant (part-time internship)   Feb 2021 – Dec 2021
National Research Council of Canada

- Supervised by Dr. Miroslava Čuperlović-Culf
- Created META-BOA, a tool for addressing class imbalance in lipidomics and metabolomics datasets using over-sampling algorithms.

Graduate Student Research Assistant   Sept 2019 – Dec 2021
Faculty of Medicine, University of Ottawa

- Supervised by Dr. Mathieu Lavallée-Adam and Dr. Steffany Bennett
- Created MAGPIE, a machine learning algorithm for the confidence assessment of protein-protein interactions in human plasma.
- Contributed to the research project and publication investigating putatively targeted human protein sequence motifs by the SARS-CoV-2 virus.

Junior Researcher   May 2018 – Aug 2019
Employment and Social Development Canada

- Designed new and improved existing applications on both internal and external website platforms, used by government agents and the Canadian population, respectfully.
- Configured and optimized how data is captured within the website (e.g., mapping where meta-data is captured on the website).

Honours Project Research Student   Sept 2018 – Apr 2019
Lavallée-Adam Lab, Faculty of Medicine, University of Ottawa

- Supervised by Dr. Mathieu Lavallée-Adam
- Produced thesis titled, "A machine learning approach to deciphering protein-protein interactions in human plasma"

Pharmacy Assistant   Apr 2017 – Dec 2018
Rexall Ltd.
- Maintained accurate patient prescription records.
- Filled prescriptions (e.g., counting pills, compounding).

Junior Accident Analyst   May 2017 – Aug 2017
Transport Canada

- Collected and analyzed large datasets.
- Maintained database and data collection integrity.

PUBLICATIONS

PEER-REVIEWED PUBLICATIONS

* First author, co-first author

[2] **Hashimoto-Roth, E.***, Surendra, A., Lavallée-Adam, M., Bennett, S. A. L., & Čuperlović-Culf, M. (2022) METAbolomics data Balancing with Over-sampling Algorithms (META-BOA): an online resource for addressing class imbalance. *Bioinformatics*, 38(23), 5326–5327. https://doi.org/10.1093/bioinformatics/btac649

[1] Nadeau, R.*, Shahryari Fard, S.*, Scheer, A.*, **Hashimoto-Roth, E.***, Nygard, D.*, Abramchuk, I.*, Chung, Y. E.*, Bennett, S. A. L., & Lavallée-Adam, M. (2020). Computational Identification of Human Biological Processes and Protein Sequence Motifs Putatively Targeted by SARS-CoV-2 Proteins Using Protein-Protein Interaction Networks. *Journal of Proteome Research*, 19(11), 4553–4566. https://doi.org/10.1021/acs.jproteome.0c00422

IN PREPARATION & UNDER REVIEW

* First author, co-first author

[3] Ng, T.*, **Hashimoto-Roth, E.**, Röst, H., & Wheeler, M. (2024) Plasma biomarkers used for the early prediction of gestational diabetes mellitus. *Submitted*.

[2] **Hashimoto-Roth, E.***, Forget, D., Gaspar, V., Bennett, S. A. L., Gauthier, M.-S., Coulombe, B., & Lavallée-Adam, M. (2024) MAGPIE: A machine learning approach to decipher protein-protein interactions in human plasma. *Under review*.

[1] **Hashimoto-Roth, E.***, Čuperlović-Culf, M., & Bennett, S. A. L. (2024) Constellation Network Maps: mapping lipid network disruptions in dementia. *In preparation*.

SCHOLARSHIP

Ontario Graduate Scholarship Amount: CAD$15,000/year	2023 – 2024
NSERC-CREATE Metabolomics Advanced Training and International Exchange (MATRIX) Scholarship Amount: CAD$40,000/2 years	2019 – 2021
NSERC-CREATE MATRIX Metabolomics Research Training Scholarship Amount: CAD$240 *(To attend the American Society for Mass Spectrometry's virtual 2020 workshop: R Fundamentals and Best Practices for Mass Spectrometry Data Analysis)*	November 2020
Neural Regeneration Laboratory Scholarship Amount: CAD$2,000/year *(To act in a communications role, creating a new Neural Regeneration Laboratory website)*	2021

HONOURS AND AWARDS

CNPN-HUPO Trainee Travel Award   June 2023
Canadian National Proteomics Network
- To attend and present at the HUPO 2023 World Congress.
- Amount: Cost of registration + CAD$500

Winner of Trainee Pre-Symposium Best Talks   May 2022
Canadian National Proteomics Network 13th Annual Symposium
- One of two talks (out of 18) chosen to present at the main symposium.

Best Thesis Award Nomination   December 2021
Faculty of Medicine, University of Ottawa
- Nominated by M.Sc. thesis defence evaluators.

Commission on Graduate Studies in Sciences Prize Nomination   December 2021
University of Ottawa
- Nominated by M.Sc. thesis defence evaluators.

Graduate Student Poster Competition Finalist (online)   November 2021
HUPO ReCONNECT 2021 World Congress
- One of eight finalists selected from 60 applicants.

Department Seminar Day Winner (online)   April 2021
Faculty of Medicine, University of Ottawa
- Ranked 1st place among all participating students in my program.
- Evaluations conducted by professors and fellow students.
- Amount: CAD$100

Student Travel Award   March 2020
American Society for Mass Spectrometry
- To attend and present at the 2020 American Society for Mass Spectrometry 68th Annual Conference.
- Amount: USD$200

Cancelled following the move to an online platform during the COVID-19 pandemic.

Department of Biochemistry, Microbiology and Immunology Travel Award   May 2019
Faculty of Medicine, University of Ottawa
- To attend and present at the 2019 Canadian National Proteomics Network 11th Annual Symposium.
- Amount: CAD$430

CONFERENCE ABSTRACT

ORAL PRESENTATION
* Presenting author

[10] **Hashimoto-Roth, E.***, Forget, D., Gaspar, V., Bennett, S. A. L., Gauthier, M-S., Coulombe, B., Lavallée-Adam, M. (2023) MAGPIE: Using machine learning to assess the confidence of protein-protein interactions in human plasma. Human Proteome Organization World Congress 2023 (HUPO 2023), Busan, South Korea.

[9] **Hashimoto-Roth, E.***, Forget, D., Gaspar, V., Bennett, S. A. L., Gauthier, M-S., Coulombe, B., Lavallée-Adam, M. (2022) MAGPIE: Using machine learning to assess the confidence of protein-protein interactions in human plasma. 2022 Department of Biochemistry, Microbiology and Immunology Scientific Symposium, Montebello, QC, Canada.

[8] **Hashimoto-Roth, E.***, Forget, D., Gaspar, V., Bennett, S. A. L., Gauthier, M-S., Coulombe, B., Lavallée-Adam, M. (2022) MAGPIE: Using machine learning to assess the confidence of protein-protein interactions in human plasma. 2022 Ottawa Institute for Systems Biology Symposium (OISB 2022), Cornwall, ON, Canada.

[7] **Hashimoto-Roth, E.***, Forget, D., Gaspar, V., Bennett, S. A. L., Gauthier, M-S., Coulombe, B., Lavallée-Adam, M. (2022) MAGPIE: Using machine learning to assess the confidence of protein-protein interactions in human plasma. Trainee Pre-Symposium, Canadian National Proteomics Network 13th Annual Symposium (CNPN 2022), Montreal, QC, CAN.
Selected as one of two trainees (out of 18) to present at the main symposium by a panel of judges.

[6] **Hashimoto-Roth, E.***, Forget, D., Gaspar, V., Bennett, S. A. L., Gauthier, M-S., Coulombe, B., Lavallée-Adam, M. (2021) MAGPIE: A machine learning approach to decipher protein-protein interactions in human plasma. Human Proteome Organization World Congress ReCONNECT 2021 (HUPO ReCONNECT 2021), online.

[5] **Hashimoto-Roth, E.***, Forget, D., Gaspar, V., Bennett, S. A. L., Gauthier, M.-S., Coulombe, B., Lavallée-Adam, M. (2021) MAGPIE: A machine learning approach to decipher protein-protein interactions in human plasma. University of Ottawa's Department of Biochemistry, Microbiology and Immunology Seminar Day, online.
Selected as 1st place prize winner for best presentation by an M.Sc. student.

[4] **Hashimoto-Roth, E.***, Forget, D., Gaspar, V., Bennett, S. A. L., Gauthier, M.-S., Coulombe, B., Lavallée-Adam, M. (2021) MAGPIE: A machine learning approach to decipher protein-protein interactions in human plasma. Main Symposium, Canadian National Proteomics Network Annual Symposium (CNPN 2021), online.

[3] Patel, A.*, Suk, T., Callaghan, S., **Hashimoto-Roth, E.**, Lavallée-Adam, M., Ngsee, J., Rousseaux, M. (2020) Mapping the ALS linked interactome. Brain and Mind Institute's Brain Health Research Week, online.

[2] Scheer, A.*, Nadeau, R., Nygard, D., **Hashimoto-Roth, E.**, Shahryari-Fard, S., Abramchuk, I., Chung, Y.-E., Lavallée-Adam, M. (2020) Identification of human biological processes and protein sequence motifs putatively targeted by SARS-CoV-2 proteins. Intelligent Systems for Molecular Biology 28th Conference (ISMB 2020 COVID-19), online.

[1] **Hashimoto-Roth, E.***, Forget, D., Gaspar, V., Coulombe, B., Gauthier, M.-S., Lavallée-Adam, M. (2019) A machine learning approach to decipher protein-protein interactions in human plasma. Trainee Pre-Symposium, Canadian National Proteomics Network 11th Annual Symposium (CNPN 2019), Quebec City, QC, Canada.

POSTER PRESENTATION
* Presenting author

[8] **Hashimoto-Roth, E.***, Čuperlović-Culf, M., Bennett, S. A. L. (2023) Constellation Network Maps: An innovative R package for mapping Lipid Network Disruptions in dementia with Lewy Bodies applicable to all dementias. International Conference on Alzheimer's and Parkinson's Diseases and related neurological disorders (AD/PD 2023). Gothenburg, Sweden.

[7] **Hashimoto-Roth, E.***, Forget, D., Gaspar, V., Bennett, S. A. L., Gauthier, M.-S., Coulombe, B., Lavallée-Adam, M. (2022) MAGPIE: Using machine learning to assess the confidence of protein-protein interactions in human plasma. Trainee Pre-Symposium, Canadian National Proteomics Network 13th Annual Symposium (CNPN 2022), Montreal, QC, CAN.

[6] **Hashimoto-Roth, E.***, Forget, D., Gaspar, V., Bennett, S. A. L., Gauthier, M.-S., Coulombe, B., Lavallée-Adam, M. (2021) MAGPIE: A machine learning approach for deciphering protein-protein interactions in human plasma. Human Proteome Organization World Congress ReCONNECT 2021 (HUPO ReCONNECT 2021), online.
Selected as finalist in graduate student poster competition.

[5] **Hashimoto-Roth, E.***, Forget, D., Gaspar, V., Bennett, S. A. L., Gauthier, M.-S., Coulombe, B., Lavallée-Adam, M. (2021) MAGPIE: A machine learning approach to decipher protein-protein interactions in human plasma. American Society for Mass Spectrometry's 69th Annual Conference (ASMS 2021), online.

[4] Patel, A.*, Suk, T., Callaghan, S., **Hashimoto-Roth, E.**, Lavallée-Adam, M., Ngsee, J., Rousseaux, M. (2020) Using a proteomic approach to map the interactome of TDP-43 in the content of ALS. 31st International Symposium on ALS/MND, online.

[3] **Hashimoto-Roth, E.***, Forget, D., Gaspar, V., Bennett, S., Gauthier, M.-S., Coulombe, B., Lavallée-Adam, M. (2020) A machine learning approach for deciphering protein-protein interactions in human plasma. Intelligent Systems for Molecular Biology 28th Conference (ISMB 2020), online.

[2] **Hashimoto-Roth, E.***, Forget, D., Gaspar, V., Bennett, S., Gauthier, M.-S., Coulombe, B., Lavallée-Adam, M. (2020) A machine learning approach for deciphering protein-protein interactions in human plasma. American Society for Mass Spectrometry 68th Annual Conference Reboot (ASMS 2020 Reboot), online.

[1] **Hashimoto-Roth, E.***, Forget, D., Gaspar, V., Coulombe, B., Gauthier, M.-S., Lavallée-Adam, M. (2019) A machine learning approach to decipher protein-protein interactions in human plasma. Canadian National Proteomics Network 11th Annual Symposium (CNPN 2019), Quebec City, QC, Canada.

SCHOLARLY AND PROFESSIONAL ACTIVITY

Co-Founder and Director of Communications   November 2023 – present
Toronto Bioinformatics Hackathon
- Contribute to drafting the inaugural event proposal.
- Design organization's logo and brand identity.
- Create and maintain the organization's website.
- Act as a point of contact for prospective sponsors and partners.
- Coordinate sponsorship outreach strategy with Outreach Executive.
- Coordinate social media activity with Media Executive.

Executive Team Member   May 2023 – present
BiotechTO
- Contribute to organizing bi-monthly local networking events.
- Contribute to generating marketing material for advertising events.

Marketing and Outreach Committee (MOC) Member   Jan 2021 – present
Human Proteome Organization (HUPO)
Co-Chair   Feb 2024 – present
- Support MOC Chair in leading committee activities and meetings.
- Supervise working groups through fulfilling their goals.
- Attend Executive Committee meetings and liaise updates to MOC.

Chair of Branding Working Group   Jun 2023 – present
- Lead the efforts to maintain the organization's brand identity.
- Create and maintain the HUPO Brand Guide.
- Maintain the HUPO Social Media and Webinar Guides.
- Contribute to the Social Media Working Group.

Early Career Researcher (ECR) Committee Representative   Jan 2021 – Jun 2023
- Liaise between the ECR and MOC.
- Create the HUPO Social Media and Webinar Guides.
- Create volunteer opportunities for trainees and early career researchers.
- Develop initiatives to highlight members of the global proteomics research community.
- Design and procure merchandise for *Humans of HUPO* initiative.

Early Career Researcher (ECR) Committee Member   Nov 2020 – present
Human Proteome Organization (HUPO)

- Create promotional content for events and monthly newsletters.
- Advertise ECR Initiative activities across HUPO social media accounts.
- Contribute to the organization of a monthly seminar series.
- Contribute to the organization of ECR activities at the annual HUPO World Congress.
- Organized a design competition for a new HUPO ECR logo.

Operations Management Team Member   Nov 2020 – present
Canadian National Proteomics Network (CNPN)

Content Lead   Sept 2022 – present

- Design and create content for email campaigns, social media, and the CNPN website.
- Provide media support for the annual symposium.

Website Lead   Nov 2020 – Sept 2022

- Lead and execute the organization's rebranding and website redesign/build.
- Optimize integration of mailing lists with the website.
- Aid in the development of a new monthly seminar series.
- Provide support for the annual symposium.

HUPO 2023 AI Tools in Writing Co-Chair   September 2023
Early Career Researcher Committee Mentoring Session, HUPO
Previously called Early Career Researcher Initiative

Abstract Reviewer for Trainee Pre-Symposium   April 2023
Canadian National Proteomics Network 14th Annual Symposium (CNPN 2023)

Poster Evaluator   May 2022
Ottawa Institute for Systems Biology Symposium (OISB 2022)

Annual Symposium Session Co-Chair   May 2022
Canadian National Proteomics Network 13th Annual Symposium (CNPN 2022)

Abstract Reviewer for Trainee Pre-Symposium   April 2022
Canadian National Proteomics Network 13th Annual Symposium (CNPN 2022)

Director of Communications   Oct 2018 – Dec 2021
Executive Team, Pulsar Collective

- Act as a founding member of the organization.
- Act as the team lead for marketing and communications team.
- Build and maintain the organization's website and mailing lists.

HUPO ReCONNECT 2021 Proteomics 101 Video Invited Speaker (online)   November 2021
Early Career Researcher Initiative Proteomics 101 Session, HUPO

HUPO ReCONNECT 2021 Scientific Integrity Co-Chair (online)   November 2021
Early Career Researcher Initiative Mentoring Session, HUPO

Spotlight Series Seminar Chair (online) October 2021
Canadian National Proteomics Network
Previously called CanProteoTalks

Promoting Diversity in Proteomics Chair (online) May 2021
Early Career Researcher Committee Panel Series, HUPO

Conference Moderator (online) February 2021
IgNITE Medical Case Competition

Team Mentor Oct 2020 – Feb 2021
IgNITE Medical Case Competition
- Provided guidance for creating impactful scientific abstracts, posters, and oral presentations.
- Mentored three teams of high school and undergraduate students participating in the competition.
- Continued mentoring one team that successfully made it to the final competition round.

Critically Appraising Research Workshop Co-host (online) November 2020
IgNITE Medical Case Competition

Biopharmaceutical Science Program Representative March 2019
University of Ottawa Open House

Guest Speaker January 2019
Biopharmaceutical Science Information Night, Science Students' Association

Lavallée-Adam Laboratory Representative November 2018
Networking Event for 2019 – 2020 Honours Projects, University of Ottawa

COMMUNITY INVOLVEMENT

First Year Mentor Sept 2023 – present
Molecular Genetics Graduate Student Association (MoGen GSA)
- Act as a dedicated point of contact for four first-year graduate students, supporting them through their first year of the Molecular Genetics M.Sc. and direct entry Ph.D. programs.
- Attend and help facilitate orientation events for first-year graduate students.

Graphic Designer Feb 2023 – Feb 2024
Molecular Genetics Graduate Student Association (MoGen GSA)
- Design and create content for advertising MoGen GSA activities.

Conference Poster Designer and Creator Sept 2022 – May 2023
CSMB 2023 Conference, Canadian Society for Molecular Biosciences (CSMB)
- Collaborate with planning committee members.
- Design and create the poster used to advertise the conference, and programme cover.

Email Ambassador   March 2023
Molecular Genetics Graduate Student Association (MoGen GSA)
- Reached out to assigned prospective M.Sc. and direct entry Ph.D. Molecular Genetics students (i.e., students with offers of acceptance for Fall 2023 entry).
- Acted as a dedicated point of contact to answer questions pertaining, but not limited, to the program, graduate student life, and living in Toronto.

Photographer   May 2022
Discovery Day 2022, Faculty of Medicine, University of Ottawa
- Attended both English and French Discovery Day sessions.
- Took and edited photos, capturing moments throughout the event.

Grade 12 Biology Guest Speaker (virtual)   May 2022
The Hill Academy, Caledon, Ontario
- Gave grade 12 students an overview of the bioinformatics field.
- Answered questions regarding navigating post-secondary education in STEM, seeking research opportunities, and the job market.

Leadership Program Staff Member   Sept 2019 – Sept 2021
Ridgemont High School (RHS), Ottawa Carleton District School Board
- Act as a fully vetted Ottawa Network for Education (ONFE) volunteer.
- Carry out supporting roles during the preparation and execution of the RHS bi-annual leadership camp.

Vice-President (VP) of Social Media   Oct 2020 – Apr 2021
Biochemistry, Microbiology and Immunology Graduate Student Association (BMIGSA)
- Act as the BMIGSA's first VP of Social Media.
- Manage the BMIGSA social media channels.
- Create and organize content.

Conference Poster Designer and Creator   Feb 2020 – Mar 2020
CSMB 2020 Conference, Canadian Society for Molecular Biosciences (CSMB)
- Collaborated with planning committee members.
- Designed and created the poster used to advertise the conference.
Cancelled to preserve the efforts combatting the COVID-19 pandemic.

Social Media Coordinator   Aug 2017 – Apr 2018
Science Students' Association, University of Ottawa
- Act as the association's first Social Media Coordinator.
- Work with the association's Vice President of Promotional Affairs.
- Increased the association's online presence and student engagement.

101 Week Head Guide   Jul 2017 – Sept 2017
Science Students' Association, University of Ottawa
- Led and ensured the safety of a group of incoming first-year science undergraduates through a week of events.

- Provided safe, accompanied walks home for students living in the downtown Ottawa area.

Departmental Representative   Oct 2016 – Apr 2017
Science Students' Association, University of Ottawa
- Acted as a voice for the Biopharmaceutical Sciences students at council meetings.
- Organized and ran academic and social events.gm

OTHER AWARDS

Logo Competition Winner
Centre for Infection, Immunity and Inflammation, University of Ottawa   December 2020
- Amount: CAD$250

Illustration Contest 2nd Place Winner   February 2019
Department of Biochemistry, Microbiology and Immunology, University of Ottawa
- Amount: CAD$100

SKILLS

COMPUTER SKILLS
- Programming with R and Python.
- Creating responsive websites with HTML, CSS, Bootstrap, and React.
- Using SLURM for task management on high-performance computing clusters.
- Proficient with Microsoft Office, Adobe Photoshop, Lightroom, Illustrator, InDesign, and Dreamweaver.

PHOTOGRAPHY
- Canon EOS 90D DSLR