Javad Sadeghi, Ph.D.

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ACADEMIC RECORD

2017-2022 **Doctor of Philosophy,** Environmental Science, University of Windsor
Dissertation: Endogenous and exogenous factors driving bacterial community composition in aquatic ecosystem
Supervisors: Dr. Daniel D. Heath & Dr. Subba Rao Chaganti

2011-2014 **Master of Science**, Medical Microbiology, Tehran University of Medical Science
Dissertation: Evolution and genetic diversity in *Streptococcus pneumoniae*
Supervisors: Dr. Malihe Talebi & Dr. Mohammad Pourshafie

2006-2010 **Bachelor of Science**, Biology, Urmia University

PROFESSIONAL APPOINTMENTS

2024- 2027 **Postdoctoral Fellow**, University of Toronto-Scarborough, Canada

2022- 2023 **Postdoctoral Fellow**, University of British Columbia, Canada
*Five months leave due to family emergency

2018 **Research Assistant**, University of Windsor, Canada

2014- 2017 **Laboratory Technologist**, Emad Pathobiology Lab, Iran
*Completed two years of mandatory military service (2014-2016) before moving to Canada.

AWARDS, HONORS, SCHOLARSHIPS

Research Grants and Fellowships

2024-2025 University of Toronto-Scarborough Postdoctoral Fellowship. Awarded to study recreating disease-suppressive phyllosphere microbiomes (24 months, $50,000).

2023-2024 Health Innovation Funding Investment (HIFI). Award to study human eye-gut microbiome axis in age-related dry eye diseases (12 months, $25,000).

Major Scholarships

2017-2021 Ontario Trillium Scholarship. Highly competitive - only three PhD students awarded every year, open to both domestic and international students (4 years, $160,000).

2011-2014 Award for Academic Achievement-ranked 8 out of 2500 students (2 years, $8000)

Other awards

2024 University of Toronto-Scarborough Postdoctoral Research Day, Awards for the Most Comprehensive Presentation $50

2024 Integrated Microbiome Platforms for Advancing Causation Testing and Translation (IMPACTT) Gnotobiotic Workshop Travel Award, $500

2023 GENFISH, Best Presentation Award, $150

2020 Clemens-Rigler Travel Award, Canadian Conference for Fisheries Research, $340

2019 University of Windsor Travel Award, $500

2016 European Society of Clinical Microbiology and Infectious Diseases, Vaccines Travel Grant, $1000

PUBLICATIONS

I am an author on 23 journal article publications (first author on 7 and senior author on another), including articles in the top journals in my field (*Clinical Microbiology Reviews,* IF=22.5, *Microbiome*, IF=16.8; *Science of the Total Environment*, IF=9.8; *Environmental Research*, IF=8.3; *Journal of Biological Chemistry*, IF=5.4; *Molecular Ecology*, IF=4.9; *Heredity,* IF=3.8). As of Sep 2024, my h-index is 12 with 279 citations according to Google Scholar.

Refereed Journal Articles (†denotes student I supervised/Co-supervised)

2024 23. **Sadeghi J**, Zaib F, Heath D. Gut microbiome and gene transcription genetic architecture and interactions in Chinook salmon (*Oncorhynchus tshawytscha*), *Heredity,* 133: 54–66.

2024 22. Frank C, **Sadeghi J**, Heath D, Semeniuk C. Behavioral transcriptomic effects of triploidy and probiotic therapy (Bifidobacterium, Lactobacillus, and Lactococcus mixture) on juvenile Chinook salmon (*Oncorhynchus tshawytscha). Genes, Brain and Behavior,* 23: e12898.

2024 21. Yadegar A, Bar-Yoseph H, Monaghan TM, Pakpour S, Severino A, Kuijper EJ, Smits WK, Terveer EM, Neupane S, Nabavi-Rad A, **Sadeghi J***, *et al*. Fecal microbiota transplantation: current challenges and future landscapes. *Clinical Microbiology Reviews,* 37: e00060-22.
*Total pages: 55, wrote “Omics technologies and bioinformatics pipelines for Fecal

Microbiota Transplantation" pages 31-40.

2024 20. **Sadeghi J**, Venney CJ, Wright S †, Watkins J †, Manning D †, Bai E †, Frank C †, Heath D. Aquatic bacterial community connectivity: The effect of hydrological flow on community diversity and composition. *Environments*, 11: 90.

2024 19. Fancy N, Nitin, Kniffen D, Melvin M, Kazemian N, **Sadeghi J**, et al. Fecal-adherent mucus is a non-invasive source of primary human MUC2 for structural and functional characterization in health and disease. *Journal of Biological Chemistry*, 300: 105675.

2023 18. **Sadeghi J**, Chaganti SR, Johnson T, Heath D. Host species and habitat shape fish-associated bacterial communities: Phylosymbiosis between fish and their microbiome. *Microbiome*, 11: 258.

2023 17. **Sadeghi J**, Chaganti SR, Heath D. Regulation of host gene expression by gastrointestinal tract microbiota in Chinook Salmon (*Oncorhynchus tshawytscha*). *Molecular Ecology*, 32: 4427- 4446.

2023 16. **Sadeghi J**, Shahraki AH, Chaganti SR, Heath D. Functional gene transcription variation in bacterial metatranscriptomes in large freshwater Lake Ecosystems: Implications for ecosystem and human health. *Environmental Research*, 231: 116298.

2023 15. Taboun Z †, **Sadeghi J**. The Bidirectional relationship between opioids and the gut microbiome: Implications for opioid tolerance and clinical interventions. *International Immunopharmacology*, 125: 111142.

2023 14. **Sadeghi J**, Chaganti SR, Shahraki AH, Heath D. Microbial community and abiotic effects on aquatic bacterial communities in north temperate lakes. *Science of The Total Environment*, 781: 146771.

2019 13. Talebi M, **Sadeghi J**, Ahmadi A, Lohrasbi V, Owlia P, Pourshafie MR. High rate of serotype switching, and genetic variations indicates widespread recombination between clinical and commensal penicillin-nonsusceptible *Streptococcus pneumoniae* in Tehran. *Microbial Drug Resistance*, 25: 865-873.

2018 12. Esmaeli Z †, **Sadeghi J**, Razavi SH, Oshaghi M, Sayyahfar S, Rahbar M, Talebi M. High level of biofilm formation and virulence factors in *Enterococci* spp. isolated from clinical and normal flora samples. *Infectious Diseases in Clinical Practice*, 24: 227-230.

2017 11. Mirzaei R, **Sadeghi J**, Talebi M, Irajian GH. Prevalence of atlE, ica, mecA and mupA genes in *Staphylococcus epidermidis* isolates. *Infectious Diseases in Clinical Practice*, 25: 37-40.

2016 10. Talebi M, Shafiee M, **Sadeghi J**, Moghadam NA, Saifi M, Pourshafie MR. Genotypic diversity of methicillin-resistant coagulase-negative staphylococci isolated from inpatients and outpatients. *Microbial Drug Resistance*, 22: 147-154.

2016 9. Asadian M †, **Sadeghi J**, Rastegar Lari A, Razavi S, Hasannejad Bibalan M, Talebi M. Antimicrobial resistance pattern and genetic correlation in *Enterococcus faecium*

isolated from healthy volunteers. *Microbial pathogenesis*, 92: 54-59.

2016 8. Talebi M, Azadegan A, **Sadeghi J**, Ahmadi A, Ghanei M, Katouli M, et al. Determination of characteristics of erythromycin resistant *Streptococcus pneumoniae* with preferred PCV usage in Iran. *PLoS One*, 11: e0167803.

2016 7. Karimaei S †, **Sadeghi J**, Asadian M, Esghaei M, Pourshafie MR, Talebi M. Antibacterial potential and genetic profile of *Enterococcus faecium* strains isolated from human normal flora. *Microbial Pathogenesis*, 96: 67-71.

2016 6. Khanmohammadian S, Enayati M, **Sadeghi J**, Irajian G, Amirmozafari N, Talebi M. Detection of virulence genes in enterococci isolated from the human normal flora by multiplex-polymerase chain reaction. *Infectious Diseases in Clinical Practice*, 24: 227-230.

2015 5. Talebi M, **Sadeghi J**, Rahimi F, Pourshafie MR. Isolation and Biochemical Fingerprinting of Vancomycin-Resistant *Enterococcus faecium* From Meat, Chicken and Cheese. *Jundishapur Journal of Microbiology*, 8: e15815.

2015 4. Enayati M, **Sadeghi J**, Nahaei MR, Aghazadeh M, Pourshafie MR, Talebi M. Virulence and antimicrobial resistance of *Enterococcus faecium* isolated from water samples. *Letters in Applied Microbiology*, 61: 339-345.

2015 3. **Sadeghi J**, Ahamadi A, Douraghi M, Pourshafie MR, Talebi M. Molecular analysis of pbp2b in *Streptococcus pneumonia* isolated from clinical and normal flora samples. *Current Microbiology*, 70: 206-211.

2015 2. Hasannejad Bibalan M, Eshaghi M, **Sadeghi J**, Asadian M, Narimani T, Talebi M. Clonal diversity in multi drug resistant (MDR) enterococci isolated from fecal normal flora. *International journal of molecular and cellular medicine*, 4: 240.

2014 1. Talebi M, **Sadeghi J**, Pourshafie MR. Molecular characterization of vancomycin-resistant *Enterococcus faecium* isolated from intensive care units. *Current Microbiology*, 68: 615-620.

Articles in Preparation (3)

2024-2025 **Sadeghi J**, Vojnits K, Iovieno A, Yeung S, Crowther B, Pakpour S. Retrospective Validation of a Metagenomic Sequencing Protocol for Combined Detection of RNA and DNA Viruses Using Human Eye Samples (*manuscript in preparation).*

2024-2025 Kaminsky L, **Sadeghi J**, Bell T. The adaptation chip – repurposing the principles of the ichip for in situ adaptive evolution (*manuscript in preparation).*

2024-2025 Taumaunu H, **Sadeghi J**, Bell T, Hockett K. Rapid and sustained differentiation of disease-suppressive phyllosphere microbiomes in tomato following experimental microbiome selection (*submitted; Environmental Microbiome).*

Thesis

2022 **Sadeghi J**. Endogenous and exogenous factors driving bacterial community composition in aquatic ecosystems (Link).

INVITED PRESENTATIONS / POSTERS

Invited talk

2024 **Sadeghi J**. Small Bugs, Big Benefits: The impact of microbes on host health. University of Toronto-Scarborough. Postdoctoral Research Day. Toronto. Canada.

2023 **Sadeghi J.** Regulation of Chinook Salmon (*Oncorhynchus tshawytscha*) gene expression by gastrointestinal tract microbiota. Gen Fish conference, Windsor, Canada.

2020 **Sadeghi J.** Exploring fish microbial communities; opening the fish microbial black box. Canadian Conference for Fisheries Research, Halifax, Canada.

Posters (†denotes mentee I supervised)

2024 **Sadeghi J**, Ehau-Taumaunu H, Bell T, Hockett K. Sequence-based assessment of experimentally produced disease-suppressive phyllosphere microbiomes. *Conference of the Canadian Society of Microbiologists.* London, Ontario.

2020 Skurvidayte K †, and **Sadeghi J**. Characterizing Microbial Communities of Chinook Salmon. *Uwill Discover Student Research Conference*, Windsor, Canada.

2019 **Sadeghi J**, Chaganti SR, Heath D. Ecological interactions among aquatic microbial communities using metabarcoding in Southern Ontario lakes. *Conference of the Canadian Society of Microbiologists*, Sherbrooke, Canada.

2019 **Sadeghi J**, Chaganti SR, Heath D. Ecological interactions among aquatic microbial communities in Southern Ontario lakes: a network analysis. *Graduate Student Symposium*. Windsor, Canada.

2016 **Sadeghi J**, Pourshafie MR, Talebi M. Molecular Characterization of penicillin-resistant *Streptococcus pneumoniae* in Iran. *European Society of Clinical Microbiology and Infectious Diseases*. Amsterdam, the Netherlands.

TEACHING AND MENTORSHIP EXPERIENCE

Philosophy Synopsis

My goal as a teacher and mentor is to facilitate experiential learning opportunities that are active, collaborative, and engaging. I believe students learn best by doing, and therefore strive to provide a learning environment that allows students to become deeply engaged with their topic of study. Students are required to actively participate in the learning process, and my role is to both challenge and provide

support as needed, encouraging students to ask and answer to their own questions and therefore gain a deep understanding of the topic at hand. I have found this active learning approach to work well for a range of situations, from large first-year introductory classes, to smaller, specialized upper-year courses, to one-on-one mentorship of senior undergraduates conducting independent research projects. I am also committed to continual improvement of my teaching skills via self-reflection, feedback from students and peers, and engagement with the scholarly literature.

Course instructor (Integrative Biology- University of Windsor)

Applied Ecological Genetics (BIOL 4008-7, Winter 2021, Winter 2022)

- Co-instructed the course. Designed and taught lessons on the use of bioinformatic tools (R, QIIME2, and Python) to teach undergraduate students to handle real sequence data.
- Designed a class project on "Stream and Riparian Zone Bacterial Community Composition and Connectivity" and supervised students in fieldwork, water, and soil sample collection, microbial DNA extraction, sequencing library preparation, and bioinformatics analysis.
- Guided students through synthesis of the results which resulted in the submission of a manuscript to a peer-reviewed journal.

Ecological, Evolutionary & Environmental Genetics (BIOL 4008-7, Winter 2019)

- Co-instructed the course. Designed and taught lessons on the use of GenAlEx, R, QIIME1, and other bioinformatic software to teach undergraduate students to handle genetic and microbial data (e.g. QIIME 1 "Moving Pictures" tutorial exercise, and my created Video for students on how to install the software (YouTube)).
- Designed a class project for students and supervised the fieldwork sample collections.
- Trained students on DNA extraction, PCR, bioanalyzer, and amplicon sequencing library preparation.
- Co-supervised students in writing a manuscript on the class project which resulted in publishing a manuscript to a peer-reviewed journal (First author; "The effect of hydrological flow on community diversity and composition. *Environments"*).

Content development and teaching (University of Toronto)

Microorganisms and the Environment (EES1104H, Winter 2024)

- Gave a guest lecture and trained graduate students on how to use metagenomic tools (Kraken2, FastQC, HUMANN3) for microbial identification and functional potential characterization. I trained students on how they can use new programming tools such as Jupyter Notebook, and GitHub for teaching purposes.

Invited Guest Lecturer

Sadeghi J. 2022. Deterministic and Stochastic Microbial Community Assembly. Guest lecture for an undergraduate biology course (Microbial Ecology-BIOL4008), University of Windsor.

Sadeghi J. 2024. Microbiome innovations for a sustainable future. Guest lecture for an undergraduate student (ESTB03H3, Fall 2024), University of Toronto.

Workshop

Sadeghi J. 2024. Microbial metagenomics. University of Toronto. Trained more than 20 graduate students on how to do microbial metagenomics analysis.

Teaching assistant (Integrative Biology- University of Windsor)

Genetics (BIOL-55-211, Fall 2018, Fall 2019, Fall 2020, Fall 2021)

- Setting up and running genetics experiments for Teacher Assistant students.
- Directed laboratories and marked weekly assignments.

Introductory Molecular Biology (BIOL 2131, Winter 2020)

- Directed laboratories, marked assignments and exams.

Biological Diversity (BIOL-55-140, Winter 2018)

- Gave guest lectures for ~180 students, directed class discussions, marked assignments and exams.

Introductory Microbiology (BIOL- 55-237, Fall 2017)

- Directed laboratories, marked assignments and exams.

Supervision & Mentorship

M.Sc. Students

2020-2024 **Edel Baie – University of Windsor – Co-supervised**
Project: The effect of ploidy and probiotic feed treatment on the intestinal methylation profile and gut microbiome in Chinook salmon.
Current status: M.Sc. Environmental Science in Heath Lab, University of Windsor.
Role: Assistance with experimental design, breeding design, sample collection, DNA & RNA extraction, bioinformatic, analyses, visualization, and writing.

2019-2023 **Shelby Wright – University of Windsor – Co-supervised**
Project: Temporal and spatial variation of bacteria richness, composition, and function.
Current status: M.Sc. in Genetic Counseling, Wayne State University.
Role: Assistance with experimental design, field work, DNA & RNA extraction, bioinformatics, visualization, and writing.

2018-2020 **Zahra Taboun – University of Windsor – Co-supervised**
Project: Spatial and temporal genetic variation in an exploited coral reef fish: a cohort approach to examine the effects of line fishing.
Current status: Internal Medicine resident, University of British Columbia.
Role: Assistance with transcriptomic analysis.

Medical (MD) students

2020-2024 **Zahra Taboun – Western University – Supervised**
Project: *Bidirectional relationship between opioids and the gut microbiome.*
Current status: Internal Medicine Resident Physician, University of British Columbia
Role: Assisted and supervised Zahra in writing a review manuscript on how microbial communities can help in mitigating opioid tolerance.

B.Sc. students

2022- 2024 **Ahmad Rashid – University of Windsor – Mentor**
Project: Maternal and environmental effects on the inheritance of the gut microbiome.
Current status: B.Sc. student in Heath Lab, University of Windsor
Role: Training on microbial community ecology analysis using QIIME2, statistical analysis in R, analyses, visualization, and writing.

2020-2022 **Elise Bull – University of Windsor – Mentor**
Project: Transgenerational effects on the microbiome of Chinook salmon.
Current status: M.Sc. in Plant-Microbiome interactions, University of Toronto, Dillon Lab.
Role: Sample collection, bioinformatics, and statistical analysis in R.

2018-2020 **Kristina Skurvidayte – University of Windsor – Mentor**
Project: Gut microbiome and Chinook salmon health and growth performance.
Current status: M.Sc. in Biology. University of Windsor, Karpowicz Lab.
Role: Supervision analyses, visualization, and writing

ACADEMIC SERVICE

Scientific Outreach

2017 Great Lakes Citizen Science Water Sampling Event, Volunteer Coordinator
2018 University of Windsor Science Academy, DNA Forensic Lab Leader
2024 Toronto Science Fair, Judge
2014 Volunteering Translator (from English to Persian), 3rd International Congress of Microbiology, Tehran, Iran.

Committees

2024-2027 Canadian Society of Microbiologists (CSM) Education Committee

2017-2019 Great Lakes Institute for Environmental Research Council, University of Windsor

Conference Organization

2018-2019 GLIER Multidisciplinary Graduate Student Symposium Co-organizer

Community Service

I have performed 20 verified pre-publication reviews for more than 11 scientific journals, including ISME Communications, Microbial Ecology, Microbial Biotechnology, IUBMB Life, Environmental Microbiology, Scientific Reports, World Journal of Pediatrics, International Immunopharmacology, Microbial Pathogenesis, and Current Microbiology.

Society memberships

Canadian Society for Microbiology, American Society for Microbiology, European Society of Clinical Microbiology and Infectious Diseases

Professional development related to mentoring, equity, diversity, and inclusion

2024	How Identity Impacts Learning in Academia and the Workplace, Centre for Teaching & Learning, University of Toronto
2024	Dismantling Anti-Black Racism in Post-Secondary Environments, Anti-Racism & Cultural Diversity Office, University of Toronto
2024	Unconscious Bias Training, University of Toronto
2024	Optimizing the practice of mentoring 101: for research mentors of graduate students, fellows, and early-career faculty, University of Minnesota
2024	Enhancing motivation using the CARES mentoring model, University of Minnesota
2024	Statement of Teaching Philosophy Clinic, Teaching Assistants' Training Program, University of Toronto
2021	Teaching Assistants Training, University of Windsor

NEWS & MEDIA COVERAGE

University of Windsor DailyNews