

Shahrokh Shekarriz

Postdoctoral Fellow/Bioinformatician

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Education

- 2018–2022 **PhD**, *Biochemistry & Biomedical Sciences, McMaster University*, Hamilton, Canada.
Computational Microbiology
- 2014–2016 **MSc**, *Biology, McMaster University*, Hamilton, Canada.
Bioinformatics and Functional Genomics
- 2007–2011 **BSc**, *Biology, University of Tehran*, Tehran, Iran.
Molecular Biology

Research Experiences

- 2022–present **Postdoctoral Fellow**, *Dept of Medicine, University of Calgary & Univeristy of McMaster*, Hamilton, Canada.
Co-supervision by Dr. Valerie Taylor and Dr. Michael Surette.
Evaluating the efficacy of FMT for patients with major depression disorder in a randomized control trial using metagenomics and whole-genomic data.
- 2019–present **Bioinformatics Consultant**, *eDNAtec*, St.John's, Canada.
Developing bioinformatics pipelines to detect SARS-COV-2 from environmental samples.
Evaluating and creating bioinformatics pipelines for environmental genomics applications.
- 2018–2022 **PhD Candidate**, *Dept of Biochemistry and Biomedical Sciences, McMaster University*, Hamilton, Canada.
Under the supervision of Dr. Michael Surette.
Using culture-dependent and independent metagenomics to investigate the role of gut microbiota in patients with ulcerative colitis and healthy individuals.
Developed a bioinformatics approach to detect microbial engraftment after fecal microbiota transplantation.
Targeted culture-enrich metagenomics for profiling potential pathogenic bacteria from patients with ulcerative colitis.
- 2016–2018 **Research Assistant**, *Dept of Medicine, McMaster University*, Hamilton, Canada.
Under the supervision of Dr. Michael Surette.
Using computational biology to address multiple human microbiome projects include peanut allergy and a multi center study to standardize microbiome analysis across Canada.
- 2014–2016 **MSc Student**, *Dept of Biology, McMaster University*, Hamilton, Canada.
Under the supervision of Dr. Brian Golding.
Designed multiple high-throughput DNA/RNA sequence pipelines.
Used metabarcoding and metagenomics for DNA-based environmental monitoring.
Developed customized DNA databases for biodiversity evaluation in polluted environments.
- 2012–2014 **Technical support**, *KIAGEN*, Tehran, Iran.
Responsible for troubleshooting molecular diagnostic tests in clinical labs. Provided next-generation and Sanger sequencing services to colleges and private companies.

- 2011–2012 **Research Assistant**, *Pasteur Institute of Iran*, Tehran, Iran.
Under the supervision of Dr. Nader Shahrokhi.
Developed a quantitative RT-PCR kit for Hepatitis B and optimized commercialized PCR machine processes.
- 2009–2011 **Volunteer**, *University of Tehran*, Tehran, Iran.
Under the supervision of Dr. Elahe Elahi.
Responsible for executing DNA barcoding processes. Performed DNA extraction, PCR, electrophoresis, and Sanger sequencing.

Teaching & Mentorship Experiences

- 2021–2021 **Teaching Assistant**, *McMaster University*, Hamilton, Canada.
Department of Biochemistry and Biomedical Sciences, Practical Bioinformatics in the Genomics Era (3BP3).
Lead weekly tutorials for groups of 20 3rd year undergraduate students, responsible for troubleshooting and providing feedback on written, oral and practical work
- 2020–2020 **Undergraduate Supervision**, *McMaster University*, Hamilton, Canada.
Undergraduate thesis projects in bioinformatics, Dominique Tertigas from Surette Lab
- 2020–2020 **Teaching Assistant**, *McMaster University*, Hamilton, Canada.
Bachelor of Health Sciences (Honours) program, Research and Experimental Design (3V03).
Led weekly labs for groups of 25 2nd year undergraduate students, responsible for evaluating and providing feedback on written, oral and practical work
- 2019–2019 **Undergraduate Supervision**, *McMaster University*, Hamilton, Canada.
Undergraduate thesis projects in bioinformatics, Kevin Chen from Surette Lab
- 2018–2019 **Teaching Assistant**, *McMaster University*, Hamilton, Canada.
Department of Biochemistry and Biomedical Sciences, Biochemistry (2L06).
Laboratory TA for 2nd year undergraduate biochemistry lab course
- 2014–2016 **Teaching Assistant**, *McMaster University*, Hamilton, Canada.
Department of Biology, Biodiversity and Evolution (1M03)
Led weekly labs for groups of 30-40 1st year students, responsible for teaching tutorial contents, evaluating and providing feedback on written work.

Publication

- 2022 Man, E., **Shekarriz, S.**, Surette, M. G. (2022). Human gut metagenomes encode diverse GH156 sialidases. *BioRxiv*. (and in review)
- 2021 **Shekarriz, S.**, Whelan, F. J., Lau, J. T., Libertucci, J., Lee, C. H., Moayyedi, P., & Surette, M. G. (2021). Culture-enriched metagenomics reveals microbial engraftment after FMT in patients with ulcerative colitis. (in review)
- 2020 Szamosi, J. C., Forbes, J. D., Copeland, J. K., Knox, N. C., **Shekarriz, S.**, Rossi, L., ... & Bernstein, C. N. (2020). Assessment of inter-laboratory variation in the characterization and analysis of the mucosal microbiota in Crohns disease and ulcerative colitis. *Frontiers in Microbiology*, 11, 2028.
- 2020 Whelan, F. J., Waddell, B., Syed, S. A., **Shekarriz, S.**, Rabin, H. R., Parkins, M. D., & Surette, M. G. (2020). Culture-enriched metagenomic sequencing enables in-depth profiling of the cystic fibrosis lung microbiota. *Nature microbiology*, 5(2), 379-390.

- 2020 Singer, G. A., **Shekarriz, S.**, McCarthy, A., Fahner, N., & Hajibabaei, M. (2020). The utility of a metagenomics approach for marine biomonitoring. *BioRxiv*.
- 2016 **Shekarriz, S.** (2016). A new approach for simultaneous DNA-based monitoring of the polluted environments (MSc dissertation).
- 2011 Asgharian, H., Sahafi, H. H., Ardalan, A. A., **Shekarriz, S.**, & Elahi, E. (2011). Cytochrome c oxidase subunit 1 barcode data of fish of the Nayband National Park in the Persian Gulf and analysis using metadata flag several cryptic species. *Molecular Ecology Resources*, 11(3), 461-472.

Honours & Awards

- 2021 2nd top PhD student, Farncombe Research in Progress 2020-2021
- 2021 Posters of Distinction, CDDW2021
- 2019 Invited speaker for top PhD students abstracts, IIDR2019
- 2019 Invited speaker for top abstract, core CDDW2019
- 2019 Best oral presentation in GI Disease Meeting, CDDW2019
- 2018 Dept of Biochemistry, Graduate Student Travel Award
- 2015 McMaster international Excellence Award
- 2014 McMaster Tuition Bursary Award
- 2011 University of Tehran, Valedictorian (class 2011)

Volunteering & Associations

- 2019–present **Co-president**, *McMaster University*, Hamilton, Canada.
Trainee Association of Farncombe Family Digestive Health Research Institute
- 2019–2020 **Co-chair**, *McMaster University*, Hamilton, Canada.
Research In Progress seminar series, Farncombe Family Digestive Health Research Institute
- 2019 **Organizing committee member**, *McMaster University*, Hamilton, Canada.
Research Trainee day 2019, Institute for Infectious Disease Research (IIDR)
- 2018–present **Graduate association member**, *McMaster University*, Hamilton, Canada.
Department of Biochemistry and Biomedical Sciences Graduate Student Association
- 2015 **Panel session facilitator**, *University of Guelph*, Guelph, Canada.
The 6th International Barcode of life Conference
- 2009–2011 **Co-President**, *University of Tehran*, Tehran, Iran.
Biotechnology Undergrad Association

Skills

- Computational **Programming Languages:** Unix shell, R, Python, SQL
Automation: Nextflow, Git, \LaTeX
Bioinformatics: High-throughput DNA sequence analysis;
Amplicon, Whole-genome, RNAseq, Metagenomics, and Metatranscriptomics.
- Laboratory Molecular biology and Microbiology techniques

Presentations

- 2022 70th Annual Conference of the Canadian Society of Microbiologists.
- 2021 Canadian Digestive Diseases Week 2021.
- 2019 Research Trainee day 2019, Institute for Infectious Disease Research.
- 2019 69th Annual Conference of the Canadian Society of Microbiologists.
- 2019 Canadian Digestive Diseases Week 2019.
- 2018 Research Trainee day 2018, Institute for Infectious Disease Research.
- 2015 The 6th International Barcode of life Conference.