

Arshad Ali Shaikh

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Academic Information

Graduate Student (Ph.D.), Tahlan Lab,
Department of Biology, Faculty of Science,
Memorial University of Newfoundland,
St. John's, Newfoundland, Canada.
(May 2018- January 2025, expected)
GPA: 4.0/4.0

Bachelor of Technology in Biotechnology,
Department of Biotechnology,
Indian Institute of Technology Roorkee,
Roorkee, Uttarakhand, India.
(July 2012- June 2016)
GPA: 7.9/10.0

Research Experience

Graduate student at the Tahlan lab at Memorial University of Newfoundland (May 2018- Present)

- **Thesis project:** Strategies to increase or activate the production of specialized metabolites in *Streptomyces* (3 projects).
- **Research project:** The metabolome of ocean sediments from Baffin Bay of the Canadian Arctic and the Gulf of Maine (In collaboration with the Dufour lab).
- **Research project:** Overall metabolomic analysis of clavulanic acid producing *Streptomyces*.
- **Research project:** Metabolomics analysis of abiotic and biotic sediment analysis following Emamectin Benzoate addition (In collaboration with Department of Fisheries and Oceans Canada).

Project assistant at the Navani lab at Indian Institute of Technology Roorkee (July 2016- June 2017)

- **Research project:** Studies on synergistic potential of essential oils for inhibition of microbes associated with dental caries.

Undergraduate student at the Navani lab at Indian Institute of Technology Roorkee (July 2014- June 2016)

- **Thesis project:** Enhanced antibacterial activity of antimicrobial peptide capped silver nanoparticles: a double-edged weapon against food spoilage and multidrug resistant bacteria.
- **Research project:** Microbial degradation of organic solid waste by using various *Lactobacillus sp.*

Peer-reviewed Publications

- **Shaikh AA**, Verhoeven JT, Sinha RK, Dufour SC, Tahlan K. A direct examination of microbial specialized metabolites associated with ocean sediments from Baffin bay and the Gulf of Maine. *Canadian Journal of Microbiology*. 2023;69(5):199-206. **(Editor's Choice)**. <https://cdnsiencepub.com/doi/10.1139/cjm-2022-0205>
- Kumar P, **Shaikh AA**, Kumar P, Gupta VK, Dhyani R, Sharma TK, Hussain A, Gangele K, Poluri KM, Rao KN, Malik RK, Pathania R, Navani NK. Double-edged nanobiotic platform with protean functionality: leveraging the synergistic antibacterial activity of a food-grade peptide to mitigate multidrug-resistant bacterial pathogens. *ACS Applied Materials & Interfaces*. 2022;14(18):20652-68. <https://pubs.acs.org/doi/10.1021/acsami.2c01385>

- **Shaikh AA**, Nothias LF, Srivastava SK, Dorrestein PC, Tahlan K. Specialized metabolites from ribosome engineered strains of *Streptomyces clavuligerus*. *Metabolites*. 2021;11:239. (**Cover story of the issue**). <https://www.mdpi.com/2218-1989/11/4/239>
- AbuSara NF*, Piercey BM*, Moore MA*, **Shaikh AA***, Nothias LF, Srivastava SK, Cruz-Morales P, Dorrestein PC, Barona-Gómez F, Tahlan K. Comparative genomics and metabolomics analyses of clavulanic acid-producing *Streptomyces* species provides insight into specialized metabolism. *Frontiers in Microbiology*. 2019;10:2550. (*Co-first author). <https://www.frontiersin.org/articles/10.3389/fmicb.2019.02550/full>

Manuscript in Preparation

- **Shaikh AA**, Tahlan K. The unknown metabolite produced by a *Streptomyces* strain
- **Shaikh AA**, Tahlan K. Deciphering the role of a response regulator in *Streptomyces*

Achievements

- **Teaching Assistantship Excellence Award (2024)**: Graduate Student Union, Memorial University of Newfoundland.
- **Pradeep Khare Memorial Scholarship (2024)**: 4th place, Khare Family, Canada.
- **Best Oral Presentation Award (2023)**: Aldrich conference, Memorial University of Newfoundland.
- **Graduate Leadership Award (2023)**: Faculty of Science, Memorial University of Newfoundland.
- **Best Oral Presentation Award (Honorary, 2022)**: Aldrich conference, Memorial University of Newfoundland.
- **Institute Medal (2016)**: Best research project, Indian Institute of Technology Roorkee.
- **Summer Undergraduate Research Award (2015)**: Dean of Academic, Indian Institute of Technology Roorkee .
- **Competition Exam (2012)**: Qualified Indian Institute of Technology Joint Entrance Exam (IIT-JEE).

Teaching Experience

Graduate teaching assistant at Memorial University of Newfoundland (May 2018- Present)

- Principles of Biology (BIOL 1001), Principles of Biology (BIOL 1002), Introduction to Microbiology (BIOL 3050), Microbiology for Nurses (BIOL 3053), Microbial Physiology (BIOL 4404), Advanced Topics in Microbiology (BIOL 4050).

Teacher at the Heritage Coaching Institute, India (July 2017- April 2018)

- Chemistry, Physics, and Mathematics Teacher for high school students preparing for the competition exams.

Laboratory and Technical Skills

- Genomics: fastp, fastQC, Kraken, SPAdes, RagTag, Snippy, quast, autoMLST, Prokka, Roary, COGclassifier, MicrobeAnnotator, MEGA, Geneious etc.
- Gene cluster: antiSMASH, DeepBGC, PRISM, BigScape, Cblaster, Big-SLICE etc.
- Metabolomics: GNPS, NAP, Sirius, MetFrag, Metwork, BioDendro, mzMine, MetaboAnalyst, BUDDY, MestReNOVA etc.

- General lab: Molecular techniques, gene deletion, *Streptomyces* isolation, bioactivity assays, freeze drying, organic solvent extractions, Agilent 1260 Infinity HPLC machine, nanoparticles and nanofibers formation, MICs etc.
- Command-line proficiency: Linux for bioinformatic tools usage and data organization.

Conferences and Workshops

Oral presentations

- *Streptomyces clavuligerus* as source of medicinal and industrial important compounds (2023). Presented at the 24th Annual Aldrich interdisciplinary graduate research conference, St. John's, Canada. Won one of the best oral presentation award.
- Deciphering the role of a pleiotropic regulator in *Streptomyces clavuligerus* (2023). Presented at the 2023 Biology Graduate Student Symposium (BGSS), St. John's, Canada.
- *Streptomyces* species as sources of medicinal and industrially important compounds (2023). Presented at the 2nd Scientific Endeavours in Academia (SEA) Conference, St. John's, Canada.
- Two-component systems and their role in the production of specialized metabolites in *Streptomyces* (2022). Presented at the 2022 Biochemistry Summer Symposia (BCGS), St. John's, Canada.
- Overall metabolomic profile of ocean sediments from Baffin Bay and the Gulf of Maine (2022). Presented at the 2022 Biology Graduate Student Symposium (BGSS), St. John's, Canada.
- A direct examination of microbial specialized metabolites associated with ocean sediments from Baffin Bay and the Gulf of Maine (2022). Presented at the 1st Scientific Endeavours in Academia (SEA) Conference, St. John's, Canada.
- Natural products at the bottom of the ocean (2022). Presented at the 23rd Annual Aldrich interdisciplinary graduate research conference, St. John's, Canada. Won one of the best oral presentation award.
- Specialized metabolites from ribosome engineered strains of *Streptomyces clavuligerus* (2021). Presented at the 22nd Annual Aldrich interdisciplinary graduate research conference, St. John's, Canada.
- Strategies to activate the production of specialized metabolites in *Streptomyces* (2021). Presented at the 2021 Biology Graduate Student Symposium (BGSS), St. John's, Canada.
- Regulation of natural products in *Streptomyces* (2019). Presented at the 21st Annual Aldrich interdisciplinary graduate research conference, St. John's, Canada.
- Response regulators in *Streptomyces* that affect the production of various specialized metabolites (2019). Presented at the 2019 Biology Graduate Student Symposium (BGSS), St. John's, Canada.
- Pediocin-capped silver nanoparticles: a double-edged weapon against multi-drug resistant pathogens (2016). Presented at the 1st International Conference on Advanced Materials for Energy, Environment and Health, Roorkee, India.

Poster presentations

- Untargeted metabolomics uncovers the presence of diverse bacterial specialized metabolites in Arctic ocean sediments (2023). Presented at the 72nd Annual Conference of the Canadian Society of Microbiologists (CSM). Halifax, Canada.
- Microbial specialized metabolites diversity in ocean sediments from the Canadian Arctic and the Gulf of Maine (2023). Presented at the 2nd Scientific Endeavours in Academia (SEA) Conference, St. John's, Canada.
- Specialized metabolites from ribosome engineered strains of *Streptomyces clavuligerus* (2023). Presented at the 19th International Society for the Biology of Actinomycetes (ISBA), Toronto, Canada.

Workshops

- Atlantic Cancer Consortium (ACC) workshops on RNA-Seq (2022), Memorial University of Newfoundland.
- Global Natural Products Social Molecular Networking (GNPS, 2019), Virtual.
- Sustainability of a campus by recycle, reuse and reduce (2014), Auroville, India.

Volunteer Experience

The Board of Regents at Memorial University of Newfoundland

- Board Member (May 2022- July 2024)
- Human Resources committee (September 2023- July 2024)
- Audit and Risk committee (October 2022- August 2023)

Indian Youth Association at Memorial University of Newfoundland

- President (January 2022- January 2023)
- Finance Executive (January 2021 to December 2021)

Biology Graduate Student Association at Memorial University of Newfoundland

- Professional Development Coordinator (May 2021-April 2022)

National Service Scheme (NSS) at Indian Institute of Technology Roorkee

- Executive Member (July 2013- June 2016)
- Volunteer (July 2012- June 2013)

Cognizance- Annual Technical Festival at Indian Institute of Technology Roorkee

- Departmental Co-convener (Cognizance 2015)

Sankalp- Annual Social Convention at Indian Institute of Technology Roorkee

- Promotion Manager (Sankalp 2014)

Additional Information

Creative Writer: I write poetry and short stories on my personal blog, www.arshaikh.com.

CBC interview: I gave an interview about Indian cultures and their meaning in 2022,

<https://www.cbc.ca/news/canada/newfoundland-labrador/light-darkness-indian-diwali-nl-1.6626701>