Curriculum vitae

Dr. Abid Bashir Sofi
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Abid Bashir Sofi

Brief Academic profile

- **Ph.D.** (2018-2024) in Biological Sciences, from AcSIR−Academy of Scientific and Innovative Research, India
- **Thesis title:** Fungal endophytes of *Rosa damascena* Mill.: Functional characterisation and bioactive potential
- **M.Sc. (Botany, 2014)**, Jiwaji University Gwalior Madhya Pradesh, India.
- **B.Sc. (Botany, Zoology, and Chemistry, 2012)**, Islamia College of Science and Commerce, Jammu and Kashmir, India

Awards and Honors

- Qualified **Junior Research Fellowship and Eligibility for Lectureship (JRF-NET, 2017)** conducted by CSIR- Council of Scientific and Industrial Research
- Qualified **Graduate Aptitude Test in Engineering (GATE, 2015)** in the discipline of ***Life Sciences*** conducted by IIT-Indian Institute of Technology Kanpur
- Qualified **State Eligibility Test** in the discipline of **Life Sciences** conducted by the University of Jammu

Research Experience

- Currently working on an Ayush-sponsored project "Conservation, Bioprospection and Development of Good Agricultural Practices for *Rheum emodi*, *Saussurea costus*, *Podophyllum hexandrum* and *Aconitum heterophyllum* for *Ex-Situ* cultivation in Jammu &Kashmir" from July 2023 at Microbial Biotechnology Division, CSIR-Indian Institute of Integrative Medicine, Srinagar, J&K, India.
- March 2020 – February 2020 as Senior Research Fellow, Microbial Biotechnology Division, CSIR-Indian Institute of Integrative Medicine, Srinagar, J&K, India
- March 2018 – March 2018 as Junior Research Fellow, Microbial Biotechnology Division, CSIR-Indian Institute of Integrative Medicine, Canal Road Jammu Tawi, J&K, India

Areas of Specialization

The broad area of specialization: Plant-Microbe Interactions, Molecular Biology, and Applied-Microbiology

Research Skills and Capabilities

- **Molecular Biology Techniques:** Proficiency in routine molecular biology techniques such as DNA/RNA isolation, cDNA synthesis, PCR, Primer designing, Quantitative RT-PCR, DNA sequencing and analysis, Gel electrophoresis, *GFP* tagging of microbes,
- **Microbiology:** Isolation, purification, and characterization of microbes from different ecological niches, particularly, endophytes, morphological and molecular characterization, long-term preservation, plant growth-promoting assays, antimicrobial assay, biofilm inhibition assay, time-kill kinetic assay, checkerboard microdilution assay, post-antibiotic effect assay
- **Microscopy:** Light and Scanning Electron microscopy
- **Plant-microbe interactions:** Preparation of microbial formulation, treatments of the plant with microbes in the greenhouse and field experiment, *in situ* visualizations of microbial symbionts by microscopic techniques, etc.
- **Phytochemistry Techniques:** Column chromatography, compound isolation, TLC, HPLC, LC-MS, GC-MS,
- **Bio-informatics:** Well-versed in most of the bioinformatics software, data mining, nucleotide and protein sequence analysis tools, annotations of genes and proteins
- **Computer Skills:** Microsoft Office (Word, Excel, PowerPoint), Adobe Photoshop, scientific software like SciFinder, GraphPad Prism, PAST, and MEGA, etc.

Managing Skills

Supervised three undergraduate and three post-graduate students from various disciplines of biological sciences for their dissertation work.

Research project

The endophytic microbiome of *Rosa Damascena* Mill.

In this project, we investigated the microbiome associated with the *Rosa damascena* plant and exploring them for plant-growth-promoting properties to understand the benefits that the plant is deriving from endophytes. We are also trying to understand the molecular cross-talk between the endophytes and the host plant, and how these interactions affect the metabolic flux in the symbiotic partners. We aim to establish a useful plant-microbe symbiotic association in the *R. damascena* plant to improve the growth performance, and enhanced production of key metabolites, we also study the role of key host-specific volatile organic compounds on the growth and secondary metabolite content of the host plant. Further we emphasis the adaptation of the host plant to varied environmental/stress conditions, with a special focus on leaf spot disease which is one of the main causes of rose oil decline.

Bioprospection of endophytes for bioactive natural products

Our research also focuses on the establishment of a repository of novel microorganisms, particularly endophytes for the isolation and characterization of bioactive molecules. Our rationale is based on the fact that certain microbes, selected from their natural ecological settings,may provide new and useful leads for industrial, medicinal, and agricultural product discovery.

Publications

- Bashir, A., Ahmad, T., Farooq, S., Lone, W.I., Manzoor, M.M., Nalli, Y., RiyazUl Hassan, S., (2022). A secondary metabolite of *Cercospora* sp., associated with *Rosa damascena* Mill., inhibits proliferation, biofilm production, ergosterol synthesis and other virulence factors in Candida albicans. **Microbial Ecology,** 1– 12. doi.org/10.1007/s00248-022-02003-x (2).
- Bashir, A., Manzoor, M. M., Ahmad, T., Farooq, S., Sultan, P., Gupta, A. P., & Riyaz-Ul-Hassan, S., (2023). Endophytic fungal community of *Rosa damascena* Mill. as a promising source of indigenous biostimulants: Elucidating its spatial distribution, chemical diversity, and ecological functions. **Microbiological Research,** 276, 127479. doi.org/10.1016/j.micres.2023.127479.
- Ahmad T, Bashir A, Farooq S, Riyaz-Ul-Hassan S (2021). *Burkholderia gladioli* E39CS3, an endophyte of *Crocus sativus* Linn., induces host resistance against corm rot caused by *Fusarium oxysporum*. **Journal of Applied Microbiology**.doi.org/10.1111/jam.15190.
- Manzoor, M. A. L. I. K., Sofi, A., Bhat, S., & Hassan, Q. (2024). An update on endophytic natural products (ENPs) and their bioactive potential. Authorea Preprints. doi.org/10.22541/au.172214569.99028804
- 2,4′-Linked Secalonic Acid F1 from *Periconia verrucosa*, a Damask Rose Endophyte: A Potent Biofilm Inhibitor Targeting Succinate Dehydrogenase and Nucleic Acid Synthesis in *Staphylococcus aureus* (In communication).
- Ecological functions, inter-organismal interactions, and underlying mechanisms of fungal endophytes. Plant and soil. https://doi.org/10.1007/s11104-025-07444-0

Awards

- Best paper award in 2023 for the paper entitled "A Secondary Metabolite of *Cercospora* sp., Associated with *Rosa damascena* Mill., Inhibits Proliferation, Biofilm Production, Ergosterol Synthesis and Other Virulence Factors in *Candida albicans*".
- Certificate of appreciation for depositing maximum cultures in the CSIR-IIIM repository in 2023

Conferences and Symposia

- Participated and presented a poster entitled, "Participated and presented a poster entitled, "A secondary metabolite of *Cercospora* sp., associated with *Rosa damascena* mill., inhibits proliferation, biofilm production, ergosterol synthesis and other virulence factors in *candida albicans*" in International conference on "Recent advances in biomedical sciences and regenerative medicine held on May 6th and 7th, 2022 at SKAUST-K & University of Kashmir.
- Participated and presented a poster entitled, "Endophytic fungal community of *Rosa damascena* Mill. as a promising source of Indigenous biostimulants: Elucidating its spatial distribution, chemical diversity, and ecological functions" in a National conference on "Recent trends in plant biology" held on September 5th to 7th, 2022 at SKICC, Srinagar

References Conferences and Symposia

Dr. Syed Riyaz-Ul-Hassan (Supervisor)
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