

SUNIDHI BHATT

M.Sc. (Microbiology) · Ph.D. (Environmental Sciences)

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RESEARCH INTERESTS

Microbial bioremediation of environmental pollutants (fluoroquinolone antibiotics, microplastics) · Enzyme-mediated degradation mechanisms · Antimicrobial resistance · Efflux pump systems · Pathogenesis · Molecular Biology · Molecular docking & MD simulations · RNA-seq & environmental genomics · Cold-adapted microbial physiology · Drug-enzyme interaction modelling (ADMET/QSAR) · Systems biology of biodegradation pathways

ACADEMIC QUALIFICATIONS

Ph.D. in Environmental Science

October 2020 – Thesis submitted June 2026

Department of Environmental Sciences, Central University of Himachal Pradesh, Shahpur

Supervisor: Prof. Deepak Pant

Thesis Title: Biodegradation of Fluoroquinolones and In-silico Analysis of Antibiotic Degrading Microbial Enzymes

Master of Science (M.Sc.) in Microbiology

June 2016 – July 2018

Department of Microbiology, Guru Nanak Dev University (GNDU), Amritsar, Punjab

Thesis Title: Bioremediation of 2-Bromophenol by Using Mixed Bacterial Culture

Bachelor of Science (B.Sc.) in Life Sciences

June 2013 – August 2016

Chaudhary Sarwan Kumar HP Krishi Vishwavidyalaya (CSKHPKV), Palampur, HP

RESEARCH & PROFESSIONAL EXPERIENCE

Content Faculty – CSIR NET / IIT JAM Life Sciences

July 2023 – September 2024

PhysicsWallah (Online EdTech Platform)

- Authored comprehensive study materials for CSIR NET and IIT-JAM (Biotechnology, Biochemistry, Microbiology), used by thousands of aspirants nationwide.
- Designed advanced MCQs, solved examples, and detailed explanations aligned with current exam syllabi.
- Co-authored two published textbooks (Mega Solution Series, Vols. I & III, 2024).

Project Intern

July 2018 – January 2019

CSIR-Institute of Himalayan Bioresource Technology (IHBT), Palampur, HP

- Project: Biodegradation of lignin using bacteria isolated from the Western Himalayas.
- Acquired hands-on expertise in microbial isolation, enrichment culture techniques, biochemical characterisation, and ligninolytic enzyme assays.

RESEARCH PUBLICATIONS

1. Bhatt S, Chatterjee S. "Fluoroquinolone antibiotics: Occurrence, mode of action, resistance, environmental detection, and remediation – A comprehensive review." *Environmental Pollution*, 2022. <https://doi.org/10.1016/j.envpol.2022.120440> [Citations: 452]

2. Bhatt S, Choudhary P, Chatterjee S, Akhter Y. "Comparative analysis of SilA-laccase mediated degradation of Ciprofloxacin, Norfloxacin, and Ofloxacin and interpretation of the possible catalytic mechanism.." *Journal of Biomolecular Structure and Dynamics*, 2023. <https://doi.org/10.1080/07391102.2023.2197074> [Citations: 10]

3. **Bhatt S**, Kumar N, Akhter Y, Chatterjee S. "Investigating RND Efflux Pumps in *Sphingobium yanoikuyae* P4: The Role of Non-Pathogenic Bacteria in Antibiotic Resistance Gene Spread Amid Environmental Contamination.." *Journal of Biomolecular Structure and Dynamics*, 2025. <https://doi.org/10.1080/07391102.2025.2540826> [Citations: 1]
4. **Bhatt S**, Choudhary P, Chatterjee S. "From freezing to functioning: cellular strategies of cold-adapted bacteria for surviving in extreme environments.." *Archives of Microbiology*, 2024. <https://doi.org/10.1007/s00203-024-04058-5> [Citations: 32]
6. **Bhatt S***, Chatterjee S. "Environmental pollution as a critical driver of antimicrobial resistance emergence.." *Discover Environment*, 2025. <https://doi.org/10.1007/s44274-025-00491-5> [Citations: 2]
7. Soni T, Jawanda IK, **Bhatt S**, Chatterjee S, Prabha V. "Evaluating the presence of Common SIF-Binding Receptor in Mouse Spermatozoa and *Vibrio cholerae*.." *Archives of Microbiology*, 2025. <https://doi.org/10.1007/s00203-025-04379-z>
8. Koul K, Jawanda IK, Soni T, Madaan K, **Bhatt S**, et al. "Antibacterial and Antibiofilm potential of *Thuja orientalis* L. extract targeting cariogenic *Enterococcus faecalis*.." *Archives of Oral Biology*, 2024. <https://doi.org/10.1016/j.archoralbio.2024.106107> [Citations: 5]
9. Choudhary P, **Bhatt S**, Tandon A, Chatterjee S. "Development and validation of a rapid HPLC method for simultaneous detection and quantification of four broad-spectrum organophosphorus pesticides.." *International Journal of Environmental Analytical Chemistry*, 2025. <https://doi.org/10.1080/03067319.2025.251198> [Citations: 4]
10. Joshi C, Phyllei SW, **Bhatt S**, Chatterjee S. "Microplastic Surge in the Ariyankuppam River, Puducherry: A study on abundance, characterisation, and pollution load index.." *Journal of Contaminant Hydrology*, 2025. <https://doi.org/10.1016/j.jconhyd.2025.104669> [Citations: 6]
11. Jawanda IK, Soni T, **Bhatt S**, Chatterjee S, Kumari S, Prabha V. Uncovering candidate protein (s) in murine vaginal lavage fluid linked to sperm-agglutinating *Escherichia coli*-induced infertility menace: a discovery phase analysis. *Archives of Microbiology*. 2026 May;208(5):241. <https://doi.org/10.1007/s00203-026-04768-y>
12. Dadhich A, Verma AK, Dhar I, Bhatt S, Agarwal N, Sharma MM. Bacoside-A from *Bacopa monnieri* (L.) Wettst. in Parkinson's disease: In Silico and preclinical insights into dopaminergic neuroprotection. *Biomedicine & Pharmacotherapy*. 2026 Aug 1;201:119712. <https://doi.org/10.1016/j.biopha.2026.119712>
13. Dhar I, Bhatt S, Gupta S, Singh SK, Dadhich A. Nanomedicine for neuroinflammation modulation: Next-generation nano-immunotherapies for neurodegenerative disorders. *Next Nanotechnology*. 2026 Dec 1;10:100557. <https://doi.org/10.1016/j.nxnano.2026.100557>
14. **Bhatt S**, Roy B, Chatterjee S, Pant D. Degradation of Ciprofloxacin by a Non-Resistance-Acquiring *Bacillus* sp. S1 Isolated from Biomedical Waste. **Environmental Pollution-Accepted**
15. Sharma S, Sharma M, **Bhatt S***, Sharma V, Sharma S, Negi S, Giri A, Pant D* Cattle Dung Nitrogen Metabolites for CO₂ -Acid Gas Capture. **Under Revision**

Book Chapters

1. **Bhatt S**, Lishikumar S, Chatterjee S. "Combating Microbial Antibiotic Resistance: Adaptation Strategies and CRISPR-Cas Gene Editing Applications.." *Book Chapter, Elsevier*, 2026. <https://doi.org/10.1016/B978-0-443-27622-4.00015-8>

DESIGN PATENTS

Bhatt S et al. Bacteria-Enhanced Concrete Mixing Device. Design Patent No. 471381-001. Granted 27 August 2025.

Bhatt S et al. PORTABLE AQUACULTURE WATER ANALYSER. Design Patent No. 467443-001. Granted 26 July 2025.

BOOKS PUBLISHED & EDITED

1. Bhatt S (Editor). "Futuristic Trends in Biotechnology, Vol. 3.." *IIP Series*, 2024. <https://www.iipseries.org/view-book.php?bookid=261>
2. Bhatt S. "Mega Solution Series: Biotechnology Biochemistry Microbiology, Vol. I.." *Physics Wallah*, 2024. ISBN: 978-93-6034-753-6
3. Bhatt S. "Mega Solution Series: Biotechnology Biochemistry Microbiology, Vol. III.." *Physics Wallah*, 2024. ISBN: 978-93-6034-255-5

AWARDS, FELLOWSHIPS & COMPETITIVE EXAMINATIONS

Awards & Fellowships

- ASM Travel Grant Awardee — American Society of Microbiology, for Microbe 2026, Washington D.C. (Competitive international award)
- First Prize – Best Oral Presentation, International Conference on Microbial Biotechnologies for Sustainable

Development (ICMBT-2024), Lucknow, India

- Swami Ramashankar Shukla Memorial Fellowship — Drug Design and Discovery Conference, DCRC Labs, 2024
- Selected among 15 national applicants for Entrepreneurship Skill Development Programme on Enzyme Processing, CSIR-IHBT Palampur, March 2023
- **National Eligibility Examinations**

Examination	Year	Result
CSIR-JRF Life Sciences	2018	All India Rank 76 ★
ASRB NET Life Sciences	2018	Qualified
HPSET Life Sciences	2018	Qualified
GATE Life Sciences	2019	Qualified
GATE Life Sciences	2020	Qualified

TECHNICAL COMPETENCIES

Computational & In Silico

Molecular docking · Molecular dynamics (GROMACS/AMBER) · ADMET & QSAR profiling
· Protein homology modelling & structural validation · Phylogenetic analysis & sequence alignment · Protein-protein and protein-ligand interaction analysis · PyMOL · MEGA · Cytoscape · Virtual Screening · DFT · QM/MM

Genomics & Transcriptomics

RNA-seq (library preparation, quality assessment, differential expression analysis) · KEGG/GO pathway enrichment ·

Microbiology & Bioremediation

Microbial isolation, enrichment & cultivation · Biodegradation assays · Antibiotic resistance profiling · Enzyme assays
· Biofilms · Molecular Identification, Pollutant degradation.

Analytical Chemistry

HPLC method development & validation · UV-Vis spectrophotometry, LC-MS, GC-MS, Spectrophotometry, FTIR.

CONFERENCE & WORKSHOP PARTICIPATION

Oral Presentations

- International Conference on Microbial Biotechnologies for Sustainable Development (ICMBT-2024), Lucknow, Aug 2024. Paper: "Computational Investigation of Fluoroquinolone Degradation by Alkaline Laccase." — Awarded First Prize, Best Oral Presentation.
- International Conference Anusandhan, IIT Mandi, June 2023. Paper: "Comparative analysis of SilA-laccase mediated Degradation of Fluoroquinolones."
- ICBMHE-2024, Jaypee University of Information Technology, Oct 2024. Paper: "Bioremediation of Fluoroquinolones: Insights from Computational Biology."

Workshops & Short Courses

- International Conference on Drug Design and Discovery, DCRC Labs (Oct 2024) — Recipient: Swami Ramashankar Shukla Memorial Fellowship.
- International Workshop: Drug Discovery and Development (Oct–Nov 2022, 1 month, online).
- Entrepreneurship Skill Development Programme on Enzyme Processing, CSIR-IHBT Palampur (Mar 2023) — Selected among 15 national applicants.
- Techniques in DNA Protein, Ethical Edufabrical Pvt. Ltd., IIT Mandi (Apr 2024).
- RNA Sequencing: Analysis, Visualization and Interpretation (Apr 2025).

REFERENCES

Prof. Deepak Pant

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University of Free State, Bloemfontein
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