Dr. Kushneet Kaur Sodhi
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PROFILE SUMMARY

- Assistant Professor at Sri Guru Tegh Bahadur College, University of Delhi since 2023.
- **Ph.D.** under the Supervision of **Prof. Dileep Kumar Singh** (DEPARTMENT OFZOOLOGY, University of Delhi).
- **M.Phil**. from **DEPARTMENT OF ZOOLOGY**, University of Delhi, New Delhi under the Supervision of **Prof. Dileep Kumar Singh**
- Qualified UGC JRF-NET in 2016 and CSIR-JRF-NET in 2017.
- Published Various papers in INTERNATIONAL JOURNALS (as First and Corresponding author).

EDUCATION

- UGC-CSIR-JRF-NET Qualified 2016 & 2017
- Ph.D Awarded (2023) under the supervision of Prof. Dileep Kumar Singh, Environmental Toxicology and SoilMicrobiology Lab (DEPARTMENT OF ZOOLOGY, University of Delhi)
- Topic of Ph.D thesis submitted.: **Potential Application of Isolated *Alcaligenes* sp. MMA in the Amoxicillin Degradation and Remediation of Heavy Metals, and Synthesis of Amoxicillin-Iron (III) Complex for the Enhanced Antibacterial activity**

- M.Phil from DEPARTMENT OF ZOOLOGY, University of Delhi, New Delhi
- M.Sc (H) ZOOLOGY-DEPARTMENT OF ZOOLOGY, University of Delhi, New Delhi in 2016
- B.Sc (H) ZOOLOGY- SRI GURU TEGH BAHADUR KHALSA COLLEGE, University of Delhi, New Delhi in 2013

PAPERS IN PEER REVIEWED JOURNALS

- Goswami, V., **Sodhi, K. K.,** & Singh, C. K. (2025). Innovative approaches to asthma treatment: harnessing nanoparticle technology. *Discover Nano*, *20*(1), 21.
- Singh, C. K., **Sodhi, K. K.,** Saha, K., Sarma, S., Shree, P., & Singh, P. (2025). Insight into the Environmental impact of Microplastics: A Perspective on the Sources, Detection, Ecotoxicity, and Remediation. *Total Environment Microbiology*, 100009.
- Singh, C.K., **Sodhi, K.K.,** V, N. *et al.* Managing the complexity of emerging contaminants in aquatic environments: exploring their ecotoxicological impacts, detection techniques, and the use of innovative technologies for their remediation. *Discov Catal* **2**, 9 (2025). https://doi.org/10.1007/s44344-025-00013-8
- Singh, C.K., **Sodhi, K.K.,** Seth, R. *et al.* Ionizing radiation mediated changes in the larval gut bacterial community composition of pest, *Spodoptera litura* (Noctuidae: Lepidoptera) derived from irradiated male parents. *Int J Trop Insect Sci* (2024). https://doi.org/10.1007/s42690-024-01211-x.
- Singh, C. K., **Sodhi, K. K.,** & Singh, D. K. (2024). Understanding the bacterial community structure associated with the Eichhornia crassipes rootzone. *Molecular Biology Reports*, *51*(1), 35.
- Singh, C. K., **Sodhi, K. K.,** Shree, P., & Nitin, V. (2024). Heavy Metals as Catalysts in the Evolution of Antimicrobial Resistance and the Mechanisms Underpinning Co-selection. *Current microbiology*, *81*(6), 148. https://doi.org/10.1007/s00284-024-03648-2.
- Singh, P., Yadav, P., **Sodhi, K. K.,** Tomer, A., & Mehta, S. B. (2024). Advancement in the synthesis of metal complexes with special emphasis on Schiff base ligands and their important biological aspects. *Results in Chemistry*, *7*, 101222.
- Singh, C. K., & **Sodhi, K. K.** (2024). Targeting bioinformatics tools to study the dissemination and spread of antibiotic resistant genes in the environment and clinical settings. *Critical Reviews in Microbiology*, 1-19.
- Irfan, A., James, A., **Sodhi, K. K**., Bajaj, D., Buniyaadi, A., Wadhwa, N. K., & Kumar, M. A. (2024). Perspective on the Role of the Environment in the Transmission of Antibiotic Resistance.
- Nitin, V., Anand, T., Singh, C. K., & **Sodhi, K. K.** (2024). Role of organometallic complexes in targeted therapies of different diseases: Infectious diseases, Cancer and Neurodegenerative Diseases. *Journal of Organometallic Chemistry*, 123389.
- Singh, C. K., & **SODHI, K. K***. (2023). The emerging significance of nanomedicine-based approaches to fighting COVID-19 variants of concern: A perspective on the nanotechnology role in COVID-19 diagnosis and treatment. *Frontiers in Nanotechnology*, *4*, 103.
- **Sodhi, K. K.,** Singh, C. K., Kumar, M., & Singh, D. K. (2023). Whole-genome sequencing of Alcaligenes sp. strain MMA: insight into the antibiotic and heavy metal resistant genes. *Frontiers in Pharmacology*, *14*, 114456

- Sodhi, K.K., Singh, C.K. A systematic review on the occurrence, fate, and remediation of SARS-CoV-2 in wastewater. *Int. J. Environ. Sci. Technol.* **20**, 8073–8086 (2023). https://doi.org/10.1007/s13762-022-04326-1
- Shree, P., Singh, C.K., **Sodhi, K.K.,** Surya, J.N., Singh, D.K. (2023). Biofilms: Understanding the structure and contribution towards bacterial resistance in antibiotics. Medicine in Microecology
- Singh, P., **Sodhi, K. K.,** Bali, A. K., & Shree, P. (2023). Influenza A virus and its antiviral drug treatment options. *Medicine in Microecology*, 100083.
- Kavya, I. K., Kochhar, N., Ghosh, A., Shrivastava, S., Rawat, V. S., Ghorai, S. M., **Sodhi, K.K.**, & Kumar, M. (2023). Perspectives on systematic generation of antibiotic resistance with special emphasis on modern antibiotics. *Total Environment Research Themes*, *8*, 100068.
- Das, S., Singh, C. K., **Sodhi, K. K.,** & Singh, V. K. (2023). Circular economy approaches for water reuse and emerging contaminant mitigation: innovations in water treatment. *Environment, Development and Sustainability*, 1-42.
- Singh, C. K., **Sodhi, K. K.,** & Mubarak, M. S. (2023). New drugs, approaches, and strategies to combat antimicrobial resistance. *Frontiers in Pharmacology*, *14*, 1295623.
- Singh, C. K., & **Sodhi, K. K.** (2023). Antimicrobial Resistance in the Time of COVID-19. *Applied Microbiology*, *3*(4), 1388-1391.
- Singh, C. K., **Sodhi, K. K.,** & Yadav, P. (2022). Cultivable Gut Microbial Diversity of Irradiated Spodoptera Litura (F.). *Indian Journal of Entomology*, 1-9.
- **Sodhi, K.K**.* Singh, C.K. Recent development in the sustainable remediation of antibiotics: A review, *Total Environment Research Themes*. (2022), 100008, ISSN 2772-8099
- **Sodhi, K.K**.*, Singh, C.K. A systematic review on the occurrence, fate, and remediation of SARS- CoV-2 in wastewater. *Int. J. Environ. Sci. Technol.* (2022) (CORRESPONDING AUTHOR)
- Khan, M. A., Singh, D., Arif, A., **Sodhi, K. K.**, Singh, D. K., Islam, S. N., ... & Siddique, H. R. (2022). Protective effect of green synthesized Selenium Nanoparticles against Doxorubicin induced multiple adverse effects in Swiss albino mice. *Life Sciences*, 120792.
- **Sodhi, K.K**.* Mishra, L.C., Singh, C.K, Kumar, M. (2022). Perspective on the heavy metal pollution and recent remediation strategies. Current research in Microbial Sciences.
- Kumar, M., **Sodhi, K.K**. & Singh, D.K. Draft genome of *Serratia* sp. R1 gives an insight into the antibiotic resistant genes against multiple antibiotics. *Mol Biol Rep* (2022). (JOINT FIRST AUTHOR)
- Kochhar, N., Kavya, I. K., Shrivastava, S., Ghosh, A., Rawat, V. S., **Sodhi, K. K**.& Kumar, M. (2022). Perspectives on the microorganism of extreme environments and their applications. *Current Research in Microbial Sciences*, 10013.
- Sharma, N., **Sodhi, K. K**., Kumar, M., & Singh, D. K. (2021). Heavy metal pollution: Insights into chromium eco-toxicity and recent advancement in its remediation. *Environmental Nanotechnology, Monitoring & Management*, *15*, 100388.

- Kumar, M., **Sodhi, K. K.,** & Singh, D. K. (2021). Addressing the potential role of curcumin in the prevention of COVID-19 by targeting the Nsp9 replicase protein through molecular docking. *Archives of microbiology*, 1-6.
- **Sodhi, K. K**., Kumar, M., & Singh, D. K. (2021). Insight into the amoxicillin resistance, ecotoxicity, and remediation strategies. *Journal of Water Process Engineering*, *39*, 101858.
- **Sodhi, K. K**., Kumar, M., Dhaulaniya, A. S., Balan, B., & Singh, D. K. (2021). Enhanced ciprofloxacin removal by plant growth-promoting *Microbacterium* sp. WHC1 in presence of *Eichhornia crassipes* root exudates. *Environmental Sustainability*, 1-11.
- **Sodhi, K. K.,** Kumar, M., Balan, B., Dhaulaniya, A. S., Shree, P., Sharma, N., & Singh, D.K. (2021). Perspectives on the antibiotic contamination, resistance, metabolomics, and systemic remediation. *SN Applied Sciences*, *3*(2), 1-25.
- **Sodhi, K. K.,** & Singh, D. K. (2021). Insight into the fluoroquinolone resistance, sources, ecotoxicity, and degradation with special emphasis on ciprofloxacin. *Journal of Water Process Engineering*, *43*, 102218.
- **Sodhi, K. K**., Kumar, M., & Singh, D. K. (2021). Assessing the bacterial diversity and functional profiles of the River Yamuna using Illumina MiSeq sequencing. *Archives of Microbiology*, 1-9.
- **Sodhi, K. K.,** Kumar, M., Balan, B., Dhaulaniya, A. S., & Singh, D. K. (2020). Isolation and characterization of amoxicillin-resistant bacteria and amoxicillin-induced alteration in its protein profiling and RNA yield. *Archives of microbiology*, *202*(2), 225-232
- **Sodhi, K. K**., Kumar, M., & Singh, D. K. (2020). Potential application in amoxicillin removal of *Alcaligenes* sp. MMA and enzymatic studies through molecular docking. *Archives of Microbiology*, 1- 7
- **Sodhi, K. K**., Kumar, M., & Singh, D. K. (2020). Multi-metal resistance and potential of *Alcaligenes* sp. MMA for the removal of heavy metals. *SN Applied Sciences*, *2*(11), 1-13
- Balan, B., Dhaulaniya, A. S., Varma, D. A., **Sodhi, K. K.,** Kumar, M., Tiwari, M., & Singh, D. K. (2020). Microbial biofilm ecology, in silico study of quorum sensing receptor-ligand interactions and biofilm mediated bioremediation. *Archives of Microbiology*, 1-18.
- Dhaulaniya, A. S., Balan, B., **Sodhi, K. K**., Kelly, S., Cannavan, A., & Singh, D. K. (2020). Qualitative and quantitative evaluation of corn syrup as a potential added sweetener in apple fruit juices using mid-infrared spectroscopy assisted chemometric modeling. *LWT*, *131*, 10974.
- Balan, B., Dhaulaniya, A. S., Jamwal, R., **Sodhi, K. K.,** Kelly, S., Cannavan, A., & Singh, D. K. (2020). Application of Attenuated Total Reflectance-Fourier Transform Infrared (ATR- FTIR) spectroscopy coupled with chemometrics for detection and quantification of formalin in cow milk. *Vibrational Spectroscopy*, *107*, 103033.
- **Sodhi, K. K.,** Kumar, M., Agrawal, P. K., & Singh, D. K. (2019). Perspectives on arsenic toxicity, carcinogenicity and its systemic remediation strategies. *Environmental Technology & Innovation*, 100462.
- Kumar, M., Jaiswal, S., **Sodhi, K. K.,** Shree, P., Singh, D. K., Agrawal, P. K., & Shukla, P. (2019). Antibiotics bioremediation: Perspectives on its ecotoxicity and resistance. *Environment international*, *124*, 448-461.

- Kumar, M., **Sodhi, K. K.,** & Singh, D. K. (2019). Bioremediation of Penicillin G by Serratia sp. R1, and enzymatic study through molecular docking. *Environmental Nanotechnology, Monitoring & Management*, *12*, 100246.
- Kumar, M., **Sodhi, K. K.,** Singh, P., Agrawal, P. K., & Singh, D. K. (2019). Synthesis and characterization of antibiotic-metal complexes [FeCl3 (L1) 2H2O and Ni (NO3) 2 (L2) 2H2O] and enhanced antibacterial activity. *Environmental Nanotechnology, Monitoring & Management*, *11*, 100209.

Book Chapters

- **Sodhi, K. K.,** Shree, P., Mishra, L. C., Mishra, G., Kumar, M., & Singh, D. K. (2023). Promising Compounds of Plant Origin and Their Synthetic Analogs Against Trypanosomes. In *Natural Product Based Drug Discovery Against Human Parasites: Opportunities and Challenges* (pp. 411-429). Singapore: Springer Nature Singapore.
- **Sodhi, K. K.,** Kumar, M., Shree, P., Singh, I. K., & Singh, D. K. (2020). Ecological risk of dioxin exposure. In *Dioxin* (pp. 143-153). CRC Press.

PATENT GRANTED

ENHANCED ANTI-BACTERIAL ACTIVITY OF THE SYNTHESIZED AMOXICILLIN-IRON COMPLEX. Application no. **202111061107. Filed at GOVERNMENT OF INDIA, PATENT OFFICE NEW DELHI.**

GUEST EDITORIAL ASSIGNMENTS

1. Guest Editor in **Total Environment Research Themes** (Elsevier). https://www.sciencedirect.com/journal/total-environment-research-themes/metagenomic-analysis-of-polluted-sites
2. Associate Editor in **Frontiers of Pharmacology**. **New Drugs, Approaches, and Strategies to Combat Antimicrobial Resistance**
3. Review Editor for **Technologies and strategies to enable drug discovery** in **Frontiers in Drug-Discovery**
4. Guest Editor in the **Antimicrobial resistance in the time of COVID-19** in **MDPI** https://www.mdpi.com/topics/C8292V7961.

SKILLS

- Experience in Microbiological techniques
- Techniques like HPLC, GC, AAS, LC-MS, PCR, Taxonomical analysis
- Worked on Metal Contamination in the river Yamuna, Bioremediation of metals and antibiotics.

Area of Research/Research Description: Environmental toxicology and microbiology. Taxonomic

classification of bacterial species. Synthesis of antibiotic-metal complex for the enhanced antibacterial activity against antibiotics such as amoxicillin, penicillin, and ciprofloxacin. Antimicrobial resistance, Bioremediation of antibiotics using bacteria. Proteomics and genomics of bacteria. Metagenomics of polluted environmental sites. Bioreactor designing and development. Remediation of heavy metals using bacteria. Phytoremediation of antibiotics.

- **Research work** is focused on antimicrobial resistance, bioremediation, water pollution, soil pollution, and phytoremediation. Research expertise area are Taxonomy, metagenomics, genomics, proteomics, Molecular biology, and Chemical synthesis biology.
- Research work on the bioremediation of antibiotics and heavy metals. Worked on the removal of amoxicillin using bacterial strain, checked the amoxicillin-induced alteration in the bacteria's protein profile, and studied in silico interaction using molecular docking.
- To combat antimicrobial resistance, the amoxicillin-iron complex has been successfully synthesized, the antibacterial activity was checked, and the complex activity was better than that of the amoxicillin
- Metagenomics study focused on the diversity analysis of polluted sites was also carried out in the Yamuna river contaminated with antibiotics, and heavy metals, functional and structural diversity was carried out.
- Bacterial taxonomy and plant-bacterial interactions to check for the antibiotics removal

EXTRAMURAL ENGAGEMENTS

- Awarded scholarship in Class XI for securing distinction in all the subjects in class X
- Organized various Star College Schemes of Department of Biotechnology (DBT) at SGTB KHALSA COLLEGE, UNIVERSITY OF DELHI
- Awarded scholarship of Rs 5000 for Securing highest marks in Biochemistry (2012)
- Participated in the International Conference on Translational Pharmacology at ALL INDIA INSTITUTE OF MEDICAL SCIENCES (2008)
- Completion of Virtual Workshop by ASSOCIATION OF MICROBIOLOGIST OF INDIA on Scientific Writing and Publishing
- Participation Certificate in Various MATHS AND SCIENCE OLMPIYAD (STATE LEVEL).
- BIOTIKOS PARTICIPATION CERTIFICATE 2012.
- SCIENCE QUIZ RANK 1 (2009-2010)