



Dr. Umesh Ch. Naik
Assistant Professor (Stage-III)

Environmental Microbiology and Biotechnology Lab

Dr. Umesh Ch. Naik holds a Master degree in Life Sciences from Sambalpur University and a Bachelor degree in Botany from North Orissa University. He has carried out his M. Phil and PhD work on Environmental Microbiology with Prof I. S. Thakur at Jawaharlal Nehru University, New Delhi. In 2014, he has joined as Assistant Professor at Ravenshaw University, Cuttack. Our research group is engaged on development of phyto-antimicrobials, ethnopharmacology, identifying the novel microbial strains for biofertilizers and microbial remediation.

Research Interests

Phyto-antimicrobials, Ethnopharmacology, Bacterial biofertilizers,
Microbial remediation

Subjects Teaching

Microbial growth and Physiology, Microbial Ecology, Virology, Ecosystem Process

On-going Projects

Title: Detoxification of industrial effluent rich in toxic pollutants released from industries in Paradeep industrial region (2026-2028) funded by OSHEC under the scheme MRIP 2025 lunched by Govt. of Odisha

Title: Identification and Evaluation of Beneficial Bacterial Strain (2026-2028) funded by Addx Biotech Private Ltd

Completed Project

Title: Comparative study on sulphate transporters of sulphate reducing bacteria under both anaerobic and aerobic conditions (2016-19) funded by SERB, Govt. of India

Group

| Ph.D. Scholar | Regd. No. | Fellowship | Joining Year |
|-------------------------|-----------|------------|--------------|
| Ms. Itishree Behera | 21PHBT008 | MRIP | 2021-22 |
| Ms. Jyotirmayee Sethi | 25PHBO012 | | 2025-26 |
| Ms. Smaranika Mohapatra | 25PHBO004 | CSIR | 2025-26 |

Graduated Ph.D. Scholars

Dr. Hrudananda Sahoo

Research Topic: Detoxification of acid mine drainage (AMD) by indigenous sulphate reducing bacteria and chromate resistant bacteria from iron ore mines.

Completed: 2022

Email ID: hsahoo435@gmail.com

Dr. Kanika Kisku

Research Topic: Efficacy of medicinal plants on non-tuberculous mycobacterial infection in lung cancer cells

Completed: 2025

Email ID: kisku42kanika@gmail.com

Graduated M. Phil Scholars

Ms. Ankita Nayak (2021-22)

Ms. Sushma Kumari (2018-19)

Ms. Namita Muduli (2017-18)

Ms. Sweety Murmu (2016-17)

Ms. Nitushree Das (2015-16)

Publications

Kisku K, Saha D, Sahoo H, Naik UC*, Murmu N (2025) *Acalypha indica* Linn. leaf methanolic extract inhibits A549 adenocarcinoma cell proliferation via Bax/Bcl2 mediated intrinsic apoptosis pathway. *The Nucleus*, 1-11.

Kisku K, Sahoo H, Sahoo BC, Rout SS, Murmu N, Naik UC* (2024) Cytotoxicity and gene expression studies in understanding the mechanism on antimycobacterial properties of methanolic leaf extract of *Acalypha indica* Linn. *South African Journal of Botany*, 164: 121-136.

Sahoo H, Kisku K, Varadwaj KSK, Acharya P, Naik UC* (2023) Mechanism of chromium reduction by an indigenous *Rhizobium pusense* CR02 isolated from chromite mining quarry water. *Environmental Science and Pollution Research*, 30:3490-3511.

Dhara M, Kisku K, Naik UC* (2022) Biofunctionalized cuprous oxide nanoparticles synthesized using root extract of *Withania somnifera* for antibacterial activity. *Applied Nanoscience*, 12:3555-3571.

Sahoo H, Kumari S, Naik UC* (2021) Characterization of multi-metals resistant *Serratia* sp. GP01 for treatment of effluent from fertiliser industries. *Archives of Microbiology*, 203:5425-5435.

Sahoo H, Senapati D, Thakur I, Naik UC* (2020) Integrated Bacteria-algal bioreactor for removal of toxic metals in acids mine drainage from iron ore mines. *Bioresource Technology Reports*, 11:100422

Naik UC, Das MT, Sauran S, Thakur IS (2014) Assessment of In-vitro cytogenotoxicity of sequentially treated electroplating effluent on human hepatocarcinoma Huh7 cell lines. *Mutation Research- Genetic Toxicology and Environmental Mutagenesis*, 762: 9-16.

Naik UC, Srivastava S, Thakur IS (2012) Isolation and characterization of *Bacillus cereus* IST105 from electroplating effluent for detoxification of hexavalent chromium in electroplating effluent. *Environmental Sciences and Pollution Research*, 19: 3005-3014.

Book Chapters

| Sl. No. | Name of the Author(s) | Name of the Books | Title of Book chapters | Pag es | Year | Editors |
|---------|-------------------------------------------------------------------|------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|---------|------|--------------------------------------------------------------------------------------|
| 1. | Kanika Kisku, Manmata Dhara, Ankita Nayak and Umesh Chandra Naik | Current Developments in Biotechnology and Bioengineering | Chapter-16 Use of pesticides and mechanism of resistance development in plants | 401-426 | 2023 | Joginder Singh, Ashok Pandey, Simranjeet Singh, Vinod Kumar Garg, Praveen Ramamurthy |
| 2. | Ankita Nayak, Kanika Kisku, Manmata Dhara, and Umesh Chandra Naik | Relationship Between Microbes and the Environment for Sustainable Ecosystem Services, Volume 2 | Chapter-12 Genetically modified microbes as an effective tool for sustainable solid waste management | 255-271 | 2022 | Jastin Samuel, Ajay Kumar, Joginder Singh |
| 3. | Hrudananda Sahoo, Kanika Kisku, Umesh Chandra Naik | Wastewater Treatment Cutting Edge Molecular Tools, Techniques and Applied Aspect | Chapter-21 Application of Omics Tools for Microbial Community Structure and Function Analysis | 433-456 | 2021 | Maulin P. Shah, Angana Sarkar, Sukhendu Mandal |
| 4. | Kanika Kisku and Umesh Chandra Naik | Nanobiotechnology | Chapter-07 Nanobiotechnology: A Process to Combat Abiotic Stress in Crop Plants | 139-163 | 2021 | Jameel M. Al-Khayri, Mohammad Israil Ansari, Akhilesh Kumar Singh |