

## ***Vibhav Gautam, Ph.D.***

---

**Email ID:** vibhav.gautam4@bhu.ac.in, vibhavgautam16@gmail.com

**Mobile No.** +918860182113

**Name:** Dr. Vibhav Gautam

**Affiliation:** Centre of Experimental Medicine and Surgery

Institute of Medical Sciences, Banaras Hindu University

Varanasi-221005, Uttar Pradesh, India

**ORCID ID:** <https://orcid.org/0000-0001-7956-9555>

**Loop ID:** <https://loop.frontiersin.org/people/1046959/overview>

**Personal Webpage:** <https://gautamslab.com/>

**Current Employment:** Assistant Professor (*Stage II*), Centre of Experimental Medicine and Surgery (CEMS), Institute of Medical Sciences (IMS), Banaras Hindu University (BHU), Varanasi 221005-Uttar Pradesh, India.

**Postdoctoral Experience (PDF)** - From December 2016 to December 2018, I served as a Research Associate at Prof. Ananda K. Sarkar's Laboratory at the National Institute of Plant Genome Research (NIPGR) in New Delhi, India. During this period, I actively contributed to research projects and scientific endeavours in the laboratory.

**Research Interests:** *Ethnopharmacology, Molecular Biology*

### **Educational qualifications**

**Doctor of Philosophy (PhD):** During the period of 2010-2016, I pursued my PhD at the National Institute of Plant Genome Research (NIPGR), India, and earned my degree from Jawaharlal Nehru University, New Delhi, India. My research during my PhD focused on plant molecular biology and developmental biology, and I had the privilege of working in Prof. Ananda K. Sarkar's laboratory. Title of the PhD thesis was "Small RNA mediated regulation of root architecture in *Zea mays* (maize)".

**Master of Science (M.Sc.):** From 2008 to 2010, I pursued my Master's degree in Biotechnology at Savitribai Phule Pune University (formerly known as the University of Pune) in Pune, India. During my Master's program, I undertook a minor project titled 'Molecular characterization of microbial content to validate commercial Probiotic formulations.' This project was conducted under the guidance of Dr. Yogesh S. Shouche at the National Centre for Cell Science-Pune, spanning from January 2010 to April 2010.

**Bachelor of Science (B.Sc.):** From 2004 to 2007, I attended Chhatrapati Shahu Ji Maharaj University in Kanpur, India, where I completed my B.Sc. and received a degree in Zoology, Botany, and Chemistry.

### **Publications**

1. Verma A, Chattopadhyaya A, Gupta P, Tiwari H, Singh S, Kumar L, **Gautam V\***. Integration of Hyphenated Techniques for Characterizing and Chemical Profiling of Natural Products. *Chemistry and Biodiversity* (2025); <https://doi.org/10.1002/cbdv.202500234>; **Impact factor- 2.3**
2. Chattopadhyaya A, Kural S, Verma A, Gupta P, Tiwari H, Singh S, Thakur A, Kumar R, Sankhwar SN, Singh SK, Agarwal S, Mehrotra S, Kumar L\*, **Gautam V\***. Urinary

- miRNAs in bladder cancer. *Clinica Chimica Acta* (2025); <https://doi.org/10.1016/j.cca.2024.120113>; **Impact factor- 3.2**
3. Garg A, Shah S, Patel TBB, Gautam V, Kumar D. Contrasting effects of melatonin on *Brassica juncea* and *Alternaria brassicae* reduce pathogenicity of the fungus and alleviate damage to plants. *Plant Stress* (2025); <https://doi.org/10.1016/j.stress.2025.100845>; **Impact factor- 6.8**
  4. Singh KV, R Tiwari, Rajneesh, Kumar A, Chauhan SB, Sudarshan M, Sanjana Mehrotra S, **Gautam V**, Sundar S, Kumar R. Advancing Treatment for Leishmaniasis: From Overcoming Challenges to Embracing Therapeutic Innovations. *ACS Infectious Diseases* (2025); <https://doi.org/10.1021/acsinfecdis.4c00693>; **Impact factor- 4.1**
  5. Chakraborty N, Roy I, Kumar P, Singh S, Pathak R, **Gautam V\***, Gautam HK\*, Nanoscale Prussian Blue and Its Analogues: Design and Applications in Infection Control, Wound Healing and Beyond. *Pharmaceutics* (2024), 16, x. <https://doi.org/10.3390/pharmaceutics16121616>; **Impact factor- 4.9**
  6. Tiwari H, Singh S, Sharma S, Gupta P, Verma A, Chattopadhyaya A, Kumar B, Agarwal S, Kumar R, Gupta SK, **Gautam V\***. Deciphering the Landscape of Triple Negative Breast Cancer from Microenvironment Dynamics and Molecular Insights to Biomarker Analysis and Therapeutic Modalities. *Medicinal Research Reviews* (2024); <https://doi.org/10.1002/med.22090>; **Impact factor- 10.9**
  7. Gupta P, Chattopadhyaya A, **Gautam V\***. Myco-nanotechnological approach to synthesize gold nanoparticles using a fungal endophyte, *Penicillium oxalicum* and unravelling their antibacterial activity and anti-breast cancer role via metabolic reprogramming. *Biomedical Materials* (2024); <https://iopscience.iop.org/article/10.1088/1748-605X/ad7e6a>, **Impact factor- 3.9**
  8. Singh S, Tiwari H, Verma A, Gupta P, Chattopadhyaya A, Singh A, Singh S, Kumar B, Mandal A, Kumar R, Yadav AK, Gautam HK, **Gautam V\***. Sustainable Synthesis of Novel Green-Based Nanoparticles for Therapeutic Interventions and Environmental Remediation. *ACS Synthetic Biology* (2024); doi: 10.1021/acssynbio.4c00206, **Impact factor- 3.7**
  9. Jaiswal S, Rai N, Chandra S, Verma A, **Gautam V**, Adhikari M, Singh S, Bharty MK. Design, Synthesis, and Structural Evaluation of Metal Complexes of Azepane-1-carbodithioate for Targeting Human Breast Cancer: Investigating Cytotoxic Activity against MDA-MB-231 Cell Line. *RSC: New Journal of Chemistry* (2024); <https://doi.org/10.1039/D4NJ01878H>, **Impact factor- 2.7**
  10. Pandey P, Kanuru V, Rai N, **Gautam V**, Amalnerkar D, Kamble SC. Nanoparticulate curcumin spray imparts prophylactic and therapeutic properties against SARS-CoV-2.

*Emergent Materials* (2024); <https://doi.org/10.1007/s42247-024-00754-6>, **Impact factor- 4.8**

11. Thakur M, Khushboo, Shah S, Kumari P, Yadav M, Vibhuti RK, Pramanik A, Yadav V, Raina M, Negi NP, **Gautam V**, Rustagi A, Verma SK, Kumar D. Unlocking the Secrets of Rhizosphere Microbes: A New Dimension for Agriculture. *Symbiosis* (2024); <https://doi.org/10.1007/s13199-024-00980-w>, **Impact factor- 2.1**
12. Bhardwaj N, Gupta P, Tripathi N, Chakarbarty S, Verma A, Kumari S, **Gautam V**, Gudasalamani R, Jain SK. New Ring-A Modified Cycloartane Triterpenoids from *Dysoxylum malabaricum* Bark: Isolation, Structure elucidation and their cytotoxicity. *Steroids*. (2024); 109390. <https://doi.org/10.1016/j.steroids.2024.109390>, **Impact factor- 2.1**
13. Tiwari H, Gupta P, Verma A, Singh S, Kumar R, Gautam H, **Gautam V\***. Advancing Era and Rising Concerns in Nanotechnology-Based Cancer Treatment. *ACS Chemical Health & Safety*. (2024); <https://doi.org/10.1021/acs.chas.3c00104>, **Impact factor- 2.9**
14. Gupta P, Singh S, Rai N, Verma A, Tiwari H, Kamble SC, Gautam H, **Gautam V\***. Unveiling the Cytotoxic and Anti-Proliferative Potential of Green-Synthesized Silver Nanoparticles Mediated by *Colletotrichum gloeosporioides*. *RSC Advances* (2024); 1-16. <https://doi.org/10.1039/d3ra06145k>, **Impact factor- 3.9**.
15. Rai N, Kailashiya V, **Gautam V\***. Exploring the Protective Effect against 7,12 Dimethylbenz[a]anthracene-Induced Breast Tumors of Palmitoylethanolamide. *ACS Pharmacology & Translational Science* (2024), 7(1):97–109. <https://doi.org/10.1021/acsptsci.3c00188>, **Impact factor- 4.9**.
16. Tiwari R, Gupta RP, Singh VK, Kumar A, Rajneesh, Madhukar P, Sundar S, **Gautam V**, Kumar R. Nanotechnology-Based Strategies in Parasitic Disease Management: From Prevention to Diagnosis and Treatment. *ACS Omega* (2023), <https://pubs.acs.org/doi/10.1021/acsomega.3c04587>, **Impact factor- 3.7**.
17. Debnath N, Yadav P, Mehta PK, Gupta P, Kumar D, Kumar A, **Gautam V**, Yadav AK. Designer probiotics: Opening the new horizon in diagnosis and prevention of human diseases. *Biotechnology & Bioengineering* (2023), <https://doi.org/10.1002/bit.28574>, **Impact factor- 3.5**.
18. Paul V, Rai N, Agarwal A, **Gautam V**, Tripathi AD. Valorization of lignocellulosic waste (coconut coir) for bio-vanillin production having antioxidant and anticancer activity against human breast cancer cells (MCF-7). *Industrial Crops and Products* (2023); <https://linkinghub.elsevier.com/retrieve/pii/S0926669023012670>, **Impact factor- 5.6**.
19. Rajneesh, Tiwari R, Singh VK, Kumar A, Gupta R, Singh A, **Gautam V**, Kumar R. Advancements and challenges in developing malaria vaccines: Targeting multiple stages of parasite life cycle. *ACS Infectious Diseases* (2023); <https://doi.org/10.1021/acsinfecdis.3c00332>, **Impact factor- 4.0**.

20. Singh S, Rai N, Tiwari H, Gupta P, Verma A, Kumar R, Kailashiya V, Salvi P, **Gautam V\***. Recent Advancements in the Formulation of Nanomaterials-Based Nanozymes, Their Catalytic Activity, and Biomedical Applications. *ACS Applied Bio Materials* (2023); <https://doi.org/10.1021/acsabm.3c00253>, **Impact factor- 4.6**.
21. Kumar S, **Gautam V\***, Singh BP, Kumar D. *Editorial: Investigating the Impact of Bioactive Metabolites and Extracts in Human Health and Disease Authors. Frontiers in Molecular Biosciences* (2023); <https://doi.org/10.3389/fmolb.2023.1244316>, **Impact factor- 3.9**.
22. Verma A, Tiwari H, Singh S, Gupta P, Rai N, Singh SK Singh BP, Rao S, **Gautam V\***. Epigenetic manipulation for secondary metabolite activation in endophytic fungi: current progress and future directions. *Mycology* (2023); <https://doi.org/10.1080/21501203.2023.2241486>, **Impact factor- 4.2**.
23. Kumar A, Singh VK, Tiwari R, Madhukar P, Rajneesh, Kumar S, **Gautam V**, Engwerda C, Sundar S, Kumar R. Post Kala-azar Dermal Leishmaniasis (PKDL) in the Indian Subcontinent: Challenges and Strategies for Elimination. *Frontiers in Immunology* (2023); <https://doi.org/10.3389/fimmu.2023.1236952>, **Impact factor- 5.7**.
24. Verma A, Tiwari H, Singh S, Gupta P, Rai N, Singh SK, Singh BP, Rao S, **Gautam V\***. Epigenetic Manipulation for Secondary Metabolite Activation in Endophytic Fungi: Current Progress and Future Directions. *Mycology: An International Journal of Fungal Biology* (2023); <https://doi.org/10.1080/21501203.2023.2241486>, **Impact factor-4.2**.
25. Verma A, Rai N, Gupta P, Singh S, Tiwari H, Chauhan SB, Kailashiya V, **Gautam V\***. Exploration of *in vitro* anticancer activity and *in ovo* antiangiogenic activity of ethyl acetate extract of *Penicillium oxalicum*. *Environmental Toxicology* (2023); <https://doi.org/10.1002/tox.23889>, **Impact factor-4.4**.
26. Gond MK, Rai N, Chandra B, **Gautam V**, Garaia S, Butcher RJ, Bharty MK. Isolation of potassium salt of oxadiazole-2-thione and *In Vitro* Anticancer Activities of its Cu(II) and Zn(II) complexes against MDA-MB-231 human breast carcinoma cells. *RSC Dalton Transactions* (2023); <https://pubs.rsc.org/en/content/articlelanding/2023/dt/d3dt01388j>, **Impact factor- 3.5**.
27. Tiwari H, Rai N, Singh S, Gupta P, Verma A, Singh AK, Kajal, Salvi P, Singh SK, **Gautam V\***. Recent advances in nanomaterials based targeted drug delivery for preclinical cancer diagnosis and therapeutics. *Bioengineering* (2023); <https://doi.org/10.3390/bioengineering10070760>, **Impact factor- 3.8**.
28. Gupta P, Rai N, Verma A, **Gautam V\***. Microscopy based methods for characterisation, drug delivery and understanding the dynamics of nanoparticles. *Medicinal Research Reviews* (2023); <https://doi.org/10.1002/med.21981>, **Impact factor- 10.9**.
29. Rai R, Bhandari R, Kaleem M, Rai N, **Gautam V**, Misra A. A simple TICT/ICT based molecular probe exhibiting ratiometric fluorescence Turn-On response in selective detection of Cu<sup>2+</sup>. *Journal of Photochemistry and Photobiology A: Chemistry* (2023); <https://doi.org/10.1016/j.jphotochem.2023.114696>, **Impact factor- 4.1**.
30. Rai N, Gupta P, Verma A, Singh SK, **Gautam V\***. Isolation and characterization of N-(2-Hydroxyethyl)hexadecanamide from *Colletotrichum gloeosporioides* with apoptosis-inducing potential in breast cancer cells. *BioFactors* (2023); [doi:10.1002/biof.1940](https://doi.org/10.1002/biof.1940), **Impact factor- 5.0**.

31. Rai N, Gupta P, Verma A, Tiwari RK, Madhukar P, Kamble SC, Kumar A, Kumar R, Singh SK, **Gautam V\***. Ethyl acetate extract of *Colletotrichum gloeosporioides* promotes cytotoxicity and apoptosis in human breast cancer cells. *ACS Omega* (2023); doi:10.1021/acsomega.2c05746, **Impact factor- 3.7.**
32. Gupta P, Rai N, Verma A, Saikia D, Singh SP, Kumar R, Singh SK, Kumar D, and **Gautam V\***. Green-based approach to synthesize silver nanoparticles using fungal endophyte *Penicillium oxalicum* and its antimicrobial, antioxidant and in vitro anticancer potential. *ACS Omega* (2022); doi:10.1021/acsomega.2c05605, **Impact factor- 3.7.**
33. Tiwari RK, Rawat SG, Gupta VK, Jaiswara PK, Sonker P, Kumar S, **Gautam V**, Mishra MK, Kumar A. Epinephrine facilitates the growth of T cell lymphoma by altering cell proliferation, apoptosis, and glucose metabolism. *Chemico-Biological Interactions* (2022); <https://doi.org/10.1016/j.cbi.2022.110278>, **Impact factor- 4.7.**
34. Salvi P, Mahawar H, Agarrwal R, Kajal, **Gautam V**, Deshmukh RK. Advancement in the molecular perspective of plant-endophytic interaction to mitigate drought stress in plants. *Frontiers in Microbiology* (2022); <https://doi.org/10.3389/fmicb.2022.981355>, **Impact factor- 4.0.**
35. Sharma A, Negi NP, Raina M, Supoli D, Mahajan A, Rajwanshi R, **Gautam V**, Bhagat B, Kakori H, Kumar D. Phytomelatonin: Molecular messenger for stress perception and response in plants. *Environmental and Experimental Botany* (2022); <https://doi.org/10.1016/j.envexpbot.2022.104980>, **Impact factor- 4.5.**
36. Rawat SG, Tiwari RK, Jaiswara PK, Gupta VK, Sonker P, Vishvakarma NK, Kumar S, Pathak C, **Gautam V**, Kumar A. Phosphodiesterase 5 inhibitor sildenafil potentiates the antitumor activity of cisplatin by ROS-mediated apoptosis: a role of deregulated glucose metabolism. *Apoptosis* (2022); <https://doi.org/10.1007/s10495-022-01741-0>, **Impact factor- 6.1.**
37. Rai N, Gupta P, Keshri PK, Verma A, Mishra P, Kumar D, Kumar A, Singh SK, **Gautam V\***. Fungal Endophytes: an Accessible Source of Bioactive Compounds with Potential Anticancer Activity. *Applied Biochemistry and Biotechnology* (2022); <https://doi.org/10.1007/s12010-022-03872-1>, **Impact factor- 3.1.**
38. Rai N, Keshri PK, Gupta P, Verma A, Kamble SC, **Gautam V\***. Bioprospecting of fungal endophytes from *Oroxylum indicum* (L.) Kurz with antioxidant and cytotoxic activity. *PLOS ONE* (2022) 17(3); <https://doi.org/10.1371/journal.pone.0264673>, **Impact factor- 2.9.**
39. Verma A, Gupta P, Rai N, Tiwari RK, Kumar A, Salvi P, Kamble SC, Singh SK, **Gautam V\***. Assessment of Biological Activities of Fungal Endophytes Derived Bioactive Compounds Isolated from *Amoora rohituka*. *Journal of Fungi* (2022); 8(3):285; <https://doi.org/10.3390/jof8030285>, **Impact factor-4.2.**
40. Salvi P, Kumar G, Gandass N, Kajal, Verma A, Rajarammohan S, Rai N, **Gautam V**. Antimicrobial Potential of Essential Oils from Aromatic Plant *Ocimum sp.*; A Comparative Biochemical Profiling and *In-Silico* Analysis. *Agronomy* (2022); 12(3):627. <https://doi.org/10.3390/agronomy12030627>, **Impact factor-3.3.**
41. Debnath N, Thakur M, Khushboo, Negi NP, **Gautam V**, Yadav AK, Kumar D. Insight of oral vaccines as an alternative approach to health and disease management: An innovative

- intuition and challenges. *Biotechnology & Bioengineering* (2021); <https://onlinelibrary.wiley.com/doi/abs/10.1002/bit.27987>, **Impact factor-3.5.**
42. Gupta P, Verma A, Rai N, Singh A, Singh SK, Kumar B, Kumar R, **Gautam V\***. Mass spectrometry-based technology and workflows for studying the chemistry of fungal endophyte derived bioactive compounds. *ACS Chemical Biology* (2021); <https://pubs.acs.org/doi/10.1021/acschembio.1c00581>, **Impact factor-3.5.**
  43. Singh AK, Singh SS, Rathore AS, Singh SP, Mishra G, Awasthi R, Mishra SK, **Gautam V**, Singh SK. Lipid-coated MCM-mesoporous silica nanoparticles loaded with Berberine improved inhibition of acetylcholine esterase and amyloid formation. *ACS Biomaterials Science & Engineering* (2021); <https://doi.org/10.1021/acsbomaterials.1c00514>, **Impact factor-5.4.**
  44. Keshri PK, Rai N, Verma A, Kamble SC, Barik S, Mishra P, Singh SK, Salvi P, **Gautam V\***. Biological potential of bioactive metabolites derived from fungal endophytes associated with medicinal plants. *Mycological Progress* 20, 577–594 (2021); <https://doi.org/10.1007/s11557-021-01695-8>, **Impact factor- 2.1.**
  45. Kaur H, Manna M, Thakur T, **Gautam V**, Salvi P. Imperative role of sugar signalling and transport during drought stress responses in plants. *Physiologia Plantarum* (2021). <https://doi.org/10.1111/ppl.13364>, **Impact factor- 5.4.**
  46. Rai N, Keshri PK, Verma A, Kamble SC, Mishra P, Barik S, Singh S K, **Gautam V\***. Plant associated fungal endophytes as a source of natural bioactive compounds. *Mycology* (2021); <https://doi.org/10.1080/21501203.2020.1870579>, **Impact factor- 4.2.**
  47. **Gautam V**, Singh A, Yadav S, Singh S, Kumar P, Das SS, Sarkar AK. Conserved *LBL1*-ta-siRNA and *miR165/166-RLD1/2* modules regulate root development in maize. *Development* (2021) Jan 5;148(1):dev190033; doi: 10.1242/dev.190033, **Impact factor- 3.7.**
  48. Rai N, Singh AK, Singh SK, Gaurishankar B, Kamble SC, Mishra P, Kotiya D, Barik S, Atri N, **Gautam V\***. Recent technological advancements in stem cell research for targeted therapeutics. *Drug Delivery and Translational Research* (2020); <https://doi.org/10.1007/s13346-020-00766-9>, **Impact factor-5.7.**
  49. Atri N, Rai N, Singh AK, Verma M, Barik S, **Gautam V**, et al. Screening for Endophytic Fungi with Antibacterial Efficiency from *Moringa Oleifera* and *Withania Somnifera*. *Journal of Scientific Research* (2020),61(1):127-33.
  50. Barik S, Rai N, Mishra P, Singh SK, **Gautam V\***. Bioinformatics: how it helps to boost modern biological research. *Current Science* (2020),118(5):698-9, **Impact factor – 1.1.**
  51. Ranjan A, Singh RK, Khare S, Tripathi R, Pandey RK, Singh AK, **Gautam V**, Tripathi JS, Singh SK. Characterization and evaluation of mycosterol secreted from endophytic strain of *Gymnema sylvestre* for inhibition of  $\alpha$ -glucosidase activity. *Nature Scientific Reports* (2019) Nov 21;9(1):17302; doi: 10.1038/s41598-019-53227-w. **Impact factor – 3.8.**
  52. Singh S, Yadav S, Singh A, Mahima, Singh A, **Gautam V**, Sarkar AK. Auxin signaling modulates *LATERAL ROOT PRIMORDIUM1 (LRP1)* expression during lateral root

development in *Arabidopsis*. *The Plant Journal* (2019) Sep 4; doi: 10.1111/tpj.14520, **Impact factor – 6.2.**

53. **Gautam V**, Singh A, Verma S, Singh S, Chatterjee S, Sarkar AK. Whole mount in situ localization of miRNAs and target mRNA transcripts in plants. *3 Biotech* (2019), (5):193. doi: 10.1007/s13205-019-1704-x. Epub 2019 Apr 29, **Impact factor – 2.6.**
54. Verma S, **Gautam V**, Sarkar AK. Improved laser capture microdissection (LCM)-based method for isolation of RNA including miRNAs and expression analysis in woody apple bud meristem. *Planta* (2019) 249(6):2015-2020. doi: 10.1007/s00425-019-03127-0. Epub 2019 Apr 11, **Impact factor – 3.6.**
55. Kumar A, **Gautam V**, Kumar P, Mukherjee S, Verma S, Sarkar AK. Identification and co-evolution pattern of stem cell regulator miR394s and their targets among diverse plant species. *BMC Evolutionary Biology* (2019) 19(1):55; doi: 10.1186/s12862-019-1382-7, **Impact factor – 2.3.**
56. Singh A, **Gautam V**, Singh S, Sarkar Das S, Verma S, Mishra V, Mukherjee S, and Sarkar AK. Plant small RNAs: advancement in the understanding of biogenesis and role in plant development. *Planta* (2018); <https://doi.org/10.1007/s00425-018-2927-5>, **Impact factor – 3.6** (equal first author).
57. Singh A, Roy S, Singh S, Das SS, **Gautam V**, Kumar A, Yadav S, Singh A, Samantha S, Sarkar AK. A hormonal crosstalk regulates root growth in *Arabidopsis* by modulating expression of miR166/5s, target Class III HD-ZIPs and KANADI genes. *Nature Scientific Reports* (2017); doi.org/10.1038/s41598-017-03632-w, **Impact factor – 3.8.**
58. Das SS, Yadav S, Singh A, **Gautam V**, Sarkar AK, Nandi AK, Karmakar P, Majee M, Mishra NS. Expression dynamics of miRNAs and their targets in seed germination conditions reveals miRNA-ta-siRNA crosstalk as regulator of seed germination. *Nature Scientific Reports* (2017); doi:10.1038/s41598-017-18823-8, **Impact factor – 3.8.**
59. **Gautam V**, Singh A, Verma S, Kumar A, Kumar P, Mahima M, Singh S, Mishra V, and Sarkar AK. Role of miRNAs in root development of model plant *Arabidopsis thaliana*. *Plant Physiology Reports* (2017); doi:10.1007/s40502-017-0334-8, **Impact factor – 1.5.**
60. Singh S, Singh A, Yadav S, **Gautam V**, Singh A, Sarkar AK. Sirtinol, a Sir2 protein inhibitor, affects stem cell maintenance and root development in *Arabidopsis thaliana* by modulating auxin-cytokinin signaling components. *Nature Scientific Reports* (2017); 7, 42450, doi: 10.1038/srep42450, **Impact factor – 3.8.**
61. Singh A, Kumar P, **Gautam V**, Rengasamy B, Adhikari B, Udayakumar M, Sarkar AK. Root transcriptome of two contrasting indica rice cultivars uncovers regulators of root development and physiological responses. *Nature Scientific Reports* (2016); 6, 39266, doi: 10.1038/srep39266, **Impact factor – 3.8.**
62. **Gautam V**, Singh A, Singh S, Sarkar AK. An Efficient LCM-Based Method for Tissue Specific Expression Analysis of Genes and miRNAs. *Nature Scientific Reports* (2016); 6, 21577, doi: 10.1038/srep21577, **Impact factor – 3.8.**

63. Barik S, Kumar A, Sarkar Das S, Yadav S, **Gautam V**, Singh A, Singh S, Sarkar AK. Coevolution Pattern and Functional Conservation or Divergence of miR167s and their targets across Diverse Plant Species. *Nature Scientific Reports* (2015); 5, 14611, doi: 10.1038/srep14611, **Impact factor – 3.8**.
64. **Gautam V**, Sarkar AK. Laser assisted microdissection, an efficient technique to understand tissue specific gene expression patterns and functional genomics in plants. *Molecular Biotechnology* (2015); 57, 299-308, doi: 10.1007/s12033-014-9824-3, **Impact factor – 2.4**.
65. Barik S, SarkarDas S, Singh A, **Gautam V**, Kumar P, Majee M, Sarkar AK. Phylogenetic analysis reveals conservation and diversification of micro RNA166 genes among diverse plant species. *Genomics* (2014); 103, 114-121,doi: 10.1016/j.ygeno.2013.11.004, **Impact factor – 3.4**.

\*Corresponding author

## Book Chapters

1. Ganotra J, Supolia D, Sharma A, Raina M, Negi NP, **Gautam V**, and Kumar D (2025). Pathways of Important Metabolites and Enzymes Involved. In: M. K. Swamy et al. (eds.), *Metabolites of Medicinal Plants: Insightful Approaches*. Bentham Science Publishers; <https://doi.org/10.2174/9789815274103124010019>
2. Tiwari R, Singh VK, **Gautam V**, Mehrotra S, Kumar R (2025). Host directed immunotherapy for chronic infections and cancer. In Prajapati, V.K. (eds) *Advances In Protein Chemistry and Structural Biology*; 144, 355-388; <https://doi.org/10.1016/bs.apcsb.2024.10.009>
3. Bhaskar P, Tripathi R, Singh S, Chattopadhyaya A, Verma A, **Gautam V\*** (2024). Navigating the Nanoscale Frontier: An In-Depth Introduction to the World of Nanomedicine. In: Gautam, V., Kumar, R., Das Manandhar, K., Kamble, S.C. (eds) *Nanomedicine. Nanotechnology in the Life Sciences*. Springer, Cham. [https://doi.org/10.1007/978-3-031-72467-1\\_18](https://doi.org/10.1007/978-3-031-72467-1_18)
4. Saini P, Verma A, Tiwari H, Mishra V, **Gautam V\***(2024). Omics-Based Approaches in Studying Fungal Endophytes and Their Associated Secondary Metabolites. In: Singh, B.P., Abdel-Azeem, A.M., Gautam, V., Singh, G., Singh, S.K. (eds) *Endophytic Fungi. Fungal Biology*, Springer, Cham; [https://doi.org/10.1007/978-3-031-49112-2\\_10](https://doi.org/10.1007/978-3-031-49112-2_10).
5. Tiwari R, Singh VK, Rajneesh, Kumar A, **Gautam V**, Kumar R (2024). MHC tetramer technology: Exploring T cell biology in health and disease. In *Prajapati VK* (ed) *Advances in Protein Chemistry and Structural Biology*; <https://doi.org/10.1016/bs.apcsb.2024.02.002>.
6. Roy R, Madhukar P, Singh VK, Tiwari R, Kumar A, Rajneesh, Rai M, **Gautam V**, Sundar S, Kumar R (2024). MicroRNAs-mediated regulation of immune responses in parasitic infection. In *MicroRNA in Human Infectious Diseases*, pp. 239-263. Academic Press, 2024. <https://doi.org/10.1016/B978-0-323-99661-7.00009-6>.

7. Rai N, Gupta P, Verma A, Singh S, Tiwari H, Kumar R, Singh SK, **Gautam V\***(2023). Fungal Endophyte-Mediated Green Synthesis of Silver Nanoparticles as Potential Anticancer Agent: Current Perspective and Challenges. *R. C. Sobti et al. (eds.), Handbook of Oncobiology: From Basic to Clinical Sciences*,[https://doi.org/10.1007/978-981-99-2196-6\\_70-1](https://doi.org/10.1007/978-981-99-2196-6_70-1).
8. Verma A, Rai N, Kamble SC, Mishra P, Barik S , Kumar R, Singh SK, Salvi P, **Gautam V\*** (2023). Beyond the Synthetic Drugs: Fungal Endophytes Derived Bioactive Compounds in the Management of Neurodegenerative Disorders. In: Singh, S.P. (ed), *Traditional Medicine in Neural Health*. Bentham Science Publishers, Singapore; *Doi: 10.2174/9789815040197123010007*.
9. Singh B, Kumar A, Tiwari R, Chauhan SB, Singh OP, Singh SK, **Gautam V**, Sundar S, Kumar R (2022). Infection, immunity, and vaccine development. *System Vaccinology*, Elsevier Publisher, System Vaccinology - 1st Edition (elsevier.com), (<https://www.elsevier.com/books/system-vaccinology/prajapati/978-0-323-85941-7>).
10. **Gautam V\***, Gupta P, Salvi P, Sharma A, Kumar D & Dwivedi A (2021). Role of miRNAs in shaping root architecture in higher plants. In: Baluska, F. and Mukherjee, S. (eds), *Rhizobiology: Molecular physiology of roots*. Springer, Nature 2021 ([https://link.springer.com/chapter/10.1007/978-3-030-84985-6\\_7](https://link.springer.com/chapter/10.1007/978-3-030-84985-6_7)).
11. Rai N, Singh AK, Keshri PK, Barik S, Kamble SC, Singh SK, Kumar R, Mishra P, Kotiya D, **Gautam V\*** (2020). Probiotics for Management of Gastrointestinal Cancers. I. P. Kaur & P. Deol (Eds.), *Probiotic Research in Therapeutics* (Vol. 1, pp. 19). Springer Nature Singapore Pte Ltd. DOI: [https://doi.org/10.1007/978-981-15-8214-1\\_9](https://doi.org/10.1007/978-981-15-8214-1_9). ISBN: 978-981-15-8214-1. [https://link.springer.com/chapter/10.1007/978-981-15-8214-1\\_9](https://link.springer.com/chapter/10.1007/978-981-15-8214-1_9).
12. **Gautam V\***, S Chatterjee and Sarkar AK. Laser capture microdissection (LCM) based method for isolation of single cell types from rice tissue and its potential application. *Methods Mol Biol*. 2021;2238:275-283. *doi: 10.1007/978-1-0716-1068-8\_18*.
13. **Gautam V\***, Singh A, Singh S, Verma S and Sarkar AK. Improved method of RNA isolation from laser capture microdissection (LCM) derived- plant tissues. **Methods Molecular Biology** (2019);1933:89-98. *doi: 10.1007/978-1-4939-9045-0\_5*.
14. Sarkar AK, Mayandi K, **Gautam V**, Barik S, Das SS (2013). Improving the Plant Root System Architecture to Combat Abiotic Stresses Incurred as a Result of Global Climate Changes. Wiley-VCH Verlag GmbH & Co. KGaA, *doi: 10.1002/9783527675265.ch12*.  
\*Corresponding author/first author

## Edited Books:

1. Editor for an international book titled '*Nanomedicine: Innovations, Applications, and Breakthroughs in the Quest for Health and Medicine's Future*,' published by Springer Cham; Published: December 2024; (<https://link.springer.com/book/9783031724664>).

2. Editor for an international book titled "*Endophytic Fungi: The Hidden Sustainable Jewels for the Pharmaceutical and Agricultural Industries*," published by Springer Cham; Published: 26 January 2024; (<https://link.springer.com/book/10.1007/978-3-031-49112-2>).

## Technical expertise

**PhD:** During my PhD, I had the opportunity to acquire expertise in advanced forms of microscopy, including Laser Capture Microdissection (LCM), multiphoton confocal microscopy, live cell imaging, and Scanning Electron Microscopy (SEM). In addition to my proficiency in basic microbiology and molecular biology techniques, I also gained practical knowledge in gene expression-related methodologies. These included gene expression microarray analysis, miRNA microarray analysis, northern blotting, Electrophoretic Mobility Shift Assay (EMSA), in-situ hybridization, quantitative Reverse Transcription Polymerase Chain Reaction (qRT-PCR), stem-loop qRT-PCR, and the interpretation of their data. Furthermore, I developed expertise in tissue fixation, processing using paraffin wax and microtome for thin sectioning.

**M.Sc.:** During my M.Sc. project, I acquired hands-on expertise in fundamental molecular biology and microbiology techniques. Additionally, I gained proficiency in Denaturing Gradient Gel Electrophoresis (DGGE), which allowed me to explore the genetic diversity and composition of samples, providing valuable insights into the microbial communities present. Furthermore, I developed skills in sample preparation for Next-Generation Sequencing (NGS).

## Research experience

### Current research work at Banaras Hindu University, Varanasi (December 2018 to Ongoing)

My research centers around *ethnopharmacology*, with a primary focus on isolating medicinal plant-associated fungal endophytes and extracting bioactive compounds from them. Spectroscopic techniques play a key role in purifying and characterizing the monomeric compounds, followed by evaluation for their anti-breast cancer activity using both *in vitro* and *in vivo* models. My expertise lies in exploring the biological, chemical, biomedical, and pharmacological aspects of these bioactive compounds and their potential applications in breast cancer therapeutics. Through extensive *in vitro* and *in vivo* studies, we delve into the mechanisms of action and assess the efficacy of these compounds in inhibiting the growth and proliferation of breast cancer cells. In addition to isolating bioactive compounds, my research extends into the exciting field of *nanobiotechnology*. My team actively engages in the green synthesis of silver and gold nanoparticles, driven by the bioactive compounds produced from fungal endophytes. These nanoparticles hold promising potential for therapeutic applications in cancer treatment.

In summary, my research work aims to make significant contributions to the field of *ethnopharmacology*, advancing our understanding of therapeutic approaches for breast cancer. By bridging the gap between traditional medicine and modern science, I aspire to bring about impactful developments in cancer treatment.

### Postdoctoral Experience (December 2016 – December 2018)

Following the successful completion of my PhD, I joined Prof. Ananda K Sarkar's laboratory at the National Institute of Plant Genome Research in New Delhi, India, to pursue my post-doctoral work. During this period, my research focused on a Laser Capture Microdissection (LCM) based study aimed at identifying meristem-specific miRNAs in plants. This cutting-edge technique allowed us to precisely isolate and analyse microRNAs expressed in the

plant's meristems, providing valuable insights into their regulatory roles in plant development and growth.

### **PhD research experience (2010-2016)**

During my PhD research, I elucidated the role of small RNA and related genes in maize root development. I focused on a pivotal gene (*LBL1*) involved in ta-siRNA biogenesis, which served as an ideal candidate for studying its influence on maize root development. Employing functional genomics approaches and mutational analysis, I elucidated the molecular basis of ta-siRNA-mediated root development in maize. Collectively, our research work unveiled the essential role of the ta-siRNA pathway in regulating maize root architecture. Taken together, our work uncovers the role of ta-siRNA pathway in regulating maize root architecture (*Development*, 2021). Additionally, our lab has developed a LCM-based method for RNA extraction in plants, which proves highly useful for miRNA and total RNA extraction (*Sci. Rep.*, 2016).

### **M.Sc. research experience (2008-2010)**

During my M.Sc. project, which spanned four months, I conducted a comprehensive investigation to assess the validity and claims of commercially manufactured probiotic drugs known for their purported benefits in improving gut microflora in humans. This project combined the fields of molecular biology, microbiology, and preliminary bioinformatics techniques. In my study, I meticulously examined various commercial probiotic drugs to ascertain the presence and viability of the claimed microorganisms. This work serves as a valuable reference for both consumers and the scientific community, emphasizing the necessity for critical evaluation of commercial probiotics and their potential effects on human health.

### **Scholarships and Awards**

1. 'Research Publication Award' by Institute of Medical Sciences, Banaras Hindu University, Varanasi, 2022-23.
2. Recipient of *Bridge Grant* under Institution of Eminence Scheme, Banaras Hindu University, Varanasi, 2023.
3. 'Academic Excellence in Publication Award' by Institute of Medical Sciences, Banaras Hindu University, Varanasi, 2021-22.
4. Recipient of UGC BSR Start-up Grant, 2021.
5. Award of SERB-EMEQ research grant, 2019.
6. Qualified Indian Council of Agricultural Research-Agriculture research services/National eligibility test (ICAR-ASRB NET) 2014 and 2018.
7. Qualified Joint Council of Scientific & Industrial Research-University Grants Commission-National Eligibility Test (CSIR-UGC NET) for junior research fellowship (JRF) twice i.e., 2010 and 2011 among JRF awardees in Life Sciences.
8. Qualified Joint CSIR-UGC NET for lectureship in life sciences.
9. Qualified Graduate Aptitude Test for Engineering (GATE)-2010 in Life sciences.
10. Recipient of monthly fellowship from CSIR New Delhi for the period of five years.
11. Recipient of a monthly studentship from the Department of Biotechnology, Govt. of India during M.Sc. at University of Pune.
12. Lifetime membership of the Society of Biological Chemists, India.

13. Lifetime membership of the Mycological Society of India.
14. Lifetime membership of the Indian Science Congress Association.
15. Lifetime membership of the Proteomics Society of India.
16. Lifetime membership of the Association of Microbiologists of India.
17. Lifetime membership of the Electron Microscope Society of India.
18. Annual Membership of the American Chemical Society, USA
19. Member of Departmental Committees: Academic Committee, Administrative Committee, Faculty Affairs Committee, Technical Committee, Purchase Committee, and Research Committee (both the Department Research Committee or DRC and committees like Anti-plagiarism, RPC, Admission, *etc.*).
20. Category Representative for Faculty Affairs Committee, Centre of Biostatistics, IMS BHU, Varanasi

**Academic Editor:** *PLOS One, Scientific Reports*

**Guest Associate Editor:**

1. *Frontiers in Molecular Biosciences & Frontiers in Pharmacology* (2022-23)  
(<https://www.frontiersin.org/research-topics/46441/investigating-the-impact-of-bioactive-metabolites-and-extracts-in-human-health-and-disease>).
2. *Frontiers in Materials: Biomaterials and Bio-Inspired Materials* section (2023-Ongoing)  
(<https://www.frontiersin.org/research-topics/60010/biomaterials-derived-from-plants-and-fungi-for-advancing-tissue-engineering>).

**Conferences and Workshops Organized:**

1. Workshop on Computational Oncology: Integrating experiments and computational models (*WoCON- 2024*), *December 17-18, 2024* (as an Organizing Secretary) at IIT-BHU, Varanasi.
2. Two-Day Training on High-Performance Thin Layer Chromatography (HPTLC), *February 6-7, 2024* Organized at the Centre of Experimental Medicine and Surgery, Institute of Medical Sciences, Banaras Hindu University, Varanasi, India. (Role: Organizer)
3. 5<sup>th</sup> International Conference on Innovative Approaches in Applied Sciences and Technologies *03-05 December 2021*, (as an Associate Director) at Babasaheb Bhimrao Ambedkar University (A Central University) Lucknow (U.P.) India.

### Research Grants and Funding (Ongoing)

S. No.	Funding Agency	Title of Project	Duration of Project	Role	Amount
1)	Dioraphte Foundation, Sweden	Understanding the Link Between Immune Pathology, Hypopigmentation and Pathogen Control in Post Kala-Azar Dermal Leishmaniasis (PKDL) and Leprosy	2025-2028	As a Co-Investigator	₹ 10.09 million
2)	Science and Engineering Research Board-Empowerment and Equity Opportunities for Excellence in Science- New Delhi, India	Isolation and characterization of microbial endophytes for novel anticancer and antioxidant compounds from <i>Oroxylum indicum</i>	3 Years (36 months)/ <i>Project Completed</i>	Principal Investigator	₹46,96,235
3)	University Grants Commission, New Delhi, India	Isolation and evaluation of phytochemicals from <i>Oroxylum indicum</i> plant for the development of anticancer chemotherapy against cancer	2 Years (24 months)	Principal Investigator	₹10,00,000
4)	Department of Science & Technology (SEED), New Delhi, India	Science and technology-based approach for the upliftment of the socioeconomic status of the scheduled caste communities of eastern Uttar Pradesh through cultivation of selected medicinal plants	3 Years (36 months)	Co-Investigator	₹88,59,800
5)	Indian Council of Medical Research, New Delhi	Immunoregulatory network in <i>Plasmodium falciparum</i> induced severe and uncomplicated malaria and its manipulation for host directed therapy	3 Years (36 months)	Co-Investigator	₹44,54,997
6)	Seed Grant to New Faculties Under Institution of Eminence Scheme, Banaras Hindu University-Varanasi			Principal Investigator	₹19,00,000

7)	Bridge Grant Under Institution of Eminence Scheme, Banaras Hindu University- Varanasi	01 Year (12 months)	Principal Investigator	₹760,000
----	--	------------------------	---------------------------	----------

## Research Guidance

**PhD Students:** 04 (*Ongoing*); 01 (*Awarded*)

## Personal Details

Nationality: Indian

Languages known: English, Hindi

**Vibhav Gautam**

**Date:** 15-05-2025