

Dr. NEELAM PRABHA NEGI

Scientist

Biotechnology

CSIR- Central Institute of Medicinal and Aromatic Plants, Lucknow, India

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Email id: neelampnegi@cimap.res.in, sapphirenegi@yahoo.com**AREA OF SPECIALIZATION*****Integrating Cutting-Edge Techniques for Plant Metabolite Development and Stress Resilience:***

- Engineering plants for Resilience and Enhanced Metabolite Production
- Mapping the Routes to Valuable Plant Compounds
- Plant Tissue Culture for Secondary Metabolite Production
- Exploring Gene Functions for Plant Improvement
- Applying Nanotechnology for Plant Health

EMPLOYMENT/ RESEARCH EXPERIENCE

Scientist: 18 July 2024 – till date, CSIR- Central Institute of Medicinal and Aromatic Plants, Lucknow, 226015, India

Associate Professor: 1 Nov 2023 – 16 July 2024, University Institute of Biotechnology, Chandigarh University, Mohali

Assistant Professor: 24 July 2017 – 31 Oct 2023, University Institute of Biotechnology, Chandigarh University, Mohali

DST Women Scientist: (WOS-A) May 2014 – July, 2017, School of Life Sciences, Jawaharlal Nehru University, New Delhi (India).

RESEARCH PROJECTS**Completed**

S. No	Title	Agency	Period	Grant/ Amount (Rs lakh)
1.	To enhance abiotic stress tolerance in <i>Brassica juncea</i> by gene stacking of antioxidant enzymes isolated from salt tolerant cell lines of <i>Arachis hypogaea</i> ".	Department of Science & Technology (DST), Govt. of India	2014-17	23 lakhs
2	Genome wide identification of <i>CIPK</i> family and check their response to abiotic stress in Banana".	DST-SERB, GOI	2019-2023	43 lakhs

PATENT PUBLISHED

1. Chatterjee S, Maji SD, Giri A, Biswas W, Ghata A, Sarkar S, Sarangi AK, Mitra RD, **Negi NP**, Pandey RP, Chang CM and Koley S (2024). An enhanced method of immobilization of microbial alkaline protease for industrial applications- Indian Patent (Published on 31.5.24).
2. Koley S, Sarangi AK, **Negi NP**, Ghata A, Magotra S, Narwal P, Mir MA, Pandey RP, Srivastava D and Saranhi A (2024) An integrated method for enhanced drug discovery and a nanoparticle formulation for optimized drug delivery – Indian Patent (Published on 19.7.2024).

PUBLICATIONS

1. Narwal P, **Negi NP*** and Kumar D (2024). Boosting Banana Resilience: Calcium Supplementation Enhances Growth, Osmolyte Production, and Antioxidant Machinery in Drought and Cold-Exposed Plants. Environmental and Experimental botany.

2. Narwal P, Kapoor B and **Negi NP*** (2024) Decoding the Chemical Repertoire, Antimicrobial Synergy, and Antioxidant Mastery of Banana Pulp and Peel Extracts against Pathogenic Microorganisms. *Journal of Plant Biochemistry and Biotechnology*.
3. Narwal P, and **Negi NP*** (2024) Exogenous Calcium Enhances Osmotic Regulation, Photosynthetic Machinery, and Stomatal characteristics in Banana under Dehydration Stress. *Indian Journal of agricultural biochemistry*.
4. Ozkul M, Sevgin N, **Negi NP** and Akin M (2024) Developing Micro Propagation Protocol for Black Mulberry. *Turkish Journal of Agriculture*.
5. Lamba B, Mir MA, Raja V, **Negi NP***, Bhat AH, Ataya FS, Paul N, Batiha GES (2024) Phytochemical Investigation of *Tecoma capensis* Flower Aqueous Extract and *In Vitro* Biological Studies: Anti-Bacterial and Anti-Proliferative Activities of its Silver Nanoparticles. *Chemistryselect*.
6. Thakur M, Shah S, Kumari P, Kumar M, Vibhuti RK, Pramanik A, Yadav V, Raina M, **Negi NP**, Gautam V, Rustagi A, Verma SK and Kumar D (2024). Unlocking the Secrets of Rhizosphere Microbes: A New Dimension for Agriculture. *Symbiosis*
7. Narwal P, Kumar R, Pathak A, Kumar D and **Negi NP*** (2024). Genome-wide Profiling of CBL Interacting Protein Kinases (CIPKs) in Banana unveils their role in abiotic stress signaling and stress tolerance enhancement. *Plant Stress*.
8. Mir MA, **Negi NP***, Kaur M and Raja V (2023). Synergistic antimicrobial and antiproliferative proficiency of *Phaseolus vulgaris* seed extract-derived silver nanoparticles: a green fabrication approach. *Cleaner Technology and Environmental Policy*. 1-17
9. Mir MA, Bansal N, Sharma S and **Negi NP*** (2023) Nanoparticle Applications for Sustainable Agriculture and Food Science: Advances and Future Directions. *Indian Journal of agricultural biochemistry*. 36(1):10-25.
10. **Negi NP**, Prakash G, Narwal P, Panwar R, Singh A, Kumar D and Rustagi A (2023) The Calcium Connection: Exploring the Intricacies of Calcium Signaling in Plant-Microbe Interactions. *Frontiers in Plant Science*. 14: 1248648.
11. Bhardwaj K, Raina M, Sanfratello GM, Pandey P, Singh A, Rajwanshi R, **Negi NP**, Rustagi A, Khushboo, Kumar D (2023). Exogenous melatonin counteracts salinity and cadmium stress via photosynthetic machinery and antioxidant modulation in *Solanum lycopersicum*. *Journal of Plant Growth Regulation*. 42(10):6332-48.
12. Thakur A, Verma M, Setia P, Bharti R, Sharma R, Sharma A, **Negi NP**, Anand V and Bansal R (2022) DFT analysis and in vitro studies of isoxazole derivatives as potent antioxidant and antibacterial agents synthesized via one-pot methodology. *Research on Chemical Intermediates* 1-25.
13. Sharma A, **Negi NP**, Raina M Supolia D, Mahajan A, Bhagat B, Kakoria H, Rajwanshi R, Kumar D (2022). Phytomelatonin: A Promising Molecular Messenger in Decoding Remedial Strategies for Stress Perception and Response in Plants. *Journal of Environmental and Experimental Botany*. 201:104980.
14. **Negi NP**, Modgil M and Chaudhary S. (2022) Establishment of cost-effective rooting, acclimatization and genetic fidelity of in vitro plants of apple rootstock Merton 793. *Vegetos*. 36:1199–1210. <https://doi.org/10.1007/s42535-022-00479-z>
15. Muskan, Gupta D and **Negi NP*** (2022). 3D Bioprinting: Printing the future and Recent Advances. *Bioprinting*. 27: e00211.
16. Verma S, **Negi NP (Equal Contribution, corresponding author)** Narwal P, Kumari P, Kisku AV, Gahlot P, Mittal I and Kumar D (2022). Calcium signaling as ubiquitous second messenger in coordinating plant development, circadian oscillations and environmental stress responses in plants. *Journal of Environmental and Experimental Botany*. 201:104935.
17. Verma S, **Negi NP (Equal Contribution, corresponding author)**, Shalini, Mudgal G and Kumar D (2022). Auxin response factors in specifying the auxin-mediated responses during drought and salinity stress adaptation in plants. *Physiologia Plantarum*. 174: e13714.
18. Debnath N, Thakur M, **Negi NP**, Gautam V, Kumar Yadav A, Kumar D (2021). Insight of oral vaccines as an alternative approach to health and disease management: An innovative intuition and challenges. *Biotechnology and Bioengineering*. II9(2): 327-346.
19. Moan S & **Negi NP** (2020). HEAT SHOCK PROTEINS (HSPs) - A Molecular Chaperone for Plant Protection. *Plant C Biotechnology and Molecular Biology*. 21(17-18): 119-129.

20. Modgil M, Parmar S and **Negi Prabha N** (2017). RAPD analysis of long-term micropropagated rootstock plants of apple Malling 7. *Indian Journal of Experimental Biology (IJEb)* 55:178-183
21. **Negi NP**, Sharma V and Sarin NB (2017). Pyramiding of Two Antioxidant Enzymes *CuZnSOD* and *cAPX* from Salt Tolerant Cell Lines of *Arachis hypogaea* Confers Drought Stress Tolerance in *Nicotiana tabacum*. *Indian Journal of Agricultural Biochemistry* 30(2):141-146
22. **Negi NP**, Shrivastava D, Shekhar S, Sharma V and Sarin NB (2016). Simultaneous overexpression of *CuZnSOD* and *cAPX* from *Arachis hypogaea* leads to salinity stress tolerance in tobacco. *In vitro cellular and developmental biology- Plant* 52: 484-491.
23. **Negi NP**, Shrivastava D, Sharma V and Sarin NB (2015). Overexpression of *CuZnSOD* from *Arachis hypogaea* alleviates salinity and drought stress in tobacco. *Plant Cell Reports* 15:1770-1774.

16S RNA ISOLATED IN THE LAB AND THEIR ACCESSION NUMBERS:

1. Sharma H, **Negi NP*** and Kumari S (2019) *Acinetobacter vivianii* strain SK19 16S ribosomal RNA gene, partial sequence Accession no.MK999908.1
2. Kumari S, **Negi NP*** and Sharma H (2019) *Bacillus albus* strain HC19 16S ribosomal RNA gene, partial sequence Accession no.MK999906.1
3. Nancy, Sharma S and **Negi NP*** (2019) *Bacillus paranthracis* strain MCCC 16S ribosomal RNA gene, partial sequence, Accession no MN655978.1
4. **Negi NP*** and Dhull K (2023) *Bacillus paramycooides* 16S ribosomal RNA gene, partial sequence, submitted to genbank OQ690669
5. Dhull K, Marie Kouame AKP, Narwal P, Mir MA and **Negi NP*** (2023), *Escherichia fergusonii* 16S ribosomal RNA gene, partial sequence, Accession no OQ690663
6. Dhull K and **Negi NP*** (2023) *Enterobacter cloacae*, 16S ribosomal RNA gene, partial sequence, Accession no OQ690665

BOOK CHAPTERS

1. Magotra S, **Negi NP** and Kumar H (2024) Co-shaping and Co-evolution of Microbial Biodiversity: Study for Identification of Potential Plant Growth Promoting Microbes. In: Kaur, S., Dwibedi, V., Sahu, P.K. (eds) *Metabolomics, Proteomics and Gene Editing Approaches in Biofertilizer Industry*. Springer, Singapore **ISBN: 978-981-97-2910-4**.
2. Kaur H, Athwal S, **Negi NP**, Nautiyal N and Magotra S (2024). Bipolymeric conjugation with polynucleotides and applications. In: S. Sharma and AK Nadda (eds). *Physical Science Reviews*. **ISSN: 2365-659**
3. **Negi NP***, Narwal P and Sharma A (2023) Plant-Microbe interaction in alleviating Drought Stress. In *Plant Microbe interaction*. In: V. Sharma, R. Salwan E., Moliszewska (eds) *The chemical Dialogue between plants and beneficial microorganisms*. 49-65. Elsevier. **ISBN: 978-0-323-91734-6**. <https://doi.org/10.1016/B978-0-323-91734-6.00022-3>
4. Sharma A, Gupta S, **Negi NP (Equal Author)**, Patel DP, Raina M, Kumar D (2022). Selenium and Nano-Selenium-Mediated Drought Stress Tolerance in Plants. In: Hossain, M.A., Ahammed, G.J., Kolbert, Z., El-Ramady, H., Islam, T., Schiavon, M. (eds) *Selenium and Nano-Selenium in Environmental Stress Management and Crop Quality Improvement* (pp. 121-148). Cham: Springer International Publishing. **ISBN: 978-3-031-07062-4**.
5. Sharma A, **Negi NP**, Narwal P, Kumari P, Kumar D (2022) Arbuscular Mycorrhizal Fungi: A Next generation Biofertilizer. In: Prasad, R., Zhang, SH. (eds) *Beneficial Microorganisms in Agriculture*. Environmental and Microbial Biotechnology. Springer, Singapore. **ISBN: 978-981-19-0732-6**.
6. Rustagi A, Rajwanshi R, Kumar D, **Negi NP (Equal Author)**, Phazang P, Yusuf MA, Kisku AV, Pandey N, Shekhar S, Chaudhary P, Prasad SC and Sarin NB* (2022). Genetic Modification of Brassica juncea: Current Scenario and Future Prospects. In: Kole, C., Mohapatra, T. (eds) *The Brassica juncea Genome*. Compendium of Plant Genomes. Springer, Cham. https://doi.org/10.1007/978-3-030-91507-0_10. **ISBN:978-3-030-91506-3**
7. Thakur P and **Negi NP*** (2021) CBL-CIPK: The Ca⁺ Signals during Abiotic Stress Response. In: A. Thakur and P. Kumar (eds) *Crop Improvement: Biotechnological Advances* (pp. 63-74). Boca Raton and London: CRC Press. **ISBN: 9781003099079**

8. Rustagi A, **Negi NP (Equal Author)**, Choudhury HD, Mahajan A, Verma S, Kumar D, Rajwanshi R, Sarin NB. (2020) Transgenic Approaches for Improvement of Brassica Species In: Wani, S., Thakur, A., Jeshima Khan, Y. (eds) Brassica Improvement. Springer, Cham. **ISBN: 978-3-030-34693-5**
9. **Negi NP*** and Choephel T (2020) Biosensor: An Approach Towards a Sustainable Environment. In Nanobiosensors for Agricultural, Medical and Environmental Applications In: Mohsin, M., Naz, R., Ahmad, A. (eds) Nanobiosensors for Agricultural, Medical and Environmental Applications. Springer, Singapore. **ISBN: 978-981-15-8346-9**
10. Phazang P, **Negi NP**, Raina M and Kumar D (2020) Plant Antimicrobial Peptides: The Next-Generation bioactive molecules for Plant Protection. In: Kumar, M., Kumar, V., Prasad, R. (eds) Phyto-Microbiome in Stress Regulation. Environmental and Microbial Biotechnology. Springer, Singapore. **ISBN: 978-981-15-2576-6**
11. **Negi NP*** and Goel A (2018) Tissue engineering – A tool for developing solutions for new medical challenges. In: S. Kaur, Soumya H and Kaur H (eds.), Allied Health Science in India – A present Scenario. White Falcon, India

CONFERENCE PROCEEDING

1. **Modgil M and Negi Prabha N (2012)** Studies on Induction of Rooting in *in vitro* Grown Shoots of Apple Clonal Rootstock Merton 793. Agrotechnology. Omics International

AWARDS AND HONORS

1. **2023:** Awarded **Best Luminary Researcher of the department** from Chandigarh University, Mohali, India
2. **2022:** Awarded **Atam Nirbhar Award for best change maker in university** from Chandigarh University, Mohali, India
3. **2022:** **3rd prize in poster presentation at International conference** on advances and innovations in Green biotechnology and allied sciences at Chandigarh University in association with IPPS USA
4. **2019:** **Bharat Ratna Indira Gandhi Gold medal award** by Global economic progress and research association, India
5. **2018:** **Mahima Promising Scientist award** in the field of Biotechnology by Mahima Research foundation and Social Welfare, Banaras Hindu University, Varanasi, India
6. **2018:** **Best Oral Presentation** at international conference on “Impact of Climate Change and Abiotic stresses on agriculture and management strategies” organized by Institute of Science, Banaras Hindu University, Varanasi, India
7. **2017:** **SIVB Travel award** by Society for In Vitro Biology, for attending the “2017 In Vitro Biology Meeting”, Raleigh, North Carolina, USA
8. **2017:** **Hope E Hopps Award** by Society for In Vitro Biology, which is awarded annually to a single student from the world at “2017 In Vitro Biology Meeting”, Raleigh, North Carolina, USA
9. **2017:** **Awarded a Competitive travel bursary from CSIR for attending the 2017 Invitro Biology meeting** at Raleigh, North Carolina, USA.
10. **2016:** **Best poster Presentation** at “International Conference on Functional and Interaction Proteomics: Application in Food and Health, National Institute of Plant Genome Research, New Delhi, India
11. **2016:** **Mahima Young Scientist Award** under the in the field of Biotechnology by Mahima Research foundation and Social Welfare, Banaras Hindu University, Varanasi, India.
12. **2016:** **Best Paper Presentation** at international conference on “Climate Change and its Implications on Crop Production and Food Security (ICCCICPFS)” organized by Institute of Agricultural Sciences Banaras Hindu University, Varanasi, India
13. **2016:** **Young Scientist Travel Award** by Department of Science & Technology, Government of India for Interactive presentation at “2016 World Congress on In Vitro Biology”, organized by Society for In Vitro Biology, San Diego, California, USA.
14. **2016:** **Hope E Hopps Award** by Society for In Vitro Biology, which is awarded annually to a single student from the world at 2016 World Congress on In Vitro Biology”, San Diego, California, USA
15. **2015:** **Competitive Young Scientist Travel award** by Department of Department of Biotechnology, Govt. of India for Chair the Interactive Poster Session and presentation at “2015 In vitro Biology Meeting”.

- 16. 2015: Invited as a session leader** in Society for In Vitro Biology meeting at Tucson, Arizona, USA.
- 17. 2014: Second Best poster presentation award** at “National symposium “Biotechnology and Molecular Biology for Industry and the Common Man” (INDIA) at St Aloysius College, Mangalore on the occasion of the XXXVI Meeting of the Plant Tissue Culture Association of India
- 18. 2013: Sponsored participant** for the SERB School on "Introduction to systems and synthetic biology for scientists and engineers (April 22, 2013 to April 25, 2013) at Indian Institute of Technology (IIT) Mumbai, India.
- 19. 2013: First prize in poster competition** on “National symposium on Plant Cell Tissue Culture Association of India: The Present Scenario” XXXIV Annual meeting of Plant tissue culture association (INDIA) held at CSIR-CFTRI Mysore (INDIA).

SEMINAR / SYMPOSIUM ORGANIZED:

- **Convener** of International conference on Advances and innovations in green biotechnology and allied sciences **in association with international plant propagator society USA-** 24-25th March 2022 at Chandigarh University, Mohali, India.
- **National Co-Coordinator India (12th May 2017)** for the International Fascination of Plants Day Celebrations organized under the auspices of European Plant Science Organization at School of Life Sciences, JNU, New Delhi-67.
- **Symposium on Intellectual Property rights for Engineers (6th April 2018)** at Chandigarh University, Gharaun, Mohali, Punjab, India.
- **One-day event on “Transcending innovation in Biotechnology” (17th Oct, 2018)** at University Institute of Biotechnology, Chandigarh University.
- **Two Days National workshop and symposium on “Advances in Fermentation Technology” (11-22, April 2019),** at University Institute of Biotechnology, Chandigarh University.

STUDENT GUIDED:

- Ph.D.: 02 M.Sc.: 10 B.Sc.: 06