



Dr. Pratima Debnath

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RESEARCH INTERESTS

Heat Stress Biology | Plant Development | Gene
Regulation | CRISPR-Cas9 Genome Editing | Plant
Tissue Culture

CAREER OBJECTIVES

To contribute to teaching and research in Plant Sciences by integrating molecular biology, stress physiology, and genome editing approaches to develop climate-resilient crops and support conservation of plant biodiversity.

EDUCATIONAL QUALIFICATIONS

Year	Degree	Institution
2024	Ph.D	CSIR-NBRI, Lucknow
2017	M.Sc. Botany (Gold Medalist)	North Eastern Hill University, Shillong
2015	B.Sc. Botany	Pandu College, Guwahati
2011	HS (Science)	Anundoram Borooh Academy, Pathsala
2009	HSLC	Tangla Model High School, Tangla

DOCTORAL RESEARCH

Title: Deciphering the mechanism of action of *SIWRKY75* in plant development and architecture

Postdoctoral Researcher at

IGZ-Leibniz Institute for Vegetable and Ornamental Crops, Germany
(March 2024 – March 2026)

PUBLICATIONS

- **Pratima Debnath**, Justyna Jadwiga Olas (2025). Thermotolerance through trade-off: Decapping WUSCHEL mRNA in plant stem cells. **Molecular Plant (Impact Factor 24.1)**, 18, pp186-188.
- **Pratima Debnath**, Justyna Jadwiga Olas (2025). Temperature-dependent regulation of tomato lateral shoot branching via the TCP15–HDA4 module. **Molecular Plant (Impact Factor 24.1)**, 19, pp 1-3.
- Rashmi Garg, Hrishikesh Mahato, Upasana Choudhury, Ravindra S Thakur, **Pratima Debnath**, Nasreen G Ansari, Vidhu A Sane, Aniruddha P Sane (2024). The tomato EAR-motif repressor, SIERF36, accelerates growth transitions and reduces plant life cycle by regulating GA levels and responses. **Plant Biotechnology Journal (Impact Factor 10.5)**, 22,4 pp.848-862.
- Deepika Singh*, **Pratima Debnath***, Sane AP, Sane VA (2023). Tomato (*Solanum lycopersicum*) WRKY23 enhances salt and osmotic stress tolerance by modulating the ethylene and auxin pathways in transgenic Arabidopsis. **Plant Physiology and Biochemistry (Impact Factor 5.7)**. doi: 10.1016/j.plaphy.2023.01.002. Epub 2023 Jan 13. PMID: 36669348.
- Kumar, K*, **Pratima Debnath***, Singh, S and Kumar, N., 2023. An Overview of Plant Phenolics and Their Involvement in Abiotic Stress Tolerance. **Stresses**, 3(3), pp.570-585.
- Deepika Singh, **Pratima Debnath**, Roohi, Aniruddha P Sane, Vidhu A Sane (2020). Expression of the tomato WRKY gene, SIWRKY23, alters root sensitivity to ethylene, auxin and JA and affects aerial architecture in transgenic Arabidopsis. **Physiology and Molecular Biology of Plants (Impact Factor 3.3)**. doi: 10.1007/s12298-020-00820-3.
- **Pratima Debnath** and Krishna Kumar (2020). Pharmacological importance of bioactive molecules from medicinally important plant parasite *Cuscuta reflexa*: an overview. **International Journal of Research in Ayurveda and Pharmacy**. 11 (3).
- **Pratima Debnath** (2020). Bioactive molecules present in Orchids and its medicinal properties: an overview. **International Journal of Research in Ayurveda and Pharmacy** 11 (3).

AWARDS & FELLOWSHIPS

- UGC Postgraduate Merit Fellowship
- Gold Medalist, M.Sc. (NEHU)
- Best oral presentation in **5th International Conference on Innovative Approaches in Applied Science and Technologies, BBAU, Lucknow**
- EMBO Scientific Exchange Grant (France, 2022)

POSTER / ORAL PRESENTATIONS:

- Poster on “Effect of Cryostorage on three rice cultivars from Meghalaya” in **National Seminar, NEHU**, July 2015.
- Poster on “Characterization of SIWRKY75 gene from Tomato” in **4th International Plant Physiology Congress**, December 2018, India.
- Oral Presentation on ‘Expression of the tomato WRKY gene, SIWRKY23, alters root sensitivity to ethylene, auxin, JA and affects aerial architecture in transgenic Arabidopsis’ in **5th International Conference on Innovative Approaches in Applied Science and technologies**.
- Oral presentation on ‘CRISPR -CAS9 mediated knock-out of SIWRKY75 accelerates growth and reduces plant life cycle by altering GA levels’ in **International Conference on Food and Nutritional Security, 2023**.
- Plenary talk on “Thermal-memory in tomato (*Solanum lycopersicum* L.) is mediated by shoot apical meristem specific expression of the heat responsive Transcription Factor TF1” at **Solanaceae and Rubiaceae Genetics and Genomics International Conference 2025 Turin (Italy)**.

SEMINARS AND WORKSHOPS ATTENDED:

- National Seminar on “**Advances in Structure and Functions of Plants**” May 2018.
- DBT sponsored workshop on “**Basic Applications of Computer and Bioinformatics in Biological Sciences**”, March 2015.
- Workshop on “**Impact of Climate Change on Urban Life with special reference to Guwahati**”, June 2014.
- Seminar on “**Technical Education and its Prospects**” in NEHU, May 2011.

TECHNICAL SKILLS

Molecular Biology

DNA/RNA isolation, qRT-PCR, cloning, CRISPR/Cas9, VIGS, RNAi, gene expression analysis, RNA *in-situ* hybridization, Yeast one and Yeast two hybrid assays, Luciferase assay, Colocalization assay, BiFC

Protein Biochemistry

Protein purification, Western blot, SDS-PAGE, EMSA

Plant Tissue Culture

Agrobacterium-mediated transformation, transgenic plant development

Bioinformatics

Transcriptome analysis, phylogenetics, sequence alignment (NCBI, MEGA, ClustalX)

RESEARCH EXPERIENCE

- EMBO fellow in CEA, France
 - Three months studentship under the DBT sponsored project entitled “Establishment of State Biotech Hub” in molecular plant physiology lab, NEHU under the guidance of Prof. N.K. Chrungoo.
 - Six months Traineeship under the DBT sponsored Project entitled “Establishment of State Biotech Hub” in Molecular Plant Physiology Lab, NEHU under the guidance of Prof. N. K. Chrungoo.
 - Project associate in Project “Genome editing for enhanced yield and quality traits” CSIR NBRI Lucknow.
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FUTURE RESEARCH PLAN

- Understanding the molecular mechanism of plant heat stress memory and CRISPR-based crop improvement.
 - Conservation of endangered plant species using tissue culture techniques.
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