

# Curriculum-Vitae

---

## Abhinandan Mani Tripathi,

Address- Kuruom School of Advance Sciences,  
Mohanlal Ganj, Lucknow, India



---

## Education

### Doctor of Philosophy (Biological Sciences) 2012-2018

CSIR-National Botanical Research Institute, Lucknow, India.  
Thesis Title-“Deciphering the Role of miRNAs in the Natural Populations of *Arabidopsis thaliana* along the Altitudinal Gradient”

### Master of Science in Biotechnology 2008-2010

Passed in first division, CSJM, University Kanpur, India.  
Master thesis Project-“Cellular, Biochemical and Molecular Techniques for Phenotypic and Functional Study of Immune System” at IITR, Lucknow.

### Bachelor of Science (Botany, Zoology and Chemistry) 2004-2007

Passed in first division, DDU University, Gorakhpur, India.

---

## Position Held

### Research Scientist, Kuruom School of Advanced Sciences, Lucknow, India Nov, 2022-Present

(An Indian Subsidiary of INADS, Dartmouth, MA, USA)

### Postdoctoral fellow, Hebrew university of Jerusalem, Israel Jan, 2019- Oct, 2021

Senior Project Associate, CSIR-National Botanical Research Institute, Lucknow, India 2017-2018

Senior Research Fellow, CSIR-National Botanical Research Institute, Lucknow, India 2014-2017

Junior Research Fellow, CSIR-National Botanical Research Institute, Lucknow, India 2012-2014

Project Associate, CSIR-National Botanical Research Institute, Lucknow, India 2011-2012

---

## Awards

- **Qualified CSIR-NET-JRF**, Awarded with CSIR-Junior/Senior Research Fellowship in 2011 (National Research fellowship program, Government of India).

- **Qualified DBT-JRF**, Awarded with Department of Biotechnology Junior Research Fellowship in 2011 (National Research fellowship program, Government of India).
- **Qualified GATE**, Graduate Aptitude Test in Engineering (**GATE**, Biotechnology) in 2010 (conducted by IIT).

---

## Publications

- **Scholar Google:** [https://scholar.google.com/citations?user=u\\_HcUhsAAAAJ&hl=en](https://scholar.google.com/citations?user=u_HcUhsAAAAJ&hl=en)
- Arie Fridrich, Miguel Salinas-Saaverda, Itamar Kozlowski, Joachim M Surm, Eleni Chrysostomou, **Abhinandan M Tripathi**, Uri Frank, Yehu Moran (2023): A pan-cnidarian microRNA is an ancient biogenesis regulator of stinging cells (2023) (**Under review in Cell Reports**) <https://www.biorxiv.org/content/10.1101/2022.12.15.520629v1>.
- **Abhinandan Mani Tripathi**, Rajneesh Singh, Akanksha Singh, Ashwani Kumar Verma, Parneeta Mishra, Shiv Narayan, Pramod Arvind Shirke, Sribash Roy (2022): Indian Himalayan natural *Arabidopsis thaliana* accessions with abolished miR158 levels exhibit robust miR173-initiated trans-acting cascade silencing (**Under revision in The Plant Journal-TPJ-00042-2022**) <https://www.biorxiv.org/content/10.1101/2021.01.27.428373v1>
- **Abhinandan Mani Tripathi**, Yael Admoni, Arie Fridrich, Magda Lewandowska, Joachim M Surm, Reuven Aharoni, Yehu Moran (2022): Functional characterization of a ‘plant-like’ HYL1 homolog in the cnidarian *Nematostella vectensis* indicates a conserved involvement in microRNA biogenesis. **eLife** <https://elifesciences.org/articles/69464>.
- **Abhinandan Mani Tripathi**, Akanksha Singh, Rajneesh Singh, Ashwani Verma, Sribash Roy (2018). Modulation of miRNA expression in natural populations of *Arabidopsis thaliana* along a wide altitudinal gradient of Indian Himalayas. **Scientific Reports** (<https://www.nature.com/articles/s41598-018-37465-y>)
- **Abhinandan Mani Tripathi**, Abhishek Niranjana, Sribash Roy (2018). Global gene expression and pigment analysis of two contrasting flower color cultivars of *Canna*. **Plant Physiology and Biochemistry** (<https://www.sciencedirect.com/science/article/abs/pii/S0981942818301232?via%3Dihub>)
- **Abhinandan Mani Tripathi**, Amrita Yadav, Siddhartha Proteem Saikia, Sribash Roy (2017), Global gene expression pattern in a forest tree species, *Tectona grandis* (Linn. F.), under limited water supply. **Tree Genetics & Genomes** (<https://link.springer.com/article/10.1007/s11295-017-1151-y>)
- **Abhinandan Mani Tripathi**, Antariksh Tyagi, Anoop Kumar, Akanksha Singh, Shivani Singh, Lal Babu Chaudhary, Sribash Roy (2013). The Internal Transcribed Spacer (ITS) Region and trnH-psbA Are Suitable Candidate Loci for DNA Barcoding of Tropical Tree Species of India. **PLOS ONE** (<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0057934>)

- Sribash Roy, **Abhinandan Mani Tripathi (contributed equally)**, Amrita Yadav, Parneeta Mishra, Chandra Shekhar Nautiyal (2016), Identification and Expression Analyses of miRNAs from Two Contrasting Flower Color Cultivars of *Canna* by Deep Sequencing. [PLOS ONE](https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0147499) (<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0147499>)
- Antariksh Tyagi, Amrita Yadav, **Abhinandan Mani Tripathi** & Sribash Roy (2016) High light intensity plays a major role in emergence of population level variation in *Arabidopsis thaliana* along an altitudinal gradient. [Scientific Reports](https://www.nature.com/articles/srep26160) (<https://www.nature.com/articles/srep26160>)
- Antariksh Tyagi, Shivani Singh, Parneeta Mishra, Akanksha Singh, **Abhinandan Mani Tripathi**, Satya Narayan Jena and Sribash Roy. Genetic diversity and population structure of *Arabidopsis thaliana* along an altitudinal gradient. [AoB PLANTS](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4719038/) (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4719038/>)
- Akanksha Singh, Antariksh Tyagi, Abhinandan **Mani Tripathi**, Sadashiv M. Gokhale, Nandita Singh and Sribash Roy (2015). Morphological trait variations in the west Himalayan (India) populations of *Arabidopsis thaliana* along altitudinal gradients. [CURRENT SCIENCE](https://www.jstor.org/stable/24905657?seq=1#metadata_info_tab_contents) ([https://www.jstor.org/stable/24905657?seq=1#metadata\\_info\\_tab\\_contents](https://www.jstor.org/stable/24905657?seq=1#metadata_info_tab_contents))
- Sribash Roy, **Abhinandan Mani Tripathi**, T.S. Rana, Gaurav Mishra (2015) Plant barcoding of a wildlife sanctuary across a wide climatic zone, Uttarakhand, India. [Genome](https://cdnsiencepub.com/doi/10.1139/gen-2015-0217) (<https://cdnsiencepub.com/doi/10.1139/gen-2015-0217>)
- Akanksha Singh, **Abhinandan Mani Tripathi**, Parneeta Mishra, Ashwani Kumar Verma, Rajneesh Singh, Sivasubramanian Rajaram Mohan, Sri bash Roy (2021). Indian Himalayan *Arabidopsis thaliana* population reflects deep history and source of eastern edge of the species range (Under Preparation)
- Sagar Prasad Nayak; Priti Prasad; Vinayak Singh; **Abhinandan Mani Tripathi**; Sumit Kumar Bag (2021). Unraveling the regulatory role of miRNAs responsible for proanthocyanidin biosynthesis in the underutilized legume *Psophocarpus tetragonolobus* (Submitted in Journal of Genetics and Genomics) (<https://www.biorxiv.org/content/10.1101/2021.07.24.453638v1>).

---

## Conferences and workshops

- **Abhinandan Mani Tripathi**, Yael Admoni, Arie Fridrich (2019): Functional characterization of a “plant-like” HYL1 homolog in the cnidarian *Nematostella vectensis* indicates a conserved involvement in microRNA biogenesis. Organized by Israeli Society of Evolutionary Biology, Tel Aviv, Israel, **(Poster Presentation)**.
- **Abhinandan Mani Tripathi**, Sribash Roy (2015): Identification of miRNA from two contrasting flower cultivars of *Canna*. Fifth international conference on plants and environmental pollution (ICPEP-5), Lucknow, India **(Poster Presentation)**.

- Singh A, Tyagi A, **Tripathi AM** (2015): Morphological trait variations in the west Himalayan (India) populations of Arabidopsis thaliana along altitudinal gradients. Fifth International Conference on Plants and Environmental Pollution (ICPEP-5), Lucknow, India (**Poster Presentation**).
  - **Abhinandan Mani Tripathi**, Tyagi.A, Kumar.A, Singh.A, Singh.S, Chaudhary.L.B, Roy.S (2012). Plant DNA barcoding from a complex genus to tropical tree species of India. National seminar of the second Indian biodiversity congress, Bangaluru, India.
  - Tyagi A, **Tripathi A.M**, Bag SK, Chaudhary LB, Roy S. Testing standard barcode loci for species identification in tree species - Fouth International Barcode of Life Conference, Adelaide. 2011.
  - **Workshop**: Five days' workshop on "High Performance Computing" organised in NBRI collaboration with CDAC Pune, India.
- 

## Professional competences and skills acquired

**Specialization:** Molecular Biology, Computational Biology and Biotechnology

**DNA:** Genomic and Plasmid DNA isolation, PCR (from primer designing to amplification), Restriction digestion analysis, Gene cloning and plant transformation, capillary sequencing ABI3730XL.

**RNA:** cDNA preparation, PAGE for small RNA isolation, real time-PCR, RLM-RACE, Stem loop RT-PCR and small RNA NGS sequencing

**Protein:** RNA immunoprecipitation, Pull down assay, Western blot

**Bioinformatics:** Next generation data analysis of small RNA, transcriptome and degradome, DNA-barcoding, Statistical data analysis, R and Linux.

**Microbiology and Biotechnology:** Gibson assembly, Gene tagging, Cloning, DNA construct preparation, Transformation, Development of transgenic plants and animals, and mutant screening.

**Microscopy:** Microinjection, Fluorescence microscopy and compound microscope.

---

## Personal Qualities

- Excellent fluency in spoken and written English and Hindi
  - Excellent skills in scientific writing
  - Public speaking, Poster presentation and outreach activities
  - Ability to work independently, in collaboration and on several projects simultaneously
  - Strong interpersonal skills
-

## Other Academic Activities

- Assisted my Ph.D. and Postdoc supervisor in reviewing several manuscripts including BMC genomics, PLOS ONE, Scientific Reports and others.
- Research Proposal Writing
- Supervised five masters' trainees during their dissertations
- Laboratory Chemical Inventory

---

## Summary of Research work

The main focus of my doctoral research was elucidating the role of small RNAs in plant stress and adaptation. For my work, I focused on the natural populations of *Arabidopsis thaliana* that were located along an altitudinal gradient ranging from 700 meters above mean sea level to 3500 meters above mean sea level. Plant samples were collected from different altitudes, and a small RNA NGS analysis was performed. Overall, I identified 252 previously identified miRNAs and 10 novel miRNAs expressing in these populations. Based on the differential expression analysis of miRNAs and their targets, miRNA related to secondary metabolic pathway, light stress, and development are differentially expressed. The expression of miRNAs that control lignin biosynthesis differs significantly between field-grown and controlled-grown plants. An assessment of field-grown and controlled-grown plant populations revealed that miRNAs were induced transiently by environmental factors. Further for the first time, I validate the function of miR158 in *Arabidopsis* populations that naturally grow at high altitudes of the Himalaya. I validated the target of this miRNA by using RLM-RACE, degradome, and qRT-PCR and found that it regulates transpiration by controlling expression of *phasiRNA*.

Recently, I completed my postdoc at Hebrew University of Jerusalem, Israel, where I worked on *Nematostella vectensis* (a Basal animal), a new evolutionary model organism. During this study I worked on a protein (HYL1) found in plant and known to play a significant role in miRNA biogenesis. Interestingly we identified the homolog of HYL1 in basal animals, sponges, jellyfish and corals and identified that this plays an important role in development and miRNA biogenesis.

At present, I am employed by KSAS, Lucknow, India (a subsidiary of INADS, Dartmouth, MA, USA), where I am involved in vector design, miRNA-based therapeutics, spinal cord injury, and other projects related to disease.