

## **Group name: CPMB**

### **Group works on:**

Species with a wide geographical distribution offers an excellent system to understand the mechanisms through which they adapted to their local environment. The genes underlying adaptation are unknown in most systems but would be of great interest especially in cases where adaptive traits are not immediately phenotypically apparent. This requires understanding the network of molecular, physiological and morphological and epigenetics mechanisms that underlie adaptive phenotypic evolution. In this direction we focus on Indian *Arabidopsis thaliana* species in the Himalayan regions to understand these adaptive mechanisms by exploring transcriptome, miRNA and epigenetics of the natural accessions of *Arabidopsis thaliana*.

Another emerging area is plant DNA barcoding for species identification and discovery. Seeing the dwindling number of plant taxonomist and importance of species identification by a non-expert is highly demanding special in forensic, timber trade and export import control point, check in food adulteration etc.

To address the above two issues our main focus is on the following objectives:

### **Objectives:**

1. Understanding genomics and epigenomics of plant adaptation across altitudinal gradient and drought
2. Plant DNA barcoding for species identification

### **Achievements:**

**Upto 11th Five year Plan:**

**In 12th five year plan:**

### **Ongoing projects:**

**NBRI In house projects:**

**Outside agencies like DBT / DST / MOEF etc.:**

**Foreign Collaborations:**

**Areas open for collaboration:**

**Lab Publication:**

1. A.M. Tripathi, A. Tyagi, A. Singh, S. Singh, A. Kumar, LB Chaudhary, **S.Roy**. The Internal Transcribed Spacer (ITS) Region and trnH-psbA are Suitable Candidate Loci for DNA Barcoding of Tropical Tree Species of India PLoS One, 2013
2. **Roy S**, Tyagi A, Shukla V, Kumar A, Singh UM, Chaudhary LB, Datt B, Singh PK, S. Bag, Nair KN, Husain T and Tuli R. Universal Plant DNA barcode Loci May Not Work in Complex Groups: A Case Study with Indian *Berberis* species . PloS One, October, 2010, Volume 5, Issue10, e13674 I.F. 4.4
3. **Sribash Roy**, Antariksh Tyagi , Sumit K Bag, and Rakesh Tuli. Oligonucleotide Frequencies of Barcoding Loci can Discriminate Species Across Kingdoms. PLoS ONE, August, 2010, Volume 5, Issue8, e12330 I.F. 4.4
4. **Sribash Roy**, Antariksh Tyagi, Siddharth Tiwari, Ankit Singh, Samir V. Sawant, Pradhyumna K. Singh and Rakesh Tuli. Rabies glycoprotein fused with B subunit of cholera toxin expressed in tobacco plants folds into biologically active pentameric protein. Protein Express.Purif. Oct. 2009 IF 1.9
5. Tiwari S, Mishra D K, **Roy S**, Singh A, Singh P K, Tuli R. High level expression of a functionally active cholera toxin B: rabies glycoprotein fusion protein in tobacco seeds.. Plant Cell Rep. 2009. DOI10.1007/s 00299-009-0782-3 IF 2.3
6. S N Jena, A Srivastava, UM Singh, **S Roy**, N Banerjee, L B Chaudhary, J K Roy, S Patil, R Tuli. 2010 Analysis of genetic diversity, population structure, and linkage disequilibrium in an Indian survey of cultivated cotton germplasm (*Gossypium* L.) Crop & Pasture Science, 2011, **62**, 859–875
7. Arun K. Dhar, Dilip K. Lakshman, Keenan Amundsen, Refugio Robles-Sikisaka, Krista N. Kaizer, **Sribash Roy**, Kenneth W. Hasson, F.C. Thomas Allnutt. Characterization of the

taura syndrome virus isolate originating from the 2004 texas epizootic in cultured shrimp. ArchViro(2010)155:315–327 IF 2.0

8. **Roy S**, Sadhana P, Begum M, Kumar S, Lodha ML, Kapoor HC. Purification, characterization and cloning of antiviral/ribosome inactivating protein from *Amaranthus tricolor* leaves. *Phytochemistry*. 2006 Sep;67(17):1865-73. IF 3.3
9. Begam M, Kumar S, **Roy S**, Campanella JJ, Kapoor HC. Molecular cloning and functional identification of a ribosome inactivating/antiviral protein from leaves of post-flowering stage of *Celosia cristata* and its expression in *E. coli*. *Phytochemistry*. 2006 Nov;67(22):2441-9. IF 3.3
10. Begam M, Narwal S, **Roy S**, Kumar S, Lodha ML, Kapoor HC. An antiviral protein having deoxyribonuclease and ribonuclease activity from leaves of the post-flowering stage of *Celosia cristata*. *Biochemistry (Mosc)*. 2006;71 Suppl 1:S44-8,
11. **Sribash Roy**, R Sarmah, C.R.Sarkar. Fungal degumming of Ramie and its fibre characteristics . *Ind.J. Fibre and Tex. Res.*1998. 23, 281-283

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