CHAPTER 44

PLANT MOLECULAR BIOLOGY

Doctoral Theses

480. DEVESHWAR (Priyanka)
Transcriptome Profiling of Anther Development Stages in Indica Rice and Validation of Gene Function and Promoter Activity of Selected Anther-Specific Genes.
Supervisor : Prof. Dr. Sanjay Kapoor
Th 18948

Abstract

This study has identified the key genes involved in rice male meiosis and gametophyte development. Based on the status of sporogenous/gametophytic cells, anther development is categorized into pre-meiotic, meiotic and post-meiotic stages to investigate molecular mechanisms involved in the control of its development. High-throughput expression profilling of the above mentioned anther stages is carried out using whole genome microarrays. Various expression patterns of differentially expressed genes are identified and co-expressing clusters classified into functional classes. Based on expression profiles, gene expressing in anther-stage-specific manner are identified, of which six genes are also analyzed for promoter/gene function.

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481. KHURANA (Neetika)
Functional Characterization and Comparative Analysis of Heat Stress Associated Genes in Bread Wheat (Triticum aestivum L.).
Supervisor : Prof. Paramjit Khurana
Th 18950

Abstract

The present investigation involves functional characterization of three heat stress associated genes, i.e. encoding a heat shock protein, an enzyme Myo-inositol-phosphate synthase, a trans-membrane protein, and three transcription factors, i.e. a heat shock factor, a C3HC4-type Zinc-finger transcription factor, and a bZIP transcription factor. It is also a step towards comparative genomics, through an analysis undertaken of the heat-stress associated genes amongst different members of the Triticeae.

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482. PARIDA (Adwaita Prasad)
Functional Characterization of Methylated DNA Binding Proteins in Gene Silencing.
Supervisor : Dr. Arun K. Sharma.
Th 18949

Abstract

The present study is an attempt to functionally characterize the role of MBD protein in the model system Arabidopsis thaliana in both transcriptional and post-transcriptional gene silencing. The work started with identification of AtMBD genes involved in gene silencing. A model system to study gene silencing is generated by expressing gus reporter gene in different mutants of AtMBDs and transgenic lines with down regulation of the expressions of different AtMBD genes. The silencing of the hus reporter gene is monitored after introducing an RNAi or artificial microRNA construct specific to gus transcript.

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483. SHARMA (Shweta)
Engineering Tungro Resistance, Sequence Analysis and Fine Mapping of Negative Promoter Element of Rice Tungro Bacilliform Virus.
Supervisor : Prof. Indranil Dasgupta
Th 18947

Abstract

This work has investigated cloning and sequence analysis of a Rice tungro bacilliform virus genomic sequence from southern India and quantitative detection of Rice tungro bacilliform virus and Rice tungro spherical virus by SYBR Green I based Real-time PCR. Future fine mapping of the negative promoter element of Rice tungro bacilliform virus and enginnering RNAi mediated tungro resistance in rice variety Pusa Basmati 1 by targeting both RTBV and RSTV has also been done.

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