

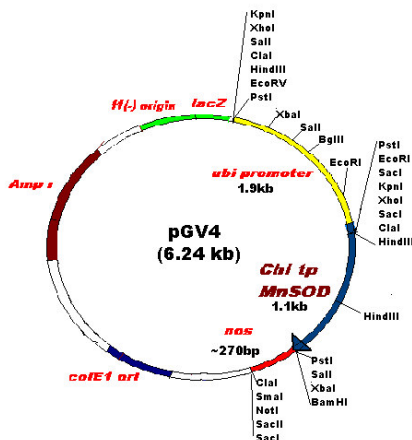
## Over Expression of Mitochondrial Manganese Superoxide (MnSOD)

Oxidative stress is one amongst the wide range of environmental stresses that influence the growth and yield of crop plant. Oxidative Stress results in enhanced production of activated oxygen species (AOS), those are highly toxic to living cells.

In eukaryotes, MnSOD is a nuclear-encoded protein that scavenges superoxide radicals in the mitochondrial matrix. The chloroplast is one of the primary sites of high AOS production during stress conditions. By targeting MnSOD enzyme to the chloroplast, the capacity to scavenge any radical that may be produced can be increased.

The invention required a comparative Study of the MnSOD gene expression at mRNA level during the abiotic stress in the seedlings of contrasting Indica Rice varieties IR64 and Rasi ; this offers a simple but powerful tool to monitor alterations in gene expression. This has been proved that dramatic induction of MnSOD during the stress conditions. It also has been suggested that superoxide radicals trigger a specific molecule in each subcellular compartment, which is capable of acting as a signal to induce nuclear gene encoding for the particular superoxide dismutase associated with that compartment.

### Construct



The protocols for gene transfer using particle bombardment, recovery of callus and regeneration technologies were done as per those defined in our laboratory & modified for *Indica* rice. Specially prepared zygotic rice embryos, 3week old scutellum callus was used for transformation. Rice in-vitro culture has a very strong genotype and culture dependent component.

Seeds of Basmati 370 & swarna seeds were provided by Directorate Of Rice Research, India. The plasmids used are-pNG10, pNG11. Thirteen biolistic transformation experiments have been done.

### Current Status:

1. A total of 27 transgenic plants have been obtained
3. Seeds have been collected from all the plants
4. 20 plants are PCR positive
5. Southern analysis of the positive plants had been done
6. The plants showing good copy number will be forwarded to the next generation