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Identification of Genes Responding to Chilling Stress in Chines Cabbage Using cDNA Microarray

LEE, Dong-Sook* · SONG, Hayoung · CHOI, Sooryun · RIM, Yong-pyo · CHOI, Sangdum · HUR, Yoonkang

Department of Biology, College of Natural Science, Chungnam National University, Daejeon 305-764, Korea

Plants are incapable of escaping the changing environment. When the temperature drops, plants induce a number of alternations in cellular components, such as changes in membrane compositions, expression of cold induced genes, accumulation of solutes and significant metabolic changes.

To understand which genes are responding to light-chilling stress, we performed a microarray experiment. Among 2,688 ESTs derived from the chine cabbage leaf library, we obtained

1,545 clones showing the clean signal and 227 clones which changed more than three fold. The latter clones consist of 115 up-regulated and 112 down-regulated ones. Up-regulated genes included chilling or drought stress resistant genes, auxin-repressed protein, and genes associated with membrane lipid fluidity. Down-regulated genes are composed of Rubisco activase and genes whose functions are unknown up to date. We confirmed the microarray data by Northern blot analysis.