

Extensive In-Silico Analysis of *cis*-Acting DNA Sequences in 5' Regulatory Regions of Sucrose Synthase, Cell Wall Invertase and Sucrose Transporter Gene Families

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Cis-acting regulatory elements are important molecular switches involved in the temporal and spatial expression of a dynamic network of gene activities. This network control hormone responses, abiotic stress responses and developmental events such as juvenility, floral signal transduction and senescence. In this analysis, a particular emphasis was placed on *cis*-acting regulatory elements present within the 5' regulatory region of sucrose synthase (SuSy), cell wall invertase (CWI) and sucrose transporter (SUT) gene families in *Arabidopsis thaliana* and *Oryza sativa*. The potential *cis*-acting regulatory elements were predicted by scanning 1.5 kbp of 5' regulatory regions of the SUT, CWI and SuSy genes translational start sites, using various resources for *cis*-element bioinformatics. *Cis*-elements associated with phytohormone responsiveness, light responsiveness, elicitor responsiveness and abiotic stress were predicted in varying frequencies within the 1.5 kbp of 5' regulatory sequences. In addition, *cis*-elements involved in sugar repression, mineral responses, and cold- and light-inducible gene expression were also identified. Some of the predicted *cis*-elements have experimental precedent, but many are novel and encourage further exploration. This analysis provides a basis for elucidating transcription regulatory interactions of SUT, CWI and SUSY gene families during development or under abiotic stress conditions.

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