

## Detection of PCD-Related Transcription Factors for Improving Salt Tolerance in Plant

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**Abstract :** The idea of this work is based on a natural exciting phenomenon suggesting that suppression of genes related to the program cell death (or PCD) mechanism might help the plant cells to efficiently tolerate abiotic stresses. The scope of this work was the detection of PCD-related transcription factors (TFs) that might also be related to salt stress tolerance in plant. Two model plants, e.g., tobacco and Arabidopsis, were utilized in order to investigate this phenomenon. Occurrence of PCD was first proven by Evans blue staining and DNA laddering after tobacco leaf discs were treated with oxalic acid (OA) treatment (20 mM) for 24 h. A number of 31 TFs up regulated after 2 h and co-expressed with genes harboring PCD-related domains were detected via RNA-Seq analysis and annotation. These TFs were knocked down via virus induced gene silencing (VIGS), an RNA interference (RNAi) approach, and tested for their influence on triggering PCD machinery. Then, Arabidopsis SALK knocked out T-DNA insertion mutants in selected TFs analogs to those in tobacco were tested under salt stress (up to 250 mM NaCl) in order to detect the influence of different TFs on conferring salt tolerance in Arabidopsis. Involvement of a number of candidate abiotic-stress related TFs was investigated.

**Keywords :** VIGS, PCD, RNA-Seq, transcription factors

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