

## TOBACCO TRANSFORMATION WITH RICE *PHOSPHORUS STARVATION TOLERANCE 1* GENE

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Phosphorus (P) have a great importance for the production of food crops. The demand for P fertilizer is increasing worldwide and continued production and application of P fertilizer relies on this nonrenewable resource. This will result in significantly increased cost, particularly for developing countries. P-efficient plants could enhance yield in the developing world where P is frequently unavailable and reduce the need for P fertilizer in the developed world, thereby ameliorating overuse of P. A major quantitative trait locus for phosphorus-deficiency tolerance, Pup1, was identified but its functional mechanism remained elusive until the locus was sequenced, showing the presence of a Pup1-specific gene, which was named phosphorus-starvation tolerance 1 (PSTOL1). OsPSTOL1 is a protein kinase that when overexpressed enhances root surface, P acquisition and grain yield in rice under P deficiency. In order to validate the function of rice OsPSTOL1 in dicot plants the gene was cloned downstream of ubiquitin promoter in pMCG1005 vector, using *bar* gene as a selective marker. Tobacco *Petit havana* plants were genetically transformed via *Agrobacterium tumefaciens* EHA101 strain and regenerated from selected callus in shooting and rooting medium supplemented with 100 mg/ml of Tioxin and 1 mg/L of Phosphinothricin. Multiplex PCR with gene specific (~700 bp) and *bar* (~400 bp) primers confirmed the presence of *osPstol1* gene in tobacco plants. Currently putative transgenic tobacco plants harboring the genetic cassette are in the greenhouse and are going to be used for molecular and functional analysis of *osPstol1* regarding the enhancement of root surface, P acquisition and grain yield in tobacco plants under low P conditions.

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