

## **THE *ROLB* ONCOGENE IMPROVES PHOTOSYNTHESIS EFFICIENCY AND CHLOROPHYLL CONTENT IN TRANSGENIC TOMATO (*SOLANUM LYCOPERSICUM* L.) PLANTS**

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Tomato is a well-known model organism both at the genetic and molecular level, and one of the most important commercial food crops in the world.

Transgenic tomato plants, transformed with the *rolB* oncogene, have been studied in order to evaluate genes differentially expressed in respect of untransformed plants.

By Suppression Subtractive Hybridization method (SSH) and cDNA sequencing analyses, 20 clones have been found to be upregulated following transformation, and their putative functions have been characterised by homology searches against the GenBank database. All cDNAs matched with high significance to sequences involved in stress response, basal metabolism, signal transduction and gene expression.

Among these, five genes engaged in chloroplast function have been identified. These genes, directly or indirectly induced by *rolB*, participate in protection from light and oxidative stress, in capture and transfer of light energy, CO<sub>2</sub> diffusion, and cytochrome involvement in chloroplast electron transport chain.

Photosynthesis efficiency measurement by three different photosynthetic parameters (Fv/Fm, rETR, NPQ) showed in *rolB* plants a significant increase in non-photochemical quenching and *a*, *b* chlorophyll content.

Our results add a new competence for *rolB* when integrated into the tomato plant genome. Transgenic plants alter their response to the environment, regulating a primary and central plant metabolism such as photosynthesis.

Assays are currently in progress to verify the effect on transgenic tomato of specific light wavelengths.