

## **Possible interactions between TFL2 and proteins in the AUX/IAA family.**

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In a recent study an interaction between two proteins with an important role in plant development was found. These proteins are the TERMINAL FLOWER2 (TFL2) and AUX/IAA5 proteins. Both proteins have been studied separately for a relative long time but, until that study, the relationship between them never has been found.

The TFL2 protein belongs to a subset of genes that regulate the function of the shoot meristems during the vegetative to reproductive transition in plants. The TFL2 has a similar function with the HETEROCHROMATIN PROTEINI (HP1 $\gamma$ ) from mammals. The HP1 $\gamma$  is located in the euchromatin, mainly associates with genes marked by a tri-methylated Histone 3 (H3K27me3), and its function is to maintain the transcriptional repression of those marked genes. TFL2 has the same function and some of the repressed genes are involved in the transition to the reproductive stage in plants, such as for example the important floral repressor FLOWERING LOCUS C (FLC).

The other protein is the AUX/IAA5, it belongs to the Auxin/Indole-3-acetic acid protein family with 29 different genes in *Arabidopsis*. These proteins are repressors of the Auxin Response Factors (ARF), transcription factors that regulate the expression of primary auxin response genes. The expression and activity of AUX/IAA's are directly controlled by the phytohormone auxin. In high concentration of auxin, it can bind to the ubiquitin E3 ligase complex (SCF) through an auxin-receptor domain, called transport inhibitor response 1 (TIR1) in *Arabidopsis*. When auxin binds to TIR1, the SCF<sup>TIR1</sup> complex is activated and it can bind to AUX/IAA proteins attaching ubiquitin on these. Then, an ubiquitin-mediated proteolysis is carried out by the 26S proteasome and the AUX/IAA is degraded, releasing the transcription factor ARF.

Until now, only the interactions between the subfamily of AUX/IAA proteins, AUX/IAA5, AUX/IAA6 and AUX/IAA19, with TFL2 have been reported but not the interaction of TFL2 with other proteins of the family. In this project I looked for protein interactions between TFL2 with 24 of the 29 AUX/IAA's proteins, using the Yeast-2-hybrid system, and I found a new interaction between AUX/IAA20 protein with TFL2 never reported before.

Degree project in biology.

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