

The *MtWOX* genes in the regulation of *Medicago truncatula* somatic embryogenesis

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Plant somatic cells can be reprogrammed into totipotent embryonic cells that are able to form embryos in a process called somatic embryogenesis (SE). SE can occur naturally in some plant species and it is widely used for the plant's genetic transformation and regeneration.

This process is regulated by hormone treatment and many proteins, among which WUSCHEL-related homeobox (WOX) transcription factors are believed to play crucial roles. Our previous studies have shown that *MtWOX9-1* stimulates SE in *Medicago truncatula*. The aim of the present research was to search for new *MtWOX* genes regulating SE. In this study, using transcriptomic data and literature data, we had selected several genes with an increased expression level during SE or in the generative organs and examined the overexpression effect of these genes on the SE ability. It was found that explants of the *M. truncatula* embryogenic line, transformed with the construct for *MtWOX6-like* overexpression, develop more somatic embryos compared to the control.

Our findings could be a helpful point for searching and studying new morphogenic regulators controlling SE and could have a positive impact on plant biotechnology in improving the transformation and regeneration capacity for other legumes.

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