

## Tissue-specific expression of *Arabidopsis* Toc homologous genes encoding plastid protein receptors by transgenic plants

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Plastid is a unique organelle which carries on many biological processes, such as photosynthesis, synthesis of aromatic amino acid and gravitropism. During the evolution of plant cells, more than 90% of the plastid genes were gradually transferred to the host nuclear genome. However, these genes have to be transcribed in nucleus, translated and post-translationally modified in cytoplasm and imported to plastids accurately while the processes of plastid biogenesis nowadays. Otherwise, the plastids will lose their biological functions, maintenance of survivorship, ability in DNA replication, and fail to undergo plastid division. Translocons on the outer envelope membrane of chloroplast, Toc34 and Toc159 proteins, are main receptors for import of nuclear-encoded plastid proteins. Based on sequence homology and substrate specificity, two Toc34 and four Toc159 homologues are found in *Arabidopsis*, atToc33/34 and atToc159/atToc132/atToc120/atToc90, respectively. The expression of these *atTOC* genes must be properly regulated, or their gene products will not be correctly integrated to their destination to allow their function. In order to verify the particular expression pattern of these family members, GUS activity of transgenic plants expressing GUS coding sequence driven by different lengths of the upstream regulatory sequences of these genes were analyzed. Our data suggest that the expression of these homologous genes is not only spatially and temporally moderated in particular vegetative and reproductive tissues, but also in specific cell type. However, they still have to express redundantly to secure the normal development and function of plastids in different plant tissues.

### Biography

Chih-Wen Sun has completed her PhD from University of California at Davis and Post-doctoral studies from Institute of Molecular and Cellular Biology, Academia Sinica in Taiwan. She joined the Department of Life Science, National Taiwan Normal University, as a Faculty member. Her research focus is on the "regulation of chloroplast development".

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