

CANDIDATE GENES INVOLVED IN LEAF DEVELOPMENT IN
LIRIODENDRON CHINENSE

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Leaves play an essential role in plant photosynthesis and transpiration and represent enormous diversity that exhibits adaptation to the environment. *Liriodendron chinense* is a common ornamental tree in China, and its leaf is termed “robe tree” since it resembles a Chinese robe of the Qing dynasty. *L. chinense* is very popular and is regarded as an excellent species to research leaf shape development. Stereoscopic and scanning electronic microscopy were employed to determine leaf shape development periods. To find candidate genes controlling leaf shape development, we evaluated different stages of leaf development transcriptome and their different expressed genes. The candidate genes were then expressed in model plants. The results showed that the leaf bud was 1-2 cm and there were always 4-8 tender leaves within a bud. The leaf primordium was about 50-100 μm and was the initial tissue of the leaf development. It then developed into a "hook-like" tissue and finally expanded to a complete leaf. Accordingly, the leaf morphological development process of *L. chinense* could be divided into three stages: leaf primordium occurrence, leaf morphology establishment, and leaf extension. In addition, the identification of candidate genes demonstrated some transcription factors prominently resulted in leaf change. Also, a few genes mediating plant hormone also affected individual height and flower timing. In summary, we attempt to provide an insight into leaf shape development mechanisms that can serve as a reference for the breeding of ornamental traits in *Liriodendron chinense*.