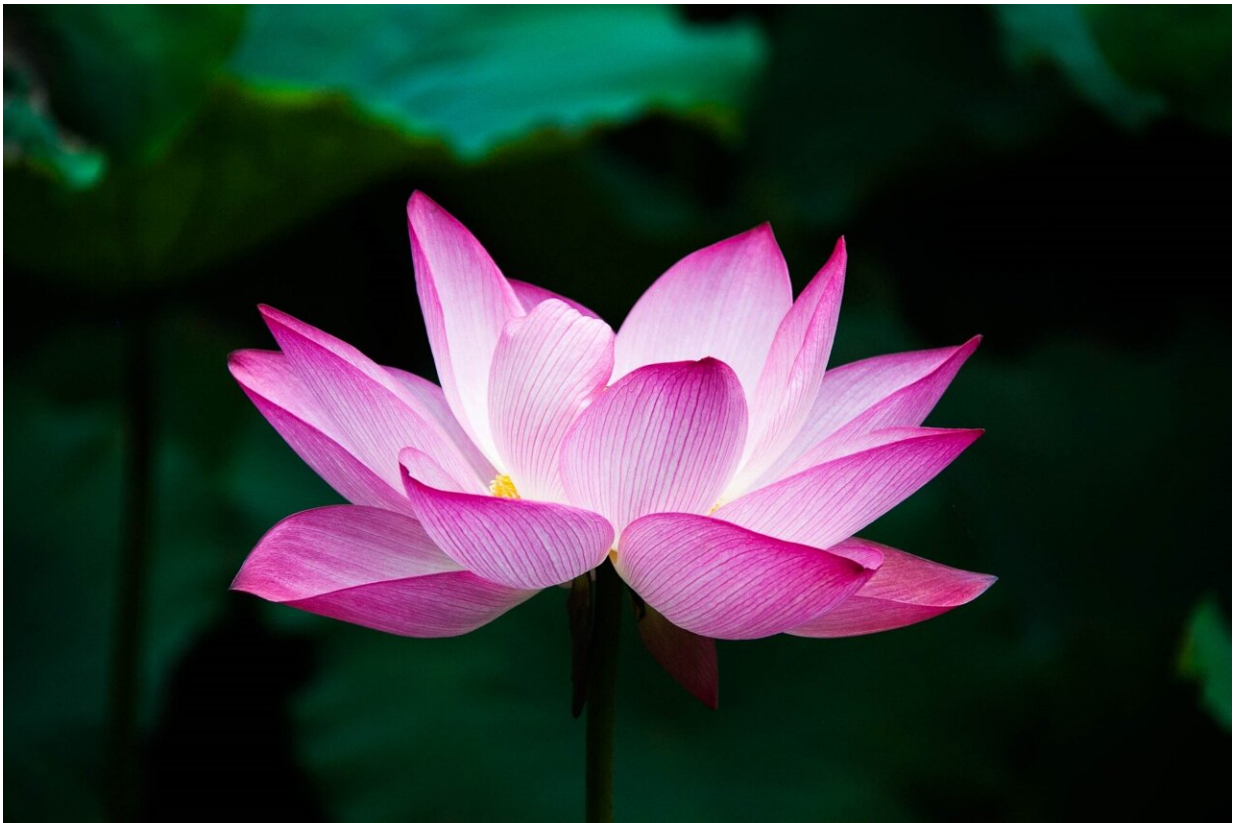


# Study reveals genes regulating lotus flowering

February 2 2024, by Zhang Nannan

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Lotus is one of the top 10 traditional flowers in China with high ornamental value. Flowering behavior in lotus marks the transition from vegetative to reproductive growth, and flowering time is also an

important determinant of its market value.

Previous comparative transcriptome data of [lotus](#) buds at different developmental stages revealed that the FLOWERING LOCUS T (FT) gene, namely NnFT, was the significant differentially expressed gene, hinting its key role in the lotus flower formation. However, the function of NnFT genes and their molecular mechanisms of lotus flowering remain largely unknown.

Researchers from the Wuhan Botanical Garden of the Chinese Academy of Sciences (CAS) found eight NnFT homologous genes, designated as NnFT1-NnFT8, in the Asian lotus genome. Two NnFT homologs, NnFT2 and NnFT3, were the major preponderantly expression genes, which showed rich transcript abundance in floral-related organs and leaves.

These results were published in *Plant Physiology and Biochemistry*, in a paper titled "[FLOWERING LOCUS T genes control floral induction in lotus.](#)"

In addition, the proNnFT:β-glucuronidase (GUS) assay exhibited GUS staining in the vascular tissues of leaves. By combining the yeast two-hybrid system with a bimolecular fluorescence complementation assay, they further demonstrated that NnFT2 and NnFT3 proteins could interact with the FLOWERING LOCUS D (NnFD) protein, a member of the flowering activation complex.

Moreover, heterologous overexpression of NnFT2 and NnFT3 genes could rescue the late flowering phenotype in *Arabidopsis* ft-10 mutant, indicating the stimulatory roles of NnFTs in floral induction.

This study reveals the molecular mechanism of NnFTs in the lotus flowering transition, providing a theoretical basis and valuable genetic

resources for the genetic improvement of lotus flowering time.

**More information:** Heyun Song et al, FLOWERING LOCUS T genes control floral induction in lotus, *Plant Physiology and Biochemistry* (2024). [DOI: 10.1016/j.plaphy.2024.108339](https://doi.org/10.1016/j.plaphy.2024.108339)

Provided by Chinese Academy of Sciences

Citation: Study reveals genes regulating lotus flowering (2024, February 2) retrieved 21 May 2024 from <https://phys.org/news/2024-02-reveals-genes-lotus.html>

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