

## THE PARALOGOUS RICE FLORIGENS Hd3A AND RFT1 HAVE PARTIALLY DIVERGENT FUNCTIONS DURING FLORAL TRANSITION

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*rice, flowering, shoot apical meristem, floral activation complex*

Rice is a tropical crop that flowers under short days. Day length is perceived in leaves, where the output of a complex molecular network is the transcriptional induction of two florigenic proteins, encoded by *Hd3a* and *RFT1*. These florigens share 91% identity at the amino acid level and are encoded by two paralogous genes, only 11kb distant on chromosome 6. After photoperiodic induction in leaves, Hd3a and RFT1 proteins are translocated through the vasculature to the shoot apical meristem. Here, Hd3a and RFT1 take part in transcriptional complexes to regulate a molecular cascade that reprograms the apical meristem from vegetative to reproductive development.

To verify whether Hd3a and RFT1 can activate differential targets at the shoot apical meristem, we performed a transcriptomic analysis of dissected meristems of transgenic rice plants where either only Hd3a or RFT1 were induced in leaves. Subsequently, we compared the datasets of Hd3a and RFT1 specific targets, with a dataset of all genes differentially expressed at the apex by photoperiodic induction. Comparing the three datasets we found that a core set of genes could be induced by photoperiodic induction and by Hd3a or RFT1 alone. Additionally, a larger number of target genes could be induced by RFT1 compared to Hd3a, suggesting a different role of these two proteins at the shoot apex. Our findings were confirmed also by the analysis of Hd3a and RFT1 CRISPR mutants.