



## The TFL1 homologue KSN is a regulator of continuous flowering in rose and strawberry

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Résumé en anglais	<p>Flowering is a key event in plant life, and is finely tuned by environmental and endogenous signals to adapt to different environments. In horticulture, continuous flowering (CF) is a popular trait introduced in a wide range of cultivated varieties. It played an essential role in the tremendous success of modern roses and woodland strawberries in gardens. CF genotypes flower during all favourable seasons, whereas once-flowering (OF) genotypes only flower in spring. Here we show that in rose and strawberry continuous flowering is controlled by orthologous genes of the TERMINAL FLOWER 1 (TFL1) family. In rose, six independent pairs of CF/OF mutants differ in the presence of a retrotransposon in the second intron of the TFL1 homologue. Because of an insertion of the retrotransposon, transcription of the gene is blocked in CF roses and the absence of the floral repressor provokes continuous blooming. In OF-climbing mutants, the retrotransposon has recombined to give an allele bearing only the long terminal repeat element, thus restoring a functional allele. In OF roses, seasonal regulation of the TFL1 homologue may explain the seasonal flowering, with low expression in spring to allow the first bloom. In woodland strawberry, <i>Fragaria vesca</i>, a 2-bp deletion in the coding region of the TFL1 homologue introduces a frame shift and is responsible for CF behaviour. A diversity analysis has revealed that this deletion is always associated with the CF phenotype. Our results demonstrate a new role of TFL1 in perennial plants in maintaining vegetative growth and modifying flowering seasonality.</p>
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