



# Isolation and characterization of microsatellite markers for *Eucommia ulmoides* (Eucommiaceae), an endangered tree, using next-generation sequencing

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**ABSTRACT.** *Eucommia ulmoides* Oliver, a single extant species of Eucommiaceae, is an endemic dioecious tree in China. The natural resources of *E. ulmoides* have rapidly declined in recent years because of the over-collection of its cortex. To design a suitable protection strategy, it is necessary to develop a set of molecular markers to investigate genetic diversity and population structure of *E. ulmoides*. Pyrosequencing of an enriched microsatellite library by Roche 454 FLX+ platform was used to isolate simple sequence repeats (SSRs) for *E. ulmoides*. A total of 1568 SSRs that contained enough flanking sequences for primer pair design were identified from 45,236 raw sequence reads. One hundred SSRs were randomly selected to design primer pairs and polymerase chain reaction was performed. Among these 100 tested primer pairs, 16 were polymorphic across 18 individuals from three *E. ulmoides* populations. The number of alleles ranged from 3 to 8, with an average of 5.1. The expected heterozygosity ranged from 0.110 to 0.830, with

an average of 0.648, and the observed heterozygosity ranged from 0.111 to 0.833, with an average of 0.524. The inbreeding coefficient ranged from -0.349 to 0.547. This set of microsatellite markers could be valuable for landscape genetic structure assessment and molecular marker-assisted breeding in *E. ulmoides*.

**Key words:** Simple sequence repeat; Genetic diversity; Population structure; *Eucommia ulmoides*