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Genetic diversity of *Aquilegia* (Ranunculaceae) species and cultivars assessed by AFLPs

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ABSTRACT. Species of the genus *Aquilegia* are exceptionally diverse in their floral morphology and color, commonly known as columbine. They are widely planted ornamentals and are highly attractive for hummingbirds. However, little is known about their genetic diversity. We examined the genetic diversity of the species and cultivars using amplified fragment length polymorphism (AFLP) markers. Sixteen *Eco*RI/*Mse*I AFLP primer combinations produced 327 informative polymorphic bands, with a mean of 20.4 bands scored per primer. Jaccard's coefficient of similarity varied from 0.61 to 0.93, indicative of high levels of genetic variation. Cluster analysis using the unweighted pair group method with arithmetic mean algorithm placed the 64 accessions into two main clusters, each divided into two sub-clusters. The AFLP variability was significantly associated with the geographic origins, as the Asian species and the North American species grouped into two distinct clusters. The genetic diversity found among *Aquilegia* demonstrated the potential value of Chinese germplasm for cultivar improvement and for widening the genetic basis of breeding programs and breeding material selection. We concluded that

AFLPs are informative and can provide significant insights for genetic diversity research in columbine species.

Key word: Genetic diversity; AFLP; *Aquilegia*; Columbine

