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The restorer gene for soybean M-type cytoplasmic male sterility, *Rf-m*, is located in a PPR gene-rich region on chromosome 16

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Several soybean (*Glycine max*) hybrids released in China were produced using M-type cytoplasmic male sterility (CMS) line W931A and various restorer lines. However, the identities of restorer genes in the nuclei of soybean restorer lines are currently unclear. In this study, we analyzed the inheritance pattern of restorer locus *Rf-m* from restorer line WR016 and constructed a high-resolution map of this locus. The results show that *Rf-m* in WR016 is a monogenic dominant gene located within a 162.4-kb region on chromosome 16, which is flanked on each side by newly developed SSR markers GmSSR1602 and GmSSR1610 at a distance of 0.11 and 0.25 cM, respectively. Nineteen open reading frames (ORFs) were predicted in this region. Interestingly, among these ORFs, seven genes arranged in tandem on chromosome 16 encode pentatricopeptide repeat (PPR) proteins, which is similar to other reported restorer loci in plants. These results lay a solid foundation for map-based cloning of the *Rf-m* gene and will be helpful for marker-assisted selection of elite CMS restorer lines.