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## Does sexual dimorphism in plants promote sex chromosome evolution?

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### Highlights

- It is difficult to discover whether large numbers of evolutionary changes follow quickly after separate sexes evolve, and whether sexual dimorphism evolves quickly, or takes a long time to evolve. Dioecious plants, which have often recently changed from cosexuality are suitable for attempts to study interesting questions including the time course and whether sexually antagonistic (SA) conflicts are important in the initial stages of the evolution of dioecy. If many changes occur, SA effects are likely, and may contribute to the evolution of suppressed recombination in the genome region controlling sex determination. Sexual antagonism may also select for the evolution of sex-specific expression of genes. Obtaining evidence for adaptive changes is difficult, even with today's ability to study gene expression changes in large numbers of genes, because secondary sex differences due to adaptive changes are hard to distinguish from primary differences (including their pleiotropic effects). However, considering possible approaches that might be used suggest numerous interesting questions for future empirical study.

### Abstract

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