

Copy number variation of DNA enables cucumbers with all-female flowers

With the support from the National Natural Science Foundation of China and the National Program on Key Basic Research Projects in China, Huang Sanwen's group from the Institute of Vegetables and Flowers, Chinese Academy of Agricultural Sciences revealed that a recent copy number variation (CNV) of a particular DNA segment gives rise to cucumbers bearing only female flowers by collaborating with several international labs such as Fei Zhangjun's lab from the Boyce Thompson Institute, Cornell University. It has been published in *Plant Cell* (2015, 27(6): 1595–1604).

Most cucumbers are monoecious, bearing male and female flowers on a single plant, with the female flowers developing into fruits. In contrast, gynoecious cucumbers bear only female flowers and can set fruit at nearly each node, which supports fruit setting at each node, and therefore, the gynoecy trait was selected to ensure high yield (Figure A). However, its exact genetic basis has not been elucidated. Here, Zhang et al. identified SVs in cucumbers using sequencing data of 115 representative cucumber lines and explored SVs' functional impact, formation mechanisms and relationship to the level of DNA changes in cucumbers. Interestingly, a recent copy number variation (CNV) of a particular DNA segment gives rise to cucumbers bearing only female flowers (Figure B). This study provides a snapshot of structural DNA changes in plants and an example of a novel plant CNV successfully exploited in modern agriculture.

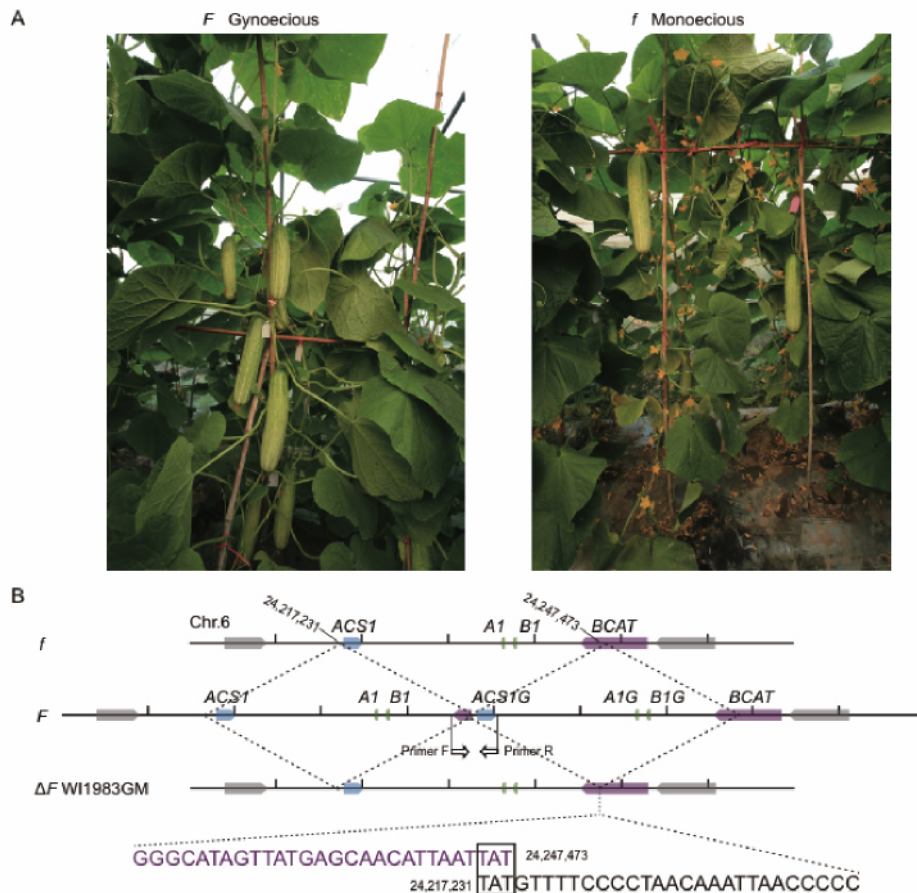


Figure The genetic basis of gynoecious cucumbers. (A) Phenotypes of gynoecious (WI1983G) and monoecious (WI1983GM) cucumbers. (B) Structural organization of the 30.2-kb duplicated region in gynoecious cucumbers.