

**PLANT ARTIFICIAL CHROMOSOMES, USES THEREOF AND METHODS OF
PREPARING PLANT ARTIFICIAL CHROMOSOMES**

ABSTRACT

Methods of preparing cell lines that contain plant artificial chromosomes, methods for preparation of plant artificial chromosomes, methods for targeted insertion of heterologous DNA into plant artificial chromosomes, and methods for delivery of plant chromosomes to selected cells and tissues are provided. In particular, plant artificial chromosomes that are substantially composed of repeated nucleic acid units of varying amounts of heterochromatin and euchromatin are provided. Also provided are methods of using plant and animal artificial chromosomes in the production of valuable transgenic plants. Methods for identifying plant genes encoding particular traits using chromosomes and for producing an acrocentric plant chromosome are also provided.

(no suitable figure)