Public Abstract

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Title:AN INVESTIGATION OF MAIZE B DERIVED MINICHROMOSOMES

The maize (*Zea mays*) B chromosome is a supernumerary chromosome with a selfish inheritance characterized by nondisjunction at the second pollen mitosis, univalent survival in meiosis, and preferential fertilization of the egg. The apparent lack of known genes allows this inheritance to accumulate the B chromosome to multiple copies in the genome with relatively little effect. By bombarding telomere-containing constructs with selection markers into maize embryos with B chromosomes, multiple B chromosome truncations of varying sizes were found. Using these B-derived minichromosomes, we were able to address minichromosome pairing and accumulation limits, which led to the observation of dosage dependent nondisjunction of the B chromosome and the discovery of an asynchronous endoreduplicating chromosome. Because the stacking of multiple genes in crop plants is becoming more prevalent, establishing a system of multiple minichromosomes could ease the development and increase the capabilities of transgenic plants.