

2. Evidence for crossing-over between non-homologs during megasporogenesis of monoploids

During a study of microsporogenesis of maize monoploids, a striking aberation [sic] was found. Approximately 17 percent of the anaphase I figures possessed at least one bridge-like configuration, and a few were found that had two. These "bridges" closely resembled the bridges found in heterozygous inversion stocks, except that acentrics were never found, even after an exhaustive search. It was tentatively assumed that exchanges had occurred between members of the genome, and that the "bridges" were actually nonterminalized chiasmata.

During the summer of 1953, 84 plants were grown from seed produced by crossing normal diploid males with monoploid females. Pollen from each of the F₁'s was examined. Four had abortive pollen; three were 50 percent abortive. These four plants were self-pollinated and outcrossed to Oh51A. At harvest, the plants that were 50 percent abortive, were also 50 percent abortive on the ear. The plant that was less than 50 percent pollen abortive also had a higher seed set.

Seeds from the selfed plants were planted in the greenhouse this winter, and the pollen mother cells are to be examined for the presence of heterozygous translocations. Should translocated chromosomes be found in these plants, there can be no doubt that crossing-over occurred between non-homologous chromosomes during megasporogenesis of the monoploid plants.