2. <u>Effect of heat treatment on crossover frequency (bridge and fragment frequencies) in inversion 5083 at early synizesis (probably zygotene) and mid synizesis (probably pachytene).</u>

Plants heterozygous for the inversion were removed from a growth chamber at 25°C for three hour treatment of meiotic tassel tissue at 36°C, and the crossover frequencies of their microsporocytes were compared to controls in three types of chromosome region: (1) where a single initiation of pairing can provide a site for a crossover without subsequent spreading of synapsis (crossover within the inversion), (2) where two independent events of pairing initiation are required for two coincident crossovers (double crossovers within and proximal to the inversion) and (3) where spreading of synapsis over a short distance from a single event of pairing initiation may provide the requisite pairing for two coincident crossovers (double crossovers within the inversion). Significant difference was found between treated and control for type (1) when treatment was applied at early synizesis but not at mid synizesis; difference of borderline significance was found between treated and control for type (2) when treatment was applied at early synizesis but not at mid synizesis; difference of borderline significance was found between treated and control for type (3) when treatment was applied at mid synizesis but not at early synizesis. Results are consistent with the interpretation that crossover sites are established for the most part at events of synaptic initiation and that nearby second crossovers occasionally follow the spreading of synapsis to adjoining regions.

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3. <u>Crossover interference for regions within inversion 5083 and proximal to it.</u>

The normal crossover map distance proximal to inversion 5083 is probably about 70 units; the map extent within the inversion is about 19 units if its cytological extent per map unit is average for the long arm of chromosome 1. Production of a fragment only at anaphase I requires coincident 3-strand double exchanges within the inversion and proximal to it. Using the table of Haldane (1919) for conversion of map distance to recombination percentage and assuming a proximal map extent of 70 units and no