

## 1. The origin of diminutive B-type chromosomes in maize.

The chance discovery of an exceptional plant in a progeny heterozygous for the B-9a translocation gave clues that seemed to explain the origin of diminutive B-type chromosomes. The following excerpt from an abstract of the article appearing in the American Journal of Botany (January 1956) outlines the changes that are necessary to produce from a normal B, a diminutive B chromosome.

"The heterochromatic areas of a B chromosome when they are not paired with the homologous areas of a second chromosome frequently are folded back on themselves at mid-prophase to simulate a paired condition. Similar pairing is found between the distal and proximal sections of the long arm of the B chromosome in B-A translocations. The dyscentric pairing of the two sections of a B is such that exchanges occur to give a diminutive B-type chromosome or a dicentric chromosome and an acentric fragment."

One plant appeared in a progeny from the above exceptional plant that had only a short section of the long arm of the B chromosome inserted at the mid-point of 9. It is thought that this second exceptional plant arose because there had been an exchange or crossover in the loop formed by the inserted B cutting off an acentric fragment and leaving a much shorter insertion from the B chromosome.

This second plant further substantiates the view that the heterochromatin of a B when dyscentrically paired will have crossing over, and that this crossing over may occur at different areas of the long arm of B.

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