

	Hybrid (Pal. Tol. X KT 41)	Palomero Toluqueno	KT 41
Mean chiasmata per cell	35.66	30.91	29.83

It is known that chiasma frequency is genetically determined. Rees has also found evidence for the occurrence of heterosis for this character in rye when completely different inbred lines were crossed (Rees, 1955). Thus, we find that the primitive and the evolved races of maize show genetic differentiation in respect of chiasma formation.

#### Reference

Rees, H. (1955) Heterosis in chromosome behaviour. Proc. Roy. Soc. London, B, 144:150-159.

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#### 9. Effect of knobs on chiasma number in a cell.

We have observed that the varieties and hybrids of maize having greater knob volume (measured in arbitrary scores) form more chiasmata at metaphase I. A highly significant correlation has been obtained ( $r = 0.628^{**}$ ) with the regression equation,  $Y = 27.66 + 0.257 X$ , where  $Y =$  chiasma number in a cell, and  $X =$  units of knob volume in the cell. When a consideration is made of the knob number and chiasma frequency together, a highly significant negative correlation is obtained ( $r = -0.704^{**}$ ) with the regression equation,  $Y = 37.83 - 0.609 X$ , where  $Y =$  chiasma number in a cell, and  $X =$  number of knobs in the cell. These results demonstrate that a higher number of knobs is associated with fewer chiasmata per cell, whereas the greater knob volume increases the chiasma frequency in a cell.

Thus, the knobs, which are supposed to be made up of heterochromatin, appear to have a regulatory function with regard to crossing over. It may be explained that the heterochromatic B-chromosomes have also been found to have a similar regulatory function with regard to crossing over (MNL 42:63, 79; 43:54).

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