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Is crossing over in *Drosophila* males induced by heat?

Temperature affects very efficiently the frequency of crossing over in *Drosophila melanogaster* females. When considering the mechanism of crossing over in *Drosophila melanogaster* males, it is of primary import-

ance to know whether crossing over in males can also be induced by heat treatment. Positive results were recorded in the older literature (Shull, Whittinghill 1934, *Science* 80: 103; Plough 1935, *DIS* 3: 50). Both the authors tested crossing over in the third chromosome. We replicated their experiments with second chromosome markers. In our experiments maternal stock was *dp b cn bw* and paternal one Oregon K.

Plough exposed 5-day-old larvae to 36.5°C for 16 hours. We repeated this treatment but obtained only negative results. Shull and Whittinghill submitted 0-6-day-old larvae to the action of temperature of 33-35°C for 1-8 days. When repeating their experiment we treated 6-day-old larvae by exposing them to the temperature of 32°C for four days. This kind of treatment again did not show any positive effect on the frequency of crossovers. All our experiments were sampled by ten 48-hour broods, starting from the second day after hatching. As there were no apparent differences between individual broods, only summarized results are given in the table.

The discrepancy between our results and summarized data can be explained in several ways:

- 1) Crossing over in *D. melanogaster* males can be induced by heat only in the third chromosome.
- 2) It can be induced only in some genome or plasmone backgrounds.
- 3) It can be induced by interaction of heat treatment with some food constituents - through the stress produced by heat.

The papers quoted above, however, do not give sufficient quantitative data to evaluate the statistical significance of results. It seems therefore that the possibility of induction of crossovers in *Drosophila melanogaster* males is rather doubtful unless it is proved by experiments which can be replicated.

Table

Treatment	n	crossovers	percentage
Control	57 993	12	0.021
36.5°C, 18 hrs	21 059	3	0.014
32°C, 4 days	13 457	3	0.022
Total	92 509	18	0.019