pairs more readily with Y^S than Y^S would with Y^S. This may not be as peculiar as it may seem if one considers that in normal situations, the X and Y are pairing partners.

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The influence of heterochromatin on crossing over in ring/rod heterozygotes of D. melanogaster.

The presence among the Eugene stocks of a large number of tandem metacentric (TM) lines, synthesized for other purposes by Drs. E. Novitski and W. J. Peacock, has afforded the opportunity to study the influence of pericentric heterochromatin on the crossing over properties of ring X-chromosomes. The TM lines had been obtained by irradiating females of the constitution XY, y^2su-$w^a w^a Y^S \cdot Y^L y^+$(Parker)/ XY^L, In(1)sc^4-sc^{8L}, EN^R, y f v(or m) cv $y \cdot Y^L y^+$. Two different inverted chromosomes, derived from two separate stocks of In(1)EN, had been used. TM's bearing one or the other of these inverted chromosomes will be referred to as (A) or (B) in the following presentation (series 17- and 19- of Novitski and Peacock).

Virgin females from each of 5 (A) and 9 (B) TM lines (all heterozygous for the markers y, cv, v (or m) and f) were crossed to males bearing the fertility tester Y-chromosomes of Brosseau; the fertility of ring-bearing sons with each of the various Y-testers determined the amount of Y heterochromatin present in a given TM (and, therefore, in the ring X-chromosomes derived from it), measured in terms of fertility factors. Using the representation for a normal Y + + + + + c + +, where the first five + signs indicate kl-5 through kl-1, c is the centromere and the next two + signs are ks-1 and ks-2, the following distribution was obtained: - - - - - c - - (3), - - - - + c - - (5), - + + - + c - - (1) and + + + + + c - - (5).

Ring chromosomes from each of the above four types were used in the following crosses: X^c(from TM (A) or (B)), y cv v (or m) / f x sc cv v f B / Y. Each cross consisted of 12 or 24 pair matings, brooded for three 3-day broods. Care was taken concerning uniformity in age of females and temperature. The results are presented in the following table:

Ring Type* (kl-1 tokl-5)	Rod ♂♂ c.o. / n.c.o.	Rod ♂♂ % c.o.	Ring ♂♂ c.o. / n.c.o.	Ring ♂♂ % c.o.	Pat. ♂♂	♀♀	Pat. ♂♂ / ♀♀
(A) - - - - -	87 / 1785	4.6	32 / 1340	2.3	77	3405	2.3
+ - - - -	187 / 1635	10.3	55 / 1300	4.1	85	3447	2.5
(B) - - - - -	169 / 1657	9.3	36 / 1302	2.7	87	3127	2.8
+ - + + -	124 / 910	12.0	20 / 590	3.3	70	1681	4.2
+ + + + +	94 / 883	9.6	24 / 612	3.8	67	1683	4.0

* Refers to the number of Y^L factors present in the pericentric heterochromatin of the ring chromosome.

The results of crosses involving rings derived from type (A) TM chromosomes suggest that an increase in pericentric heterochromatin results in an increase in the frequency of crossing over. Furthermore, this increase is of greatest magnitude in region IV which, significantly perhaps, is the region adjacent to heterochromatin in both the ring and the rod chromosomes. Rings derived from type (B) TM's show an increase in crossing over with added heterochromatin of a much lower level of magnitude. The following table presents recombination frequencies for each individual region studied; the rings containing no Y^L fertility factors are used as the reference base; the Table also includes a comparison of one of the (B) rings with the (A) series

Ring type	I (y to cv) Rods	Rings	II (cv to v/m) Rods	Rings	III (v/m to f) Rods	Rings	IV (f to centr.) Rods	Rings
(A) - - - - -	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
+ - - - -	2.02	1.40	2.05	1.95	2.25	1.14	3.84	3.09
(B) - - - - -	1.79	0.96	1.96	0.92	1.7	1.19	3.8	1.72
(B) - - - - -	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
+ - + + -	1.13	1.18	1.40	1.56	1.40	1.10	1.00	1.00
+ + + + +	1.02	1.47	0.93	1.00	1.10	1.84	1.15	1.27

The difference in the results obtained with type (A) and type (B) rings may be explained in the following manner. By chance, or because of the use of different inverted chromosomes in the original TM synthesis, the (B) rings may have a segment of unspecified X or Y heterochromatin large enough to render them less sensitive to additional heterochromatin. This working hypothesis may be tested by a systematic search among type (A) TM's for rings which lack all of the Y fertility factors, yet yield high crossing-over values (of the order of 10%); and conversely, among type (B) TM's for rings yielding low crossing-over values (of the order of 4 or 5%). Cytological estimates of relative size may be useful to determine the presence of unspecified X or Y heterochromatin.

$(XY^L)^C$ chromosomes will be sent to the Drosophila Stocks Center of the Institute for Cancer Research, Philadelphia, from where they would be available to anyone who might want to use them as balancers for special stocks.

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Preliminary chromatographic analysis of the "brown spots" character in Drosophila melanogaster.

Owing to the peculiar manifestation of the bsp character, it seemed useful to investigate if differences in free-ninhydrinpositive substances could be correlated with the changes of metabolic pattern in the female following copulation. According to the method described by Fox et al. (1959), two-dimensional chromatograms of virgin and mated females (5 days old) were obtained. The quantitative analysis of the free-ninhydrin reacting components showed that the tyrosine amount does not change after mating in bsp females, while an increase occurs in the Sevelen females (control). This finding points to a correlation between tyrosine and brown spots formation, because it can be suspected that part of this substance is utilized for the formation of brown pigment.

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Experimental puffs in D. hydei polytene chromosomes, induced by temperature shocks.

During the entire third larval instar abnormal puffs can be induced in the salivary gland chromosomes by transferring the larvae from 25 to 35°C. for 1 hour. These abnormal puffs (located at 32A, 36A, 48C, 58B, 81B and 85B respectively, according to the cytological map of Berendes, 1963), are also induced in cells of the stomach, midintestine and Malpighian tubules. Also, in salivary glands transplanted from early third instar larvae into the abdomen of adult females, abnormalities in the puffing pattern are induced by temperature shocks. After 3 days of implantation, the flies were shocked for 1 hour, and after 3 weeks of implantation for 1/2 hour. Both experiments revealed the same abnormal puffs as found after treatment of normal larvae.