Novitski, E. and W.J. Peacock. University of Oregon, Eugene, Oregon; and C.S.I.R.O., Canberra, Australia. Results from the combination of B^S and SD in the male.

It is known that the components of the B^S translocation, and their homologs, are recovered from a male with unequal frequencies. This aberration has been combined with a segregation distorter chromosome (SD-72) to check for further interactions. The experimental set-up has been modified slightly by replacing the basal segment of the translocation, the piece of the X-chromosome extending from the centromere to the Bar region, capped by the tip of the fourth chromosome by a Y chromosome which has incorporated into it the basal segment just described, and the tip of the X chromosome carrying the normal allele of yellow. The translocation so constituted will be referred to as T(1;Y;4)B^S and the modified Y chromosome as B^SYy^+.

Table 1. Progeny from mating ♂♂ of constitution T(1;Y;4)B^S, B^SYy^+/Y;SD-72/cn bw to ♀♀ of constitution y/y;cn bw (Line A) and to y/y/B^SYy^+;cn bw (Line B).

Type of ♀♀	B^S ♀	B^S cn bw ♀	y ♂	B^S ♂	y cn bw ♂	B^S cn bw ♂
A. y/y	44	21	126	0	0	0
B. y/y/B^SYy^+	27	7	40	62	1	3

It will be noted from both Lines A and B that the progeny that carry the simple Y chromosome from the father are always SD so that those cn bw progeny that do appear are B^S females, with only one exception. The large B^S ♂ class, 62, in Line B, is basically the y ♂ class which has received a B^SYy^+ chromosome, as well as an X chromosome, from the mother.

Table 2

	♂	♀	SD?	y♀	B^S♀	B^S♂
A	B^S	$\overline{XX}$	-	1092	595	608
B	B^S	$\overline{XX}$/B^S	-	914	372	519
C	B^S;SD	$\overline{XX}$	+	390	154	147
			-	91	90	110
D	B^S;SD	$\overline{XX}$/B^S	+	124	59	77
			-	36	28	42

Table 2 gives the distribution of progeny when males with the translocation and both without (A & B) and with (C & D) SD are mated to $\overline{XX}$, cn bw ♀♀ (A & C) and to $\overline{XX}$/B^SYy^+;cn bw ♀♀ (B & D).

Lines A and B, when analyzed jointly to determine the frequencies of the gametic types from the male, show the typical pattern. The larger of two homologs is least frequently recovered (X^D, .433 vs IV, .567 and B^SYy^+, .389 vs Y, .611) and when the expectations are arrived at by cross multiplying, the disagreement with the observed frequencies is approximately 3.5%. If the SD-bearing progeny from lines C and D are handled similarly, the results are approximately the same. (This may be seen by inspection by comparing the ratios of 1092, 592 and 608 with 390, 154 and 147, respectively, and the ratios of 914, 372 and 519 with 124, 59 and 77 respectively.) In other words, the conditions which lead to the unequal recovery of the translocation components characterize the SD cells. But the non-SD, the cn bw classes are more nearly equal (91, 90 and 110 in Line C and 36, 28 and 42 in Line D), and, if anything , with a slight increase in the B^S ♂ class, which is consistent with the results in table 1, that cn bw progeny are more apt to be B^S than not, although the effect here is not nearly so striking as in the first table. In fact, when the gamete types are considered individually in the standard way, the increase appears to arise from a greater recovery of the distal part of the translocation rather than the basal (B^SYy^+). A note also should be made of a clear difference between the results in Table 1 and those on lines C and D of Table 2. In the first case, all but one of the cn bw exceptions appearing received the $X^D+B^SYy^+$ gamete from the father. In the second, only a preponderance do. The essential difference between these experiments is that in the first case the females carried free X-chromosomes and the second attached X's. Whether this difference in female constitutions is responsible for the different results remains to be seen.

From this it can be seen that the recovery of the translocation components is different depending on whether or not the sperm also carries SD. When it does not, the homologs in the translocation approach a 50% recovery, with approximately 25% recovery of each of the four products, whereas with SD, the recoveries are grossly disparate. This can be interpreted to mean that the same condition which leads to a preferential recovery of the SD chromosome also provides the basis for the preferential recovery of the translocation components. As in other experiments involving the B^S translocation, males are exceedingly infertile; non-function or dysfunction of the mature sperm seems a distinct possibility.

del Solar, E. Universidad de Chile, Santiago, Chile. Behavior in selected gregarious lines in D. pseudoobscura.

The manner in which Drosophila females distribute their eggs among the available sites for oviposition has been denominated aggregation. Two lines from a CH/CH population of D. pseudoobscura selected for high and low aggregation over twenty generations, were significantly different according to three statistics: a) the number of vials containing one or more eggs, b) the percentage of eggs in the vials with the largest number of eggs, and c) an aggregation index = $100\sqrt{s^2-\bar{x}}/\bar{x}$. These results suggested that this gregarious behavior is under genetic control.

In the aforementioned experiments the females from the line selected for low aggregation showed an increase in fecundity, which, measured in groups of 15 females in population cages containing 15 food cups over a ten day period, was of 1.7 to 1 eggs in the High respecting the low line.

The present experiments were designed to compare the fecundity of both lines under two conditions: a) 15 females in a population cage with 15 food cups, and b) 15 females in a 15 x 2.9 cm. vial containing a paper spoon with food medium. The food containers were renewed daily over 10 days in both cases.

The results summarized in Table 1 show that the females from the line selected for High aggregation lay more eggs under crowded conditions than the females from the Low line. This suggests that their fecundity is influenced by the space available for oviposition.

Table 1. Fecundity among flies selected for high and low aggregation in population cages and in vials.

Number of females	System	Number of replicates	Number of eggs per day High line	Low line	"t"	P
15	cages	3	323.2±62.3	543.8±46.5	2.107	0.05-0.02
15	vials	10	221.3± 7.9	187.6± 8.1	2.105	0.05-0.02
3	vials	10	77.2± 3.7	61.2± 3.1	2.352	0.02-0.01

The behavior of females from the Low line maintained in cages for 12 or 24 hours was compared to that of females from the High line kept in other cages for 24 or 48 hours. The results summarized in Table 2 indicate that both lines behave independently of time, in the expected direction, i.e., while the average number of cups used, and the average total of eggs laid is always greater in the Low line, the aggregation index is lower than in the High line.

Table 2. Average number of cups, eggs, and aggregation indices in lines selected for high and low aggregation.

Direction of selection	Time in hours	Number of replicates	Cups with eggs $\bar{x}$ ± S.E.	Eggs $\bar{x}$ ± S.E.	Index $\bar{x}$ ± S.E.
Low	12	6	8.2±1.0	196.1±29.2	153.8± 9.6
High	24	6	5.0±0.6	379.5±57.5	206.8±17.3
Low	24	6	13.8±0.4	517.0±58.0	111.8± 6.2
High	48	6	9.2±0.9	817.3±94.8	129.3±12.7