

maxima per replicate were on the order of 350-450 flies.

Every other generation 100 female flies from each replicate were assayed for sternopleural bristle count. Samples from males invariably averaged a few percent lower in bristle count than females. The 22nd generation results, based on the pooled counts of 600 females taken from subreplicates of replicates, are summarized below.

Means and 95% Confidence Intervals

Line I Replicate	Line II	Line III
1 17.43±.22	1 17.83±.22	1 16.79±.21
2 17.65±.25	2 17.72±.23	2 16.58±.16
3 17.64±.23	3 17.96±.23	3 18.58±.26

Inter- and intra- line divergence are relatively slight in Lines I and II. The initiation of Line II populations with small samples of the parental gene pool did not lead to a drifting apart of bristle count. The more drastic decimation regimen of Line III was effective in producing drift. Two generation 22 replicates have counts significantly less than any Line I or II replicates, and one replicate is significantly higher. A plot of replicate bristle count against generations (not shown) indicates that the dispersal of Line III replicates developed gradually and was still increasing at the termination of the experiment.

Monclús, M. University of Barcelona, Spain. Influence of day time and season on mating propensity in *D. subobscura*.

A strong influence of day time and season has been detected in the mating propensity of *D. subobscura*. This relation came out in tests carried on with a different purpose. In each test 50 ♂♂ and 25 virgin ♀♀

were put together and the number of matings accomplished during one hour was recorded. Flies of different ages were tested separately, but in the results here presented all the ages are lumped.

The individuals were developed in our standard conditions of culture for *D. subobscura*, in a room with controlled temperature at  $17^{\circ} \pm 0.5^{\circ}$  C. The mating tests were performed in all seasons at  $22^{\circ}$  or  $23^{\circ}$  C. The stock used has been kept in the laboratory for two years.

Routine tests were performed at 11 a.m. since December to June. Working at the same time of the day in July and August it became difficult to get results because of the very few matings observed. Since *D. subobscura* in the natural populations is active in summer only early in the morning and in the evening, the time of testing was moved to 6:45 a.m. The mean mating frequencies observed in the tests carried out in these three different conditions, are as follows:

December-June	11	a.m. (32 tests)	M = 16.03	matings for test
July-August	11	a.m. (13 tests)	M = 1.30	" " "
July-August		6:45 a.m. ( 9 tests)	M = 10.44	" " "

These results seem to indicate that the sexual activity of *D. subobscura* is controlled by an internal rhythm, perhaps related to some external factor difficult to identify.

Robertson, F. W. and Chipchase, M. Department of Genetics, University of Edinburgh. The comparison of genetic differences by hybridization between DNA and RNA synthesized in vitro.

DNA prepared from different species of *Drosophila* has been used as template to synthesize complementary RNA (c-RNA) by RNA polymerase extracted from *Micrococcus lysodeikticus*. The general properties of the hybridization between such DNA and RNA have been studied and the RNA transcribed

from *melanogaster* template has been annealed with DNA from various species to determine the level of discrimination. The ribonuclease resistant RNA, bound to denatured DNA, is recovered on membrane filters and separate labelling of the DNA and RNA has been used to estimate the fraction of the DNA which is bound to RNA. The level of hybridization between *D. melanogaster*

c-RNA and DNA from *Schistocerca* and *Aedes* was extremely low. Within the genus *Drosophila*, the comparisons have been applied to the sibling species *melanogaster* and *simulans* and the more distantly related *funnebris*. The level of hybridization between either *melanogaster* and *simulans* c-RNA and *funnebris* DNA was only about 10% of the level found in the homologous combinations. For the sibling species, the heterologous combinations led to levels of hybridization which were only about half those found in the homologous combinations.

The high level of discrimination which can be attained by this method favors a search for intra-specific differences and this is in progress. Preliminary tests indicate that the rapidly renaturing fraction of *Drosophila* DNA is exclusively involved in the hybridization with RNA under our conditions. Hence this approach offers an effective way of studying the properties and rates of divergence of the highly reiterated sequences generally. Comparisons between closely related species are of particular interest, to see how far the evidence from hybridization compares with more conventional taxonomic criteria and with estimates of affinity based on salivary banding. Experiments to this end are in progress. A preliminary report of the work has been published (*Biochem. Journ* 1968, 108 J. 30p) and a fuller account is in press.

Portin, P. University of Turku, Finland.  
The meiotic loss of the extra Y-chromosome in relation to its preferential segregation in *D. melanogaster* XXY-females.

It is known from R. F. Grell's (1962) experiments that the extra Y-chromosome can segregate preferentially only from non-crossing over chromosomes. This led Grell to construct a meiotic model with two pairing events. This model is

known as the "distributive pairing"-hypothesis.

In the present study the meiotic behavior of the extra Y-chromosome was examined in four different translocation/inversion-systems involving T(2;3)Xa and various combinations of the Curly and Payne inversions. The distal ends of the autosomes, which were potential pairing partners with the Y-chromosome, were marked with recessive genes in order to measure crossing-over.

It was found, as could be expected, that preferential segregation of Y and an autosome can be observed only in those cases where there is no crossing-over in the autosome in question. However it was also found that the Y-chromosome is lost to a certain degree in the non crossing-over cases but in the crossing over cases there is no meiotic loss. This last finding is in contradiction to the distributive pairing hypothesis, because it should be expected in the terms of this hypothesis that the Y-chromosome has fewer if any partners for distribution in the crossing-over situation and thus its meiotic loss should increase.

However, the evidence is not in contradiction to Novitski's (1964) alternative hypothesis to distributive pairing.

References: Grell, R. F., 1962: *Proc. Natl. Acad. Sci.* 48, 165-172. Novitski, E., 1964: *Genetics* 50, 1449-1451.

Kuroda, Y. National Institute of Genetics, Misima, Japan. Characteristic aggregation pattern of dissociated imaginal disc cells of *Drosophila melanogaster* larvae in rotation culture.

To elucidate at a cellular level under strictly defined conditions the mechanism by which cells of identical genetic constituents show various phenotypic expressions in various organs and tissues, dissociated cells from various imaginal discs of *D. melanogaster* were tested for

their ability to form characteristic histogenetic aggregates in rotation culture.

Eye-antennal discs and wing discs were dissected as described in earlier papers (Kuroda and Yamaguchi, 1; Kuroda and Tamura, 2) from mature third-instar larvae (96 hours after hatching at 25°C) grown under sterile conditions. They were incubated in calcium- and magnesium-free salt solution for 15 minutes, then in 1% trypsin solution for 15 minutes, and were dispersed in the culture medium into single cells by flushing the dissected material through the tip of a fine pipette. After some improvements and simplifications of the culture medium had been made, it was found that medium K-10 (3), a chemically defined medium, was better than