Wagenberg, B. D. and A. B. Burdick. Adelphi University, Garden City, New York. Effect of K-pn on the pseudo-alleles of the prune locus.

K-pn (3-104.5), or "prune killer" is a dominant autosomal gene which kills all prune (1-0.8) eye colored flies. It has no other detected effect on phenotype. In 1954 Sturtevant tested this gene against sources of pn, pn^2 and pn^3, the only alleles of the prune available at the time, and found it equally effective in killing each in males. He found that it would kill pn in homozygous attached X females. We marked K-pn with Mio (3-100.5) and thus have the stock Mio K-pn/Ins TM3, ri p^P bx^{34c} Ser.

We set out to: (1.) test other alleles of prune against the K-pn gene, (2.) test homoallelic females, pn^i/pn^i, against the K-pn gene, and (3.) to set up transheterozygotes, pn^i/pn^j, and test them against K-pn. To transmit prunes through males in the presence of K-pn we have used Lindsley's modified Y, kz^+--spl^+ y^+ ac^+ KL•bb^+ KS.

All the alleles of prune tested were susceptible to the killer both in males and in homoallelic females.

All combinations of transheterozygotes, pn^i/pn^j, except one are susceptible to the killer. One transheterozygote, $pn^{27-9}+/+pn^{68b10}$ produced wild-type eye color and was not susceptible to the killer. (See Table 1.)

This means that the prune locus has two complons. We have been unable to separate the functions of eye color and susceptibility to the prune killer.

Table 1

Phenotype and Effect of K-pn on Various Homoallelic and Transheterozygous Prune Females

MALE PARENT \ FEMALE PARENT	pn^2	pn^{27-9}	pn	pn^3	pn^{68b10}
pn^2	+	+	+	+	+
pn^{27-9}		+	+	+	-
pn			+	+	+
pn^3				+	+
pn^{68b10}					+

\+ Eye color prune; dies in presence of K-pn
\- Eye color wild type; lives in presence of K-pn

Gooch, James L. Juniata College, Huntingdon, Pennsylvania. Rapid micro-evolutionary changes in sternopleural bristle count in Drosophila melanogaster.

The sternopleural bristles remain favorable material for the study of short term evolutionary changes. A hybrid stock of D. melanogaster was synthesized from a mass mating of Oregon-R, Seto and Samarkand strains. During the next four months random mating occurred, fractionating the genomes of the strains among individuals of the hybrid stock. The hybrid stock was then divided into three lines, each replicated three times in half-pint population bottles on cornmeal-molasses-agar medium. Line I replicates were founded by 200 females and 50 males each, and were carried 22 generations. Each generation was artificially truncated at the 18th day. Line II replicates were maintained in the same way, but were founded by only five females and five males each. Line III replicates were also initiated by five flies of each sex, but were decimated to the same level each generation.

Thus, Line I served as a large-population control, with an ample reservoir of genetic variability. Population levels averaged 450-650 flies after the first generation. Line II was founded according to the "founder principle". After the first generation populations also averaged 450-650 flies per replicate. Line III replicates were bottlenecked every generation to obtain random drift of gene frequencies and, hopefully, drift of bristle count. Population 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

Replicate	Line I	Line II	Line III
1	17.43±.22	17.83±.22	16.79±.21
2	17.65±.25	17.72±.23	16.58±.16
3	17.64±.23	17.96±.23	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° ± 0.5° C. The mating tests were performed in all seasons at 22° or 23° 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