Policansky, D. University of Oregon, Eugene, Oregon. Three sperm sizes in D. pseudoobscura and D. persimilis.

All males examined from several laboratory stocks and wild populations of D. pseudoobscura and D. persimilis were found to have three distinct sizes of sperm (fig. 1). Two of the stocks of D. pseudoobscura came from San Diego, two of the stocks of D. persimilis came from Texas and Chicago and the wild populations were from California, Oregon and Washington. The sperm were measured by tracing the lengths on photographs; individual sperm of the three lengths were 0.31mm, 0.10mm, a and 0.05mm long. Yanders and Perras (DIS 34:112) reported lengths ranging from 0.295 to 0.304mm in D. pseudoobscura. Dobzhansky (1934) reported lengths of 0.4-0.5mm for the same species.

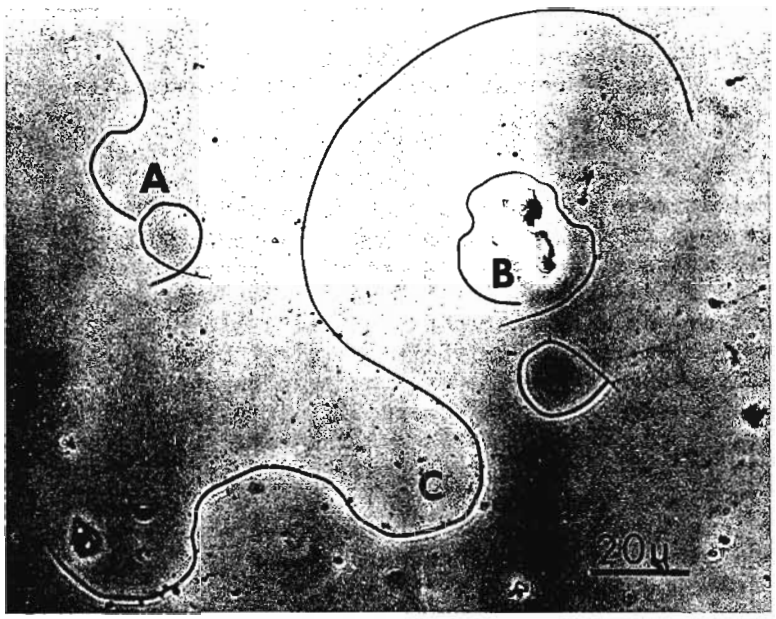

Fig. 1. Sperm of D. pseudoobscura (sh;or, Eugene).

A whole testis of D. pseudoobscura (sh;or, Eugene) was stained in Feulgen reagent and squashed. Sperm bundles of the three different sizes were seen and measured as described above. The sperm bundles were about 0.30mm, 0.10mm and 0.05mm long. These lengths correspond with the lengths of the free sperm. All the sperm in any bundle appear to be the same size, indicating that different size sperm are the product of different meiotic cells.

Under dark field illumination all three sizes show distinct pink-stained areas presumed to be DNA. These appear light in photographic prints (fig. 2). In the two shorter sizes (A and B) the stained area is at the tip of the sperm. In the longest size (C) the stained area is somewhat removed from the tip and less clearly defined.

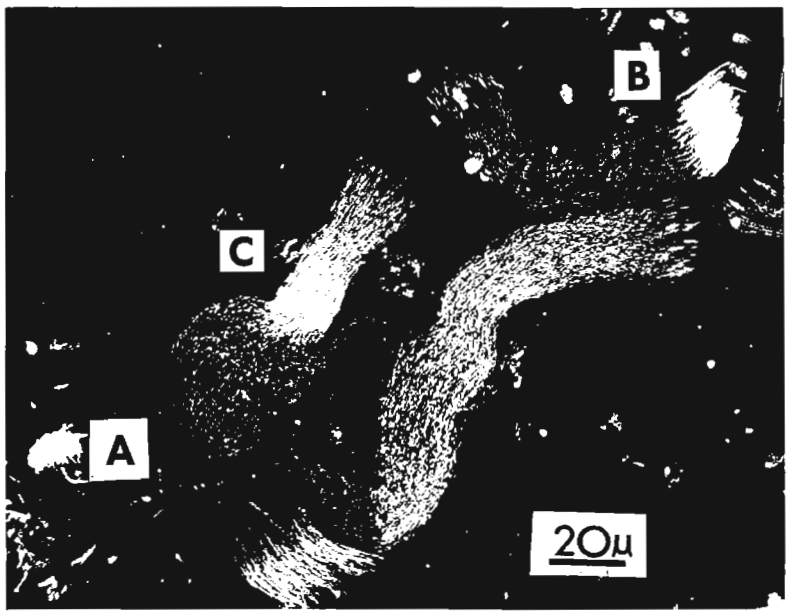

Fig. 2. Stained sperm bundles of D. pseudoobscura (sh;or, Eugene).

The fact that the long sperm stain differently from the shorter ones argues against the possibility that the shorter ones are merely fragments; also all three sizes are motile and can be found in the storage organs of females.

I gratefully acknowledge the assistance of John Ellison.

Reference: Dobzhansky, Th., 1934. Studies on hybrid sterility. I. Spermatogenesis in pure and hybrid D. pseudoobscura. Z. Zellforsch. und mikroskop. Anat. 21: 169-223.

Footnote: Correspondence with Dr. R.A. Beatty, Institute of Animal Genetics, Edinburgh,

subsequent to submission of this article, indicates that polymorphism in the sperm of the obscura group was observed in his laboratory by N.S. Sidhu (Ph.D. Thesis, Edinburgh, 1963) and that these observations will appear in a paper to be published shortly in the Proceedings of the Royal Society of Edinburgh.

Šrám, R.J. Department of Genetics, University of Edinburgh, Scotland.
The influence of storage on the viability of zygotes carrying chromosomal aberrations.

When spermatozoa from D. melanogaster treated with some chemical mutagens are stored in untreated females, the frequency of structural chromosomal changes increases considerably. One of the possible explanations of this storage effect may be a change in the viability of zygotes carrying chromosomal aberrations.

To answer this question, two reconstruction experiments were carried out.

In the first experiment, the effect of storage on the viability of zygotes carrying a translocation was tested. Translocations used in this experiment were induced by EI and involved 2nd and 3rd chromosome. About 10 males (T/bw;st) from each translocation culture were mated for three days to bw;st virgins and discarded; fertilized females were transferred to fresh vials every three days until eight broods were obtained. In each brood the ratio of homozygous bw;st and T/bw;st was scored. Thirteen translocations were tested in this way. The ratio was not affected by storage and remained approximately the same through all 8 broods.

In the second experiment 15 EI induced sex-linked lethals were similarly tested. Females of the constitution 1/M-5 were individually mated with M-5 males and the ratio of M-5/M-5 and 1/M-5 scored before and after storage. As in the previous case storage did not affect this ratio.

Since the viability of structural or lethal heterozygotes does not change with storing, it can be concluded that storage effect and viability are not causally related.

(This work was supported by a Grant from the University of Edinburgh.)

Gearhart, J. Cornell University, Ithaca, New York.
Quantitation of drosopterins in Lobed^2 eyes of D.m.

It has been reported by Taira and Nawa (D.I.S. 33:167) that red pigments in the mutants BB, bar-3, L^2, and Dp, decrease in direct relation to eye size. Using the technique of cellulose acetate electrophoresis with single eyes (Gearhart and MacIntyre, in press), I have found that within L^2 this direct relationship does not exist. Ten eyes were chosen at random from an L^2 stock. A visual estimation of eye size was obtained by drawing the eyes and then cutting out and weighing the paper (mg). With the electrophoretic technique, results are expressed as mm^2 (area under the absorption curve at 520 nm).

Eye No.	Weight (mg)	% Wild Type*	Densitometric Reading (mm^2)	% Wild Type**
1	235.6	98	367.0	98
2	185.0	77	332.0	89
3	184.3	77	363.5	96
4	117.0	49	244.5	65
5	188.5	79	376.0	100
6	175.0	73	329.0	88
7	136.3	57	267.5	71
8	96.6	40	294.0	78
9	176.9	74	291.0	78
10	217.0	90	307.0	82

* Wild type 240 mg (average of 4 eyes) ** Wild type 375 mm^2 (average of 4 eyes)
r = (0.69)

It is evident from this data that no direct relationship exists between eye size and amount of red pigment within the L^2 mutant.

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