Novitski, E. and Dan L. Dews. University of Oregon, Eugene, Oregon.
Comparison of mating ability of diploid and triploid females.

Triploid individuals are no larger than diploids despite the fact that 3N cells are typically larger than 2N cells. This is so because there are fewer cells in the adult 3N female than in the 2N female. If this is true of the nervous system, one might wonder if the functioning of the triploid adult is affected.

In a preliminary attempt to explore this question a comparison was made of the mating behaviors of the diploid female and triploid female when placed in competition with each other. The detailed results are given below; they demonstrate quite conclusively that the triploid females in our experiments were at a disadvantage compared with the diploids. While these results are consistent with the initial supposition that triploids would be at a disadvantage with respect to diploids because of a probable reduced number of cells in the nervous system, it remains to be shown that this in fact is the case, since there must be a number of other differences between 2N and 3N females that could have the same end result. It is of interest that this result is similar to one, pointed out to the authors by K.C. Atwood, obtained by Fankhauser et al (Science 122, 692) in tests of 2N and 3N salamanders.

	3N		2N		
	not mated	mated	not mated	mated	χ^2 1 d.f.
Exp. I	24	13	16	22	3.90*
Exp. II	45	24	11	56	33.42**
totals	69	37	27	78	32.99**

Experimental procedure and results: Two different triploid lines were each backcrossed to Oregon R males for several generations to produce two lines giving 2N and 3N females of wild phenotype. Wing cell and ommatidium size were used to distinguish 2N from 3N females. A small number, from three to ten, of virgin 3N females were matched with an equal number of virgin diploid females from the same culture bottle, and with an equal number of previously unmated Oregon R males. The females were 5-6 days old and the males 3-4. To avoid interfering with mating behavior, all flies were transferred unanesthetized to quarter pint milk bottles. After 2 hours the flies were etherized, 2N females separated from 3N females, males discarded, and all females cultured individually. It was assumed that lack of progeny production by a female indicated she had not mated. As a partial check on this assumption, 22 2N and 3N females which did not produce progeny were examined 4-5 days after mating to see if their spermathecae and ventral receptacle contained sperm. Sperm was found in only one of the 22 females; this female had laid no eggs. In 4 out of 17 runs, unintentional deviations from exact equality of 3N females and 2N females occurred. These deviations from equality did not exceed one individual per run.

Although a much greater proportion of the 2N females mated in Exp. II than in Exp. I, 3N females in both Exp. I and II mated significantly less than did 2N females. It is not known whether this difference is due to rejection of courting males by 3N females or to less courtship by males of 3N females than of 2N females. Both experiments I and II included runs using the two different 3N stocks. No significant difference between the two 3N stocks was found.

Taira, T. and F. Uda. Waseda University, Tokyo, Japan.
Deamination of adenosine 2',3'-cyclic phosphate in D. melanogaster.

Four nucleoside cyclic phosphates were isolated from the hot ethanol extracts of the 3rd instar larvae of D.m. and identified as follows: cytidine 2',3'-cyclic phosphate (Cp!), uridine 2',3'-cyclic phosphate (Up!), guanosine 2',3'-cyclic phosphate (Gp!) and inosine 2',3'-cyclic phosphate (Ip!).

The occurrence of Ip! instead of Ap! in the larvae suggests the presence of a deaminase which catalyzes the conversion of Ap! to Ip!. Such an enzyme has indeed been shown to be present in Drosophila larvae.

The purification and characterization of the deaminase in D. were carried out by means of the separation of 50 to 70 percent saturation of ammonium salfate and the fractionation of gel-filter column. The present results suggest that: (1) the deaminase from D. larvae would be one sort of molecular weight, about 200,000, and (2) this enzyme could catalyze the conversion of Ap! to Ip! as well as that of adenosine to inosine.