This close correspondence in the positioning of the two genes within homologous elements, plus the fact that interspecific hybrids show patterns typical of heterozygotes (see Figure 1) strongly suggests that the acid phosphatases of the sibling species are controlled by homologous structural genes. However, as yet no allele has been found that is shared by both the species. An additional difference between enzymes of D. melanogaster and D. simulans may be indicated by the differential effect of EDTA (and/or boric acid) on their rates of migration in starch prepared in a tris-EDTA-boric acid buffer. As shown in Figure 1, the enzymes specified by alleles of D. simulans (including those "heterozygote" enzymes of interspecific hybrids) show reduced rates of migration. This is not true of the acid phosphatases characteristic of D. melanogaster. The migration rate of the Acph-1^A "homozygote" enzyme in tris-EDTA-boric acid starch appears to be the same as that of the Acph-1^A enzyme of D. melanogaster in starch of both buffer systems. However, the enzyme specified by Acph-1^B homozygotes of D. simulans migrates in tris-EDTA-boric acid starch to a position between the two "homozygote" bands of D. melanogaster. The results summarized in this communication will be reported in detail elsewhere (MacIntyre, R. J. The genetics of an acid phosphatase in D. melanogaster and D. simulans. Manuscript in preparation.)

Gfeller, Sister M. David. University of Oregon, Eugene. A quantitative comparison of the fluorescing eye pteridines in male and female D. melanogaster.

Five day old + Ore-R males and females have similar quantities of all the fluorescing eye pteridines (described by Hadorn and Ziegler, 1958, Z. Vererb.-Lehre, 89: 221-234) unless a weight factor to correct for the smaller head size of males as compared to females is introduced. After correction for weight, males have a significantly (0.01 level) greater quantity of all the pteridines.

On the other hand, if isoxanthopterin and xanthopterin (usually measured as one fluorescing spot) are measured separately, + Ore-R females show significantly more isoxanthopterin than males, whether a weight factor is introduced or not. The fluorometric means, corrected for weight, are as follows:

	Females	Males
Drosopterins	40.1 + 2.77	51.3 + 2.96
Isoxanthopterin	56.3 + 4.16	50.7 + 4.87
Xanthopterin	34.2 + 1.82	43.6 + 4.71
HB* + sepiapterin	21.8 + 1.76	27.3 + 2.11

*HB consists of 2-amino-4-hydroxypteridine and biopterin.

The isoxanthopterin results are in accord with the report of Munz (1962, DIS 36:96) that Ore-R females have greater xanthine dehydrogenase activity than males. However, the above results are contrary to Hadorn and Ziegler's (1958) report that + Sevelen males have twice as much isoxanthopterin as females and less of all the other pteridines. The introduction of a weight correction for Ore-R pteridine values may account for some of the discrepancies between males and females of this and + Sevelen wild type but hardly for the great differences in isoxanthopterin content.

Even greater biochemical sex differences are found in the eye pteridines of the mutant white-blood (w^{bl}) and compounds of w^{bl} than in Ore-R. But the differences are not in the same direction in w^{bl} and w^{bl} compounds. In the mutant w^{bl}, as in Ore-R, males have a significantly smaller amount of isoxanthopterin and greater amounts of all the other pteridines than females. However, in w^{bl},v, w^{bl};cn and w^{bl};st compounds with genetic blocks to ommochrome formation, males have a significantly greater amount of isoxanthopterin as well as the other pteridines.

The quantity of isoxanthopterin appears to be modified not only by sex but also by genes associated with both the formation of the pteridines and the ommochromes and thus may be a necessary component for the production of both pigments.

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