

Frei, H. University of Geneva, Switzerland. New white alleles by recombination in *Drosophila hydei*.

w^{iv} of *D. hydei* is a slightly ivory-tinged mutant of the white locus. Only one coloured allele, w^k , is known. Darker alleles (w^{hg} , w^{fr} and w^{gl}) are mutational derivatives of w^{iv} .

They arose either spontaneously or in an X-irradiation experiment (w^{fr}) in attached-X chromosomes. After detachment, intragenic exchange properties of these secondary alleles were studied in w^k/w^{hg} , w^k/w^{fr} and w^k/w^{gl} genotypes. Among the offspring of such compound females, wildtype recombinants were found as well as the reciprocal white-eyed exchange types (R). Furthermore, exceptional white-eyed recombinants (E) exhibiting the marker combination of the wildtype recombinants were found among the offspring of w^k/w^{hg} and w^k/w^{fr} . From females w^+/w^{hg} and w^+/w^{fr} , but not from w^+/w^{gl} , white-eyed recombinational types could be obtained (E*), the direction of exchange being the same as in the case of E-types. Recombinant males were individually crossed to attached-X females C(1)RM, $w^{iv} y^{lt}$, and of four different stocks thus established, male offspring was used for a chromatographic study of allele expression.

By thin layer chromatography of head extracts I examined the pattern and the relative amounts of fluorescent eye pigment components in R of w^{fr} , E and E* of w^{fr} , and E* of w^{hg} . Fluorescence was induced by filtered UV at wavelength 365 m μ , and its intensity measured at different wavelengths of the visible spectrum on a Zeiss "Chromatogramm-Spectro-Photometer." In the examples illustrated, flies reared at 25°C were aged for 1 week and used when 7-10 d. old. Extracts of 20 ♂ heads in 0.1 ml of methanol/NH₃(25%)/H₂O(5:1:4) gave sufficient material for 2 chromatographs. Ascending chromatography on thin layer cellulose foils (Merck) was applied in one-dimensional runs of 8 hours in propanol/NH₃(25%)/H₂O(10:1:4). The chromatograph readings (Figure) were taken at wavelengths in the blue part around 440 m μ , from the starting point to about RF 0.5.

R of w^{fr} , which is a double mutant as shown by its separability by recombination into w^k and w^{fr} , contains a minimum of fluorescent pterins. By contrast, E and E* of w^{fr} contain relatively high amounts of, mainly, bioppterin, isoxanthopterine and xanthopterine, thereby

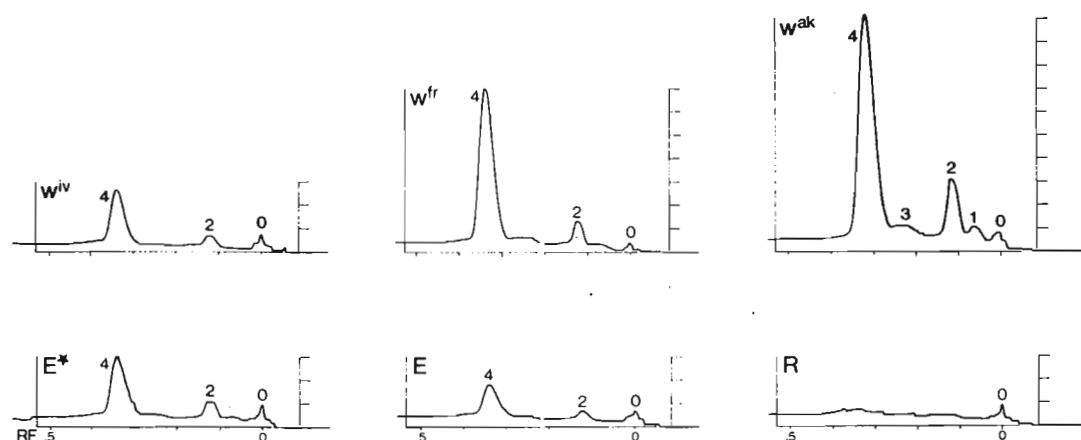


Figure: Pterin fluorescence patterns from two simultaneously prepared series of chromatographs. Top row: original white alleles, w^{iv} , w^{fr} and w^k . Bottom row: White-eyed types from recombination experiments, E* of w^{fr} , E of w^{fr} and R of w^{fr} . 0 = starting point, 1 = pterincarbonic acid, 2 = isoxanthopterine + xanthopterine and allied substances, 3 = yellow pterin and allied substances, 4 = mainly bioppterine, admixture of 2-amino-4-hydroxypteridine. The same intensity scale of arbitrary fluorescence units applies to the six examples shown.

resembling rather closely the original w^{iv} allele. However, in 6 independent comparisons, E* showed a higher concentration than E of the substances mentioned, w^{iv} being intermediate in most of the cases. E* of w^{hg} (not shown in the Figure) produced chromatographs that were nearly empty, and similar in pattern to those from R of w^{fr} . (Continued at bottom of next page)

Grossman, A.I. The Hebrew University, Jerusalem, Israel. α -glycerophosphate dehydrogenase in males and females of *Drosophila melanogaster*.

Three alleles have been recently described in the α -Gpdh locus of *Drosophila melanogaster*, and the isozymes produced by these alleles have been identified (Koreneva & Grossman 1970). The identification of specific isozymes is achieved by electrophoresis, but in a survey of some wild

populations in the Soviet Union we found several flies in which the bands were smeared and did not allow definite identification. The same phenomenon was also found in other studies.

Flies were collected from a wild population in Qiryat Anavim, 10 km west of Jerusalem. Whole fly homogenates were prepared on glass, in a drop of distilled water. These homogenates were run in starch gel electrophoresis, with a discontinuous buffer system, TRIS - citric acid, pH 7.9. Staining was done by the usual procedure.

The front lines of the samples from females showed further movement than those of males, and their bands came out smeared and unclear (Figure 1). It was impossible to determine the

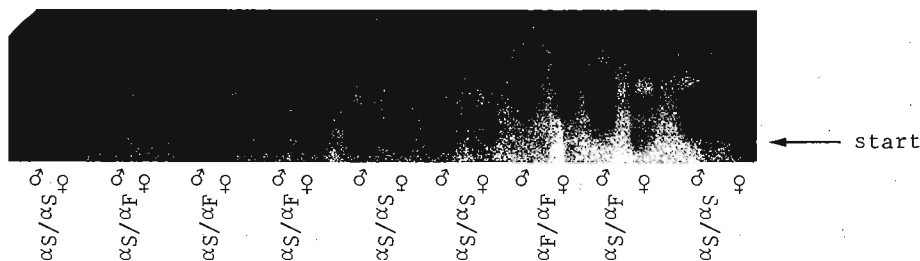


Figure 1

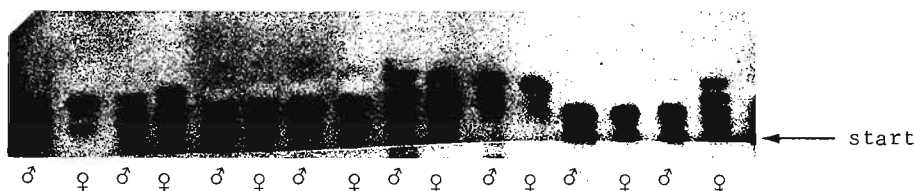


Figure 2

genotypes of the females with respect to the α -Gpdh locus. Clear bands were obtained after electrophoresis was performed with homogenates of females after removal of the abdomen (Figure 2).

It may be that the inability to get clear bands from whole fly homogenates of females is due to the presence, in these homogenates, of proteins associated with developing eggs.

References: Koreneva, L.G. and A.I. Grossman 1970, *Genetica* (Russ.) 6(6):126-128.

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Considering that all the exceptions arose through crossing over, but were white-eyed instead of wildtype, it may be postulated that "incorrect" recombination has created new hypomorphic alleles. In line with this, they could be interpreted as more or less important deficiencies of the white gene with meiotic mispairing and unequal exchange at their origin. Alternatively, the w^{iv} -derivatives (w^{fr} and w^{hg}) might already be double mutants of white. In that case, the allelic crosses carried out would represent trifactorial exchange experiments, so that new sublocus combinations would be expected to appear, comprising from zero to three mutated sites.

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