

support for allelism has been obtained by comparing map distances between Aph and a nearby locus using the deficiency as well as the electrophoretic variation.

The presence of the "extra" band in Aph^S/Aph⁰ heterozygotes is possibly the result of combination of an S subunit and the product of the "silent" allele, in which case Aph⁰ is producing protein which cannot dimerize or does dimerize but is inactive for some other reason (under the test conditions employed). No indication of a double band has yet been found in Aph^F/Aph⁰ type larvae. All attempts in starch with continuous and discontinuous buffer systems at pH 9.5, 8.5, 7.5, 7.0, 6.5, 6.0 and 3.0, polyacrylamide slabs at pH 8.5 and 7.0, and disc electrophoresis (Ornstein and Davis, 1961) running at pH 9.5 and 6.6 (cf. brochure, Canal Industrial Corporation) show only the single band. This might suggest a structural difference between Fast and Slow APH which prevents the Fast and "silent" protein subunits from combining into active enzyme.

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Esterase differences between male and female *D. melanogaster*.

Esterase zymograms of single adult *Drosophila* show a quantitative difference in Esterase 6 between males and females - the males having a greater amount of the enzyme or a more active form. A minor

esterase component, Esterase M, sometimes not observable, when present is of greater intensity in males than in females or entirely absent in females, depending apparently on the strain under examination.

Multiple homogenates, adjusted to equivalent protein concentrations, show in addition to the quantitative variations, a slightly greater mobility of Esterase B and Esterase E in females. Repeated freezing and thawing aids in making the mobility difference apparent.

Suspecting either a male esterase enhancing substance or a female esterase suppressing substance and assuming a non-random distribution of such a substance within the body, individuals of both sexes were severed in the mesothorax with a lancet and homogenates of the anterior and posterior parts prepared. On examination of the homogenates in starch gels, very little difference could be observed among female anterior, male whole, male anterior and male posterior homogenates. Only female whole homogenates show the increased mobility of Esterase bands B and E while female posterior homogenates have a decreased intensity in

nearly all bands. Hence, the complete set of esterase differences can be explained on the basis of a female suppressing substance located in the posterior portion of the fly. The pertinent esterase patterns are diagrammed in the figure.

Females of the constitution XXY show a typical female esterase pattern and XO males show the pattern of normal males; XXY tra/tra females with a phenotypic resemblance to males show a male esterase pattern. The inheritance, therefore, appears to be sex-limited.

A tendency for males to exhibit a female-like esterase pattern when raised on media containing progesterone or stilbestrol has been indicated from preliminary experiments. Unfortunately the purity of the hormones was questionable in these first experiments.

Legend for figure:

- 1) Female multiple whole fly homogenate
- 2) Female multiple anterior homogenate
- 3) Female multiple posterior homogenate
- 4) Male multiple whole fly homogenate
- 5) Male multiple anterior homogenate
- 6) Male multiple posterior homogenate

