

Ogonji, Gilbert O. Howard University, Washington, D.C. A comparison of octanol dehydrogenase isozyme patterns of *D. neomorpha*, *D. simulans*, and *D. metzii*.

A polymorphism of octanol dehydrogenase isozymes has been found in unselected strains of *D. neomorpha* which closely resembles that which has been genetically analyzed by Pipkin (this issue DIS) in strains of *D. metzii*. Crude homogenates

of single females taken at the height of egg laying have been assayed using agar gel electrophoresis with 1-octanol as substrate for formazan staining. The ODH isozyme patterns of females of the Rio Raposo, Colombia, strain of *D. neomorpha* (Fig. 1) can be interpreted in accordance with Pipkin's genetic analysis of *D. metzii*, as being due to two unlinked genes, A and B, and their respective electrophoretic variants, a and b. Assuming the ODH molecule to be a dimer (see Courtright, Imberski, and Ursprung, 1966, Genetics 54: 1251-1260), flies of the first and seventh slits of Fig. 1, going from left to right, are supposed to have had the genotype aa bb. Those of the 4th, 5th, 6th, 8th and 10th slits are supposed to have been aa Bb. The third female from the left is assumed to have been a double heterozygote, Aa Bb; while the next to last female was apparently Aa bb. Females of the unselected strain of *D. neomorpha* from Barro Colorado Island, Canal Zone (Fig. 2) are thought to have been either aa bb, with a single band in the zymogram; or Aa bb, with four isozyme bands. The slowest migrating isozyme of the group of four is supposed to represent dimers aa, ab, and bb, all of which migrate to the same position. The three faster migrating isozymes in the group of four are supposed to represent dimers AA, Aa, and Ab. Thus both allelic and non-allelic complementation in the formation of ODH dimers is suggested by the presence of four isozymes in certain females of this polymorphic strain. In *D. simulans* a somewhat different ODH isozyme pattern occurs which can be interpreted as being due to the occurrence of either fewer dimer molecules arising from non-allelic complementation or lower activity of such dimers judged by intensity of formazan staining. Fig. 3 shows the monomorphic strain of an Australian strain of *D. simulans*. The more cathodally migrating group of isozymes represent alcohol dehydrogenase. The two more slowly migrating groups of isozymes are ODH isozymes. Midway between the latter are faint ODH isozymes. The females are all thought to have the genotype AA BB. The strongly staining two rows of ODH isozymes are believed to be AA and BB dimers respectively, resulting from allelic complementation. The faintly staining intermediate isozymes are thought to be AB dimers arising from non-allelic complementation. A similar pattern of ODH isozymes has been seen in preparations of *D. simulans* from Lima, Peru; Rarotonga, South Pacific; and Pleasant Hills, Washington, D.C. This work has been supported by PHS grant GM 14937 and a grant from the Dean of the Graduate School, Howard University.

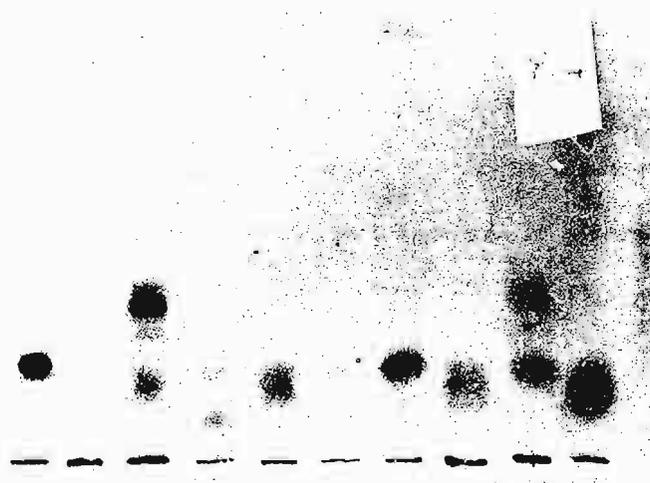


Fig. 1

