Scharloo, W., K. A. Schuitema, J. G. Wijnstra and A. Zweep. Genetisch Instituut, Rijksuniversiteit te Groningen, Haren (Gr.), The Netherlands. Selection on temperature sensitivity of the expression of a cubitus interruptus mutant.

Waddington and Robertson (1966) showed that the sensitivity of the expression of the Bar mutant can be changed by suitable selection. We applied their selection scheme on the expression of ci^{D-G}. The progeny of the selected flies was reared at two temperatures (22.5° and 27.5° Celsius). The length of the fourth vein (expressed as a percentage of winglength) is larger at the lower temperature.

The following selection lines were started.

1. Two lines in which from the cultures grown at 27.5° the flies with the longest fourth veins were selected and from 22.5° the flies with the shortest veins.
2. Two lines in which the flies with the shortest veins from 27.5° and the flies with the longest veins from 22.5° were selected.

In both selection types there is, besides the selection against temperature sensitivity in 1. and selection for sensitivity in 2., disruptive selection. In earlier experiments at 25° (Scharloo, Hoogmoed and Ter Kuile, 1967 and D.I.S. 41:96) it was shown that disruptive selection with random mating (D^R) does not affect the environmental variance but that disruptive selection with compulsory mating of opposite extremes (D^-) increases the environmental variance. Both modes of disruptive selection were practised in our experiments. In the D^R lines the selected flies were mated at random, in the D^- lines ♀♀ from 27.5° were mated with ♂♂ from 22.5° and vice versa. After 24 hours the ♂♂ were discarded and the ♀♀ transferred to one culture. In the lines selected for temperature sensitivity the expression difference between the 22.5° and 27.5° cultures increased rapidly to more than two times the original difference after 5-10 generations of selection. Progress was most rapid in the D^- line where selection for sensitivity and the disruptive selection act in the same direction.

In the D^- line selected against temperature sensitivity the difference did not change very much. Here an equilibrium seems to occur between the selection against temperature sensitivity and the disruptive selection. In the D^R line selected against temperature sensitivity the expression difference between the 27.5° and 22.5° cultures decreased rapidly until in generation 7 it was almost 0. But in later generations the difference regressed to half its original value.

MacIntyre, Ross. Cornell University, Ithaca, New York. Hybridization of subunits of Acid phosphatase-1 from D. melanogaster and D. virilis.

If crude homogenates from both species are subjected to electrophoresis and the gels stained for phosphatases, a definite difference in the migration rates of the most prominent soluble acid phosphatase in the two species can be seen. The isozymes controlled by the $Acph\text{-}1^A$ or $Acph\text{-}1^B$ allele of D. melanogaster migrate to the anode at pH 8.7 (about 1.5-3.0 cm. under the conditions specified by MacIntyre, DIS 41:61). The isozyme from D. virilis (only one stock has been examined to date) migrates to the cathode, about 2 cm. from the origin, under those same conditions. MacIntyre and Dean (Nature 214: 274) found that partially purified Acph-1 in D. melanogaster can be reversibly dissociated into polypeptide subunits by exposure to high or low pH. Inactivation of the enzymes from D. melanogaster occurs between pH 3.0 and 2.6 and between pH 10.3 and 10.8. The acid phosphatase from D. virilis is completely inactivated between 3.1 and 2.7 and between 10.4 and 10.9. If a mixture of acid or alkalai inactivated acid phosphatases from the two species is dialyzed against certain buffers at pH 6.5, some activity is regained. Electrophoretic patterns from these reactivated mixtures show a zone of activity midway between the positions of the melanogaster and virilis enzymes. This indicates the formation of an interspecific "hybrid" isozyme in vitro during reassociation of the subunits into active enzymes. Besides being a powerful tool with which to identify homologous genes through analysis of their protein products, the measurement of specific activities of the "hybrid" enzymes from different species should provide information on the divergence of the Acph-1 gene within the genus Drosophila. Work on quantification systems for both enzyme activity and protein in reassociated and electrophoresed mixtures is underway.