

Levine, Louis and Seymour Kessler. The City College of New York and Columbia University. Use of the Drosophila maze to study rate of activity.

ity of different mutants and species of Drosophila, and to select for faster and slower running of the maze.

In preliminary experiments involving the mutant orange (or) of D. persimilis, it was found that some 93% of the flies ran the maze in a 24 hour test period. In the case of the mutant glass (gl) of D. pseudoobscura, some 59% of the flies ran the maze in the same time interval. Data gathered at two hour intervals show that for the or flies, some 90% of the flies that ran the maze did so in the first eight hours. When using gl flies, only some 60% did so during the same period of time.

Selection for fast and slow running of the maze have been initiated. It has been possible to select for increased speed of running the maze in both or and gl flies. However, only in the case of gl flies was the total percent of flies completing the maze in the test period also increased. Results of selection for slow running have not thus far been fruitful. The pattern and percent of running the maze appears to be stable despite six generations of selection.

Experiments are now in progress to test the maze running characteristics of wild populations of these two species and the hybrids between them.

Research supported by NSF grant GB-1906 to Professor Howard Levene of Columbia University.

Baker, William K. University of Chicago. A method for the developmental timing of the pattern of variegation.

In order to obtain more critical evidence on the time during development when the pattern of position-effect variegation is laid down in the eye anlage, a genetic scheme was devised in which twin spots resulting from induced somatic exchange and variegated pigmentation caused by position effect could be scored in one and the same eye. The rearrangement causing white variegation was $Dp(w^m)264-58a$, an insertion of the white region into the base of 3L. Larvae of the following genotype were exposed to X rays 40 hrs. after the eggs were deposited:

$$\frac{Y^S \ y \ w^a \ + \ rb \ + \ f}{+ \ w^a \ ec \ + \ sn \ +}; \quad \frac{Dp(w^m)}{III}$$

A somatic exchange will produce a twin spot in the eye consisting of a patch of "white" ($w^a \ rb$) tissue next to a patch of echinus tissue, these spots being located in a background of w^a -pigmentation and normal facet arrangement. The presence of $Dp(w^m)$ will cause an area of wild-type pigmentation in the same eye.

When twin spots were induced by irradiation at 40 hrs. the size and shape of the twin spots were much the same as that of the variegated tissue. The accompanying figure illustrates one such eye. Although the precise shape of the echinus area is difficult to delimit by visual inspection, its general outline is obvious. The areas of different pigmentation can be delimited quite precisely. The ambiguities in the outline of the echinus area prevented the full utilization of the experimental design, which had incorporated the homozygosis for Y^S , in the white member of the twin spot, to see if there was a sector effect of additional heterochromatin when the variegated tissue partially covered both members of the twin spot.

A series of eyes similar to the one pictured have provided the critical evidence that the pigment potentialities of the developing variegated eye anlage are determined during the end of the first larval instar. (Studies supported by an NSF Senior Postdoctoral Fellowship).

