Williamson, R.L. City of Hope Medical Center, Duarte, California. A notation for genetic mosaics.

A notation which allows a genetically mosaic fly to be symbolized is long overdue. This can be accomplished simply by separating the genotypes by double oblique strokes. Thus, for instance, y w/o//y w/+ + is a gynandromorph whose male side carries yellow body and white eyes and whose female side is heterozygous for these mutations. y w/o;4/o//y w/+ +;4/4 is a more complex mosaic involving loss of the fourth chromosome on the male side. X-irradiation of a y w/+ + fly during development might cause the formation of a y w/y w//+ +/+ +//y w/+ + individual by somatic recombination.

This notation is simple, immediately understandable and can be found on any typewriter. It has been used previously in the abstracts listed below.

References: Williamson, R.L. and W.D. Kaplan 1976, Genetics 83:s82; Kaplan, W.D., W.E. Trout and C. Parseghian 1978, XIV Int. Cong. of Genetics, Moscow, Contrib. Papers I:552; Trout, W.E., P. Wong and R. Williamson 1978, XIV Ing. Cong. of Genetics, Moscow, Contrib. Papers I:566.

TEACHING NOTES

Bryant, S.H. Western Illinois University. Salivary preparations from D. pseudoobscura.

I have found that the use of D. pseudoobscura rather than D. melanogaster is much easier for salivary preparations. The larvae are much larger, and so are the salivary glands. Students also have a much easier time extracting the glands from D. pseudoobscura than they do from D. melanogaster. While not as many interesting chromosome aberrations are available in D. pseudoobscura, one excellent balanced lethal stock is available which has a very nice single inversion loop in chromosome 2. This stock is Δ/Ba: Delta/Bare^{Inv}.

Klug, W.S., G.Nicholls and T.W. Kottke, Trenton State College, Trenton, New Jersey. Drosophila transmission genetics computer package.

General genetics courses often include the performance of some Drosophila genetics laboratory experiment. Strickberger (1962) and King (1967) discuss the manner in which the appropriate crosses are executed in order to identify an unknown mutation in this organism. Klug and Weller (1972) earlier reported the development of a Drosophila transmission genetics experiment simulation program for student use. Written in BASIC-PLUS for the Resource Time Sharing System of the PDP-11 family of computers, this program was intended to complement the actual student laboratory exercise rather than replace it. A new, expanded version of this program has now been written for use with an IBM CALL-OS timesharing system. Two additional programs have been written so that a complete computer based learning package for Drosophila transmission genetics now exists.

The computer simulation package consists of three separate yet interrelated programs. ILUVFLYS, the first computer program that the student uses, serves two functions. During the first encounter with ILUVFLYS the student is randomly assigned one of 25 unknown recessive mutations. Homozygous mutant females are independently crossed with male flies with a marker gene on either the second or third chromosome respectively. Two generations are carried out for each cross and the student is supplied with number-coded phenotypes of the offspring. From the phenotype ratios of the offspring the student should be able to determine on which chromosome the unknown trait is found. The number of offspring supplied for each generation is between 150 and 250, randomly assigned by the computer at the time of the run.

Once the student has counted the number of flies in each phenotype class the ILUVFLYS program may be recalled for a statistical analysis of the data. This second portion of ILUVFLYS computes the observed class ratios, the chi square statistic for the observed and expected ratios, and provides the probability value that the observed deviation has occurred on the basis of chance.