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40 C.F.R. § 798.5955

Heritable translocation test in drosophila melanogaster.

(a) *Purpose.* The heritable translocation test in *Drosophila* measures the induction of chromosomal translocations in germ cells of insects. Stocks carrying genetic markers on two or more chromosomes are used to follow the assortment of chromosomes in meiosis. The F_1 male progeny of treated parents are individually mated to females and the F_2 progeny phenotypes are scored. The observed spectrum of phenotypes is used to determine the presence or absence of a translocation. This is usually indicated by a lack of independent assortment of genes on different chromosomes.

(b) *Definitions*—(1) Chromosome mutations are chromosomal changes resulting from breakage and reunion of chromosomes. Chromosomal mutations are also produced through nondisjunction of chromosomes during cell division.

(2) Reciprocal translocations are chromosomal translocations resulting from reciprocal exchanges between two or more chromosomes.

(3) Heritable translocations are reciprocal translocations transmitted from parent to the succeeding progeny.

(c) *Reference substances.* These may include, but need not be limited to, ethyl methanesulfonate or N-dimethyl-nitrosamine.

(d) *Test method*—(1) *Principle.* The method is based on the principle that balanced reciprocal chromosomal translocations can be induced by chemicals in the germ cells of treated flies and that these translocations are detected in the F_2 progeny using genetic markers (mutations). Different mutations may be used as genetic markers and two or more of the four chromosomes may be genetically marked for inclusion in this test.

(2) *Description.* Wild-type males are treated with chemical and bred with females of known genetic markers. The F_1 males are collected and individually bred with virgin females of the female parental stock. The resulting F_2 progeny are scored. Putative translocation carriers are confirmed with an F_3 cross.