Finnerty, V., D.L. Baillie and A. Chovnick. University of Connecticut, Storrs. A chemical system for mass collection of virgin females or males.

A purine selector system has been devised to kill flies lacking xanthine dehydrogenase (XDH) activity (Glassman, E., Fed. Proc., 24: 1243, 1965). The purine (Sigma Chem. Co., P6880) is used as an aqueous solution, generally 0.2%. Parental flies are allowed to remain in fresh culture bottles for 2-3 days. Immediately after transfer, 1-2 ml. of 0.2% purine is evenly distributed over the surface of the already formed culture. This method is useful since it allows stocks to be maintained indefinitely by the usual transferring. When one sex is required the chemical selector is simply applied to the required number of cultures in the manner just described.

1. For attached-X virgin females: such females, with any desired combination of markers (except those with drastically reduced or no XDH activity) are kept with ma-1 males. The purine system will kill ma-1 males before eclosion leaving only virgin females.

2. For virgin males: method 1 is reversed so that desired males are kept with homozygous ma-1 attached-X females.

3. For free-X heterozygous virgin females: a variation of method 1 is potentially useful where virgin females are needed for (X or autosomal) fine structure analysis. Where the heterozygous female, a^X/a^Y, are required, virgin females of the type a^X/a^X, homozygous for ma-1, are crossed to a^Y males. After treatment, the daughters, being ma-1/ma-1+ having normal levels of XDH activity, will survive. The sons, being ma-1, will be eliminated.

Similar selector systems employing ry with X-translocations may be utilized in situations where ma-1 would be undesirable.

Since the purine system may be used for a variety of genotypes and culture conditions, the concentration of purine may have to be adjusted to maximize the results. We have noted that dilute aqueous purine is subject to destruction by mold and therefore make up fresh solution with clean glassware as required. Any unused solution is kept refrigerated. The purine concentrations described have been successful with our medium (cornmeal, agar, molasses, karo, brewers yeast, tegosept) used in half-pint creamers, but may well need adjusting when used with different media or with different volumes of media.

Leuthold, U. and Würgler, F.E. Swiss Federal Institute of Technology, Zürich, Switzerland. Egg collection from individual females of D. melanogaster.

As a standard procedure for the registration of X-ray induced damage in stage 14 oocytes virgin females are irradiated. The females are then mated with unirradiated males and allowed to lay eggs for 24 hours. With this procedure two difficulties arise: (a) variation in control mortality resulting from eggs deposited by non-inseminated females and (b) heterogeneity of oocyte stages tested if some females deposit large numbers of eggs. To avoid these difficulties the following modified method is used:

Females from uncrowded standard cultures[1] are collected as virgins and kept for 4 days in "feeding bottles" with well-yeasted medium[1]. On the 5th day the females are irradiated and mass mated with about 2 days old males in empty bottles in a dark room. About twice as many males as females are used. After 2 to 3 hours the females (which do not lay eggs in the empty bottles) are separated from the males and put individually into special egg collection arrangements in a room of 25°C. and 96% relative humidity. Each egg collection arrangement consists of a glass beaker (5 cm diameter, 9 cm high) standing upside down on a thick blotting paper and a small plastic bowl (1.5 cm diameter, 1 cm high) placed in a central position beneath the beaker. The bowl is two-thirds filled with fermenting egg laying medium[1]. A large area of the smoothed surface of this medium is covered with black paper soaked previously in 1% acetic acid. Since most of the liquid will be absorbed by the medium, more acetic acid is dropped into the paper. Females anaesthetized by CO_2 are brought individually under each beaker. As the black paper in the bowl is the only wet place in the arrangement the flies will deposit most of the eggs on it. Occasionally some eggs may be found on the free surface of the medium or on the wall of the bowl. During the egg collection period groups of 24 of these arrangements are brought under a light-tight cover which prevents the flies from disturbance by light changes in the experimental room. With this method an average of about 20 eggs per female are deposited within 3 hours. From