Raising *Drosophila melanogaster* in the laboratory

Remedies for contaminations of *D. melanogaster* culture

The following describes remedies for the three most common types of contamination of *D. melanogaster* cultures.

Bacteria

To remedy a bacterial contamination, it is recommended to add antibiotics (streptomycin, tetracycline, or ampicillin) to the growth medium at a concentration of 250mg/liter; this treatment is usually sufficient to solve the probem within a single generation. If the problem recurs, it is necessary to search for the source of the contamination (for example, the yeast). In addition, using dextrose instead of table sugar in the growth medium can prevent bacterial growth. The regular use of antibiotics is not recommended because it inevitably leads to the development of resistance.

Molds

To inhibit the development of molds, it is necessary to include fungicides such as Nipagin M or propionic acid among the ingredients of the growth medium. In the case of bacteria and molds that resist treatment, it is possible to wash the eggs in 70% alcohol.

Mites

Mites are the most feared infestation for a Dm lab. Some mites eat only the flies' food, but others feed on embryos and pupae and can completely destroy a fly laboratory. Mites are very small and thus difficult to detect. Adults are smaller than *Drosophila* embryos and can easily be seen (under the microscope) walking on the pupal cases inside old containers. Mite embryos are even smaller and are often found in chains of 10-20 eggs on *Drosophila* pupal cases. Mites thrive among the debris that accumulates in the fly trays and incubators, which is why it is essential to constantly clean them with ethanol, which is able to kill both the mites and their eggs.

The mite life cycle is slightly longer than that of the fly, so if the flies are replicated immediately after their exit from the pupal case, mites should not be able to overwhelm a strain.

However, the best precautions against mites are to:

a) quarantine strains that arrive from other laboratories;

b) regularly refresh the laboratory strains;

c) clean constantly.

To prevent mite infestations, it is strongly recommended that flies arriving from other laboratories or stock centers be put in quarantine, kept in a separate room from the Dm lab, far from the laboratory strains.

Recommended isolation times correspond to two generations for flies arriving from other laboratories and four generations for flies coming from the environment. In any case, the flies can be added to the collection after being quarantine only if they are determined to be free from infection or infestation by a careful stereo microscope examination.

If it is not possible to wait to work on a quarantined strain, crosses can be set up in the quarantine room. If, after 6 weeks, the original container of the strain is free of mites, the entire experiment can be moved into the laboratory and incubators.

If there is an infection or infestation in progress, the first rule is to isolate all affected cultures in a quarantine room.