4. Modelling ageing and neurodegeneration in the fruit fly *Drosophila melanogaster*

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4.1 Background

The fruit fly Drosophila melanogaster has proved itself an extremely useful model system in which to define the genetic basis of a range of biological phenomena which have relevance to humans. In recent years it has increasingly been adopted to model human disease processes including improving the understanding of fundamental mechanisms that lead to neurodegeneration.

4.2 Project overview:

Students will have the opportunity to devise experiments that examine the effect of aging processes and environmental "stresses" on fly behaviour. These are major factors which increase the risk for neurodegenerative diseases such as Alzheimer's disease (AD), Huntington's diseases (HD) and Parkinson's disease (PD).

Students may also examine the effects of different diets on aging and investigate how this impacts on behaviour.

You might like to investigate the effects of drugs e.g. alcohol, on fly behaviour.

In the first week you will be shown how to carry out a simple assay for motor behaviour (movement) in the adult fly. You will also be shown how to apply a heat stress to the flies. We will also set up some cohorts of flies to age.

4.3 Resources

a) Equipment to anaesthetize flies
b) Fine brushes to move flies whilst setting up crosses
c) Vials to house flies
d) An incubator at 25'C to rear flies
e) A stove to make fly food (+ fly food ingredients – recipe can be provided)
f) Stop watches
g) A camera to take photographs of flies during climbing assay.
h) Mouse mats for climbing assays.
i) 200 ml glass cylinders (possibly 10) for climbing assays.

4.4 Risk assessments

Risk assessments are held by the college for all the experimental procedures. There are no exceptional hazards associated with the procedures.
Additional risk assessments may be required if specific drugs or chemicals are used.