

Technique Notes



Climbing assay.

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Climbing performance is a means to assay overall locomotion either purely driven by geotaxis in red light or by a combination of geotaxis and phototaxis in daylight. We employ a single glass cylinder for the test and videotape the whole process of climbing for 30 seconds with internal time exposure. It avoids falsifying the result from stalling of flies at the interface of the two tubes, which are usually placed on top of each other to separate flies that arrived in the upper part from those which did not. Tiny marks on the glass at fixed distances allow easy calculation of the proportion of flies, which reached a given distance within a time of choice. In addition we cut the wings to prevent flight.

Flies needed

1. Prepare several vials of flies (*e.g.*, 15 age-matched males/vial) for each genotype to be tested. Flies are stored at room temperature inside the test box until ready to test.

Equipment needed

1. Use one Plexiglas test tube stand for 6 glass tubes (height = 20 cm, opening width = 2-3 cm).
2. Parafilm to cover the cylinder opening
3. Black experiment box
4. Light source above the test tube stand
5. Red marker (Edding) for marking climbing distances (we use 10 or 15 cm)
6. Video camera with internal time recording
7. Timer

Climbing assay

1. Cold anesthetize flies and cut wings off.
2. Prepare 15 flies on fresh food the day before.
3. One hour before testing load glass tube with 15 flies, cover the opening with Parafilm and place it into the test tube stand inside the experiment box (Figure 1).

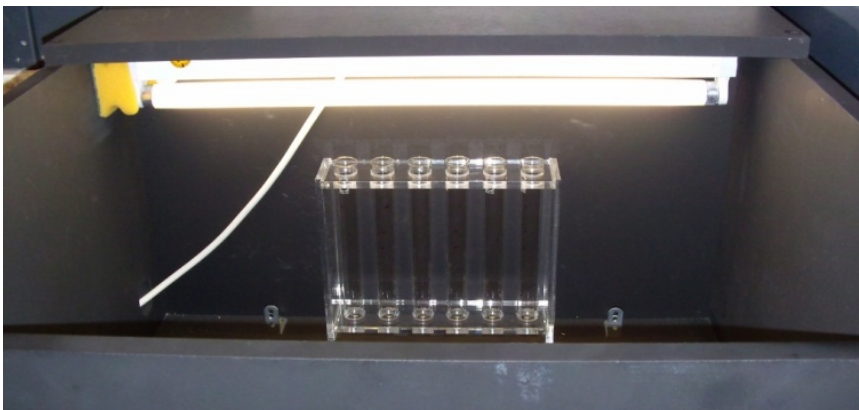


Figure 1.

4. Place the video camera at the appropriate distance to have all 6 vials in focus. Start the recording.
5. Bang flies down to the bottom of the cylinders and start your timer.
6. At 30 seconds, bang the flies down again and repeat this for a total of 6 climbing opportunities. The flies should have 15-20 seconds to climb within each 30-second recording time frame.
7. After a 5 min break, another test run is performed with the same parameters.
8. The camcorder records are fed into a computer for movie presentation.
9. Climbing evaluation is performed by visually counting the flies climbing over the distance mark within a chosen time frame that is visible in the camcorder movie.
10. Data of repeated test series are calculated for statistical relevance.



A convenient method for supplying food to *Drosophila*.

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Commonly used food for *Drosophila* is supplied in the form of dry flakes (for example, Instant Medium by Carolina Biological Company). Cool water is added to the flakes before use in the culture vials. The disadvantage of this method is that the food tends to become very dry in a month or so, and the vials need to be washed extensively before reuse or have to be discarded altogether.

We have found that *Drosophila* food can be supplied in a liquid form to prevent it from drying out. We used cotton balls to soak up highly moistened fly food and put the cotton balls directly in the bottom of culture vials. This method has the advantage of maintaining an adequate amount of moisture in the fly food for up to two weeks without disturbing normal fly development. When the cotton balls get dry, they can be easily taken out with forceps and replaced with new cotton balls soaked with freshly moistened food. This method thus enables the continuing use of the same culture vials for an extensive period of time.

Additionally, if one is concerned about mold and bacteria growth, a low concentration of propionic acid (0.5% by weight) or sodium azide (0.001% by weight) can be included in the moistened food.

Call for Papers

Submissions to *Drosophila* Information Service are welcome at any time. The annual issue now contains articles submitted during the calendar year of issue. Typically, we would like to have submissions by mid-December to insure their inclusion in the regular annual issue, but articles can be accepted for this volume until 31 December. Details are given in the Guide to Authors or on the DIS web site: www.ou.edu/journals/dis. Very early submissions may be uploaded as “prepublication” files on this web site.