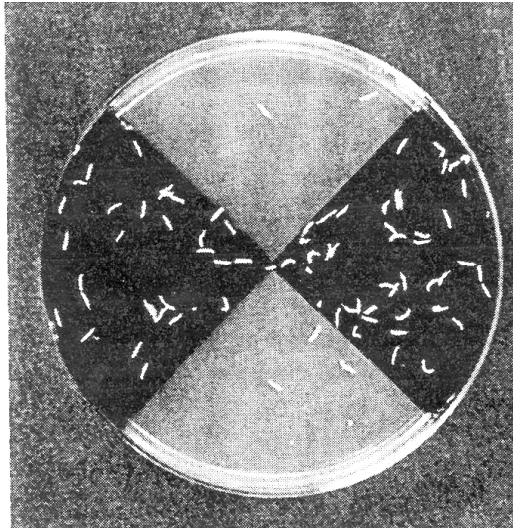


## 8. Vision

Flies are highly sensitive to visual stimuli, and respond to a range of wavelengths from ultraviolet (~ 350 nm) to far-red (~ 650 nm). Perhaps the most celebrated of the *Drosophila* mutants, *sevenless*, was isolated in a screen for mutants unable to sense ultraviolet light. As well as simple phototactic responses, flies can also recognize specific visual patterns which can be used to produce operant conditioning.

### 8.1 Larval phototaxis

Larvae are negatively phototactic (*Figure 10*) (26). Their response to light can be assayed on Petri dishes (*Protocol 17*).



**Figure 10.** Larval phototaxis assay. Larvae are placed at the centre of a Petri dish containing diametrically opposed dark and translucent quadrants of 1% agarose. Dishes are placed on a light box, and larvae are given 5 min to choose between illuminated and dark quadrants. A response index (RI) is calculated by subtracting the number of larvae on translucent quadrants from the number on dark quadrants divided by the total number of animals. The distribution of larvae shown here represents an RI of 0.85. Reproduced with permission from ref. 26.

### Protocol 17. Larval phototaxis

#### *Equipment and reagents*

- Petri dishes
- Light box
- Agarose
- Blue, green, and red food dyes

#### *Method*

1. Prepare two Petri dishes of 1% agarose, one containing 1 ml/100 ml of each of the blue, green, and red food dyes.
2. Cut the agarose on each dish into quadrants and move the quadrants

**Protocol 17. Continued**

to make two dishes each with two opposed transparent quadrants and two opposed dark quadrants.

3. Pour 12 ml of 1% agarose on top to produce a smooth surface for larvae to crawl on.
4. Place the dishes on a light box in a dark room.
5. Place larvae in the centre of the dish and allow them 5 min to choose between transparent and dark quadrants.