

Fruit Fly (*Drosophila Melanogaster*)

Encyclopedia Article

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Fruit Fly (*Drosophila Melanogaster*)

This small insect, also known as the vinegar fly, was a favorite subject for laboratory studies in genetics beginning around 1900. Why did researchers choose to study *Drosophila melanogaster* instead of another type of insect or animal? Because of its small size, only 1/16 to 3/32 inch (1.5 to 2.5 millimeters), the fruit fly could be kept by the thousands in small containers, ensuring that researchers always had an abundant supply of experimental subjects. *Drosophila* didn't need much to eat; a bowl of fermenting or spoiled fruit could feed thousands of the tiny insects. And this particular species had simple, easy-to-study characteristics: bright red eyes, clear wings, shiny black abdomen with yellow bands, and only four chromosomes in each cell.

Most important, though, were its reproductive characteristics. *Drosophila melanogaster* has the most rapid reproductive rate of any dried-fruit insect. The whole maturation process takes only seven days: about 24 hours in the egg, three days as larva, and three days as a pupa. Sometimes, if the female keeps the mature eggs within her body, they may hatch within an hour after they are laid. Consequently, many generations of fruit flies can be bred in a short time for genetic study.

An adult female fruit fly may lay as many as 2,000 eggs in her lifetime. However, the average number of eggs during a female's life span is about 1,000. The life span of the female can vary, depending on the weather conditions. Females live about 39 days in warm weather or up to 70 days in cooler weather. But males don't seem to have the same weather sensitivity. They typically live about 41 days.

The characteristics of *Drosophila melanogaster* made the insect especially valuable to researchers like Thomas Hunt Morgan, who needed to study several generations of a particular species in order to observe the mechanisms of heredity.

Today fruit flies are still popular as experimental subjects. They are used to study everything from circadian rhythms and sex-determining genes to alcoholism and cocaine addiction.