

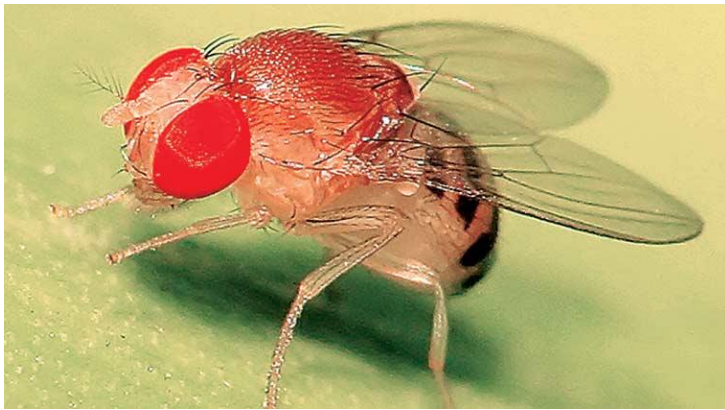
## Biological Clocks in Animals-II

Let us understand the concept of Circadian rhythm with the help of few examples in animals:

### 1. *Drosophila* (The Fruit Fly) :

In *Drosophila*, the circadian rhythm is in the form of a daily 24-hour cycle of rest and activity. **Scientists have discovered a particular locus known as the *per* gene**, which have a profound effect on the biological rhythms.

The mutation in the *per* gene can show different circadian periodicities, for example of 19 or 28 hours, or no period at all.



### **The Fruit Fly: *Drosophila***

### 2. Honey bees:

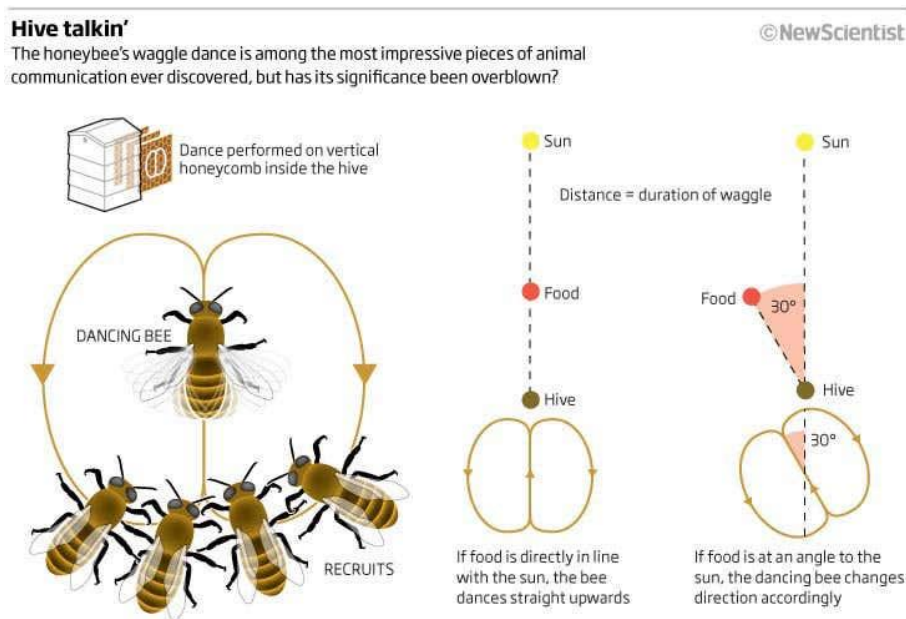
**Lindauer** (1961) was first to demonstrate that honey bees have a biological clock inbuilt in them as he observed and found the same and termed it as "**marathon dances**".

**Honey bee dances**—many types of such dances have been observed in honey bees which direct other honey bees present in the bee hive towards food sources. They use the sun to orient and retrieve information about directions to food sources into their dances along with the changing direction of the sun they keep on changing the information in those dance forms. For example in the morning, the

sun is in the east and, at noon in the northern hemisphere, it is in the south. Hence, honeybees need a clock to compensate for the movement of the sun.

Under natural conditions, forager bees who have found out a rich nectar source somewhere may dance continually for up to several hours in the hive, without ever going out again to the food and without seeing the sun. But inside the hive the scenario is different, the angle of a forager bees dance is with respect to vertical, the component of the dance that tells other hive members the direction of the food source, slowly changes at 15 degrees per hour, tracking the sun's movement and giving correct directions to the followers.

A **waggle dance**, or **wag-tail dance**, is performed by bees foraging at food sources that are over 150 meters away from the hive. This dance, unlike the **round and sickle dances**, communicates both distance and direction to potential recruits.



**Fig- An illustration of Honey Bee Dances used for Communication.**

**Reference: Newscientist**