
EXERCISE 19 STUDY OF THE FRUITFLY *DROSOPHILA* FROM MOUNTED SPECIMEN

Structure

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19.1 INTRODUCTION

Drosophila commonly known as fruitfly or vinegar fly, belongs to the order **Diptera** of class **Insecta** under Phylum **Artliropoda**. It is a small insect about 2 mm size, has a yellowish brown to rusty brown body and clear, unmarked wings.

D. melanogaster is well-known as an excellent genetic material for chromosomal studies and is easy to culture. Its larvae can easily be reared on artificial media for experimental investigations.

Objectives

After performing this exercise you should be able to:

- identify the fly,
- describe its diagnostic features,
- draw a diagram to show its external features.

19.2 MATERIAL REQUIRED

1. Hand lens
2. Compound microscope
3. Mount of *Drosophila*
4. Practical Record Book

19.3 METHOD AND OBSERVATIONS

Examine the permanent mounts of the specimens of adult fruit fly under low power of microscope and note the following features:

- i) Small insect having only one pair of forewings with few veins.
- ii) Hindwings are represented by a pair of balancers or halteres.
- iii) Body divided into head, thorax and abdomen.
- iv) Head bears large compound eyes, 3 ocelli and plumose type antennae, having 2 basal segments and a fringed flagellum.
- v) Mouth-parts are of sucking type, Feeds upon fermenting fruits.
- vi) Broad thorax bears bristles.
- vii) Abdomen has dark posterior bands.
- viii) Metamorphosis is complete consisting of egg, larva, pupa and adult.
- ix) Examine the specimen to verify the features listed above.

You should sketch what you observe under the microscope in the record note book, label and give the descriptive features.

2. List the differences between mouth-parts of i) male and female *Culex* and ii) male and female *Anopheles*.

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19.4 TERMINAL QUESTIONS

Draw a labelled diagram of *Drosophila* giving salient features?

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2. Why *Drosophila* is called a synanthropic species?

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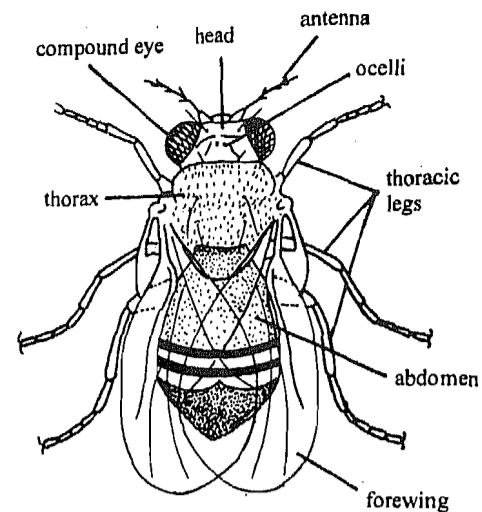


Fig. 19.1: *Drosophila melanogaster*.

Classification and its Justification

Drosophila : (Fruitfly)

Kingdom	Animalia	Animals, multi-cellular organisms with cells that lack a cell wall, many capable of movement or movement of some of their body parts or capable of movement at some time of their life cycle; heterotrophic nutrition.
Phylum	Arthropoda	Bilaterally symmetrical, triploblastic and segmented. Limbs jointed, exoskeleton chitinous
Class	Insecta	3 pairs of legs, wings present
Division	Endopterygota	Metamorphosis complete
Order	Diptera	Forewings present, hind wings reduced to halteres
Family	Drosophilidae	
Scientific name	<i>Drosophila</i>	
Common name	Vinegar fly, Fruit fly	

Habit and Habitat

In the household, we usually come across these flies at the end of **summer** and the beginning of autumn, when they are seen flying slowly in masses on fermenting fruits, very common on banana and on exposed foods. About 1000 species are known. It is a synanthropic (close association with human beings) species causing damage in the food industry, where absolute hygienic conditions are **main** defense against **them**. The larvae speed up the decomposition of fruits, vegetables, jams, **cheese** and foodstuffs and the adult fly causes further damage by spreading yeast cells over them.

Distribution

This is a cosmopolitan species distributed over the whole globe.

3. Why is *Drosophila* classified under order Diptera of the class Insecta?

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