

UNIT

18

ORGANISATION OF LIFE



Learning Objectives



After the completion of this lesson, students will be able to:

- ◆ understand the different levels of organization seen in the animal world.
- ◆ know about the structure of cells.
- ◆ understand the types of tissues.
- ◆ know about the structure of eye as an example for organ level of organization.
- ◆ understand the respiratory system as an example for system level of organization.
- ◆ understand the physiological functions of organizational setup with reference to homeostasis, diffusion, osmosis, osmoregulation, cellular respiration and metabolism.

Introduction

If you look around your surrounding, you will be able to observe numerous varieties of animals. There are animals like amoeba which cannot be seen by our naked eye. There are also animals like elephants and blue whale which are of huge size. The variations in animal are not only seen in size but also in the complexity of the cells, tissues and the body structure.

Based on the structural organization, organisms can be classified into prokaryotes and eukaryotes. In some organisms like bacteria, cyanobacteria and mycoplasma, the true nucleus is absent. These organisms are called prokaryotes. However, organisms like plants and animals have cells with a well-defined nucleus covered by membrane. These organisms are called eukaryotes. Some organisms have a single cell body and they are called as **unicellular organisms**. Eg. Yeasts and amoeba. Organisms such as plants, animals and human beings are made of a large number of cells and they are called **multicellular organisms**. In this lesson, let us learn about different levels of organizations of living organism with suitable example.

18.1 Biological Organisation

Biological organisation starts with submicroscopic molecular level and passes through microscopic cellular level and the microscopic or macroscopic organismic level. Finally it ends in ecosystem and the biosphere. Thus, biological organisation shows the hierarchy in organisation level from simple to more complex. The hierarchy in biological organisation reveals that atoms are the lowest unit at the submicroscopic level while the cells are the smallest unit at the microscopic level.

Atoms combine to form molecule which undergo chemical reaction to form organelles of the cells. Several organelles are contained in the cell. A group of cells which are similar and meant for a specific function constitutes a tissue. Several tissues together contributing to some specific function inside the body constitute an organ. Many organs acting together to perform a specific life process constitute an organ system. Several organ systems together constitute the organism. We see that several systems are present in an organism and they are required to perform diverse life process in