1 An introduction to living organisms

Biology is the study of living organisms. All living organisms from the simplest unicellular organisms to the most complex multicellular organisms share certain characteristics.

The Characteristics of living organisms

Living organisms have seven characteristics in common:

- **M**ovement: a change in the position of a whole organism or of parts of an organism
- **R**espiration: the process by which living organisms obtain or make food.
- **S**ensitivity : the ability of organisms to detect and respond to changes in their environment or within themselves.
- **G**rowth: a permanent increase in the size and complexity of an organism.
- **R**eproduction: the process by which living organisms generate new individuals of the same kind as themselves.
- **E**xcretion: the process by which waste and harmful substances, produced by the body's metabolism, are removed from the body.
- **N**utrition; the process by which living organisms obtain or make food.

Classification of living organisms

Using similarities and differences between living organisms they can be classified into groups.

Visible characteristics such as number of legs, number of body parts, number of wings, presence or absence of antennae, hairiness, shape, arrangements of veins in a leaf or an insect's wings.

Modern classification uses the molecular structure of deoxyribonucleic acid (DNA) to assist in grouping organisms; the greater the similarity in their DNA structure, the more closely related are the organisms.

The basic category of classification is the species. A species is a group of organisms of common ancestry that closely resemble each other and are capable of interbreeding to produce fertile offsprings.

- Closely related species are the grouped into **genera** (singular genus)
- Related genera are then grouped into **families**
- Families into **orders**