

Animal Tissues

Cells do not function independently of each other, but instead they are organized into groups to perform certain vital functions in the life of the animal. Such a group of cells performing a specific function is called a TISSUE. The physiological or functional differences between various kinds of tissues are often accompanied by differences in physical appearance, since the cells of the tissues are adapted to the tasks they perform. Tissues do not function independently of each other either. Several tissues are organized to work together as a group. Such a group of tissues is called an ORGAN.

Tissues may be divided into 4 main groups:

A. Epithelial tissue: - cells are generally arranged into sheets which cover the surfaces of the organs or body. Glands are also derived from this tissue. Scrape a small amount of tissue from the lining of your cheek with a toothpick, and suspend the scraping in a drop of water on a microscope slide. Add a drop of iodine stain and put a cover-slip on. Notice the shape of the cells.

B. Muscular tissue: - there are three main varieties of muscle, but all are specialized for contraction. Examine the prepared slides of skeletal, smooth and cardiac muscle. Skeletal muscle is sometimes called "striated" or striped muscle. Can you see why?

C. Nervous tissue: - cells are specialized for the conduction of electrical impulses. Examine the prepared slide of a nerve cell. Note the long extension to the cell called the axon.

D. Connective tissue: - consists of several types of cell, usually embedded in a non-cellular substance. It includes blood cells, cartilage, bone, and the cells of "proper" connective tissue. Examine prepared slides of bone tissue and blood. How many types of cell can you find in the blood? How common is each type of cell?

Most organs, of course, consist of more than one type of tissue. For instance, the walls of your digestive tract are lined with epithelial cells, but there are also layers of muscle interlaced with connective tissue, and many small blood vessels and nerves.