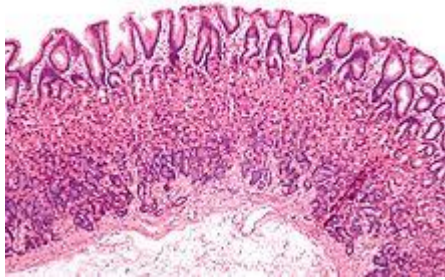


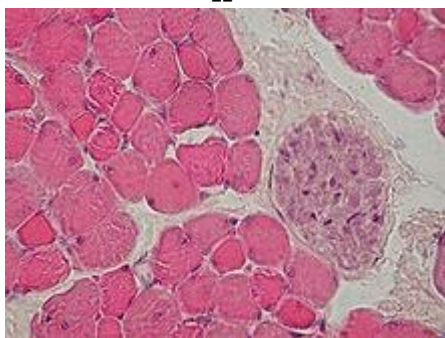
Epithelium[]



Gastric mucosa at low magnification (H&E stain)

Epithelial tissue is composed of closely packed cells, bound to each other by cell adhesion molecules, with little intercellular space. Epithelial cells can be squamous (flat), cuboidal or columnar and rest on a basal lamina, the upper layer of the basement membrane,¹ the lower layer is the reticular lamina lying next to the connective tissue in the extracellular matrix secreted by the epithelial cells.^[18] There are many different types of epithelium, modified to suit a particular function. In the respiratory tract there is a type of ciliated epithelial lining; in the small intestine there are microvilli on the epithelial lining and in the large intestine there are intestinal villi. Skin consists of an outer layer of keratinized stratified squamous epithelium that covers the exterior of the vertebrate body. Keratinocytes make up to 95% of the cells in the skin.¹ The epithelial cells on the external surface of the body typically secrete an extracellular matrix in the form of a cuticle. In simple animals this may just be a coat of glycoproteins.¹ In more advanced animals, many glands are formed of epithelial cells.¹

Muscle tissue[]



Cross section through skeletal muscle and a small nerve at high magnification (H&E stain)

Muscle cells (myocytes) form the active contractile tissue of the body. Muscle tissue functions to produce force and cause motion, either locomotion or movement within internal organs. Muscle is formed of contractile filaments and is separated into three main types; smooth muscle, skeletal muscle and cardiac muscle. Smooth muscle has no striations when examined microscopically. It contracts slowly but

maintains contractibility over a wide range of stretch lengths. It is found in such organs as sea anemone tentacles and the body wall of sea cucumbers. Skeletal muscle contracts rapidly but has a limited range of extension. It is found in the movement of appendages and jaws. Obliquely striated muscle is intermediate between the other two. The filaments are staggered and this is the type of muscle found in earthworms that can extend slowly or make rapid contractions.¹ In higher animals striated muscles occur in bundles attached to bone to provide movement and are often arranged in antagonistic sets. Smooth muscle is found in the walls of the uterus, bladder, intestines, stomach, oesophagus, respiratory airways, and blood vessels. Cardiac muscle is found only in the heart, allowing it to contract and pump blood round the body.