

Mammalian Differentiated Cell Types, Part1

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CELL TYPES

There are over 200 types of cells in the human body. These are assembled into a variety of types of tissue such as

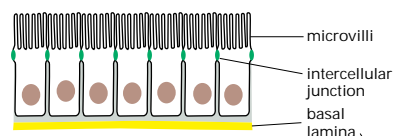
- epithelia
- connective tissue
- muscle
- nervous tissue

Most tissues contain a mixture of cell types.

EPITHELIA

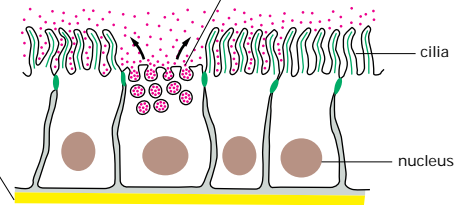
Epithelial cells form coherent cell sheets called epithelia, which line the inner and outer surfaces of the body. There are many specialized types of epithelia.

Absorptive cells have numerous hairlike projections called microvilli on their free surface to increase the area for absorption.



Adjacent epithelial cells are bound together by cell junctions that give the sheet mechanical strength and also make it impermeable to small molecules. The sheet rests on a basal lamina.

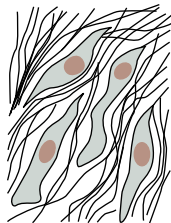
Ciliated cells have cilia on their free surface that beat in synchrony to move substances (such as mucus) over the epithelial sheet.



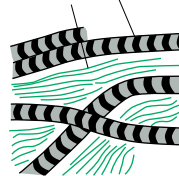
Secretory cells are found in most epithelial layers. These specialized cells secrete substances onto the surface of the cell sheet.

CONNECTIVE TISSUE

The spaces between organs and tissues in the body are filled with connective tissue made principally of a network of tough protein fibers embedded in a polysaccharide gel. This **extracellular matrix** is secreted mainly by **fibroblasts**.

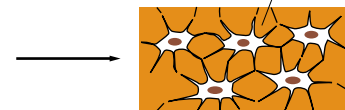
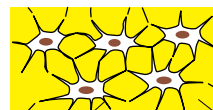


Two main types of extracellular protein fiber are **collagen** and **elastin**.

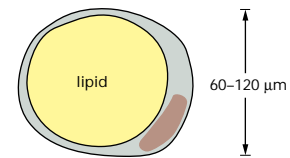


Bone is made by cells called **osteoblasts**. These secrete an extracellular matrix in which crystals of calcium phosphate are later deposited.

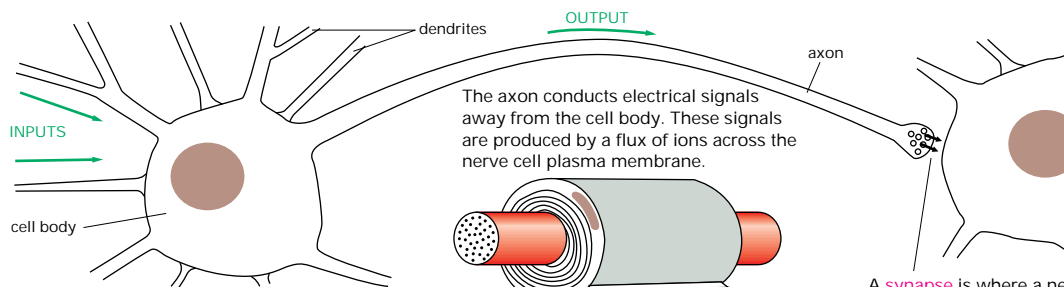
Calcium salts are deposited in the extracellular matrix.



Fat cells (or adipose cells), among the largest cells in the body, are responsible for the production and storage of fat. The nucleus and cytoplasm are squeezed by a large lipid droplet.



NERVOUS TISSUE



Nerve cells, or **neurons**, are specialized for communication. The brain and spinal cord, for example, are composed of a network of neurons among supporting **glial cells**.

Specialized glial cells wrap around an axon to form a multilayered membrane sheath.

A **synapse** is where a neuron forms a specialized junction with another neuron (or with a muscle cell). At synapses, signals pass from one neuron to another (or from a neuron to a muscle cell).