



Department of Kidney Dialysis Techniques

Histology lec 1: Introduction

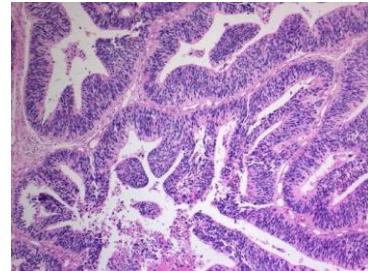
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LEARNING OBJECTIVES

By the end of this section, you will be able to understand:

- **Introduction and Definition of Histology.**
- **Importance of Histology.**
- **Types of body tissues.**
- **Histological Techniques.**



+ **Histology** is the branch of medicine that studies the microscopic structure of tissues.

+ **The word histology comes from:**

- Histo = tissue
- Logy = study

+ **Histology** helps us understand how tissues are organized and how their structure relates to their function in the human body.

+ **Importance of Histology**

Histology is important because it:

- Explains the normal structure of tissues and organs
- Helps in diagnosis of diseases (such as cancer and inflammation)
- Connects cell biology, anatomy, and pathology
- Is essential for medical laboratory and clinical practice

► Levels of Structural Organization:

The human body is organized into:

1. Cells
2. Tissues (groups of similar cells performing a function)
3. Organs
4. Organ systems

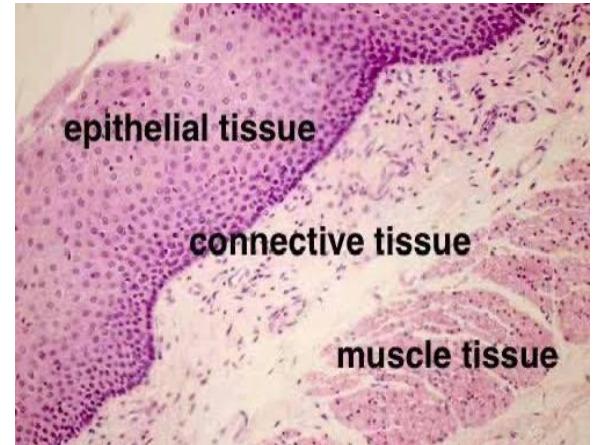
Histology focuses mainly on the tissue level.

► Basic Types of Tissues

There are four basic tissue types in the human body:

1. Epithelial Tissue
2. Connective tissue
3. Muscle tissue
4. Nervous tissue

1. Epithelial Tissue



Functions:

- Protection
- Absorption
- Secretion

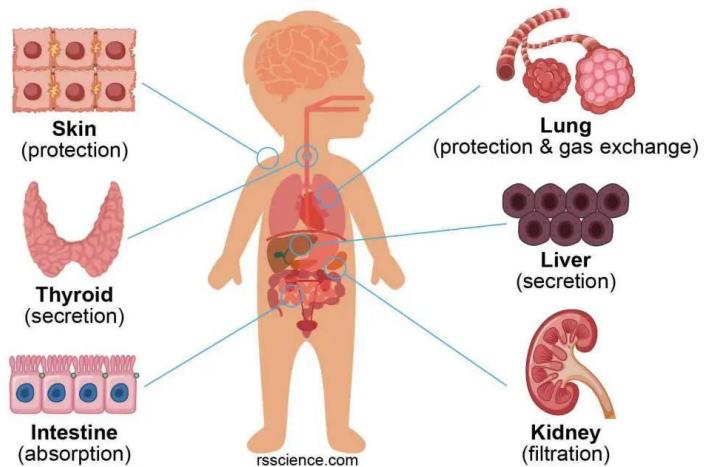
Characteristics:

- Closely packed cells
- No blood vessels (avascular)
- Rapid regeneration

Examples:

- Skin epidermis
- Lining of the digestive tract
- Glands

Examples of Epithelial Tissues and Their Functions



2. Connective Tissue

Functions:

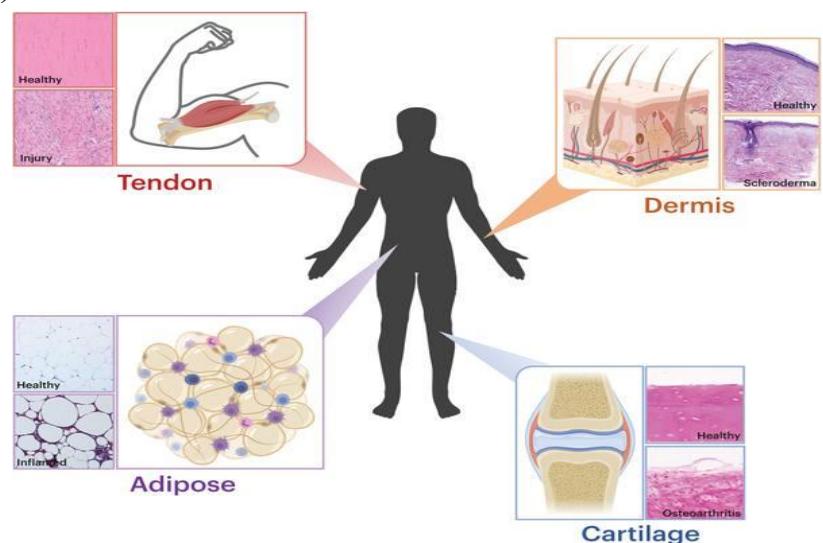
- Support and binding
- Protection
- Transport of substances

Components:

- Cells
- Fibers (collagen, elastic, reticular)
- Ground substance

Examples:

- Bone
- Cartilage
- Blood
- Adipose tissue



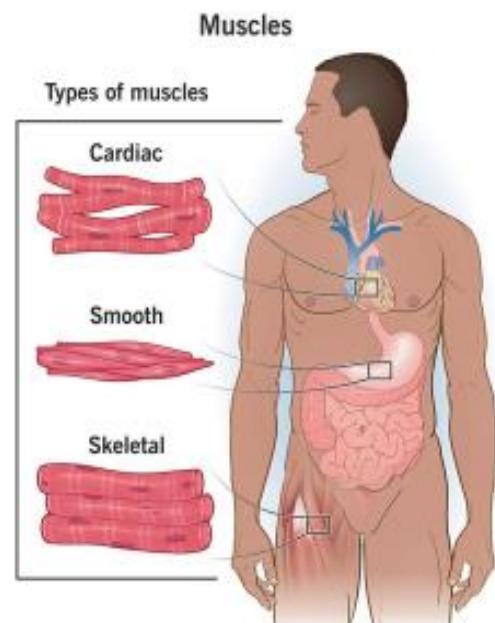
3. Muscle Tissue

Function:

- Movement and force production

Types:

- Skeletal muscle – voluntary movement
- Cardiac muscle – heart contraction
- Smooth muscle – involuntary movement in organs



4. Nervous Tissue

Function:

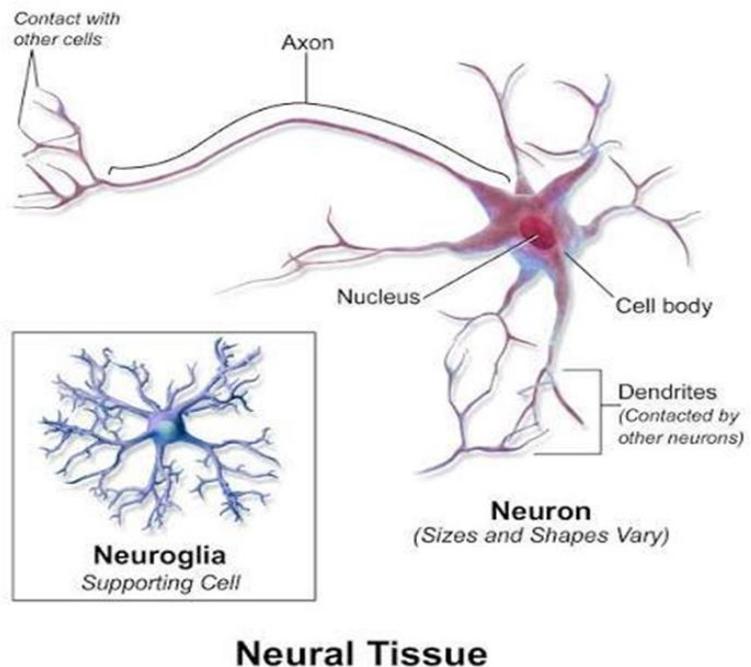
- Transmission of electrical signals

Cells:

- Neurons
- Neuroglial cells

Locations:

- Brain
- Spinal cord
- Peripheral nerves



✚ Histological Techniques

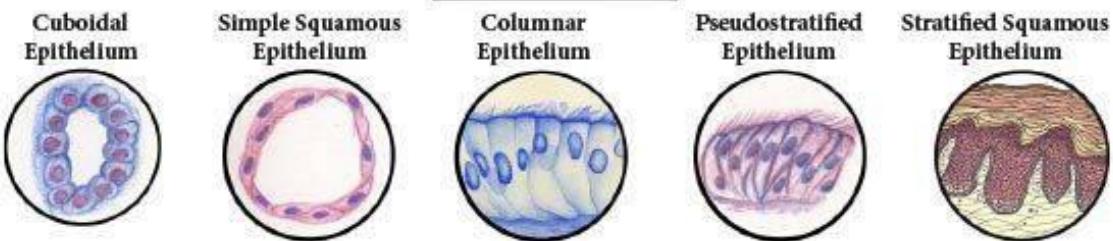
To study tissues microscopically, the following steps are used:

1. Fixation – preserves tissue structure
2. Processing – dehydration and embedding
3. Sectioning – thin tissue slices
4. Staining – enhances contrast (e.g., Hematoxylin & Eosin)

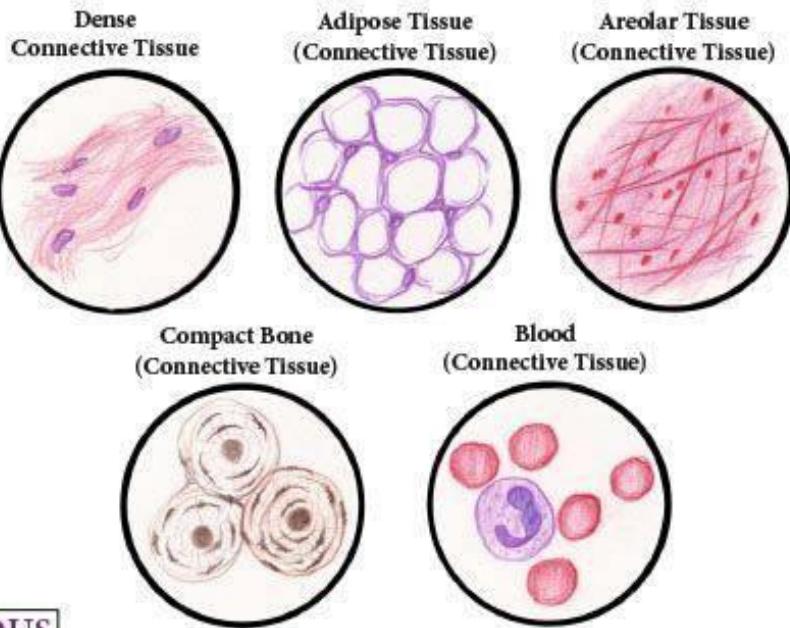
Histology is a fundamental science that allows us to see the microscopic architecture of tissues. Understanding normal histology is essential for recognizing abnormal changes in disease, making it a cornerstone of medical education and diagnosis.

The Four Basic Tissue Types Of The Human Body: Epithelium, Connective Tissue, Nervous Tissue and Muscle

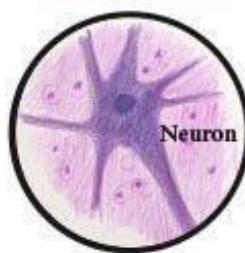
EPITHELIUM



CONNECTIVE TISSUE



NERVOUS TISSUE



MUSCLE TISSUE

