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جامعة المستقبل
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قسم الادلة الجنائية

Lecture (5)

عنوان المحاضرة

Tissue: Structure, Properties and Classification (Part 2)

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Tissue: Structure, Properties and Classification (Part 2)

Introduction

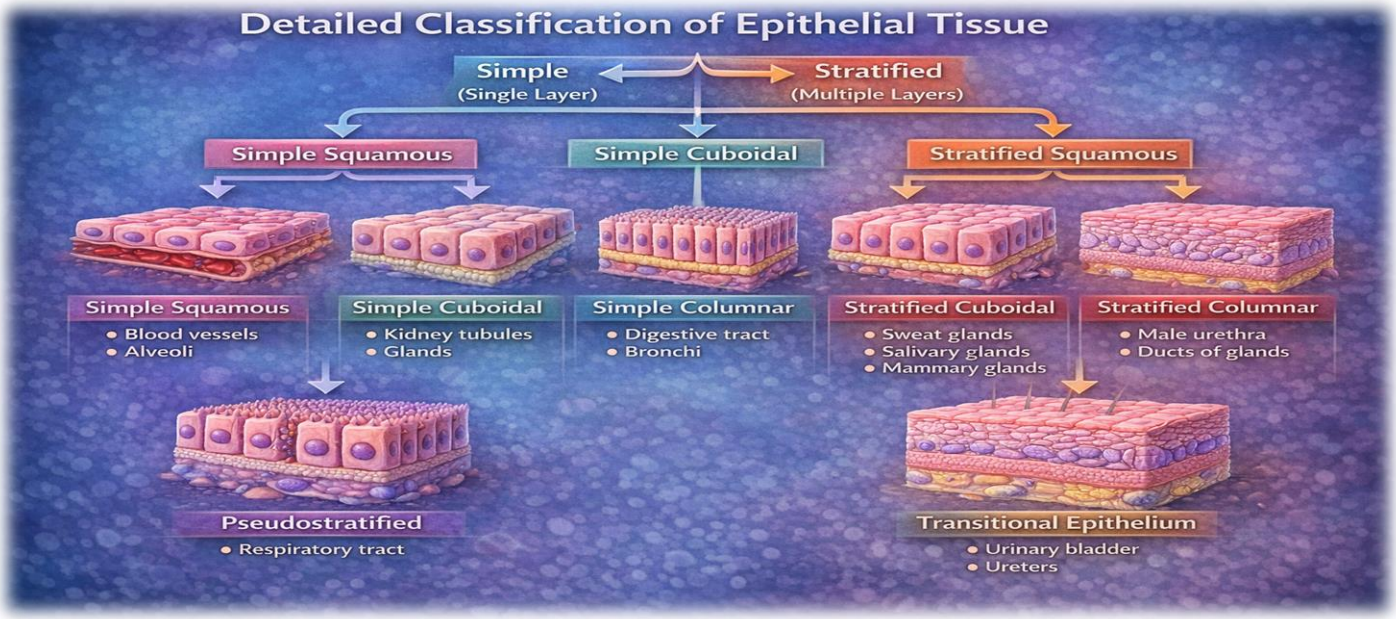
In Part 1, we learned what tissues are, why they are important, and how they are classified. We also studied epithelial tissue in a general way. In this part, we will continue with more details about epithelial tissue and then study the other main types of tissues in a simple and clear way.

Detailed Classification of Epithelial Tissue

Epithelial tissue is classified more clearly based on two main points:

1. **Number of cell layers**
2. **Shape of the cells**

This classification helps us understand where each type is found and what function it performs.



Simple Epithelium

Simple epithelium consists of one single layer of cells. These cells are thin and allow easy movement of substances.

Functions of Simple Epithelium

- **Absorption**
- **Diffusion**
- **Filtration**
- **Secretion**

Simple Squamous Epithelium

This type is made of flat and thin cells.

Functions:

- **Allows diffusion of gases**
- **Allows filtration of fluids**

Locations:

- **Alveoli of the lungs**
- **Blood vessels**
- **Body cavities**

Simple Cuboidal Epithelium

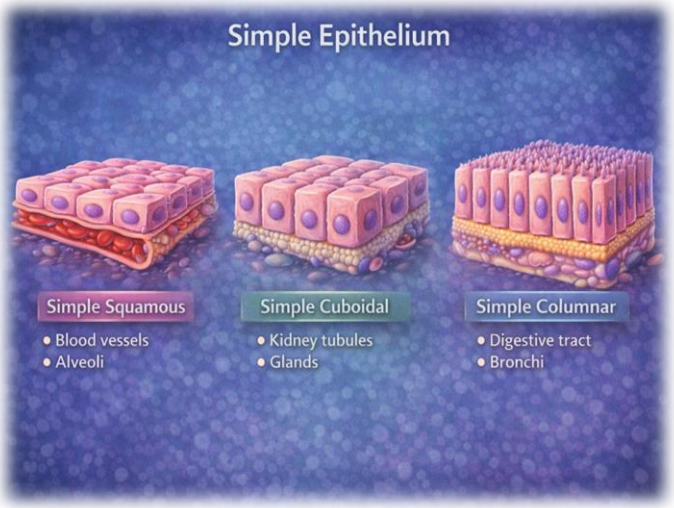
Cells are cube-shaped with a round nucleus.

Functions:

- **Secretion**
- **Absorption**

Locations:

- **Kidney tubules**
- **Glands**
- **Ovaries**



Simple Columnar Epithelium

Cells are tall and column-shaped.

Functions:

- **Absorption**
- **Secretion of mucus and enzymes**

Locations:

- **Stomach**
- **Intestines**

Pseudostratified Epithelium

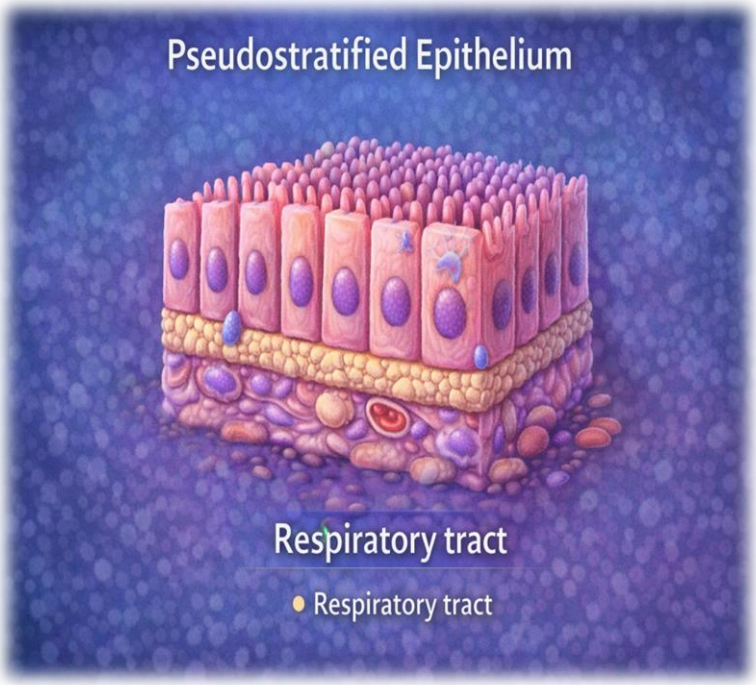
This tissue looks like it has many layers, but actually it has only one layer. All cells touch the basement membrane, but not all reach the surface.

Functions:

- **Secretion of mucus**
- **Movement of mucus**

Location:

- **Trachea**
- **Respiratory tract**



Stratified Epithelium

Stratified epithelium is made of many layers of cells. It mainly protects the body from damage.

Stratified Squamous Epithelium

This is the most common type.

Functions:

- **Protection**
- **Prevents water loss**

Types:

- **Keratinized (skin)**
- **Non-keratinized (mouth, esophagus)**

Transitional Epithelium

This tissue can stretch and return to its normal shape.

Function:

- **Allows stretching**

Location:

- **Urinary bladder**

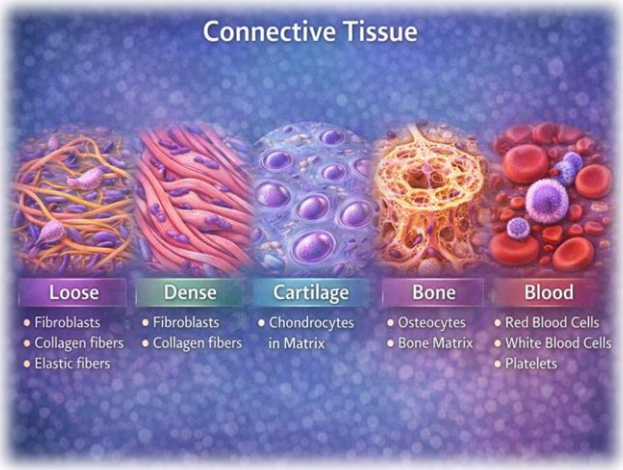
Connective Tissue

Definition

Connective tissue connects, supports, and protects other tissues and organs.

Functions of Connective Tissue

- **Support**
- **Protection**
- **Binding tissues together**
- **Transport (blood)**



Components of Connective Tissue

- **Cells**
- **Fibers**
- **Ground substance**

Types of Connective Tissue (General)

- **Loose connective tissue**
- **Dense connective tissue**
- **Cartilage**
- **Bone**
- **Blood**

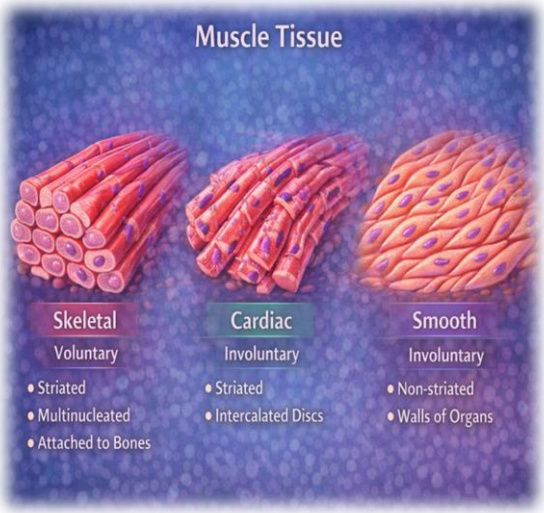
Muscle Tissue

Definition

Muscle tissue is responsible for movement.

Types of Muscle Tissue

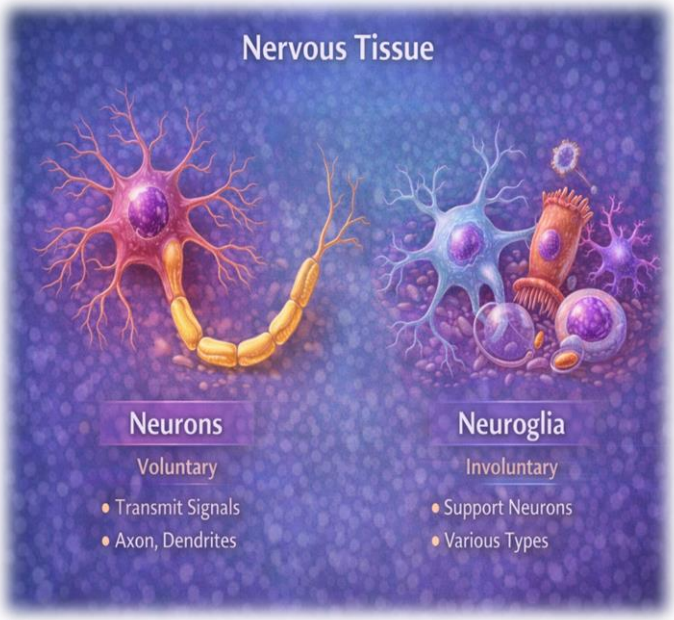
1. **Skeletal muscle**
   - **Voluntary**
   - **Attached to bones**
2. **Cardiac muscle**
   - **Found in the heart**
   - **Involuntary**
3. **Smooth muscle**
   - **Found in organs**
   - **Involuntary**



Nervous Tissue

Definition

Nervous tissue receives and transmits signals.



Functions

- **Communication**
- **Control**
- **Coordination**

Locations

- **Brain**
- **Spinal cord**
- **Nerves**

Relationship Between Tissues

All tissues work together:

- **Epithelial tissue covers and protects**
- **Connective tissue supports**
- **Muscle tissue moves**
- **Nervous tissue controls**

Conclusion

Each tissue in the body has a special structure and function. Understanding tissues helps us understand how the human body works as one complete system. Studying tissues is important for medicine and health sciences.