Tissues are groups of **cells** with a common structure (form) and function (job). There are four main tissues in the body – **epithelium, muscle, connective tissue** and **nervous tissue**.

I. EPITHELIUM

Functions (jobs):

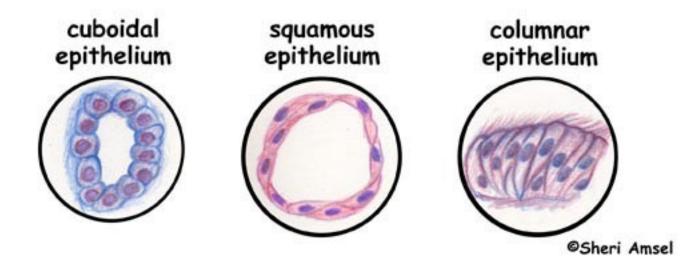
- 1) It protects us from the outside world skin.
- 2) Absorbs stomach and intestinal lining (gut)
- 3) Filters the kidney
- 4) Secretes forms glands

Characteristics (Traits):

- 1) Closely attached to each other forming a protective barrier.
- 2) Always has one free (apical) surface open to outside the body or inside (cavity) an internal organ.
- 3) Always had one fixed (basal) section attached to underlying connective tissue.
- 4) Has no blood vessels but can soak up nutrients from blood vessels in connective tissue underneath.
- 5) Can have lots of nerves in it (innervated).
- 6) Very good at regenerating (fixing itself). i.e. sunburn, skinned knee.

Classifications (types):

- 1) By shape
 - a) squamous flat and scale-like
 - b) cuboidal as tall as they are wide
 - c) columnar tall, column-shaped
- 2) By cell arrangement
 - a) simple epithelium single layer of cells (usually for absorption and filtration)
 - b) stratified epithelium stacked up call layers (protection from abrasion (rubbing) mouth, skin.)



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II. CONNECTIVE TISSUE

Functions (jobs):

1) Wraps around and cushions and protects organs

2) Stores nutrients

3) Internal support for organs

4) As tendon and ligaments protects joints and attached muscles to bone and each other

5) Runs through organ capsules and in deep layers of skin giving strength

The 3 Elements of Connective Tissue:

1) Ground substance - gel around cells and fibers

2) Fibers - provide strength, elasticity and support

3) Cells

<u>2 Kinds of Connective Tissue:</u>

1) Loose Connective Tissue:

a) Areolar Connective Tissue - cushion around organs, loose arrangement of cells and fibers.

b) Adipose Tissue - storehouse for nutrients, packed with cells and blood vessels

c) <u>Reticular Connective Tissue</u> – internal supporting framework of some organs, delicate network of fibers and cells

2) Dense Connective Tissue:

a) <u>Dense Regular Connective Tissue</u> – tendons and ligaments, regularly arranged bundles packed with fibers running same way for strength in one direction.

b) <u>Dense Irregular Connective Tissue</u> – skin, organ capsules, irregularly arranged bundles packed with fibers for strength in all directions.

IIa. SPECIAL CONNECTIVE TISSUES

1) Cartilage

Functions (jobs):

1) provides strength with flexibility while resisting wear, i.e. epiglottis, external ear, larynx 2) cushions and shock absorbs where bones meet, i.e. intervertebral discs, joint capsules

2) Bone

Functions (jobs):

1) provides framework and strength for body

2) allows movement

3) stores calcium

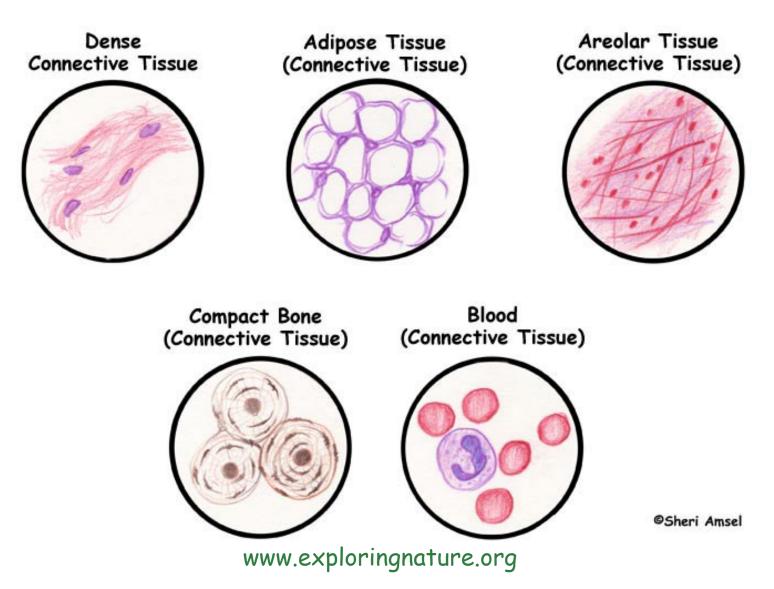
4) contains blood-forming cells

3) Blood

Functions (jobs):

1) transports oxygen, carbon dioxide, and nutrients around the body

2) immune response



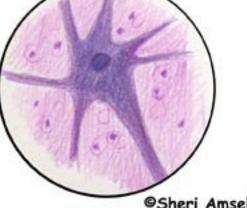
III. NERVOUS TISSUE

Functions (jobs): 1) Conducts impulses to and from body organs via neurons

The 3 Elements of Nervous Tissue

1) Brain 2) Spinal cord 3) Nerves





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IV. MUSCLE TISSUE

Functions (jobs):

1) Responsible for body movement

2) Moves blood, food, waste through body's organs

3) Responsible for mechanical digestion

The 3 Types of Muscle Tissue

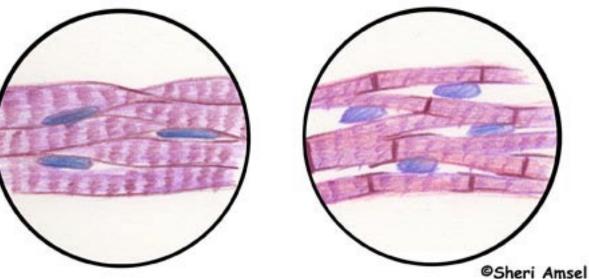
4) Smooth Muscle - organ walls and blood vessel walls, involuntary, spindle-shaped cells for pushing things through organs

5) Skeletal Muscle - large body muscles, voluntary, striated muscle packed in bundles and attached to bones for movement

6) Cardiac Muscle - heart wall, involuntary, striated muscle with intercalated discs connecting cells for synchronized contractions during heart beat.

Skeletal Muscle

Cardiac Muscle



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