

What Are Tissues

Chapter 4 Lesson 1
Part 1

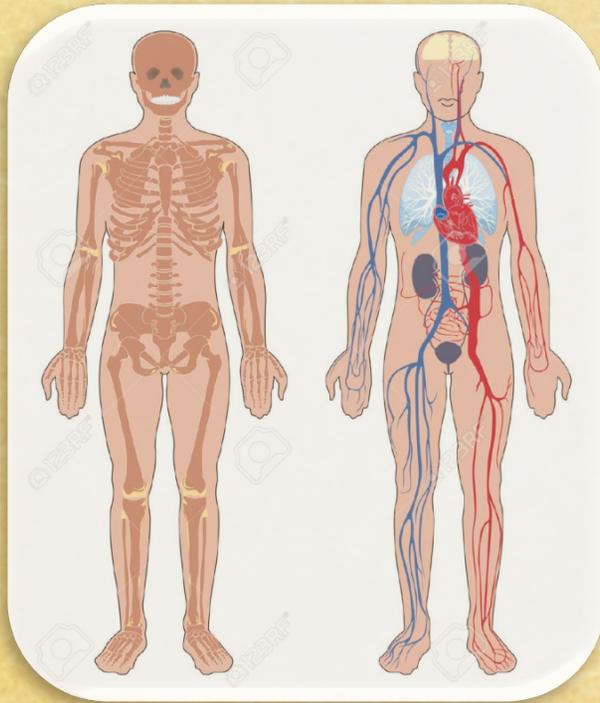
ByDesign Science, 6th Grade

Organization

- ◆ You know that cells are the basic unit of life.
- ◆ You also know that living things are organized in specific ways.

1. Atoms
2. Molecules
3. Organelles
4. Cells
5. Tissues
6. Different Organs
7. Organ System
8. Organism
9. Population
10. Community
11. Ecosystem
12. Biomes

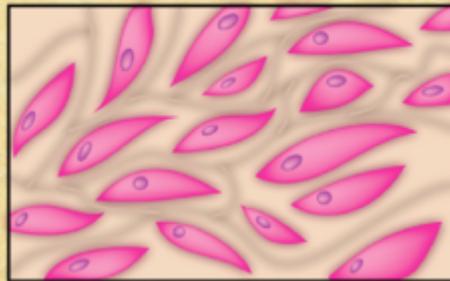
Organization



- ◆ How is your body organized?
- ◆ How are cells in your right hand connected to those in your left hand?
- ◆ What is the relationship between your eyes and your stomach?
- ◆ Why is this important?

Tissues of the Body

- ◆ Groups of similar cells working together to perform specific jobs are **tissues**.
- ◆ Your body has four types of tissues:



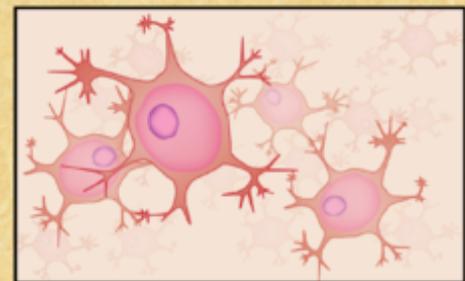
Connective tissue



Epithelial tissue

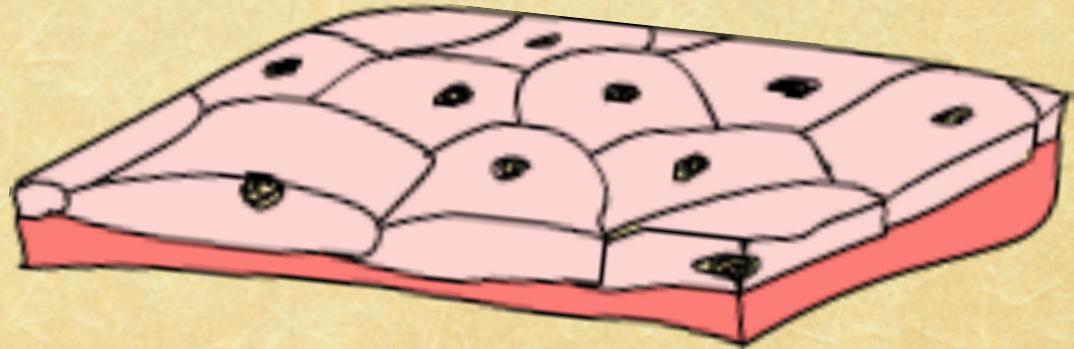


Muscle tissue



Nervous tissue

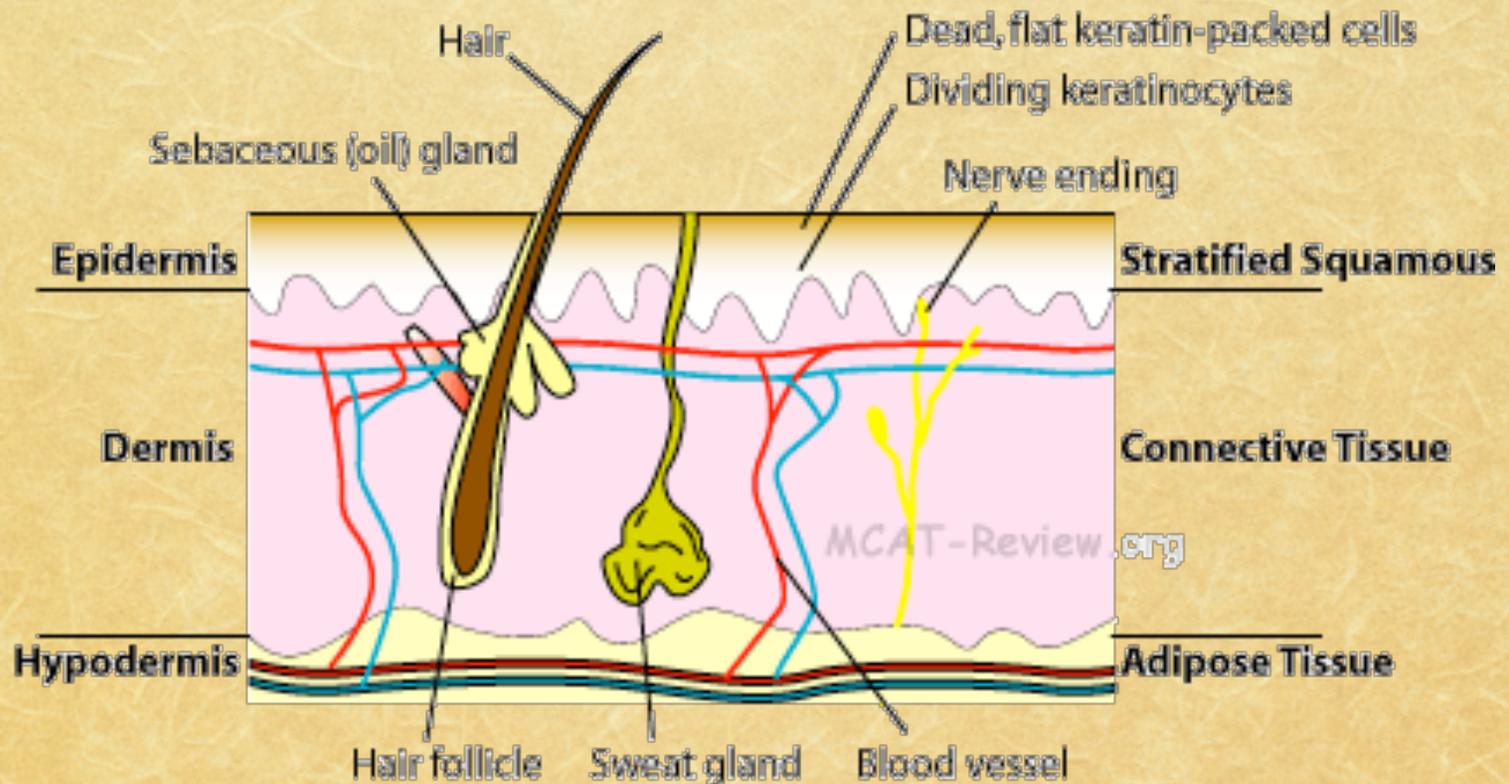
Epithelial Tissue



- ◆ **Epithelial tissue** protects all internal and external body surfaces.
- ◆ What do you think is inside your body that some tissues might need to be protected from?

Epithelial Tissue

- ◆ Epithelial tissue covers the outside surfaces of the body and lines spaces within the body.



Epithelial Tissue



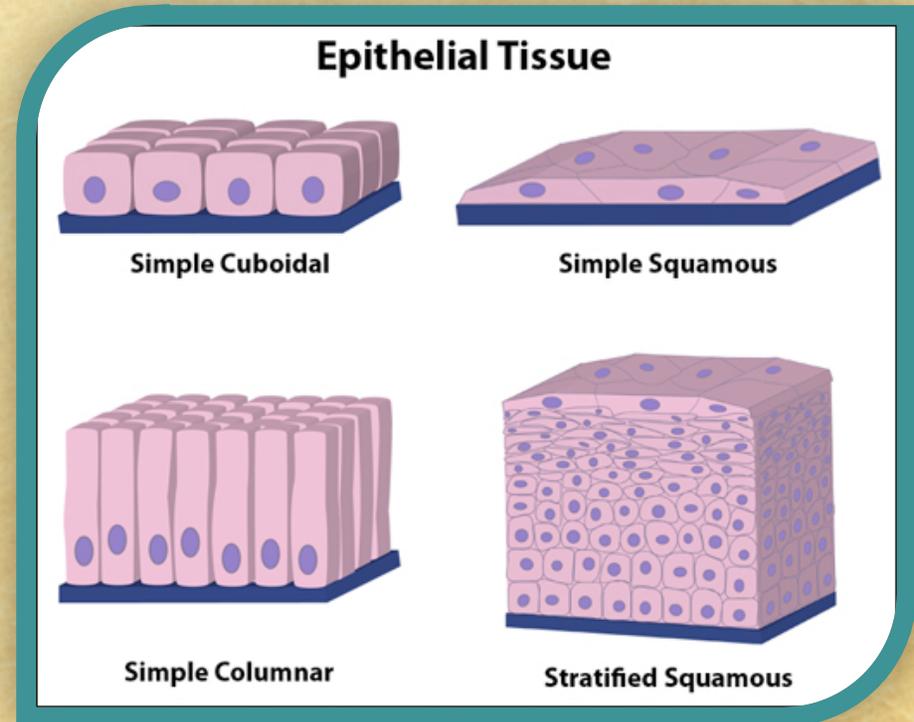
- ◆ Epithelial cells fit tightly together to provide protection.
- ◆ *What do you think would most likely happen if epithelial cells were not tightly packed together?*
 - ◆ Cells would not regenerate quickly, so wounds would not heal as fast and the body may not be as well protected.

Epithelial Tissue

- ◆ Epithelial tissue has several functions,
 - ◆ Acts as a shield to protect other tissues.
 - ◆ Controls movement of substances between the internal and external environments.
 - ◆ Absorbs nutrients from the digestion of food.
 - ◆ Excretes waste products from the body.
 - ◆ Its cilia removes dust particles and other substances from air that enters the air passages.

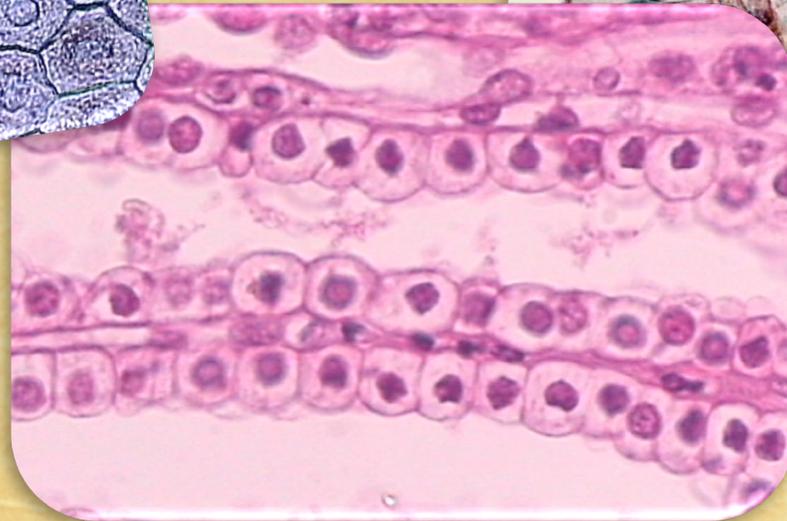
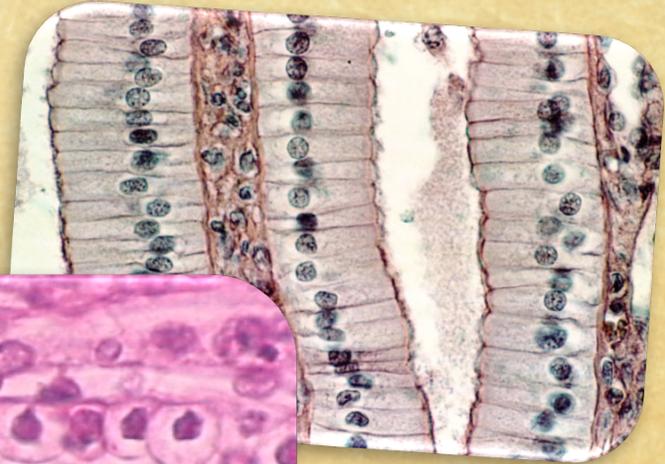
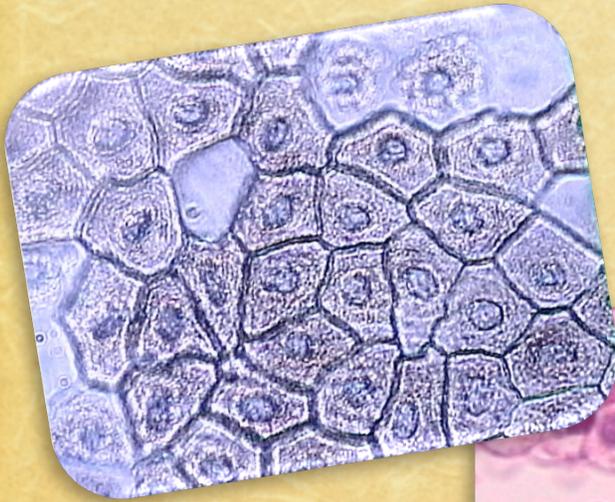
Epithelial Tissue

- ◆ Epithelial tissues are made of tightly packed cells that form one or more layers.
- ◆ It repairs itself almost continuously, allowing injuries to heal relatively quickly.



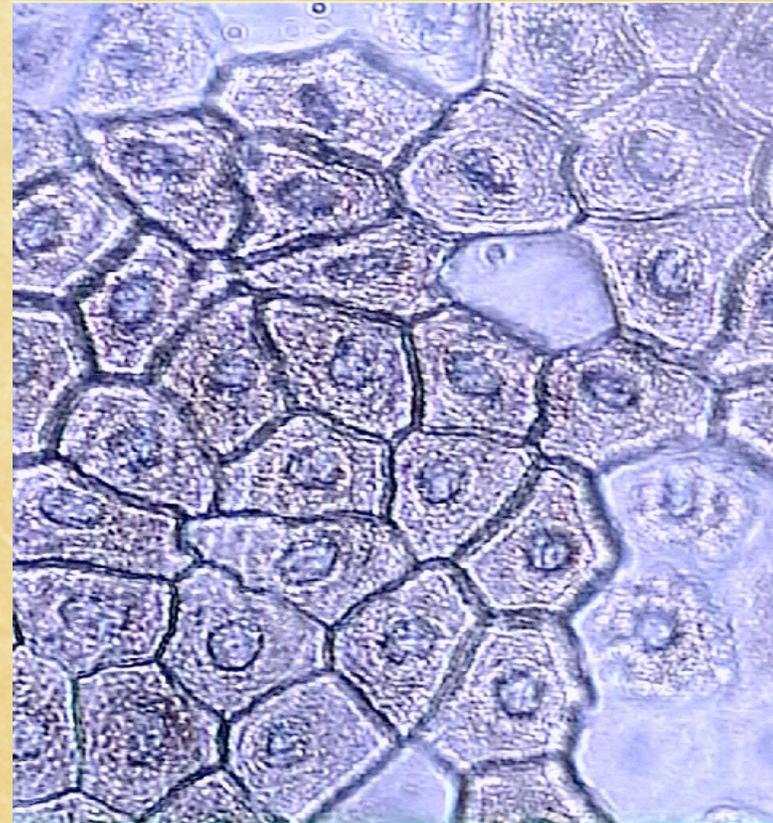
Types of Epithelial Tissue

- ◆ Different groups of epithelial tissue have different shapes and different purposes.



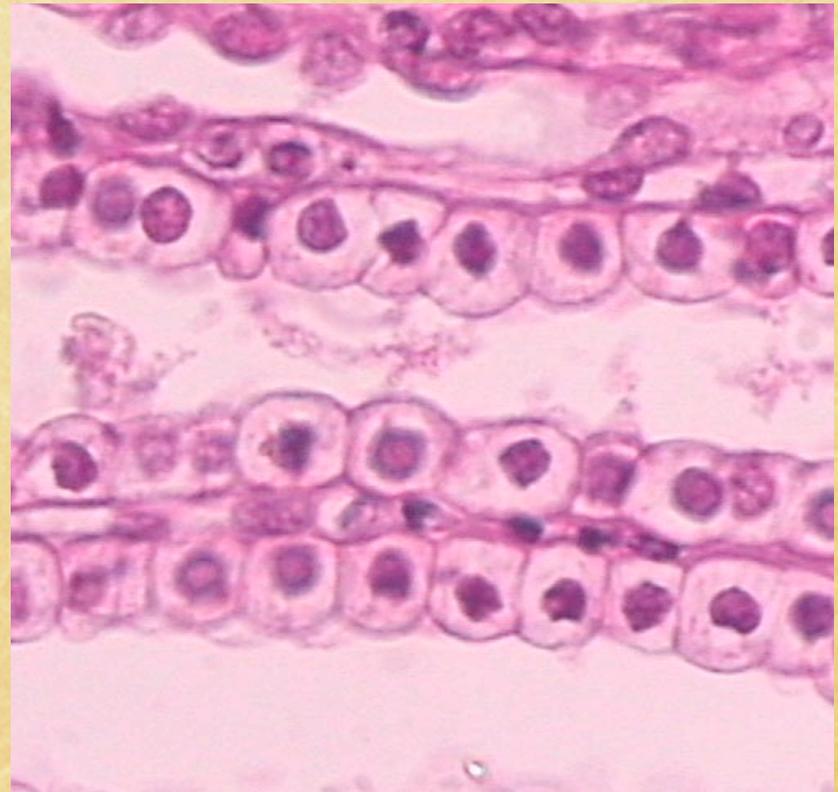
Types of Epithelial Tissue

- ◆ Characteristics:
 - ◆ Flat and irregularly shaped cells
- ◆ Location:
 - ◆ Covers skin, lungs, heart, blood vessels



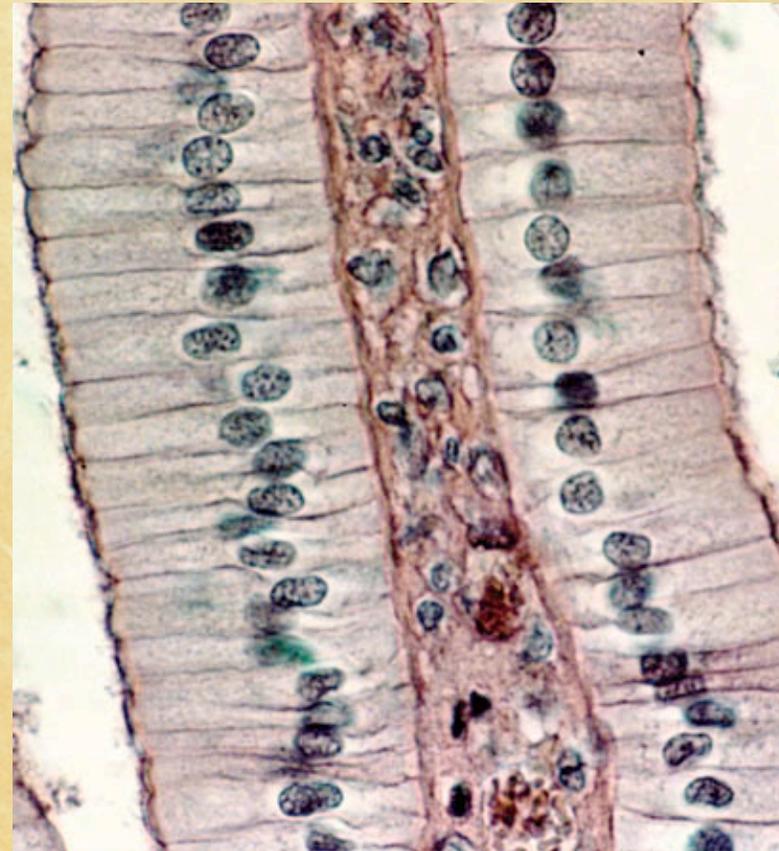
Types of Epithelial Tissue

- ◆ Characteristics:
 - ◆ Cube-shaped cells
- ◆ Location:
 - ◆ Found in kidneys, middle ear, brain



Types of Epithelial Tissue

- ◆ Characteristics:
 - ◆ Column-shaped Cells
- ◆ Location:
 - ◆ Found in small intestine and some other body parts



Faith Connection



*Each cell is designed with a shape to match its function.
How might your talents and interests be a clue to God's
plan for you?*

God gives us talents and interest in areas where we may serve Him. For example, someone talented in music may serve God as a musician. A student who is good at science may grow up to be a doctor or research scientist.

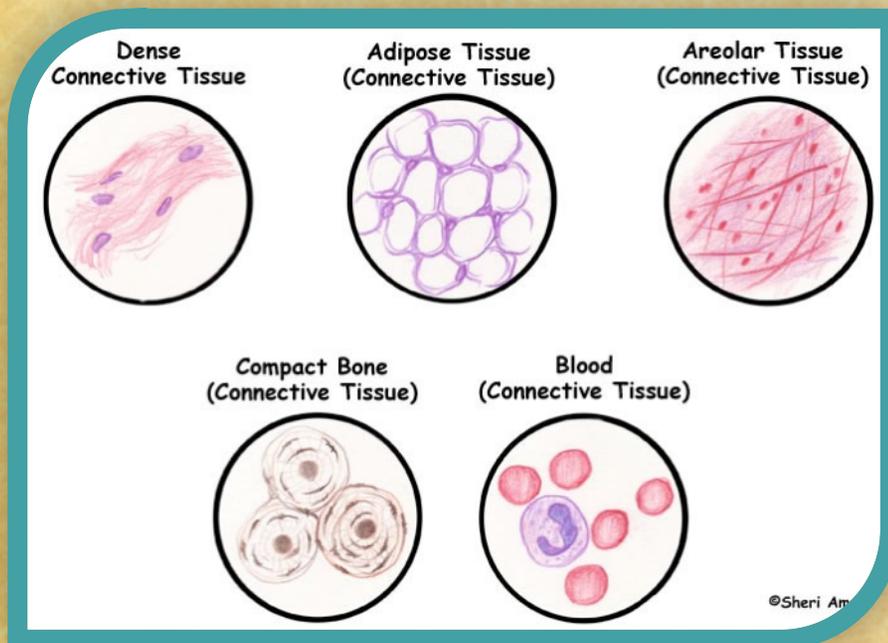
Connective Tissue

- ◆ Look closely at the skin on your arm.
- ◆ Use your thumb and forefinger to stretch the skin.
- ◆ Why do the cells not spread apart?
- ◆ What keeps the cells together?



Connective Tissue

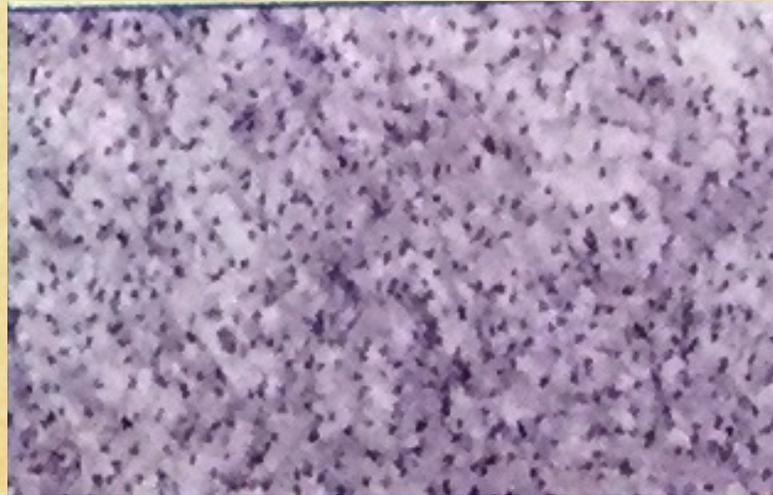
- ◆ **Connective tissue** connects one part of the body with another and separates one group of cells from another.
- ◆ It is the most abundant tissue found in the body.



- ◆ It is composed of a few specialized celled that are in a thick material that contains protein fibers.

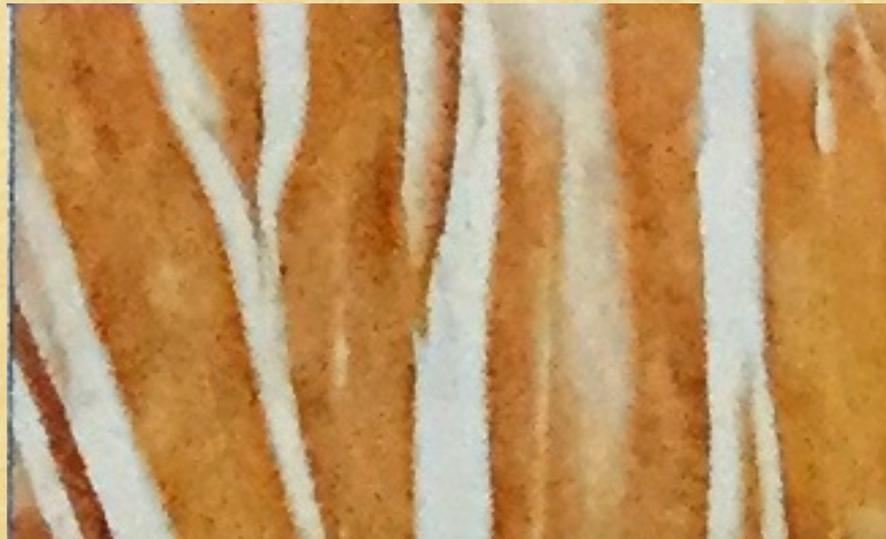
Types of Connective Tissue: Loose Tissue

- ◆ **Loose Tissue**: small fibers found under the skin, where fat is stored.



Types of Connective Tissue: Dense Tissue

- ◆ **Dense Tissue**: large fibers for strength, found along tendons, ligaments, and the neck and back.



Types of Connective Tissue: Supportive Tissue

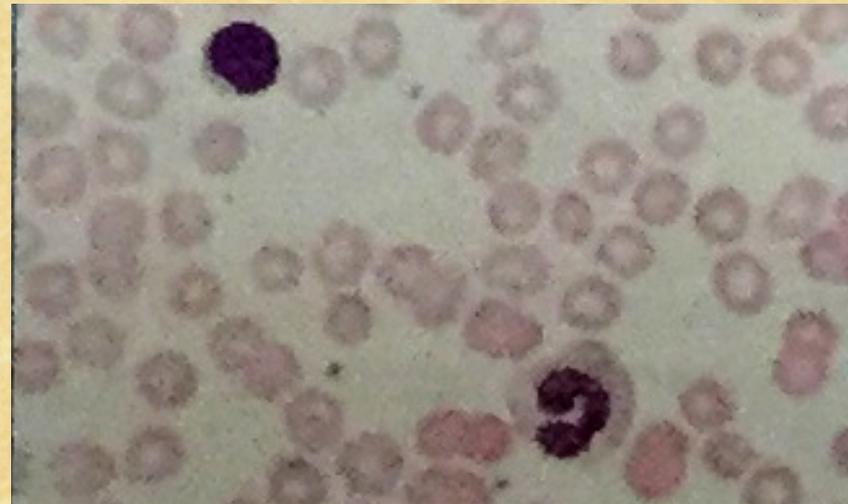
- ◆ **Supportive Tissue**: strong tissue that supports, found in bone and cartilage.



Types of Connective Tissue:

Fluid tissue

- ◆ **Fluid Tissue**: moves dissolved materials throughout the body, helps your immune system function properly, and thickens to prevent excessive bleeding during injuries, found in blood and lymph.

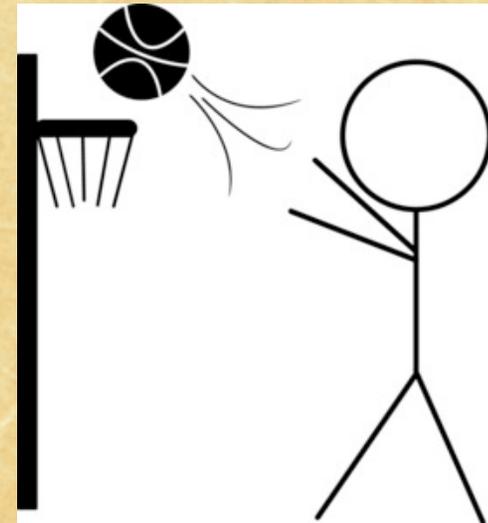


Muscle Tissue

- ◆ What steps go into you standing up from a chair?



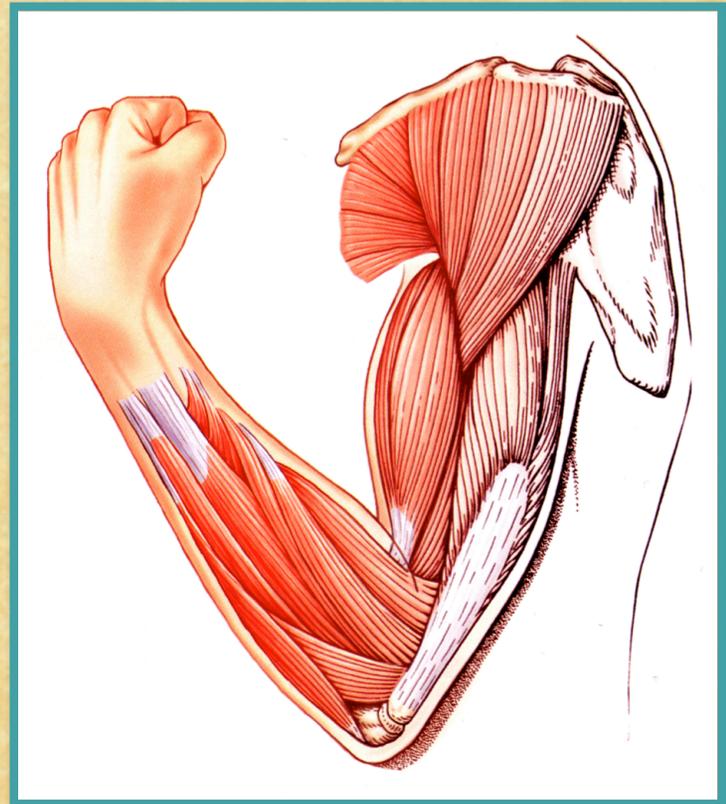
- ◆ How about shooting hoops?



- ◆ Think about how living things move.

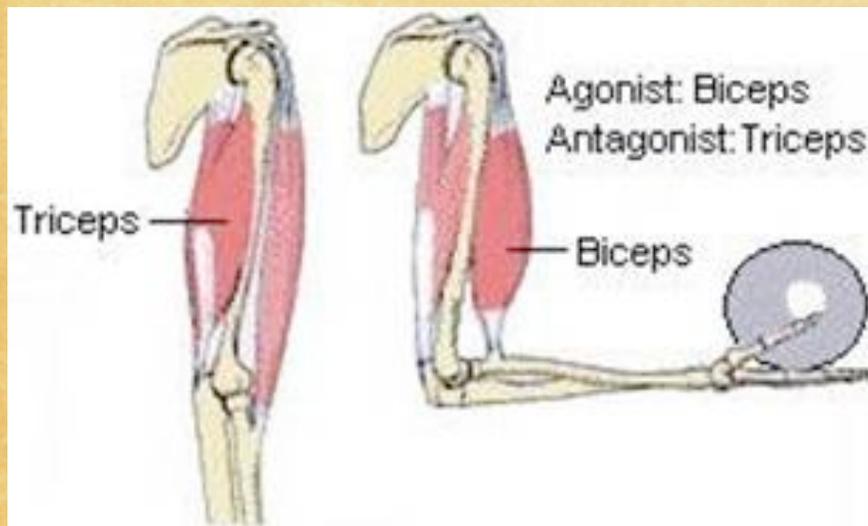
Muscle Tissue

- ◆ Specialized cells with the ability to contract and produce movement make up **muscle tissue**.
- ◆ The cells of this type of tissue are called **fibers**.



Muscle Tissue

- ◆ Different types of muscle tissues are found throughout your body.
- ◆ Muscle tissue only contracts.

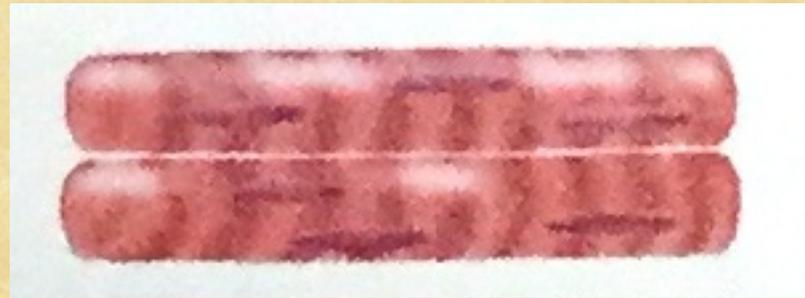


- ◆ Because it only contracts most muscles work in pairs.
- ◆ As one muscle contracts, the paired muscle lengthens, or stretches.

Types of Muscle Tissue: Skeletal Muscle

- ◆ Description:

- ◆ most abundant muscle tissue in body
- ◆ functions in pairs
- ◆ causes voluntary movement
- ◆ involved in breathing; enclosed in connective tissue



- ◆ Found:

- ◆ attached to bones of skeleton
- ◆ facial muscles attached to skin

Types of Muscle Tissue: Smooth Muscle

- ◆ Description:
 - ◆ Made up of thin elongated muscle cells
 - ◆ Controls slow, involuntary movements
- ◆ Found:
 - ◆ Digestive tract
 - ◆ Bladder
 - ◆ Uterus
 - ◆ Walls of blood vessels



Types of Muscle Tissue: Cardiac Muscle

- ◆ Description:
 - ◆ Causes the heart's rhythmical beating
 - ◆ Circulating blood throughout the body
 - ◆ Involuntary movement
- ◆ Found:
 - ◆ Wall of heart



Scripture Spotlight



There was a certain muscle tissue the Israelites would not eat. Read Genesis 32:24-32 to find out which one and why.

The Israelites would not eat the hip muscle because that's where the Angel touched Jacob and made him limp.

Nervous Tissue

- ◆ How does your brain tell your toe to wiggle?

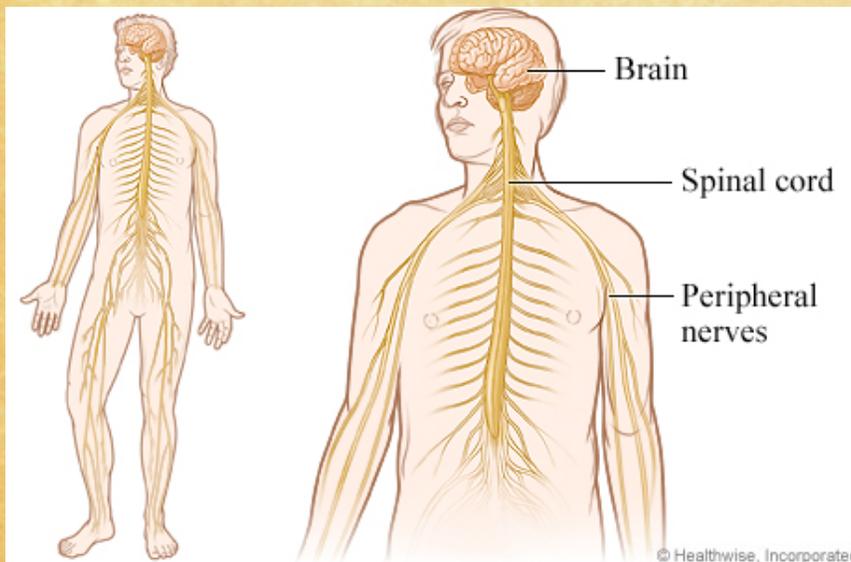


- ◆ Why do you pull your hand away from a hot plate?



Nervous Tissue

- ◆ Nervous tissue transmits messages throughout the body.
- ◆ Nerve cells are located in the brain, spinal cord, and nerves.



- ◆ Nerve cells sense stimuli and send impulses to different parts of the body in response.

Nervous Tissue

- ◆ Nervous tissue...
 - ◆ stimulates muscle contraction
 - ◆ provides information
 - ◆ enables emotions, memory, and reasoning

