

Handout - Tissue

- organized layers of cells that perform a specific function, four major types

• **Epithelial** • **Connective** • **Muscle** • **Nervous**

Epithelial Tissue:

Covers the body and lines many organs

Packed close together with no blood vessels

Classified by Shape or Arrangement

Shape	Arrangement
1. Squamous (flat and scalelike)	1. Simple- single layer of single shape
2. Cuboidal (cube shaped)	Ex. <i>Bronchial tubes of lungs</i> = <i>Cuboidal</i>
3. Columnar (higher than wide)	2. Stratified- multiple layers, named for the shape of outer layer
4. Transitional (varying, stretchable)	Ex. <i>Epidermis</i> = <i>stratified squamous</i> , <i>Bladder</i> = <i>stratified transitional</i>

Connective Tissue:

most abundant tissue in the body, highly diverse structures and functions

ex. flexible skin, rigid bone, fluid blood

the cells of the tissue and the quality of the matrix surrounding the tissue dictate form and function.

1. Areolar- fibrous connective tissue that holds organs together
2. Adipose- fat (lipid energy storage)
3. Fibrous- collagen; strength and flexibility- tendon connecting muscle to bone
4. Bone- calcified matrix of osteons (ring-like Haversian Canals), vascularized
5. Cartilage- plastic-like chondrocytes, rigid but more flexible, non-vascularized
6. Blood- cells in a liquid matrix (transport) that travel through entire body
7. Hematopoietic- blood forming cells in bone marrow, lymphatic organs

Muscle Tissue:

- Specialize in motion (by contraction)

Skeletal- voluntary (you have control)- form in long, thin fibers of multinucleated cells “striated”

Cardiac- involuntary (you have no control)- contract to pump heart “both striated and non-striated”

Smooth- involuntary (no control)- contract for internal organ function, smaller, single nucleus “non striated”

Ex. Food moving through digestive system after swallowing

Nervous Tissue:

Communication-

Neurons (nerve cells)- communicate

Cell body, axon (away) and dendrites (towards)

Glial cells- support

Tissue Repair: Regeneration of damaged tissue

Scar- a fibrous mass of repaired tissue

Keloid- thick scar formed under the skin

Muscle tissue will repair with fibrous tissue, losing some ability

Nerve Regeneration- rare, but it is possible

- especially if hormones known as *nerve growth factors* present **STEM cell therapies as well**

