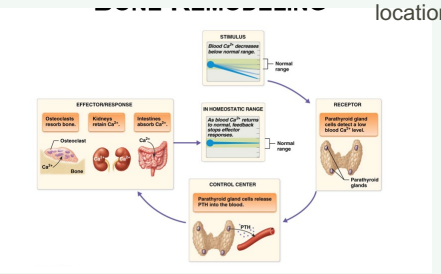
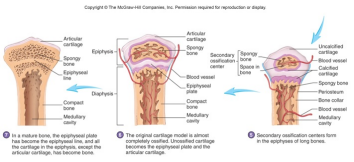
PTH and Calcium



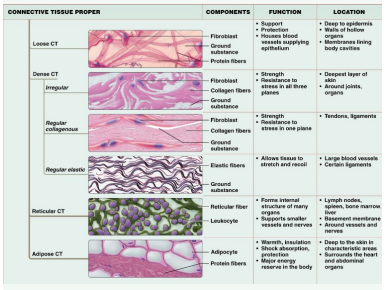
Musco skeletal system

the muscular and skeletal systems work together to support and move the body. The bones of the skeletal system serve to protect the body's organs, support the weight of the body, and give the body shape. The muscles of the muscular system attach to these bones, pulling on them to allow for movement of the body.

epiphyseal plate



Connective Tissue Proper



compact bone

location	makes up 80% of bone in body, Under the Periosteum: It lies just beneath the periosteum, the outer membrane covering bones. In the Diaphyses of Long Bones: The diaphysis refers to the shaft of long bones, where compact bone provides support and protection
function	Strength and Rigidity
histology	

Terminology

Sagittal plane	a vertical plane which passes through the body longitudinally. It divides the body into a left section and a right section
median sagittal plane	passes down the midline of the body, separating it into equal halves

Terminology (cont)

Coronal plane	a vertical plane which also passes through the body longitudinally – but perpendicular (at a right angle) to the sagittal plane It divides the body into a front (anterior) section and back (posterior) section
Transverse planes	a horizontal plane. It is perpendicular to both the sagittal and coronal planes, and parallel to the ground. It divides the body into an upper (superior) section and a lower (inferior) section. Transverse planes are also known as transaxial planes or axial planes.
Medial	towards the midline
Lateral	away from the midline

Terminology (cont)

Anterior	to the front
Posterior	to the back
Superior	Higher
Inferior	lower
Proximal	Closer to origin (of limb)
Distal	further away (of limb) from origin

The integumentary system and other systems

Immune system	it's the first line of defense against bacteria and infection. It also sends white blood cells to injuries to begin the healing process.
Endocrine system	helps you absorb vitamin D, which acts as a hormone and is crucial to your bone health because it affects calcium absorption.
Respir-atory system	nose hairs filter out dust and other particles before you inhale them into your lungs

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Cheatography

A and P Unit 1 Lecture Cheat Sheet

by tamar1493 via cheatography.com/200741/cs/42441/

Function of skeletal system

Protection

Blood cell formation-Red blood marrow is the site of blood cell formation

Mineral storage- calcium, phosphorus, and magnesium salts

Fat storage-yellow bone marrow

Movement-provide movement from the muscles attached to the bones

Supports the weight of the body

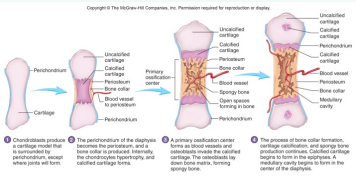
Osteoporosis

A disease that causes bones to become weak and brittle.

More prevalent in females, older and slender, thin boned people, if someone in your family had it, a diet low in calcium and vitamin diet low in calcium and vitamin D, Long-term use of certain medications, Not getting enough exercise and being inactive for long periods of time, Long-term heavy drinking of alcohol, Smoking

To prevent osteoporosis-intake the recommended amount of calcium, exercise regularly, add more lean protein to diet, get enough vitamin D, Limit your alcohol consumption, Maintain a healthy weight, If you smoke, quit,

Intramembranous Ossification Process



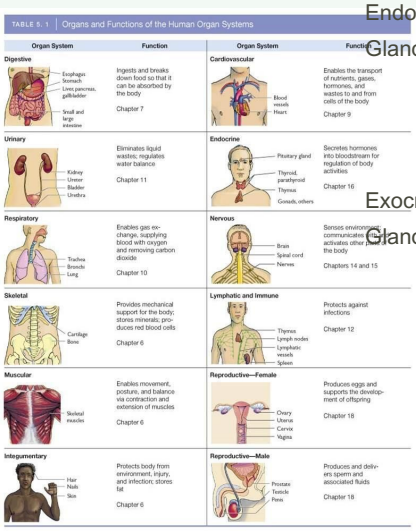
Ossification

Intramembranous ossification	built on a model (starting material) made of a membrane of embryonic connective tissue
endochondral ossification	built on a model of hyaline cartilage

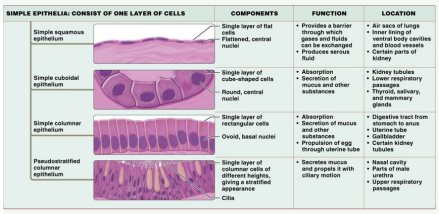
Yellow bone marrow

Location	Yellow bone marrow is located in the cavities of long bones.
Function	It stores fat (adipocytes) and contains mesenchymal stem cells. Yellow bone marrow can convert to red marrow if needed

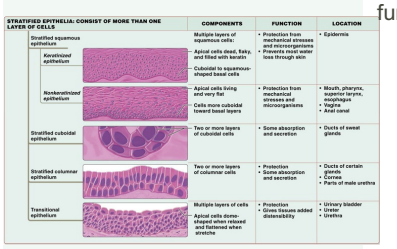
What and functions



Simple epithelial tissue

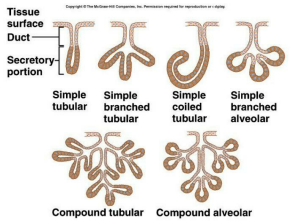


Stratified Epithelial Tissue



Exocrine glands

Structures of Exocrine Glands



Endocrine vs Exocrine Glands

Endocrine Glands	secrete hormones; ductless; secrete hormones directly into the bloods-tream
Exocrine Glands	secrete substances like enzymes, digestive juices, sweat, saliva, etc.; contain ducts; release substances through ducts onto surfaces or into cavities

Spongy bone

location	usually located at the ends of the long bones (the epiphy-ses), with the harder compact bone surrou-nding it. It is also found inside the vertebrae, in the ribs, in the skull and in the bones of the joints
function	deal for making and storing bone marrow within the lattice-like trabeculae network, Spongy bone contains red bone marrow that is used in erythropoiesis.

By **tamar1493**
cheatography.com/tamar1493/

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Spongy bone (cont)

histology	contains osteocytes housed in lacunae, but they are not arranged in concentric circles. Instead, the lacunae and osteocytes are found in a lattice-like network of matrix spikes called trabeculae

Joint classification

Summary of Joint Classification

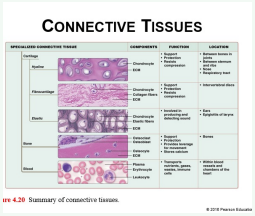
Structural Class	Characteristics	Types	Motility
Fibrous	Bones united by collagen fibers	1. Suture 2. Syndesmosis 3. gomphosis	1. Immobile (synarthrosis) 2. Slightly moveable (amphiarthrosis) 3. immobile
Cartilaginous	Bone ends united by cartilage	1. Synchondrosis (hyaline) 2. Symphysis (fibrocartilage)	1. Immobile 2. Slightly moveable
Synovial	Bone ends covered with articular cartilage and enclosed within a capsule lined with a synovial membrane	1. Plane 2. Hinge 3. Pivot 4. Condyloid 5. Saddle 6. Ball and socket	Freely moveable (diarthrosis) which depends on joint design

Joints, bones, and movement

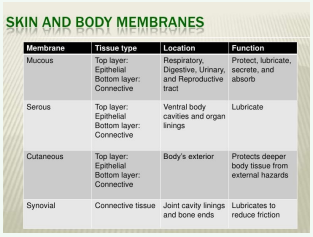
Your joints, connective tissue and muscles all work together to push and pull parts of your body every time you move

Depending on how much a joint moves, it fits into one of three categories-Synarthroses, Amphiarthroses, Diarthroses

Specialized Connective Tissue



Membranes



Muscle tissue

	Main features	Location	Type of cells	Histology
Skeletal muscle	- Fibers : striated, tubular and multi nucleated - Voluntary - Usually attached to skeleton			
Smooth muscle	- Fibers : non-striated, spindle-shaped, and uninucleated. - Involuntary - Usually covering wall of internal organs.			
Cardiac muscle	- Fibers : striated, branched and uninucleated. - Involuntary - Only covering walls of the heart.			

Bones classifications

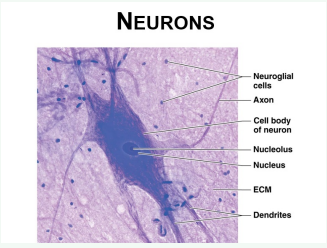
Bone Types	Appearance	Function	Picture	Example(s)
Long Bones	Longer Than They Are Wide	Mechanical Strength		Femur Tibia Fibula Humerus Ulna Radius
Short Bones	Cube-shaped	Multi-directional Motion		Carpal Bones (Of The Hands/Wrists) And The Tarsal Bones (Of The Feet/Ankles).
Flat Bones	Thin And Flat Has Large Surfaces For Muscle Attachments	Mechanical Protection to Soft Tissues Beneath		-Cranial Bones -Sternum -Ribs -Scapulae
Irregular Bones	Complicated Shapes that cannot be Classified as "Long", "Short" or "Flat".	Provides Major Mechanical Support for the Body Vertebra Protects the Spinal Cord		-Vertebrae -Hyoid Bone -Sphenoid Bone -Facial Bones.
Sesamoid Bones	Most Sesamoid Bones Are Un-named.	Protects From Additional Friction And Use - can form in Palms And Soles		Only One Type Of Sesamoid Bone Is Present In All Normal Human Skeletons So It Has A Name; The Patella.

Red bone marrow

consists of loose connective tissue that supports islands of blood-forming hematopoietic cells,

Amount of red marrow decreases as a person ages

Nervous tissue



Tissue repair

Regeneration	Replacing cells, Epithelium tissue, most connective tissue, smooth muscle tissue
Fibrosis	Divide by mitosis, collagen that fills in gap and tissue loses some level of functional ability, End result of fibrosis is development of scar tissue composed of dense irregular connective tissue, cartilage (connective tissue), skeletal and cardiac muscle tissue, nervous tissue

Sensory receptors

Lamellated (Pacinian) corpuscles	found embedded within reticular layer; sensory receptors that respond mainly to changes in pressure and vibration associated with skin

Sensory receptors (cont)

Tactile (Meissner) corpuscles	also found in dermal papillae; sensory receptors that respond to light touch stimuli; more numerous in regions of body where sensation is a primary function; skin of fingertips, lips, face, and external genitalia

Bone terms

Articular cartilage	specialized connective tissue present in synovial joints that does not ossify, and persists through life, to provide an optimal surface for enabling movement in the joint. More specifically, it prevents friction between the bones and facilitates the transmission of loads to the underlying bone.

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Bone terms (cont)

periosteum	Fibrous sheath that covers bones, Supplying blood and nourishment to the bone, Giving the bone and the surrounding area sensation, Protecting the bone from damage, Growing and repairing the bone when needed
Medullary cavity	The medullary cavity (medulla, innermost part) is the central cavity of bone shafts where red bone marrow and/or yellow bone marrow (adipose tissue) is stored; hence, the medullary cavity is also known as the marrow cavity

Bone terms (cont)

endosteum	The endosteum (pl.: endostea) is a thin vascular membrane of connective tissue that lines the inner surface of the bony tissue that forms the medullary cavity of long bones.[1][2] This endosteal surface is usually resorbed during long periods of malnutrition, resulting in less cortical thickness

Osteo-

-clasts	break down and reabsorb bone
-blasts	bone-forming cells
-cytes	mature bone cells

3 layers

Epidermis	Structure: superficial layer that consists of keratinized stratified squamous epithelium resting on a basement membrane Function: It protects your body from harm, keeps your body hydrated, produces new skin cells and contains melanin, which determines the color of your skin.

3 layers (cont)

Dermis	Structure: deep to epidermis and basement membrane; consists of loose connective tissue and dense irregular connective tissue Function: to cushion the body from stress and strain, and to also provide: elasticity to the skin, a sense of touch, and heat.

Epidermal derivatives

Thermoregulation

How does the skin regulate the body's temperature?

> sweat glands, accessory structures to the skin, secrete water, salt, and other substances to cool the body when it becomes warm,

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