Anatomy & Physiology Unit 1: Intro to Anatomy Cheat Sheet

by julescrisfulla via cheatography.com/122651/cs/25356/

Anatomy vs. Physiology

anatomy: structure of an organism (what does it look like?)

physiology: function of an organism (what does it do?)

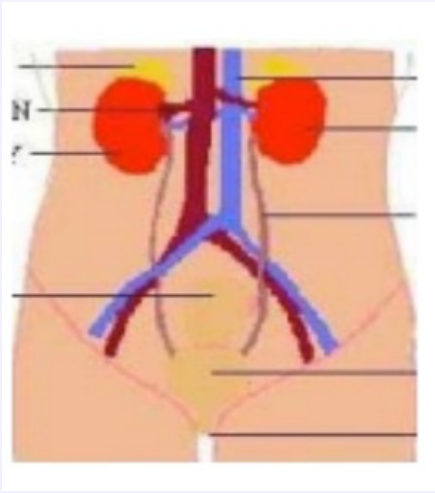
Human Body Systems

digestive	immune
circulatory	integumentary
nervous	lymphatic
excretory	reproductive
respiratory	endocrine
skeletal	muscular

Excretory System

anatomy:	physiology:
kidneys	1) removes waste products from cellular metabolism (urea, water, carbon dioxide)
ureters	2) filters blood
bladder	
urethra	
lungs	
skin (sweat glands)	
liver (produces urea)	

Excretory System Image



Skeletal System

anatomy:	physiology:
bones	1) protects organs
cartilage	2) provides shape, support
ligaments	3) stores materials (fats, minerals)
	4) produces blood cells
	5) allows movement

Skeletal System Image

Endocrine System

anatomy:	physiology:
glands (produce hormones)	1) regulates body activities using hormones. slow response, long lasting
~hypothalamus	
~pituitary	
~thyroid	
~thymus	
~adrenal	
~pancreas	
~ovaries	
~testes	

Endocrine System Image

By **julescrisfulla**

cheatography.com/julescrisfulla/

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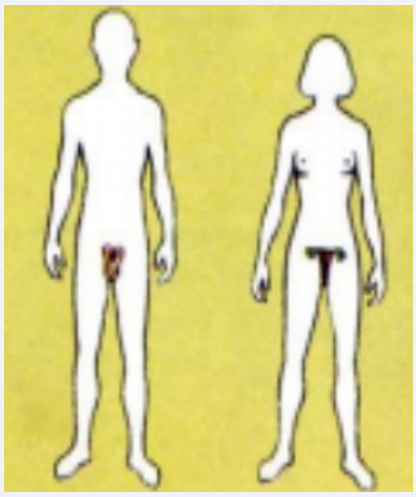
Reproductive System

anatomy:	physiology:
ovaries (produce eggs)	1) allows organisms to reproduce which prevents their species from becoming extinct

testes (produce sperm)

Reproductive System Image

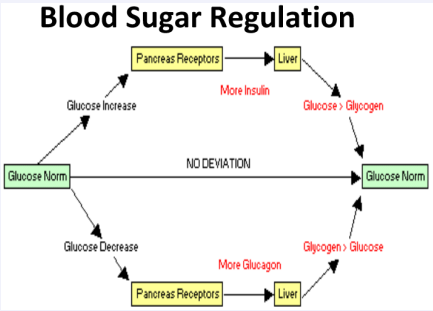


Negative Feedback

when the effector(s) activated by the control center oppose or eliminate stimulus

ex) blood sugar regulation

Negative Feedback Image (Blood Sugar Regulation)

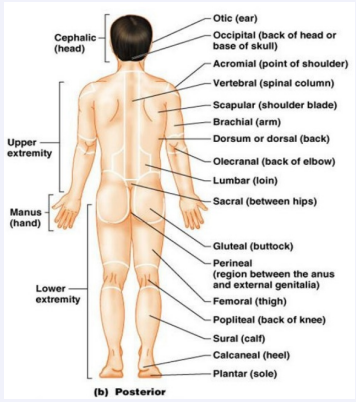


Regional Terms: Posterior View

cephalic: head	otic: ear	occipital: back of head or base of skull
acromial: point of shoulder	vertebral: spinal column	scapular: shoulder blade
lumbar: loin	brachial: arm	olecranal: back of elbow
dorsum/ dorsal: back	manus: hand	sacral: between hips
gluteal: buttock	perineal: region between anus and external genitalia	femoral: thigh
popliteal: back of knee	sural: calf	calcaneal: heel

plantar: sole

Regional Terms: Posterior View Image



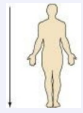
Inferior (Orientation and Directional Term)

also known as caudal

away from the head end or toward the lower part of a structure or the body; below

ex) the navel is inferior to the breastbone

Inferior (Orientation and Directional Term) Image

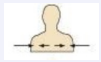


Intermediate (Orientation and Directional Term)

between a more medial and a more lateral structure

ex) the armpit is intermediate between the breastbone and shoulder

Intermediate (Orientation and Directional Term) Im



Superficial (Orientation and Directional Term)

toward or at the body surface

ex) the skin is superficial to the skeleton

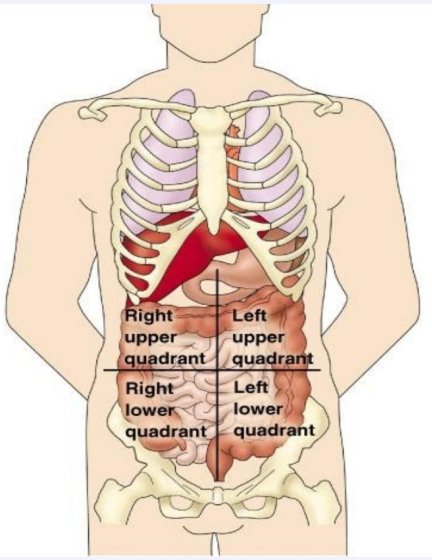
Superficial (Orientation and Directional Term) Img

Deep (Orientation and Directional Term)

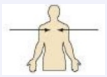
away from the body surface; more internal

ex) the lungs are deep to the rib cage

Abdominopelvic Quadrants Image



Deep (Orientation and Directional Term) Image



CT

full name:

- computed tomography

how does it work?

- different tissues absorb the electromagnetic radiation in various amount

what does it show?

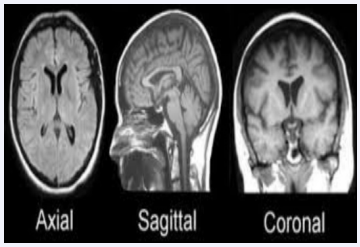
- shows cross sectional pictures of the body region scanned

CT (cont)

when is it used?

- used to evaluate brain and abdominal problems without the need of exploratory surgery

CT Image



MRI

full name:

- magnetic resonance imaging

how does it work?

- magnetic energy causes the spin of hydrogen molecules, and their energy is enhanced by radio waves; when the radio waves are turned off, energy is released and translated by a computer into a visual image

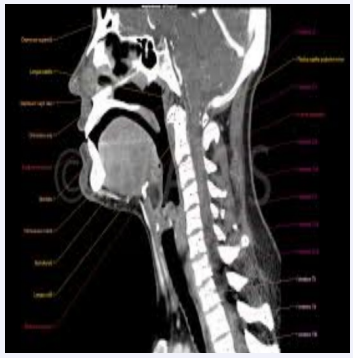
what does it show?

- dense structures do not show and soft tissue, like the the brain, can be evaluated

when is it used?

- to evaluate soft tissue, brain, intervertebral pads and cartilage to detect degenerative disease

MRI Image



Levels of Organization

atoms -> molecules -> macromolecules -> organelles -> cells -> tissues -> organs -> organ systems -> organism

8 Necessary Life Functions (Human)

1) maintain boundaries: inside is separate from the outside

2) movement: whole body and cellular level

3) responsiveness/irritability: sense and respond to changes in the environment

4) digestion: breaking down food to nutrients

5) metabolism: breaking down and building molecules for energy

6) excretion: remove wastes from the body

7) reproduction: cellular or organismal level

8) growth: cellular or organismal level

Circulatory System

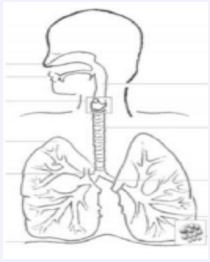
anatomy:	physiology:
heart	1) transport materials to and from cells
veins	
arteries	
capillaries	
blood	

Circulatory System Image

Respiratory System

anatomy:	physiology:
nose	1) takes in oxygen and removes carbon dioxide and water
trachea	
bronchi	
bronchioles	
alveoli	
lungs	

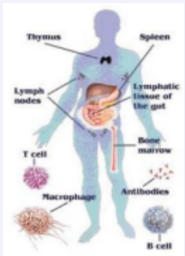
Respiratory System Image



Immune System

anatomy:	physiology:
white blood cells	1) fights off foreign invaders in the body
~T cells	
~B cells (produce antibodies)	
~macrophages	
skin	

Immune System Image



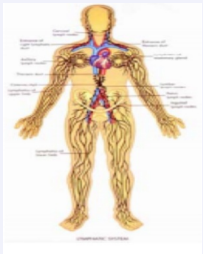
Lymphatic System

anatomy:	physiology:
lymph (liquid part of blood - plasma, when it is in lymph vessels)	1) stores and carries white blood cells that fight disease

Lymphatic System (cont)

lymph vessels	2) collects excess fluid and returns it to blood (second circulatory system - reaches places other one can't - between cells)
lymph nodes	
contain white blood cells	

Lymphatic System Image

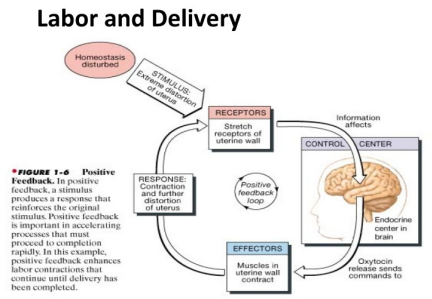


Positive Feedback

initial stimulus produces a response that exaggerates or enhances its effects; less common

ex) labor and delivery

Positive Feedback Image (Labor and Delivery)



The Language of Anatomy

special terminology is used to prevent misunderstandings

exact terms are used for:

~position

~regions

~direction

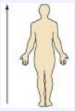
~structures

Superior (Orientation and Directional Term)

toward the head end or upper part of a structure of the body; above

ex) the forehead is superior to the nose

Superior (Orientation and Directional Term) Image



Anterior (Orientation and Directional Term)

also known as ventral

toward or at the front of the body; in front of

ex) the breastbone is anterior to the spine

Anterior (Orientation and Directional Term) Image

Lateral (Orientation and Directional Term)

away from the midline of the body; on the outer side of

ex) the arms are lateral to the chest

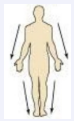
Lateral (Orientation and Directional Term) Image

Distal (Orientation and Directional Term)

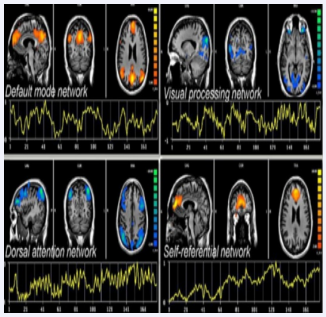
farther from the origin of a body part or the point of attachment of a limb to the body trunk

ex) the knee is distal to the thigh

Distal (Orientation and Directional Term) Image



fMRI Image



fMRI

full name:

> functional magnetic resonance imaging

how does it work?

> follows blood flow in the brain in real time

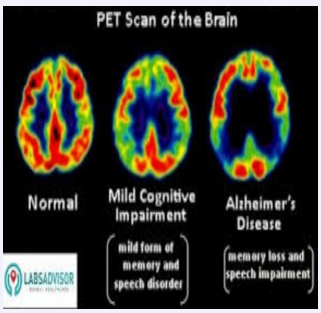
what does it show?

> shows brain activity

when is it used?

> to diagnose brain disease; can not be used in the presence of metal in the body, pacemakers, and tooth fillings

PET Scan Image



PET Scan

full name:

> positron emission tomography

how does it work?

> requires an injection of short-lived radioi-sotopes that have been tagged to biological molecules (ie. glucose) in order to view metabolic processes

PET Scan (cont)

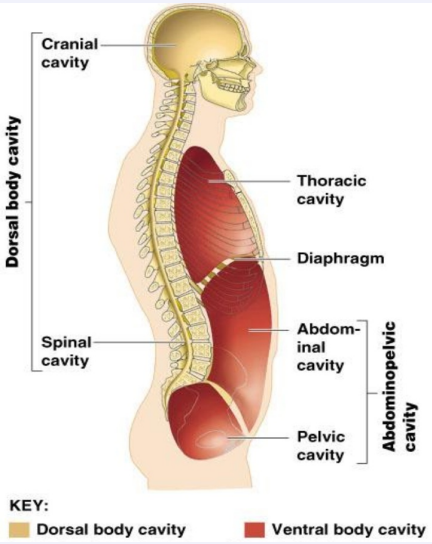
what does it show?

> provides insights into brain activity in people affected by mental illness, Alzheimer's disease, and epilepsy

when is it used?

> to diagnose areas of impairment in the brain

Body Cavities Image



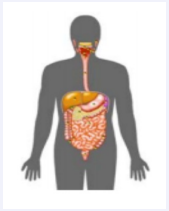
Body Cavities

dorsal body cavity	ventral body cavity
~cranial cavity (brain)	~thoracic cavity (lungs)
~spinal cavity (spinal cord)	~abdominopelvic cavity
	~~abdominal cavity (abdomen)
	~~pelvic cavity (pelvis)

Digestive System

anatomy:	physiology:
mouth	1) take in food (ingestion)
esophagus	2) digest food into smaller molecules and absorb nutrients
small intestine	3) remove undigested food from body (feces)
large intestine	
rectum	
anus	
salivary glands	
pancreas	
liver	
gallbladder	

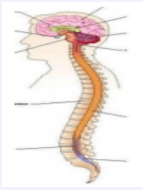
Digestive System Image



Nervous System

anatomy:	physiology:
brain	1) gathers and interprets information
spinal cord	2) responds to information
nerves	3) helps maintain homeostasis
hypothalamus	

Nervous System Image



Muscular System

anatomy:	physiology:
cardiac muscle	1) allows for movement by contracting
smooth muscle	
skeletal muscle	
tendons	

Muscular System Image

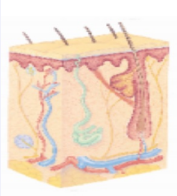
Integumentary System

anatomy:	physiology:
skin	1) barrier against infection (first line of defense)
~epidermis	2) helps regulate body temperature
~dermis	3) removes excretory waste (urea, water)
~~sweat gland	4) protects against sun's UV rays

Integumentary System (cont)

~~sebaceous gland	5) produces vitamin D
~~hair follicle	
~~blood vessels	
~~nerves	

Integumentary System Image



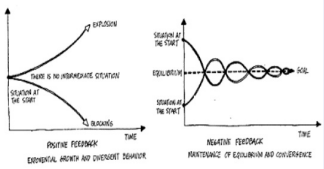
Homeostasis

"homeo-" = same

"-stasis" = standing or status

goal: to maintain a relatively constant internal environment

Positive Feedback vs. Negative Feedback



Regional Terms: Anterior View

axial: head, neck, and trunk

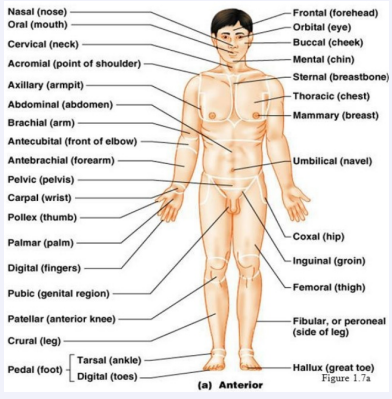
appendicular: appendages or limbs

nasal: nose	oral: mouth	cervical: neck
frontal: forehead	orbital: eye	buccal: cheek

Regional Terms: Anterior View (cont)

mental: chin	acromial: point of shoulder	axillary: armpit
abdominal: abdomen	sternal: breastbone	thoracic: chest
mammary: breast	umbilical: naval (belly button)	brachial: arm
antecubital: front of elbow	antebrachial: forearm	carpal: wrist
pollex: thumb	palmar: palm	digital: fingers
coxal: hip	pelvic: pelvis	inguinal: groin
pubic: genital region	femoral: thigh	patellar: anterior knee
crural: leg	fibular/pero-neal: side of leg	pedal: foot
tarsal: ankle	digital: toes	hallux: big toe

Regional Terms: Anterior View Image



Posterior (Orientation and Directional Term)

also known as dorsal

toward or at the backside of the body; behind

ex) the heart is posterior to the breastbone

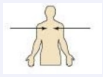
Posterior (Orientation and Directional Term) Image

Medial (Orientation and Directional Term)

toward or at the midline of the body; on the inner side of

ex) the heart is medial to the arm

Medial (Orientation and Directional Term) Image

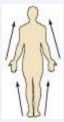


Proximal (Orientation and Directional Term)

close to the origin of the body part or the point of attachment of a limb to the body trunk

ex) the elbow is proximal to the wrist (elbow is closer to shoulder or attachment point of arm than wrist is)

Proximal (Orientation and Directional Term) Image



By **julescrisfulla**

cheatography.com/julescrisfulla/

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Ultrasound

full name:

ultrasonography

how does it work?

high frequency sound waves is its energy source; the sound waves go through the tissues without harming them, and the echoes are recorded

what does it show?

it shows visual images of body organs

when is it used?

preferred method for fetal evaluation

Ultrasound Image

Xray Image

Xray

full name:

radiograph

how does it work?

shadowy negative image of internal structures produced by directing electr-omagnetic waves of very short wavelength at the body

what does it show?

best to visualize hard, body structures and locate abnormally dense structures (tumors, tuberculosis nodules) in the lungs and breasts

when is it used?

to diagnose fractures and dense tumors

Body Planes Image