Physiology team 434

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Contact us : physiologyteam434@gmail.com

1 Functional Organization of the Human Body

Important | Extra explanation

Girls notes | Boys notes

(وفي أنفسكم أفلا تبصرون)

وفي خلق أنفسكم دلائل على قدرة الله تعالى، وعِبر تدلكم على وحدانية خالقكم، وأنه لا إله لكم يستحق العبادة سواه، أغفلتم عنها، فلا تبصرون ذلك، فتعتبرون به؟

السعدي في تفسيره.

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Objectives

- Understand the level of body organization.
- Distinguish the primary tissues and their subtypes.
- Recognize the regulation of extracellular fluid transport and mixing system.

The doctor said she will not include any questions from this lecture in the exam.

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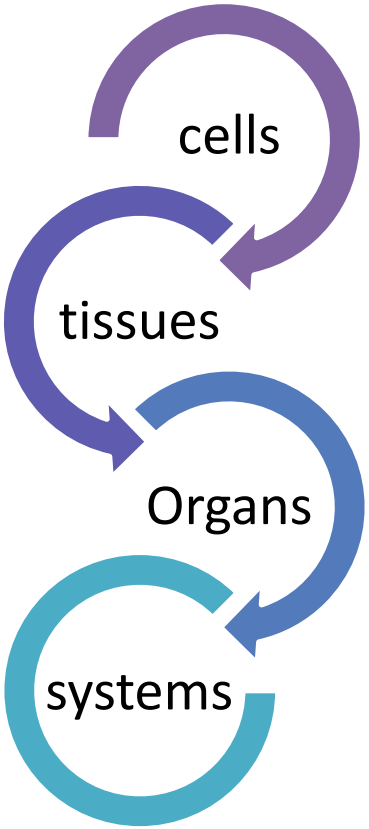
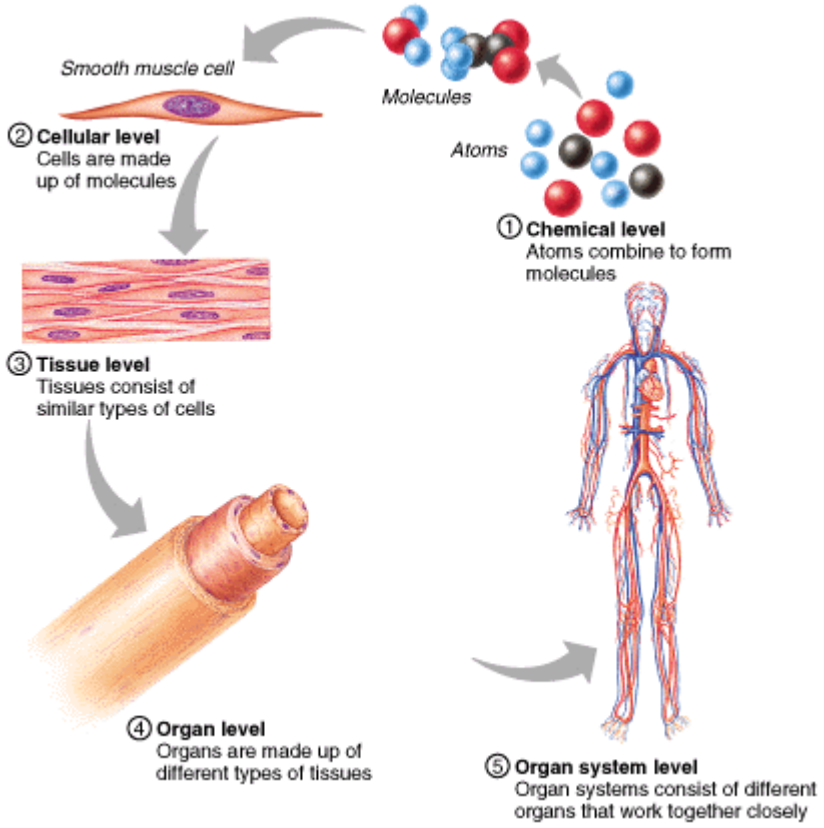
Levels of Organization





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THE PRIMARY TISSUES

EPITHELIAL	Covers body surfaces and lines body cavities
CONNECTIVE	Binds and supports body parts
MUSCULAR	Causes body parts to move
NERVOUS	Responds to stimuli and transmits impulses from one body part to another

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THE PRIMARY TISSUES

EPITHELIAL TISSUES	CONNECTIVE TISSUES	MUSCULAR TISSUES	NERVOUS TISSUES
Covers entire body surface and most of the body's inner cavities. Outer epidermis (skin) protects from injury and drying out Inner epidermal tissue, on internal surfaces protects, secretes mucus (e.g. along digestive tract)	Bind structures together Fill up spaces Provide support and protection Store fat	skeletal muscle: Striated voluntary get fatigue in time Smooth muscle: non-striated Involuntary cardiac muscle: striated involuntary found only in the heart.	Specialized tissue that forms nerves, brain, spinal cord. Conduct electrical & chemical messages along special cells called neurons. Composed of cell body, dendrites (conduct messages *to* cell body), axon (send messages *away* from cell body).

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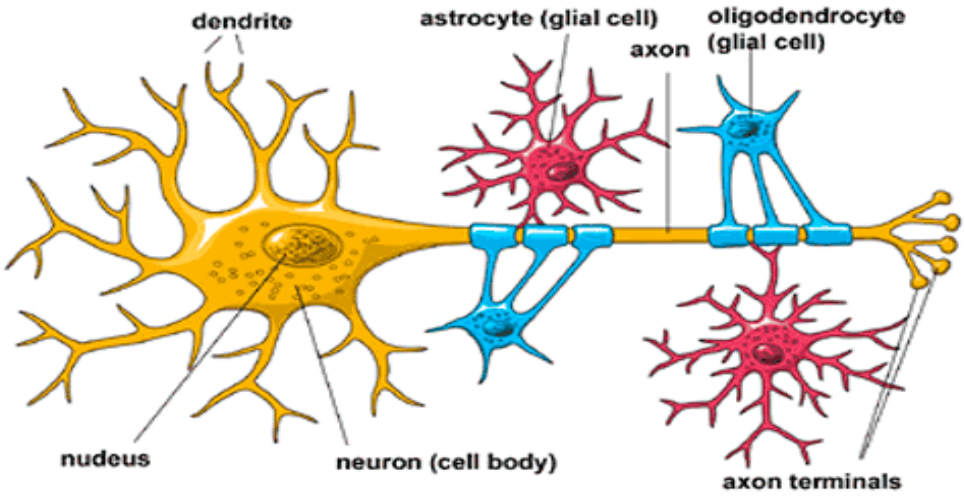
What are Glial cells?

Glial cells: are cells that surround nerve cells.

They help to support, protect, and nourish nerve cells.

They provide nutrients to the neurons and help keep the tissue free of debris.



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What are Glands?

Gland: a single cell, or a collection of cells that secrete chemicals

Exocrine glands	Endocrine glands
secrete into ducts. e.g. gall bladder and sweat glands	secrete chemicals (especially hormones) into bloodstream (e.g. pituitary gland, pancreas secretes insulin into the blood

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Organs

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- Organs: are made up of one or more types of tissues (usually more).

e.g. the heart, skin (is also an example of an organ. It is the largest organ, and has several tissue layers).

Functions of skin:

gives protection from water loss and invasion by microorganisms, contains sense organs, helps to regulate body temperature.

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Human Organ Systems

- Each located in specific location, with specific functions. (e.g. digestive system).
- Many internal organ systems enclosed within coelom, a cavity within the body.
- Organ systems contribute to maintaining a stable internal environment (homeostasis). e.g. Temp, pH, [glucose], blood pressure.

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Function of Organ Systems

1. Digestive	convert food to usable nutrients
2. Circulatory	transport of necessary molecules to cells
3. Immune	defense against invading pathogens
4. Respiratory	gas exchange
5. Excretory	gets rid of metabolic wastes
6. Nervous & Sensory	regulation and control, response to stimuli, processing information
7. Muscular & Skeletal	support and movement
8. Hormonal	regulation of internal environment, development
9. Reproductive	producing offspring

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General Organization of the Circulatory System

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Exchange Between the Capillaries and Interstitial Fluid

Origin of nutrients in the extracellular fluid:

Respiratory system: O_2

Gastrointestinal tract:

- Carbohydrates
- Fatty acids
- Amino acids

Liver and other organs

Musculoskeletal system

Removal of Metabolic End–products

CO2 (by lung)

Urea, uric acid, excess water and ions (kidneys)

others

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Check your understanding!

1) cardiac muscles are considered as:
   - A) striated & voluntary
   - B) non- striated & involuntary
   - C) striated involuntary

2) epithelial tissue covers entire body surface and most of the body's inner cavities.
   - A) true
   - B) false

3) functions of glial cells are:
   - A) Fill up spaces
   - B) Store fat
   - C) response to stimuli
   - D) support, protect, and nourish nerve cells

1) C
2) A
3) D

Done by :

Razan Alsubhi.

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