





KFU Medical Entry Exam. اختبار القبول للتخصصات الصحية في جامعة الملك فيصل.

If you have any question, you can contact us:

- SnapChat: Futureoutlook
- 😏 Twitter: afaaqmustaqbal
- o Instgram: afaaqmustaqbal



We will talk about:

- 1. Cell and its component
- 2. Micro-organisms
- 3. Body systems
- 4. vitamins
- 5. Glands
- 6. Normal values
- 7. Blood and heart
- 8. Types of vertebrae in spine
- 9. Teeth
- 10. Brief talk about jobs
- 11. Tumor
- 12. ABO blood groups



Let's get started!!

Cell and its component

Cell and its components

Cell is the functional part that makes the body. It is composed of many organelles and a wall that separate it internal environment from the external environment.

The wall that separate the cell is named 'plasma **membrane'** and it is made of lipids called **phospholipids.** These phospholipids have a head liking the water 'hydrophilic' and tails hating the water 'hydrophobic'. Also, it contains other materials like proteins that help in regulating the entry of components to the cell, carbohydrate that help in

communication between the cells, and cholesterol to keep the phospholipids tails separated from each other.

Inside the cell, there are organelles helping in regulating the essential mechanisms in the cell, we will go through them one by one: -

- **Cytoplasm** is the inner part of the cell that contains all the parts that are going to be discussed below.
- **Cytosol** is the fluid inside the cell to maintain the functions and work as a medium for working.
- **Nucleus** is the center of the cell that manages and supervises everything in the cell. It is covered by a nuclear envelope, same as plasma membrane to separate the nucleus from the cytoplasm. It contains the genetic material (DNA) and the nucleolus, which work in synthesizing ribosomes.
- Rough Endoplasmic Reticulum (RER) is a membranous network around the nucleus that work producing proteins with the help of ribosomes. The reason of naming it *rough* is because it is covered with ribosomes.
- Smooth Endoplasmic Reticulum (SER) is a membranous network free of ribosomes. It works in producing lipids and removing toxins.
- **Golgi apparatus** works as packaging place to export the products from the cell.







SER

RER

- Mitochondria is the place where the energy of the cell is made in the form of ATP. It works only in the presence of the oxygen (O₂).
- Ribosomes are small components made of proteins and RNA, and work by producing proteins. If they are attached to the RER, they will produce proteins to other cells; if they are free, they will produce proteins to the same cell.
- **Cytoskeleton** is the bone of the cell, made of long proteins that work by supporting the cell, maintaining its shape, and transporting materials inside the cell.
- **Centrosomes** are products near the nucleus that work in cell division.

- Vesicles are small membranous parts covering the cellular materials (like hormones) and help in transporting them in the cell.
- Lysosomes are small vesicles containing enzymes and acids to destroy unwanted parts of the cell, or by killing microbes.









Lysosomes





2- Micro-Organisms

Micro-organisms

Micro-organisms are the small live organisms including bacteria, fungi, and parasites. They could be made of 1 cell only like the bacteria, or multiple cells like the parasites. We will focus here in the micro-organisms that make diseases.

Bacteria are small prokaryotic organisms made of 1 cell and a plasma membrane supported by a cellular wall. It contains DNA inside the cell, but not inside a nucleus. Entry of any bacteria inside the body will cause a disease, most common bacteria are: -

<i>E. coli</i> cause diarrhea	Streptococcus pyogens lyses red
	blood cells
Vibrio cholera causes diarrhea	Staphylococcus aureus causes food
	poisoning

Fungi are eukaryotic organisms that could be unicellular (made of 1 cell) or multicellular (made of multiple cells), like yeasts and mushrooms. Most common fungus is *Pneumocystis jirovecii*, which causes pneumonia (disease of the lungs).

Parasites are the organisms that depend on other organisms to live. They wil cause disease in humans because they multiply inside the body and invade the cells. Most common parasites are: -

<i>Giardia lamblia</i> cause diarrhea <i>Plasmodium</i> causes malaria.

3-Body Systems.



NOTE: It is important to study the pictures in this file because the parts of each system are on it.

Respiratory system:

The respiratory system takes oxygen " O_2 " from the air and converts it into a form that cells can use.

In humans, that means our lungs take in oxygen, and rapidly diffuse it into the blood.

- It could be argued that the respiratory system is one of the body's most important. Without oxygen to fuel cellular respiration, cells begin to die within minutes.
- The lungs also expel carbon dioxide "CO₂"– a waste product of cellular respiration which could otherwise build up to toxic levels.





Digestive System/Excretory System:

- The digestive system takes in food and processes it to obtain useful nutrients.
- One of the most important purposes of food is to serve as cellular fuel; carbohydrates, proteins, and fats can all be used by our cells as sources of the energy
- We can also get other important nutrients from food, such as essential amino acids (amino acids our bodies can't make themselves), good fats, and vitamins and minerals that our cells need to keep their machinery in a good working order.

- When the food enters the body, it is **first** chewed by **the mouth** to break it down into a mush that stomach acids can penetrate.

In **the stomach**, it is treated with acids and special enzymes that break the food's components down into more useful forms.

Finally, it passes through **the intestines**: being squeezed 'through the huge surface area of the intestines narrow tubes ensures that as many useful nutrients are extracted from the food as possible

- The liver helps by releasing substances that assist the intestines in breaking down food, and by breaking .down toxic substances in the blood
- Once these nutrients have been extracted from the food, they are distributed to the body's cells by the ."circulatory system "the blood
- The digestive/excretory system also expels solid waste components of our food that our body can't .use in the form of fecal matter

Cardiovascular/Circulatory System:



It consists of heart /veins/artery/ Capillaries.

- The cardiovascular system is a highly efficient system for moving substances around the body.
- The heart is the central pump of the circulatory system, pumping blood to throughout the body at very high speeds.
- The arteries are the oxygen-delivery system that carry oxygenated blood through the body at high speeds and pressures.

- The veins return blood to the heart after its oxygen has been removed. The blood in veins moves a bit slower .and at lower pressures
- In addition to oxygen and nutrients, the circulatory system also transports chemical messages, such as .hormones, around the body
- Lastly, of course, the circulatory system performs the vital task of carrying waste products away from our cells. It delivers carbon dioxide to the lungs, and other toxins to the liver and kidneys to be destroyed or .excreted

Renal System/Urinary System:

- The renal/urinary system keeps our body healthy by removing dangerous waste products from our blood, and expelling them from our body in the form of urine.

All blood is passed through the kidneys, where special filters "nephrons" allow dangerous substances to pass out of the bloodstream, while keeping helpful substances in.

- The waste liquid that's filtered out by the kidneys is stored in the bladder until the body expels it.



Endocrine System:

- The endocrine system consists of a number of tissues 'that send out chemical messages – called 'hormones to the rest of the body –.
- The endocrine system allows the body to respond to environmental changes, and to other types of survival changes, such as the need to reproduce.



Nervous System:

- The nervous system is a complex network of nerves and cells that carry messages to and from the brain and .spinal cord to various parts of the body
- The nervous system includes both the Central nervous system and Peripheral nervous system. The Central nervous system is made up of the brain and spinal cord and The Peripheral nervous system is made up of the Somatic and the Autonomic nervous systems.

- The nervous system allows us to sense stimuli such as light, sound, smell, and touch from our environment. It also allows rapid communication of stimuli within our body, such as sensations of pain, illness, and wellness.

- It also gives us the brain – a huge central processing unit that combines these stimuli into unified experiences, and performs tasks such as recording memories, producing emotional responses, and thinking.

- The last important function of the nervous system is to allow our brain to send signals back to our body, enabling us to respond to environmental stimuli.

- The brain can be thought of as the control center that receives data, analyzes it, and then commands the body to respond.

- The nervous system accomplishes all of this using highly specialized cells called neurons, which can transmit signals extremely fast by firing electrochemical potentials.



Muscular System:

- Human muscles are often divided into striated muscle (or skeletal muscle), smooth muscle, and cardiac muscle.

Smooth muscle is under involuntary control and is found in the walls of <u>blood vessels</u> and of structures such as the <u>urinary bladder</u>, the <u>intestines</u>, and the <u>stomach</u>.

Cardiac muscle makes up the mass of the heart and is responsible for the rhythmic contractions of that vital pumping organ; it too is under involuntary control.



Skeletal System:

- The skeletal system in humans is the mineralized internal framework consisting of bones, joints and associated cartilages.

- An adult human has 206 bones in their body and variety of different joints.



Exocrine System:

- Skin is our body's first line of defense against bacteria, viruses, injuries, etc. It also controls how much heat and water our body loses to the environment, allowing us to sweat.

- The skin is a complex material; which scientists have not been able to reproduce artificially. This is because it is a living tissue, which is constantly maintained by the nourishing circulatory system underneath; and by a number of glands on the outside of our skin, which secrete oils and other substances that keep our skin from drying and cracking.

Fun fact: skin is also the largest organ on the body.

Lymphatic System/Immune System:



- We have white blood cells that can specially target and destroy invading pathogens. These white blood cells are made in our bone marrow and stored in our blood and our lymphatic systems.

- The lymphatic system is a circulatory system separate from the cardiovascular system that carries water, white blood cells, and other substances. lymph can move more slowly than the bloodstream – giving the white blood cells more time to find and attack invaders.

Lymph nodes" are locations in the lymphatic system" where white blood cells can cluster and attack invading pathogens. Sometimes when we're sick, our lymph nodes swollen as our immune system fights the infections in these nodes.

Reproductive System:

In humans, there are two very different reproductive systems:

A. The male system, which is concerned primarily with producing sperm and finding mates.

B. The female system, which must prepare for pregnancy, childbirth, and baby care for reproduction to be successful.



4-Vitamins and their biomedical role.



They are organic materials cannot be produced in the body, so the body needs them but in little quantity, and <u>they are generally important in:</u>

Normal cell function, body development (growth), maintenance, secretion of milk in mammary glands in females and function as coenzymes.

Т

Classification of Vitamins:

 Water soluble Vitamins: Vitamins that dissolve in water. 1. Vitamin B₁ (Thiamine) 2. Vitamin B₂ (Riboflavin) 	 Fat soluble Vitamins: Vitamins dissolve in .fats
3. Vitamin B_3 (Niacin)	1. Vitamin <mark>A</mark>
4. Vitamin B_5 (pantothenic acid)	2. Vitamin <mark>D</mark>
5. Vitamin B ₆ (Pyridoxine &	3. Vitamin <mark>E</mark>
Pyridoxamine)	4. Vitamin <mark>K</mark>
6. Vitamin B ₇ (Biotin)	
7. Vitamin B ₉ (Folic acid)	
8. Vitamin B ₁₂ (cobalamin)	
9. Vitamin C	

:Comparison between Fat & Water soluble Vitamins*

	Water soluble	Fat soluble
Absorption	Absorbed through simple diffusion in small intestine without the need .for lipids & bile	Absorbed in small intestine with the need for lipids& bile
Function	They are important in energy metabolism because they <u>.</u> function as <u>Coenzymes</u>	<u>.</u> They function as <u>Antioxidants</u>
Storage	They cannot be stored in the body, Extra amount secreted .with urine	They are stored in the Liver and .fat tissue
Toxicity	.Very unusual and rare	Can happen due to extra .intake amount
dissolution	.Dissolve in <u>Water</u>	<u>.</u> dissolve in <u>Fats</u>

Description of all vitamins:

NOTE: The most important points are in *RED* color.

1. Vitamin A:

Functions:

- 1. Maintain healthy skin
- 2. Vision

Dietary Sources:

1. Cod liver .oil

2.<u>Eggs</u>

3. .Orange and yellow vegetables and fruits

4. Other sources of beta-carotene such as broccoli, spinach, and most .dark green, leafy vegetables

5. <u>Milk</u>

:Deficiency signs, symptoms and related diseases*

1. Night blindness.

2. Dry eye

- 3. .Failure in reproductive functions
- 4. .Suppression of immune system
 - 2. Vitamin D.

Functions:

- 1. Maintain healthy teeth and bones
- 2. Helps the body to absorb Calcium
- 3. .Supports immune system by increasing the activity of white blood cells Dietary Sources:
- 1. Fatty fish (such as tuna, salmon, and mackerel)
- 2. Beef liver
- 3. Mushroom
- 4. Eggs
- 5. Fish oil & cod liver oil

Deficiency signs, symptoms and related diseases:

- 1. Ostemalacia in adults
- 2. Rickets in children

Ostemalacia causes weak bones, bone pain, and muscle weakness

3. Vitamin E:

Functions:

- 1. Antioxidant (protects the body from the damage caused by (free radicals
- 2. Important in formation of red blood cells
- 3. Maintains strong immune system
- 4. Helps the body to utilize Vitamin K

Dietary Sources:

1. Vegetable oils (wheat germ, sunflower, safflower, corn, and soybean oils)

- 2. Nuts (peanuts, hazelnuts& almonds)
- 3. Green leafy vegetables (broccoli, spinach)
- 4. fortified breakfast cereals
- 5. Sunflower seeds

Deficiency signs, symptoms and related diseases:

- 1. Bleeding and may be serious bleeding in the brain
- 2. Neurological disorders
- 3. Muscle weakness

4. Vitamin K:

Functions:

- 1. Clotting Vitamin because it helps the blood to clot
- 2. Maintains strong & healthy bones

Dietary Sources:

- 1. Green leafy vegetables (such as kale, spinach)
- 2. Vegetables (such as Brussels sprouts, broccoli)
- 3. Fish, liver, meat, eggs, and cereals (contain smaller amounts)

Deficiency signs, symptoms and related diseases:

Blood clotting disorders (in newborns leads to bleeding tendency)

5. <u>Vitamin B₁</u> (Thiamine)

Functions:

- 1. Helps the body cells to convert carbohydrate into energy (Energy metabolism)
- 2. It is important in muscle contraction and nervous conduction
- 3. Acts as a coenzyme

Dietary Sources:

- 1.Grain products (bread, cereals, rice)
- 2. Nuts and seeds

3.Egg

4. Honey

5. Beef liver

Deficiency signs, symptoms and related diseases:

1. Deficiency can cause a disease called beriberi, *which* can affect Skin, cardiovascular system (Heart)

can cause brain damage

6. Vitamin B₂ (Riboflavin)

Functions:

- 1. It is Important in Energy metabolism
- 2. Red blood cell production
- 3. It helps in releasing energy from proteins

Dietary Sources:

1.Organ meats (liver, Kidney).

2. Diary products & milk

- 3..Nuts
- 4. .Fish eggs

Deficiency signs, symptoms and related diseases:

- a. Mouth or lips sores
- b. Skin disorders
- c. Anemia (lack of Iron)

7. <u>Vitamin B₃</u> (Niacin)

Functions:

1. It is important for converting food (carbohydrate, amino acids, and lipids) to energy.

2. It aids in the function of digestive system, skin and nerves.

*Dietary Sources:

1.Meats.

2. Sunflower seeds, beans.

3. Green leafy vegetables.

4. Fish.

5.poultry.

*Deficiency signs, symptoms and related diseases:

- can cause 1. Diarrhea.

2. Dermatitis (inflammation of the skin).

- 3. Dementia.
- 4. Death (if not treated).
 - 8. Vitamin B₅ (pantothenic acid):
 - *Functions:
 - 1. It is important for converting food (carbohydrate, amino acids, lipids) to energy.
 - 2. It is important in the production of hormones & cholesterol.

*Dietary Sources:

1.Meats & animal proteins.

2.Avocado.

3. Yeast.

4.royal jelly.

5. Broccoli and vegetables in cabbage family.

*Deficiency signs, symptoms and related diseases:

1. Paresthesia (tingling feeling usually felt in the hands, arms, legs, or feet).

2. Neurological disorders.

9. Vitamin B₆ (Pyridoxine & Pyridoxamine):

*Functions:

- 1. Production of Antibodies which is important to fight a lot of disease.
- 2. It is important in Hemoglobin formation.

3. Maintains normal nerve function and immune system.

*Dietary Sources:

- 1. Avocado.
- 2. Cereals.
- 3. Nuts.

4. Banana.

5. Fish, beef and poultry.

*Deficiency signs, symptoms and related diseases:

1. Confusion & depression.

- 2. Inflammation of skin(Dermatitis).
- 3. Mouth sores also known as (Stomatitis).
- 4. Tongue sores also known as (glossitis).
- 5. Anemia.

10. Vitamin B₇ (Biotin):

Functions:*

1. It is important in Metabolism reactions.

- *Dietary Sources:
- 1.Yeasts.

2. Egg yolk.

4.Milk.

5. Mushroom.

*Deficiency signs, symptoms and related diseases:

- 1. Dermatitis & Skinrashes.
- 2. Glossitis (swelling of the tongue).

3. Alopecia (Hair loss or total baldness).

4. Anemia.

5. Birth defect.

11. Vitamin B₉ (Folicacid):

*Functions:

1. It is important in the synthesis of Nucleotides and nucleic acid (DNA, RNA).

2. Can help in preventing anemia.

*Dietary Sources:

1 Dark green leafy vegetables.

2.Milk and its products.

*Deficiency signs, symptoms and related diseases:

1. Diarrhea.

2. Gray hair.

3. Mouth Ulcers.

4. In pregnant women leads to birth defects.

12. Vitamin B₁₂ (Cobalamin):

*Functions:

1. Formation and Maturation of red blood cells.

2. Important information of Myelin (it is an insulating sheath around the nerve fibers and it aids in increasing the speed of impulse conduction).

3. Maintenance of the central nervous system.

Dietary Sources:*

It is found only in animal products

- 1. Selfish & fish
- 2. Meats (liver)
- 3. Eggs & milk

4. Poultry

*Deficiency signs, symptoms and related diseases:

1. Pernicious anemia.

2. Problems in the nervous system.

13. Vitamin C:

*Functions:

1. It is important in the production of collagen which is an essential component in skin, tendons, ligaments and cartilages.

*Dietary Sources:

1. Kiwi fruits.

2. Orange.

3. Lemon.

4. Papaya.

5. Broccoli, Brussels sprouts, and cauliflower.

6. Sweet and whitepotatoes.

*Deficiency signs, symptoms and related diseases:

1.Scurvy which can lead to:

- Bleeding gums, Dry and rough scaly skin, Swollen and painful joints, Weakened tooth enamel.

5-Glands



Exocrine Glands	Endocrine Glands
Secrete their products through a duct	Secrete substances directly in the
into an outer or inner surface of the	blood
body	
Example: Sweat gland, Salivary	Example: Thyroid gland, Pituitary
glandetc	gland, Adrenal glandetc

Endocrine Glands:

• Pineal gland:

The pineal gland is a small, pea- shaped gland, located deep in the center of the brain.

It produces and regulates some ,hormones including melatonin. Melatonin is best known for the role it plays in regulating sleep patterns. Sleep patterns are also called circadian rhythms.

• Pituitary gland:

The pituitary gland is a pea-sized structure located at the base of the brain just below the hypothalamus. It has many roles including:

- > "Secretion of Growth Hormone "GH.
- Regulation of body glands, like thyroid gland and adrenal glands "will be mentioned below".
- :Thyroid gland

The thyroid is a butterfly-shaped gland that sits low on the front of the neck. It regulates the body metabolism"عمليات الأيض



Thyroid gland

Parathyroid gland:

Parathyroid glands are located in the neck behind .thyroid

Parathyroid glands are four small glands of the endocrine system which regulate the calcium in the body by releasing parathyroid hormone.

Thymus gland:

The thymus is located in the upper anterior (front) part of the chest directly behind the sternum and between the lungs. The thymus serves a vital role in the training and development of T-lymphocytes or T cells, an extremely important type of white blood cell. It releases thymosin thymus hormone". It is only active till puberty" after that it turns to a fatty tissue.

Adrenal gland:

They are located on top of each kidney. Their name directly relates to their location (ad— near or at; renes—kidneys). The adrenal glands produce hormones that help the body control blood sugar, burn protein and fat, react to stressors like a major illness or injury, and regulate blood pressure. Two of the most important adrenal hormones are cortisol and .aldosterone



Kidney





Gonads "Testes and Ovaries"

- ,Testes: The testes are located within the scrotum which is the loose pouch of skin that hangs outside the body behind the penis. They play a role in the development of the male reproductive system and secretes testosterone "a hormone that is vital to the normal development of male physical characteristics.
- Ovaries: The ovaries are located in the lower abdomen. They play a role in the development of the —female reproductive system and secrete hormones primarily estrogen and progesterone—that are vital to normal reproductive development and fertility.

• Pancreas

The pancreas, located in the abdomen, below and behind the stomach, is both an exocrine and an endocrine gland.

The alpha and beta cells are the endocrine cells in the pancreatic islets that release insulin and glucagon.

Insulin and glucagon influence blood sugar levels.

Glucagon is released when blood glucose level is low and stimulates the liver to release glucose into the blood.

Insulin increases the rate of glucose uptake and metabolism by most body cells

Somatostatinis released by delta cellsand acts as an inhibitor of Growth hormone, insulin and glucagon

Alpha cells	Beta cells	Delta cells
Glucagon	Insulin	Somatostatin





NOTE

The liver and pancreas are both exocrine and endocrine glands; they are exocrine glands because they secrete products bile and pancreatic juice into the small intestin and endocrine because they secrete other substances directly into the bloodstream.

Salivary glands:

Are exocrine glands that produce saliva through a system of ducts.

Humans have three paired major salivary glands as well as hundreds of minor salivary glands.



They secret:

- 1. Amylase to begin the digestion of starches
- 2. Saliva to facilitate mastication and swallowing
- 3. Serous fluid: has a role in digestion
- 4. Mucous: has a protection role

6-Normal Values



Value	Normal Range	
Respiratory Ra te :(RR)	20-12 .breath/min	
:Heart Rate (HR)	100-60 .beats/min	
Random plas ma :glucose	RPG < 200 mg/dl	
:Red Blood Cells	.Male: 4.7 to 6.1 : Female to 4.2 .million mcL 5.4	Increasing the number of RBCs .Erythrocytosis << Decreasing the number of RBCs .Erythrcytopenia <<
White Blood Cells (WBC):	and 10,500 3,500 mcL	Leukocytosis: High WBC count. Leukocytopenia: Low WBC count
Blood Pressure (BP):	Unit :Unit زئبقي ملم رئبقي ملم	الضغط الإنقباضي Systolic Pressure= 120 mmHg الضغط الإنبساطي Diastolic Pressure = 80 mmHg
Hemoglobin Level (Hb):	Male: 14-18 g/L Female:16-12 g/L	
Total Lung capacity :(TLC)	ml = 5.7 L 5700	
Total Body Water (TBW)	Female: 55% Male: 60%	

NOTE:

.mcL: million cells per microliter .mmHg: Millimeter of mercury Mg/dl: Milligrams per Deciliter



(a) Distribution of body solids and fluids in average lean adult female and male

7-Blood and Heart.



What is the heart?

- The heart is a blood pump that is located inside the rib cage.
- It pumps ~ 70 ml of blood with each beat.
- The heart beats ~ 72 times every minute.



The Four Champers of Heart



This is a picture of the heart from front



What is Systole and Diastole?

In systole the blood pressure in arteries is 120 mmHg

عند انقباض القلب، الضغط في الشرايين يكون 120 مليميتر من الزئبق



Contract



Heart muscles Relax

In diastole the blood pressure in arteries is 80 mmHg

عند انبساط القلب، الضغط في الشرايين يكون 80 مليميتر من الزئبق

What is Blood?

- It the fluid that runs in arteries (شرابين) and veins (أوردة).
- An adult has from 5-6 liters of blood.
- Blood has four main components:
- White blood cell Red blood cells Platelets Plasma.
- Plasma is a yellowish fluid that holds other components.

Blood Components

- White blood cells protect the body from infections.
- خلايا الدم البيضاء تحمي الجسم من العدوى .
- Red blood cells transfer oxygen to the tissues.
- خلايا الدم الحمراء تنقل الدم إلى أنسجة الجسم. •
- Platelets help stop bleeding.
- الصفائح الدموية تساعد على إيقاف نزيف الدم. •





Where is it Produced?

All blood components are produced in the red bone marrow

كل مكونات الدم تنتج في النخاع الأحمر للعظام.



Blood Components



8-Types of Vertebrae in spinal cord



.We have many types of vertebrae in spinal cord

- 1- Cervical vertebrae 7
- 2- Thoracic vertebrae 12
- 3- Lumber vertebrae 5
- 4- Sacrum 5 fused
- 5- Coccyx 4 fused

هناك عدة انواع لفقرات العمود الفقري:

- الفقرات العنقية ٧
- 2. الفقرات الصدرية ١٢
 - 3. الفقرات القطنية ٥
- 4. الفقرات العجزية ٥ ملتصقة
- 5. فقرات العصعص ٥ ملتصقة



9-Teeth.



"تسوس الاسنان" Tooth decay= dental caries

Is a breakdown of teeth due to acids made by bacterial infection.

"مسببات التسوس" : Causes of dental caries

Mainly is sugary food and beverages. Also, being careless about brushing your teeth regularly, dry mouth, and some medical problems such as head & neck cancer and .bulimia





The external layer of teeth is Enamel المينا

NOTE: The most basic structures are surrounded with orange border.

The number of teeth:

The number of teeth in adult





:The stages of teeth growth

Primary teeth start to show up in baby mouth at 6 months of age, while the first permanent teeth erupt at age of 6 years.

الأسنان اللبنية = Primary teeth الأسنان الدائمة = Permanent teeth

10- Brief talk about jobs.





Doctor:

Is someone who can diagnose and treat ill people by listening to the patients trying to understand their problem and using the communication skills in order to come up with the right diagnosis and provide a proper treatment.

,A doctor can specialize in different area such as surger pediatrics etc

Nurse:



Nursing job duties include communicating between patients and doctors, caring for patients, administering medicine, Managing intravenous (IV) linesand supervising nurses' aides.



Pharmacist:

Distributes prescription drugs to individuals. Also, advice the patients, physicians, and other health practitioners on the selection, dosages, interaction, and side effects of medications, as well as monitor the health and progress of those patients to ensure that they are using their medications safely and effectively.



Dentist:

Diagnose and treat problems with a patient's teeth, gums and related parts of the mouth.

11- Tumor



A soft fibroma of the eyelid is just one type of tumor. Photo credit: Oliver Riesen

• What is a tumor?

- Tumor is referred to as masses, which are larger, or nodules, which refer to smaller lumps.
- Tumor sizes may vary enormously.
- Almostanytype of cell or tissue can develop into a type of tumor



A soft fibroma of the eyelid is just one type of tumor. Photo credit: Oliver Riesen

• Types

There are many different type of tumors and a variety of name for them. Their name usually reflects their shape, the origin of the cell, and the type of tissue they appear in.

In general, tumors are divided into three groups:

أورام حميده Benign ا

These are not cancerous and cannot spread.

- A benign tumor will remain in its current form.
- They do not generally return after being removed.

Premalignant:

- A premalignant tumor is not yet cancerous but appears to be developing the properties of cancer
- This type of tumor requires close monitoring.

مسرطنة /أورام خبيثة: Malignant

- Malignant tumors are cancerous.
- They can grow, spread, and get worse.
- Malignant tumors are cancerous tumors that can potentially result in death.

12- ABO blood groups



ABO blood groups

ABO blood group system, the classification of human blood based on the inherited properties of red blood cells (erythrocytes) as determined by the presence or absence of the antigens A and B, which are carried on the surface of the red cells. Persons may thus have type A, type B, type O, or type AB blood.



Blood containing red cells with type A antigen on their surface has in its serum (fluid) antibodies against type B red cells.

- If, in transfusion, type B blood is injected into persons with **type A blood**, the red cells in the injected blood will be destroyed by the antibodies in the recipient's blood. In the same way, type A red cells will be destroyed by anti-A antibodies in type B blood.
- **Type O blood** can be injected into persons with type A, B, or O blood unless there is incompatibility with respect to some other blood group system also present.
- Persons with type AB blood can receive type A, B, or O blood." Universal Recipient "1

¹ Universal Recipient : It refers to someone of the AB positive blood type, who can receive blood from any ABO type (A, B, AB, or O) and any Rh type (Rh-positive or -negative).

Positive or negative blood

The Rh blood group system was discovered in 1940 by Karl Landsteiner and A.S. Weiner The Dantigen in the Rhesus (Rh) system determines whether you have positive or negative blood.

If you have the Rh D antigen, your blood type is positive. If you lack the Rh D antigen, your blood type is negative.

77% of our donors are Rh D positive. There are four other main antigens in the Rh system. Your combination of these makes up your blood subtype

<mark>NOTE !</mark>

O RhD negative can be given without any transfusion investigations being undertaken



Good luck! Study hard and you will succeed.