Medical Terminology

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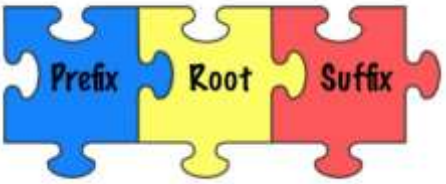
ARKAN ACADEMY

Word Parts

- Like every other language, medical terminology has changed over time and will continue to change, using words (terms) which make up the language of the medicine
- Most medical terms comes from *Greek* and *Latin* language

♦ Word elements



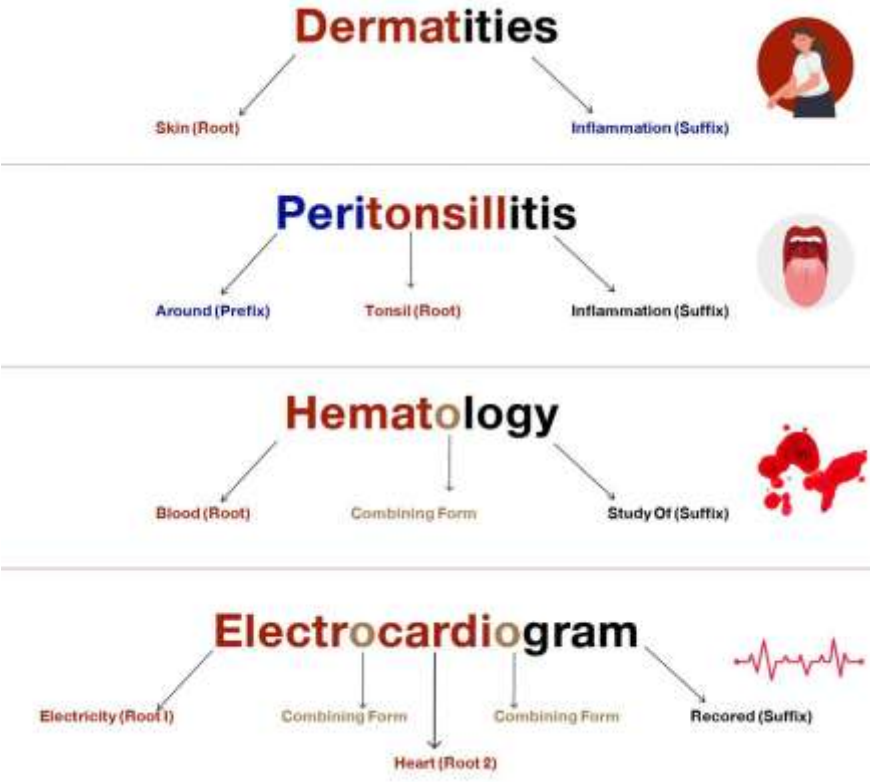
- Prefix: It is a word component placed ***in front (before)*** of root to change or modify its meaning
  - It may indicate direction, classification, quality, position …
  - It is *followed* by a dash (pre-)

- Root: It is the ***basic element*** of a word
  - It represents the foundation where the ***meaning of word is built on***

- Suffix: It is a word component added to the ***end of root (after)*** to change or modify its meaning
  - It may indicate a function, usage …
  - Indicated by a dash *before* (-itis)

- The only essential component is the root, where both <u>prefix and suffix may be absent</u>
  - It is important to memorize the most common prefixes and suffixes so that you can tell the difference

- ***Combining forms:*** They are composed from a vowel added to a word component to ***link*** adjacent components together, the vowels to be added can be:
  - ***O*** (most common) such as hepat**o**megaly



- **Prefix Examples**

Prefix	Meaning	Arabic Meaning	Example
Hyper -	Excessive, above normal	أكثر / أعلى	Hypertension
Hypo -	Below normal	أقل / تحت	Hypotension
Dys -	Abnormal, difficult	خلل / عطل	Dysfunction
Tachy-	Fast	سريع	Tachycardia
Brady -	Slow	بطيء	Bradycardia
Pre/Pro	Before	قبل	Presynaptic
Post -	After	بعد	Postsynaptic
Contra -	Against	ضد / عكس	Contraindication
Neo -	New	جديد	Neonatal
Normo-	Normal	طبيعي	Normothermal
Macro -	Big / large	كبير	Macromolecule
Micro -	Small	صغير	Micromolecule
Pseudo -	False	كاذب / خاطئ	Pseudopods
Exo -	Outside, Outer	خارج	Exergonic
Endo -	Within, inner	داخل	Endonucleases
Iso -	Equal	متساي / متشابه	Isomer

- **Root Examples:**

Root	Meaning	Arabic Meaning	Example
Cardio	Heart	قلب	Cardiopathy
Derma	Skin	جلد	Dermatology
Neuro	Nerve	أعصاب	Neurology
Osteo	Bone	عظام	Osteoporosis
Psycho	mind	نفسي	Psychology
Arthro	Joint	مفصل	Arthritis

Nephro / Renal	Kidney	كلى	Renal system / Nephrology
Adipo	Adipose	دهني	Adipose tissue
Cyto	Cell	خلية	Cytology
Encephalo	Brain	عقل	Encephalopathy
Thoraco	Chest	صدر	Thoracic cavity
Hemato	Blood	دم	Hematology

- **Suffix Examples:**

Suffix	Meaning	Arabic Meaning	Example
-itis	Infection	التهاب	Gastritis
- oma	Tumor / cancer	سرطان	Adenoma
- pnea	Breathing	نفس	Tachypnea
- edema	Swelling	تجمع سوائل	Lymphedema
- spasm	Contraction	إنكماش	Muscle spasm
-emia	In blood	بالدم	Anemia
- ectomy	Remove of	إزالة	Thyroidectomy
- lysis	Breakdown	تحلل	Hydrolysis
- megaly	Enlargement	تتضخم	Hepatomegaly
- pathy	Disease of	مرض	Cardiopathy
- scope	Instrument to view / examine	أداة	Endoscope
- tomy	Incision	شق	Colotomy
- toxic	Poisin	سم	Toxicology
- uria	Urin	بول	Hematouria
- able	Capable of	قادر على	Excitable
- dilation	Expand widen	توسع	Vasodilation
- constriction	Narrow of	تضييق	Vasoconstriction
- ology	Study of	علم بـ	Hematology

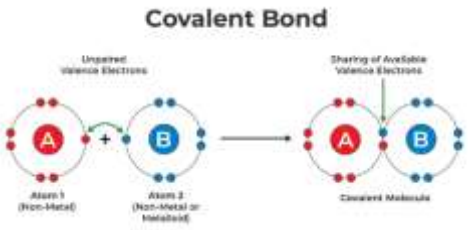
- emesis	Vomiting	استفراغ	Hematemesis
- phobic	Fear	خوف	Hydrophobic
- philic	Love	حب	Hydrophilic
- ism	Medical condition	وصف ظاهرة طبية	Alcoholism
- ologist	Specialist	عالم / مختص	Cardiologist
- stasis	Stop	إيقاف	Hematostasis
- phagia	Eating / ingestion	أكول	Autophagia
algia	pain	ألم	Neuralgia
- ia	a state or condition	وصف ظاهرة طبية	Pneumonia
-osis	abnormal condition	وضع غير طبيعي	Neurosis
-malacia	Soften	ترقق	Osteomalacia

Basic words in chemistry

- ***Chemistry:*** It is the science that studies reactions between materials and the structure of these materials

♦ Bonds Types

1. Covalent bonds



- They are chemical bonds that involve the *sharing of electrons* between atoms
- According to the sharing of electrons, covalent bonds can be:

A. Polar Covalent bond

- Between 2 atoms with *different electronegativity* where electrons are *not shared equally* between them

B. Non-Polar Covalent bond

- Between 2 atoms with *similar electronegativity* where electrons are *shared equally* between them

- **Notes**
  - Covalent bonds can be either ***single***, ***double*** or ***triple*** bonds
  - Triple bonds are the strongest, and single bonds are the **weakest**
  - The unique properties of covalent bonding contribute to the structure and function of these macromolecules, influencing everything from enzyme activity to genetic information storage

2. Non-covalent bonds

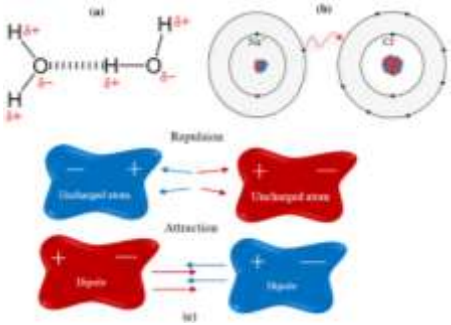
- They are interactions that do *not involve the sharing of electron* pairs between atoms, unlike covalent bonds, instead, they rely on various types of attractive forces.

- Types of non-covalent bonds

A. Hydrogen Bonds

- Occur when a hydrogen atom covalently bonded to an electronegative atom (like oxygen or nitrogen) interacts with another electronegative atom

B. Ionic Bonds



- Formed between *charged ions*, where opposite charges attract each other

C. Van der Waals Forces

- Weak attractions between molecules due to temporary dipoles that occur when *electron distribution* around atoms fluctuates. These include London dispersion forces and dipole-dipole interactions.

D. Hydrophobic Interactions

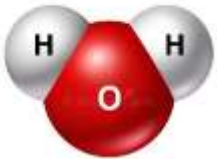
- Occur when *nonpolar molecules aggregate* to avoid contact with water, which can stabilize the structure of biological molecules like proteins

E. π-π Interactions

- Occur between *aromatic rings*, where the electron clouds of adjacent π systems interact.

- **Note**
  - Non-covalent bonds play crucial roles in biological processes, including enzyme-substrate interactions, protein folding, and DNA base pairing. They are typically weaker than covalent bonds but are essential for the stability and function of complex biomolecules.

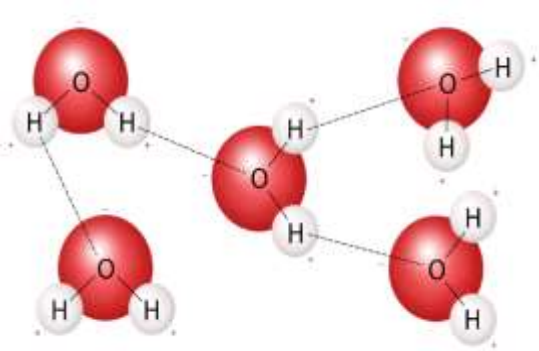
♦ Chemistry of water



- ***Atoms:*** are defined as "the basic building blocks of matter"
- ***Molecule:*** is made of two or more atoms chemically bonded together
- ***Polar bonds:*** are a type of covalent bond that occurs when two atoms with different electronegativities share electrons unequally.
- ***Non-polar bonds:*** are a type of covalent bond in which two atoms share electrons equally or nearly equally.
  - This occurs when the atoms involved have similar or identical electronegativities, resulting in no significant charge separation within the bond
- ***Hydrophilic:*** describes molecules or parts of molecules that have an *affinity for water*
  - These substances are typically *polar or charged*, allowing them to interact with water molecules through hydrogen bonding or ionic interactions. Hydrophilic substances tend to dissolve easily in water.
- ***Hydrophobic:*** refers to molecules that *repel water* and do not interact favorably with it

- These substances are usually *nonpolar* and do not form hydrogen bonds with water, making them poorly soluble or *insoluble in water*

- **Electronegativity** : tendency to attract electrons toward itself.
  F. **Evaporation/vaporization :** process by which an element or compound transitions from its liquid state to its gaseous state
  G. **Condensation** : chemical reaction involving union between molecules.
  H. **Amphipathic :** has two characteristic against each other.



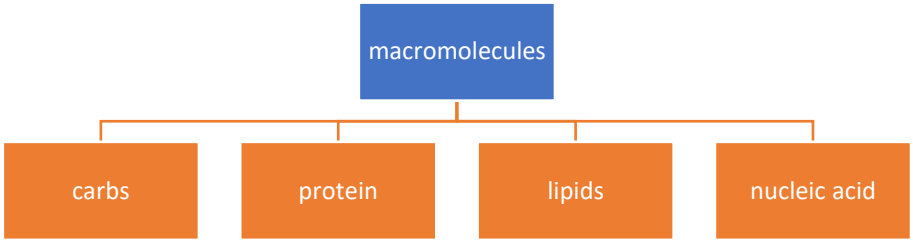
- **Cohesion:** attractive forces between *similar substances*
- **Adhesion:** the attractive forces *different substances*

♦ The most important chemical element

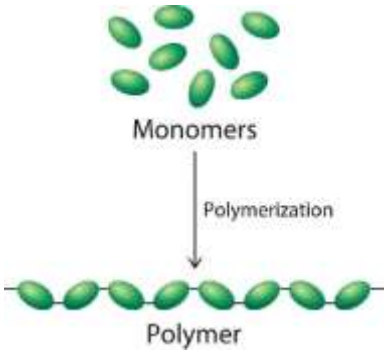
Basic words in Biology

- ***Biology***: It is the science that studies the living organisms and their bodies
- Advances in medicine, agriculture, biotechnology, and many other areas of biology have brought improvements in the quality of life.

♦ Macromolecules



- ***Monomer:*** is a small, simple molecule that can join together with other monomers to form a larger, more complex structure known as a polymer.
- ***Dimer:*** formed from <u>two i</u>dentical or similar monomers that are chemically bonded together.
- ***Polymer:*** is a large molecule composed of <u>repeating structural</u> units called monomers, which are connected by covalent bonds.
- ***Homodimer*****:** is a type of dimer formed from two identical monomer units.
- ***Heterodimer*****:** is a type of dimer formed from two different monomer units.



- ***Polymerization*****:** s the process by which monomers combine chemically to form a polymer
- ***Repolymerization :*** reforming the polymer again
- ***Dehydration (condensation)*** **:** the process of removing water from a substance. In a chemical context, it often involves the removal of water molecules during a reaction, leading to the formation of new bonds.
- ***Hydrolysis:*** is a chemical reaction in which water is used to break down a compound
- ***Greek numbering used in Biology :***

  Mono =. 1
  Di = 2
  Tri = 3
  Tetra = 4
  Penta = 5
  Hexa = 6
  Hepta = 7

1- Carbohydrates :

- Carbohydrates are organic compounds composed of carbon, hydrogen, and oxygen, typically with a hydrogen-to-oxygen ratio of 2:1. They are one of the primary macromolecules essential for life and serve several important functions, including:

1. **Energy Source**
2. **Structural Role**
3. **Storage**

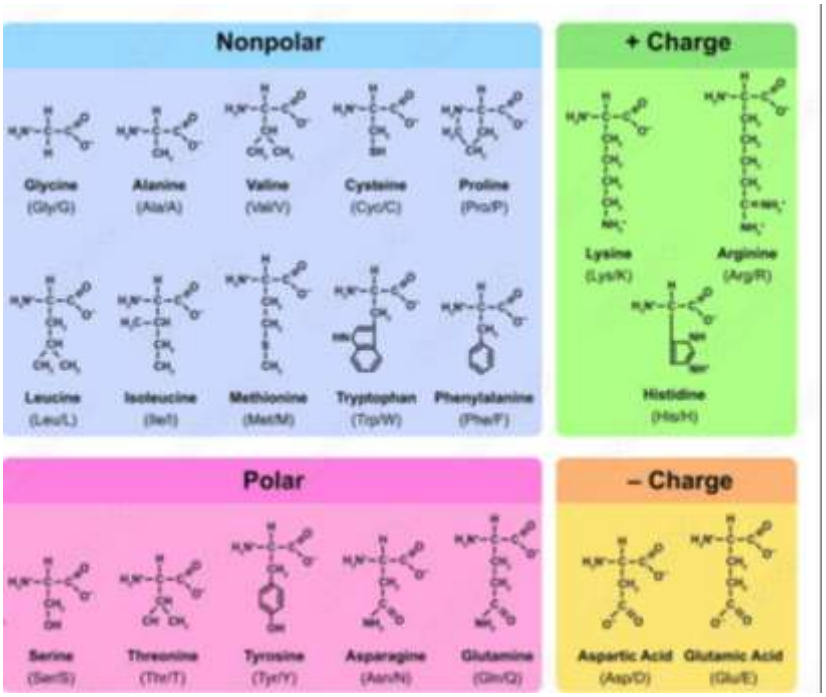
- **Types of Carbohydrates**

1. **Monosaccharides:** The simplest form of carbohydrates, consisting of single sugar units. Examples include glucose, fructose, and galactose.
2. **Disaccharides:** Formed by the combination of two monosaccharides. Common examples are sucrose (glucose + fructose) and lactose (glucose + galactose).
3. **Oligosaccharides:** Short chains of monosaccharides, typically containing 3 to 10 units.
4. **Polysaccharides:** Long chains of monosaccharides that can be branched or unbranched. Examples include starch, glycogen, and cellulose.

2- Proteins

- Protein is polymer , the monomer is Amino acid (we have 20 standard A.A).
- Some major protein families:

1. **Enzymes**
2. **Structural Protein**
3. **Transport Proteins**
4. **Antibodies**
5. **Receptors**
6. **Motor Proteins**
7. **Storage Proteins**



3- Lipids

- Lipids are a diverse group of hydrophobic molecules that play essential roles in biological systems. They can be classified into several families based on their structure and function. Here are the main lipid families:

1. **Fatty Acids**
2. **Triglycerides**
3. **Phospholipids**
4. **Steroids**
5. **Waxes**
6. **Glycolipids**

- **Functions of Lipid Families**
  - ✓ **Energy Storage:** Triglycerides store energy for later use.
  - ✓ **Membrane Structure:** Phospholipids form the basis of cellular membranes, creating barriers that regulate substance movement.
  - ✓ **Signaling Molecules:** Some lipids act as hormones or signaling molecules, facilitating communication within and between cells.
  - ✓ **Insulation and Protection:** Lipids provide thermal insulation and protect organs in animals.

4- Nucleic acid

Nucleic acids are biopolymers essential for all known forms of life, and they fall into two primary families:

1. **DNA (deoxyribonucleic acid)**
2. **RNA (ribonucleic acid)**

Functions of Nucleic Acids

- **Genetic Information Storage**
- **Protein Synthesis**
- **Regulatory Roles**

➢ Organism types and Cell content

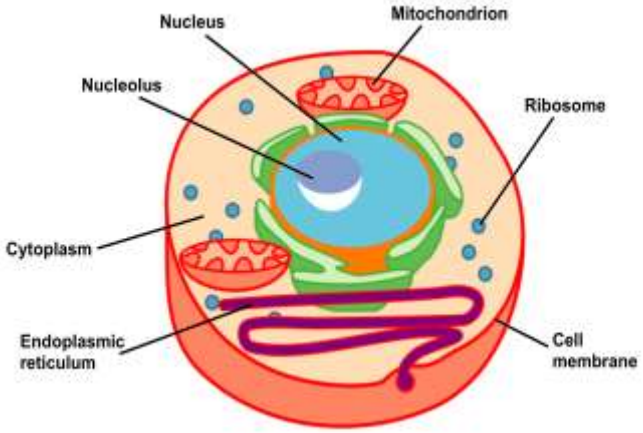
- The Cell **: i**s the basic structural and functional unit of all living organisms. Cells are often referred to as the "building blocks of life".

- The nucleus : is a membrane-bound organelle that contains the cell's genetic material (DNA).

- The plasma membrane(cell membrane): is a phospholipid bilayer that encloses the cell.

- The ribosome : protein factory .

- the cytoplasm : is the gel-like substance found inside a cell, excluding the nucleus



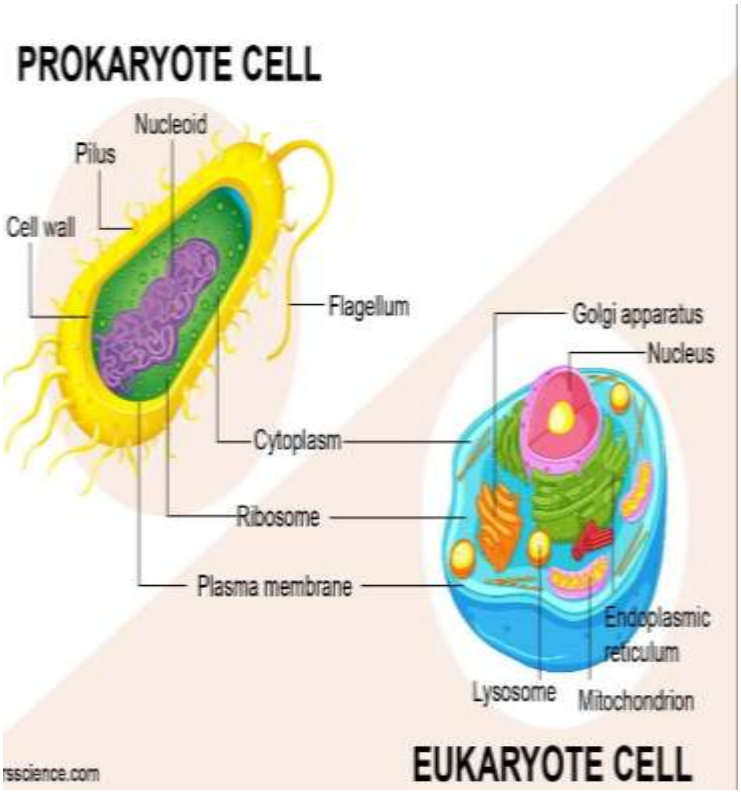
- **Cells can be broadly classified into two main types:**

1. **Prokaryotic cells** :

- Lack a defined nucleus; genetic material is located in a nucleoid region.
- Generally smaller and simpler than eukaryotic cells.
- Do not contain membrane-bound organelles (e.g., mitochondria, endoplasmic reticulum).
- Have a cell wall (most bacteria) and a plasma membrane.
- Examples (**Bacteria / Archaea) .**

2. **Eukaryotic cells**

- Contain a defined nucleus that houses genetic material.
- Possess membrane-bound organelles, which carry out specialized functions.
- Generally larger and more complex than prokaryotic cells.
- Examples: **Animal Cells / plant Cells / Fungal Cells / Protists .**



♦ Important Metabolic Process :

1.Cell respiration : is the process by which cells convert glucose (or other organic molecules) into usable energy in the form of adenosine triphosphate (ATP), while releasing waste products.

Glucose+O2→ATP+CO2+H2O

2.Photosynthesis : is the process by which green plants, algae, and some bacteria convert light energy into chemical energy stored in glucose, using carbon dioxide and water.

$$6\ CO_2 + 6\ H_2O + \text{light energy} \rightarrow C_6H_{12}O_6 + 6\ O_2$$

♦ Gene expression

- is the process by which information from a gene is used to synthesize a functional gene product, typically a protein, though it can also involve non-coding RNAs. It consists from two process :

1. Transcription**:** the first step in gene expression, where a specific segment of DNA is copied into messenger RNA (mRNA) by the enzyme RNA polymerase.

2. Translation: **t**he mRNA is transported to the ribosome in the cytoplasm, where it serves as a template for protein synthesis.

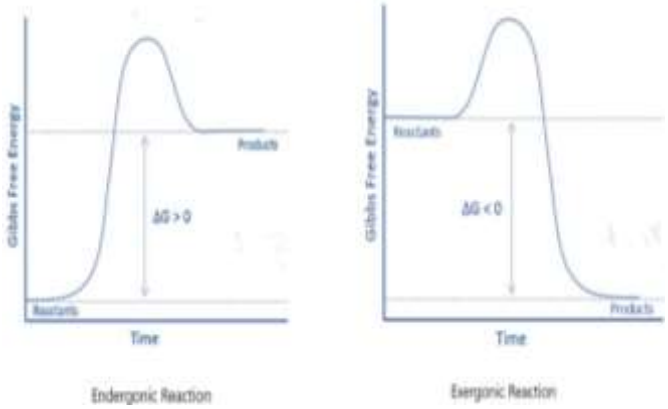
Basic words in Biochemistry

- ***Biochemistry*** is the branch of science that explores the chemical processes and substances that occur within living organisms. It combines principles from both biology and chemistry to understand the molecular mechanisms that underlie biological functions.
- You will study the Metabolic process in the four macromolecules (Carbs / Proteins / Lipids / Nucleic acid).

♦ The reactions types :

1. ***Exergonic:*** realse energy , $\Delta G < 0$, spontaneous , catabolic .
2. ***Endergonic :*** absorb energy , $\Delta G > 0$, non-spotaneous .

- ***Transition state:*** a high-energy, unstable state during a chemical reaction
- ***Enzyme*** **:** biological catalysts that speed up chemical reactions in living organisms.
- ***Metabolism*** **: Catabolism + Anabolism**



1. **Catabolic pathways** can be broadly categorized into **aerobic**, **anaerobic**, and **fermentation** processes.

Aerobic Catabolic Pathway

Definition: This pathway requires oxygen to efficiently break down glucose and other organic molecules to produce ATP. Example **cell respiration**

A. **Glycolysis:**
   - Glucose is converted into two molecules of pyruvate, producing a net gain of 2 ATP and 2 NADH.

B. **Oxidation of pyruvate :**

- Convert the pyruvate to actyl CoA .

C. **Krebs Cycle (Citric Acid Cycle):**
   - Each pyruvate is converted into acetyl-CoA, which enters the cycle, producing :
     1(ATP/ FADH2)
     2(CO2)
     3(NADH)

D. **Electron Transport Chain (ETC) & Oxidation phosphorylation :**
   NADH and $FADH_2$ donate electrons, creating a proton gradient that drives ATP synthesis (oxidative phosphorylation). Oxygen serves as the final electron acceptor, forming water.

Overall Reaction: $C_6H_{12}O_6+6O_2 \rightarrow 6CO_2+6H_2O+ATP$

Energy Yield: Approximately 30-32 ATP per glucose molecule.

Anaerobic Catabolic Pathway

Definition: This pathway occurs in the absence of oxygen, allowing organisms to extract energy from glucose through different mechanisms.

Fermentation

Definition: Fermentation is an anaerobic process partial degradation that allows cells to generate energy without oxygen, typically resulting in the production of organic byproducts.

Types of Fermentation:

- **Lactic Acid Fermentation:**
  Pyruvate is converted into lactic acid.
- **Alcoholic Fermentation:**
  Converts pyruvate into ethanol and CO_2.

♦ Biochemistry terminology :

- ***Cofactor*** **:** non-protein chemical compound or metallic ion that is required for an enzyme's role as a catalyst
- ***Activator*** **:** is a molecule that enhances the activity of an enzyme or a protein, promoting a biological process.
- ***Inhibitor*** **:** is a molecule that decreases or blocks the activity of an enzyme or a protein, thereby regulating biological processes.
- ***Standard condition :***
  - ✓ **1M T=25C PH=7**
- ***Feedback inhibition*** **:** is a regulatory mechanism in which the end product of a metabolic pathway inhibits an enzyme that acts earlier in the pathway.
- ***Reduction*** **:** gain e- , gain H , lose O
- ***Oxidation*** : gain O , lose H , lose e-

♦ Vitamins

- The **four fat-soluble** vitamins are vitamins A, D, E, and K
- The **nine water-soluble vitamins** are vitamin C and all the B vitamins.

Basic words in Pharma

- ***Pharmacology :*** The study of how drugs interact with biological systems. It covers mechanisms of action, therapeutic effects, side effects, and drug interactions.

- ***Active Ingredient***
  The biologically active component of a medication that produces the desired therapeutic effect.
- ***Bioavailability***
  The degree and rate at which an active ingredient or active moiety is absorbed and becomes available at the site of action.
- ***Half life (t1/2):***
  is the time it takes for the concentration of the drug in the bloodstream to reduce to half its initial value.
- ***The onset of action :***
  refers to the time it takes for a drug to start producing its therapeutic effects after administration.
- ***The duration of action :***
  is the length of time a drug remains effective in producing its desired therapeutic effect.
- ***The mechanism of action :***
  describes how a drug produces its effects at the molecular or cellular level.
- ***Pharmacokinetics***
  The study of how a drug is absorbed, distributed, metabolized, and excreted in the body. It includes parameters like absorption, distribution, metabolism, and excretion (**ADME**).
- ***Pharmacodynamics***
  The study of the effects of drugs on the body, including mechanisms of action and the relationship between drug concentration and effect.
- ***Dosage Form***
  The physical form of a dose of medication, such as tablet, capsule, liquid, injection, or topical application.
- ***Indication***
  The condition or disease for which a particular drug is prescribed or used.
- ***Contraindication***
  A specific situation or condition in which a drug shouldn't be used because it may be harmful to the patient.
- ***Side Effects***
  Undesired or unintended effects of a medication that occur in addition to the intended therapeutic effect.
- ***Over-the-Counter (OTC) Drug***
  Medications that can be purchased without a prescription, typically considered safe and effective for use without a healthcare provider's supervision.
- ***Prescription Drug***
  Medications that require a prescription from a licensed healthcare professional for dispensation.
- ***Therapeutic Window***
  The range of drug doses that produces a therapeutic effect without causing significant adverse effects.
- ***Drug Interaction***
  A modification of the effect of a drug when administered together with another drug, which can enhance or diminish therapeutic effects or increase toxicity.
- ***Placebo:***
  An inert substance or treatment used as a control in clinical trials to assess the efficacy of a drug.

- ***Prodrug:***
  An inactive compound that is metabolized in the body to produce an active drug.
- ***Route of Administration:***
  The path by which a drug is delivered to the body (e.g., oral, intravenous, intramuscular, topical).
- ***Antagonist:***
  A substance that binds to a receptor and blocks its activation, inhibiting the biological response.
- ***Agonist:***
  A substance that binds to a receptor and activates it, eliciting a biological response.
- ***in vitro:***
  Studies conducted outside of a living organism, often in a controlled laboratory environment.
- ***In vivo:***
  Studies conducted within a living organism to assess drug effects in a biological context
- ***Bactericidal:***
  A drug that kills bacteria.
- ***Bacteriostatic:***
  A drug that inhibits the growth and reproduction of bacteria without killing them.
- ***Maintenance Dose:***
  The dose of a drug administered to maintain therapeutic levels after achieving the desired effect.
- ***Herbal Medicine:***
  The use of plant-derived substances for therapeutic purposes.
- ***Antimicrobial:***
  A substance that kills or inhibits the growth of microorganisms, including bacteria, viruses, fungi, and parasites.
- ***Inhalation Therapy:***
  The administration of medication directly into the lungs through inhalers or nebulizers.
- ***Intrathecal Injection:***
  A method of delivering medication directly into the cerebrospinal fluid, often used for pain management or chemotherapy.
- ***Parenteral Route:***
  Any route of administration that bypasses the gastrointestinal tract, including intravenous, intramuscular, and subcutaneous routes.
- ***Subcutaneous Injection:***
  A method of delivering medication into the layer of fat beneath the skin, often used for insulin or certain vaccines.
- ***Antidote:***
  A substance that counteracts the effects of a poison or overdose of medication.
- ***Medication Adherence:***
  The extent to which a patient correctly follows prescribed medication regimens.
- ***Affinity:***

The strength of the binding interaction between a drug and its target receptor.

- **Specificity**
  the ability of a drug or compound to interact with a particular target, such as a specific receptor or enzyme, while having minimal effects on other targets.

Basic words in Pathology

- ***Pathology :*** the branch of medicine that deals with the nature, causes, and effects of diseases.

- ***Etiology:***
  The study of the cause of disease.
- ***Inflammation:***
  The body's response to injury or infection, characterized by redness, heat, swelling, and pain.
- ***Necrosis:***
  The death of cells or tissues due to disease, injury, or lack of blood supply.
- ***Hypertrophy:***
  An increase in the size of cells, often leading to an increase in the size of an organ.
- ***Hyperplasia:***
  An increase in the number of cells in a tissue or organ, often resulting in enlargement.
- ***Atrophy:***
  A decrease in the size or function of a cell or tissue due to disuse, lack of nourishment, or disease.
- ***Dysplasia:***
  Abnormal development or growth of tissues or organs, often associated with cancer.
- ***Apoptosis:***
  Programmed cell death, a normal process that helps maintain healthy cell turnover.
- ***Tumor:***
  An abnormal mass of tissue, which can be benign (non-cancerous) or malignant (cancerous).
- ***Anemia:***
  A condition characterized by a deficiency of red blood cells or hemoglobin, leading to reduced oxygen transport.
- ***Ischemia:***
  Reduced blood flow to a tissue, resulting in a shortage of oxygen and nutrients needed for cellular metabolism.
- ***Hemorrhage:***
  Excessive bleeding due to the rupture of blood vessels.
- ***Hemolysis:***
  The destruction of red blood cells, which can lead to anemia and other complications.
- ***Autoimmunity:***
  A condition in which the immune system mistakenly attacks the body’s own tissues.
- ***Sepsis:***
  A life-threatening condition caused by the body’s response to an infection leading to tissue damage and organ failure.
- ***Carcinogenesis:***
  The process by which normal cells transform into cancer cells.
- ***Morbidity:***
  The state of being diseased or the incidence of disease within a population.
- ***Mortality :***
  Refers to the state of being subject to death.
- ***Chronic vs. Acute:***
  - Chronic refers to diseases or conditions that develop slowly and persist over time, while ,
  - Acute describes sudden onset diseases that are often severe but of short duration.
- ***Cirrhosis:***
  A late-stage scarring (fibrosis) of the liver caused by many forms of liver diseases and conditions.
- ***Syndrome:***
  A collection of signs and symptoms that occur together and characterize a particular abnormality or condition.
- ***Diagnosis:***

The process of determining the nature of a disease based on signs, symptoms, and test results.

- ***Prognosis:***
  The likely course and outcome of a disease, including chances of recovery.
- ***Biopsy:***
  The removal of a small sample of tissue for examination under a microscope to diagnose disease.

Medical Abbreviations

- Medical abbreviations are a shorthand way of writing and talking by medical professionals (people who work to help sick people) to hurry explanation of diseases (sickness), patients, or medicines (drug)

Words	Meaning	Arabic Meaning
CBC	Complete blood count	فحص الدم الشامل
WBC	White blood cell	خلايا الدم البيضاء
RBC	Red blood cell	خلايا الدم الحمراء
Plt	Platelets	الصفائح الدموية
LFT	Liver function test	وظائف الكبد
KFT	Kidney function test	وظائف الكلى
Hct	Hematocrit	حجم الخلايا المكدسة
HB	Hemoglobin	البروتين الذي يحمل الحديد بالدم / قوة الدم
VS	Vital sign	العلامات الحيوية
VSS	Vital sign stable	العلامات الحيوية مستقرة
BP	Blood pressure	ضغط الدم
HR	Heart rate	معدل ضربات القلب
P	Pulse	النبض
T	Temperature	درجة الحرارة
BMI	Body mass index	مؤشر كتلة الجسم
WT	Weight	الوزن
HT	Hight	الطول
RR	Respiratory rate	معدل التنفس
BMP	Basic metabolic panel	لوحة التمثيل الغذائي الاساسية
SaO2	Oxygen saturation	تشبع الاكسجين

Summery

- **Prefix Examples**

Prefix	*Meaning*	*Arabic Meaning*	*Example*
Hyper-	Excessive, above normal	أكثر / أعلى	Hypertension
Hypo-	Below normal	أقل / تحت	Hypotension
Dys-	Abnormal, defect	خلل / عطل	Dysfunction
Endo-	Within, inner	داخل	Endonucleases
Tachy-	Fast	سريع	Tachycardia
Brady-	Slow	بطيء	Bradycardia
Pre- / Pro-	Before	قبل	Presynaptic
Post-	After	بعد	Postsynaptic
Mono- / Uni-	One	واحد	Monomer
Bi- / Di-	Two	اثنان	Dimer
Tri-	Three	ثالثة	Trimer
Tetra-	Four	أربعة	Tetramer
Penta-	Five	خمسة	Pentamer
Hexa-	Six	ستة	Hexamer
Hepta-	Seven	سبعة	Heptamer
Contra-	Against	ضد / عكس	Contraindication
De-	Remove	إزالة	Dehydration
Hydro-	In water	مائي	Hydration
Neo-	New	جديد	Neonatal
Normo-	Normal	طبيعي	Normothermic
Hemato-	Blood	دم	Hematology
Exo-	Outside / outer	خارج	Exergonic
Homo-	Same	متشابه	Homodimer

Hetero-	Different	مختلف	Heterodimer
Iso-	Equal	متساي / متشابه	isomer
Macro-	Big / large	كبير	Macromolecule
Micro-	Small	صغير	Micromolecule
Re-	Repeat / again	إعادة	Regeneration
Pseudo-	False	كاذب / خاطئ	Pseudopods

- **Root Examples:**

Root	*Meaning*	*Arabic Meaning*	*Example*
Cardio	Heart	قلب	Cardiopathy
Derma	Skin	جلد	Dermatology
Neuro	Nerve	أعصاب	Neurology
Osteo	Bone	عظام	Osteoporosis
Psycho	mind	نفسي	Psychology
Arthro	Joint	مفصل	Arthritis
Nephro / renal	Kidney	كلى	Renal failure / Nephrology
Adipo	Adipose	دهني	Adipose tissue
Cyto	Cell	خلية	Cytology
Encephalo	Brain	عقل	Encephalopathy
Thoraco	Chest	صدر	Thoracic cavity

- **Suffix Examples:**

Suffix	*Meaning*	*Arabic Meaning*	*Example*
-itis	Infection	التهاب	Gastritis
-oma	Tumor / cancer	سرطان	Adenoma
-pnea	Breathing	نفس	Tachypnea

-spasm	Contraction	إنكماش	Muscle spasm
-edema	Swelling	تجمع سوائل	Lymphedema
-emia	In blood	بالدم	Anemia
-ectomy	Remove of	إزالة	Thyroidectomy
-lysis	Breakdown	تحلل	Hydrolysis
-megaly	Enlargement	تتضخم	Hepatomegaly
-pathy	Disease of	مرض	Cardiopathy
-scope	Instrument to view / examine	منظار	Endoscope
-tomy	Incision	استئصال / قص	Colotomy
-toxic	Poising	سم	Neurotoxic
-uria	Urine	بول	Hematuria
-able	Capable of	قادر على	Excitable
-dilation	Expand / Widen	توسع	Vasodilation
-constriction	Narrow of	تضييق	Vasoconstriction
-ology	Study of	علم بـ	Hematology
-emesis	Vomiting	استفراغ	Hematemesis
-phobic	Fear	خوف	Hydrophobic
-philic	Love	حب	Hydrophilic
-ism	Medical condition	وصف ظاهرة طبية	Alcoholism
-ologist	Specialist	عالم / مختص	Cardiologist
-stasis	Stop	إيقاف	Hematostasis
-phage	Eating / ingestion	أكول	Macrophage
-algia	pain	ألم	neuralgia
-ia	a state or condition	وصف ظاهرة طبية	pneumonia
-osis	abnormal condition	وضع غير طبيعي	neurosis
-malacia	Soften	ترقق	Osteomalacia

Words	Meaning / Description	Arabic Meaning
Polar	Has two different ends	قطبي
Electronegativity	The tendency of an atom to attract electrons toward itself	كهروسلبية
Cohesion	Attraction between ***similar*** atoms	تماسك
Adhesion	Attraction between ***different*** atoms	تالصق
Evaporation / Vaporization	The process by which an element or compound transitions from its liquid to gaseous state	تبخر
Monomer	One subunit representing a basic unit for large molecules	وحدة بنائية واحدة
Polymer	Many monomers attached to each other	سلسلة
Dehydration	Building by removing water	إزالة ماء
Hydrolysis	Breaking using water	التكسر بوجود الماء
Condensation	A chemical reaction involving union between molecules	التكاثف
Exergonic	Reaction release energy	تفاعل طارد للطاقة
Endergonic	Reaction absorb energy	تفاعل ماص للطاقة
Enzymes	Proteins catalyze chemical reactions without being consumed	إنزيم
Feedback inhibition	The first product inhibits the first step	تغذية راجعة مثبطة
Cofactor	Non-protein chemical compound or metallic ion that is required for an enzyme's role as a catalyst	مساعد
Activator	A molecule that activates a process	منشط
Inhibitor	A molecule that inhibits a process	مثبط
Standard condition	Concentration = 1M Temperature = 25^{o} C pH = 7	ظروف معيارية
Cell	The smallest, basic unit of life that is responsible for all of life's processes	خلية

Eukaryotic	Cell has true nucleus	خاليا حقيقة النواة
Prokaryotic	Cell don't have true nucleus	خاليا بدائية النواة
Plasma membrane	The boundary around the cell	الغشاء البالزمي
Unicellular / multicellular	Organism composed of single or many cell	وجيدة الخلية / عديدة الخلية
Amphipathic	Has two characteristics against each other	مركب يمتلك صفات متضادة
Cell respiration	The process of using fuel and O_2 to produce energy and CO_2 as a by-product	التنفس الخلوي
Photosynthesis	The process of using CO_2 and water to produce sugars and O_2	البناء الضوئي
Reduction	Remove O_2 / Add Hydrogen / Add electrons	إختزال
Oxidation	Add O_2 / Remove H / remove e^-	أكسدة
Glycolysis	Degradation of glucose	عملية تحلل السكر
Anaerobic respiration	Respiration without the need of O_2	التنفس الغير هوائي
Fermentation	Partial catabolism	التخمر
Types of organisms	Autotrophs / Heterotrophs	أنوا الكائنات الحية
Gene expression	Transcription / Translation	التعبير الجيني
Transcription	The process of copying a segment of DNA into RNA	نسخ
Translation	The process of translating the sequence of a messenger RNA (mRNA) to a sequence of amino acids during protein synthesis	ترجمة

- ان الخيلَ اذا شارَفَت نهايةَ المِضمار، بَذَلَت قُصارَى جُهدِها لتفوز بالسباق، فلا » :ال ابن الجوزي رحمه الله تَكنِ الخيلُ أفطَنَ منك، فانما الأعمال بالخواتيم , ارجع ادرس الجداول وحل الأسئلة في الصفحات القادمة .

- لم ننتهي بعد , في جعبتنا المزيد !

هناك أجزاء أخرى لدورة المصطلحات الطبية فيها تخصصية أكثر بحيث تحتوي على مفردات ومصطلحات طبية مهمة جداً في كلِ من الجهاز الهضمي والجهاز التنفسي والغدد الصم ..... الخ. تواصل معنا لتعرف المزيد .

1. ***The prefix meaning "outside or outer " is which of the following?***

   A. Ana-
   B. Dia-
   C. Epi-
   D. Exo-
   E. Peri-

2. ***The prefix "brady-" means which of the following?***

   A. Away from
   B. Downward
   C. Irregular
   D. Slow
   E. Without

3. ***Which of the following suffixes refers to eating?***

   A. "phagia"
   B. "phasia"
   C. "phonia"
   D. "plegia"
   E. "praxia"

4. ***Which of the following terms refers to pain?***

   A. Arthralgia
   B. Diplopia
   C. Dysplasia
   D. Hemiplegia
   E. Urticaria

5. *"K" is the chemical symbol for which of the following substances?*

A. Barium
B. Calcium
C. Iron
D. Hydrogen
E. Potassium

6. *Which of the following is the chemical symbol for iron?*

A. F
B. Fe
C. Fr
D. I
E. Ir

7. *Which of the following is the chemical symbol for Soduim?*

A. F
B. Fe
C. Fr
D. Na
E. Ir

8. *The prefix "Tachy-" means which of the following?*

A. Away from
B. Downward
C. Irregular
D. Slow
E. Fast

9. *The prefix meaning “two” is which of the following?*

A. Bi-
B. Di-
C. mono-
D. A+B
E. A+b+C

10. *The prefix "itis -" means which of the following?*

A. Away from
B. Inflammation
C. Irregular
D. Slow
E. Without

11. Which of the following is fat soluble vitamin?

- **A.** Ascorbic acid
- **B.** vitamin E
- **C.** Vitamin B12
- **D.** Thiamine
- **E.** Biotin

12. Which of the following is fat soluble vitamin?

- **A.** Ascorbic acid
- **B.** vitamin K
- **C.** Vitamin B6
- **D.** Folic acid
- **E.** Biotin

13. Which of the following refers to "after"?

- ***A.*** Pre
- ***B.*** Post
- ***C.*** Tri
- ***D.*** Hemiplegia
- ***E.*** -emia

14. The prefix "tachy-" means which of the following?

- **F.** Away from
- **G.** Downward
- **H.** regular
- **I.** Slow
- **J.** fast

15. The suffix "philic -" means which of the following?

- **K.** Away from
- **L.** Love
- **M.** Irregular
- **N.** Slow
- **O.** Without

16. "Ca" is the chemical symbol for which of the following substances?

- **F.** Barium
- **G.** Calcium
- **H.** Iron
- **I.** Hydrogen
- **J.** Potassium

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