



جامعة الاخوة منتوري قسنطينة

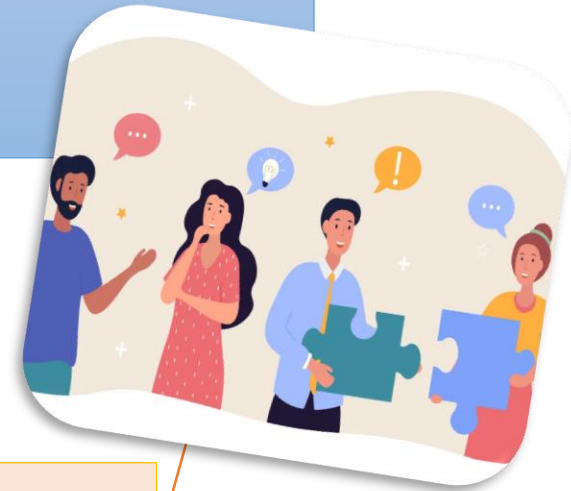
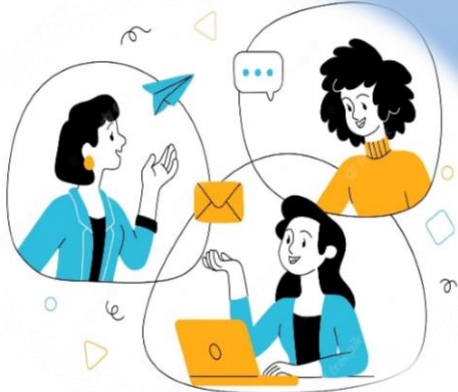
UNIVERSITÉ DES FRÈRES  
MENTOURI CONSTANTINE

Democratic and Popular Republic of Algeria  
Ministry of Higher Education and Scientific Research

University of Mentouri Brothers - Constantine 1  
Faculty of Nature Sciences and Life  
Département of Animal Biology  
Common Core 2<sup>nd</sup> Year/S3

U E Méthodologie  
Code : UEM 2.1.1  
Crédits : 4  
Coefficients: 2

# Technical communication and expression « TCE » تقنيات التواصل و التعبير

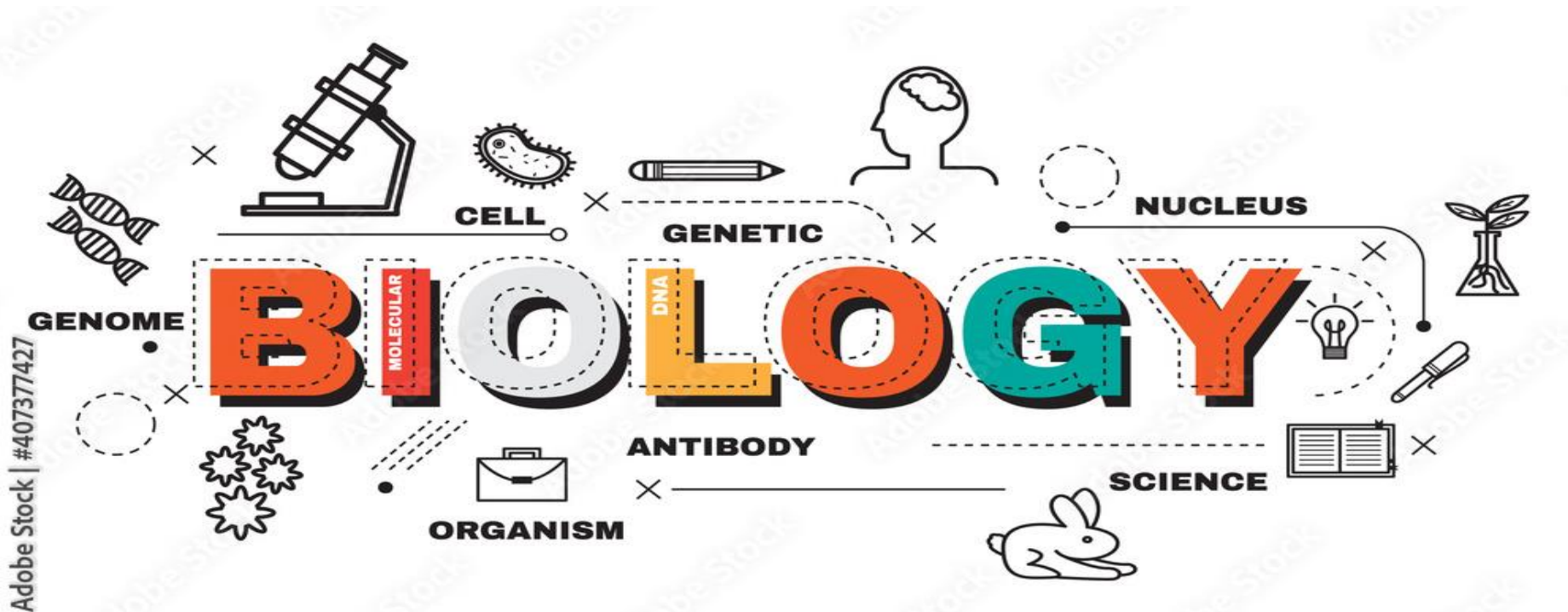


**Responsible of the course**  
Dr. Imène HAMADOU

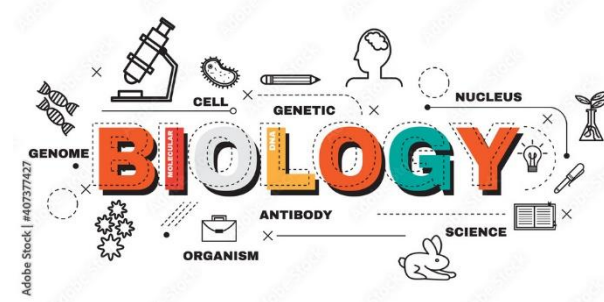
**Targeted public:** 2<sup>nd</sup> year in Biology  
**Langage:** English

Academic Year: 2024-2025

# Chapter 02: Using English Terminology in Nature Science and Life

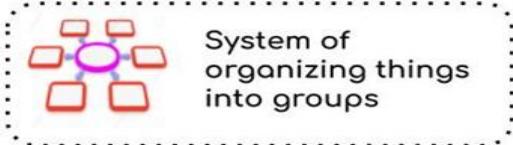


# Scientific Terminology

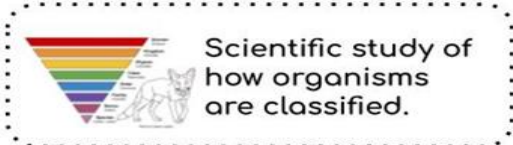


❖ **Definition** : Scientific terminology is the specialized language used by scientists to communicate about scientific concepts and ideas.

CLASSIFICATION



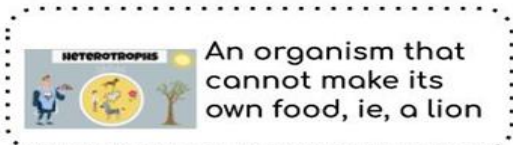
TAXONOMY



ORGANISM



HETEROTROPH



AUTOTROPH



# *Scientific Terminology*

## **Biology Branches Terms**

**Zoology** : The Study Of Animals.

**Botany** : The Study Of Plants.

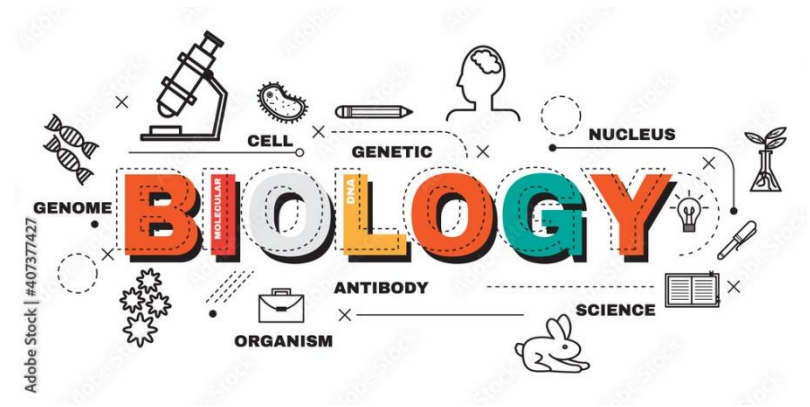
**Bacteriology** : The study Of Bacteria

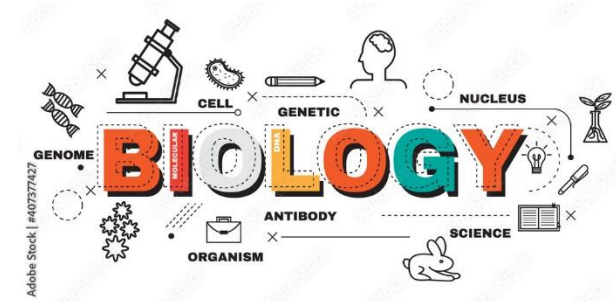
**Taxonomy**: The classification of living organisms

**Virology**: The study of Viruses

**Ornithology**: The Study of Birds.

**Cytology**: The study of Cells.





# Types of Scientific Terms

There are many different types of scientific terms, each with its own specific purpose. Some of the most common types of scientific terms include:

**Taxonomic terms**

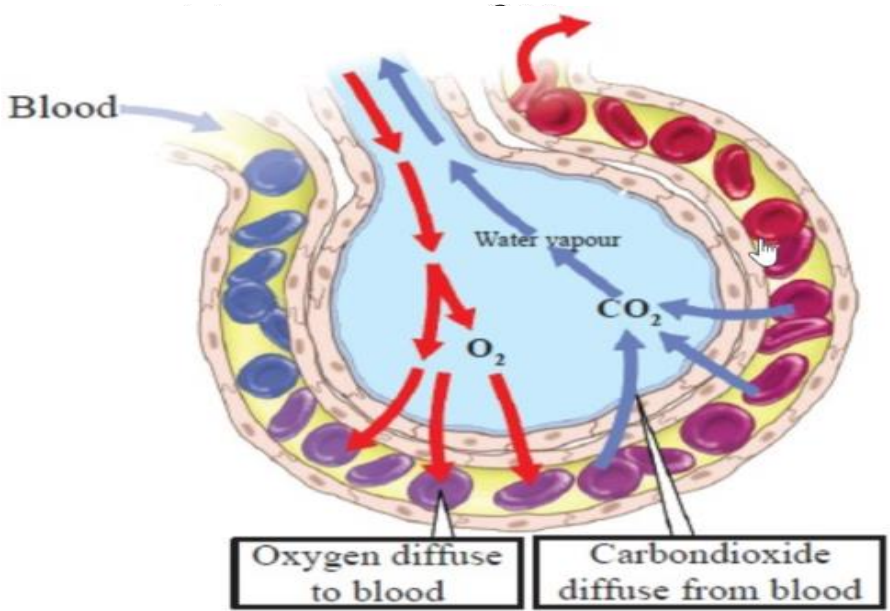
These terms are used to classify and identify organisms

**Morphological terms**

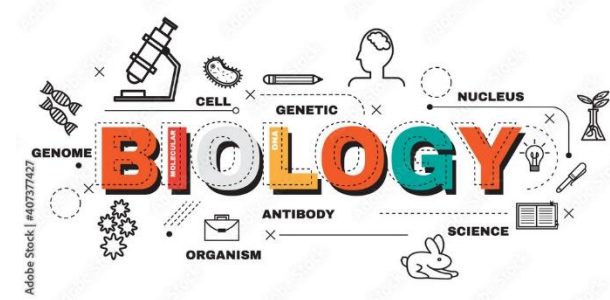
These terms are used to describe the structure of organisms

**Physiological terms**

These terms are used to describe the functions of organisms.



# Types of Scientific Terms



There are many different types of scientific terms. Some of the most common types of scientific terms are:

## Ecological terms

These terms are used to describe the interactions between organisms and their environment.

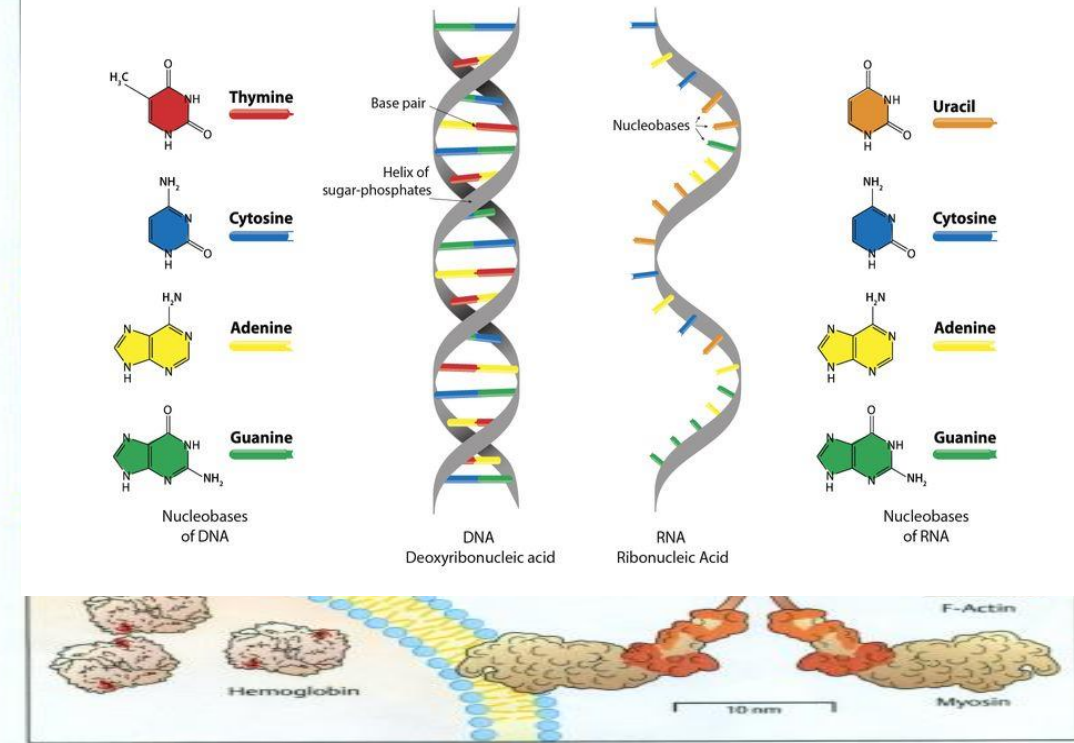
## Biochemical terms

These terms are used to describe the chemical processes that occur in organisms.

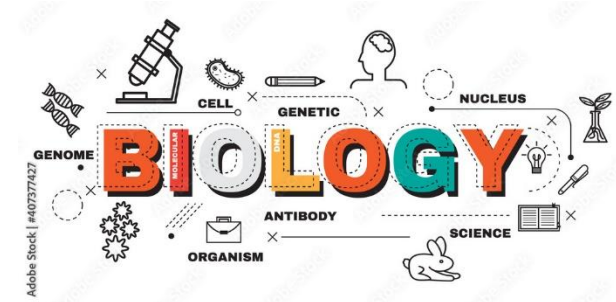
## Genetic terms

These terms are used to describe the genes and other genetic material that organisms inherit from their parents, as well as the processes by which genes are expressed and transmitted to offspring (children).

## Overview - Proteins



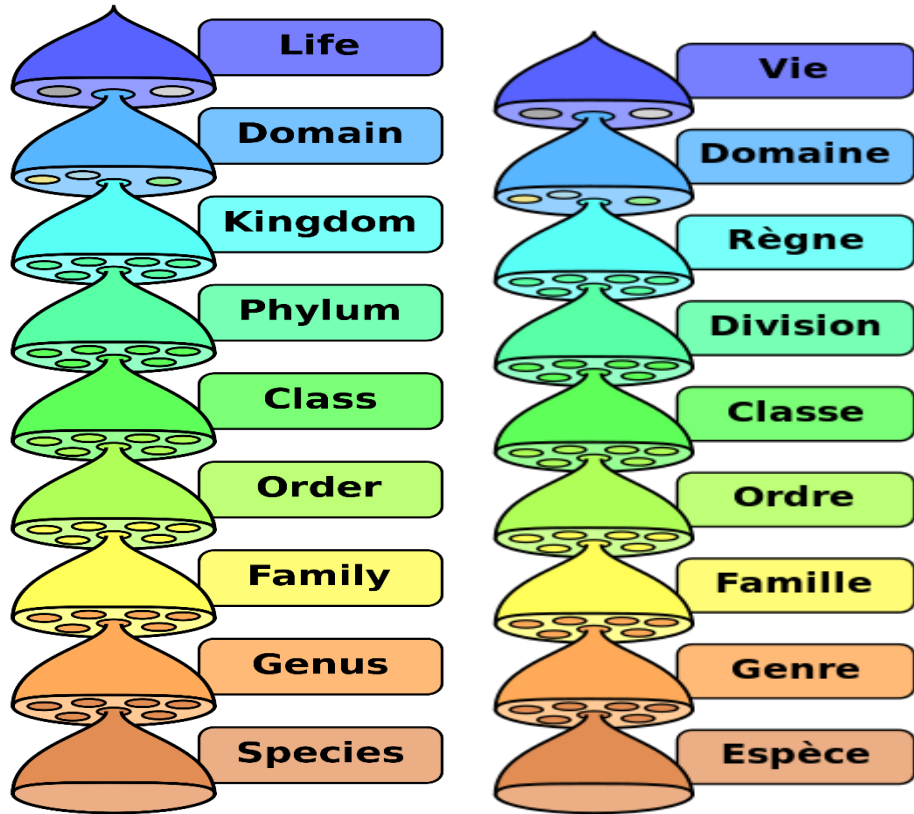
Koolman, Color Atlas of Biochemistry, 2nd edition © 2005 Thieme. All rights reserved. Usage subject to terms and conditions of license.



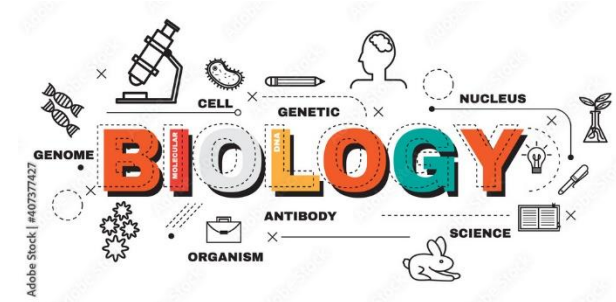
# Types of Scientific Terms

1

## Taxonomic terms

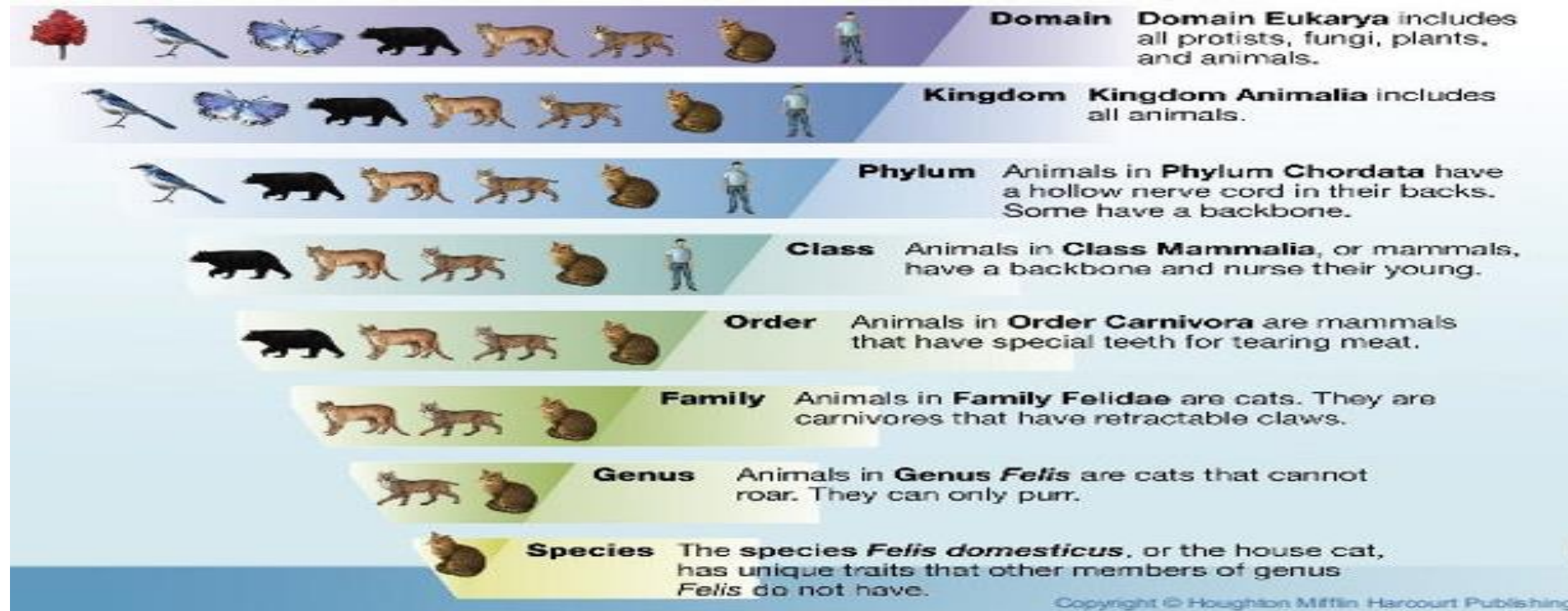


# Types of Scientific Terms

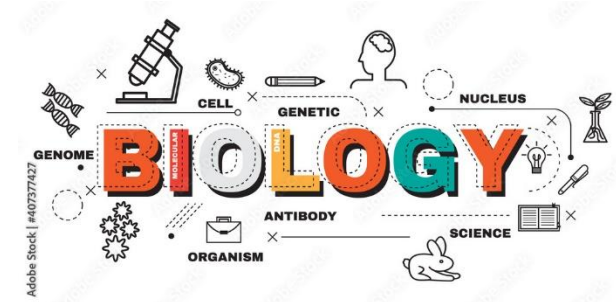


1

## Taxonomic terms







# Types of Scientific Terms

2

## Morphological terms

### Example 01 : Plant parts

#### Root

The underground part of a plant that absorbs water and nutrients from the soil.

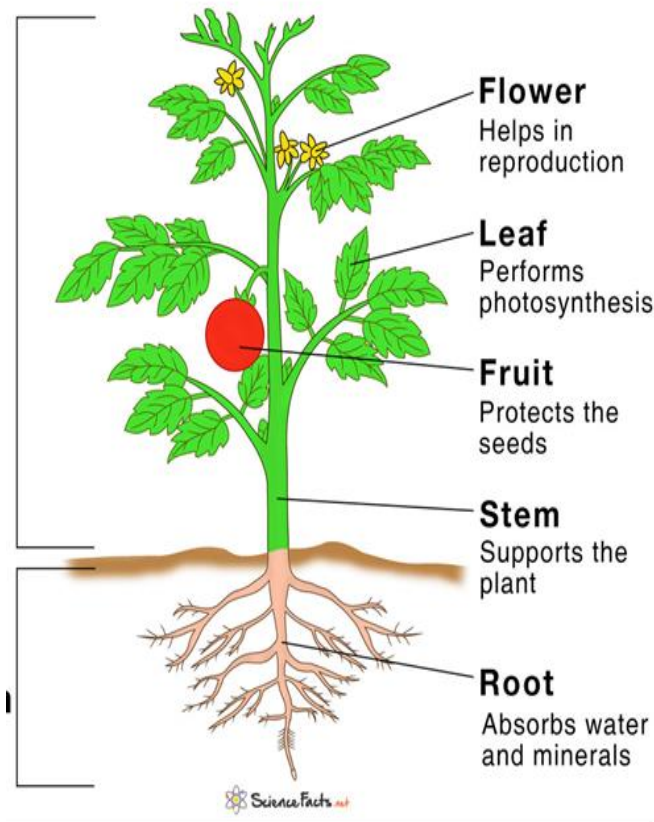
#### Stem

The upright part of a plant that supports the leaves and flowers.

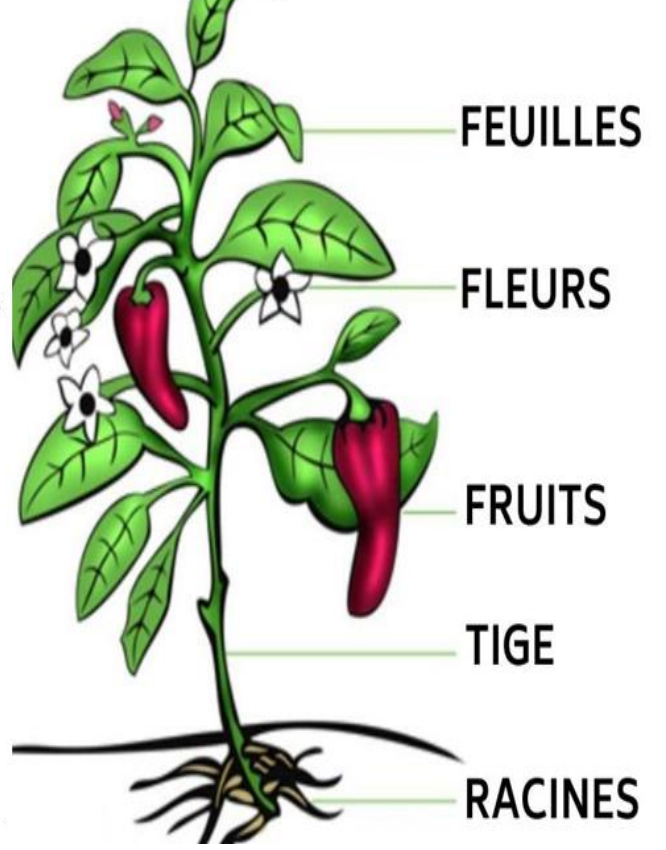
#### Leaf

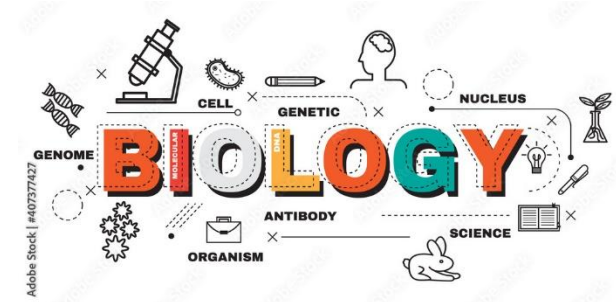
The flat, green part of a plant that produces food through photosynthesis.

### Parts of a Plant



### Parti de la plante





# Types of Scientific Terms

2

## Morphological terms

### Example 01 : Plant parts

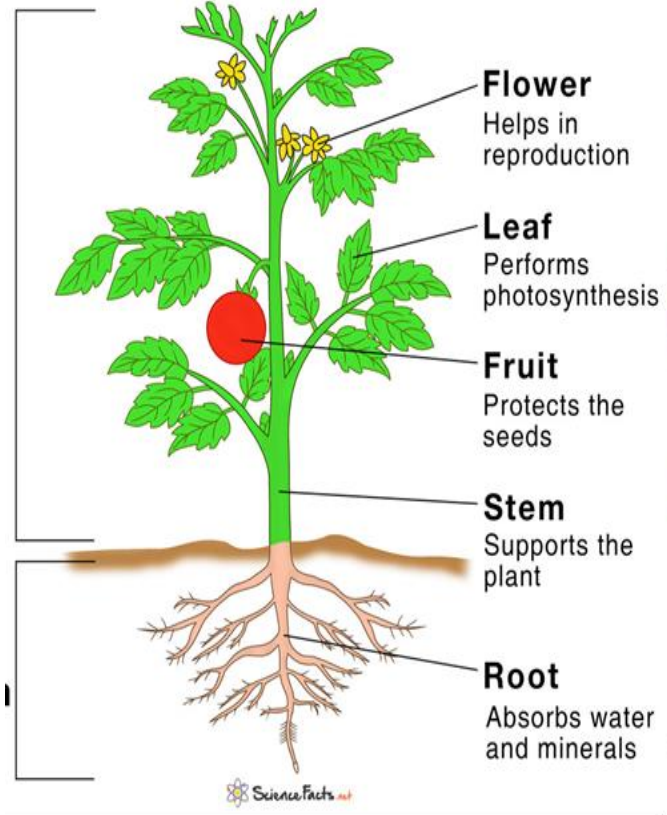
#### Flower

The reproductive organ of a plant.

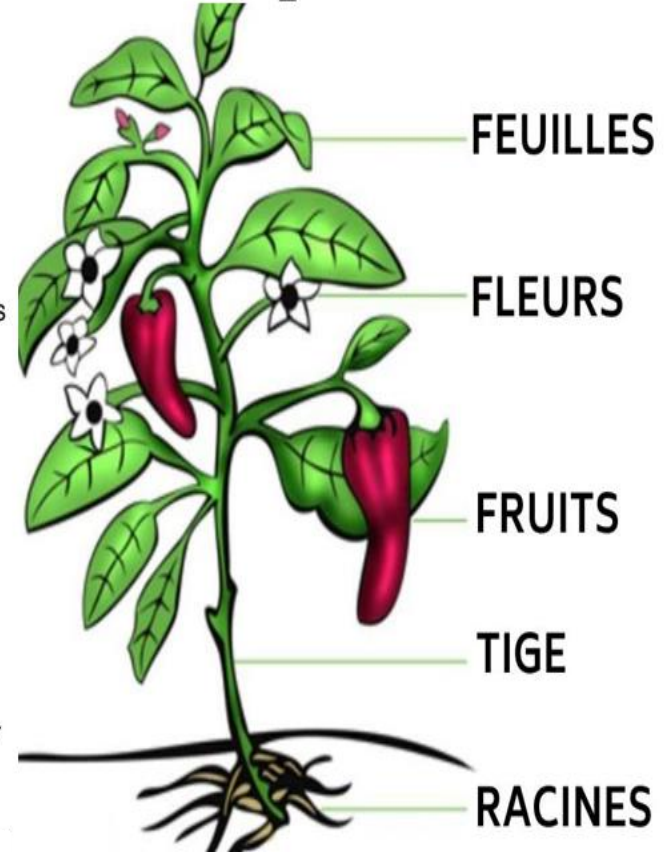
#### Fruit

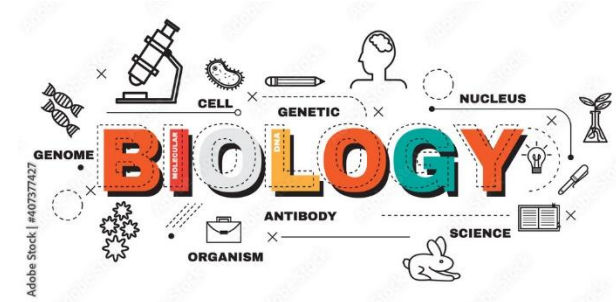
The ripened ovary of a plant that contains seeds.

### Parts of a Plant



### Parti de la plante





# Types of Scientific Terms

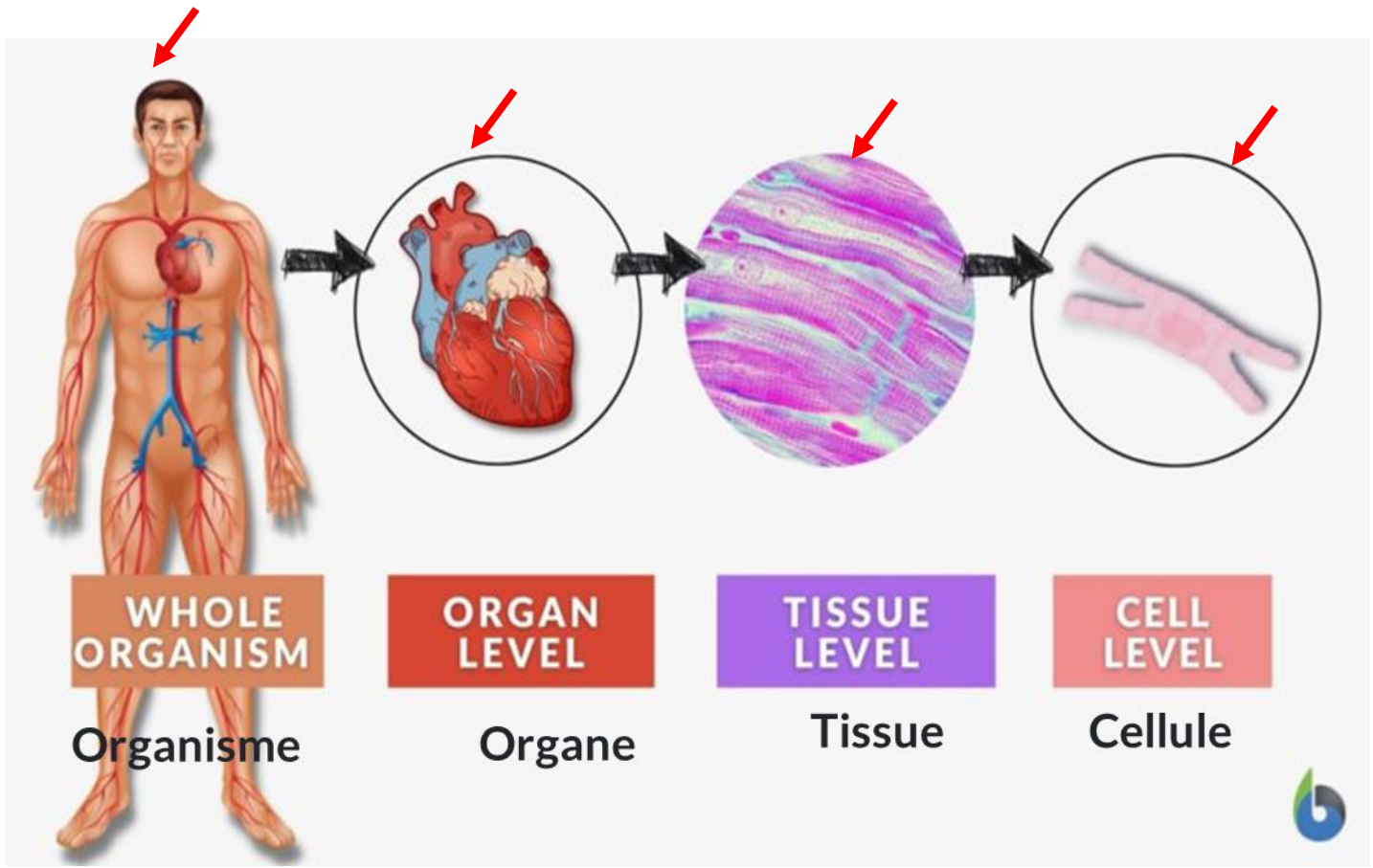
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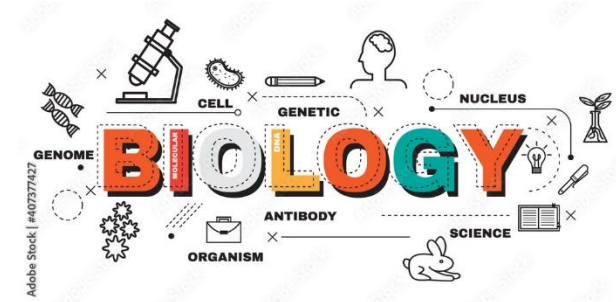
## Morphological terms

### Example 02 : Organization of Human Body

There are different types of morphology in Human body :

- Cellular Morphology: **Cell**
- Tissue Morphology : **Tissue**
- Organ Morphology : **Organ**
- The Whole Organism: **Organism**



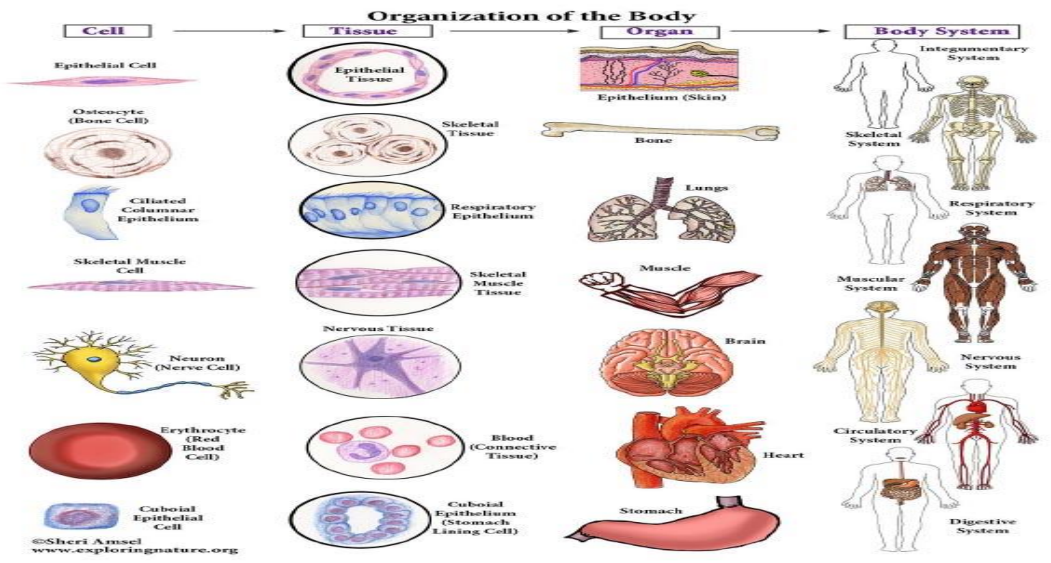


# Types of Scientific Terms

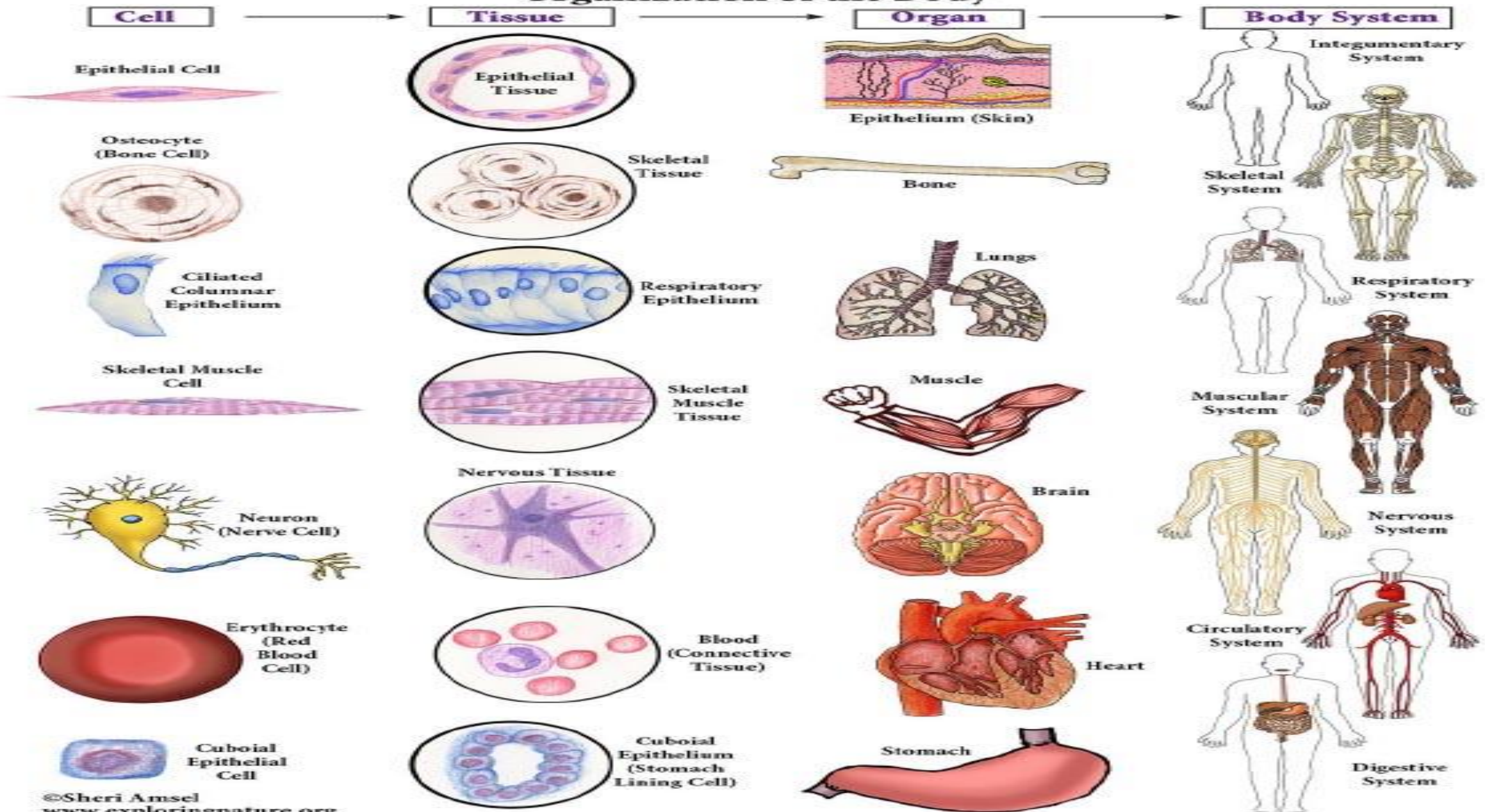
2

Morphological terms

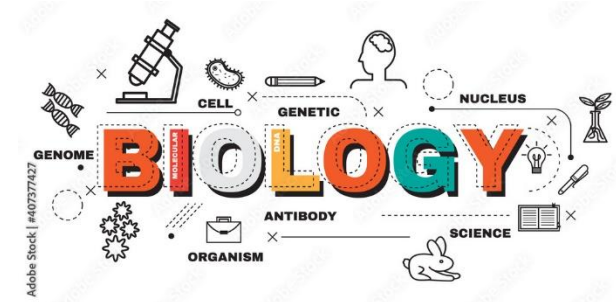
## Example 02 : Organization of Human Body



# Organization of the Body



# Types of Scientific Terms



3

Physiological terms

## Photosynthesis

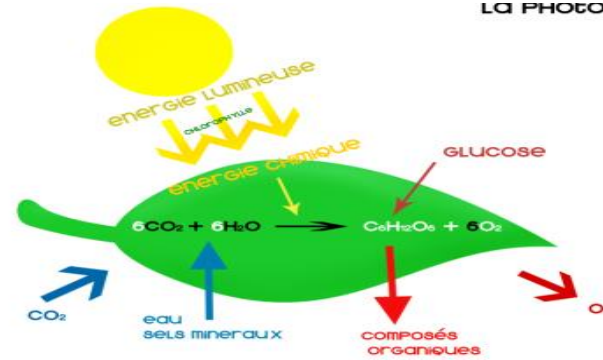
The process by which plants use sunlight, water, and carbon dioxide to produce food (oxygen and glucose).

## Respiration

The process by which organisms break down food to release energy.

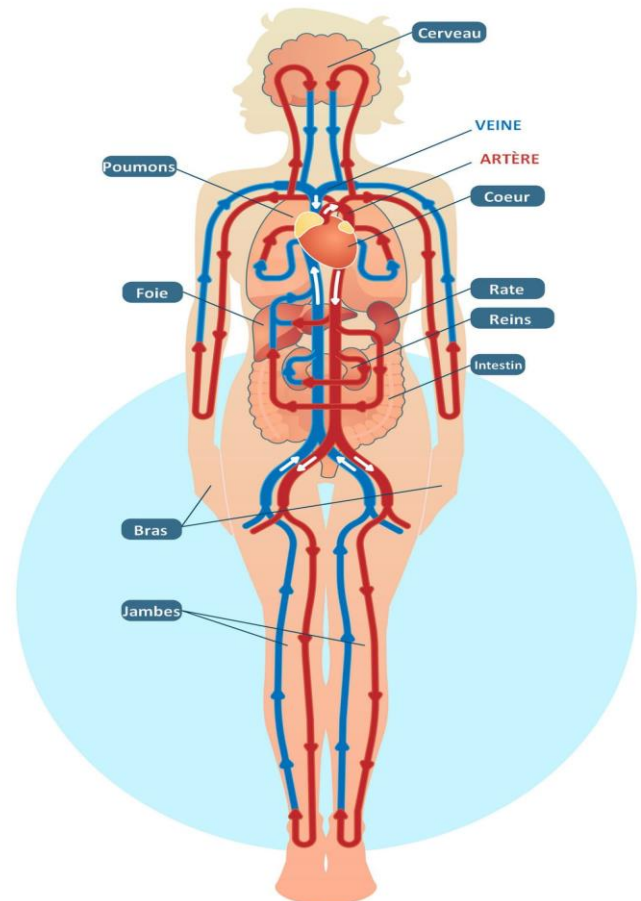
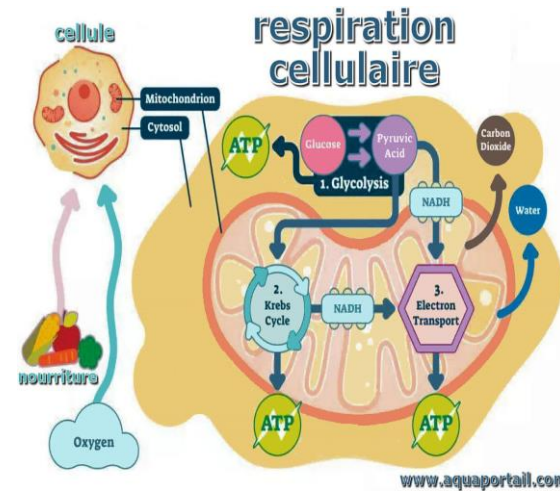
## Circulation

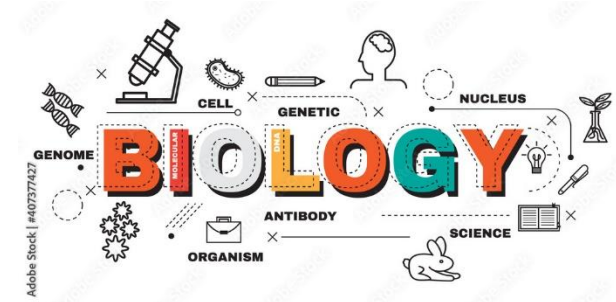
The movement of blood or other fluids throughout an organism's body.



LA PHOTOSY

CIRCULATION DU SANG DANS LE CORPS





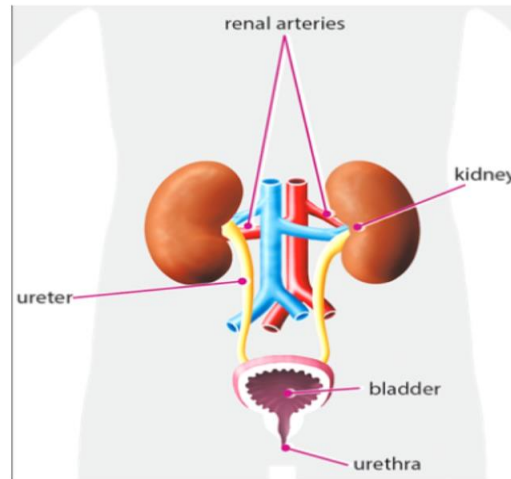
# Types of Scientific Terms

3

## Physiological terms

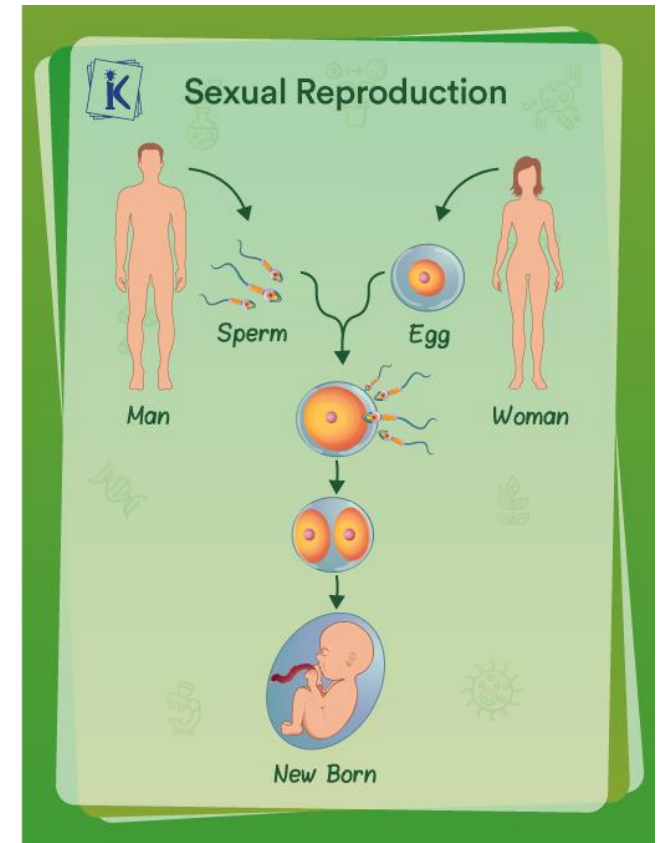
### Excretion

The removal of waste products from an organism's body.



### Reproduction

The process by which organisms produce offspring.



# Types of Scientific Terms

4

Ecological terms

## Population

A group of individuals of the same species that live in the same area.

## Community

All of the populations of different species that live in the same area.

## Ecosystem

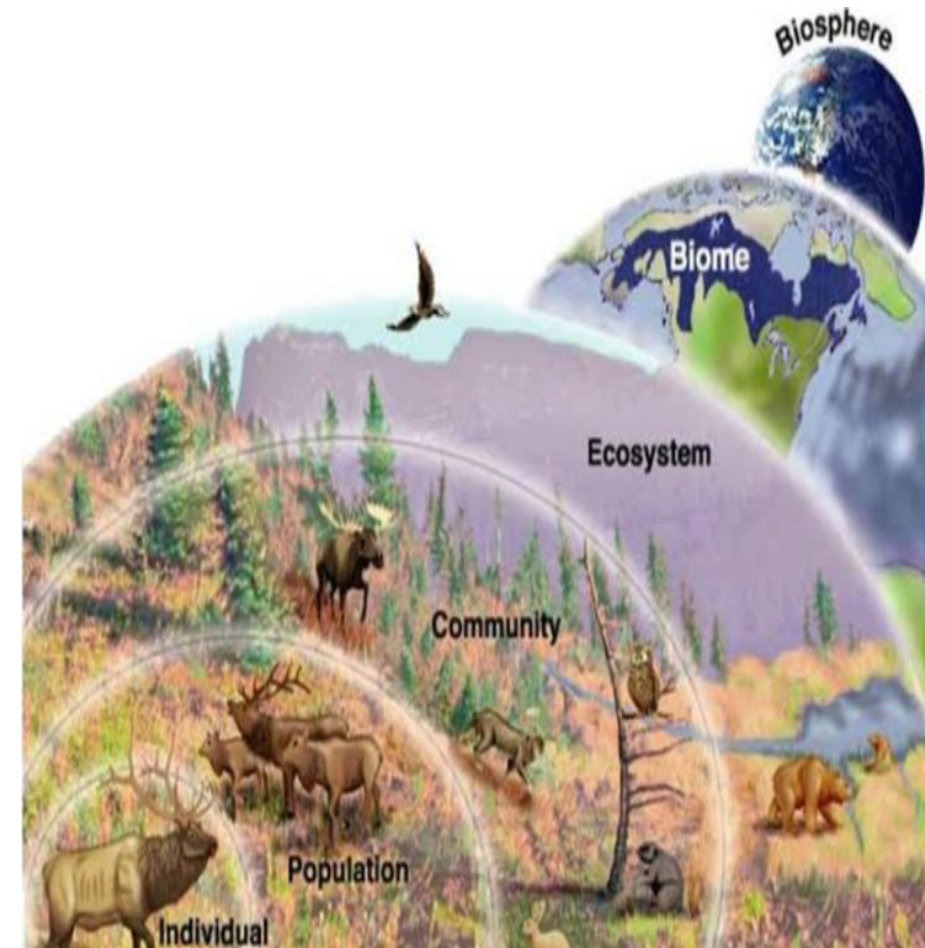
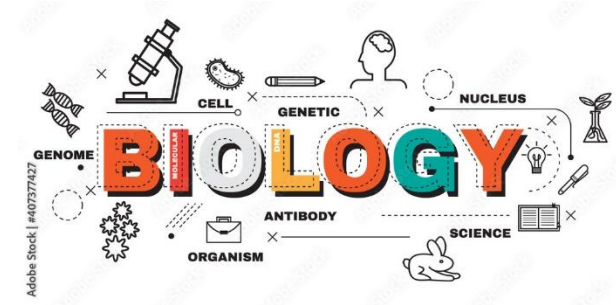
A community of organisms and their physical environment.

## Biome

A biome is a large community of plants and animals that occupies a distinct region.

## Biosphere (Ecosphere)

Is the worldwide sum of all ecosystems. It can also be termed the zone of life on Earth.





# Types of Scientific Terms

4

Ecological terms

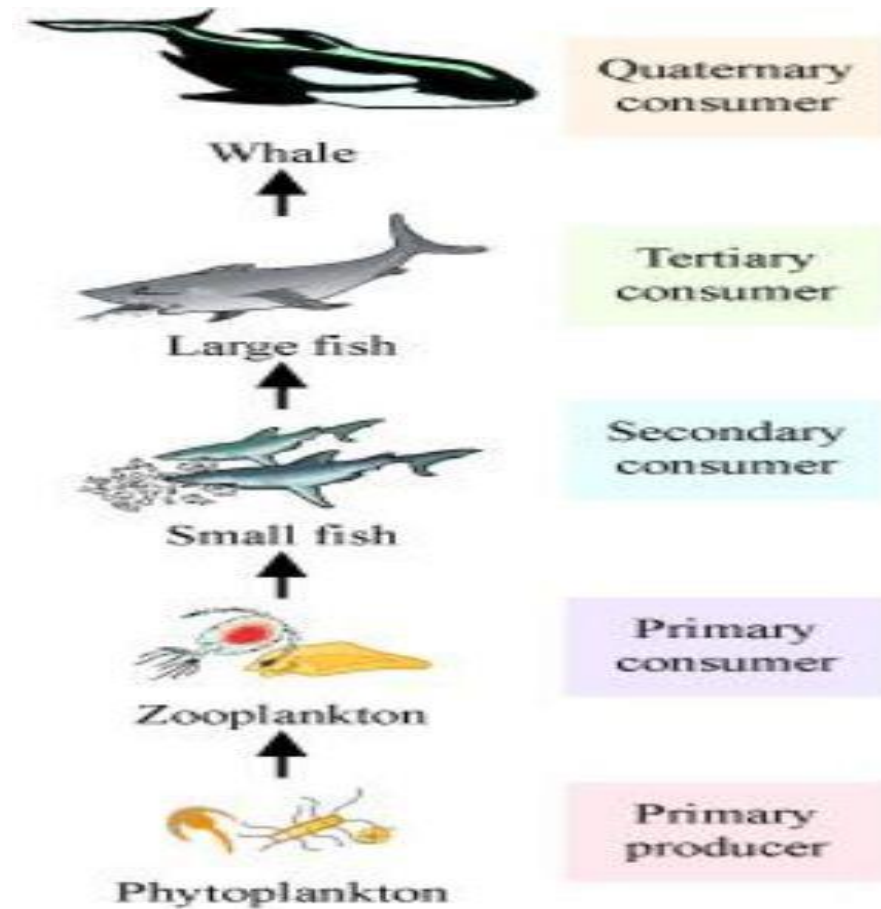
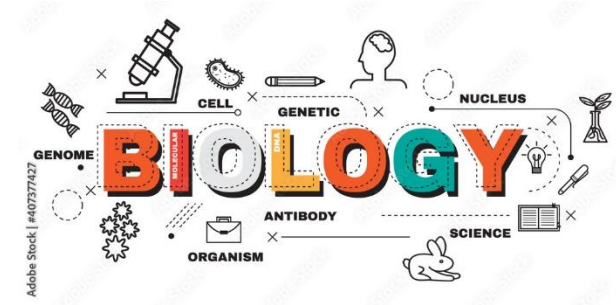
## Food web

A diagram that shows the feeding relationships between organisms in an ecosystem.

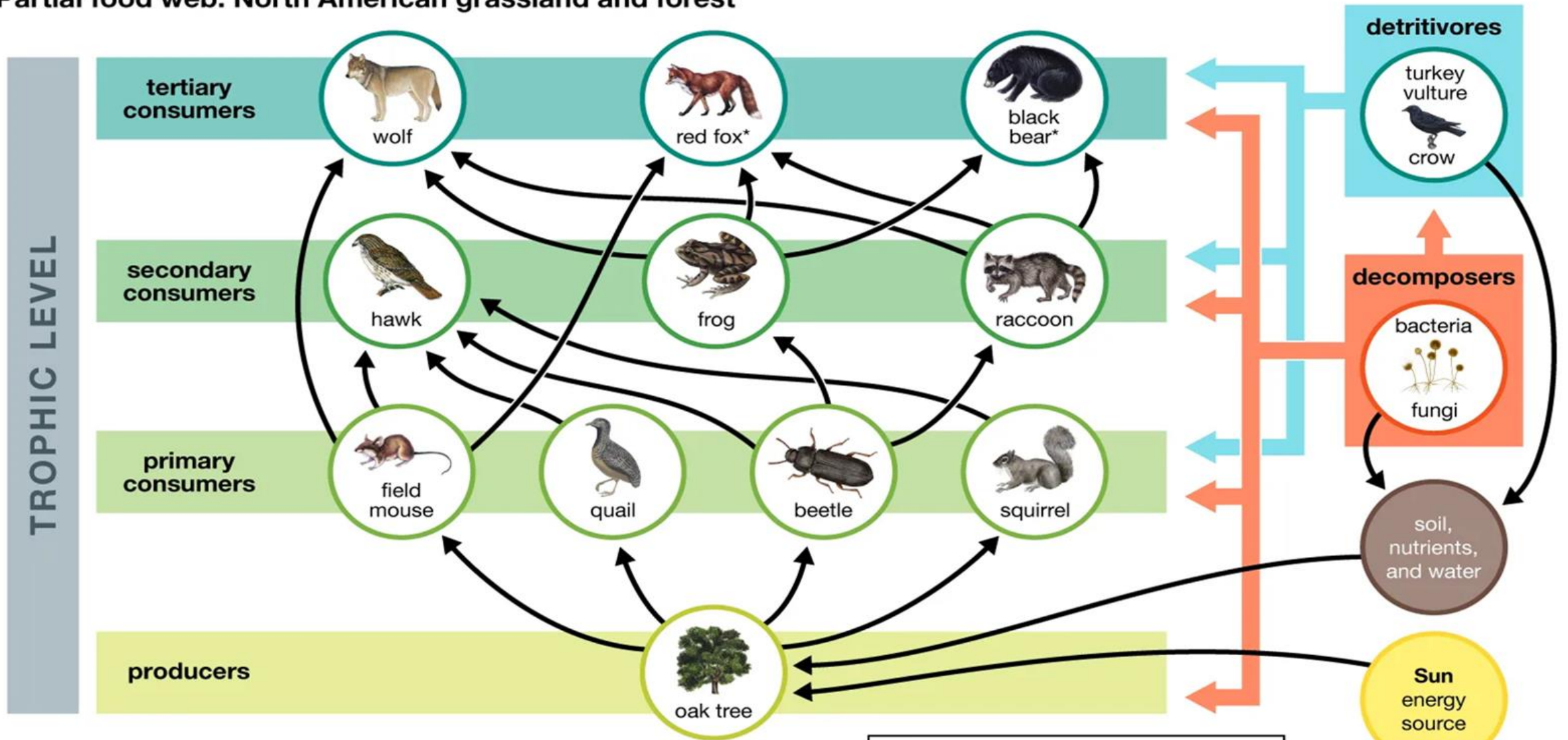
## Food chain

is a linear network of links in a food web starting from producer organisms

The food chain describes who eats whom in the wild. Each food chain is a possible pathway that energy and nutrients can follow through the ecosystem.

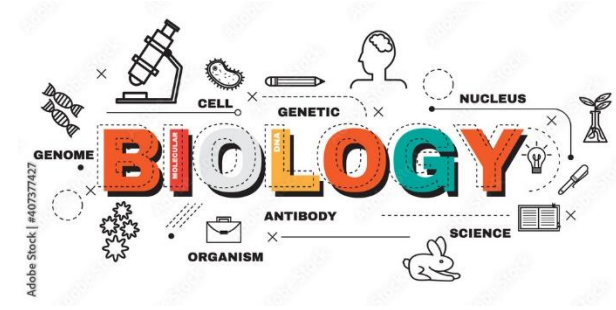


# Partial food web: North American grassland and forest



\*Red foxes (*Vulpes vulpes*) and black bears (*Ursus americanus*) are omnivores, and thus they are very often considered to be secondary consumers. However, in this food web they function as tertiary consumers.

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# *Types of Scientific Terms*

5

Biochemical terms

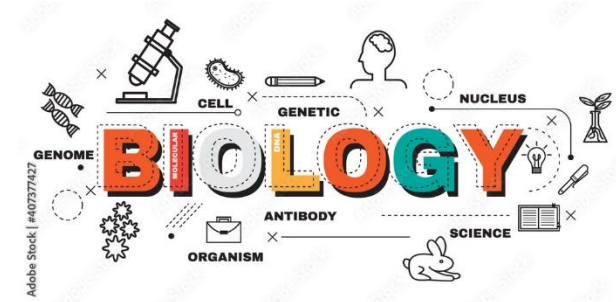
**Biochemical reactions:** Chemical reactions that take place inside the cells of living things

**Metabolism:** Present the sum of all the biochemical reactions in an organism

**Catabolic reactions:** These reactions break down molecules into smaller units and release energy. EXE: the breakdown of Glucose.

**Anabolic reactions:** These reactions build up bigger molecules from smaller ones.

EXE: amino acids joining to form proteins.



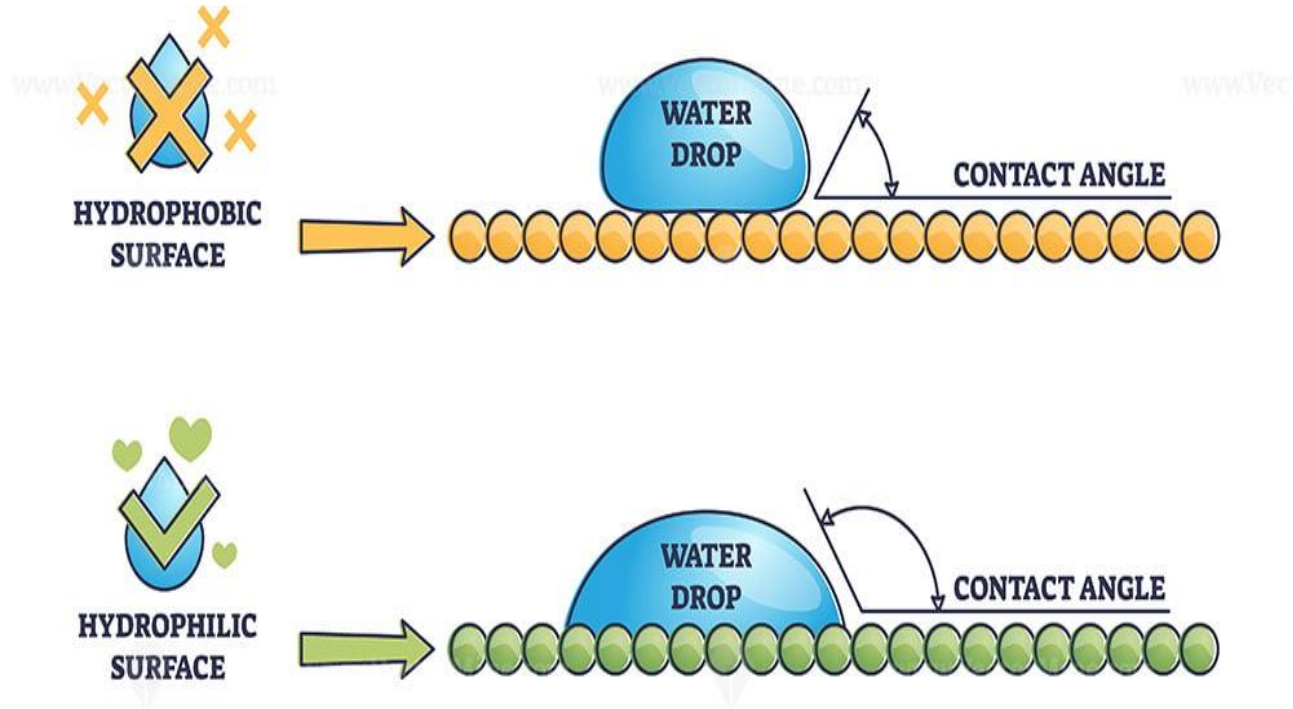
# Types of Scientific Terms

5

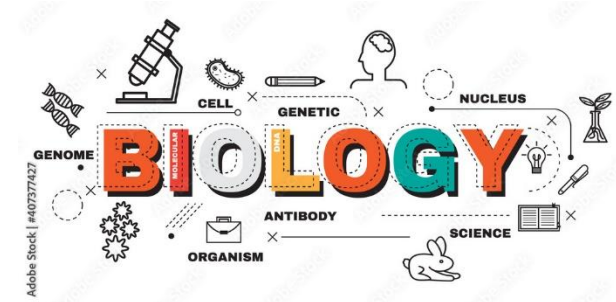
## Biochemical terms

**Hydrophilic** -- "water loving". Hydrophilic compounds dissolve easily in water, and are usually polar.

**Hydrophobic** -- "water fearing". Hydrophobic compounds do not dissolve easily in water, and are usually non-polar. Oils and other long hydrocarbons are hydrophobic.



# Types of Scientific Terms



5

Biochemical terms

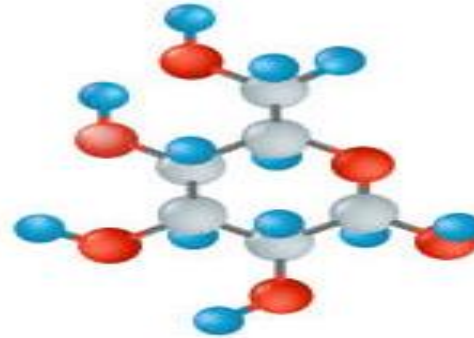
## Biochemical Molecules



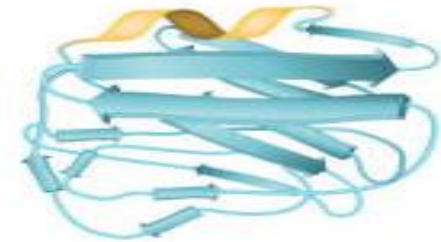
Nucleic acids  
(DNA)



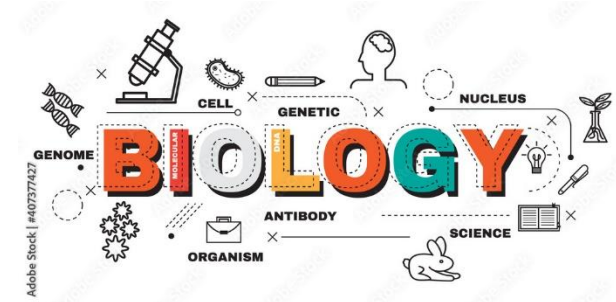
Lipids  
(cell membrane)



Carbohydrates  
(Glucose)



Proteins  
(monomer of a CRP)



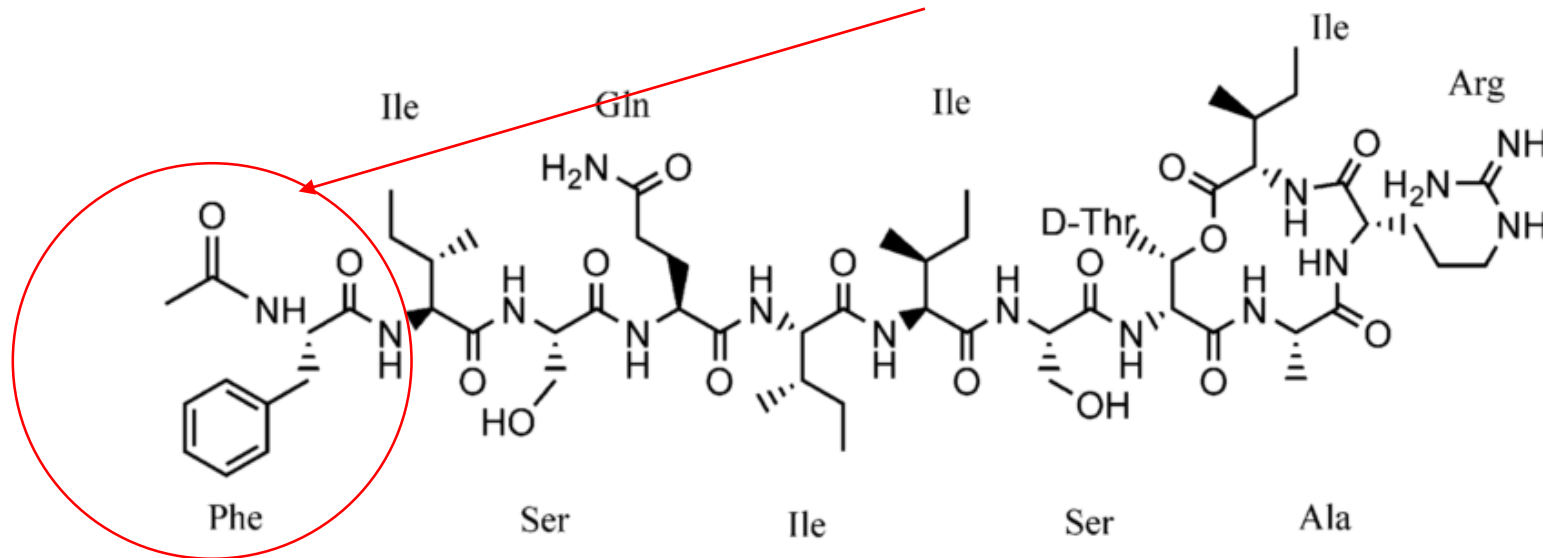
# Types of Scientific Terms

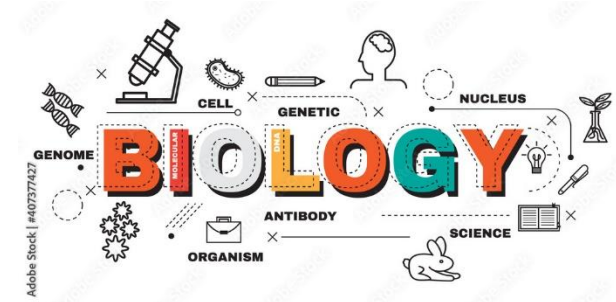
5

Biochemical terms

## Biochemical Molecules

**Protein** Long, continuous, and unbranched chain of **amino acids**, each joined to the next by a peptide bond.



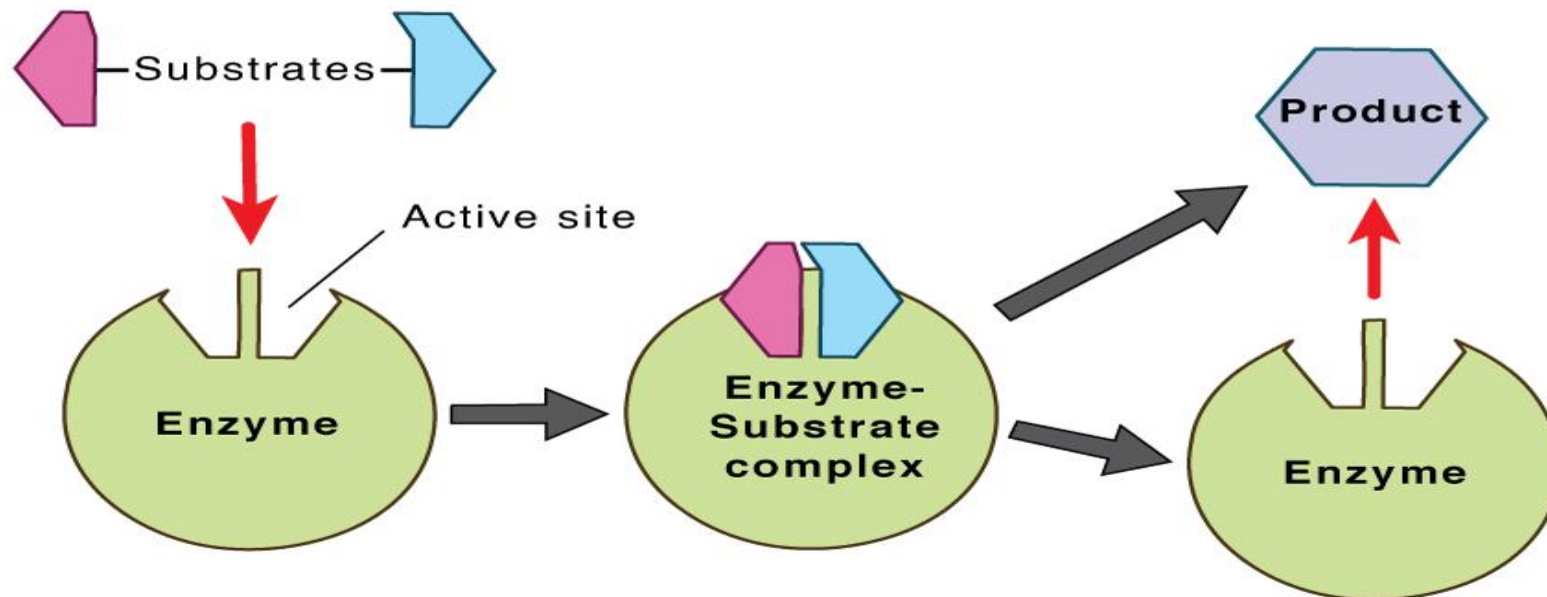


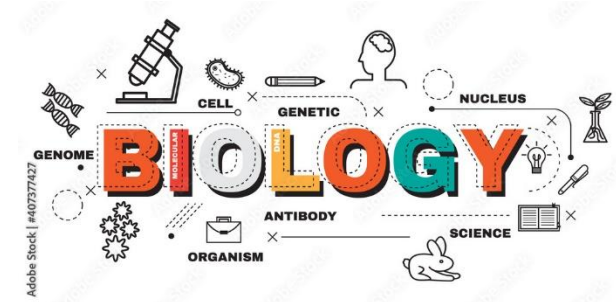
# Types of Scientific Terms

5

## Biochemical terms

**Enzyme** Complex protein which helps to speed biochemical reactions. Enzymes are important in the construction and degradation of other molecules.





# Types of Scientific Terms

5

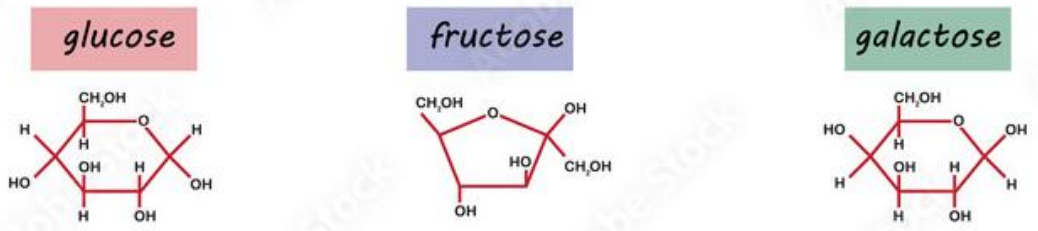
Biochemical terms

## Carbohydrate (saccharide)

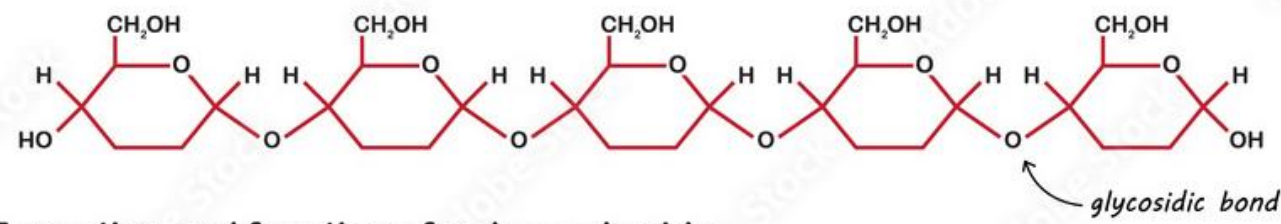
Molecules consisting of carbon, hydrogen and oxygen atoms; can exist as monosaccharides, disaccharides, oligosaccharides, and polysaccharides. Important biological compounds include sugars, starch, and cellulose. performing important cellular roles such as energy storage and structural components.

## Carbohydrate

Carbohydrate is polymer, made from monosaccharide



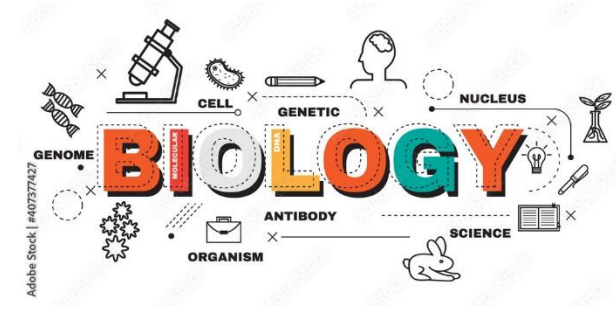
Monosaccharide link together by condensation to form polysaccharide



Formation and function of polysaccharide

|                                                     |                                                        |                                                             |
|-----------------------------------------------------|--------------------------------------------------------|-------------------------------------------------------------|
| <p><b>Starch</b></p> <p>Energy storage in Plant</p> | <p><b>Glycogen</b></p> <p>Energy storage in Animal</p> | <p><b>Cellulose</b></p> <p>Cell wall component in Plant</p> |
|-----------------------------------------------------|--------------------------------------------------------|-------------------------------------------------------------|





# *Types of Scientific Terms*

5

Biochemical terms

**Lipids** -- a class of biochemical compounds which includes fats, oils, and waxes.

## Triglycerides



### FATS

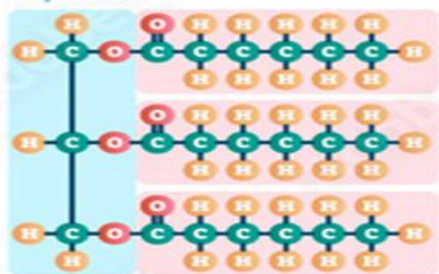
Solid At Room Temperature  
Used By Animals



### OILS

Liquid At Room Temperature  
Used By Plants

### Glycerol



3 Fatty Acid Chains

### Saturated Fatty Acid



NO Double Bonds

BAD



Cheese

### Unsaturated Fatty Acid



Double Bond

GOOD

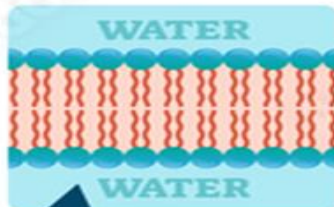


Nuts

## Phospholipids

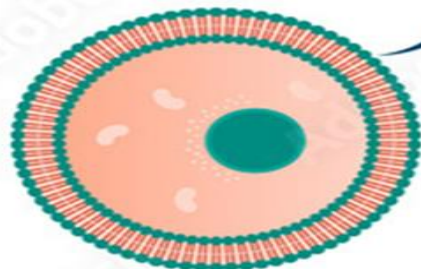
Hydrophilic Head  
Water Loving

Hydrophobic Tails  
Water Hating



Cell Wall

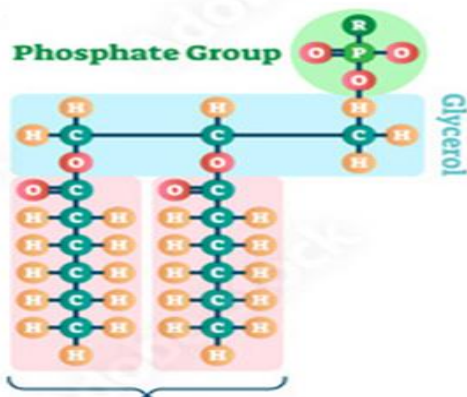
Cell



### Phosphate Group

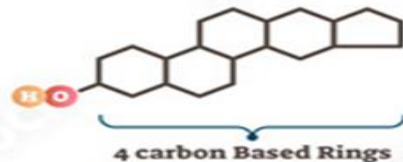
Hydrophilic  
Water Loving

Hydrophobic  
Water Hating



2 Fatty Acid Chains

## Steroids



4 carbon Based Rings



CHOLESTEROL



TESTOSTERONE



ESTROGEN



VITAMIN D



CORTISONE

## Waxes

Long Carbon Chains



Solid at Room Temperature

Repel Water



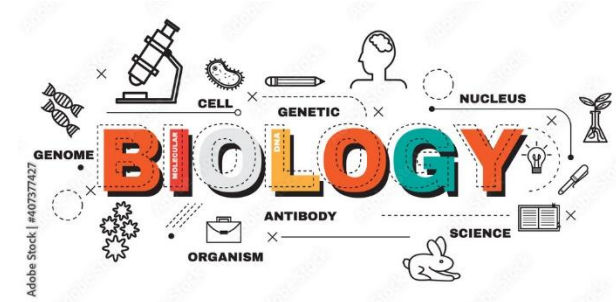
PLANTS



EARS



BEE CONES



# Types of Scientific Terms

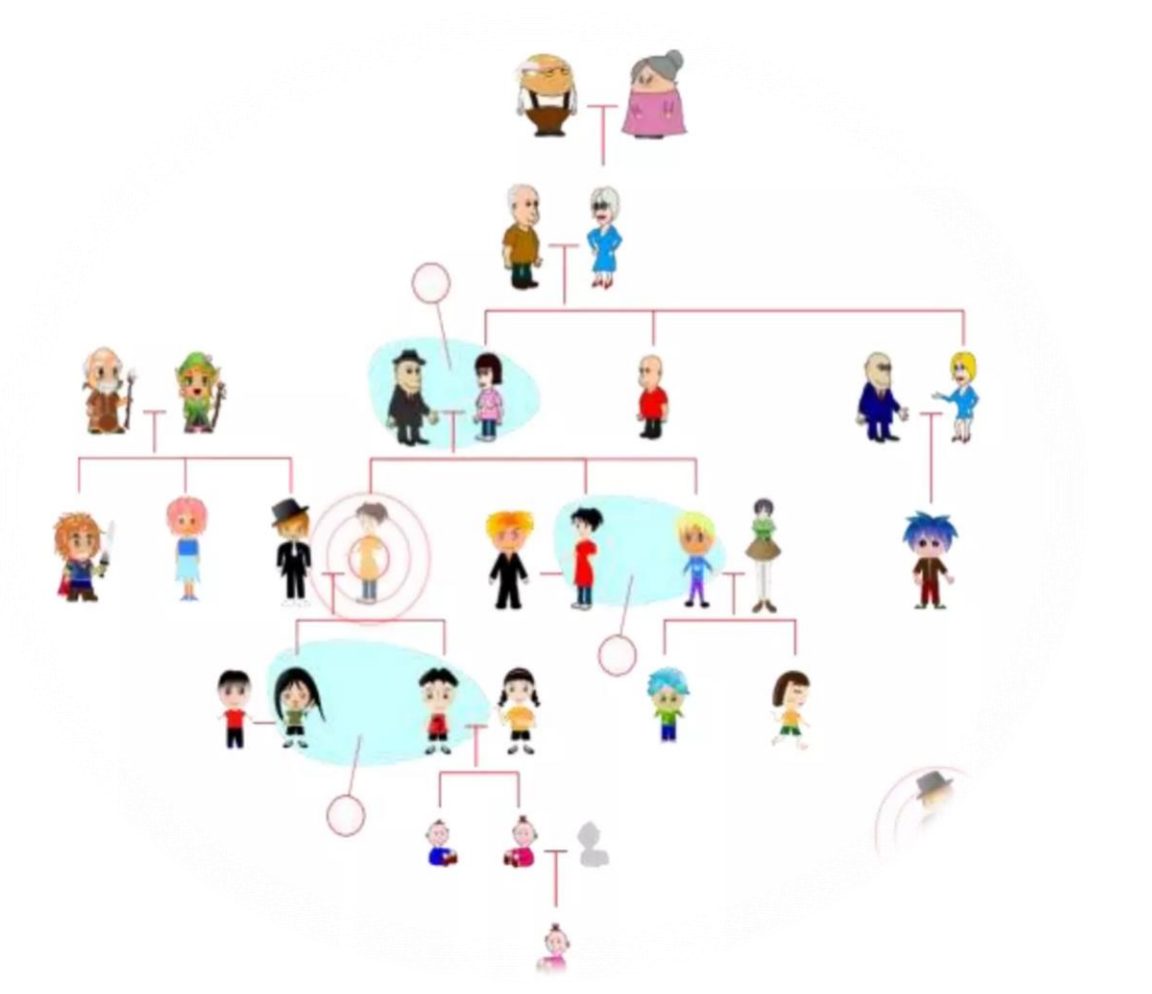
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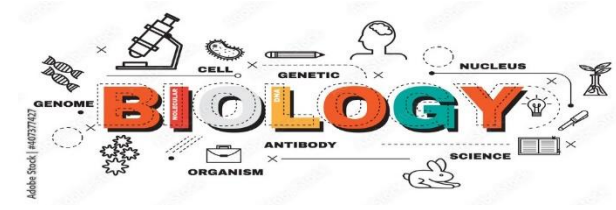
## Genetic terms

**Trait:** any characteristic that can be passed from parent to offspring

**Heredity:** passing of traits from parent to offspring

**Genetics:** Study of heredity





# Types of Scientific Terms

6

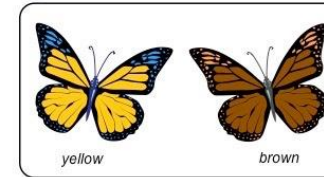
Genetic terms

**Inheritance:** The process by which genetic information is passed down from parents to offspring.

**Natural selection:** The process by which organisms with traits that are better suited to their environment are more likely to survive and reproduce.

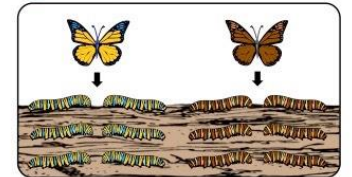
**Genetic engineering:** The process of changing the genetic makeup of an organism.

## 1 Variation



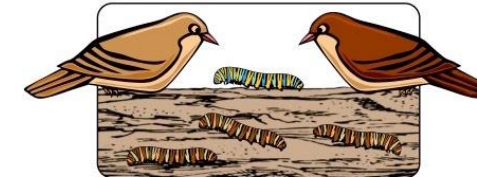
There is genetic variation within a population which can be inherited

## 2 Competition



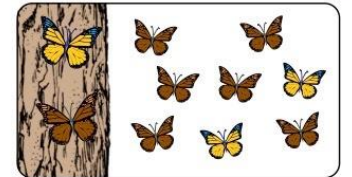
Overproduction of offspring leads to competition for survival

## 3 Adaptations



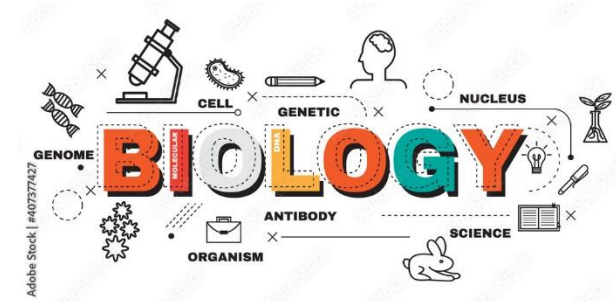
Individuals with beneficial adaptations are more likely to survive to pass on their genes

## 4 Selection



Over many generations, there is a change in allele frequency (evolution)



















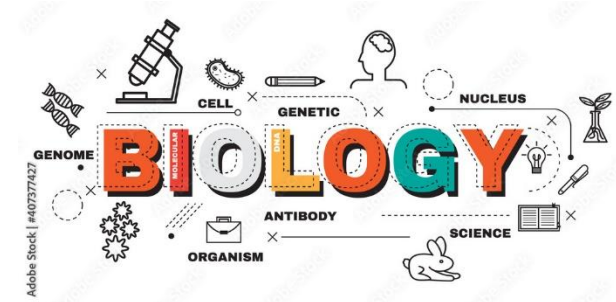
# Types of Scientific Terms

6

Genetic terms

- **Dominant:** Trait which stays visible.
- **Recessive:** Trait which disappeared.
- **Alleles:** Alternate forms of a gene for a trait.
- **Genotype:** Genetic makeup of a trait.
- **Phenotype:** Physical appearance of a trait.
- **Homozygous:** Both alleles are the same.
- **Heterozygous:** Two alleles are different.

| Traits Compared by Mendel |                                                                                                   |                                                                                                |                                                                                                 |                                                                                                            |                                                                                                |                                                                                                              |                                                                                                |
|---------------------------|---------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| Traits                    | Shape of Seeds                                                                                    | Color of Seeds                                                                                 | Color of Pods                                                                                   | Shape of Pods                                                                                              | Plant Height                                                                                   | Position of Flowers                                                                                          | Flower Color                                                                                   |
| Dominant Trait            | Round<br>      | Yellow<br>  | Green<br>    | Full<br>                | Tall<br>    | At leaf junctions<br>     | Purple<br>  |
| Recessive Trait           | Wrinkled<br> | Green<br> | Yellow<br> | Flat, constricted<br> | Short<br> | At tips of branches<br> | White<br> |



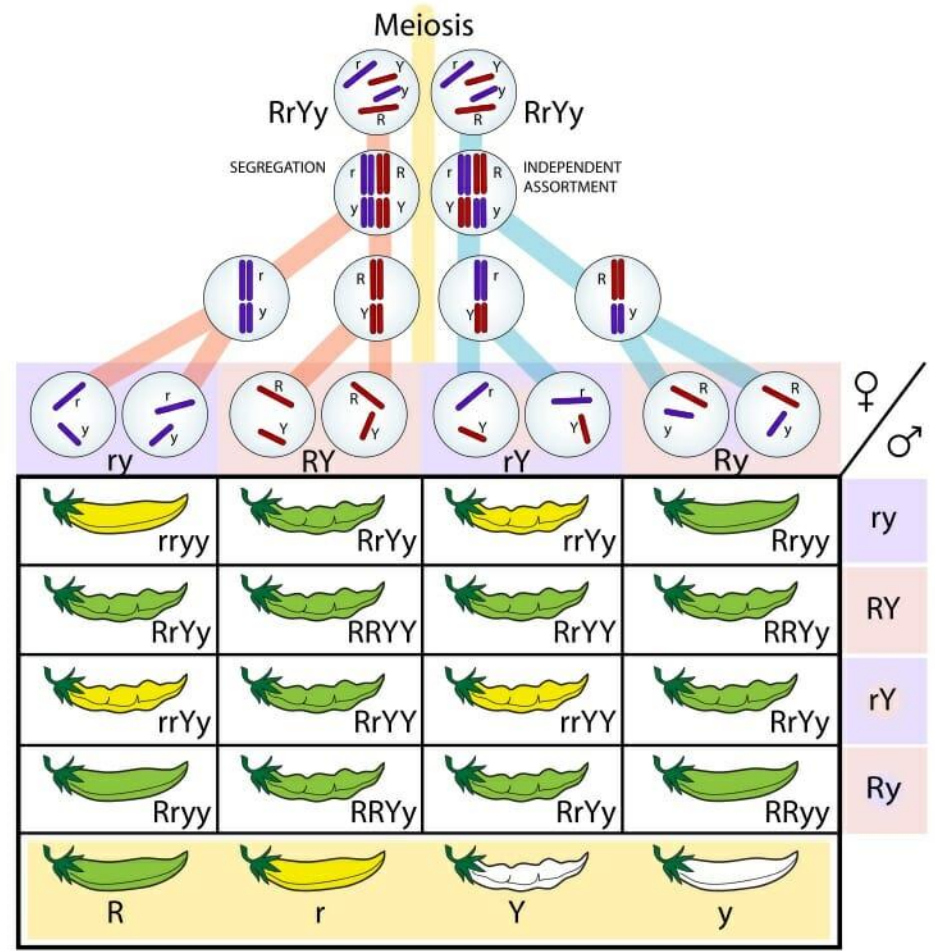
# Types of Scientific Terms

6

## Genetic terms

**Genetic Cross:** A genetic cross is the purposeful mating of two individuals resulting in the combination of genetic material in the offspring.

**Hybrid:** an offspring ensuing from the coupling between individuals of two different genetic compositions. (different allele)

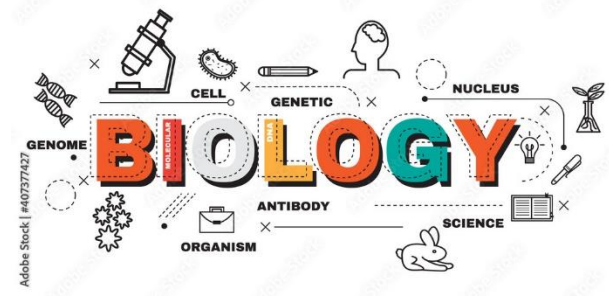
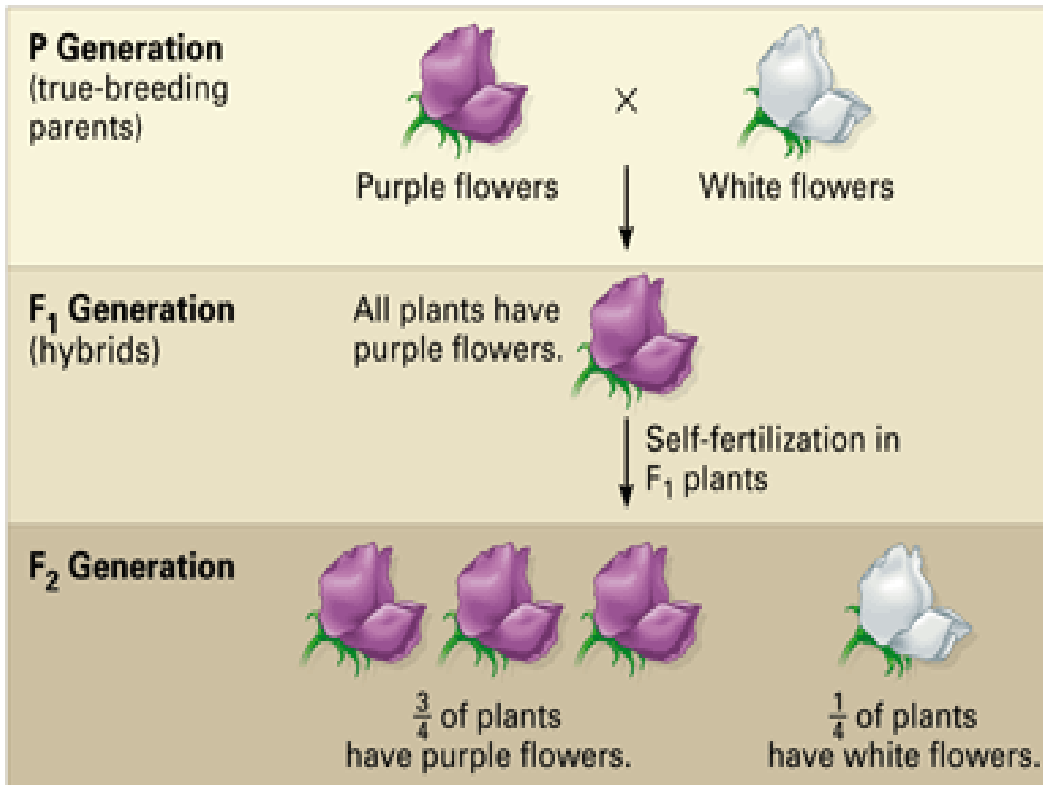


# Types of Scientific Terms

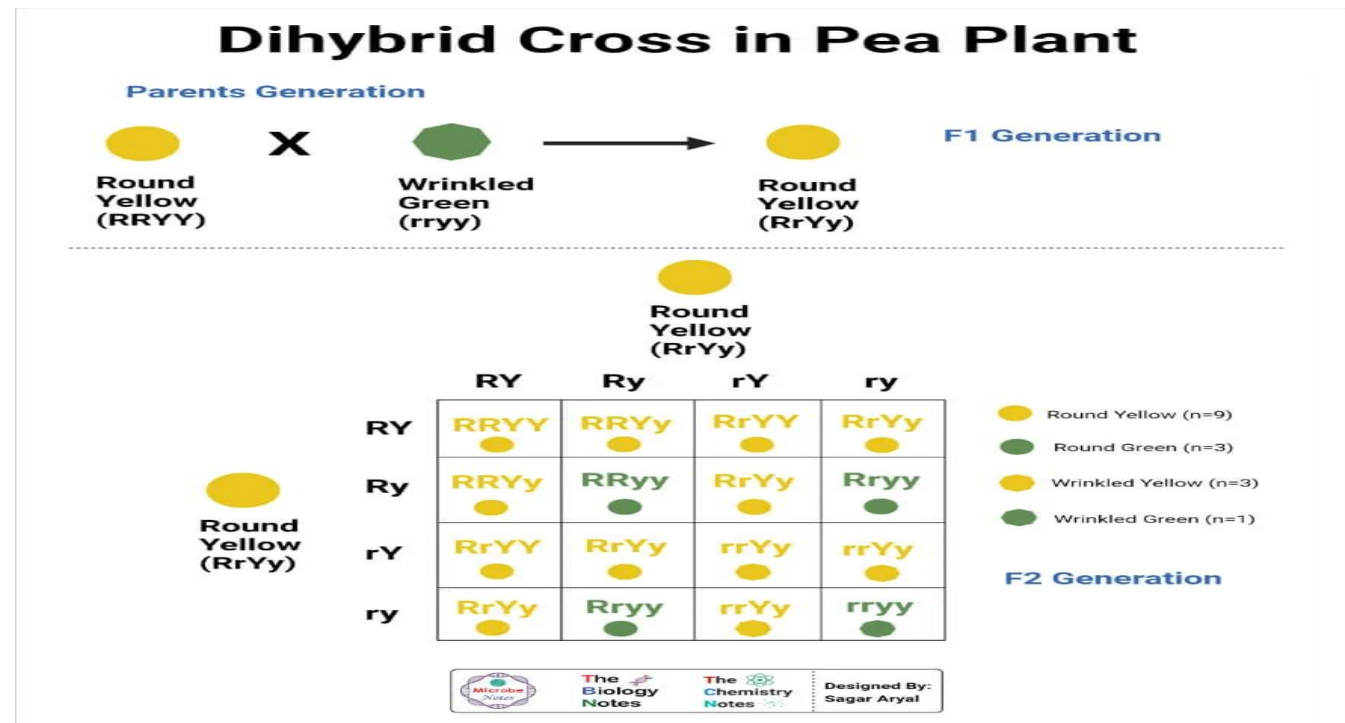
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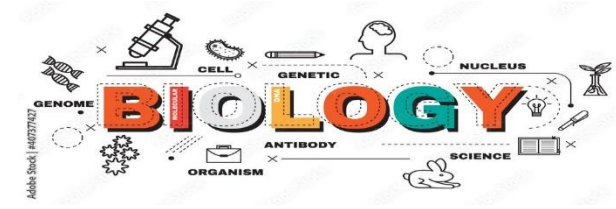
Genetic terms

**Monohybrid cross:** A cross between two individuals differing in one characteristic.



**Di hybrid cross:** A Dihybrid cross is a type of genetic cross between two individuals with either homozygous/heterozygous genotypes of two characters/traits.





# Types of Scientific Terms

6

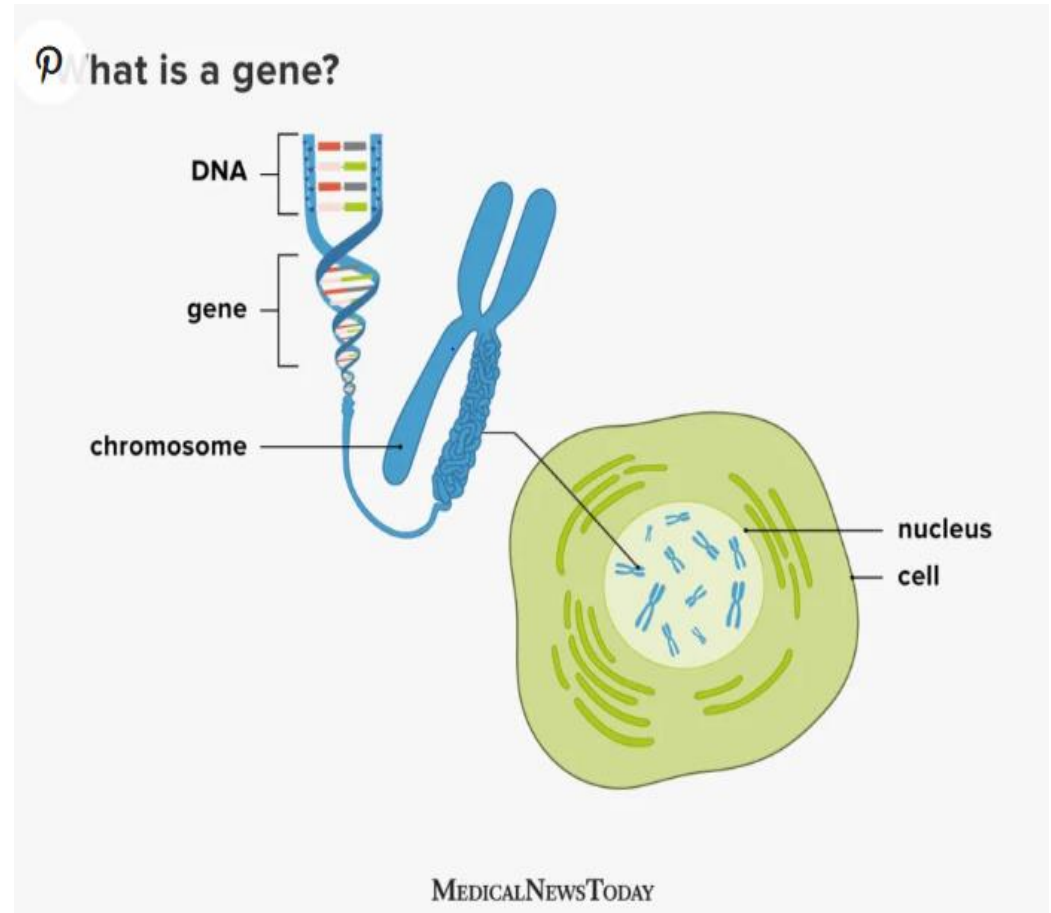
Genetic terms

**Gene:** A basic unit of heredity that is passed down from parents to offspring. It consists of a specific segment of DNA.

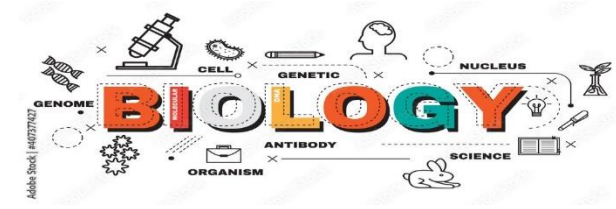
**Locus:** The specific location of a gene on a chromosome.

**Genome:** The complete set of genetic material in an organism.

**Mutation:** A change in the DNA sequence of a gene.







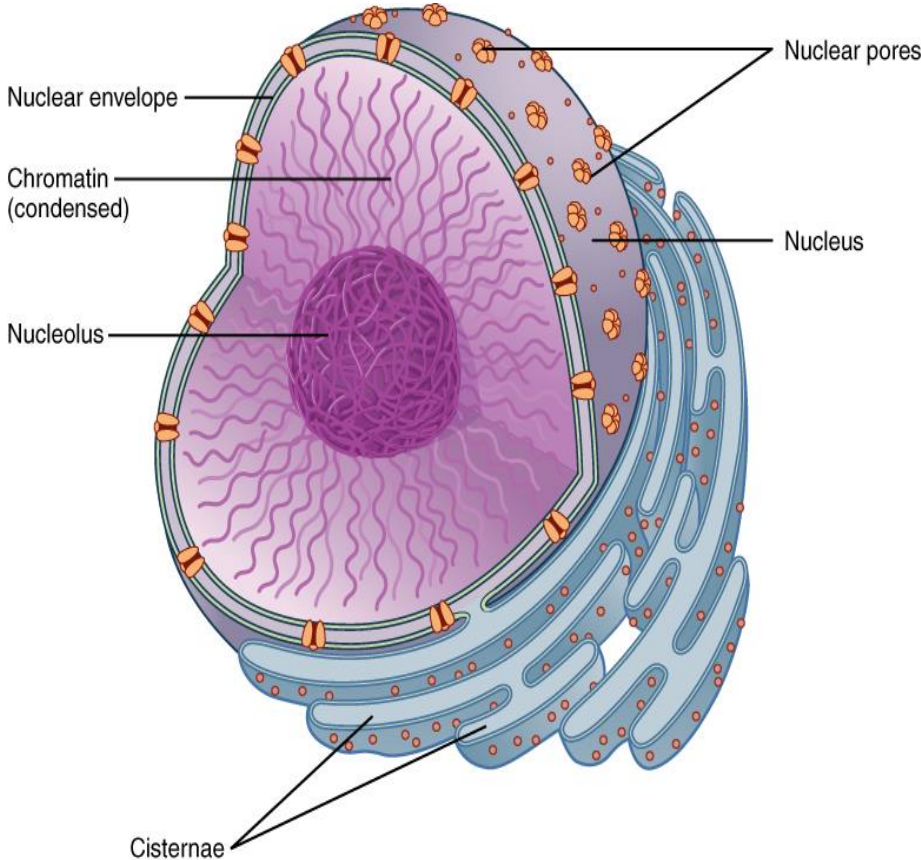
# Types of Scientific Terms

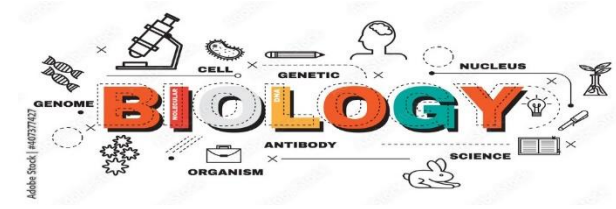
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Genetic terms

## The nucleus

is the largest and most prominent of a cell's organelles. The nucleus is generally considered the control center of the cell because it supplies all of the genetic instructions for generating proteins





# Types of Scientific Terms

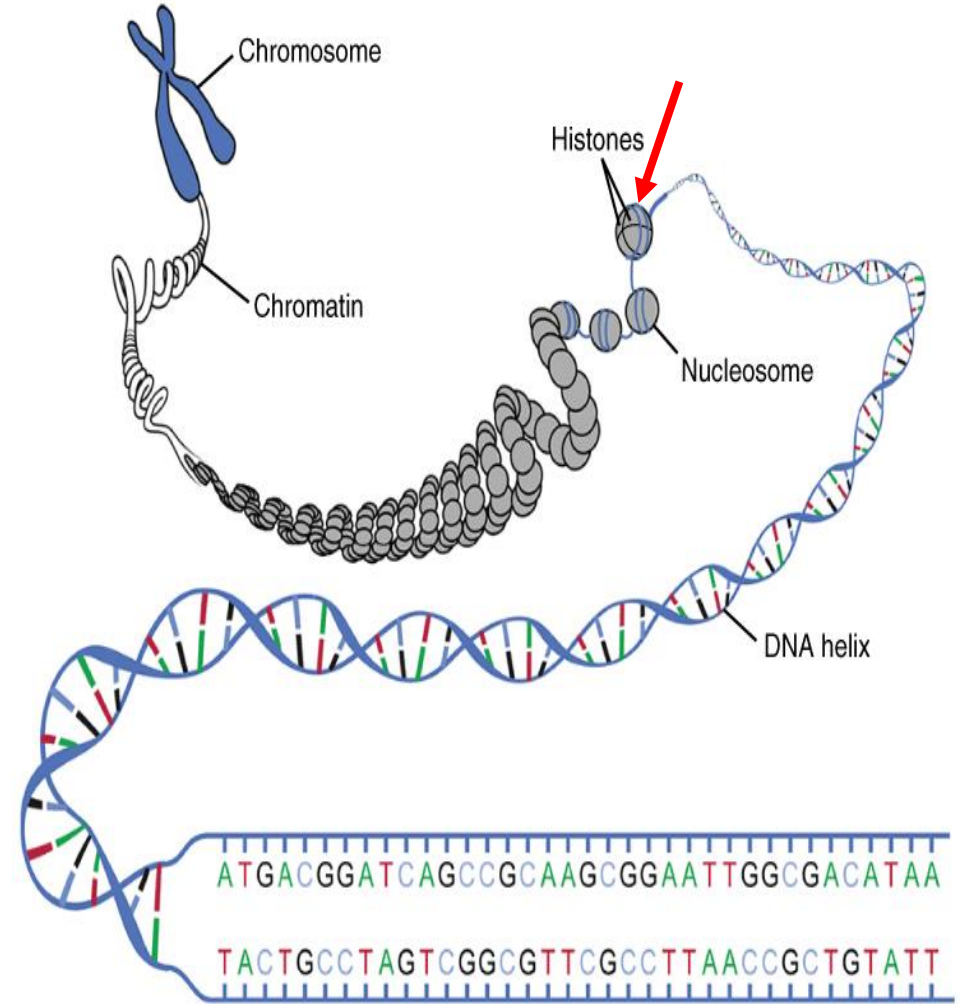
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Genetic terms

## DNA Macrostructure

Strands of DNA are wrapped around supporting **histones**.

These proteins are increasingly bundled and condensed into **chromatin**, which is packed tightly into **chromosomes** when the cell is ready to divide



# Types of Scientific Terms

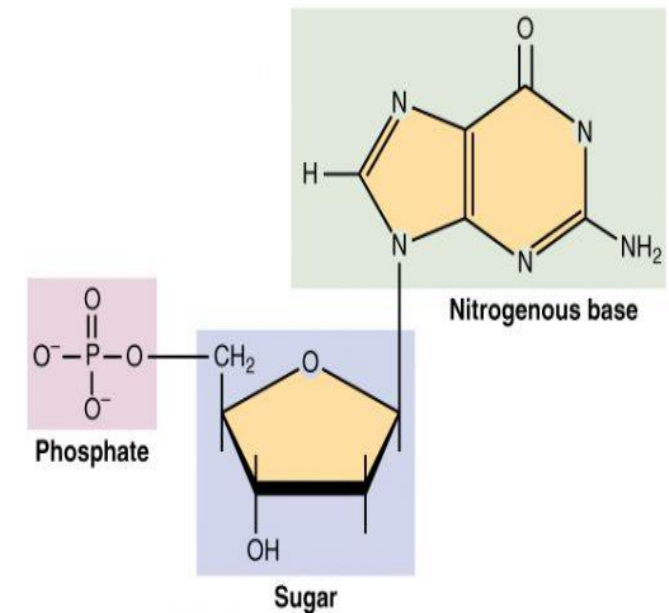
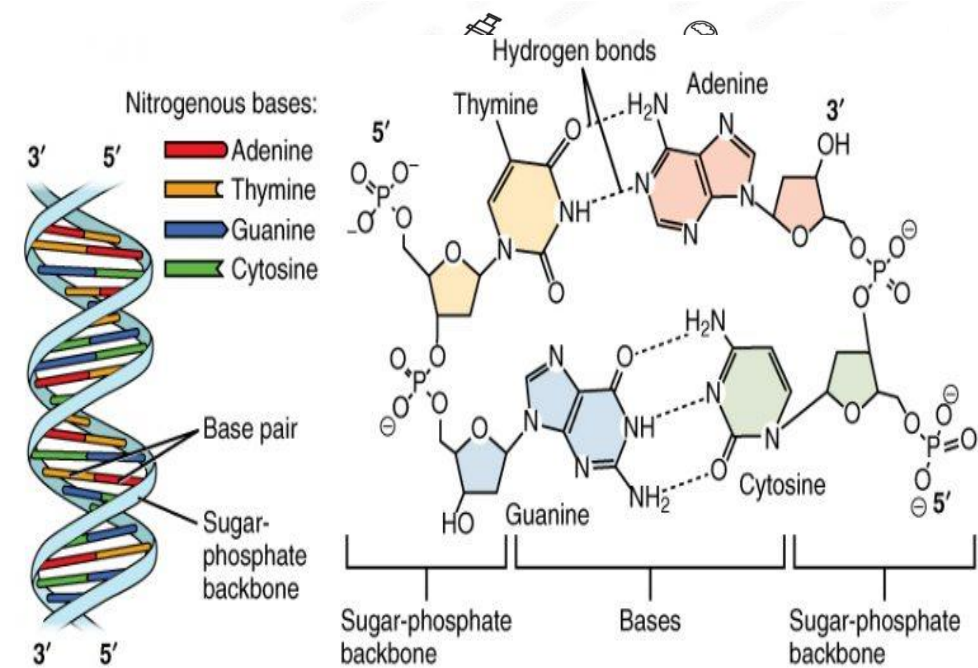
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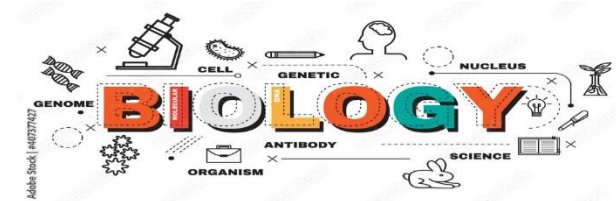
Genetic terms

## DNA Molecule

DNA (deoxyribonucleic acid) DNA is made up of two strands that are twisted together to form a double helix. The strands are made up of units called **nucleotides**. Each nucleotide has three parts: a sugar, a phosphate group, and a nitrogenous base.

The four **nitrogenous bases** in DNA are adenine (A), guanine (G), cytosine (C), and thymine (T). The order of the nitrogenous bases in DNA is what determines the genetic information.





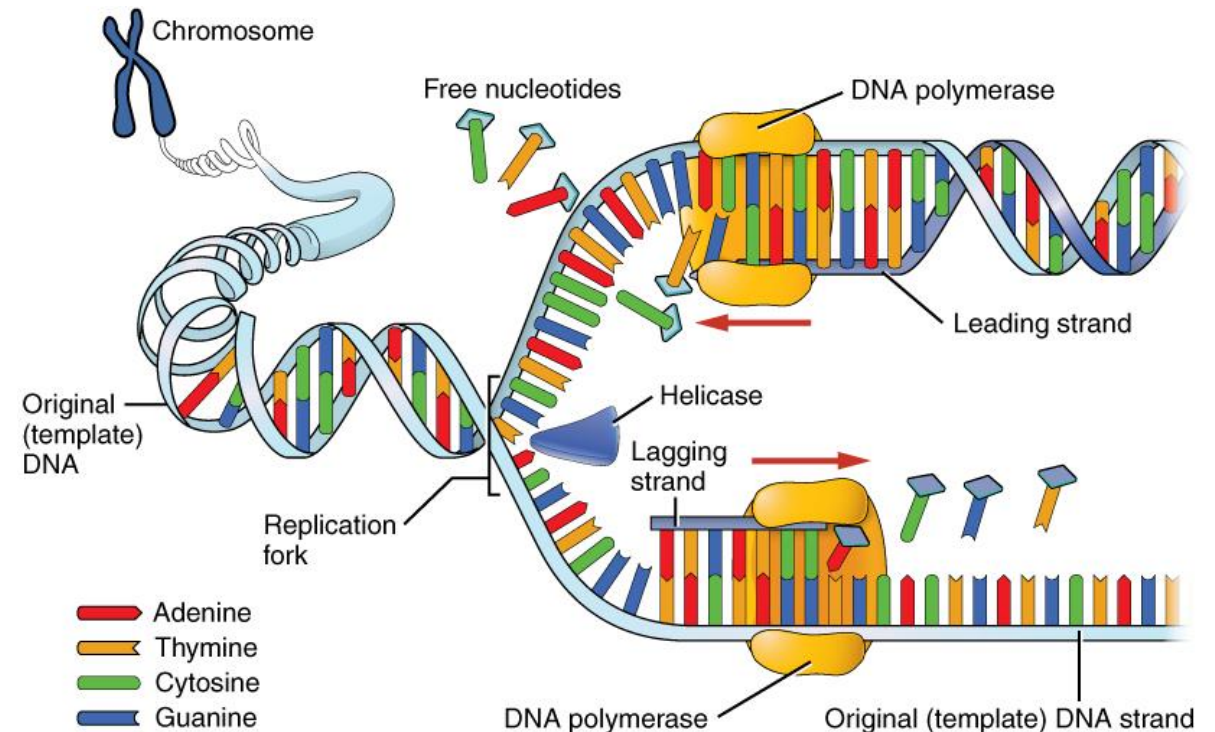
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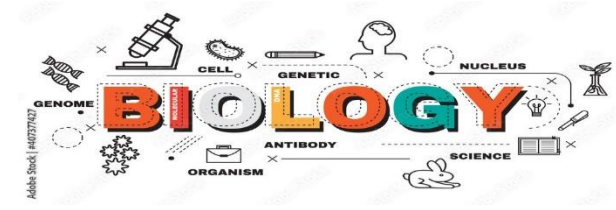
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Genetic terms

## DNA Replication

DNA replication is the process of making a copy of DNA. This process is essential for cell division, as it ensures that each new cell has a complete set of genetic instructions.





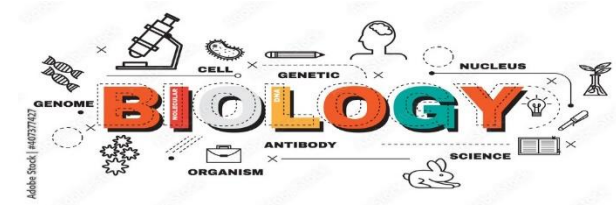
# *Types of Scientific Terms*

6

Genetic terms

## **DNA Transcription**

DNA transcription is the process of converting the genetic information in DNA into messenger RNA (mRNA). mRNA is an RNA molecule that carries the genetic information from DNA to the ribosomes, where it is used to make proteins.



# Types of Scientific Terms

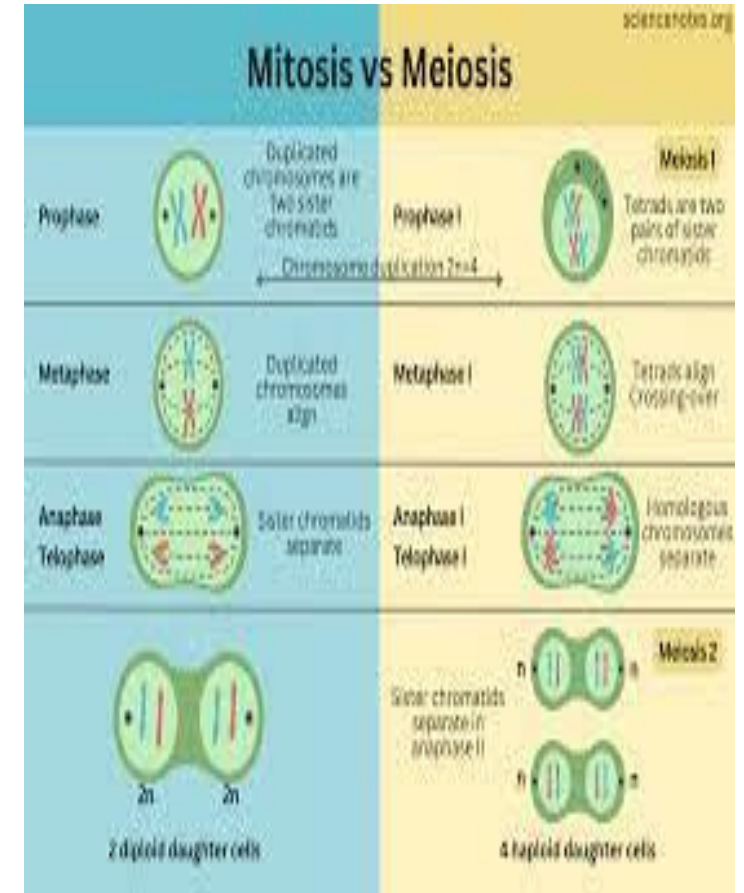
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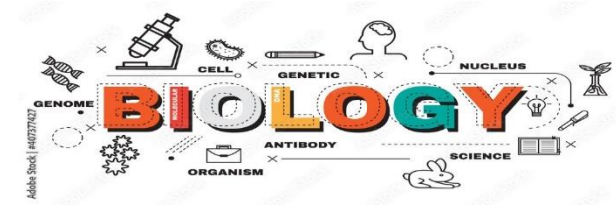
Genetic terms

**Cell Division** Cell division is the process by which a cell divides into two or more daughter cells. Cell division is essential for growth, repair, and reproduction. There are two main types of cell division: mitosis and meiosis.

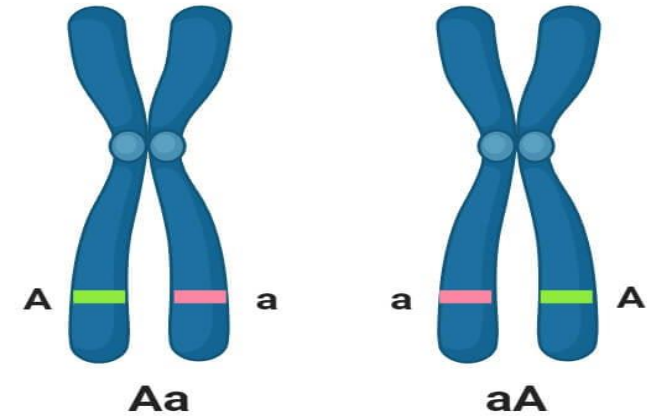
**Mitosis** is a type of cell division that produces two genetically identical daughter cells.

**Meiosis** is a type of cell division that produces four genetically unique daughter cells.

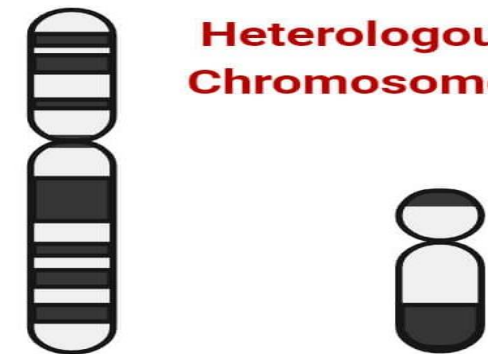




## Homologous chromosomes



Chromosomes with heterozygous gene



X Chromosome Y Chromosome

## Non-homologous chromosomes

# Types of Scientific Terms

6

Genetic terms

## Chromosomes

Hold genetic information within cells and afford instructions for an organism's growth, development, and functioning.

In diploid organisms, chromosomes are usually present in pairs.

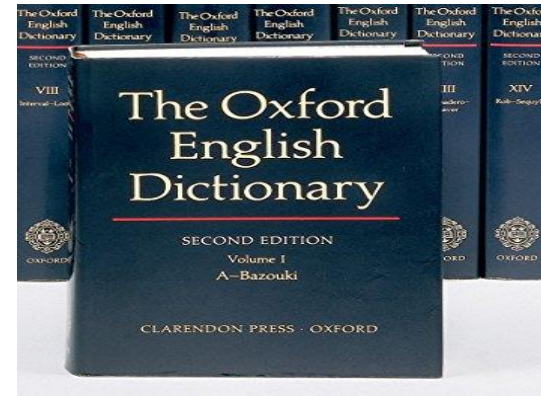
- **Homologous chromosomes** are pairs of chromosomes carrying similar genes sequence.
- **Heterologous chromosomes** (non-homologous chromosomes): are pairs of chromosomes that convey different genes.

# Scientific Terms Sources

## How to find and use scientific terms?

### Dictionaries and Glossaries

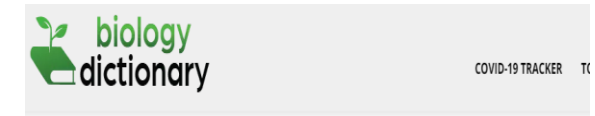
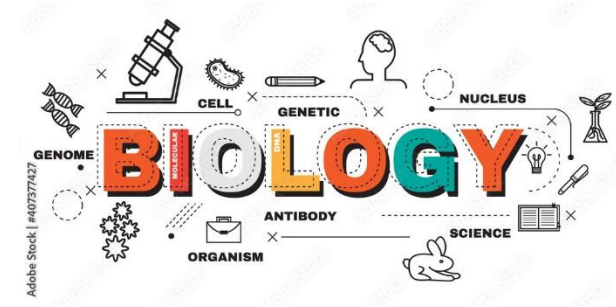
One way is to consult scientific dictionaries and glossaries. These resources provide definitions of scientific terms, as well as examples of how they are used in context.



Dictionary



Glossary



Index

### Biology Dictionary

- [COVID-19 Tracker](#)
- [Topics](#)
  1. [Biology A-Z](#)
  2. [Articles](#)
  3. [Animal Kingdom](#)

Biology is the study of living things. It is broke complexity of life from the atoms and molecu millions of organisms in ecology. This biology sorts of biology terms, principles, and life form alphabetized menu below, or search by field o

### Online Dictionary



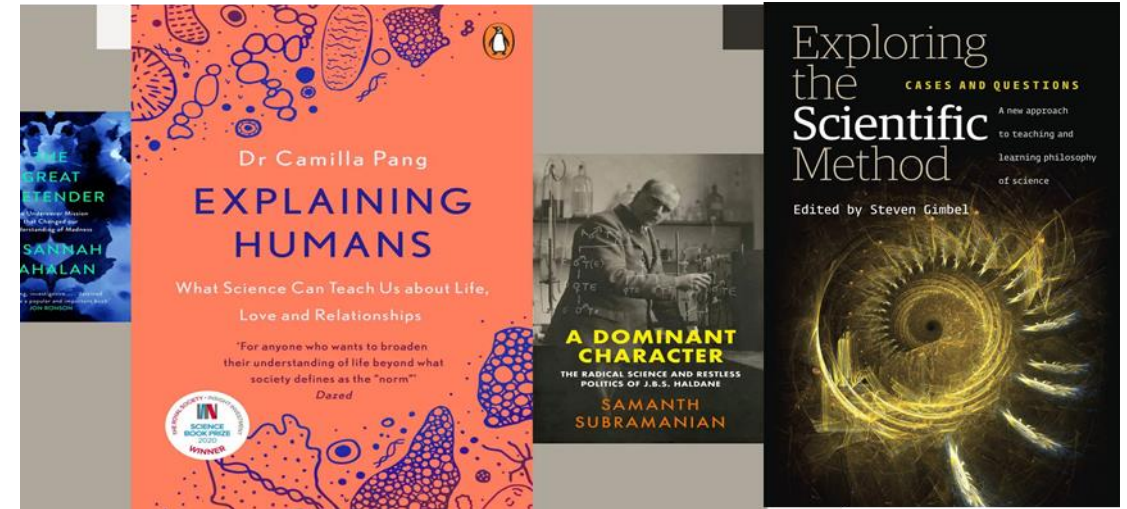
# Scientific Terms Sources

## Scientific papers and textbooks

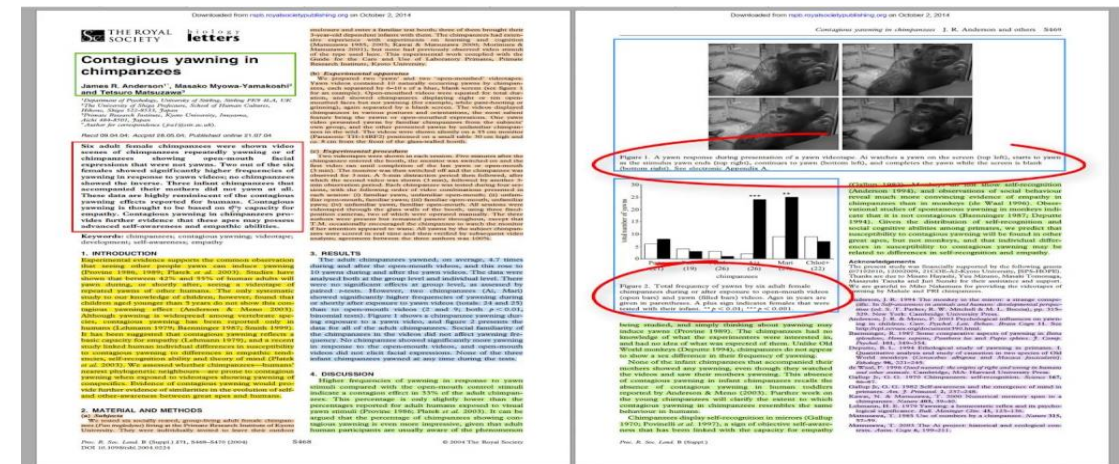
Another way to find and use scientific terms is to read scientific papers and textbooks.

These resources typically contain a list of key terms at the beginning or end of the text.

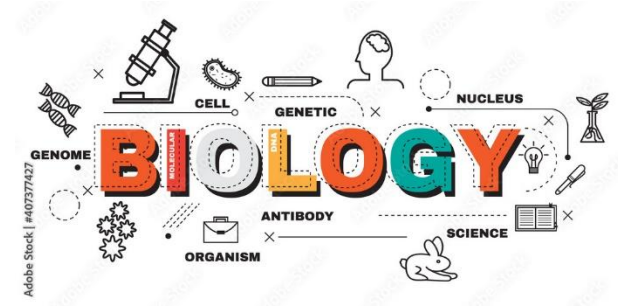
## Scientific Books



## Scientific papers

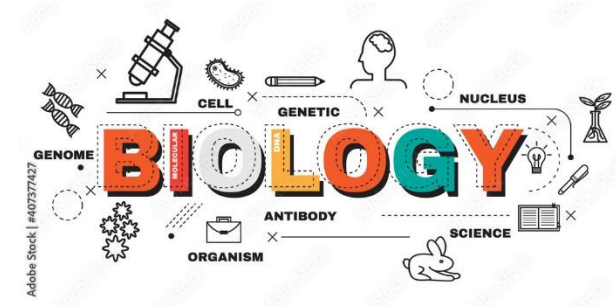


# *Scientific Terms utilization Method*



- 1. Choosing the right term**
- 2. Defining terms correctly**
- 3. Using terms consistently**
- 4. Avoiding common mistakes**

# Scientific Terms utilization Method

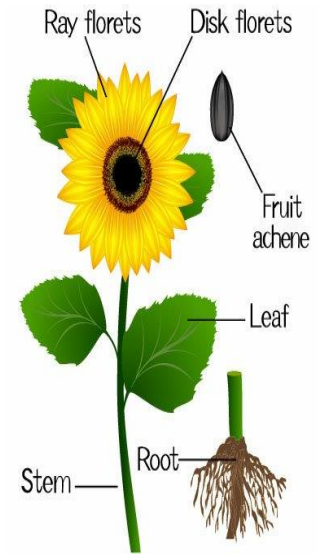


## 1. Choosing the right term

When writing about science, it is important to choose the right term for the job. This means using terms that are precise and accurate, and that are appropriate for the audience and the context.

**There are a few things to keep in mind when choosing the right term:**

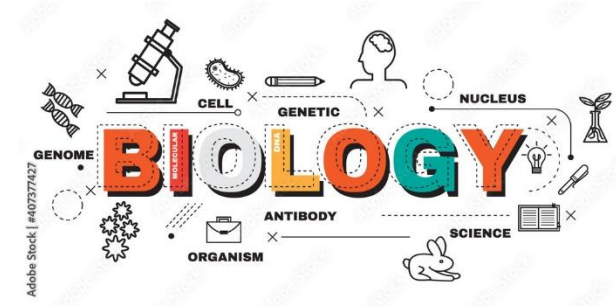
- Use the most specific term possible. For example, instead of saying "plant," say "vascular plant" or "angiosperm."
- Avoid using jargon or technical terms that your audience may not understand. If you must use a technical term, be sure to define it clearly.



**Angiosperm: Example Sunflower**

Plante à graine donne un fruit clos

# Scientific Terms utilization Method



## 1. Choosing the right term

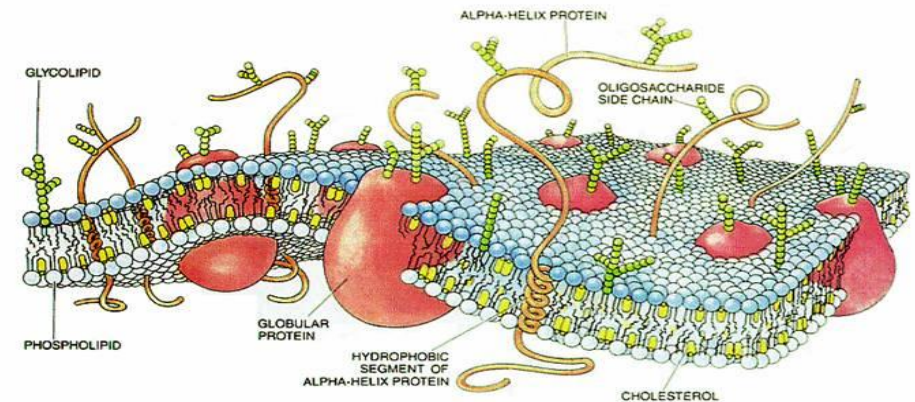
**b.** Avoid using jargon or technical terms that your audience may not understand. If you must use a technical term, be sure to define it clearly.

⊠ **Jargon:** is the complex language used by experts in a certain discipline or field. This language often helps experts communicate with clarity and precision.

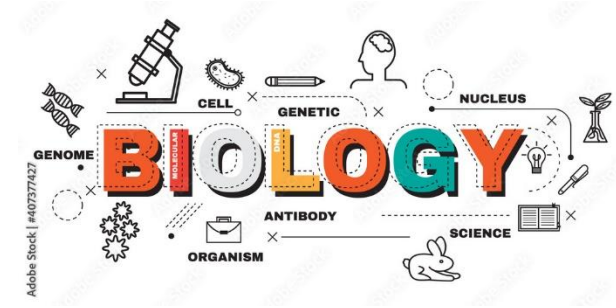


### Example:

**Phospholipid bilayer:** This is a complex term for a layer of fat molecules surrounding a cell. A simpler term is "**cell membrane.**"



# Scientific Terms utilization Method



## 2. Defining terms correctly

When defining a scientific term, it is important to be clear and concise. Avoid using circular definitions, or definitions that use the term being defined. Instead, use other, more familiar terms to define the term you are trying to explain.

### Example:

Instead of defining "photosynthesis" as

***"The process by which plants use sunlight to make food,"***

you could define it as

***"The process by which plants use sunlight, water, and carbon dioxide to produce oxygen and glucose."***

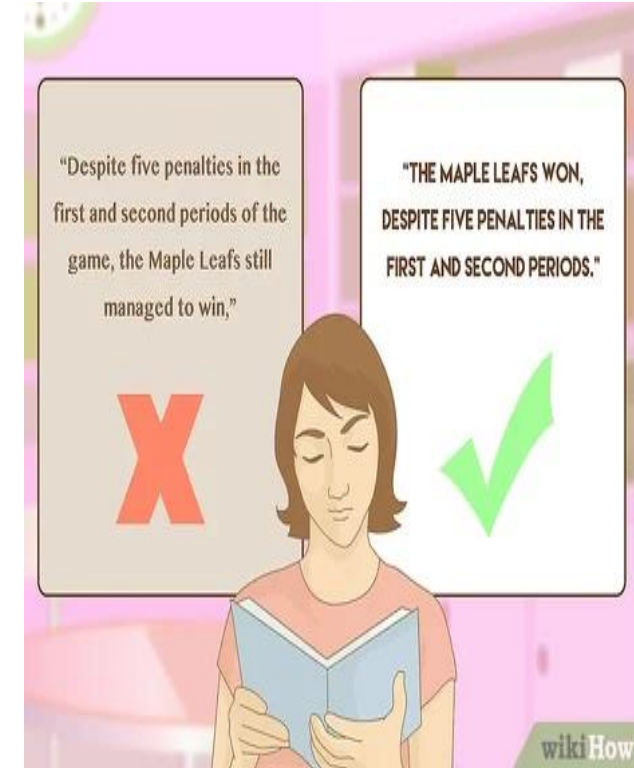
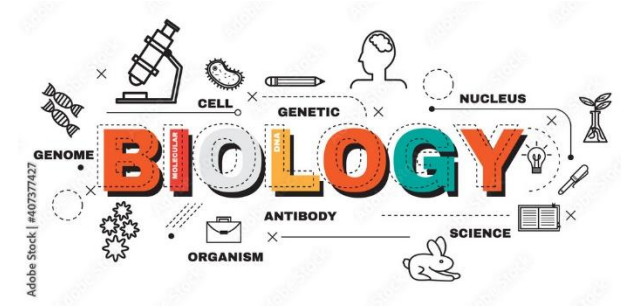


# Scientific Terms utilization Method

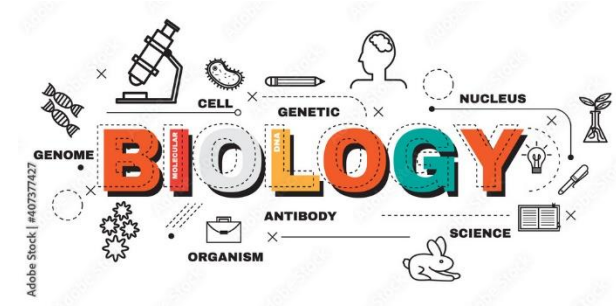
## 3. Using terms consistently

Once you have chosen the right terms for your writing, it is important to use them consistently throughout. This means using the same term to refer to the same thing each time

- Don't use the same word to refer to two different concepts.**
- Avoid using different words interchangeably to mean the same thing.**
- Only use words that are in a standard dictionary and can be easily understood by your readers.**



# *Scientific Terms utilization Method*



## **3. Using terms consistently**

Once you have chosen the right terms for your writing, it is important to use them consistently throughout. This means using the same term to refer to the same thing each time

### **Example:**

If you are writing about a particular species of plant, angiosperm vs vascular plant.

don't use one term for the plant in one place and another term for the same plant in another place.

Instead, use the same term consistently throughout your writing.

# Scientific Terms utilization Method

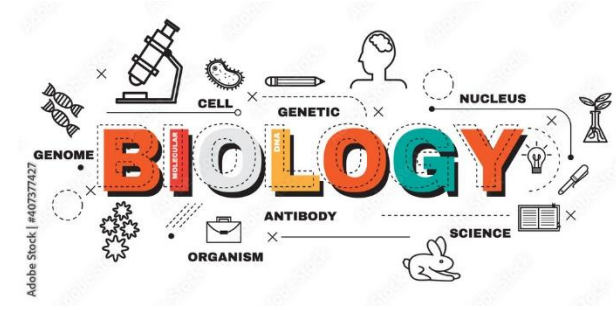
## 3. Using terms consistently

### Phylogeny of Flowering Plants

The flowering plants in the narrow sense (**angiosperms**) are a group of the seed plants (spermatophytes). Extant **angiosperms** are seen as a relatively young diversification, the “crown group” of an older clade, the “stem group” angiosperms, without well-established fossils and without surviving branches other than the **angiosperms**.

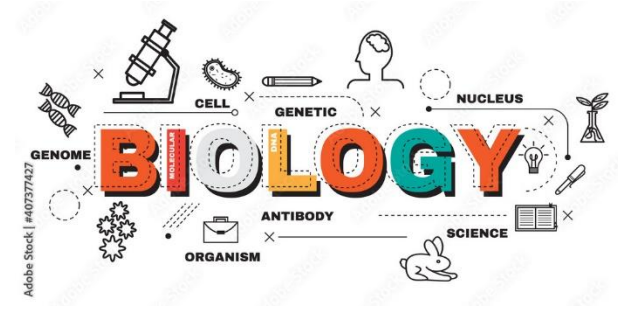
### Phylogeny of Flowering Plants

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# Scientific Terms utilization Method



## 3. Avoiding common mistakes

There are a few common mistakes that people make when using scientific terms.

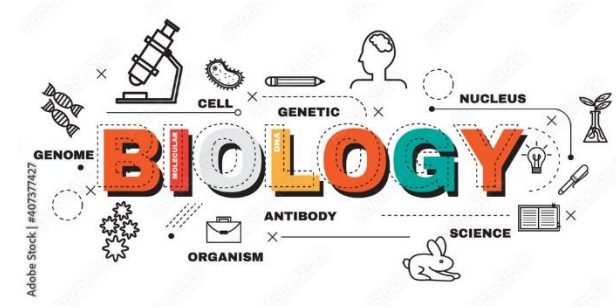
These mistakes include:

**Misusing scientific terms:** Using scientific terms incorrectly can lead to confusion and misunderstandings.

### Example

Misusing the term “**Theory**” to mean “**Hypothesis**” is a common mistake.

# Scientific Terms utilization Method



## 3. Avoiding common mistakes

There are a few common mistakes that people make when using scientific terms. These mistakes include:

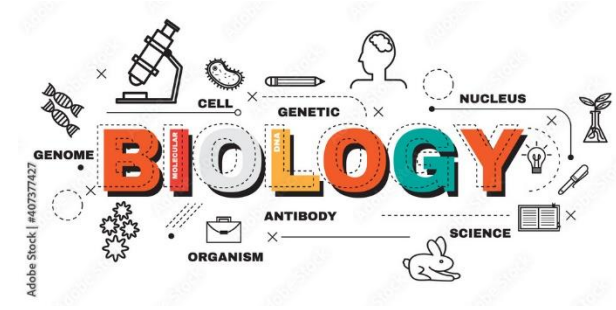
**Using jargon:** Jargon is specialized language that is used by a particular group of people. While jargon can be useful in certain contexts;

**it is important to avoid using it when writing for a general audience.**

**Writing in a passive voice:** The passive voice is a grammatical construction in which the subject of the sentence is acted upon, rather than acting. While the passive voice can be used in certain contexts;

**it is generally best to avoid using it in scientific writing.**

# Scientific Terms utilization Method

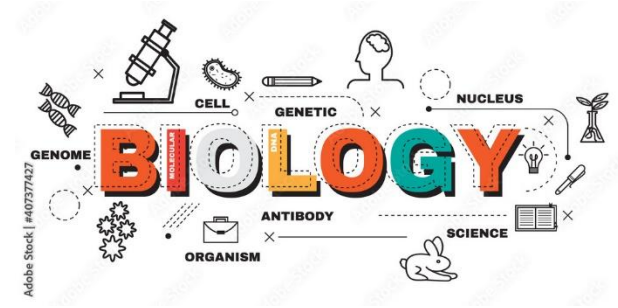


## General example

This is an example of a paragraph that uses scientific terms correctly:

“**Photosynthesis** is the process by which plants use sunlight, water, and carbon dioxide to produce oxygen and glucose. Glucose is a type of sugar that plants use for energy. **Photosynthesis** occurs in the chloroplasts of plant cells. Chloroplasts are organelles that are specialized for **photosynthesis**.”

# *Scientific Terms utilization Method*



By choosing the right terms, defining terms correctly, using terms consistently, and avoiding common mistakes.



you can write about science in a **clear** and **concise** way. This will help you to **communicate** your ideas to your audience more effectively.