

bio

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characteristics of living organisms

- cells
- energy
- homeostasis
- DNA, RNA and protein
- reproduction
- evolution

Cell theory

all living organisms are composed of one or more cells cells are the smallest units of life new cells come only from pre-exists cells by cell division

Cell Theory (or Cell Doctrine)

All living organisms are composed of one or more cells

Cells are the smallest units of life

New cells come only from pre-existing cells by cell division

organisms

unicellular multicellular

Prokaryotic Cells	Eukaryotic Cells
No Nucleus	Nucleus
No Membrane-bound organelles	Membrane-bound organelles
Simpler and Less Complex	Larger and more complex

Homeostasis

is the maintaining of a relatively stable internal physiological environment in an organism all living things maintain relatively stable internal environments examples in humans include pH, temperature, and blood pressure

An autotroph is an organism that can make its own food A heterotroph is an organism that can't make its own food and must obtain it from another organism.

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all living things maintain relatively stable internal environments

examples in humans include pH, temperature, and blood pressure

dna, rna, protein

- All organisms use Deoxyribonucleic Acid (DNA), Ribonucleic Acid (RNA), and proteins:
- All organisms use Deoxyribonucleic Acid (DNA) as their genetic material
- RNA, among other things, is involved in expressing the information stored in DNA
- Proteins perform many of the functions of cells and organisms

In transcription the nucleotide sequence in DNA determines the nucleotide sequence of the RNA through the base pairing rules. In translation the nucleotide sequence in RNA determines the amino acid sequence of the protein using tRNAs.

<https://www.youtube.com/watch?v=gG7uCskUOrA>

Gene – a segment of DNA that codes for a protein or codes for a RNA molecule that is not mRNA.

energy

All organisms require energy

They must acquire, transform, and use energy

The ultimate source of energy for most organisms is the sun

- **Acquiring energy:** The ultimate source of energy for most organisms is the sun. Some organisms acquire that energy directly, like plants, while others will acquire it indirectly, like animals can do by eating plants or eating other animals that eat plants.
- **Transforming energy:** Organisms are constantly transforming one form of energy into another and their existence depends on it. Energy has to be transformed into forms that are usable by the organism. Two important energy transforming pathways that we will discuss in mind numbing detail are photosynthesis and aerobic cellular respiration. **Photosynthesis** transforms light energy (a form of kinetic energy) into food (a form of chemical energy) for a plant. Aerobic cellular respiration transforms food (a form of chemical energy) into adenosine triphosphate (ATP). ATP is also chemical energy, but it is a form that cells use directly to power various processes.
- **Using Energy:** All organisms expend energy. Everything an organism spends its energy on depends on the organism, but all organisms will spend energy on maintaining a constant and organized internal environment, synthesizing the many molecules that perform the functions of cells, and reproducing.

all living organisms reproduce during reproduction DNA is transmitted from parent to offspring two main types: asexual and sexual

reproduction

all living organisms reproduce

during reproduction DNA is transmitted from parent to offspring

two main types: asexual and sexual

reproduction	asexual	sexual	
How many parents are involved?	It involves one parent giving rise to the offspring.	It involves two parents giving rise to the offspring.	
What do the offspring look like genetically (DNA) compared to the parent(s)?	The offspring are usually genetically identical to the parent.	The offspring are not genetically identical to either parent.	The offspring are not genetically identical to either parent.

Evolution

Evolution is a population of organisms (not an individual) changing over time

Natural Selection is the most important cause of evolution all organisms on earth share a common ancestry
Atoms Molecules Organelles Cells Tissues Organs Organ Systems Organism Population Community
Ecosystem Biosphere

topics

pros

Handle, W (2) Kraner, S (1) Rose, S (1) Saelzler, M (5) Sindhu, I (1)

X

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Merged Segment (.review/organized/B/Bio.md)

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