

Name: _____ Unit 4: Single-Celled Organisms

NOTES: 4.01

FOCUS: Single-Celled Organisms

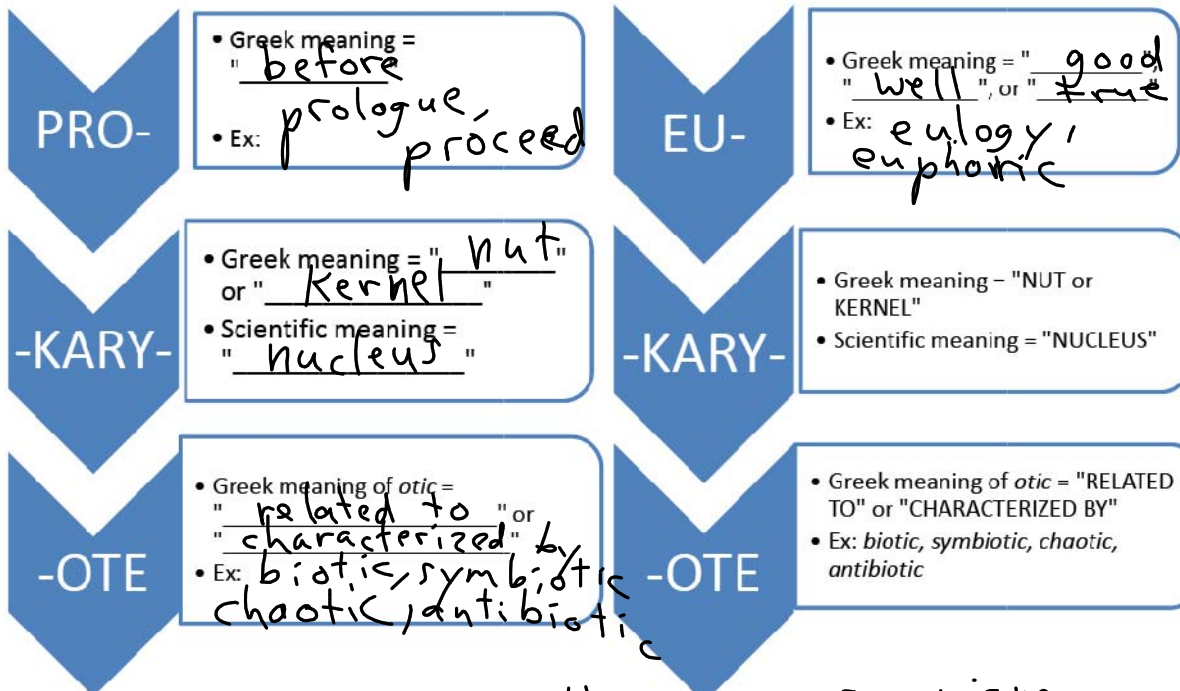
ESSENTIAL QUESTION: Can you explain the difference between a prokaryote and a eukaryote? Can you explain the difference between bacteria and protists?

Prokaryotes & Eukaryotes

- Every living thing on the Earth can be classified into two groups:

prokaryotes & eukaryotes.

- Let's break those words down:



- Prokaryote:**

literally - an organism characterized by existing **BEFORE** the nucleus
 actually - an organism made of a single cell without a nucleus

- Eukaryote:**

literally - an organism characterized by having a good or true nucleus.
 actually - an organism made up of a cell or cells, each with a nucleus.

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Prokaryotes

- Lack a nucleus
- Lack membrane-bound organelles
- DNA in a single, free-floating loop
- Ex: bacteria
(most primitive organism)

Eukaryotes

- Have a nucleus to hold the DNA
- Many specialized membrane-bound organelles
- DNA organized into several chromosomes
- Ex: Everything else
(fungi, plants, animals, protists)

Two types of single-celled organisms: Bacteria & Protists

Bacteria

- Single-celled prokaryotes
- Simple structure: no nucleus, single loop of DNA, enzymes, no organelles (tiny organs)
- Can be photoautotrophs, chemoautotrophs or heterotrophs

Protists

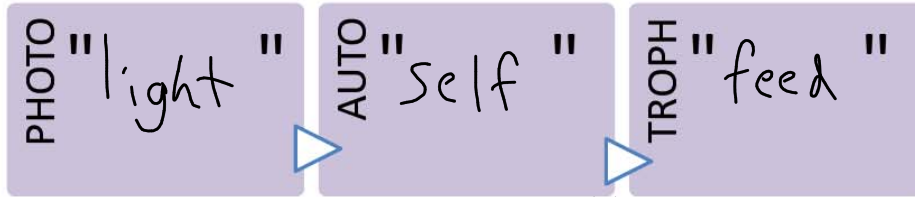
- Single-celled eukaryotes
- Complex structure: nucleus, DNA organized in chromosomes, several specialized organelles (tiny organs)
- Can be photoautotrophs, heterotrophs, or both

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What in the world do all those words mean?

• **Photoautotrophs:**



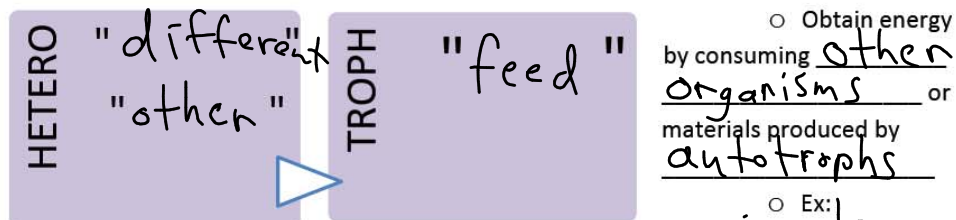
- Use light to produce their own food
- Ex: plants, algae, some bacteria, some protists

• **Chemoautotrophs:**



- Use chemicals, such as sulfur, iron, or ammonia, to produce their own food
- Ex: bacteria around hydrothermal vents on the ocean floor

• **Heterotrophs:**



- Obtain energy by consuming other organisms or materials produced by autotrophs

- Ex: animals, some bacteria, fungi, some protists, carnivorous plants