## Topic 02

Prokaryotic and Eukaryotic Cells

## **Learning Objectives**

#### At the end of this module, students will be able to:

- Recognize two different cell types.
- Compare and contrast prokaryote & eukaryote cells.
- Recognize several key words used in other modules.
- Generally identify size comparisons of various cells.
- Recognize the evolutionary relationship of these two major cell types.

### Outline

- a. Examine several key words for recognition.
- b. Make a "scale model" illustrating size differences of several small things.
- c. Discuss two diagrams illustrating the evolutionary relationship of prokaryotes and eukaryotes.

## Definition

# Prokaryote [proˈkereˌot]

A microscopic single-celled organism that has neither a distinct nucleus with a membrane nor other specialized organelles. Prokaryotes include the bacteria and cyanobacteria.

# Definition

#### Eukaryote [proˈkereˌot]

02.a

An organism consisting of a cell or cells in which the genetic material is DNA in the form of chromosomes contained within a distinct nucleus. Eukaryotes include all living organisms other than the eubacteria and archaebacteria.

# 02.a Examine Several Key Words

The word **prokaryote** comes from the Greek πρό (**pro**, 'before') and κάρυον (karyon, 'nut' or 'kernel').

The word **eukaryote** comes from the Greek **eu**, "well," and karyon, "nut or kernel," which is a common scientific word-forming element that's used to talk about the nuclei of cells.

https://en.wikipedia.org

Examine Several Key Words

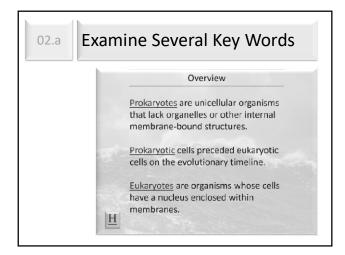
prokaryote - before true nucleus

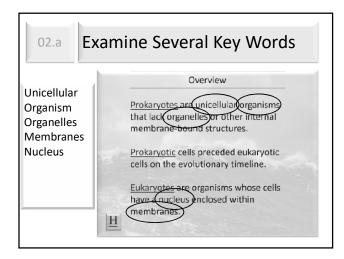
eukaryote - with true nucleus

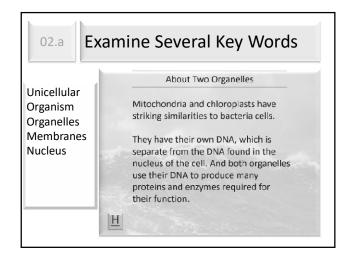
02.a Examine Several Key Words

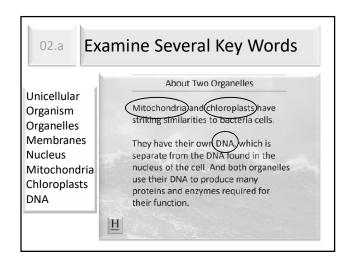
prokaryote - before true nucleus

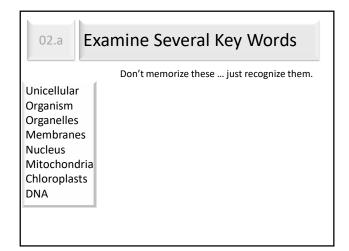
eukaryote - with true nucleus

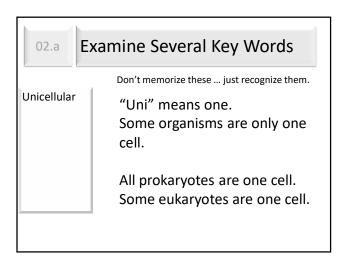


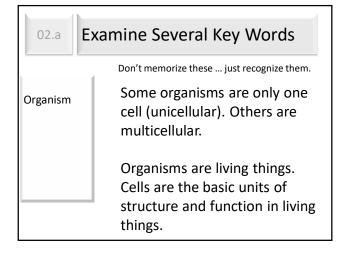


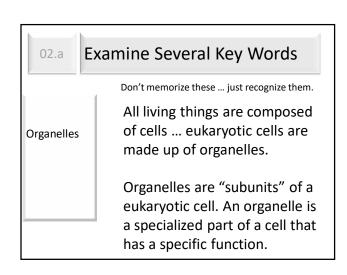


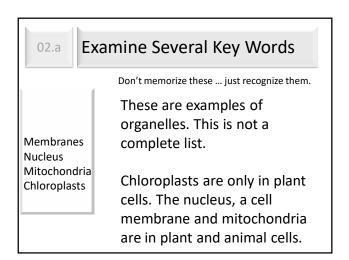


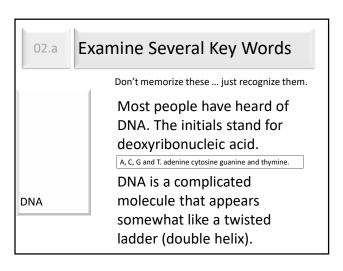


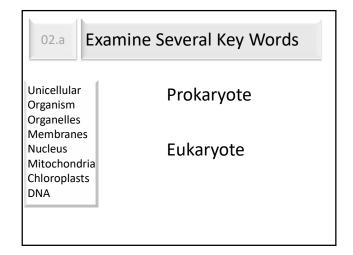


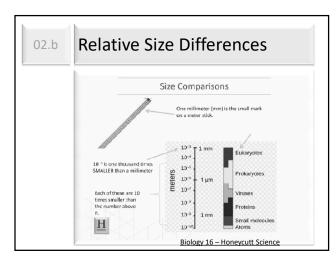


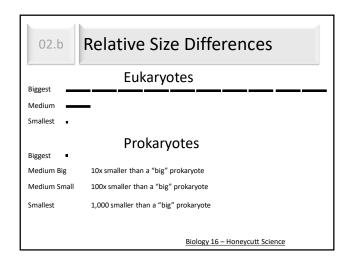










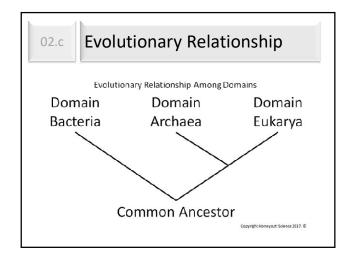


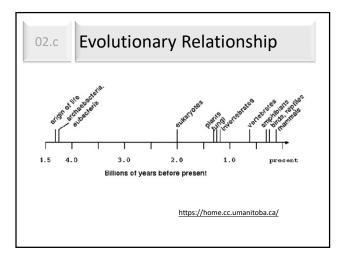
# 02.b Relative Size Differences

Use a yard stick or meter stick.

Measure off 10 units of the stick (probably in a hallway – or, outside)

Let that represent the "biggest" eukaryotic cells. Examine the comparison of 1/10 and 1/100 of that length for medium and small eukaryotes.





## Check

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- Recognize the evolutionary relationship of these two major cell types.