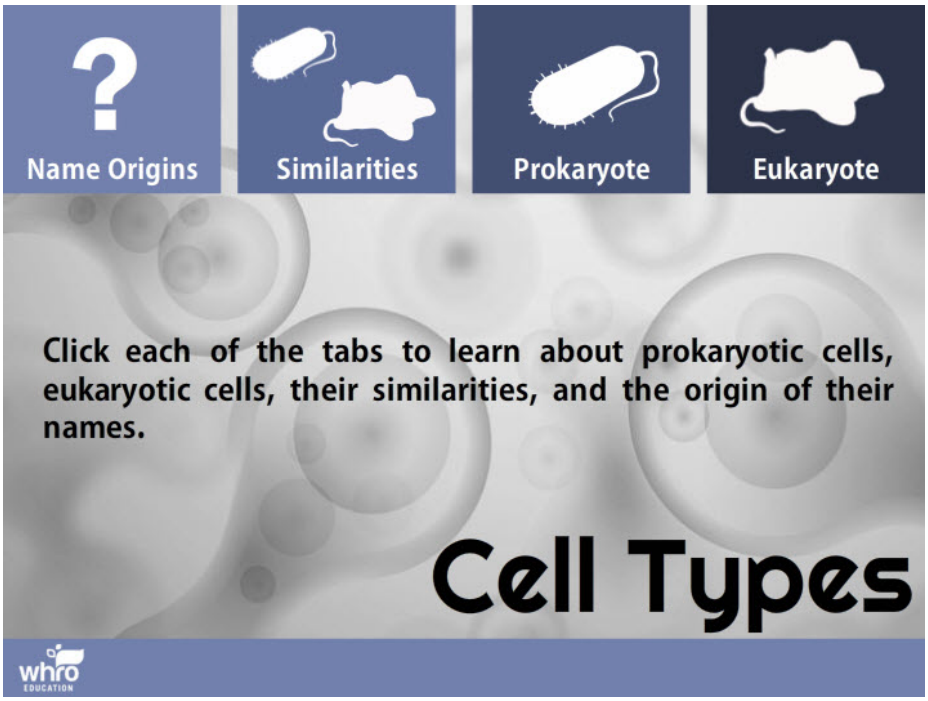
Module 3: Cell Biology - Structure and Function

Topic 2 Content: Cell Types Notes

Introduction



Just like there is a diversity of living organisms, there is also a diversity of cell types. Cells are either prokaryotic or eukaryotic. Click each of the tabs to learn about prokaryotic cells, eukaryotic cells, their similarities, and the origin of their names.

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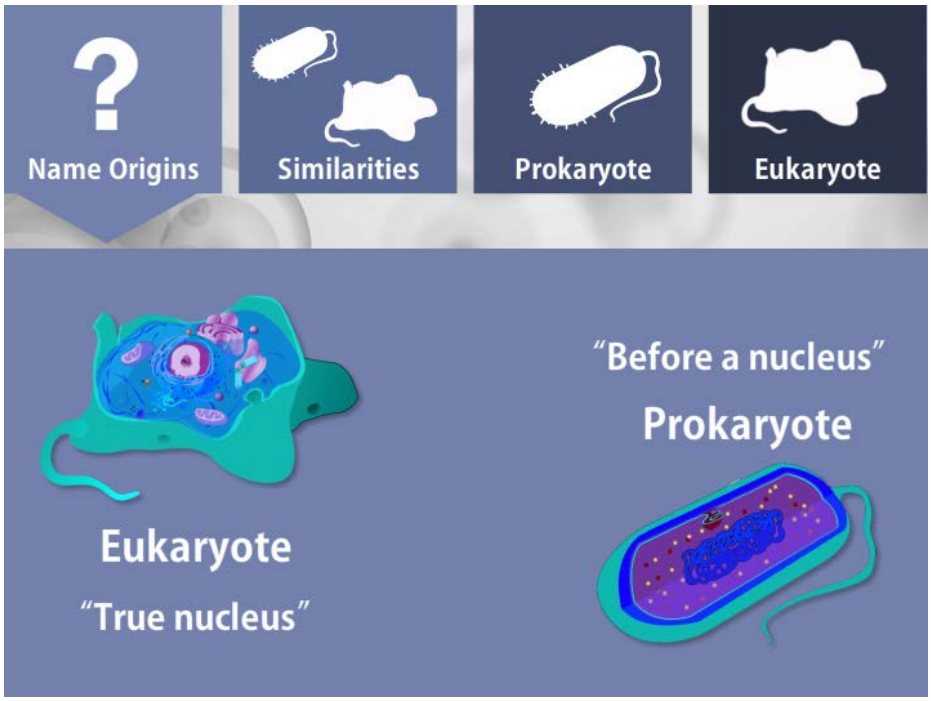
Name Origins



The broadest division of cell types is between prokaryotic and eukaryotic cells. The words prokaryote and eukaryote come from the Greek word "karyose", which means kernel. In biology, the root word kernel refers to the nucleus. The prefix "pro" means before, and the prefix "eu" means true. Therefore, prokaryotic means "before a nucleus" and eukaryotic means the cell has a "true nucleus".

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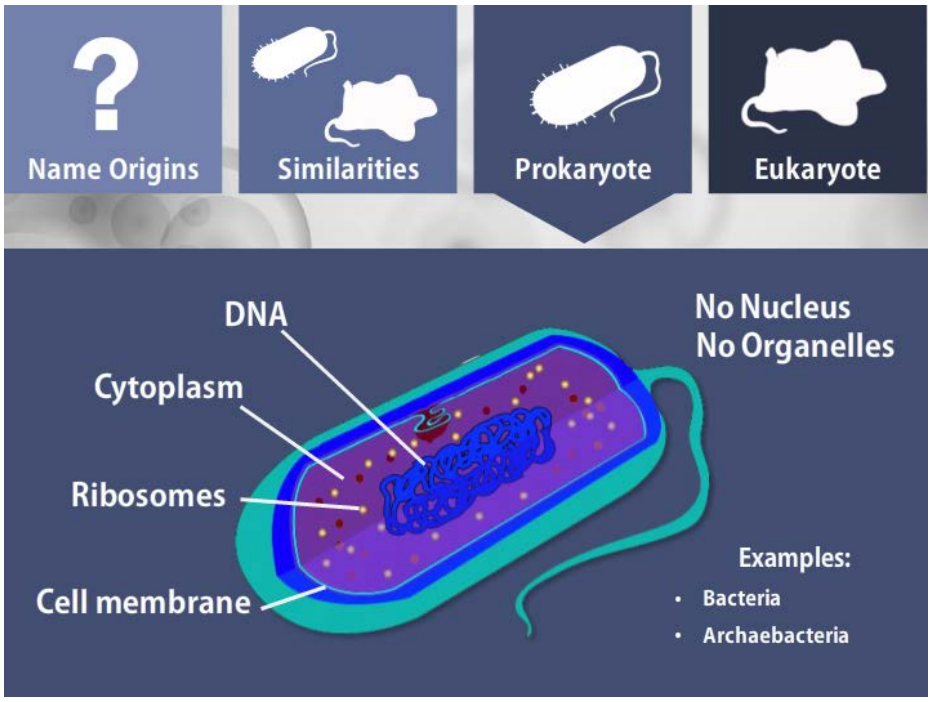
Prokaryotic Cells



Prokaryotic cells are simple cells with cytoplasm, ribosomes, and a cell membrane. Prokaryotic cells lack a nucleus and other membrane bound organelles. Organelles are structures that perform functions in cells. The DNA is circular and is found in a nucleoid region instead of a nucleus. Unicellular organisms, like bacteria and archaebacterial, are prokaryotes. These cells are smaller and much more abundant than eukaryotic cells. Scientists believe that prokaryotic cells first appeared on Earth 3.5 billion years ago, and that eukaryotic cells evolved from prokaryotic cells.

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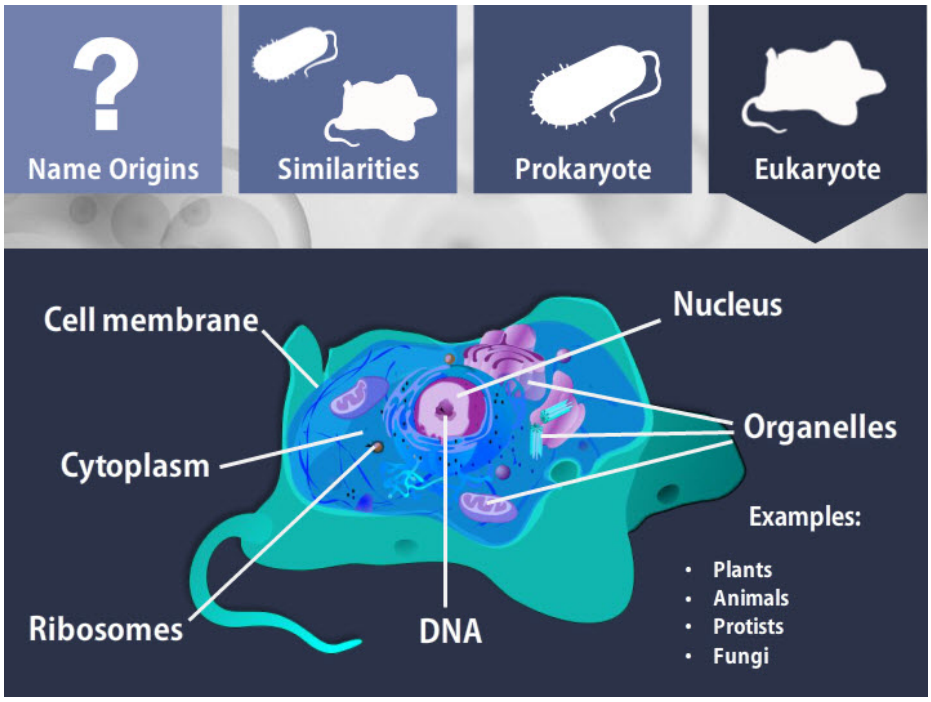
Eukaryotic cells



Eukaryotic cells are cells that contain a nucleus, membrane-bound organelles, cytoplasm, and ribosomes. In eukaryotes, the DNA is linear and contained in the nucleus. Eukaryotic cells evolved 1.5 billion years ago, and are much larger than prokaryotic cells. Most eukaryotic organisms are multicellular. Examples of eukaryotic organisms include plants, animals, protists, and fungi. Some protists and fungi are unicellular.

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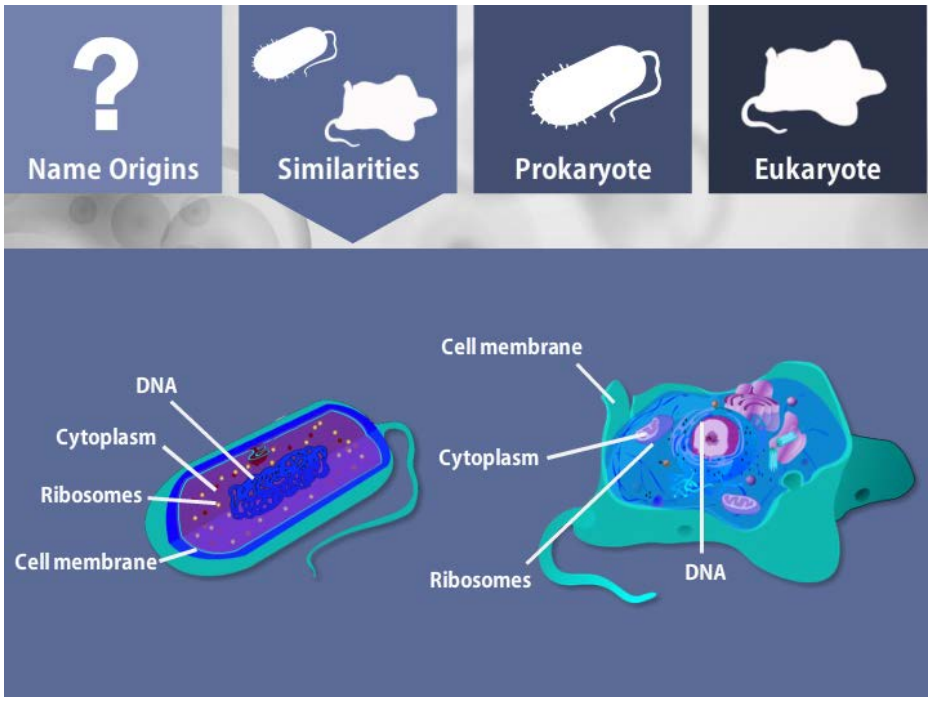
Similarities



All cells are surrounded by a protective cell membrane, and all cells contain cytoplasm. All cells contain the genetic material DNA, and all cells have ribosomes to make proteins.