

Name _____ Class period _____

INTEGRATED SCIENCE B
NTI Day 3

Prokaryotes and eukaryotes

| Term | Meaning |
|----------------------|-----------------------------------------------------------------------------------------------------|
| Endosymbiotic theory | Theory proposing that eukaryotic cells formed from a symbiotic relationship among prokaryotic cells |

How do prokaryotic and eukaryotic cells differ?

| | Prokaryotes | Eukaryotes |
|---------------------|-----------------------------------------------------|-------------------------------------------------------------------------------------------|
| Genetic information | DNA is circular, usually free-floating in cytoplasm | DNA is linear, found in nucleus |
| Organelles | No nucleus or membrane-bound organelles | Has nucleus and membranebound organelles (ie: mitochondria, chloroplasts, Golgi body, ER) |
| Size | Small (1-5 micrometers) | Larger (10-100 micrometers) |
| Organisms | Bacteria/archaea | Animals, plants, fungi, protists |
| Cell structure | Always unicellular | Can be unicellular or multicellular |

What is the endosymbiotic theory?

One theory that may explain how eukaryotes became so complex is the **endosymbiotic theory**. This theory proposes that organelles like mitochondria and chloroplasts were once free-living prokaryotic cells that began to live within a larger host cell. Over a long time, the prokaryotes and their hosts evolved together until one could not function without the other.

Answer the following questions using the information you read.

Match each statement below with A (prokaryotic) or B (eukaryotic)

1. _____ Has no organelles
2. _____ Always unicellular
3. _____ Larger cells
4. _____ Circular DNA
6. _____ Can be multicellular
7. _____ 1-5 micrometers in size
8. _____ Fungi is an example

9. In eukaryotes DNA is _____ and found in the _____

10. Prokaryotes are small and between _____ micrometers.

11. In the endosymbiotic theory, _____ and _____ were once free-living cells that began to live in a host cell.

