General Information on Collaborative Reading Materials with an Information Gap.

These are a set of different texts with a common question sheet/task. The principle here is that readers will be unable to complete the questions by simply using the information in their version, but will have to collaborate with other readers, asking questions and eliciting information, possibly arguing and negotiating. There is also an opportunity to draw on their own previous knowledge and other information that might be provided.

The class works first in pairs or threes and these groups have copies of the same text. For example: five pairs could have Sheet A, five Sheet B etc. Pupils can read the text silently first, and then to each other, and then work together to answer as many questions as they can.

They need to know that not all the answers are in their text and that they are very welcome to draw on their own shared knowledge/prior learning. Everyone in the group needs to make notes on their answer sheet since they will subsequently move to a group where their

information is unique to them. They become experts.

The pairs/threes then split up and move into new groups of six where two participants have Sheet A, two Sheet B, two Sheet C. They can then go on to complete the questions by interrogating and informing each other.

**Source 1.** **Prokayotes vs Eukaryotes** **Collaborative Reading**

The distinction between **prokaryotes** and **eukaryotes** is considered to be the most important distinction among groups of organisms. Eukaryotic cells contain membrane-bound organelles, such as the nucleus, while prokaryotic cells do not. Differences in cellular structure of prokaryotes and eukaryotes include the presence of mitochondria and chloroplasts, the cell wall, and the structure of chromosomal DNA.

Prokaryotes do not have a nucleus, mitochondria, or any other membrane-bound organelles. In other words, all their intracellular water-soluble components (proteins, DNA and metabolites) are located together in the same area enclosed by cell membrane, rather than separated in different cellular compartments.

The division to prokaryotes and eukaryotes reflects two distinct levels of cellular organization rather than biological classification of species. Prokaryotes include two major classification domains: the bacteria and the archaea. Archaea were recognized as a domain of life in 1990. These organisms were originally thought to live only in inhospitable conditions such as extremes of temperature, pH, and radiation but have since been found in all types of habitats.

Prokaryotes were the only form of life on Earth for millions of years until more complicated eukaryotic cells came into being through the process of evolution.

Similarities between the two cell types:

|  | **Eukaryotic Cell** | **Prokaryotic Cell** |
| --- | --- | --- |
| **Nucleus:** | Present | Absent |
| **Number of chromosomes:** | More than one | One--but not true chromosome: Plasmids |
| **Cell Type:** | Usually multicellular | Usually unicellular (some cyanobacteria may be multicellular) |
| **True Membrane bound Nucleus:** | Present | Absent |
| **Example:** | Animals and Plants | Bacteria and Archaea |
| **Genetic Recombination:** | Meiosis and fusion of gametes | Partial, undirectional transfers DNA |
| **Lysosomes and peroxisomes:** | Present | Absent |
| **Microtubules:** | Present | Absent or rare |
| **Endoplasmic reticulum:** | Present | Absent |
| **Mitochondria:** | Present | Absent |
| **Cytoskeleton:** | Present | May be absent |
| **DNA wrapping on proteins.:** | Eukaryotes wrap their DNA around proteins called histones. | Multiple proteins act together to fold and condense prokaryotic DNA. Folded DNA is then organized into a variety of conformations that are supercoiled and wound around tetramers of the HU protein. |
| **Ribosomes:** | larger | smaller |
| **Vesicles:** | Present | Present |
| **Golgi apparatus:** | Present | Absent |
| **Chloroplasts:** | Present (in plants) | Absent; chlorophyll scattered in the cytoplasm |
| **Flagella:** | Microscopic in size; membrane bound; usually arranged as nine doublets surrounding two singlets | Submicroscopic in size, composed of only one fiber |
| **Permeability of Nuclear Membrane:** | Selective | not present |
| **Plasma membrane with steriod:** | Yes | Usually no |
| **Cell wall:** | Only in plant cells and fungi (chemically simpler) | Usually chemically complexed |
| **Vacuoles:** | Present | Present |

**Source 2.** **Prokayotes vs Eukaryotes** **Collaborative Reading**

**Prokaryotes** (pro-KAR-ee-ot-es) (from Old Greek *pro-* before + *karyon* nut or kernel, referring to the cell nucleus, + suffix *-otos*, pl. *-otes*; also spelled "procaryotes") are organisms without a cell nucleus (= karyon), or any other membrane-bound organelles. Most are unicellular, but some prokaryotes are multicellular).

**Eukaryotes** (IPA: [juːˈkæɹɪɒt]) are organisms whose cells are organized into complex structures by internal membranes and a cytoskeleton. The most characteristic membrane bound structure is the nucleus. This feature gives them their name, (also spelled "eucaryote,") which comes from the Greek ευ, meaning good/true, and κάρυον, meaning nut, refering to the nucleus. [Animals](http://www.diffen.com/difference/Category:Animals), plants, fungi, and protists are eukaryotes.

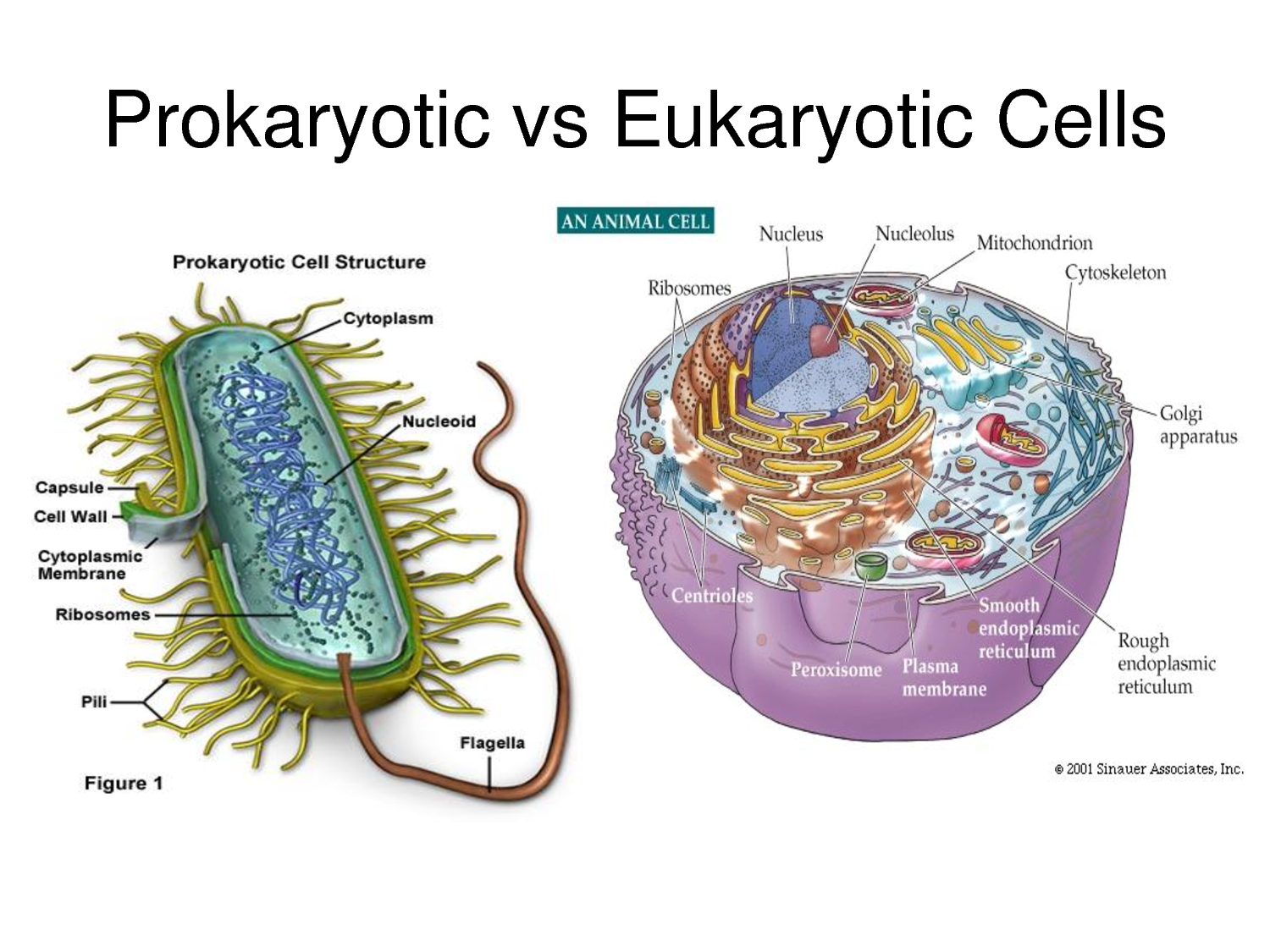
**Differences between eukaryotic and prokaryotic cells**

The difference between the structure of prokaryotes and eukaryotes is so great that it is considered to be the most important distinction among groups of organisms.

* The most fundamental difference is that eukaryotes do have "true" nuclei containing their DNA, whereas the genetic material in prokaryotes is not membrane-bound.
* In eukaryotes, the mitochondria and chloroplasts perform various metabolic processes and are believed to have been derived from endosymbiotic [bacteria](http://www.diffen.com/difference/Special:Information/Bacteria). In prokaryotes similar processes occur across the cell membrane; endosymbionts are extremely rare.
* The cell walls of prokaryotes are generally formed of a different molecule (peptidoglycan) to those of eukaryotes (many eukaryotes do not have a cell wall at all).
* Prokaryotes are usually much smaller than eukaryotic cells.
* Prokaryotes also differ from eukaryotes in that they contain only a single loop of stable chromosomal DNA stored in an area named the nucleoid, while eukaryote [DNA](http://www.diffen.com/difference/DNA_vs_RNA) is found on tightly bound and organised chromosomes. Although some eukaryotes have satellite DNA structures called plasmids, these are generally regarded as a prokaryote feature and many important genes in prokaryotes are stored on plasmids.
* Prokaryotes have a larger surface [area](http://www.diffen.com/difference/Area_vs_Perimeter) to volume ratio giving them a higher metabolic rate, a higher growth rate and consequently a shorter generation time compared to Eukaryotes.
* Genes :Prokaryotes also differ from eukaryotes in the structure, packing, density, and arrangement of their genes on the chromosome. Prokaryotes have incredibly compact genomes compared to eukaryotes, mostly because prokaryote genes lack introns and large non-coding regions between each gene. Whereas nearly 95% of the human genome does not code for proteins or [RNA](http://www.diffen.com/difference/DNA_vs_RNA) or includes a gene promoter, nearly all of the prokaryote genome codes or controls something.

**Source 3.** **Prokayotes vs Eukaryotes** **Collaborative Reading**

<https://www.youtube.com/watch?feature=player_embedded&v=4ASXK6RG_f0>

[](http://www.google.co.uk/url?sa=i&source=images&cd=&cad=rja&docid=8lnEmMBlLfraXM&tbnid=9zI_S-haEQIwIM:&ved=0CAUQjRw&url=http://www.docstoc.com/docs/125817436/Prokaryotic-vs-Eukaryotic-Cells&ei=LCzwUd-lL86S0QX58oHQDw&psig=AFQjCNGqU4E9bRG2c3XB97wDefGqeefnlw&ust=1374780837968911)