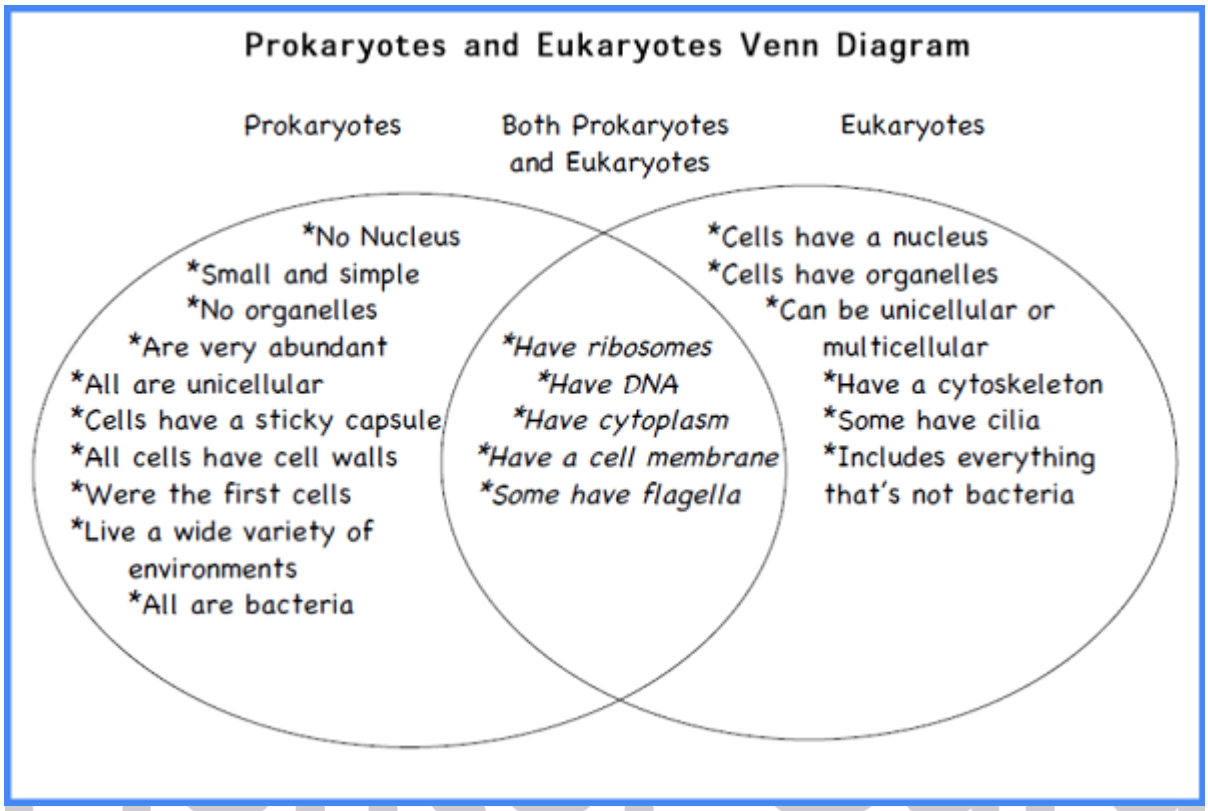
CSIR NET Life Science Unit 2

Types of Cells by Nucleus

When distinguishing between two different groups of organisms, the most important is to understand the difference between prokaryotes and eukaryotes

1. Prokaryotic cell.
2. Eukaryotic cell



Difference Between Prokaryotic Cell and Eukaryotic Cell

Prokaryotic Cell Structure	Eukaryotic Cells Structure
The size is 0.1- 5.0 um.	The size is 5-100 um.
Cell wall, if present, contains mucopeptide or mucopeptide or peptidoglycan.	The cell wall, if present, contains cellulose, peptidoglycan.
A typical **nucleus** is absent.	A typical nucleus made of the nuclear envelope, chromatin, nucleoplasm, nuclear matrix and nucleoli
DNA content is low	DNA lies inside the nucleus, mitochondria and plastids.

DNA is generally circular.	DNA is commonly linear
DNA is naked or without any association with histone proteins.	DNA is associated with histones.
Plasmids may occur.	**Plasmids** are rare
Cell membranes may have infolding called mesosomes.	Mesosome absent
Mitochondria are absent	Mitochondria are often present
Ribosomes are 70 S	Ribosomes are 80 S occur in the cytoplasm.
Cytoplasm does not possess Endoplasmic Reticulum.	The endoplasmic reticulum is usually present.
Golgi apparatus is absent	Golgi apparatus is present
Lysosomes, sphaerosomes and glyoxysomes are absent.	Lysosomes, sphaerosomes and glyoxysomes are present.
Microtubules and microfilaments are rare.	Microtubules and microfilaments are usually absent.
Sexual reproduction is absent.	Sexual reproduction is commonly present.
Microtubules and microfilaments are rare.	Microtubules and microfilaments are absent
Transcription occurs in the cytoplasm	Transcription occurs inside the nucleus
The chromosome is circular and remains attached to the cell membrane at one point	Each chromosome is linear with its two ends free
Cell division does not show the distinction of interphase and M phase	A distinction between the interphase and Mitotic phase occurs during the cell cycle.
Endocytosis and exocytosis are absent.	They occur in eukaryotic cells
Cyclosis is absent.	Cyclosis or cytoplasmic streaming is present.
Flagella are smaller	Flagella are longer. A flagellum shows the distinction of axoneme and sheath.
It may have pili and fimbriae.	Pili and fimbriae are absent
The chromosome has a single double-stranded circular DNA molecule and is not associated with histones.	Each chromosome has one linear double-stranded DNA complexed with histones.

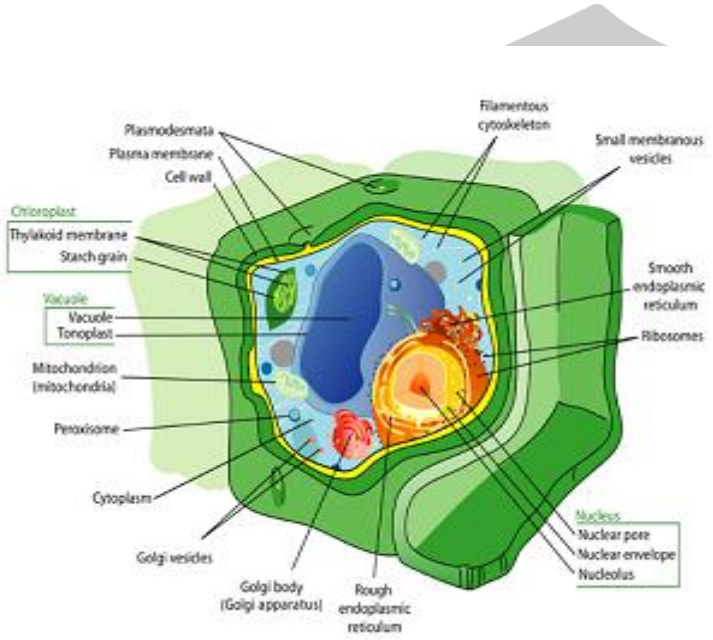
Points to Remember:

- **Mesokaryotic** cells contain a well-organised nucleus like that of eukaryotic cells, but its nucleus divides through amitosis like that of prokaryotes, so the cells are termed **mesokaryotes.**
- The smallest cell is Mycoplasma about 10 micrometre in size and the largest cell is an **egg cell** of an ostrich.
- The longest cell is the nerve cell.

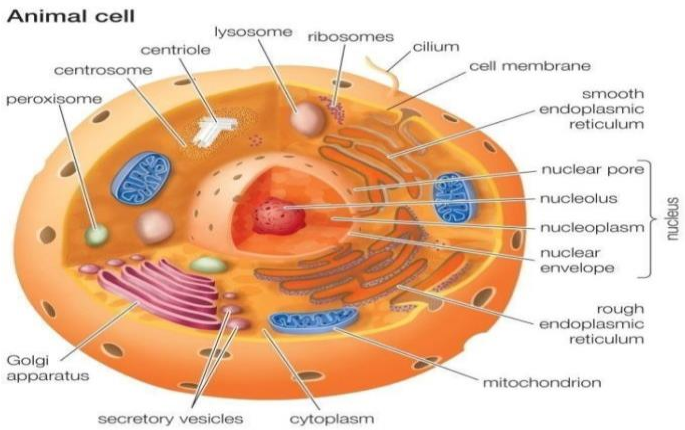
Types of Cells by Kingdom

There are two types of cells in the Animalia Kingdom. They are Plant Cell and Animal Cell. Here's the distinction between them.

Plant Cell



Animal Cell



Difference Between Plant Cell and Animal Cell

Plant Cell Structure	Animal Cell Structure
Cellulose cell wall present external to the cell	No cell wall, Outermost structure is cell membrane or plasma membrane
Vacuoles are usually large	Generally, vacuoles arc absent and if present, are usually small.
Plastids present.	Plastids are absent.
Golgi bodies are present in the form of units known as dictyosomes.	Golgi body well developed having 2 cisternae
Centriole absent.	Centriole present.
Ribosome :80S*(S =Svedberg unit)	Ribosome :70S*(S =Svedberg unit)