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Ans No :- 1

Prokaryotic cell:-

Prokaryotic cell are contain only a single membrane , which surrounds the cell as an outer membrane.

Organism that have prokaryotic cells are unicellular. All the, reaction with in the cytoplasm of the cell. A prokaryote reproduce through binary fission.

Eukaryotic cell:-

Eukaryotic cells are cells that contain a nucleus and organelles, and are enclosed by a plasma membrane.

Eukaryotic cells are larger and more complex than Prokaryotic cells. Eukaryotic cells contain a variety of structures called organelles, which perform various functions within the cell.

Organisms that have eukaryotic cells include protozoa, fungi, plants and animals.

Similar features between eukaryotic and prokaryotic cells:-

Cell Membrane:-

Both eukaryotic and prokaryotic cells have a lipid bilayer, which is an arrangement of phospholipids and proteins that acts as a selective barrier between the internal and external environment of the cell.

Genetic Material:-

Eukaryotic and prokaryotic cells both use deoxyribonucleic acid (DNA) as the basis for their genetic information. This genetic material is needed to regulate and inform cell function through the creation of RNA by transcription, followed by the generation of proteins through translation.

Ribosomes:-

Ribosomes facilitate RNA translation and the creation of protein, which is essential to the functioning of both eukaryotic and prokaryotic cells.

Cytoplasm

The cytoplasm is the medium in which the biochemical reactions of the cell take place, of which the primary component is cytosol.

In eukaryotic cells, the cytoplasm comprises everything between the plasma membrane and the nuclear envelope, including the organelles; the material within the nucleus is termed the nucleoplasm. In prokaryotes the cytoplasm encompasses everything within the plasma membrane, including the cytoskeleton and genetic material.

Ans No :- 2

Microscope:-

It is an optical instrument that uses a Lens or combination of lenses to produce highly magnify image of small specimens.

Role of microscope

- Lenses are arranged in sequence.
- To enlarge the image.
- Separate the details of two image/object.
- Difference in light intensity between image and backward intensity to produce the details visible to eye.

Types of microscope.

1. Simple microscope:-

It is a microscope that use only lense for magnification.

2. Compound microscope:-

A microscope which have at least two lense, including an objective lense, and eye piece.

3. Electronic microscope:-

It is a type of microscope which is use a bean of electron to create an image of the specimen use highly energetic electron to examine an object.

4. contrast microscope:-

That phase difference of light rays transmitted by different portion of an object to create an image.

5. Interference microscope:-

A microscope utalized light interference .phenomena to create two superimposed image of an object making possible the observation of transparent objects without using the staining technique.

Ans No:-3

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. 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 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 to volume ratio giving them a higher metabolic rate, a higher growth rate and consequently a shorter generation time compared to Eukaryotes.

The End.