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Q7: Prokaryotes:

Ans: They are unicellular.

They lack a membrane bound nucleus (Nucleon) mitochondria or any other membrane-bound organelle.

SHAPE

Prokaryotic organisms exist in different shape which includes spherical, rod, flat Coccus, bacillus, Spirochete and some of them are shapeless as they do not possess constant shape.

Size:

Their size range from $1\mu\text{m}$ to $10\mu\text{m}$ but in a few cases they may vary in their size from $0.2\mu\text{m}$ to $75\mu\text{m}$.

Most spherical bacteria have diameter of 0.5 to $2\mu\text{m}$ and rod shaped cells are generally 0.2 to $2\mu\text{m}$ wide and 1 to $10\mu\text{m}$ long.

Locomotion:

There are only few Prokaryotes which can move swim spin and rotate with the help of the helical shaped members called flagella, while others are non motile.

Components:

They consist of very few internal structures like cell wall, ribosome, plasma membrane, cytoplasm along with circular strands of DNA.

They have cell wall, which is made of Peptidoglycan capsule, cell wall - tougher middle layer (Peptidoglycan

cell membrane - delicate inner skin

cytoplasm - inner liquid filling
DNA in one big loop
Ribosome - For building proteins

Eukaryotes :

A cell is defined as eukaryotes if it has a membrane-bound nucleus.

Any organism composed of eukaryotic cells is also considered a eukaryotic organism.

Biologists do not know of any organism that is composed of both eukaryotic and prokaryotic cells. However, many different types of prokaryotic cells usually bacteria can live inside large eukaryotic organisms.

All of the organisms we can see with the naked eye are composed of one or more eukaryotic cells with most having many more than one. This means that most of the organisms we are familiar with are eukaryotes.

Here are some examples of Eukaryotes:

Animal multicellular.

Plants multicellular.

Protists (algae, plankton etc.)

Unicellular

Plasma membrane:

The Plasma membrane in eukaryotic cells is responsible for controlling what gets into and out of the cell.

Domain: Eukarya (Protists)

Fungi, Plant and Animals

10-100 μm
DNA located nucleus
organelles.

Q2: Normal Flora:

Ans: Normal flora are microorganisms that are always present on or in a person and usually they do not cause any disease e.g. bacteria, Fungi.

The normal microbial flora is relatively stable with specific genera populating various body regions during particular periods in an individual's life.

Significance :

First the germ-free animals lived almost twice other investigation showed that germ-free animals have anatomic, physiologic and immunologic features not shared with conventional animal.

It is found in many sites in human body including the skin especially the moist areas such as the groin and between the toes.

The normal flora in humans usually develops in an orderly sequence or succession after birth leading to the stable population of bacteria that make up the normal adult flora.

Skin flora
Intestinal flora
Nail flora
Conjunctival flora

Advantage:

These normal flora provide us with many benefits which include. They prevent colonization by pathogens by competing for attachment and nutrients. Some synthesize vitamins that are absorbed as nutrients by the host (e.g. B₁ and B₁₂).

Some produce substances that inhibit pathogenic species.

Disadvantage:

Although the normal flora can inhibit pathogens many of its members can produce disease in humans.

Anaerobes in the intestinal tract are the primary agents of intra-abdominal abscesses and peritonitis.

Treatment with antibiotics may allow certain anaerobic species to become predominant and cause disease.

Q3: Differentiate:

Host :

Is able to exist independently or might depend on microbes.

Macro organism usually multicellular
Phylogenetically higher level,
eukaryote (animal, plant) it
could be Prokaryote.

Parasite:

Living on/in the host - damages
Can cause disease obtaining
necessities of life from the
host.

Non living: unique Protein
Region, nucleic acid (Viroid)

Non living / living: virus,
Prokaryote, bacterium

Eukaryote: microscopic, fungi
Protozoa, Helminths.

vast majority of microorganism
living in the environment

Endotoxin:

LPS) in gram negative bacteria - cell wall major characteristics

Heat Stable Conserved in many gram - bacteria, weakly immunogenic (as antigen)

Importance:

Recognition by innate immunity.

Exotoxin:

Secreted by living bacteria effect on host cells.

Characteristics:

Polypeptides (mostly A+B)

Subunits) good antigens well defined structure and effect.

Plant cell :

Have chloroplasts

Have vacuoles

Can absorb liquids

Creates food by Photosynthesis

Have cell wall made of cellulose.

Animal cells :

Have no cell walls

Eats other cells

Cannot absorb much liquid

because it has no cellulose

Can form a variety of shapes.

Have lysosomes.

Archae

Bacteria:

cell type

Prokaryotic

Prokaryotic

cell wall

Non Peptid
oglycanContain
Peptidoglycanmembrane
lipidsEther
linked

Ester linked

First amino
acid in all
proteins

Methionine

Formyl
methionineAntibiotic
Sensitivity

No

Yes

DNA
organizationCircular
with histones

Circular

Known for

Extreme
environment
none infect
humansBoth helpful
and harmful
relationships
with humans

Protozoa :-

Protozoa are typically unicellular microscopic eukaryotic organisms that lack a cell wall. They are not photosynthetic and move by flagella or cilia.

In oceans and lakes the small 2-10 μm long flagellates are the most important predators on bacteria.

Fungi :-

Fungi (yeasts and molds) are typically unicellular microscopic, eukaryotic fungi that reproduce asexually by budding.

5-10 μm in diameter

Fungi are uncommon in aquatic environments.