The title of the unit is Unit 1 microbes.

Module name is Archaebacteria and

myself Sushma Salgaonkar . Outline.

Introduction characteristics types of

archaebacteria economic importance.

Learning outcomes they

are as follow describes,

the structure of Archaebacteria

cites the different examples of it

described types of archaebacteria

and economic importance of Archaea.

This classification of Archaebacteria.

Kingdom Monera is divided into

Archaebacteria and Eubacteria.

Archaebacteria is further classified

into methanogens halophiles thermophiles.

bacteria is further

divided into cyanobacteria.

Bacteria and bacteria is further

classified into two ie 1st gram positive bacteria

and 2nd is gram negative bacteria.

In this module we are going

to deal with Archaebacteria.

Archaebacteria introduction This

is the structure of Archaebacteria,

which is also known as ancient bacteria.

They are unicellular.

Prokaryotic heaving simple organization.

They are obligate anaerobes.

They do not require oxygen.

They live in extreme environments.

Having Nutrition mode:
Heterotrophs/ Autotrophs
nutrition.
General characteristics.

First one is size.

Individual archaebacteria varies from 0.1- 15 micrometers in diameter
shape.

Spiral , Rod, sphere , pleomorphic, etc.

Structure under this cell wall

which is made up of pseudo peptidoglycan.

And it is made up of an acetyl glucosamine.

And N- acetyltalos aminouronic acid

which is linked by beta 1/3 bond.

Cell wall functions are as follow , it

provides shape and support.

It also protects cell busting

under hypotonic condition.

Become since beta 1/3

glycosidic bond is Linked to .

So insensitive.

They prevent the cell

dissolving from host Lysosome .

Next is cell membrane,

which is made up of ether linked

branched aliphatic chain L,

glycerol and phosphate group.

This is the unique structure of

Archaebacteria, which makes them

to live in extreme conditions.

Cell content.

This is a transverse section

of archaebacteria .

It has capsule.

Simple cell wall plasma membrane, flagella

Cytoplasm , ribosome.

Then chromosomal DNA, plasmid etc.

So the membrane bound cell

organelles are absent.

They have thick cytoplasm which

contain all compounds which are

required for nutrition and metabolism.

Plus me they are antibiotic resistance.

Next is genetic material wherein

single circular DNA is present

and they show transcription

and translation process which

is very similar to eukaryotes.

Next is RNA polymerase.

They are several in number and

consist of complex subunit which

is very similar to eukaryotes.

Protein synthesis.

This is the structure of t RNA,

which has acceptor arm, pseudo

uridine variable loop anticodon.

Loop, dihydro uridine loop.

So, so the first amino acid in

protein synthesis is Methionine .

And there is no thymine in the common arm of t RNA.

Reproduction is a Asexual l type,

binary fission.

Budding and fragmentation is present.

In general, introns are present exhibit

neither glycolysis not krebs cycle.

Their nature is nonpathogenic.

There are two types of Archaea,

one is gram positive and gram negative.

The differences rRNA suggested they

diverge from both prokaryotes and eukaryotes.

They can be sent a very high pressure

of more than 200 atmosphere.

Next is types of Archaebacteria,

which is divided into seven types.

Such as methanogens,

thermophiles, Helophfiles,

hyperthermophiles , Psychrophiles,

Acidophiles, analkalilcala files.

So the first one is methanogen,

which is a largest group in Archaea

found living in anaerobic environment

such as Swamp Marsh, Lake sediment,

digestive tract of animal,

cattle and termites.

Then human colon etc.

They are chemoautotrophs.

They use hydrogen as an electron and reduce

carbon dioxide to form methane and water.

Examples like *Methanobacterium*

and methanococcus.

Thermophiles or Thermo acidophiles

as the name suggests.

Thermoacidophiles means they

live at high temperature.

An acid examples hot sulphur spring which

is present in Yellowstone National Park and.

Deep sea.

Examples like f*erroplasma acidophilum,picrophilus oshimae*

, thermoplasm,

.

Helophiles, they live in water with

high concentration of salt examples,

great Salt Lake in US and dead sea.

High internal salt content

maintains osmotic balance examples.

H*eloferax Volcanii helcococcus.*

Helo bacterium.

Hyperthermophiles lives in

very high temperature.

Present record is 121 degrees Celsius.

Psychrophiles leaves in cold

temperature best at 4 degrees Celsius.

Acidophiles live in low pH.

Alkaliphiles living high pH.

Next is the economic importance of Archaea.

Due to their extremophile nature.

This helps this researcher to

learn about climatic condition,

environment and their

survival on ancient Earth.

Phylogenetic importances that

helps in studying their homology

and establish their phylogeny.

They also play important role in

carbon nitrogen sulfur cycles.

Methanogens can grow in bio gas for fermenters
and decomposes cow dung into methane gas,

which is a domestic gas used for cooking.

Methanobacterium ruminantium is present

in the guts of ruminating animals

which help them to digest cellulose.

Sulfobolus acidocaldarius play

important role in bleaching purpose.

In biotechnology this helps in

production of heat resistance,

enzymes and antibodies antibiotics.

And used as a biosensor.

Heat resistant enzyme is

also used in detergent.

They can be also used in petroleum spill,

which is a contaminated sites.

Taq polymerase is enzyme which is

extracted from *thermus aquaticus.*

It is used in PCR for DNA fingerprinting.

Next is Glossary.

References and weblinks

thank you.