

➤ Differences between Archeae and Bacteria

1. Cell Wall

The cell wall of bacteria is composed of peptidoglycan while cell wall of Archeae lacks peptidoglycan. Cell wall of Archeae is made of S-layer "S" stands for surface.

S-layer is made of glycoproteins

2. Cell membrane

Cell membrane of both Bacteria and Archeae is made of lipoproteins but cell membrane of Archeae is composed of different types lipids as compared to bacteria.

3. Ribosomal RNA (rRNA)

Archeae possess a unique type of rRNA. There are various types of RNA species which is different in Archeae as compared to bacteria.

➤ Characteristics of Archeae

It is the distinct and unique group of prokaryotes.

➤ **Habitats:** Archeae survive in both extreme and moderate conditions.

Archeae is divided into groups.

1. Extremophiles
2. Methanogens

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1. **Extremophiles:** Such Archeae survive in extreme conditions of salts and temperature. They are further divided into two classes:

- i. Extreme Halophiles
- ii. Extreme Thermophiles

Extreme-Halophiles	Extreme-Thermophiles
<ul style="list-style-type: none">• They survive in highly saline (salty) conditions e.g. Utah's great Salt Lake (USA) and Death Sea.• The cell wall & proteins of such Archeae tolerate high salty environment, if salinity drop below certain level then they can't survive.	<ul style="list-style-type: none">• They survive in hot climatic conditions e.g. sulphur rich volcanic spring as high as 90°C.• In such conditions other organisms can't survive due to denaturation of proteins & DNA.• Some Archeae form dense community at 120°C above the active volcano 150 feet below the surface of Pacific Ocean near Macdonald Mount Sea.

2. Methanogens

Methanogens live in extreme anaerobic conditions. Methanogens have unique method of getting energy i.e. they utilize CO_2 to oxidize hydrogen and produce methane as by product.

Habitat:

Methanogens are found in:

- Marshy places (waterlogged area)
- Bottom of lakes
- Some are found in intestine of animals
- Beneath the thick ice layer
- Greenland