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Commentary

Note on Types and Importance of Archaebacteria

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INTRODUCTION

Archaebacteria are thought to be the world's earliest living organisms. They belong to the Monera kingdom and are categorised as bacteria because, under a microscope, they look like bacteria. Apart from that, they are not related to prokaryotes in any way. They do, however, share a few traits with eukaryotes.

Following are the important characteristics of archaebacteria. They are only archaebacteria can undergo methanogenesis because they are obligate or facultative anaerobes, meaning they thrive in the absence of oxygen. The Archaebacteria's cell membranes are made up of lipids. The Archaebacteria's stiff cell wall gives them shape and support. In hypotonic situations, it also protects the cell from bursting. Pseudomurein is a component of the cell wall that protects archaebacteria against the effects of Lysozyme. Lysozyme is an enzyme produced by the host's immune system that dissolves harmful bacteria's cell walls. They lack membrane-bound organelles like nuclei, endoplasmic reticulum, mitochondria, lysosomes, and chloroplasts. All of the substances essential for nourishment and metabolism are found in its thick cytoplasm. They are known as extremophiles because they can exist in a wide range of settings. They can live in both acidic and alkaline aquatic environments, as well as at temperatures over boiling. They can resist more than 200 atmospheres of pressure. Because they carry plasmids with antibiotic resistance enzymes, Archaebacteria are resistant to key antibiotics. Binary fission, or asexual reproduction, is the mode of reproduction. They perform unique gene transcription. They diverged from both prokaryotes and eukaryotes based on differences in their ribosomal RNA.

Types of archaebacteria

Archaebacteria are classified on the basis of their phylogenetic relationship. The major types of Archaebacteria are discussed below.

Crenarchaeota: The *Crenarchaeota* are *archaea* that live in a variety of environments. Extreme heat or high temperatures are not a problem for them. They have unique proteins that allow them to function at temperatures of up to 230°C. They can be found in deep-sea vents and hot springs, as well as other hot-water environments. Thermophiles, hyperthermophiles, and thermoacidophiles are among them.

Euryarchaeota: Unlike any other living creature on the planet, they can thrive in extremely alkaline environments and create methane. Methanogens and halophiles are examples of these organisms.

Korarchaeota: They have genes that are shared by *Crenarchaeota* and *Euryarchaeota*. All three are thought to be descendants of the same ancestor. These are said to be the world's earliest living organisms. Hyperthermophiles are among them.

Thaumarchaeota: These include *Archaea* that oxidize ammonia.

Nanoarchaeota: This is an *Archaea* obligatory symbiont from the genus *Ignicoccus* .

Importance

The importance of archaebacteria can be understood from the following points. Archaebacteria have forced scientists to rethink the traditional notion of species. Species are a group of organisms that share gene flow. The archaebacteria have cross-species gene flow. The Archaebacteria are methanogens, which means they can produce methane. They degrade organic waste to release methane, which can then be utilized for cooking and illumination. It's a methane-producing bacteria present in people's intestines. It aids in the digestion of complex plant carbohydrates and the extraction of energy from the food we eat. Some of them aid in the prevention of colon cancer. *Euryarchaeota* bacteria are found in abundance in the guts of people with colon cancer and obesity. Archaebacteria are unable to photosynthesise and exhibit extensive gene transfer between lineages. The discovery of Archaebacteria has led scientists to conclude that life may thrive in even the harshest of environments.

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