

Prokaryote Encyclopedia Article

Prokaryote

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Prokaryote

Prokaryotes are cells or organisms that lack a nuclear membrane and membrane bound organelles.

Prokaryotic cells differ from eukaryotic cells in important ways. Prokaryotic cells are usually much smaller than eukaryotic cells, and are able to grow and divide rapidly. **Eukaryotes**, with a true membrane-bound **nucleus** and discrete membrane-bound organelles, are able to compartmentalize functional activity into structural components and organelles such as **mitochondria**, chloroplasts, lysosomes, endoplasmic reticulum, and Golgi complex. Prokaryote cells carry out the essential activities that take place in eukaryotic organelles without the benefit of these specialized structures.

Prokaryotes and eukaryotes differ to some extent in their biochemical composition, particularly with respect to their lipid composition. These biochemical differences also allow prokaryotes to differ in many aspects of their metabolism.

Other than the morphological differences, perhaps the most significant of the differences between prokaryotes and eukaryotes involves the nature of genes and the manner in which genetic information is expressed. The genes of prokaryotes are simpler and do not contain the large amounts of material incidental to **protein synthesis** found in eukaryotes.

Prokaryotes have been present on Earth for much of its history, and in one form or another have occupied nearly all potential habitats. Although some prokaryotic **bacteria** cause disease in plants and animals, the overwhelming majority do not. Many prokaryotes are benign and necessary inhabitants of the larger ecosystem.