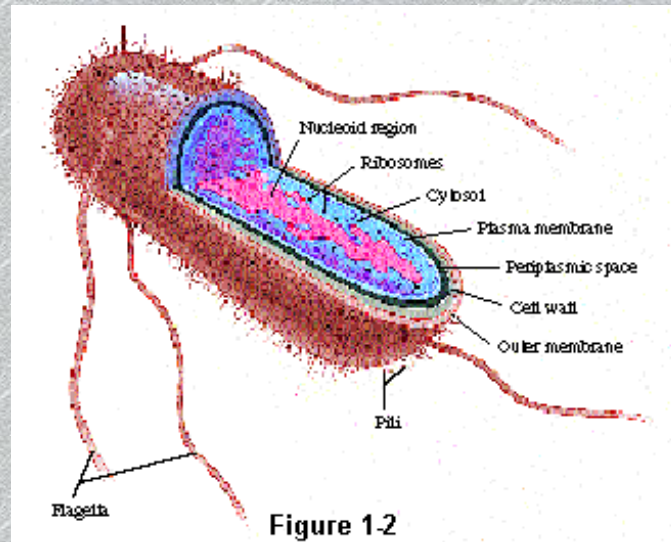


Prokaryotes

The Basic Structure Of A Prokaryote

Prokaryotes are the single-celled organisms, such as bacteria, and are roughly **one micrometer** in diameter. Unlike Eukaryotes, prokaryotes do not have a nucleus that houses its genetic material. Rather, the genetic material of a prokaryote cell consists of a large DNA molecule compacted in an area of cytoplasm called the **nucleoid region**. The nucleoid region is protected and encased by the cell wall, or **cell membrane**, the outer layering of the cell (similar to human's skin). Finally, a **flagellum (flagetta - plural)**, a rudder-like device, affords the prokaryote the luxury of mobility. Refer below to the figure for an illustration of the Prokaryote's structure.



General Characteristics

One differentiating characteristic is that prokaryotes are **asexual**, meaning their offspring nearly always bear the *exact* characteristics of the parent cell. (In fact, the cell essentially replicates itself according to its own DNA and then divides itself from the newly created cell.) Since the Prokaryotes exhibit this asexual behavior as opposed to **sexual** behavior, where a recombination of chromosomes occur to form unique entities (as with humans), evolution of the prokaryotic cell has been fairly stagnant over its two billion year lifespan. Additionally, at the time of Symbiosis, prokaryotes were **anaerobic**, that is, they did not respire oxygen as a fundamental necessity to live. As far as **nutrition distribution**, the small size of prokaryotes provides a high ratio of surface area to volume, making diffusion an adequate means for distributing nutrients throughout the cell.

Abundance

Prokaryotic cells and fossils have been found in almost every conceivable environment on the earth, from hot sulfur springs to beneath the ocean floor and within larger cells. Overall, Prokaryotes account for a significant portion of the past and present **biomass** on earth.

