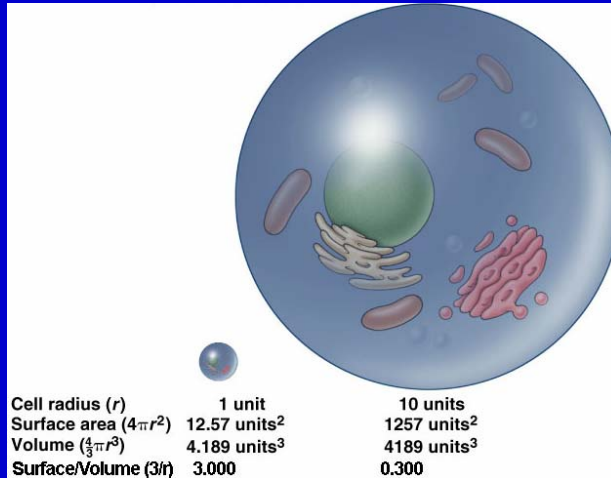


Why are cells small?

As cell size increases the volume increases much faster than the surface area.

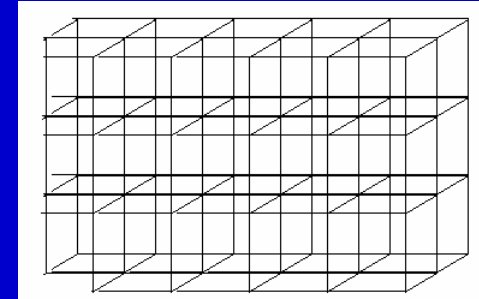
Cells obtain nutrients, gain information and rid waste through their plasma membrane.



As cell size increases, a cell's ability to exchange with its environment becomes limited by the amount of membrane area that is available for exchange.

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Robert Hooke - 1665 - using an early microscope viewed cork and saw many repeating box-like structures and called them "cells."



What he saw were spaces surrounded by walls that once contained living cells.

Since Hooke's first observations what is known about cells has increased greatly.

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Cell Theory

- Cells are the fundamental unit of life - nothing less than a cell is alive.
- All organisms are constructed of and by cells.
- All cells arise from preexisting cells. Cells contain the information necessary for their own reproduction. No new cells are originating spontaneously on earth today.
- Cells are the functional units of life. All biochemical processes are carried out by cells.
- Groups of cells can be organized and function as multicellular organisms
- Cells of multicellular organisms can become specialized in form and function to carry out subprocesses of the multicellular organism.

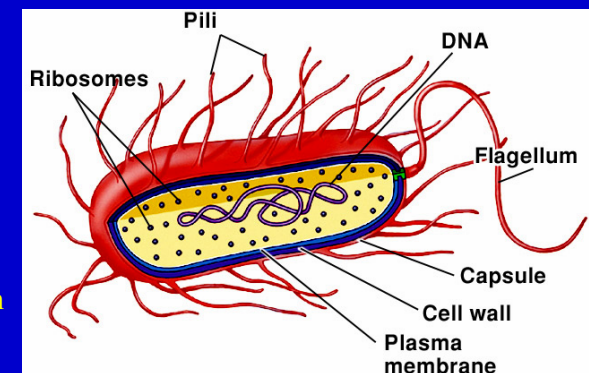
7

Prokaryotic cell structure

small, with a plasma membrane surrounded by a rigid **cell wall** - in many the cell wall is made of - a carbohydrate cross-linked with polypeptides
cell wall may be covered with a **capsule** made of polysaccharides

few or no membrane enclosed spaces within the cytoplasm
no nucleus - DNA is in a region called the **nucleoid**

DNA is circular and **naked** (has no protein associated with it)



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