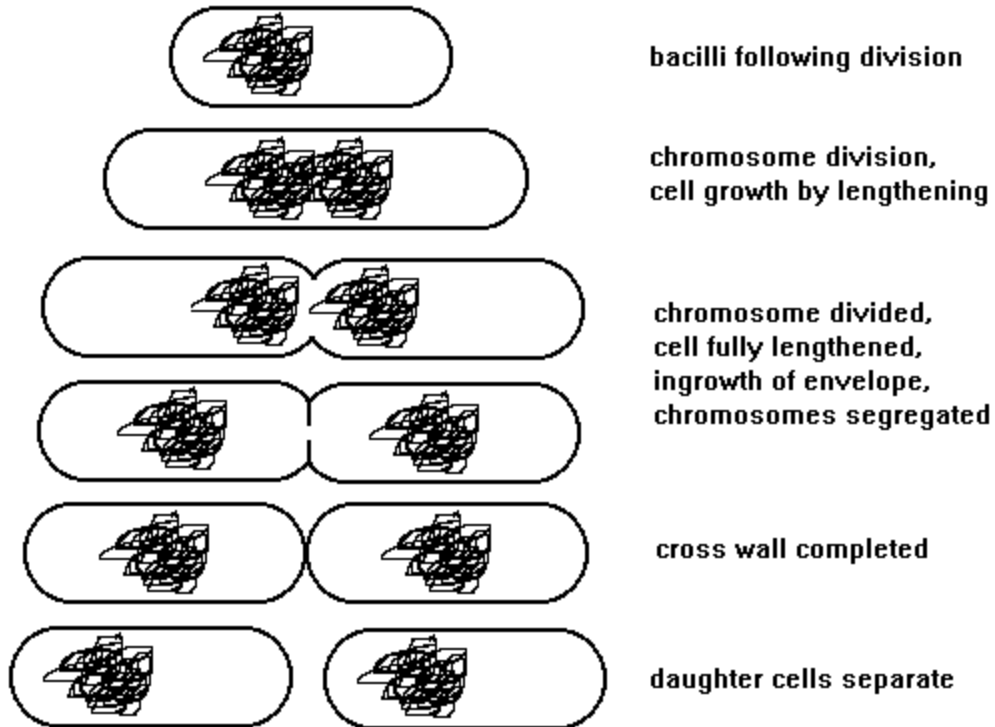


Binary Fission



Binary fission is the process by which all bacteria reproduce. Binary fission results in the separation of a single cell into two identical daughter cells each containing at least one copy of the parental DNA. This process is carried out in a stepwise manner. First the bacterial cells elongate. Then the bacterium replicates its chromosomal DNA. Next the cell envelope pinches inward, eventually meeting. This results in a cross wall being formed and ultimately two distinct cells are present. This is more clearly shown in the figure below.

Binary Fission



Each resulting daughter cell is a clone of the parent cell. Therefore this form of reproduction does not allow for differences in the bacterial genome. However, occasionally a mistake is made as the DNA is copied and one of the new cells may have a slight difference, called a mutation.

Bacteria carry out binary fission very efficiently and, when conditions suit them perfectly, can divide once every twenty minutes.