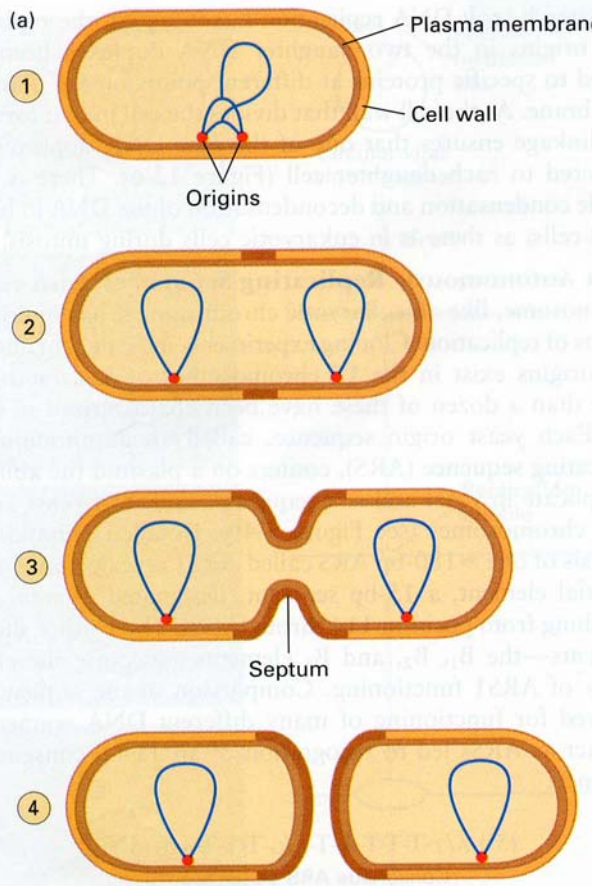

◀ FIGURE 12-6 DNA replication and cell division in a prokaryote. (a) In a bacterial cell, the partially replicated circular chromosome (blue) is attached to the plasma membrane at the origins of the two daughter DNAs (step ①). The origins of the replicated chromosomes have independent points of attachment to the membrane and thus move farther apart as new membrane and cell wall forms midway along the length of the cell (step ②). Continued formation of more sections of membrane and cell wall gives rise to a septum dividing the cell (step ③), leading to division of the cytoplasm into two daughter cells, each with a chromosome attached to the plasma membrane (step ④). (b) The origin of each DNA molecule can be localized to a particular region of each daughter cell at sequentially later stages in the cell-division process. *B. subtilis* was engineered to express a chimeric protein consisting of a bacterial protein that binds to a segment near the origin of DNA replication fused to GFP, a green-fluorescing protein from the jellyfish *A. victoria* (see Figure 5-7). Shown here are images of growing engineered cells viewed in the fluorescence microscope. The two well-separated green fluorescence spots indicate the location of the daughter origins; these separate from each other as division proceeds. [Part (b) from C. D. Webb et al., 1997, *Cell* **88**:667; courtesy Dr. Richard Losick, Harvard University.]