

REPRODUCTION IN BACTERIA

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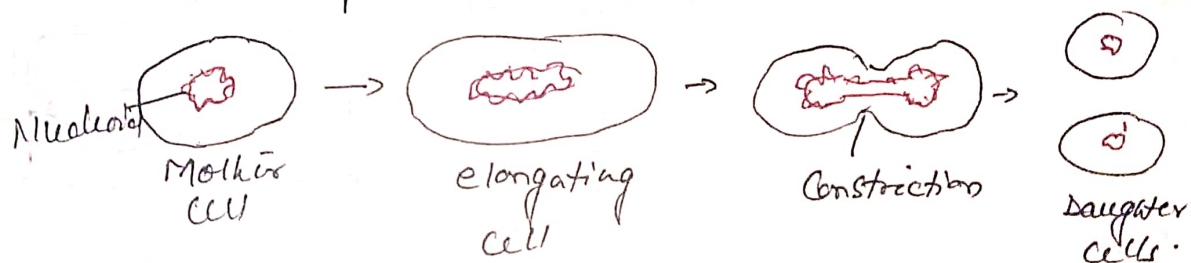
Bacteria reproduce

- by
- (i) vegetative
 - (ii) asexual, and
 - (iii) genetic recombination or sexual means.

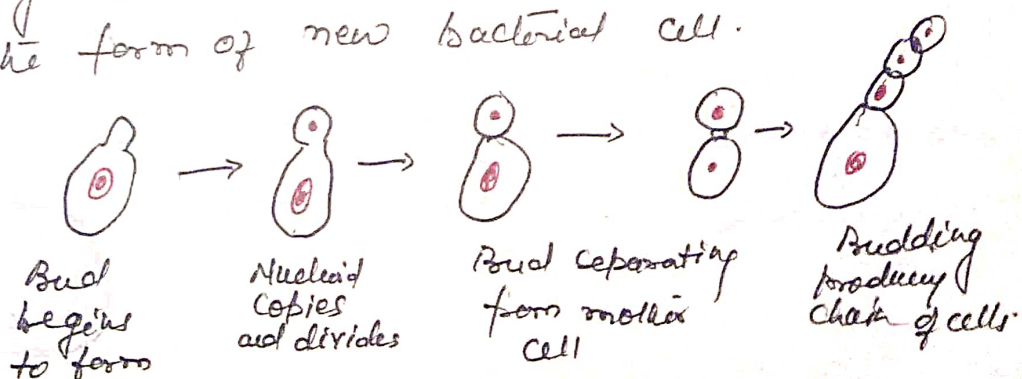
(1) VEGETATIVE REPRODUCTION:

Mainly by Binary fission and budding

(1) Binary fission: This is the commonest method of reproduction found in bacteria. This involves the elongation of cell and formation of a transverse septum as well as division of the chromosome. Both the events occur simultaneously and two genetically identical cells are produced.



(2) Budding: Commonly observed in the genus Hyphomicrobium. In this process, the cell produces outgrowth called buds. Cytoplasm and the chromatin material enter the bud which later separates from the parent cell by constriction. The separated bud takes the form of new bacterial cell.



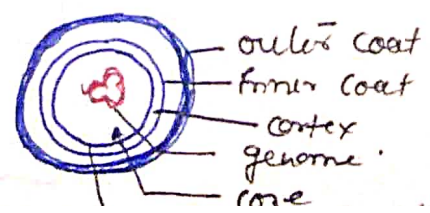
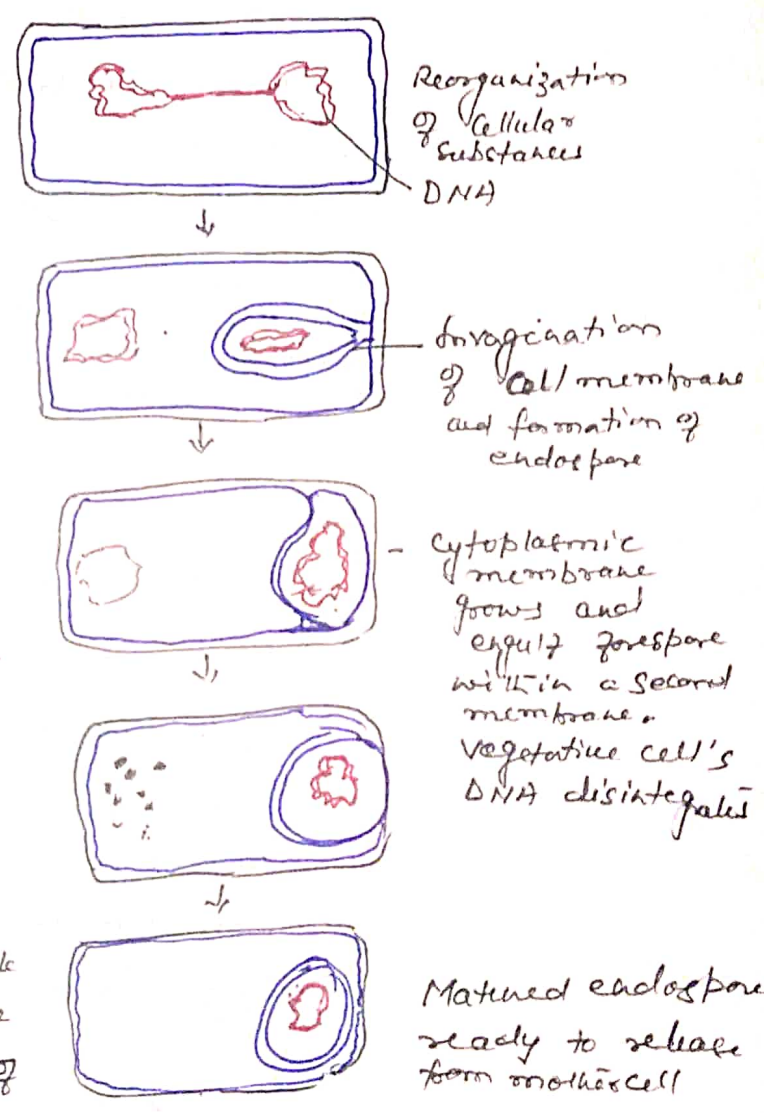
(II) ASEXUAL REPRODUCTION:

By endospore, conidia, zoospore and cyst formation.

(1) Endospore: This is the most common method of asexual reproduction.

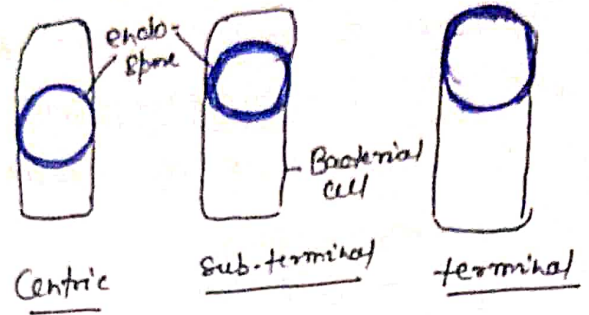
- Endospores are organs of preservation rather than reproduction. They can withstand extreme conditions.
- Formed in bacteria like Clostridium, Bacillus etc under unfavourable condition.
- A single endospore is formed in one cell.
- The endospore formation begins with the invagination of cell wall followed by invagination of the cell membrane.

- A septum is laid down around the concentrated genome.
- The released endospore has a cortex and spore coat.
- The cortex of the endospore is a complex of calcium, dipicolinic acid and peptidoglycan.
- This complex forms about 5-10% of the dry weight of the endospore and is responsible for the resistance to the extremes of physical and chemical forces.



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- The endospores are smaller than the parent cell.
- According to the place of formation, the endospores may be central, terminal and subterminal.



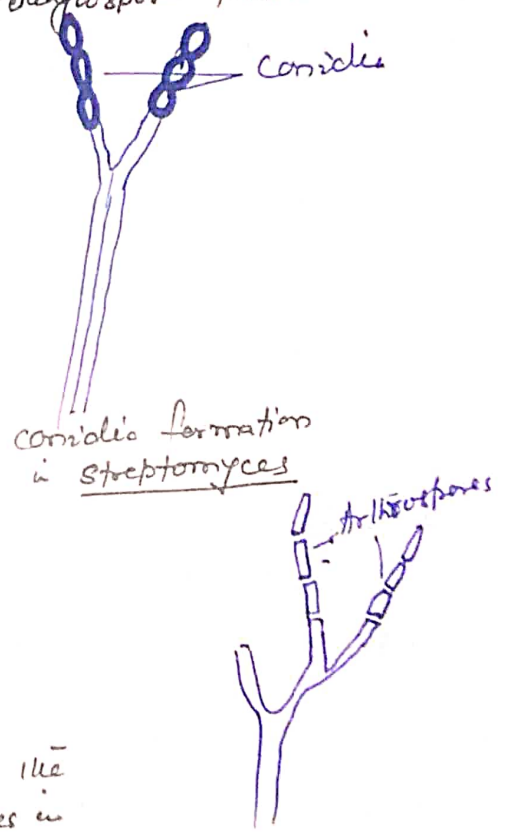
- With the advent of favourable condition, the spore coat breaks open and a new bacterium is produced.

2. Conidia, sporangiospores: In some bacteria

like Streptomyces, the asexual reproduction occurs by conidia or sporangiospore formation.

They are formed by multiple cleavage and fragmentation in the mycelial forms.

When the spores are not in any sac like structure, they are called conidia or conidiospores or arthrospores. When they are formed in a sac, they are called sporangiospores.



3. Cyst: In Azotobacter, the

encystment occurs by changes in the cell wall and the whole cell is transformed into cyst (unlike endospore formation). Bacterial cyst differs from endospores in the way they are formed.