

MODULE 3

How do organisms reproduce?

CLASS: 10

SCIENCE

Key points:

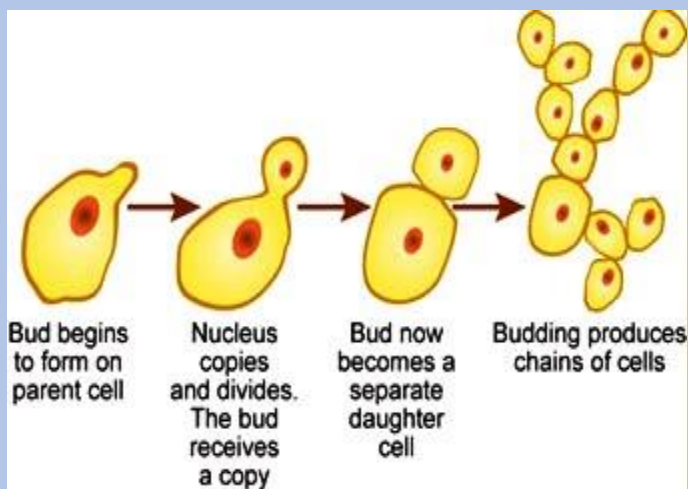
Methods of asexual reproduction continued.....

4. budding
5. vegetative propagation
6. Tissue culture

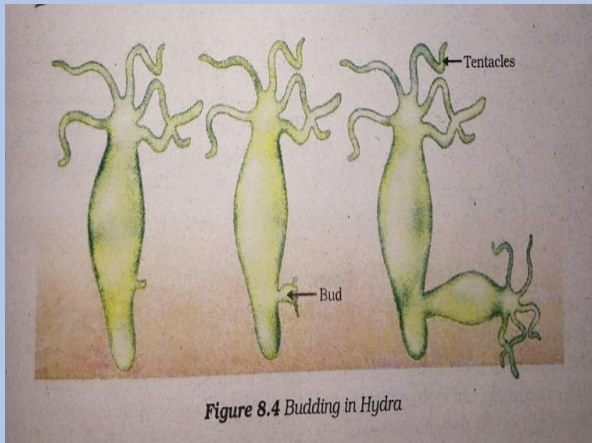
4 BUDDING

In this mode one or more unicellular or multicellular outgrowths called buds develop on the parent body which upon detachment can form a complete new organism. (Each bud is formed by repeated cell division at specific site of the parent body).

a) **Budding in Yeast:** Bud formed is unicellular. Nucleus divides first, passes into bud and then a complete new daughter cell is formed. Before a bud detaches itself from the parent yeast cell, its own bud starts forming and we get a chain of buds. Thus, budding is very rapid in yeast.



b) **Budding in Hydra** : A small multicellular bud is formed in the lower half of the body. This bud elongates and develops mouth and tentacles and finally separates from the parent body to become a complete new individual.



Note: Some organisms show internal budding like fresh water sponges during unfavourable conditions. These internal buds are called gemmules.

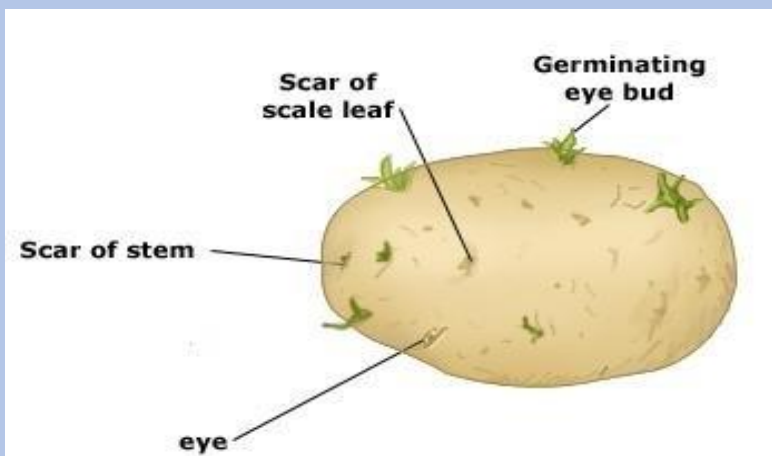
5. VEGETATIVE PROPAGATION

IT is the process of growing a new plant from the vegetative parts of a plant like root, stem or leaves

For eg: **Through root:** Sweet potato, carrot etc. Roots of some plants develop adventitious buds on them which sprout under suitable conditions and get separated and start growing naturally.



Through stem: potato, ginger



In potato eyes or nodes are present. Each eye has one or more buds. New plants are produced from these buds.

THROUGH LEAF: BRYOPHYLLUM



In Bryophyllum adventitious buds are present in the notchy margins of leaf. When leaf comes in contact with moist soil new plantlets develop along the margins.

NOTE: Adventitious bud means the bud that develop at the places other than shoot apical meristem(tip of the stem) or or in the leaf axil. These buds develop on leaves ,roots and stem.

ADVANTAGES OF VEGETATIVE PROPAGATION

1. Plants raised by vegetative propagation bear flowers and fruits earlier than produced from seeds.
2. It is possible to propagate plants like banana, rose etc. which have lost the capacity to produce seeds.
3. All plants produced are genetically similar enough to the parent plant to have all its characteristics.

DISADVANTAGE

IF there is any disease in the parent plant that will be transmitted to the new plant.

6. TISSUE CULTURE

1. In tissue culture new plants are grown by removing tissue or separating cells from the growing tip of the plant
2. The cells are then placed in an artificial medium where they divide to form a small group of cells called callus.

3. The callus is transferred to another nutrient medium which contains hormones for growth and differentiation.
4. The plantlets are then placed in the soil so that they can grow into mature plants.

Reference : NCERT class 10 Science

Images from google.