

Reproduction in Lower and Higher Plants

clones without gametes, then a flower that stakes everything on one pollen tube

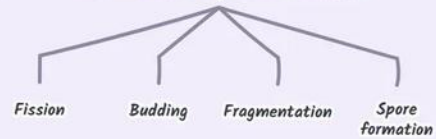
Asexual Reproduction

- no fusion of gametes: progeny is genetically identical to the single parent, a **clone**
- fragmentation: the body breaks into pieces, each piece regrows into a new individual, e.g. Spirogyra
- budding: an outgrowth (bud) forms, grows, then separates, e.g. yeast, Protosiphon
- spore formation: motile flagellated zoospores released, grow independently, e.g. Chlamydomonas; also conidia (Penicillium), gemmae (Marchantia)
- binary fission: the parent cell splits into two, e.g. Chlorella, Diatoms, Chlamydomonas

no meiosis, no gamete, no new combination: every asexual route just copies the parent forward

Four modes, one idea

Asexual reproduction



one parent, four different ways to split off a genetically identical copy

Vegetative propagation: natural vs artificial

Natural

- root: sweet potato, Asparagus, Dahlia
- leaf: Bryophyllum, Kalanchoe, Begonia
- underground stem: rhizome (ginger, turmeric), tuber (potato), bulb (onion), corm (Colocasia)
- creeping stem: runner (grass), stolon (strawberry), sucker (Chrysanthemum)
- bulbils: small buds that drop off and grow, e.g. Agave

Artificial

- cutting: a piece with one or more buds is rooted directly, e.g. rose, Bougainvillea
- layering: a branch is bent into the soil, roots form, then it is cut free, e.g. jasmine, grapevine
- grafting: a multi-bud scion is joined onto a rooted stock, e.g. apple, pear
- budding (here) = grafting with just one bud on the scion
- tissue culture / micropropagation: small tissue piece grown into plantlets in vitro

either way, the new plant is genetically identical to the parent: vegetative propagation is asexual reproduction, just from a differentiated part rather than a single cell

