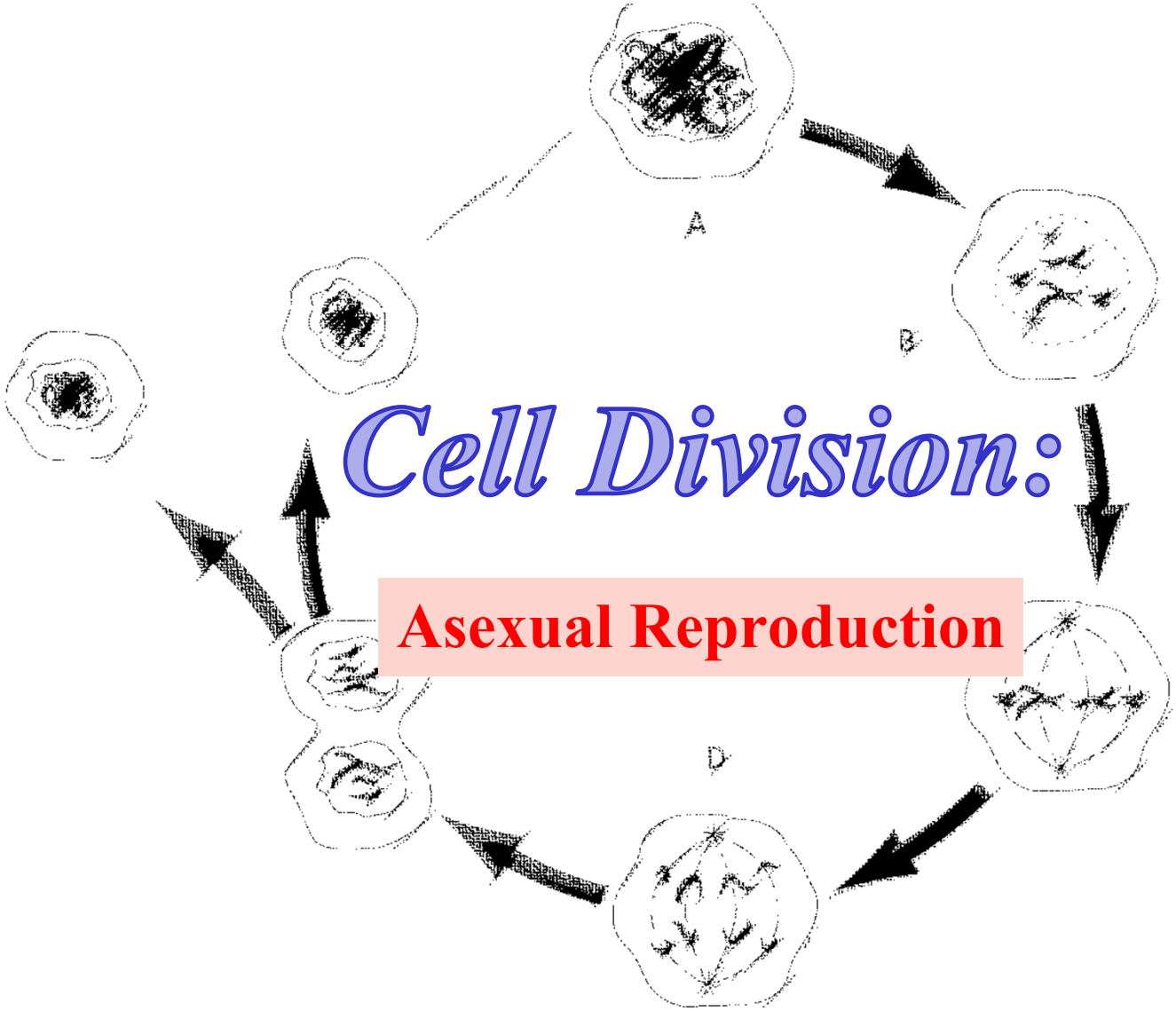


Cell Division:

Asexual Reproduction

OUTCOME QUESTION(S):

S1-1-01:

Why do cells divide and how does it work?

Vocabulary & People

Mitosis

Asexual

Binary Fission

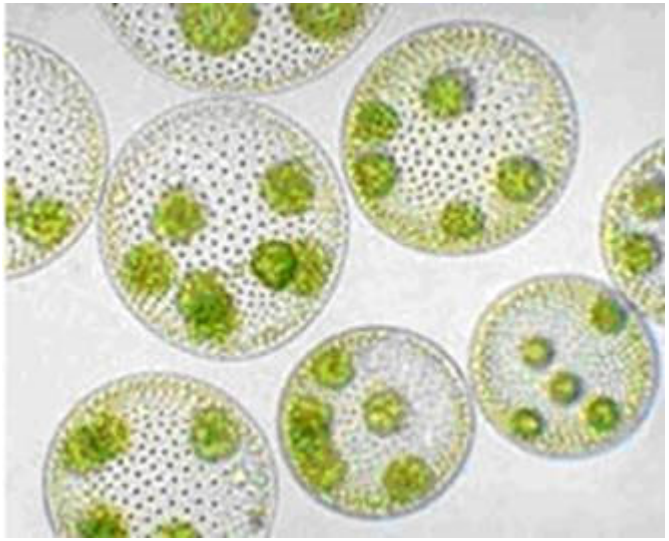
Why do cells divide?

3. *Reproduction*

– *Pass on genetic information*

There are 2 types of organism reproduction:

Asexual ***and*** ***Sexual***



Asexual Reproduction

- Create *offspring* (babies) *from* ***one parent*** organism
- Using basic cell division - **Mitosis**

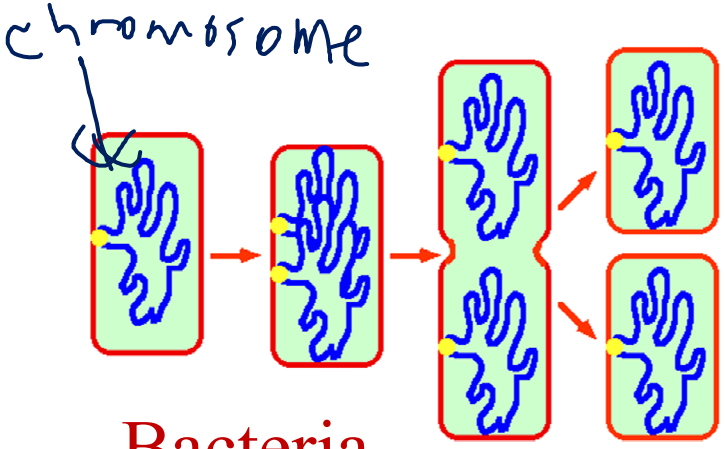
*1. **Rapid** and effective reproduction method*
*2. Cells are "**clones**" – genetically identical*

Mitosis ***IS*** asexual reproduction: *making an identical copy (*offspring*) from an existing cell (*parent*)*

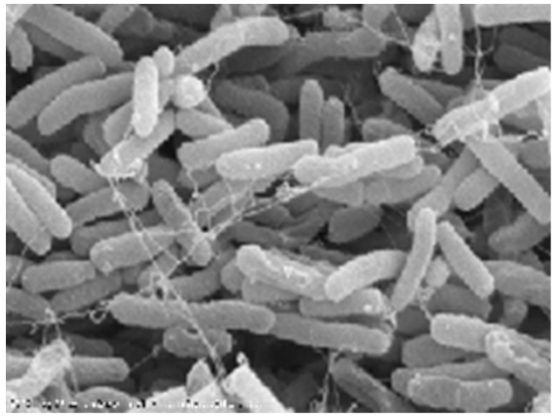
1. Binary Fission
2. Budding
3. Sporulation (Spores)
4. Regeneration (Fragmentation)
5. Vegetative Propagation (Vegetative Reproduction)

1. Binary Fission

- This is like mitosis but in bacteria
  - Simple **single-cell** (*unicellular*) organisms
    - Bacteria have ***1 circular chromosome*** *(plasmid)*



Bacteria
(like E. Coli)



Remember: even though we call this "binary fission" it is still **just** a simplified **Mitosis**

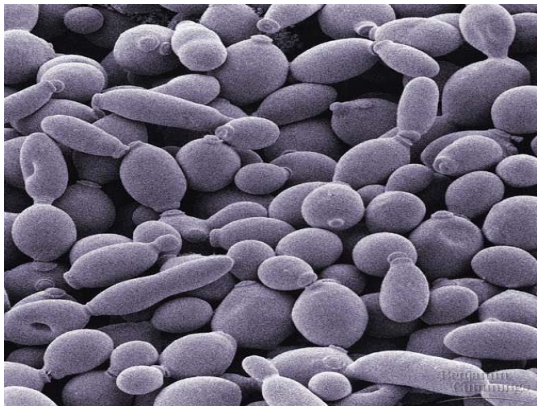
Protists
(like amoebas)

Telophase, maybe?

Unlike bacteria, these ones actually have a nucleus and a few chromosomes

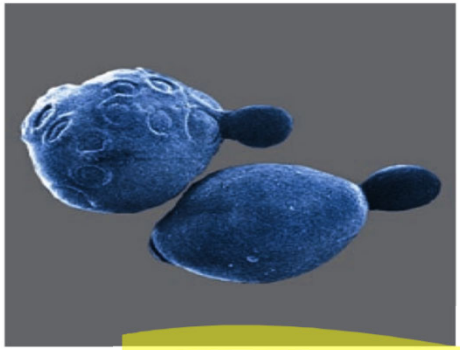
2. Budding

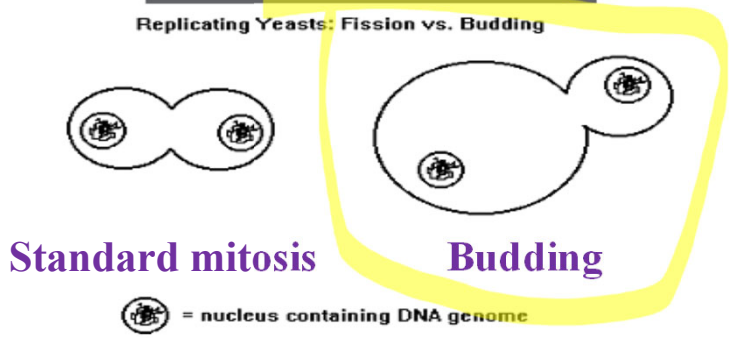
- Cell duplicates nucleus, forms outgrowth
- New cell is ***smaller than original*** cell



The key is ***unequal*** mitotic division – think of it as creating a "mini-me" that will grow bigger…eventually

Fungi
(yeast)





3. Sporulation

- Creation of spores that are released into the air
- Spores are made to survive and grow anytime later

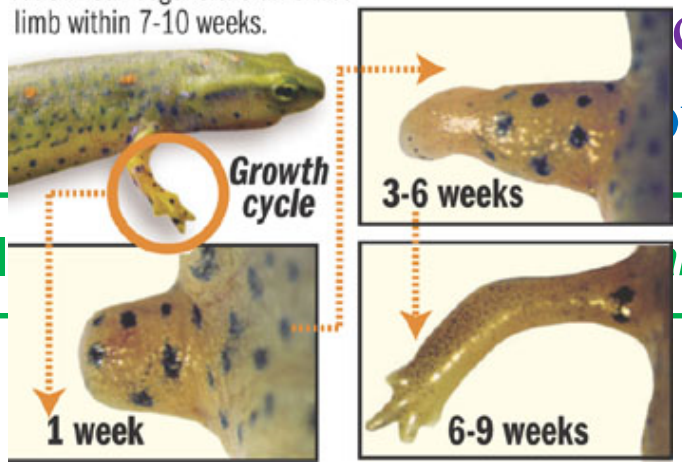
This is similar to budding – but in very large numbers
(like creating 1000s of "mini-me's" at once)

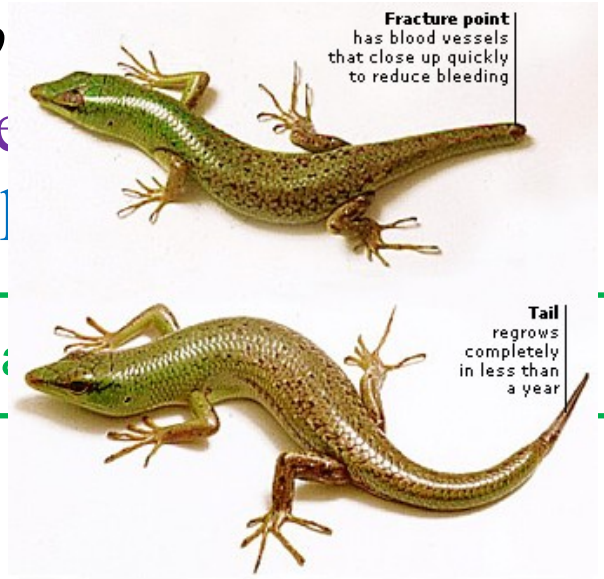
Fungi
(mold)

Ar

- ckbone
- ut back

ls – usua

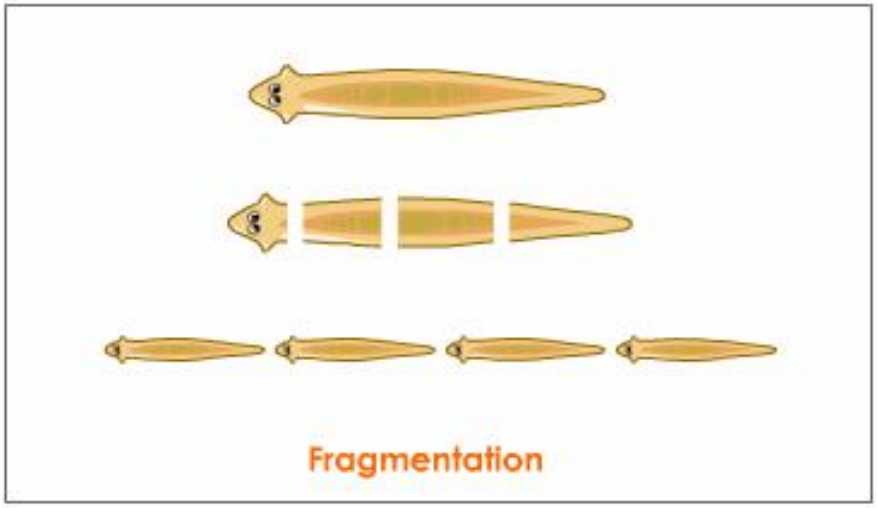




4. Fragmentation

- Ability to regenerate (*regrow*) fragments of the body **OR** have that fragment grow into **separate identical** organism

The "simpler" the animal the better it will be at fragmentation



Many experiments have been done to investigate the regeneration and **fragmentation** of simple organisms

5. Vegetative Propagation

- Creation of new plant from any of the growing parts of a plant – *roots, leaves, stems*

This is how we can get a whole new plant from an old one!