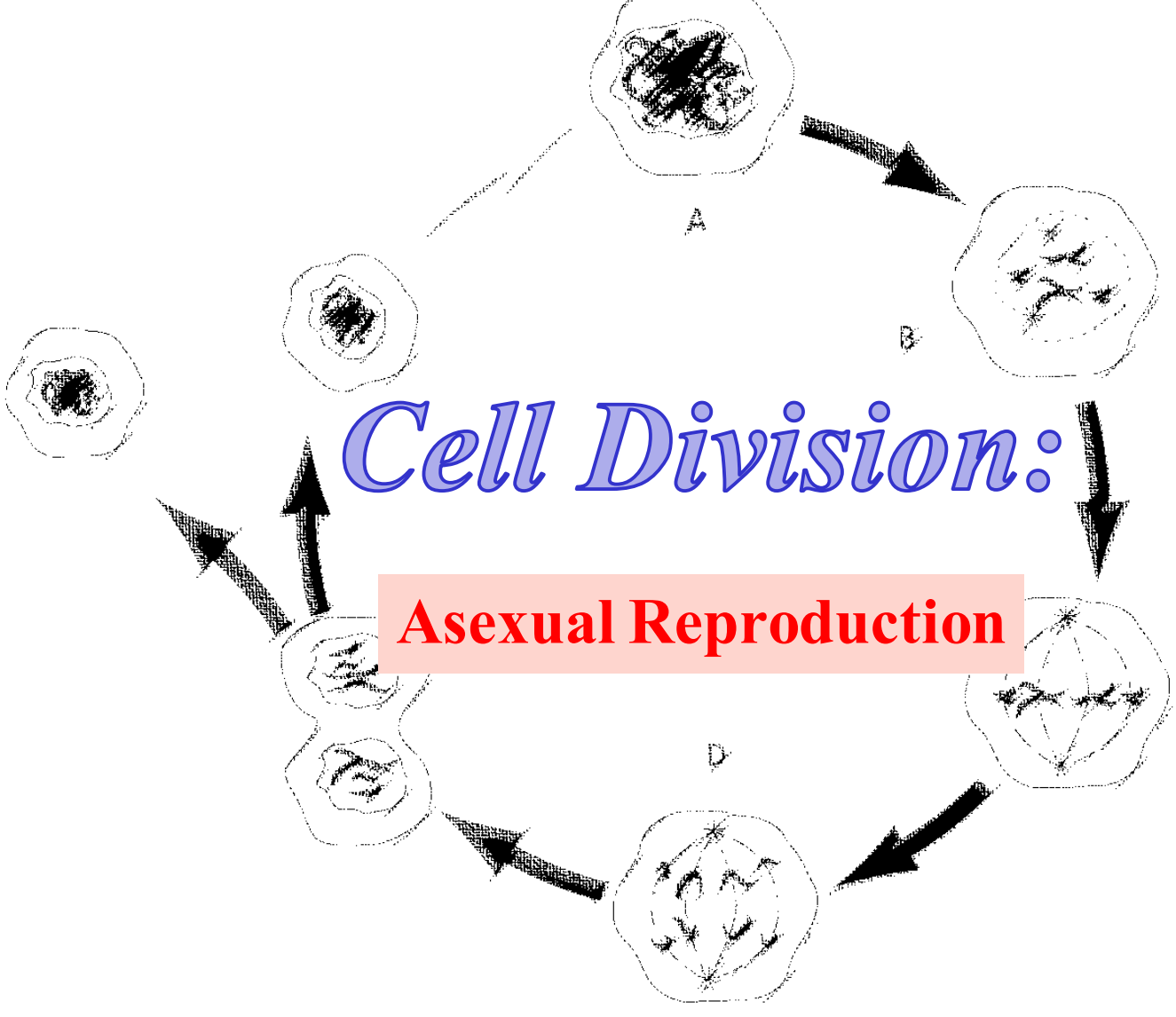



# *Cell Division:*

## Asexual Reproduction

# OUTCOME QUESTION(S):

## S1-1-01:

**Why do cells divide and how does it work?**

## Vocabulary & People

Mitosis

Asexual

Binary Fission

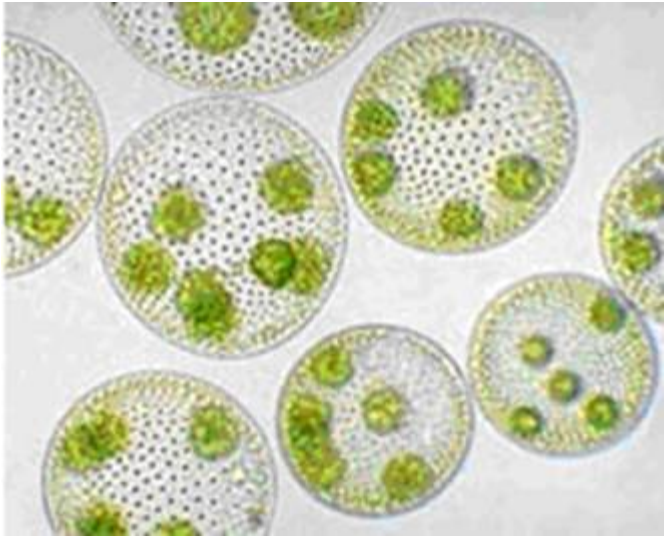
# Why do cells divide?

## 3. *Reproduction*

– ***Pass on genetic information***

There are 2 types of organism reproduction:

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

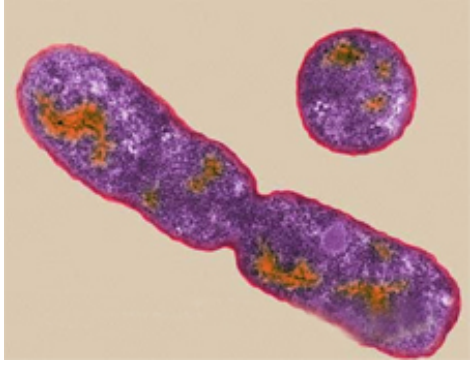


# Asexual Reproduction

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

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

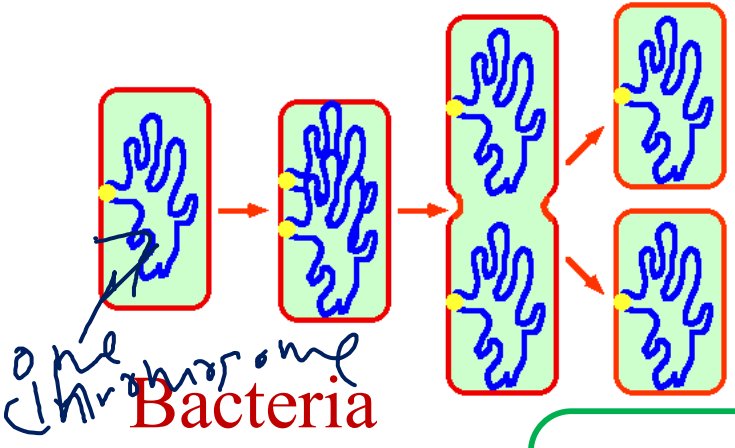
Mitosis ***IS*** asexual reproduction: *making an identical copy (*offspring*) from an existing cell (*parent*)*



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

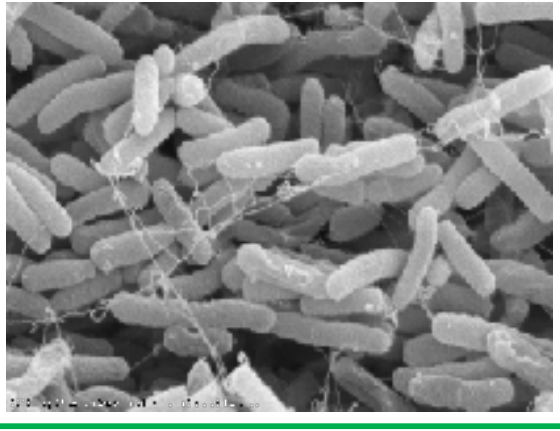
# 1. Binary Fission

- 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)*

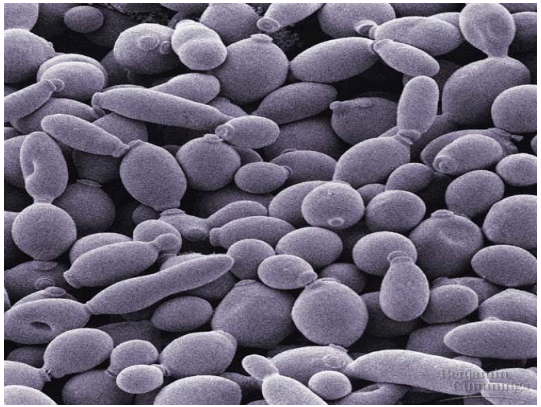
Telophase, maybe?

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

# Diagram

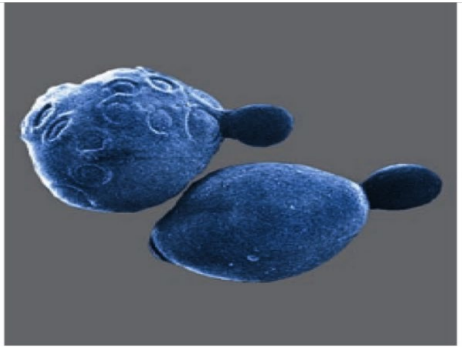
# 2. Budding

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

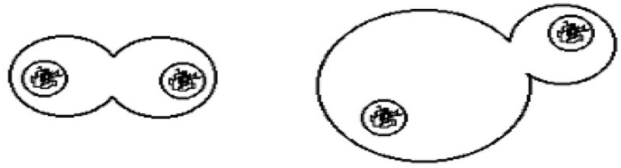


The key is ***unequal*** mitotic division – think of it as creating a "mini-me" that will grow bigger…eventually

Fungi
*(yeast)*



Replicating Yeasts: Fission vs. Budding



# Diagram

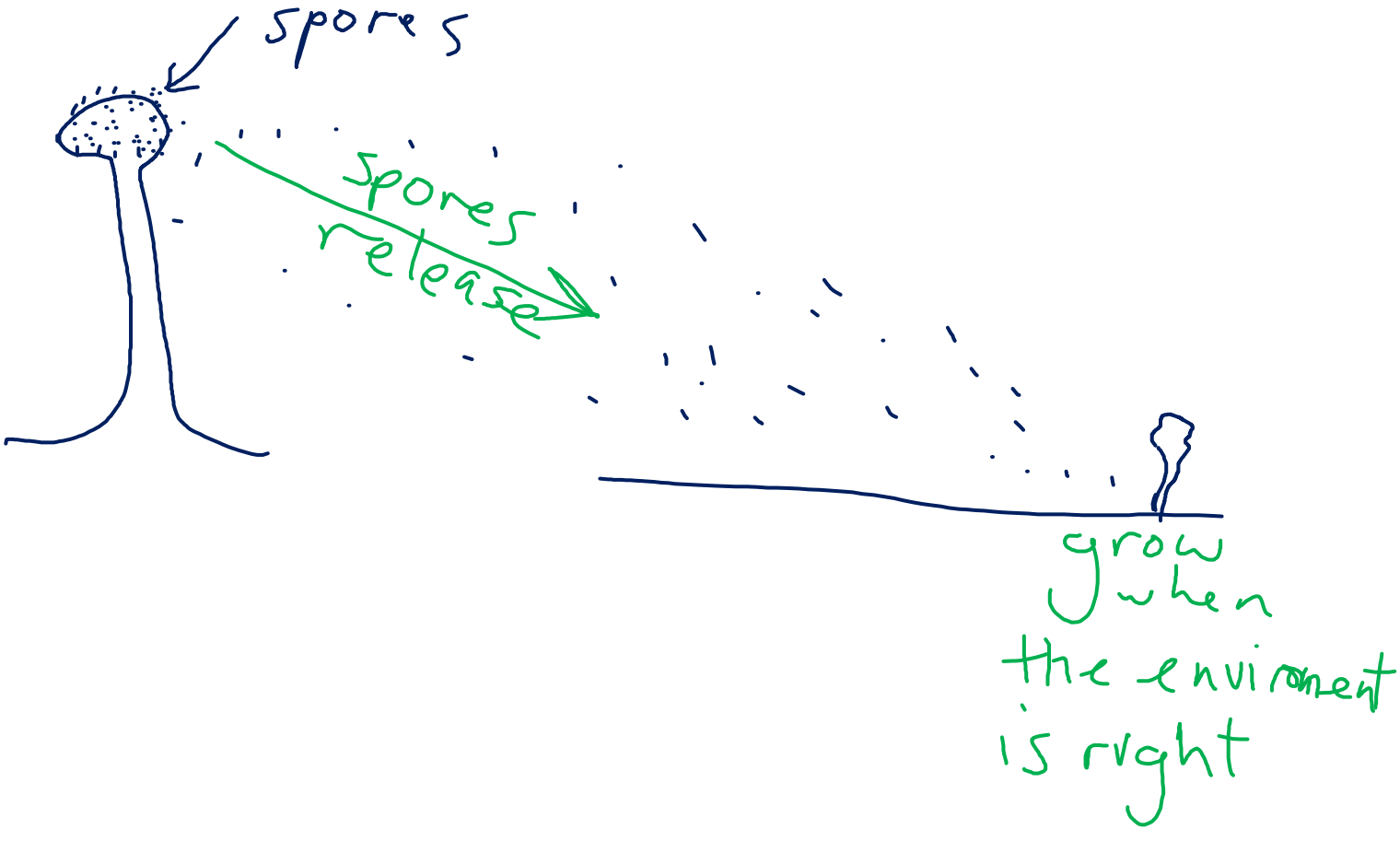
# 3. Sporulation

- 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)*

# Diagram



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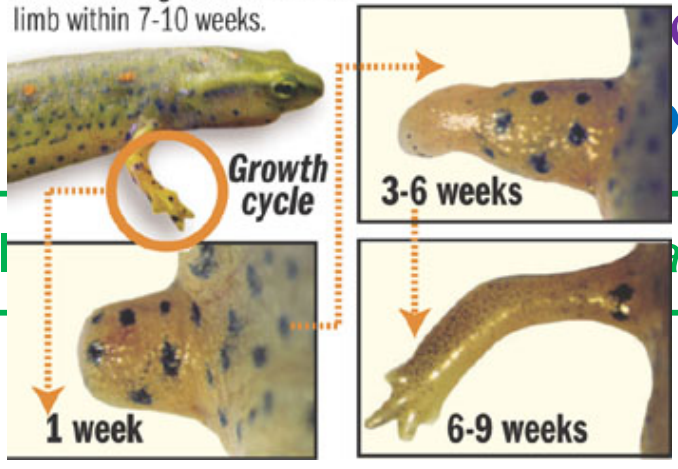
- …ckbone
- …ut back

…als – usu…

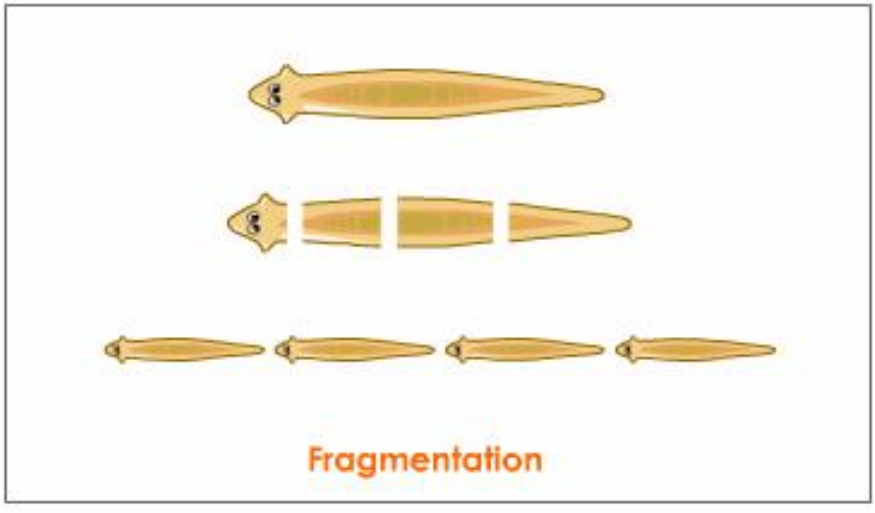




# 4. Fragmentation

- 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



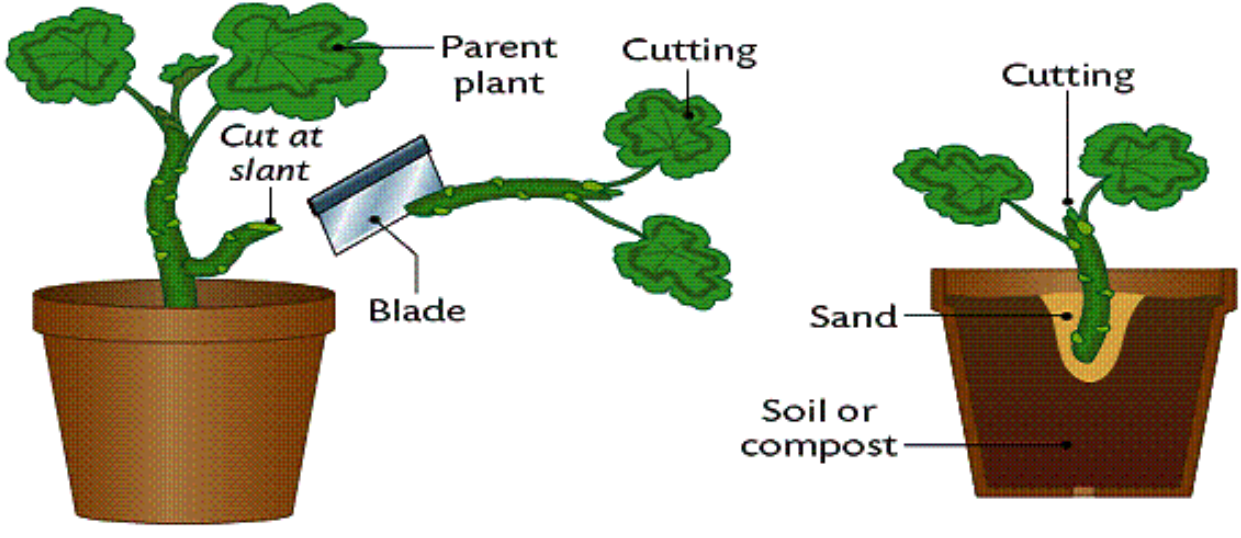

Many experiments have been done to investigate the regeneration and **fragmentation** of simple organisms

# Diagram

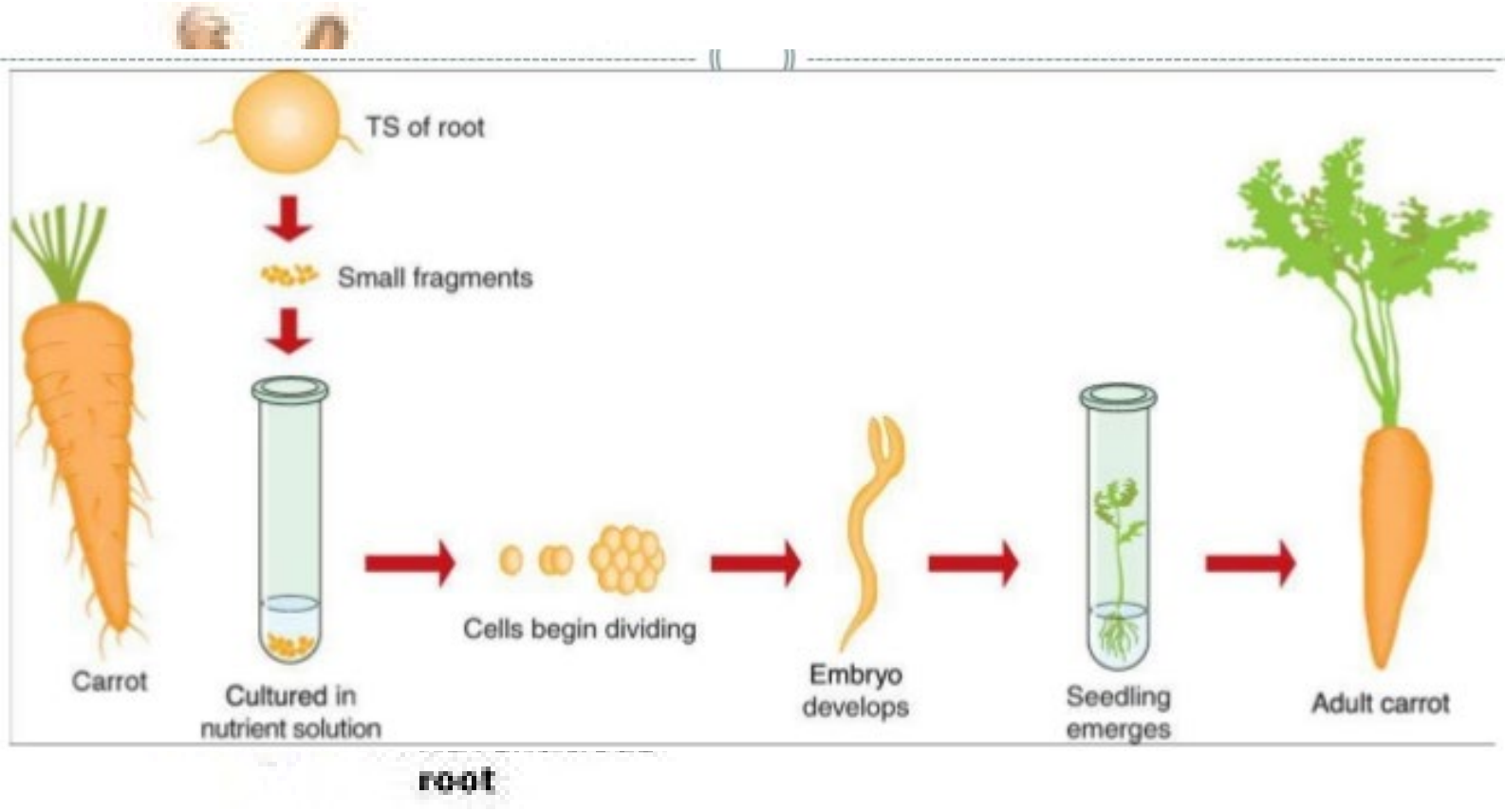
# 5. Vegetative Propagation

• 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!

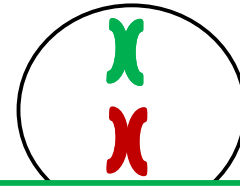


# This can occur in many different plants!



# Diagram

# MITOSIS – *in general*



P

Remember: **ALL** these **asexual** methods of reproduction are like a **fancy-named Mitosis**

**2** identical *daughter* **cells**