

Spider plants are common household plants which produce plantlets (or babies) that can be removed, placed in soil, and grown independently.



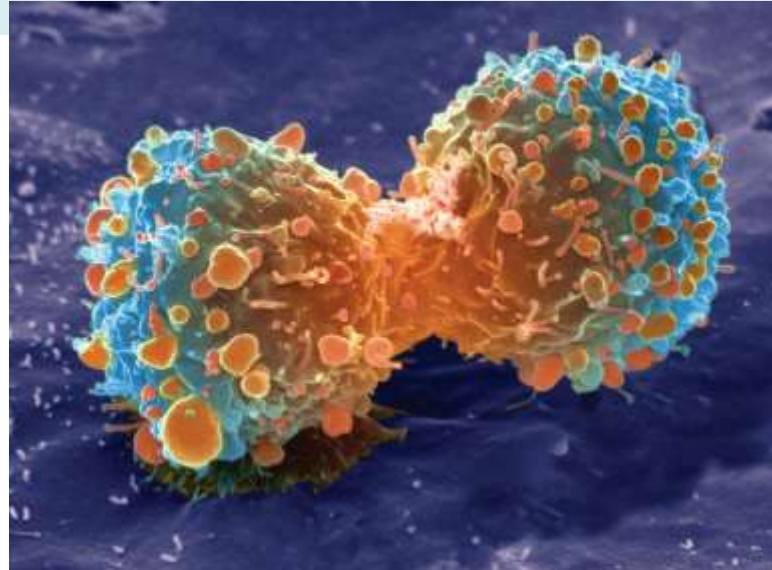
Why would this form of reproduction be called asexual?

Section 5.4 Asexual Reproduction

KEY CONCEPT - Many organisms reproduce by cell division.

EQ – What are the advantages of sexual and asexual reproduction in different situations?

SB2.e. Compare the advantages of sexual reproduction & asexual reproduction in different situations.



Asexual reproduction is the creation of offspring from a single parent.

Sexual reproduction is the creation of offspring from more than one parent.

- Environment determines what form of reproduction is most advantageous.

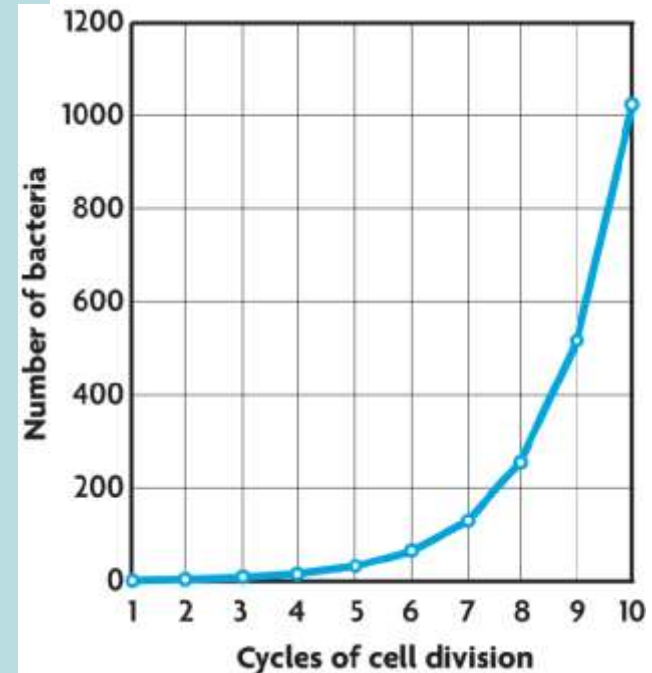
- Asexual reproduction is an advantage in **consistently favorable conditions**.

- ADVANTAGES:

- Can be more efficient if organisms are well suited to the environment
- All organisms can potentially reproduce
- Organisms do not need to spend resources finding or attracting a mate

- DISADVANTAGES:

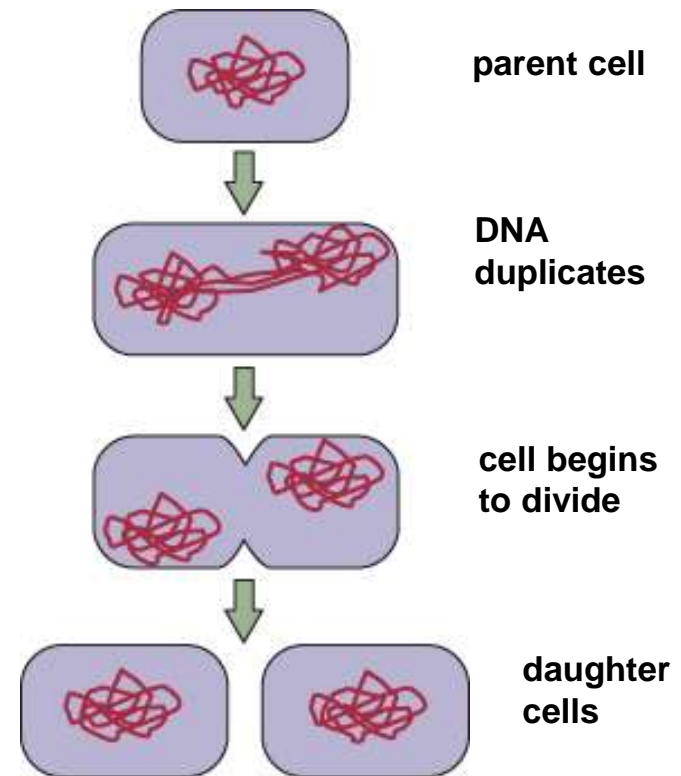
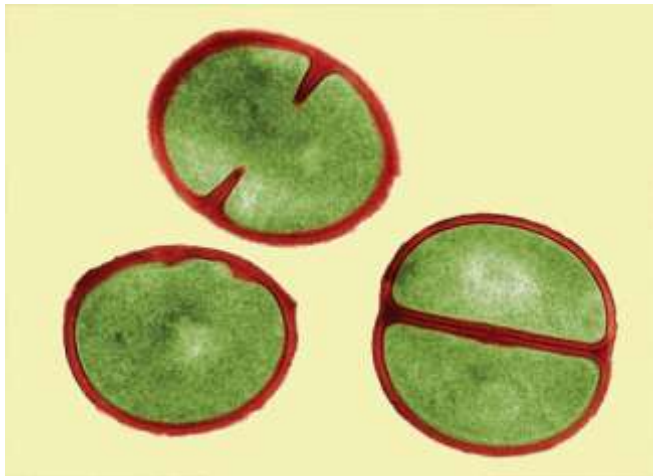
- all organisms respond same way to the environment
- Organisms may lack adaptability to survive changing conditions



- Sexual reproduction is an advantage in **changing conditions**.

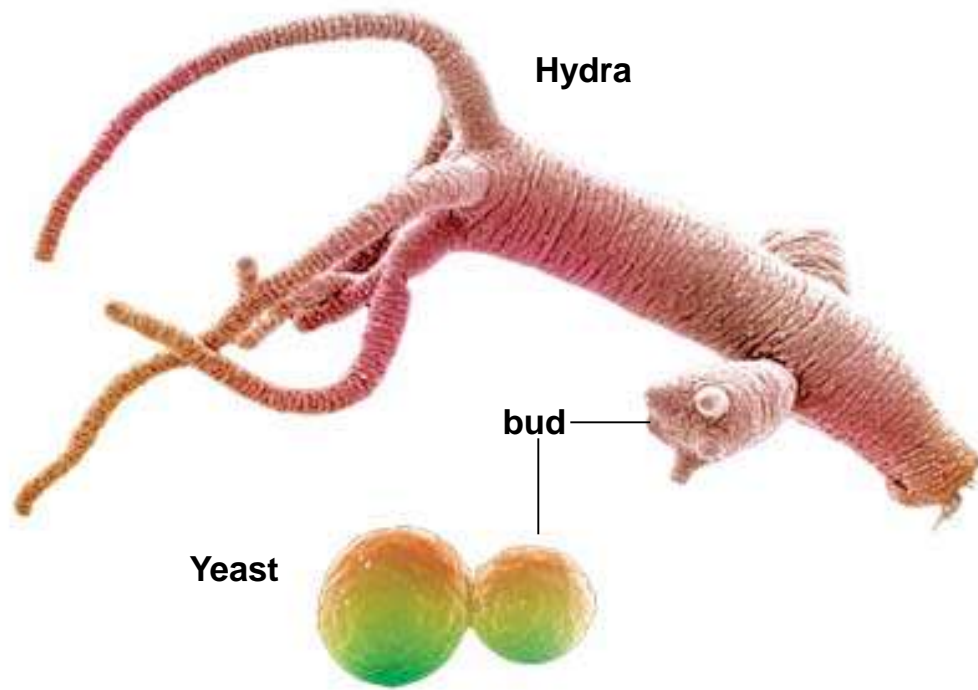


- Binary fission occurs in **prokaryotes** (bacteria).
 - **Binary fission** produces two daughter cells (roughly equal in size) genetically identical to the parent cell.



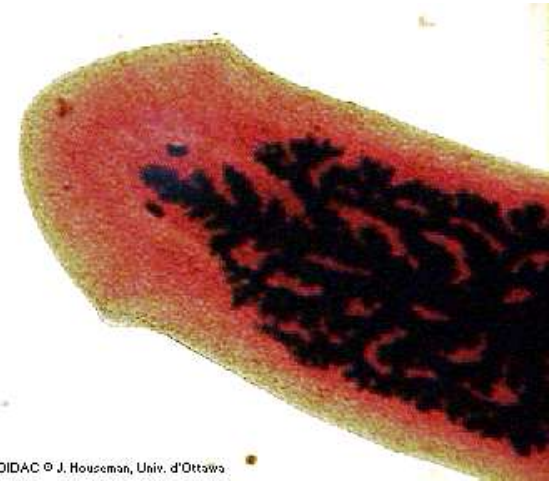
► Some eukaryotes reproduce through mitosis.

1. **Budding** forms a new organism from a small projection growing on the surface of the parent.





2. Fragmentation is the splitting of the parent into pieces that each grow into a new organism.



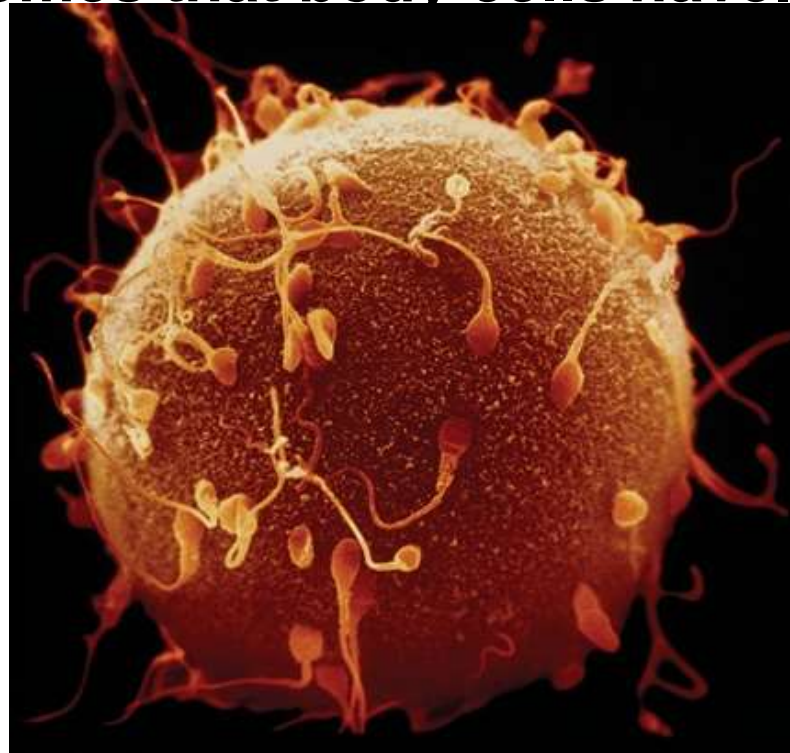
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3. Vegetative reproduction forms a new plant from the modification of a stem or underground structure on the parent plant.

Section 6.1 – Chromosomes & Meiosis REVIEW

KEY CONCEPT - Gametes have half the number of chromosomes that body cells have.



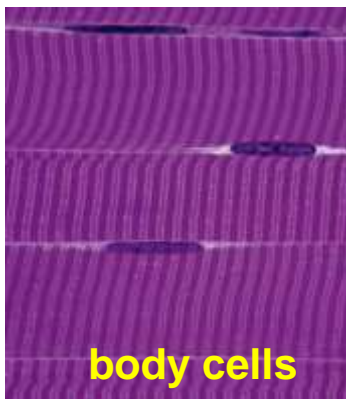
▶ You have body cells and gametes.

- **Somatic cells:**

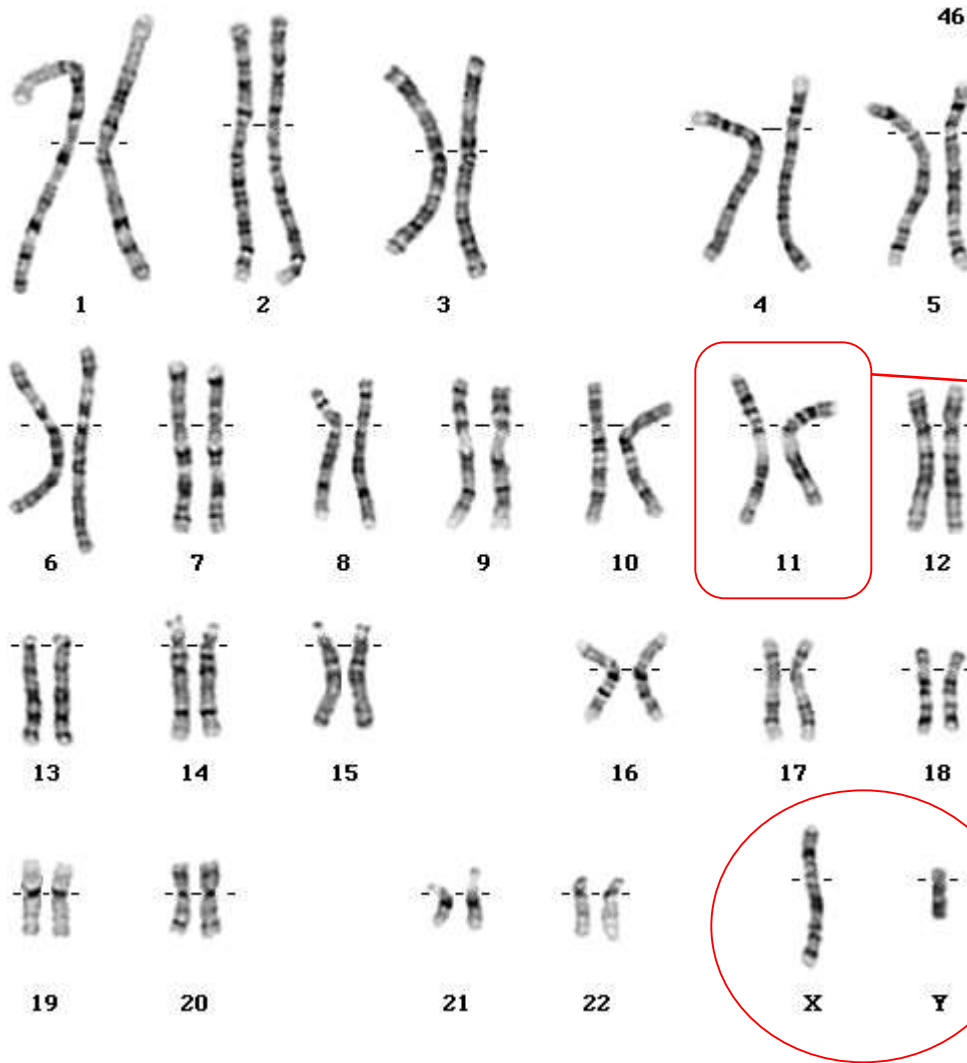
- Also called body cells
- Make up most of the body tissues and organs
- Not passed on to children

- **Gametes:**

- Germ cells located in the ovaries and testes develop into gametes.
- Gametes are sex cells: egg and sperm.
- Gametes have DNA that can be passed to offspring.



▶ Human Karyotype:

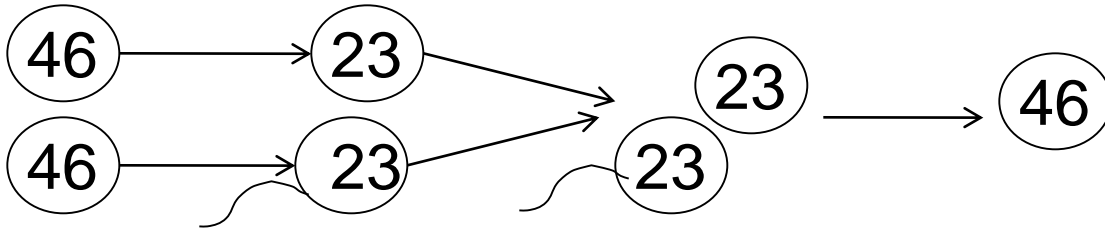


1. **Autosomes**: chromosomes that contain genes not directly related to the sex of an organism

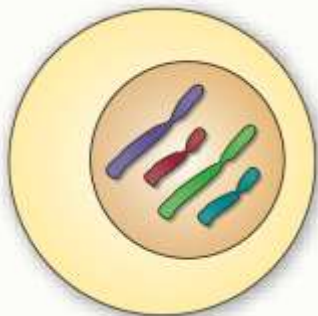
2. → **Homologous chromosomes**: pair of chromosomes, inherit one from each parent, carry the same genes although the genes may code for different traits

3. **Sex chromosomes**: contain genes that directly control the development of sexual characteristics

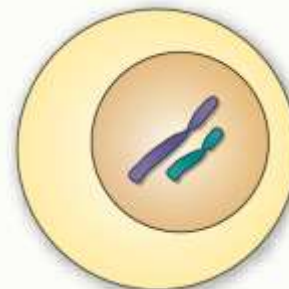
- **Fertilization** between egg and sperm occurs in sexual reproduction.



- **Diploid ($2n$) cells** have two copies of every chromosome.
 - Body cells are diploid.
 - Half the chromosomes come from each parent.
 - Result from mitosis
- **Haploid (n) cells** have one copy of every chromosome.
 - Gametes are haploid.
 - Gametes have 22 autosomes and 1 sex chromosome.
 - Result from meiosis

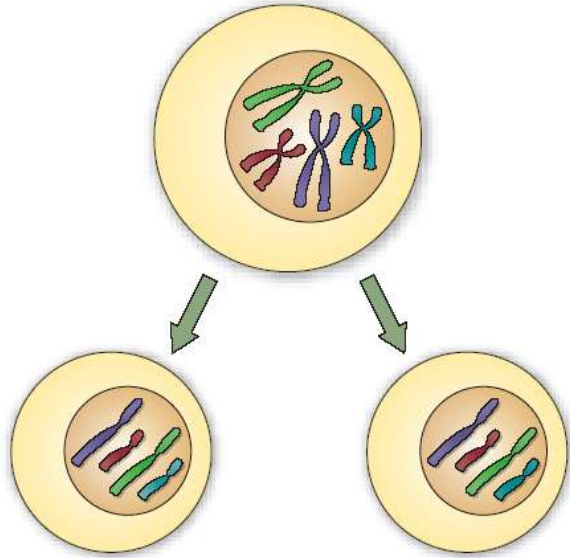


Body cells are diploid ($2n$).



Gametes (sex cells) are haploid (n).

MITOSIS



Produces genetically identical cells

Results in diploid cells

Takes place throughout an organism's lifetime

Involved in asexual reproduction

MITOSIS



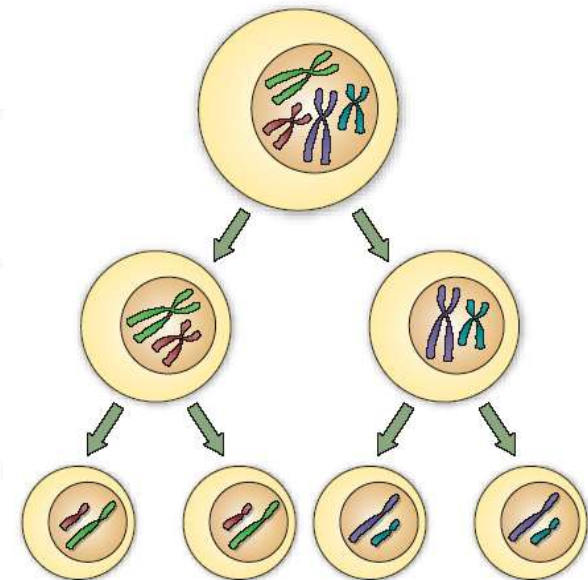
MEIOSIS

Produces genetically unique cells

Results in haploid cells

Takes place only at certain times in an organism's life cycle

Involved in sexual reproduction



MEIOSIS



A microscopic image showing various cells, likely from a biological specimen, with different shapes and internal structures. The image is in shades of blue and green.

▶ **What threats must humans overcome to survive as a species?**

OR

▶ **What are the biggest threats to survival?**