

Asexual vs. Sexual Reproduction

Asexual Reproduction

- Requires only one parent
- Offspring have 100% the same chromosomes as the parent.
- In other words, the offspring are exact "clones" of the parent.
- Most unicellular organisms reproduce this way.
- Mitosis
- [Movie](#)

Asexual Reproduction

- Binary Fission**
 - [Bacteria](#)
 - [Protists](#)

Binary fission is a form of asexual reproduction where every organelle is copied and the organism divides in two.

Asexual Reproduction

- Plant cuttings**

Vegetative reproduction is a type of asexual reproduction in plants that relies on multi-cellular structures formed by the parent plant. It has long been exploited in horticulture and agriculture, with various methods employed to multiply stocks of plants.

Asexual Reproduction

- Budding**
 - [Hydra](#)
 - [Movie](#)

Budding is a means of asexual reproduction whereby a new individual develops from an outgrowth of a parent, splits off, and lives independently.

Asexual Reproduction

- Fragmentation**

Fragmentation is a means of asexual reproduction whereby a single parent breaks into parts that regenerate into whole new individuals.

Asexual Reproduction

- Regeneration**

Regeneration occurs when a body part has broken off and the organism grows a new one.

Asexual Reproduction

- Examples of organisms that reproduce asexually
 - [Hydra](#)
 - [Sea Star](#)
 - [Strawberry](#)
 - [Archaeobacteria](#)
 - [Eubacteria](#)
 - [Euglena](#)
 - [Paramecium](#)
 - [Yeast](#)

Types of Cells: Body Cells

All cells other than sex cells
-Also called somatic cells
-Made by mitosis

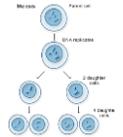
Mitosis

- Our body cells undergoes growth and repair using **mitosis**.
- **Mitosis is when a body cell (called a somatic cell) makes an exact copy of itself.**
- In Mitosis, you start with one body cell and end with two body cells that are genetically identical to each other.



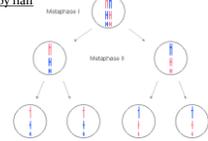
Sexual Reproduction

- Requires **two parents** that each share $\frac{1}{2}$ of the genetic information.
- Offspring share the characteristics of each parent.
- **Meiosis**



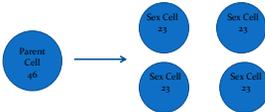
Meiosis

- Meiosis makes egg cells and sperm cells
- It is a cell division process that reduces the number of chromosomes by half



Results

- At the end of meiosis we end up with four sex cells (egg cells or sperm cells) that have half the number of chromosomes as the parent cells and are genetically different.



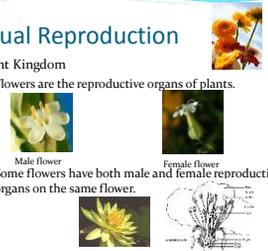
Sexual Reproduction

- All the members of the Animal Kingdom
 - Fish
 - Mammals
 - Amphibians
 - Birds
 - Reptiles
 - Insects
 - Crustaceans



Sexual Reproduction

- Plant Kingdom
 - Flowers are the reproductive organs of plants.
- Some flowers have both male and female reproductive organs on the same flower.



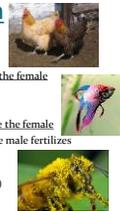
Sexual Reproduction

- Examples of organisms that reproduce sexually
 - Chickens
 - Iguanas
 - Lobsters
 - Sharks
 - Humans
 - Butterflies
 - Sunflowers
 - Roses



Sexual Reproduction

- Happens 2 ways
 - Internally (inside)
 - The egg is fertilized by sperm inside the female
 - Mammals, reptiles, insects, spiders
 - Externally (outside)
 - The egg is fertilized by sperm outside the female
 - The female lays the eggs and then the male fertilizes them.
 - Birds, Fish, and some amphibians
 - Plants and fungi (pollen and spores)



Some Organisms do Both

- most plants that produce seeds (sexual reproduction) can also reproduce asexually by things like cuttings or runners
- this gives them an advantage for survival



Which is Better?

It depends!

Asexual Reproduction

- advantages
 - does not require special cells or a lot of energy
 - can produce offspring quickly
 - in a stable environment creates large, thriving population
- disadvantages
 - limited ability to adapt
 - face massive die-off if environment changes

Sexual Reproduction

- advantages
 - lots of variation within a species
 - able to live in a variety of environmental settings
 - able to adapt to changes in the environment
- disadvantages
 - needs time & energy
 - produce small populations

Summarize

- Write two paragraphs with 6 detailed sentences each describing asexual and sexual reproduction.
- Paragraph 1: Asexual reproduction is....
- Paragraph 2: Sexual reproduction is...