

LIFE SCIENCES 11

SEXUAL VS. ASEXUAL REPRODUCTION

Learning Outcomes

- I can differentiate between mitosis and meiosis.
- I can compare asexual and sexual reproduction.

Mitosis vs. Meiosis

	Mitosis	Meiosis
Divisions	One	Two
Synapses	No	Yes (Homologous Pairs – Prophase 1)
Crossing Over	No	Yes (Prophase I)
Independent Assortment	No	Yes (Metaphase I)
Outcome	Two Cells	Four Cells
Ploidy	$2n \rightarrow 2n$ or $n \rightarrow n$	$2n \rightarrow n$
Genetics	Identical Cells	Variations

Asexual Reproduction

- used by single-celled and multicellular organisms
- one parent produces offspring
- Types
 1. Binary Fission
 - produces two daughter cells that are identical to each other and to the parent cell
 - used by bacteria
 2. Budding
 - growing of a “bud” off the side of a parent organism
 - may look like uneven binary fission
 - bud is a smaller version of the parent organism
 - used by sea anemone, jellyfish, baker’s yeast
 3. Vegetative Reproduction
 - plant parts grow into new organisms
 - used by strawberry plants, spider ferns, potatoes
 4. Fragmentation
 - piece of a parent organism breaks off and grows in a different location
 - used by mosses

5. Parthenogenesis

- laying of unfertilized eggs that grow and develop into new offspring
- used by aphids, bees, bonnethead shark, komodo dragon

Sexual Reproduction

- used by single-celled and multicellular organisms
- two parents produce offspring by combining their genetic material
- Types
 1. Conjugation
 - exchanging of part of the genetic material between bacteria
 - does not result in the formation of more offspring
 2. Gamete Production
 - formation of sex cells by meiosis that contain half the normal amount of DNA
 - sex cells combine to form a new individual that is similar, but not identical to either parent

	Asexual	Sexual
Pro's	• faster • less energy • less dangerous	• genetic diversity • faster evolution
Con's	• no genetic diversity • slower evolution	• slower • more energy • more dangerous