

Chapter 6 Lesson 1 Part 3

I can explain the difference between sexual and asexual reproduction.

I can explain how genes, chromosomes, and traits are related.

SPI 0707.4.1 Classify methods of reproduction as sexual or asexual.

SPI 0707.4.3 Describe the relationship among genes, chromosomes, and inherited traits.

What You Will Learn

- What happens as a result of mitosis
- The difference between sexual and asexual reproduction
- The types of asexual reproduction

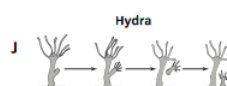
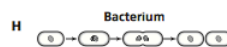
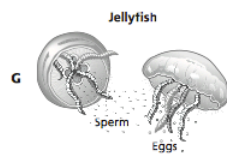
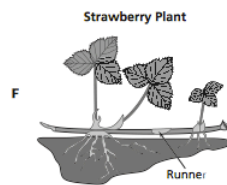
What Mastery Looks Like

58 Which example could only be classified as an outcome of sexual reproduction?

- F** when all of the offspring are genetically identical
- G** when two of the offspring are produced from one parent
- H** when one parent combines its genetic information with another parent to produce offspring
- J** when the cells in the offspring have the same number of chromosomes as cells in the parent

What Mastery Looks Like

4 Which diagram is the **best** example of an organism undergoing sexual reproduction?



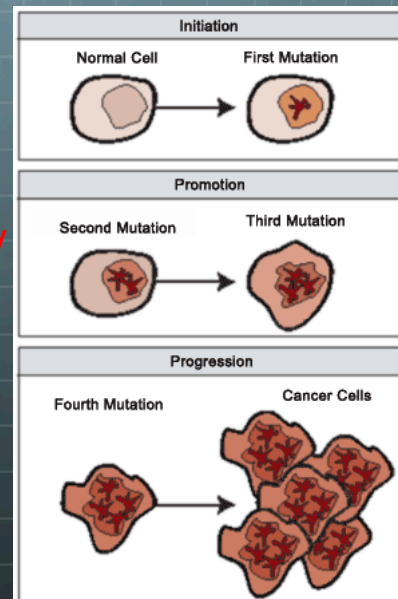
Mitosis and Cell Division

Results of Mitosis and Cell Division

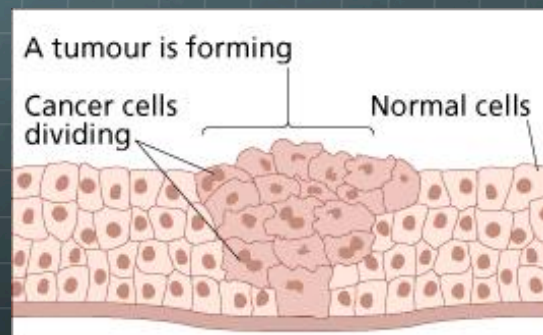
- 🌐 **Mitosis = the division of a nucleus**
- 🌐 **2 nuclei are identical to each other and to the original**
- 🌐 **Each new nucleus has the same number and type of chromosomes**
- 🌐 **The original cell no longer exists**
- 🌐 **Cell Division – replaces worn out or damaged cells**

Cell Division Control

- **DNA controls all** cell activities including cell **division**
- Some cells **lose their ability to control** their **rate of cell division** – the DNA of these cells has become **damaged** or changed (**mutated**)
- These **super-dividing** cells form masses called **tumors**



- **Benign tumors** are **not cancerous** – these cells **do not spread** to other parts of the body
- **Malignant tumors** are **cancerous** – these cells break loose and can invade and **destroy healthy tissue** in other parts of the body (called **metastasis**)



Recap

- Before we move on to types of reproduction, we need to recap the stages of the cell cycle.

Phase	RECAP: Chromosome Appearance & Location	Important Events
Interphase	DNA copies itself; chromatin	DNA replication, cell grows and replicates organelles
Prophase	Chromosomes coil up	Nuclear envelope disappears, spindle fibers form
Metaphase	Chromosomes line up in the middle	Spindle fibers connect to chromosomes
Anaphase	Chromosome copies divide and move apart	Spindle fibers pull chromosome copies apart to opposite poles
Telophase	Chromosomes uncoil back into chromatin	Nuclear envelopes reform, 2 new nuclei are formed, spindle fibers disappear
Cytokinesis	Chromatin	Division of the rest of the cell: cytoplasm and organelles

Reproduction

2 Types of Reproduction

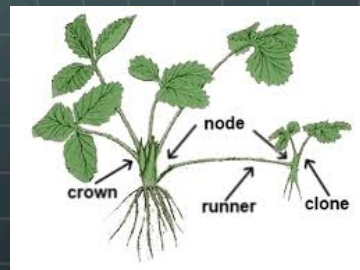
- **Sexual – Requires 2 organisms. Hereditary material taken from both parents**
- **Asexual – Requires 1 parent**
 - **Organism produced will have hereditary material identical to parent organism**

Types of Asexual Reproduction

- Vegetative Propagation (Runners)
- Fission
- Budding
- Regeneration

Asexual Reproduction

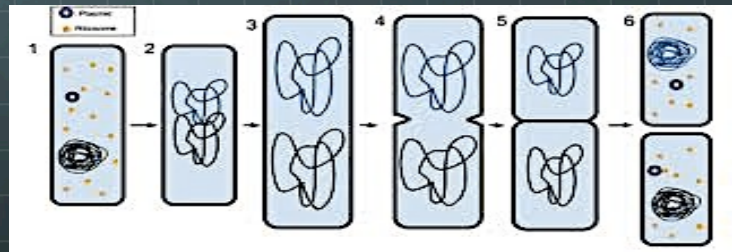
- Types of Asexual Reproduction
 - Vegetative Propagation
 - Occurs in plants
 - Part of plant becomes separated from the parent plant and divides by mitosis
 - Runners = horizontal stems growing from the parent plant, but they grow above ground. When their buds touch the ground they take root and produce new plants.
 - EX: Strawberry Plants



Asexual Reproduction

Cellular Asexual Reproduction

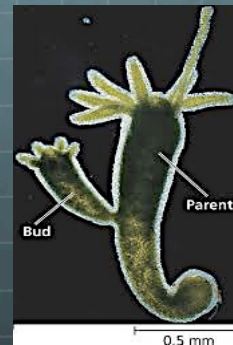
- Types of Asexual Reproduction
 - Fission**
 - Bacterium does NOT have nucleus – Can't use Mitosis
 - 1-celled bacterium without nucleus copies genetic material and divides into 2 identical organisms
- <https://www.youtube.com/watch?v=DY9DNWcqxI4>



Asexual Reproduction

Cellular Asexual Reproduction

- Types of Asexual Reproduction
 - Budding:** Figure 8A pg. 180
 - New organism grows from the body of the parent organism
 - Ex: Hydra
 - Sometimes the bud on parent organism grows large enough, and breaks away to live on its own
 - Others like sea coral grow and stay on the parent



- <https://www.youtube.com/watch?v=a5oHMjGqjyo>

Asexual Reproduction

Cellular Asexual Reproduction

- **Types of Asexual Reproduction**
- **Regeneration**
 - **Process using mitosis and cell division to regrow body parts**
 - Figure 8B pg. 180
 - If organism breaks into pieces, whole new organisms can grow from each piece
 - Ex. Sponges and Sea Stars
- <http://www.brainpop.com/science/cellularlifeandgenetics/asexualreproduction/preview.weml>



Exit Ticket

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Exit Ticket

4 Which diagram is the best example of an organism undergoing sexual reproduction?

