

ASA Presentation Notes Lesson 7.1

Unit Name: Unit 7 Genetics

Lesson Topic: Lesson 7.1 A New Pair of Genes

Presentation on: In the Beginning

What is Inheritance?

- The transfer of genetic material (genes) from one generation to the next.
- Half of an individual's genes come from the sire via sperm.
- Half of an individual's genes come from the dam via the egg.
- Offspring contain genes from both parents.

Fertilization.

- **Fertilization** is the union of sperm with the ovum to produce a fertilized egg called a zygote.
- **When sperm reaches the ovum:**
 - 1. One sperm cell unites with one ovum.
 - 2. The resulting cell contains all genetic material and undergoes rapid cell division (i.e., mitosis) as the embryo develops.

Why does fertilization not increase the number of chromosomes in each generation of offspring?

A Microscopic View – Formation of Sperm and Egg Cells.

- Sperm and egg cells must undergo the process of **meiosis** to become haploid.
- **Meiosis** is a type of cell division that reduces the number of chromosomes in new cells by half.

Start With a Sex Cell.

- Male and female reproductive organs produce sex cells.
- The nucleus of cells contains chromosomes, which carry genes.

Meiosis I.

- **Diploid** cells are cells with two sets of each chromosome.

Meiosis II.

- Cells divide again to produce **haploid** gametes.

From Haploid Gametes Back to a Diploid.

The Next Step.

- Following fertilization, division of the zygote will continue the cell replication process.
- This process is called **mitosis**.

The Development of a Zygote.

- Cells undergo rapid **mitosis** as the zygote grows.

Mitosis.

- **Mitosis** is the division of cells to produce daughter cells that contain a full set of chromosomes.

Phases to Mitosis.

- **Interphase.**
- **Prophase.**
- **Metaphase.**
- **Anaphase.**
- **Telophase.**
- Mitosis phases will be explored further in **Activity 7.1.1 Focus in on Mitosis.**

ASA Reflection Page

List 5 key points that are important to remember from this presentation.

- 1.
- 2.
- 3.
- 4.
- 5.

List 3 ideas or concepts that this new information has in common with previous things learned.

- 1.
- 2.
- 3.

List questions or ideas that remain unclear about the information presented that should be asked for clarity at the appropriate time.