

Where'd you get your Genes? (Gr. 6-8)

DESCRIPTION

Explore all that cells, genes, and inheritance has to offer by digging into the comparison between the reproduction of plants and animals. We will start with the anatomy of a cell and then dive into reproduction, the cells that it requires, and its "micro" process. Students will learn about fun and interesting examples for each variation of reproduction discussed!

OBJECTIVES

- Students will be able to describe the process of reproduction from a cellular standpoint for plants and animals.
- They will learn the definitions of terms on the Teacher Guide and be able to loosely explain them. Ex. Sexual reproduction involves two kinds of cell division called "meiosis" and "mitosis."
- Students will understand the difference between and significance of Sexual vs. Asexual reproduction. Ex. Genetic material varies with sexual reproduction, which is necessary for a genetically diverse population.
- Students will understand *why/how* genetic diversity is important.
- Each class will explore a portion of our Human Health gallery virtually and learn about how DNA can be altered through Epigenetics.

OHIO'S LEARNING STANDARDS

Grade 6 Life Science

6.LS.1: Cells are the fundamental unit of life.

6.LS.2: All cells come from pre-existing cells.

6.LS.3: Cells carry on specific functions that sustain life. Many basic functions of organisms occur in cells.

6.LS.4: Living systems at all levels of organization demonstrate the complementary nature of structure and function.

Grade 7 Life Science

7.LS.2 In any particular biome, the number, growth and survival of organisms and populations depend on biotic and abiotic factors.

Grade 8 Life Science

8.LS.2 Every organism alive today comes from a long line of ancestors who reproduced successfully every generation.

8.LS.3 The characteristics of an organism are a result of inherited traits received from parent(s).

Before your Program

- Please have student desks clear before the program begins.
- Use the vocabulary and additional resources provided in this Teacher Guide to preview or review program content with your class.
- Additional set-up requirements: for this program, feel free to allow students to write down any questions that come up through the duration of the program. Because this is a Virtual program, students might not feel comfortable asking questions with a raised hand, so having a sheet of paper where they can jot down questions throughout may be helpful.

VOCABULARY

Cell – the basic building blocks of all living things. Each cell carries out a specific function.

Gene – the basic physical and functional unit of heredity.

Inheritance – the passing of traits from parents to their offspring through genetic material like DNA.

DNA – the hereditary molecule in cells that carries genetic instructions. It is shaped like a double helix.

Meiosis – a special type of cell division that reduces the chromosome number by half, creates sex cells, and causes genetic variety.

Chromosome – a thread-like structure made of DNA and protein that carries genetic information.

Mitosis – A process of cell division that makes two *identical* daughter cells from one single parent cell.

Sexual reproduction – a biological process where two parents combine their genetic material to create a *genetically unique* offspring.

Asexual reproduction – a process where a single parent creates offspring without the fusion of gametes.

Gamete – a sexually reproducing organism's reproductive cells, specifically sperm and egg

cells.

Zygote – the name of two combined sex cells (female & male gametes) after fertilization.

Epigenetics – the study of how behaviors and environment can cause changes that affect how your genes work, without changing your actual DNA sequence.