



Discovery Guide Under the Microscope Grades 6-8

Directions

Answer the questions as you travel through *Under the Microscope*. This guide is meant to be completed while in the gallery with a chaperone.

- 1. Find and enter the large cell.** Most cells contain a variety of *organelles*. These organelles, such as the nucleus and mitochondria, are specialized structures that perform different and unique jobs.

Draw a cell with the organelles inside, then label each organelle.

Name an organelle found inside of the cell and describe its function.

- 5. Find Epigenetics.** DNA is a molecule in all of our cells which codes for our traits, such as eye color, hair color, and many more. Our DNA is received from our parents, making many of our traits dependent on our parents. However, it is not the only way for cells, and animals, to obtain specific traits. What is another way that animals are able to obtain new traits, and what is an example?

- 6. Find the Transparent Anatomical Manikin.** Our digestive system is composed of multiple organs. These organs help us break down the food we eat and absorb the nutrients we need to live. What are the organs that help our bodies break down food?

- 7. Our bodies contain many systems, made of many different cells, which all need to work together in order for us to function properly.** In order for these systems to work with one another, they need to communicate with each other. How do the cells in our bodies communicate with each other? Give an example!

- 8. The brain is one of the most important organs in our bodies and is made up of dense nervous tissue.** What is the function of the brain?

2. **Find The Recipe of Life.** DNA can have mutations which can change the sequences of genes. What are the three different types of mutations?

What happens when genes mutate?

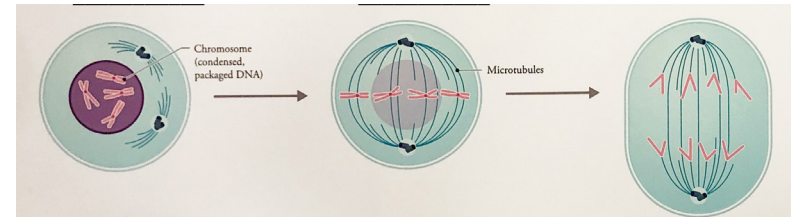
3. **CRISPR is a system that is able to cut strands of DNA at very specific locations.** Scientists use CRISPR to edit genes and make precise changes to DNA sequences. What is one application of CRISPR?

What are some potential risks or benefits of using CRISPR to edit genes?

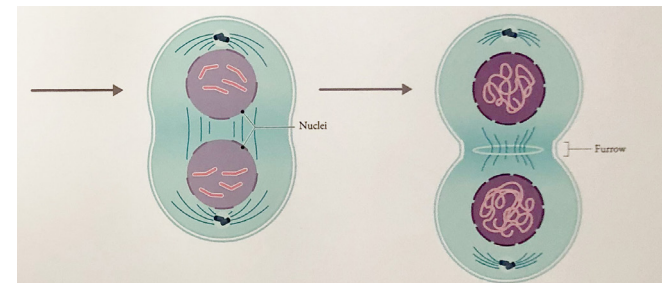
4. **Find Every Body Grows.** Human cells reproduce through two different processes of cell division.

One of the methods is called *sexual reproduction (meiosis)* which creates four cells, each with a half set of chromosomes (*haploid*). Two haploid cells combine to create one cell with half its DNA from each parent.

The second type of cell division creates two cells, each with a full set of chromosomes. What is the second type of cell reproduction called, and how does it differ?



1. _____ 2. _____ 3. _____



4. _____ 5. _____