

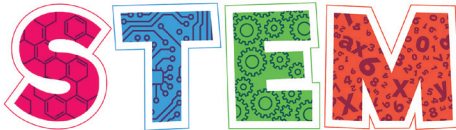
AGES 8-12

TIME

15 minutes

# ANIMAL CELL COOKIE

*Lilly* Girls & Young Women In



At The Children's Museum of Indianapolis



# ANIMAL CELL COOKIE

Investigating STEM as a family is a great way to build a child's confidence and interest in STEM topics. This short investigation is designed to be completed with an adult. A video is available on the museum's website to help with the investigation.

## INVESTIGATION QUESTION

- Where do we find cells?
- What organelles make up an animal cell?
- Do all cells look the same?



## MATERIALS

- Pre-baked sugar cookie
- Store-bought white frosting
- Pull 'N' Peel Twizzlers
- Mini Oreo cookies
- Round sprinkles
- Chocolate chips
- Jelly beans
- Fruit roll-up
- Plate
- Spoon or knife



## WHAT'S THE SCIENCE?

All living things are made of **cells**. A cell is a basic unit of life. Bacteria and other unicellular organisms are made up of just one cell. Animals are made up of millions and millions of cells. Although there are different types of cells inside an animal, they all have the same basic parts no matter the cell's function. All animal cells contain a **cell membrane** and inside that contain many **organelles** that serve a specific function. The main organelles found in an animal cell are the **nucleus**, **ribosomes**, **Golgi bodies**, **endoplasmic reticulum**, and **mitochondria**. An animal cell contains everything that it needs to be self-sufficient so that it can do the job that is required. Plant cells differ from animal cells. They contain a cell wall, chloroplasts, and vacuoles. One of the most important functions of a plant cell is to photosynthesize, which is to convert sunlight energy into food for the plant.

## FAMILY SCIENCE TIPS



- Compare the animal cell to a plant cell. What are the main similarities between both? What differences do you see that distinguish a plant cell from an animal cell?
- Cells are typically too small to see without assistance. Since students may have difficulty imagining how small a cell really is, you can make your own microscope slide to reveal the size and shape of plant and animal cells. (You may have to borrow a microscope or visit a location that has one.) Onion skin is typically used to show plant cells and dyed cheek swabs from you or your students' cheeks can be used to show animal cells.

# Creating the Animal Cell Cookie

## INSTRUCTIONS

**1** All living things are made of cells. Within those cells are organelles, or “tiny organs,” that help the cell to carry out its functions. Place the sugar cookie on a plate and cover it with frosting. The cookie is in the shape of an animal cell, which is more round, compared to a plant cell. The frosting represents the cytoplasm which contains the cell’s enzymes.



**2** Take a Twizzler and carefully pull it apart, leaving one strand of the candy. Place the Twizzler around the perimeter of the cookie to form a circle. This represents the cell membrane. The cell membrane controls what goes in and out of the cell.



**3** Next, grab a Mini Oreo cookie and place it somewhere inside the cell membrane. The Oreo is our nucleus that controls the cell’s activities. It also houses the cell’s DNA!



**4** Carefully shake the round sprinkles on the frosting. These will be our ribosomes and their function is to build proteins by reading the genetic code and linking the correct pieces (amino acids) together in the correct order.



**5** Place 3 jelly beans side by side in the frosting. The jelly beans are the Golgi bodies and their function is to package up the protein and fat molecules to be used inside or outside of the cell.



**6** Unwrap the fruit roll-up from its packaging and cut or tear it into fourths. Take a fourth of the roll-up and fold it like an accordion. Press the edges together. Place the fruit roll-up close to the nucleus (Oreo cookie). This is the endoplasmic reticulum or the ER. The function of the ER is to make, modify and transfer proteins.



**7** Lastly, place a couple of chocolate chips in the frosting to act as the mitochondria. The mitochondria are more commonly known as the powerhouse of the cell. They generate most of the energy needed to power the cell’s reactions.



**8** Compare your animal cell cookie to a picture or drawing of an animal cell. Identify the different organelles. How is an animal cell different from a plant cell?

**9** Enjoy your animal cell cookie as a treat after your investigation!

# Resources

- *Story of the Cell* by Ashley Hannah George
- *Plant Cells vs Animal Cells* by Rebecca Woodbury, Ph.D.
- *Cells* by Marina Cohen
- *Animal Cells* by Penny Dowdy

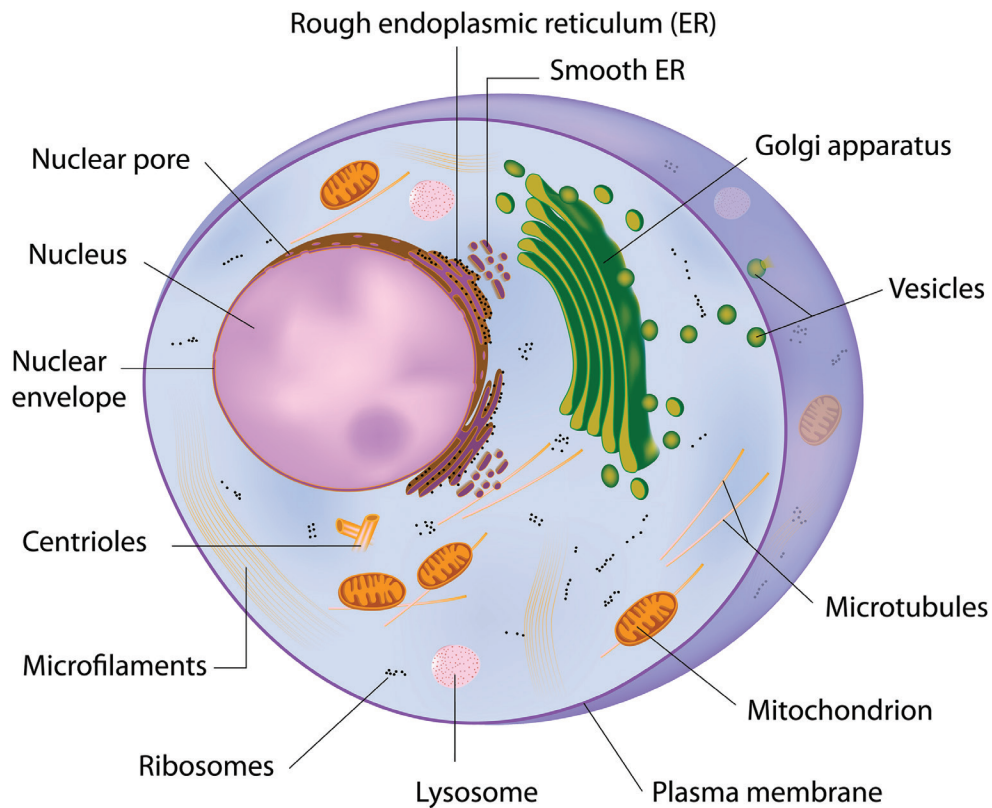
## VOCABULARY

- Cell
- Organelle
- Nucleus
- Mitochondria
- Golgi bodies
- Ribosomes
- Endoplasmic reticulum

## INTERESTED IN MORE SCIENCE INVESTIGATIONS?

- Visit The Children's Museum website for more at-home science investigations.
- Explore the museum's ScienceWorks exhibit to learn more about living things.
- Visit the STEMLab, located in ScienceWorks, for a fun, family science experience.

## Structure of a Typical Animal Cell



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