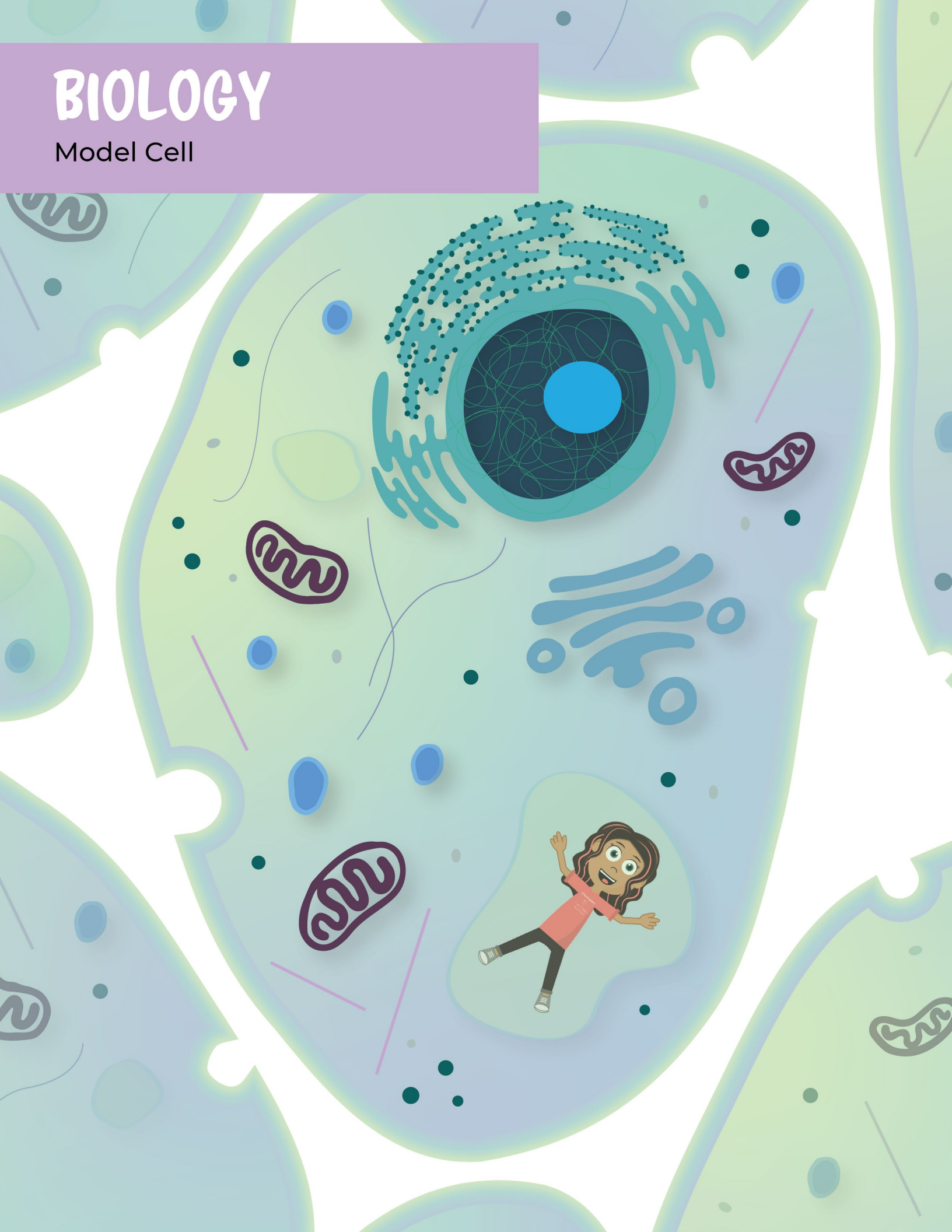
BIOLOGY

Model Cell



Model Cell

NGSS

MS-LS1-2

Objective

The student will understand the role that each component of a cell plays for the total function of the cell.

The student will be able to identify the basic components of a cell and create a model of an animal cell.

Vocabulary

Cell: Smallest structural and functional unit of an organism/life.

Nucleus (candy brains): The brain of the cell – contains DNA and RNA that is responsible for growth and reproduction

Plasma Membrane (Nerds Rope): Thin layer of proteins and fats that surround the cell. It is semipermeable (some substances can pass, others cannot), much like a gatekeeper!

Cytoplasm: Jellylike material outside of the cell nucleus in which other organelles are located

Endoplasmic Reticulum (Air Heads Xtremes): Helps transport materials around the cell

Lysosome (shark candy): The trash can of the cell, will "eat" particles in the cell.

Ribosome (sprinkles): Helpers inside a cell to make different products (DNA and proteins)

Golgi Apparatus (Gummy Worms): Near the nucleus, provides a membrane for lysosomes that can be exported from the cell

Vacuoles (Gushers): A space within the cytoplasm of a cell, enclosed by a membrane and typically containing fluid

Mitochondira (Mike and Ikes): POWERHOUSE, creates energy for the cell.

Tissue: A mass of like cells that form specific organs, which

then form systems, which then form organisms.

Background

If you are unsure of what any part of the cell does – refer to the vocabulary section. This lesson is often paired with DNA extraction, so depending on sequence, you can ask the students if they recall extracting DNA from a fruit or from their own saliva – DNA is located in the nucleus, etc....

Materials

- Toothpicks, pens, and masking tape for labeling
- 15 paper plates to put the cell model on
- 15 spoons to spread out the frosting/cytoplasm
- Jar of frosting (cytoplasm)
- 15 Gummy Brains (nucleus)
- 15 Nerds Ropes (Plasma membrane)
- 15 Air Head Xtreme (ER)
- 15 shark candies (Lysosomes)
- Sprinkles (Ribosomes)
- 15 Gummy Worms (Golgi Apparatus)
- 5 packs of Gushers (vacuoles)
- Bag of Mike and Ikes (pick a color for the mitochondria)

Procedure

1. Introduce the concept, generally – It will probably be best to talk about each part of the cell as you go. You know your students – you can decide!
2. Pass out toothpicks and masking tape. Give each student 9 toothpicks, and demonstrate how to fold masking tape over one end of each toothpick to use as a label.
3. You can either have students write everything out at the beginning, or go organelle by organelle.
4. Explain what each part of the cell does as you go along and ask questions.

5. This lesson is pretty self-explanatory. After all discussion, students can eat their cell!

Guiding Questions

- Why would we choose a shark to be the lysosome?
- Why is the nucleus the brain?

Career/Future Application

Biologists, Doctors, Researchers... the possibilities are endless! So many careers rely on the knowledge of cells to do research. The cell is at the very basis of so many processes, and therefore understanding of these processes are important to continued research application.

Sources

https://sciencetrends.com/the-parts-of-an-animal-cell/