

Submitted by: GENERATION CURES

TITLE: CELLS

SUBJECT: Science

GRADE: 6th

RECOMMENDED TIME: 55 minutes

GENERATION CURES CONTENT: Zebrafish Webisode 3-Diagnosis

LEARNING GOALS:

Students will learn the various parts of the cell, and that cells are the fundamental unit of life. Cells are known as the “building blocks” of life. There are two different types of cells: eukaryotic and prokaryotic.

RESOURCES/MATERIALS NEEDED:

- Computer / Internet / Projector
- Pen / Pencil / Paper
- *Zebrafish* Webisode 3-Diagnosis (www.kids.generationcures.org)
- Dictionary: Define
 - Cell membrane- a thin layer around the cell that holds it together while allowing materials to flow in and out.
 - Cytoplasm- a thick fluid inside the cell in which the other cell parts are suspended.
 - Organelle- a part of a cell that has its own specialized function, and is typically separated from other organelles by its own membrane.
 - Nucleus- the center of the cell that governs all other cell parts.
 - DNA- genetic material that controls and regulates cell activities.
 - Ribosomes- organelles that form proteins by stringing together amino acids.
 - Cell wall- the hard, nonliving layer around the cell membrane, which gives it rigidity.
 - Vacuole- an organelle chamber where water and dissolved materials are stored.
 - Chloroplasts- plant organelles that appear as tiny green spheres containing chlorophyll, used in photosynthesis.
 - PCR Machine- a Polymerase Chain Reaction Machine—also called a Thermocycler or a DNA amplifier—is used to amplify segments of DNA for use in medical research.

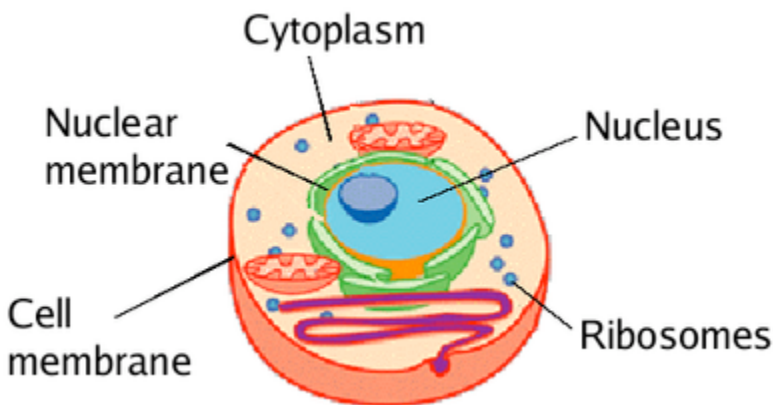
BACKGROUND:

As Episode 3 of *Zebrafish* begins, Vita gets a message that Walt and Tanya can't make a planned band rehearsal. Initially, she's frustrated, but when Vita bumps into Tanya at the hospital, her frustration turns to concern. Her friend reveals that she has leukemia.

Later, in her brother's research lab at the hospital, Vita asks about the disease. Her brother Pablo reveals that leukemia is a type of cancer, the focus of some of his research with zebrafish. He also explains that his research is being delayed because the hospital doesn't have the funds to buy a PCR machine. This discussion is Vita's *aha!* moment. Her interest turns from helping herself to helping others as she realizes that her new band might help provide funds to buy the equipment, which in turn might speed up the efforts to find a cure for Tanya's disease. Suddenly, the issue of research and finding cures becomes urgently personal.

LESSON STEPS:

- Before students watch *Zebrafish* Webisode 3-Diagnosis review the vocabulary and discuss the difference between eukaryotic cells (plant and animal cells which contain a nucleus) and prokaryotic cells (primitive cells such as bacteria, which lack a nucleus).
- Draw a eukaryotic cell on the board for students:



- Divide the class into groups of not more than four and ask them to spend fifteen minutes brainstorming what they can use to build a model of a cell.
- Reiterate that their cells should contain a cell membrane, cytoplasm, nucleus, ribosomes, and nuclear membrane.
- *Example:* Cell membrane- sandwich bag; ribosomes- macaroni; cytoplasm- hand sanitizer; nucleus- grape
- Engage students: What materials represents the components of the cell best? Why?

EXTENSIONS:

- Have students create their own cell at home, individually, using the materials discussed among group members.