STEM Relay

Biologist

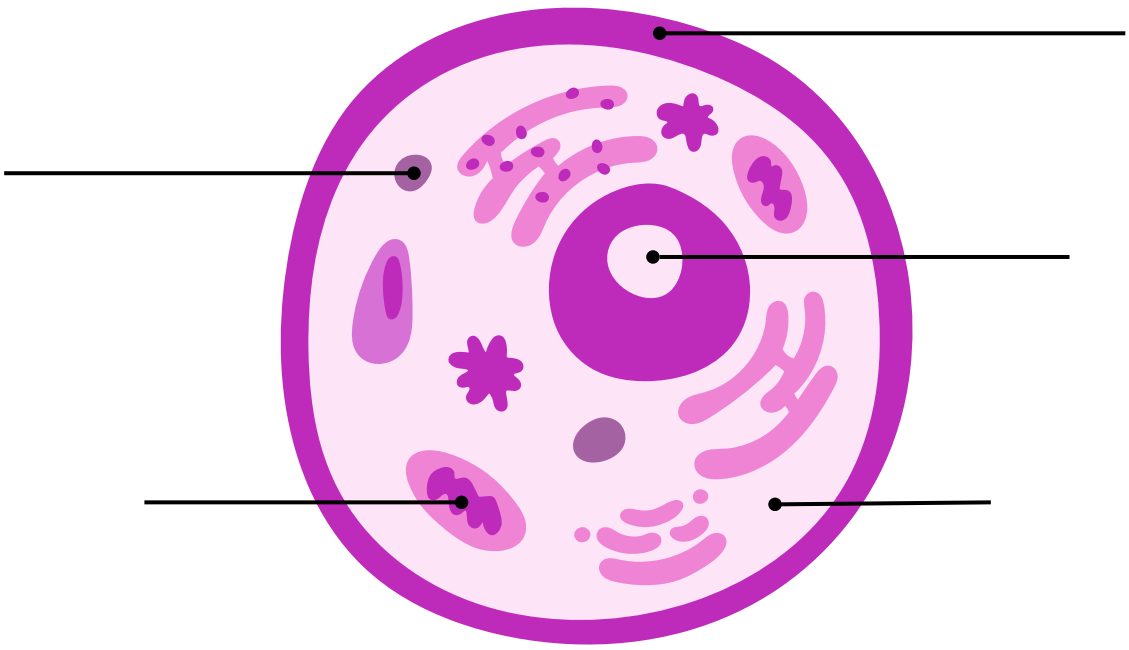
Student Instructions:

You are a biologist examining cells at a research lab. Today you are helping the medical team understand how different types of cells work to keep the body healthy. The team is counting on your expertise to make important discoveries!

Your Task

Investigate a sample under the microscope, identify the organelles inside, and explain how each part helps?

1. You see a large structure controlling all the cell's activities and storing important genetic information.
2. You notice a flexible outer layer that determines what enters and leaves the cell.
3. Small structures are producing proteins, which are essential for growth and repair.
4. Energy production is happening here as the cell breaks down food to stay powered.
5. A jelly-like substance is holding all the organelles in place.



STEM Relay

Chemist

Student Instructions:

You are a chemist studying how different materials react to heat and other substances. You conducted experiments with three different substances: iron filings, sugar, and baking soda. Below are the observations from each experiment.

Your Task

1. Identify which reaction is an example of a chemical change when heat is applied, and explain why.
2. Which substance can be separated from a mixture using a magnet?
3. Suggest a way to separate a mixture of iron filings, sugar, and baking soda using what you've learned.

Substance	Reactions with Heat	Reactions with Vinegar	Magnetic
Iron Fillings	No visible change	No bubbles	Yes
Sugar	Melts and turns brown	No bubbles	No
Baking Soda	No visible change	Fizzing bubbles	No

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Pharmacologist

Student Instructions:

You are a pharmacologist researching how medicines interact with the human body. A patient is prescribed a medicine that takes 1 hour to start working, and every hour after that, half of the medicine remains active in the body.

Your Task

1. If the patient takes 100 milligrams of medicine at 8:00 a.m., how much medicine remains active at 9:00 a.m.?
2. How much remains active at 10:00 a.m.?
3. Explain why understanding how medicine breaks down over time is important for prescribing the correct dosage.

STEM Relay

Clinical Trial Specialist

Student Instructions:

You are a clinical trial researcher tracking how different doses of a medicine affect the number of virus particles in patients' bloodstreams over time. Each pattern below represents how the virus particles grow. Your task is to analyze and predict the next number in each sequence to make treatment decisions.

Your Task

Pattern 1: A medicine reduces virus particles in a patient's blood as follows
2, 4, 8, 16, __, __

Pattern 2: Another medicine affects virus particles with the pattern
2, 6, 18, 54, __ , __

Pattern 3: A different treatment causes the following pattern:
2, 8, 32, 128, __, __

Explain what type of mathematical pattern each sequence follows (multiplication, addition, etc). How do these patterns help predict the effect of treatments over time?