Stop-Motion Mitosis Animation Lab

Introduction: Stop motion (also known as stop action) is an animation technique to make a physically manipulated object appear to move on its own. The object is moved in small increments between individually photographed frames, creating the illusion of movement when the series of frames is played as a continuous sequence.

Objective: Create a model that demonstrates the behavior of chromosomes during mitosis.

Materials: play-dough, laptop, labels

Procedure:

- Using available materials, construct a model of a cell for each stage of the cell cycle.
- Take a minimum of 25 pictures of the different stages of the cycle. Make very small changes to transition from phase to phase (5-6 pictures between each phase change).
- Label the stages and important parts of the cell as you are taking your pictures.

Grading: SEE RUBRIC

Phase Requirements: These stages and labels will be required on your pictures and will need to stay up throughout the stage:

- Prophase
- Metaphase
- Anaphase
- Telophase
- Cytokinesis

You will also want to make sure the following are labeled throughout your presentation according to the "Helpful Information":

- Centromere
- Sister chromatids
- Nuclear membrane
- Cell membrane
- Chromosomes

Helpful Information

Prophase: The nuclear membrane is starting to break down and the centrioles have moved to opposite poles. The spindle fibers are forming from the centrioles. Label all the parts.

Metaphase: Line up your chromosomes up on the equatorial plane. The spindle fibers should attach to the chromosomes in the correct place. Label the chromosomes, chromatids, and spindle fibers

Anaphase: Separate the double-stranded chromosomes; move them toward opposite poles

Telophase: The nuclear membrane reforms around the new sets of chromosomes. The chromosomes begin to unwind and become thin strands again.

Cytokinesis: Make sure you show the formation of a cleavage furrow and the split into two new cells.

iMovie Tutorial:
https://youtu.be/ipE3nCjI0IU
Here is a brief example for ideas on how to construct your play-dough model:
https://youtu.be/oe5o0vgql6I