Mitosis Lab

Modeling of the Phases of Interphase, Mitosis, and Cytokinesis

Create a data table to record the name of each phase modeled, a sketch of your model.

Make two chromosomes—each out of a different color WIKI stick. Using the other wiki sticks, assemble the parts that are visible during the phases of the cell cycle. Have vB check your model and stamp your lab book for each phase you successfully model.

G1: Nuclear membrane still intact. Chromosomes not coiled. Nucleolus visible. Centrioles not replicated. DNA has not been replicated and the DNA has not coiled up.

G2: Nuclear membrane still intact. Chromosomes not coiled. Nucleolus visible. Centrioles have been replicated. DNA has been replicated but the DNA has not coiled up.

Prophase: Chromosomes coil-up so they are visible under the compound microscope. Sister chromatids are attached at the centromeres. Nucleolus disappears. Centrioles begin to separate. The spindle begins to form. The nuclear membrane breaks down.

Metaphase: The kinetochore microtubules attach to chromosomes at their centromeres. Chromosomes line up in the middle of the cell. Non-kinetochore microtubules grow from the spindle across the cell.

Anaphase: The centromeres holding sister chromatids split. The kinetochore microtubules of the spindle shorten, pulling one chromatid from each chromosome toward each pole of the cell. Non-kinetochore microtubules lengthen the cell. Once the centromeres splits in two, the chromatids are now officially called chromosomes.

Telophase: The chromosomes have separated and moved to opposite ends of the cell. The spindle apparatus breaks down. The nuclear membrane begins to reform.

Cytokinesis: The cytoplasm divides. In animal cells the cell pinches together at the cleavage furrow. In plant cells, a cell plate, and a new cell wall, forms between the two new cells. Each new cell receives one nucleus (which contains a complete set of chromosomes) and about half the cytoplasm. The two cells are called “daughter cells.” These new cells now enter interphase and the cell cycle begins again.