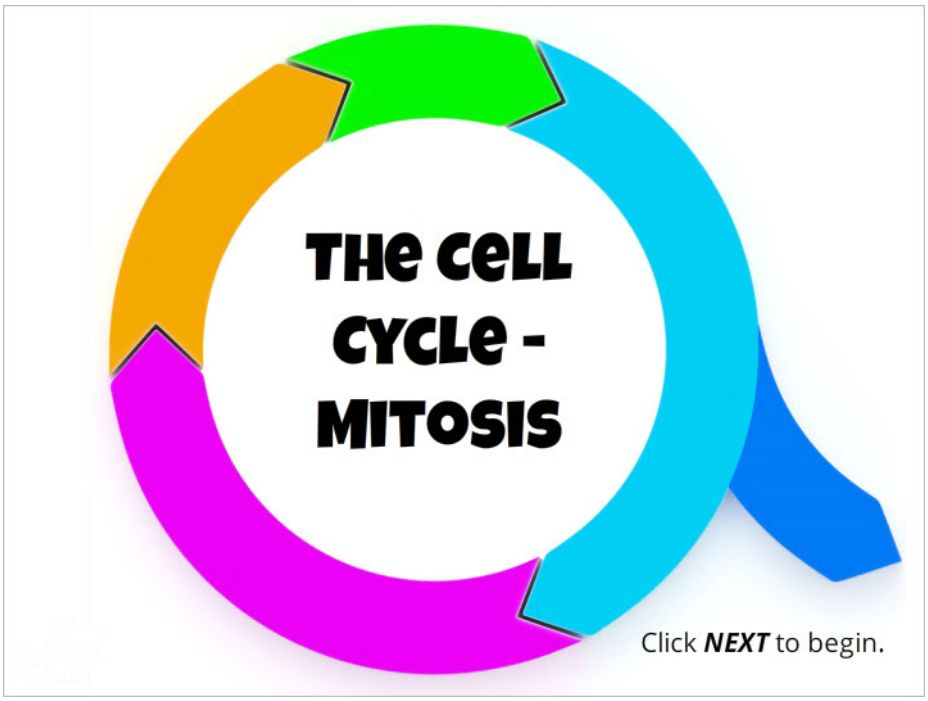
Module 4: Cell Biology - Growth and Reproduction

Topic 1 Content: The Cell Cycle - Mitosis Notes

Introduction



The Cell Cycle - Mitosis

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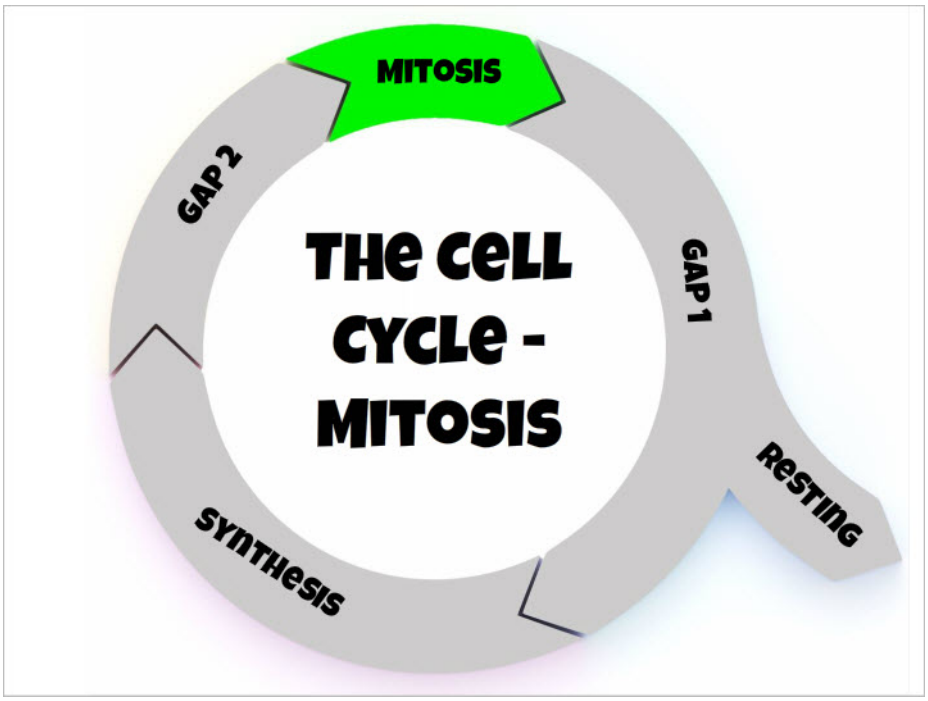
Cell Cycle and Mitosis



The growth and development of cells takes place in the cell cycle during interphase. Interphase has the phases Gap 1, Resting, Synthesis, and Gap 2. In this interactivity, you will focus on the final stage of the cell cycle, mitosis, when the cell divides. Click ***Mitosis*** to begin.

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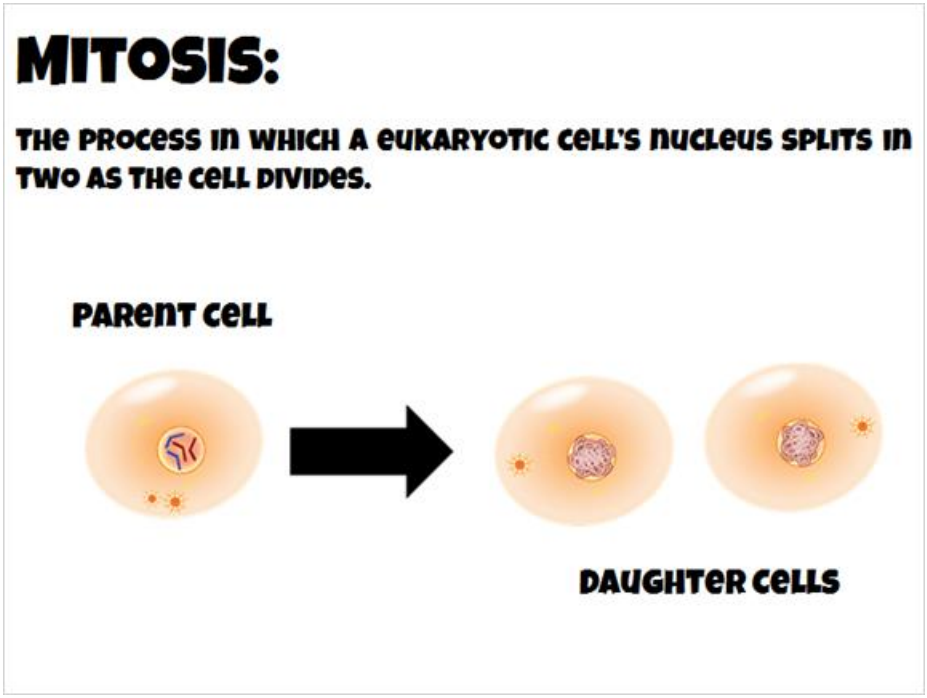
Mitosis



Mitosis is the process which a eukaryotic cell's nucleus splits in two as the cell divides. In mitosis, one parent cell creates two daughter cells.

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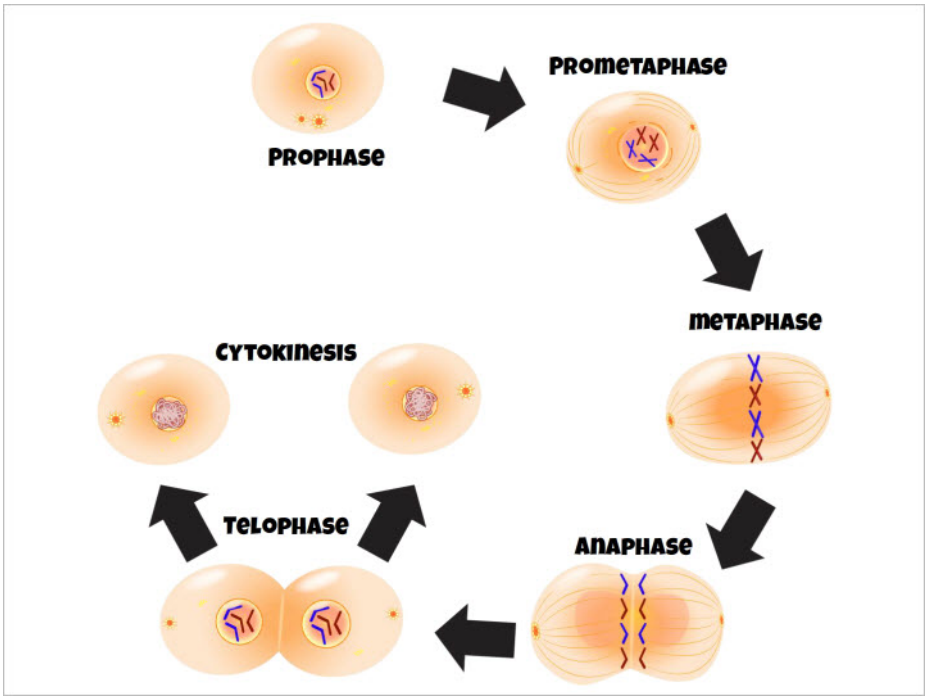

Mitosis has six important phases: prophase, prometaphase, metaphase, anaphase, telophase, and cytokinesis. Click ***Prophase*** learn about the first phase of mitosis.

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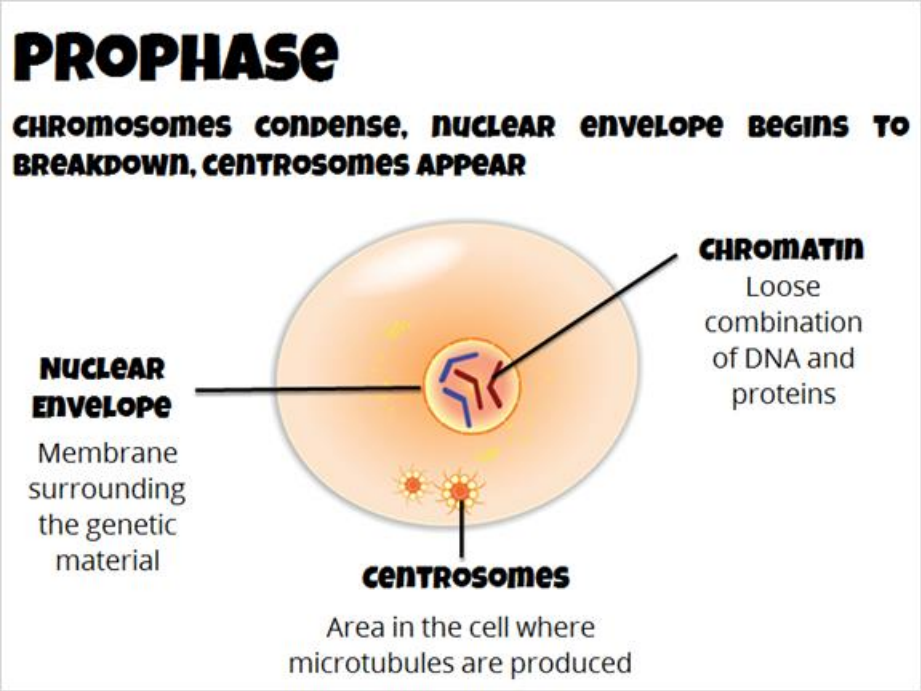
Prophase



The first phase of mitosis is called prophase. During prophase the chromosomes condense and become visible as the nuclear envelop begins to break down. Centrosomes will appear and eventually attach to the centromere of sister chromatids in a later phase of mitosis.

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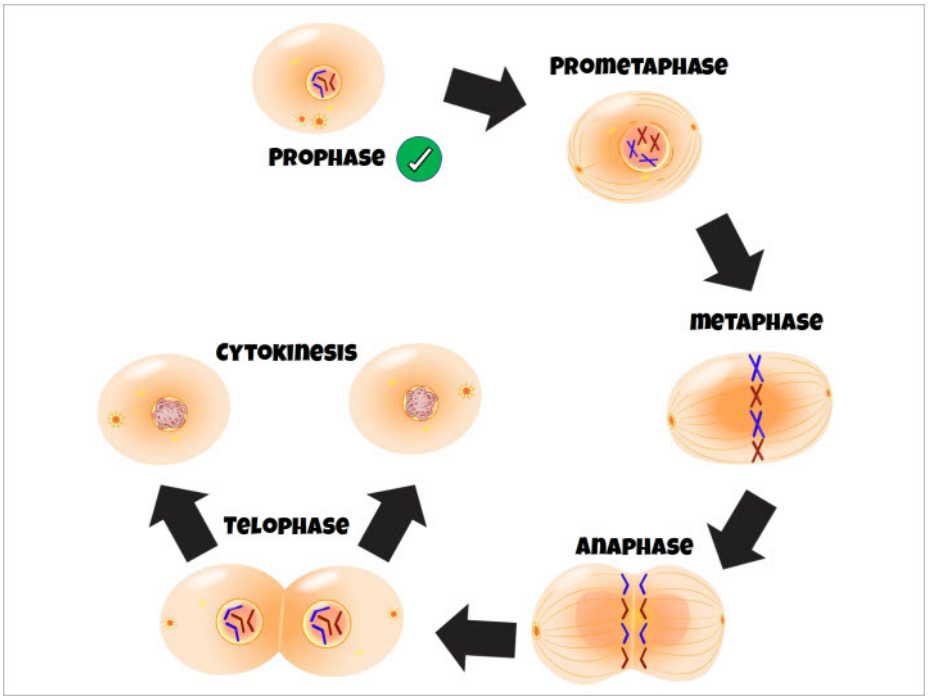
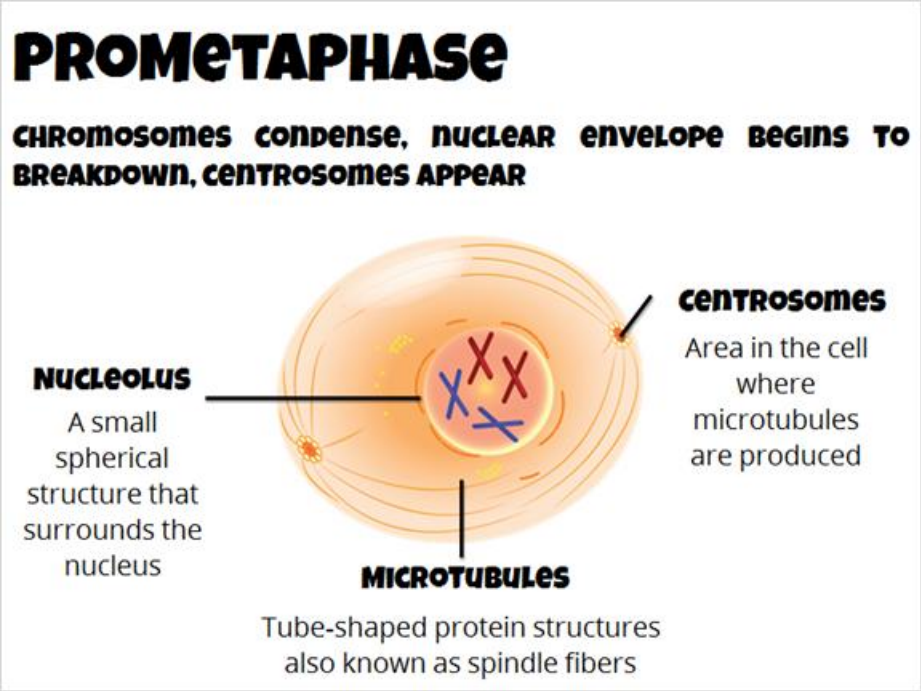


After prophase, the cell moves into prometaphase. Click ***Prometaphase*** to continue learning about mitosis.

Prometaphase



The second phase of mitosis is called prometaphase. During prometaphase, the nucleolus disappears. By the end of this phase, the entire nucleus will have disintegrated. The centrosomes and centrioles migrate to opposite ends of the cell. Microtubules, called spindle fibers, grow from the centrioles and spread toward the center of the cell.

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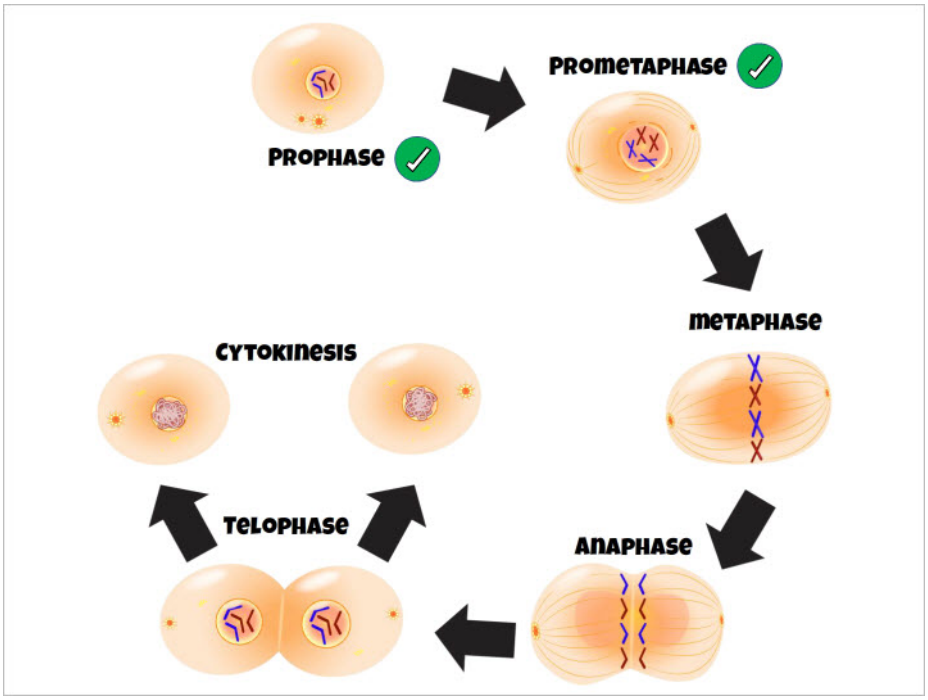
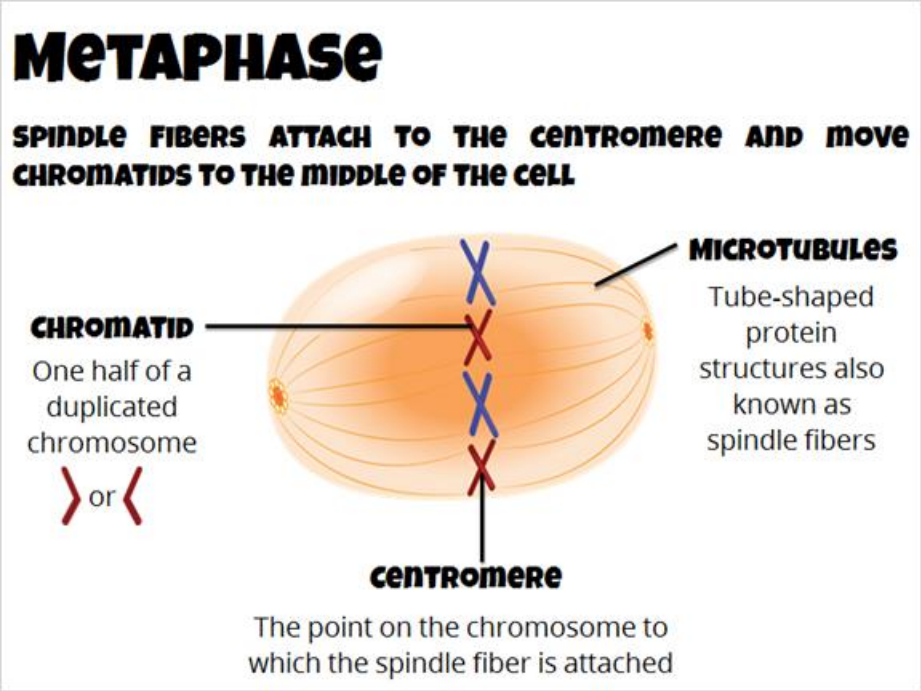


After prometaphase, the cell begins metaphase. Click ***Metaphase*** to continue learning about mitosis.

Metaphase



The next phase is called metaphase. During metaphase, the spindle fibers attach to the centromere, and move the sister chromatids to the equator, or middle, of the cell, where they align.

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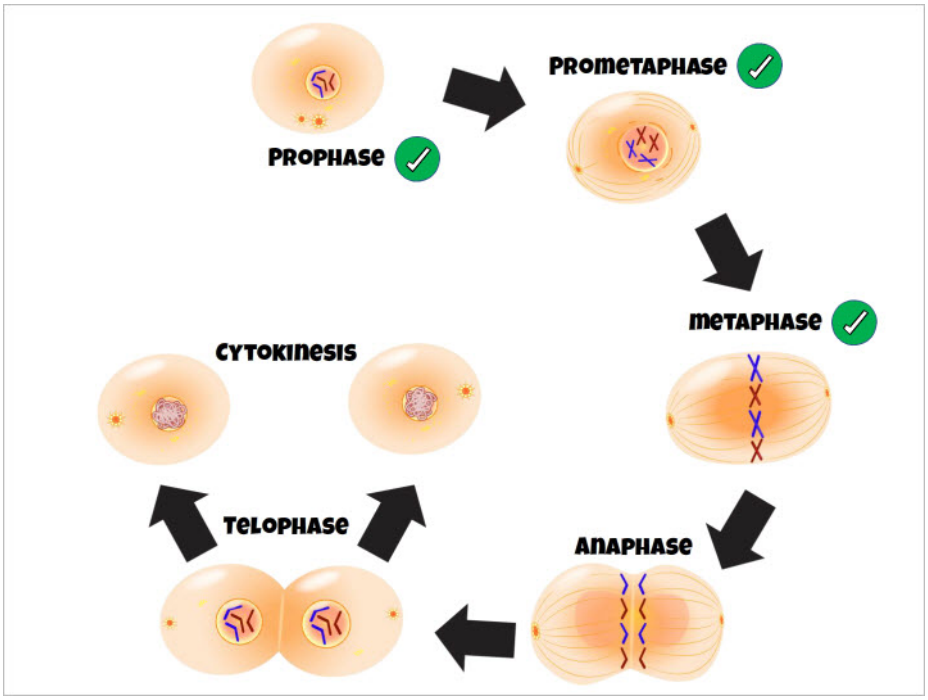
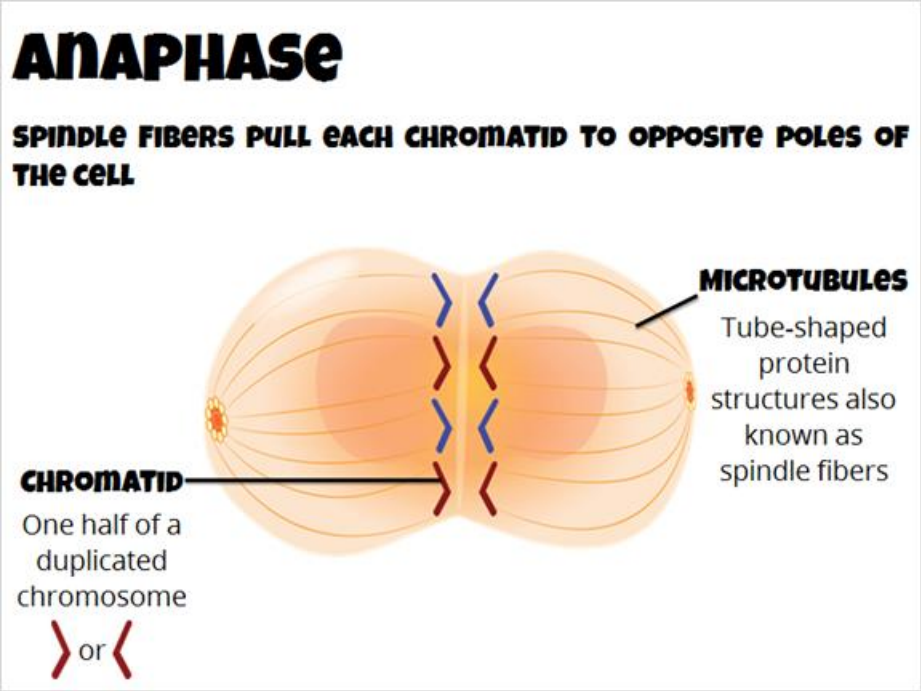


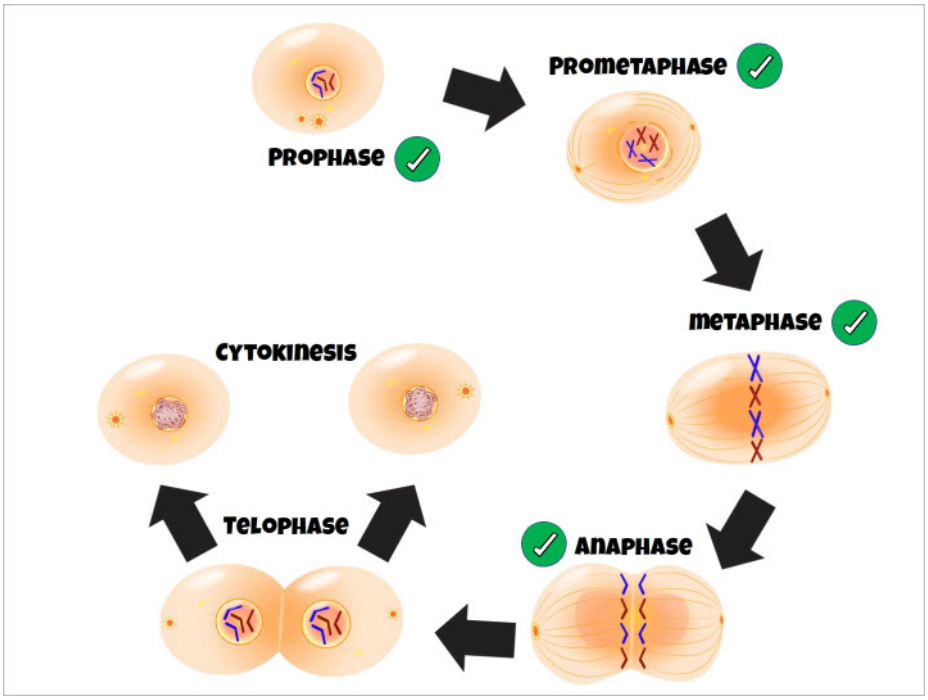
Anaphase occurs after metaphase. Click ***Anaphase*** to continue learning about mitosis.

Anaphase



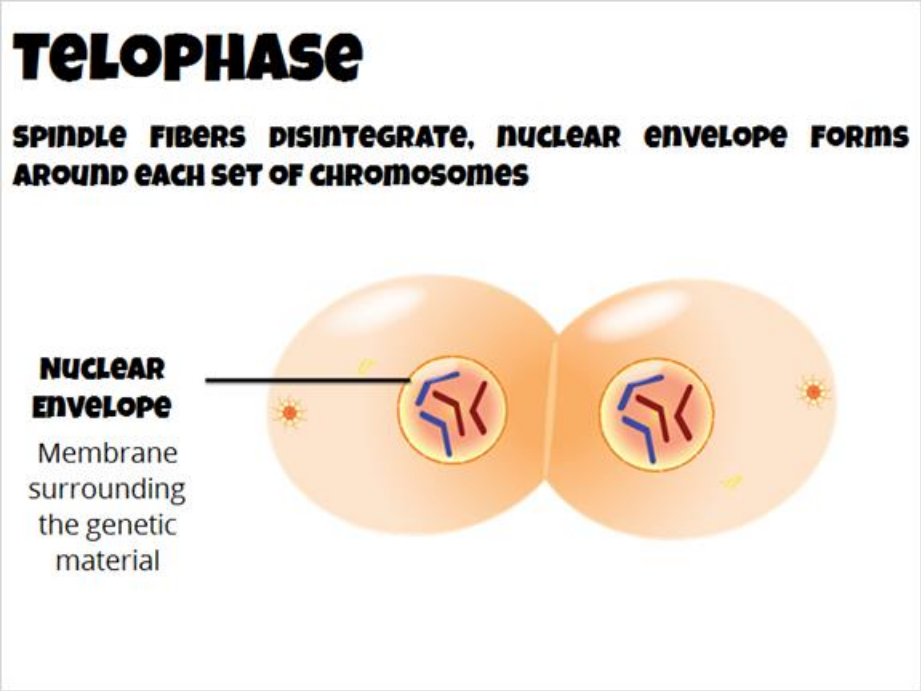
During anaphase, the spindle fibers pull each half of a sister chromatid pair to opposite poles of the cell.

Instructions



Next, the cell enters telophase. Click ***Telophase*** to continue learning about mitosis.

Telophase



In telophase, the chromosomes are now positioned at either end of the cell. The spindle fibers disintegrate and the nuclear envelope reforms around each new set of chromosomes creating two new nuclei, each an exact copy of the parent cell's nucleus. At this point the parent cell appears as two cells still connected by a single membrane.

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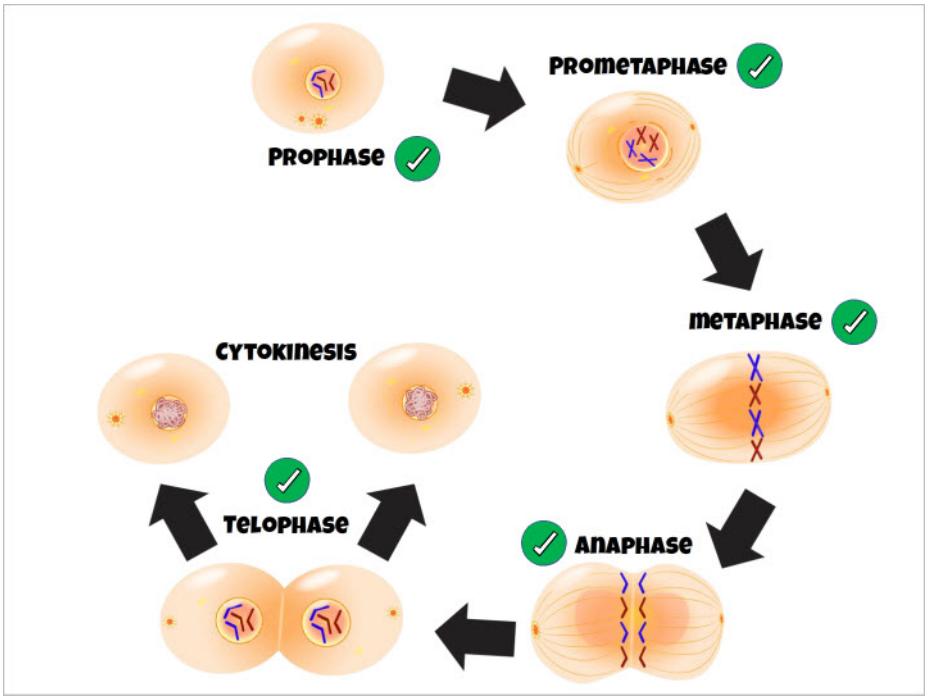
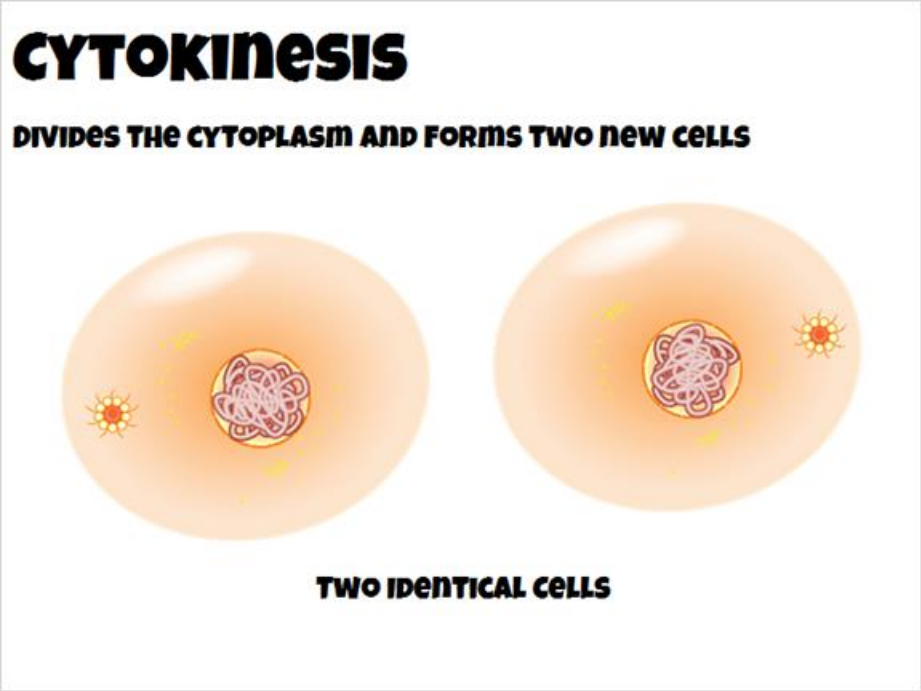


The final phase of mitosis is cytokinesis. Click ***Cytokinesis*** to continue learning about mitosis.

Cytokinesis



Cytokinesis is the process that divides the cytoplasm, and forms two new cells. The cells enter interphase and begin the entire cell cycle over.