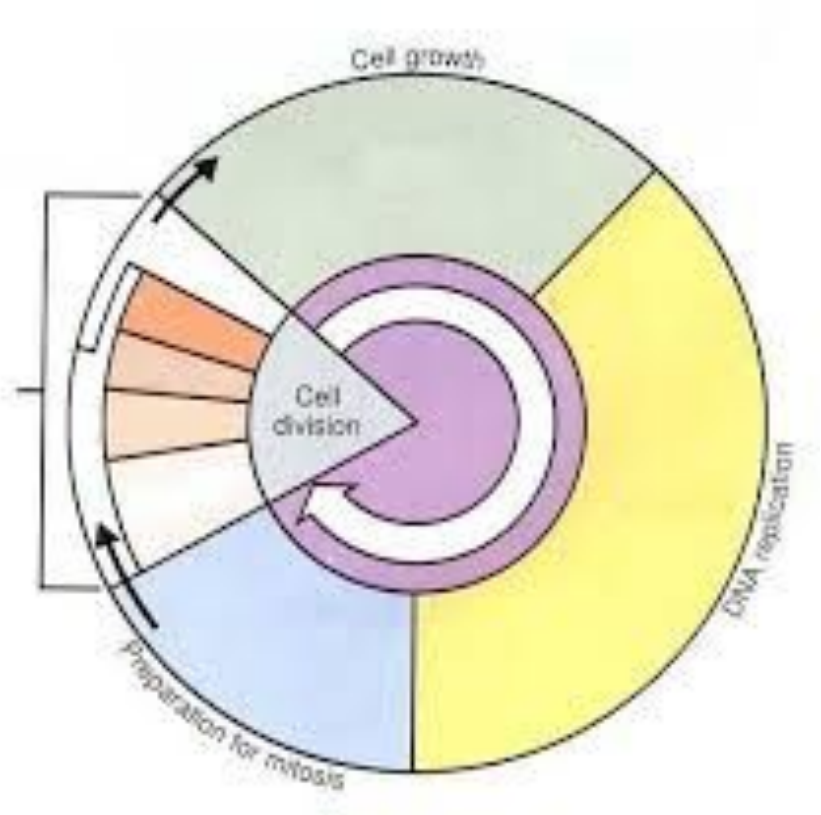
You will complete the Cell Cycle diagram as we go through this lecture together.

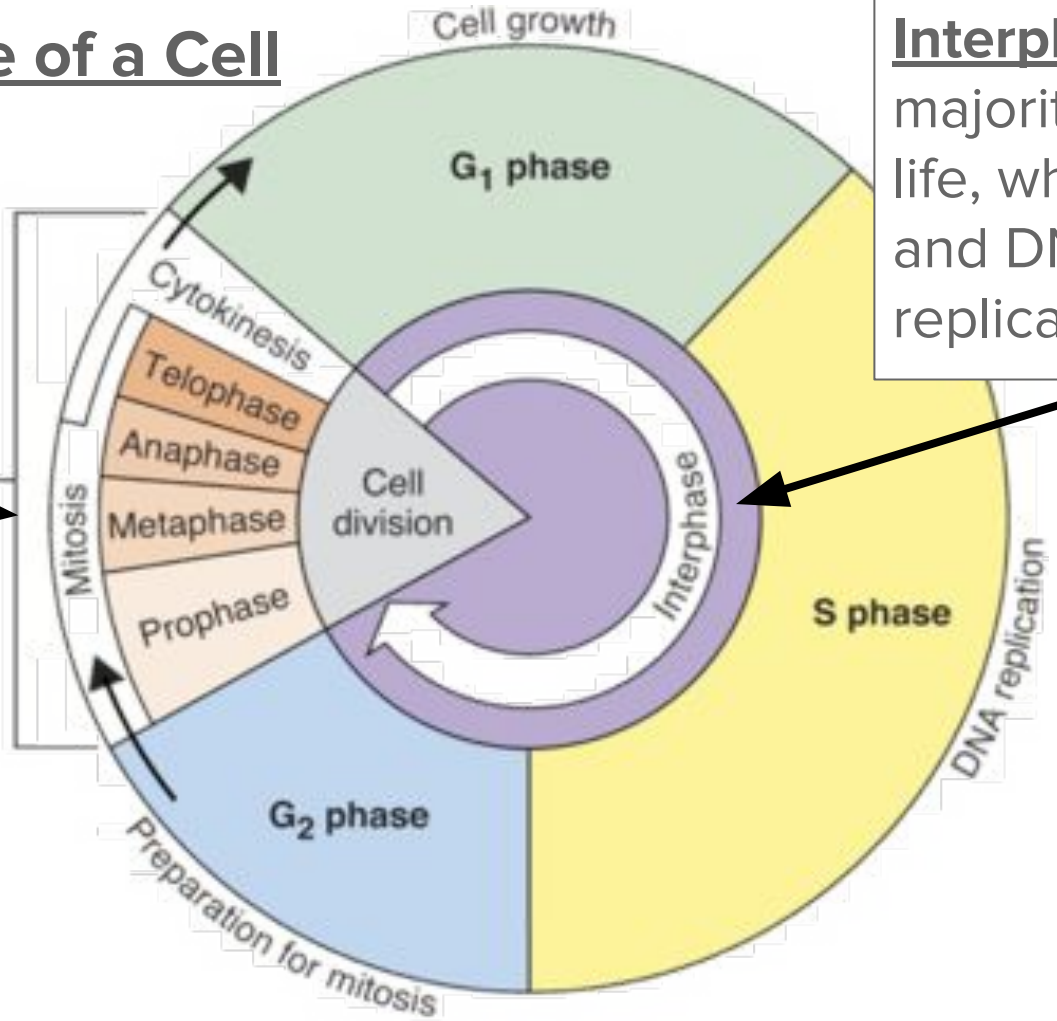
Please fill in the appropriate spaces and attach the final diagram into your notebook.



The Life Cycle of a Cell

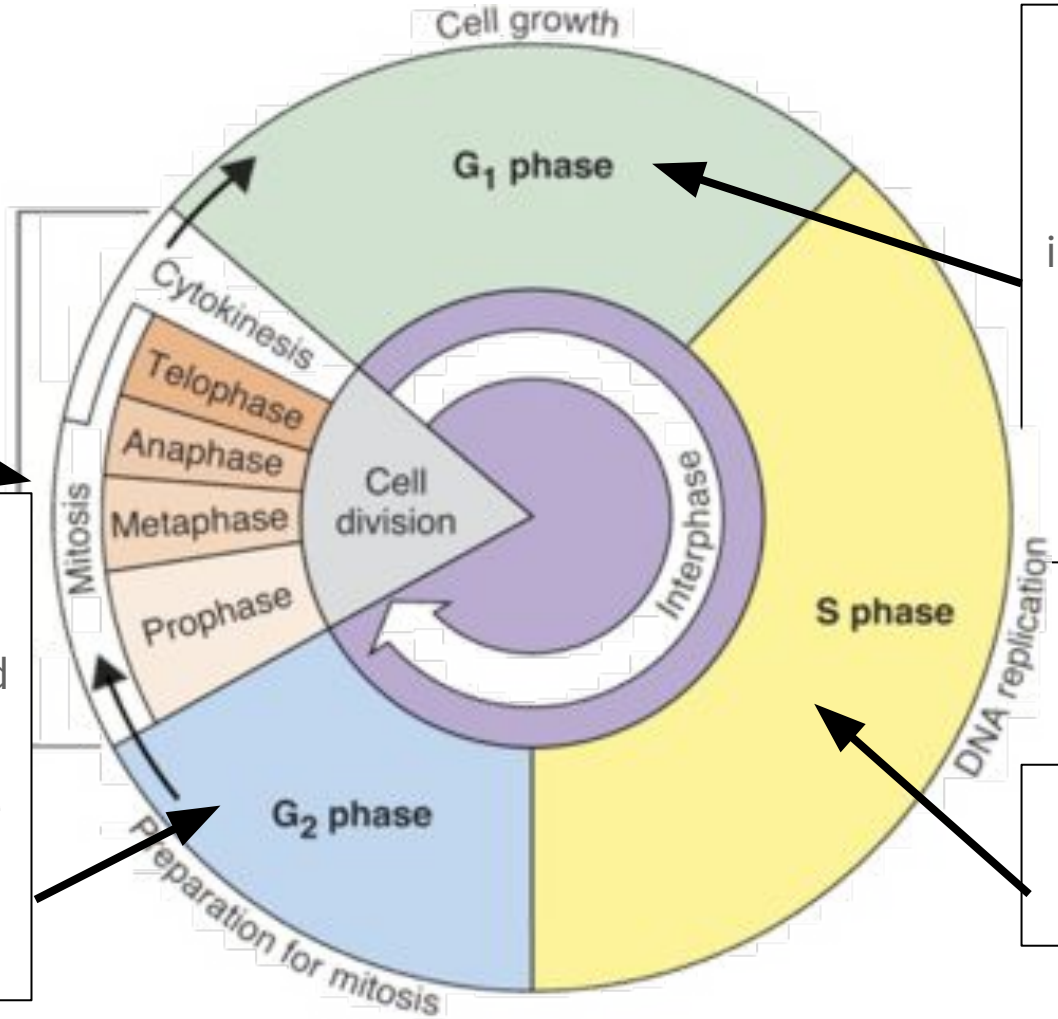
Interphase: the majority of a cell's life, when growth and DNA replication occurs

Mitotic (M) phase: the phase of the cell cycle when the cell divides



M phase: cell division occurs, and two daughter cells are created

G2 phase: organelles and molecules needed for division are produced and the cells gets ready for division

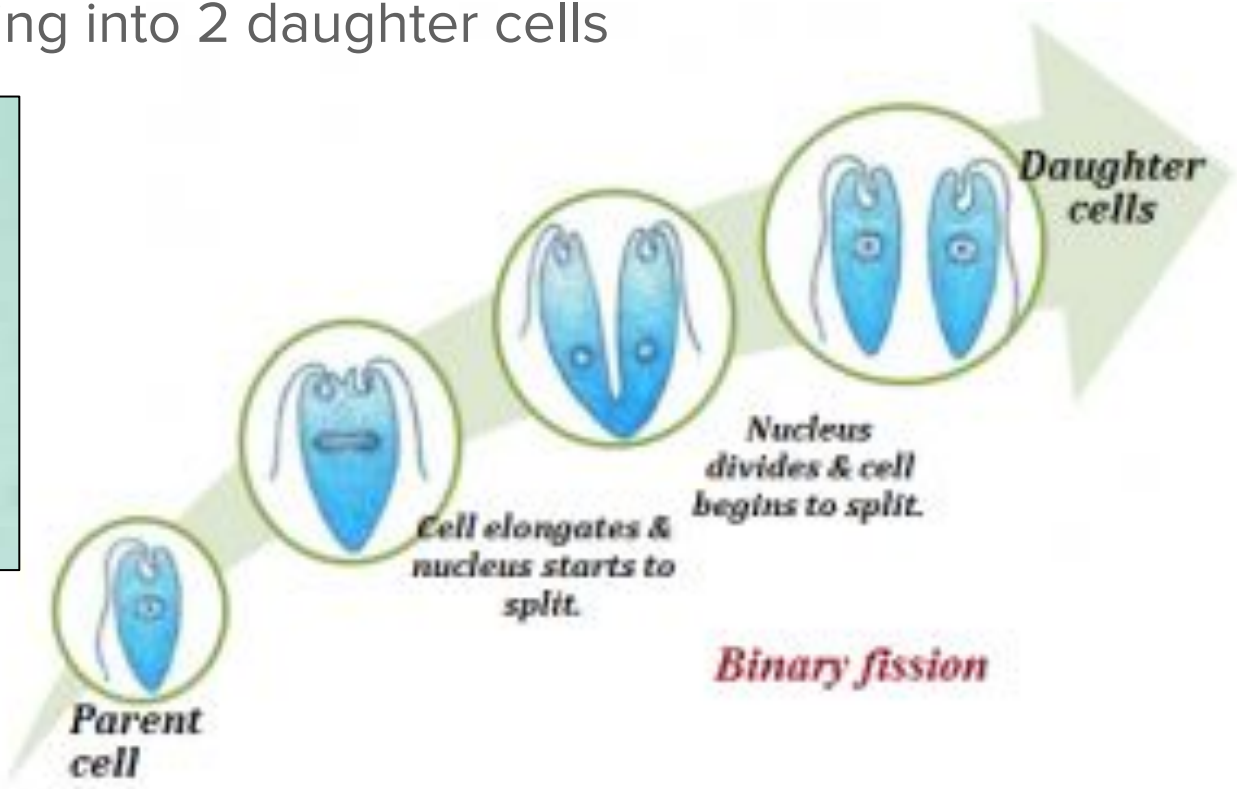


G1 phase: cells do most of their growing. They increase in size and synthesize new proteins & organelles

S phase: DNA replication occurs

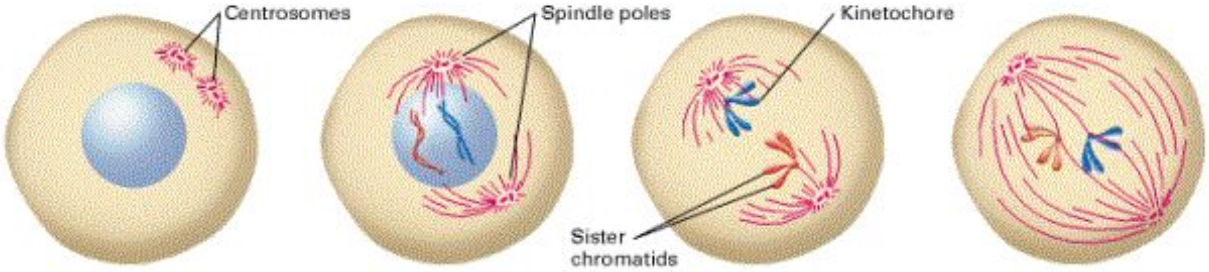
In prokaryotes, cell division is a simple separation of cell contents.

- **<u>binary</u> <u>fission</u>**: the process of a unicellular organism dividing into 2 daughter cells

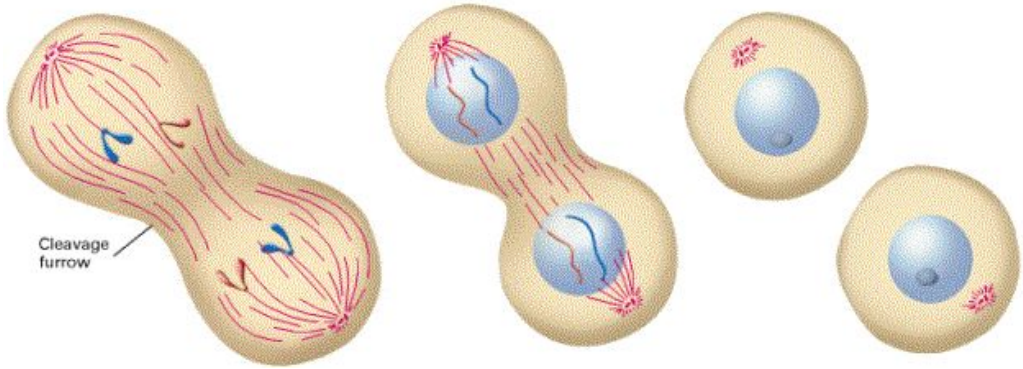


In eukaryotes, cell division is more complex and occurs in two stages:

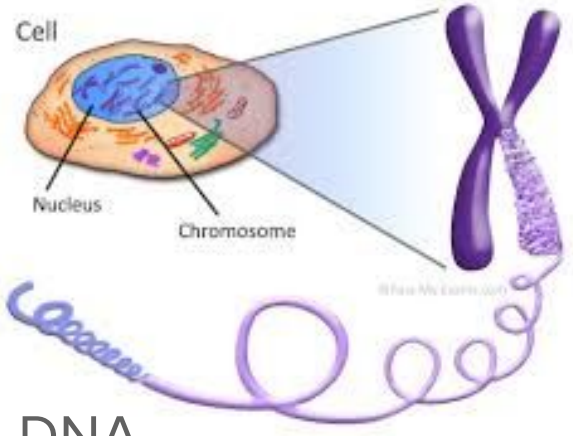
- 1st stage ➜ **Mitosis** : division of the nucleus



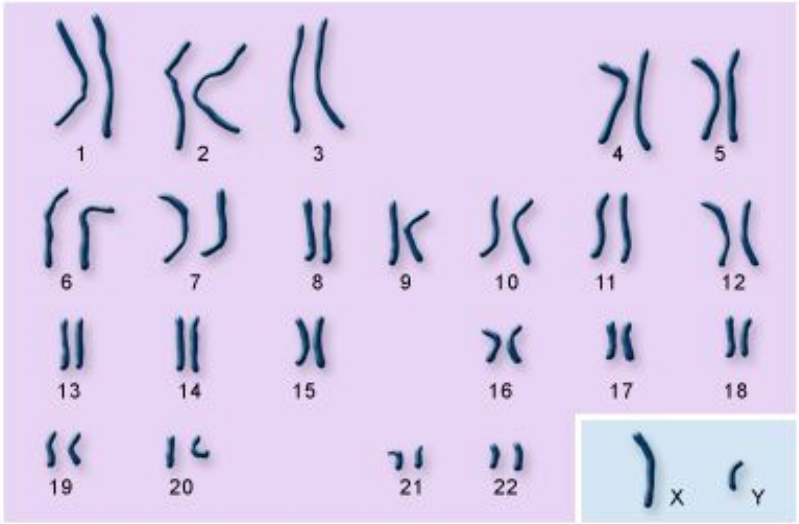
- 2nd stage ➜ **Cytokinesis**: division of the cytoplasm

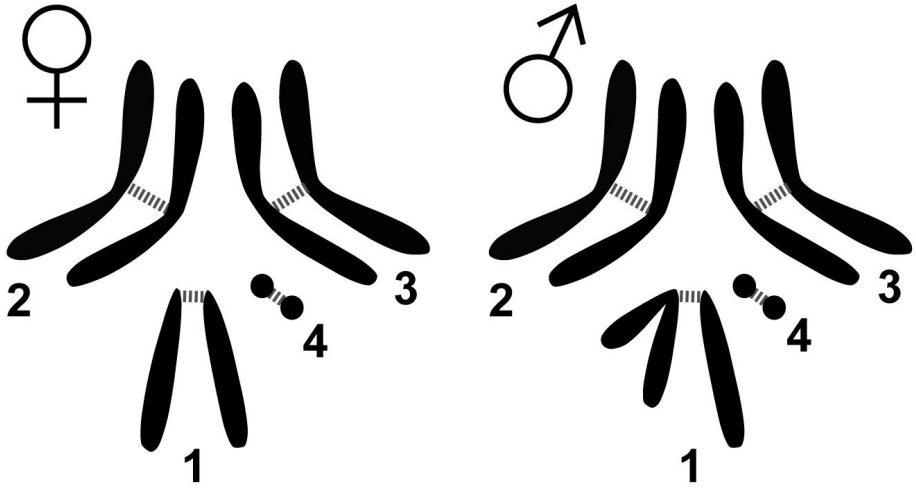


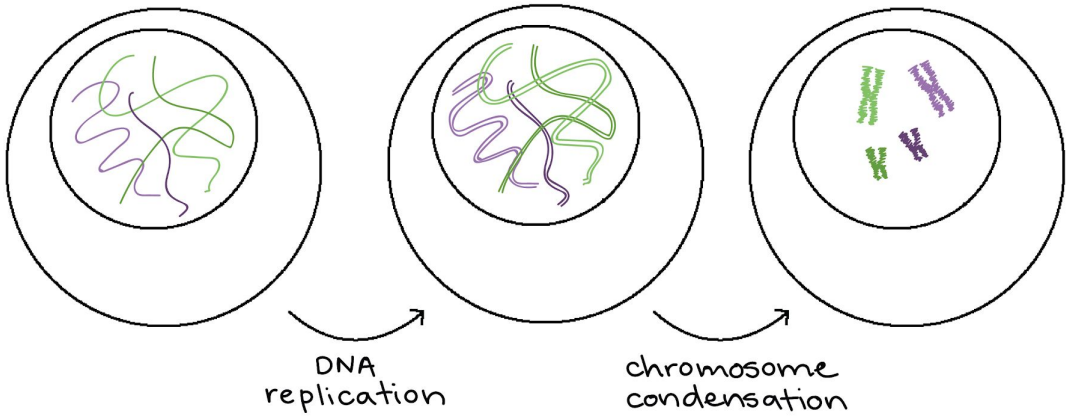
The genetic information (DNA) that needs to be carried to the next generation is transported as **chromosomes**.

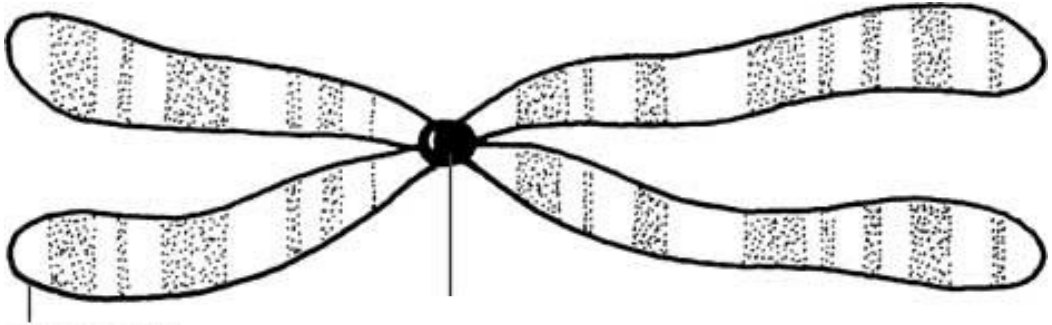


Chromosomes: tightly coiled strands of duplicated DNA.









Each chromosome consists of two identical sister **chromatids**.

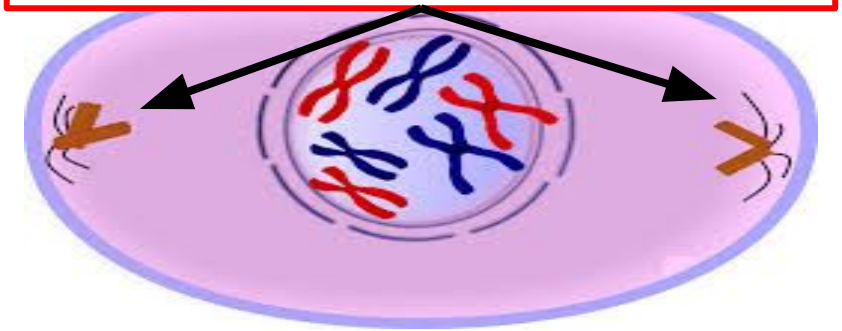
Chromatid: one half of a condensed chromosome.

Centromere: where the chromosomes will split when mitosis occurs.

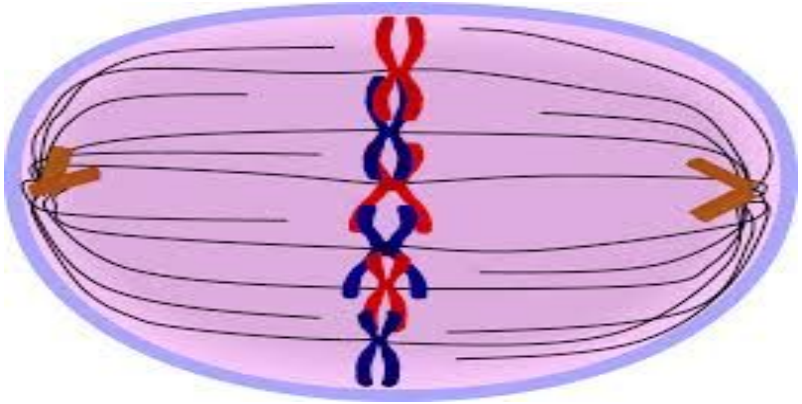
Mitosis (M phase)

Centrioles are small organelles which organize the spindle.

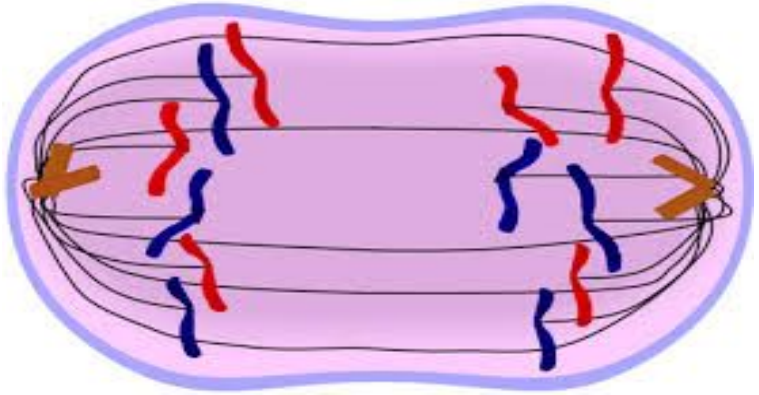
1. **Prophase**→ centrioles separate and take place on either side of nucleus.
   Nuclear envelope breaks down.



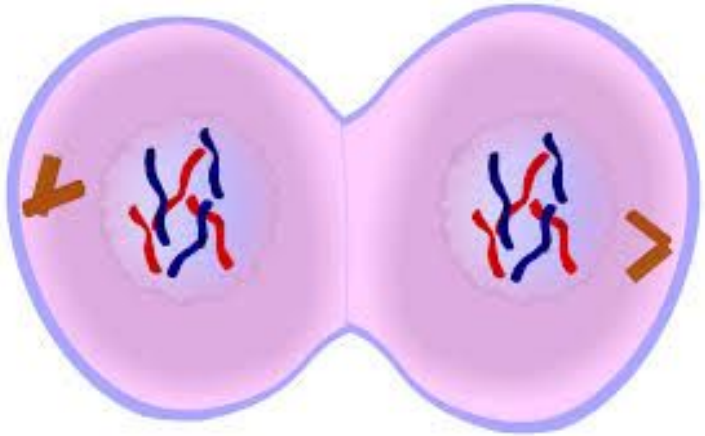
2. **Metaphase**→ chromosomes line up across the center of the cell.
   Microtubules connect to the centromere of each chromosome.



3. **Anaphase**→ sister chromatids separate and become individual chromosomes.
   These are moved towards either pole by the spindle.



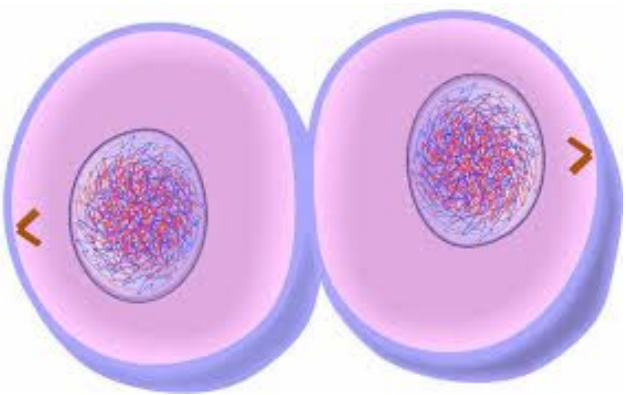
4. **Telophase**→ chromosomes begin to uncoil and disperse.
   Nuclear envelope reforms.
   Spindle breaks apart and a nucleolus becomes visible.

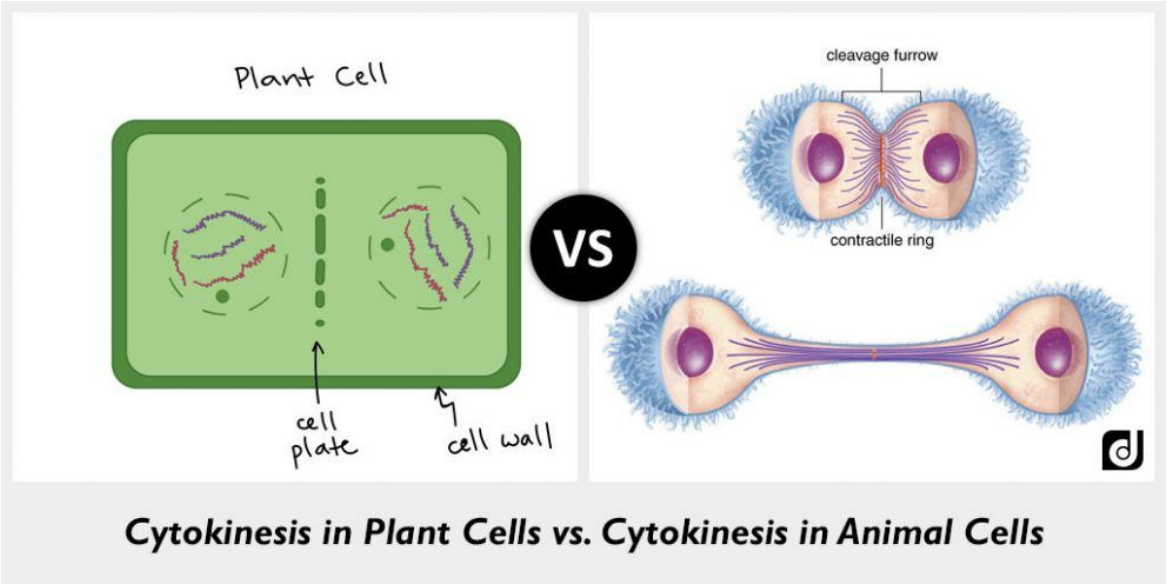


<u>Cytokinesis</u>→ AFTER MITOSIS

division of the cytoplasm occurs.

In plant cells, a cell plate will form to develop a cell wall.

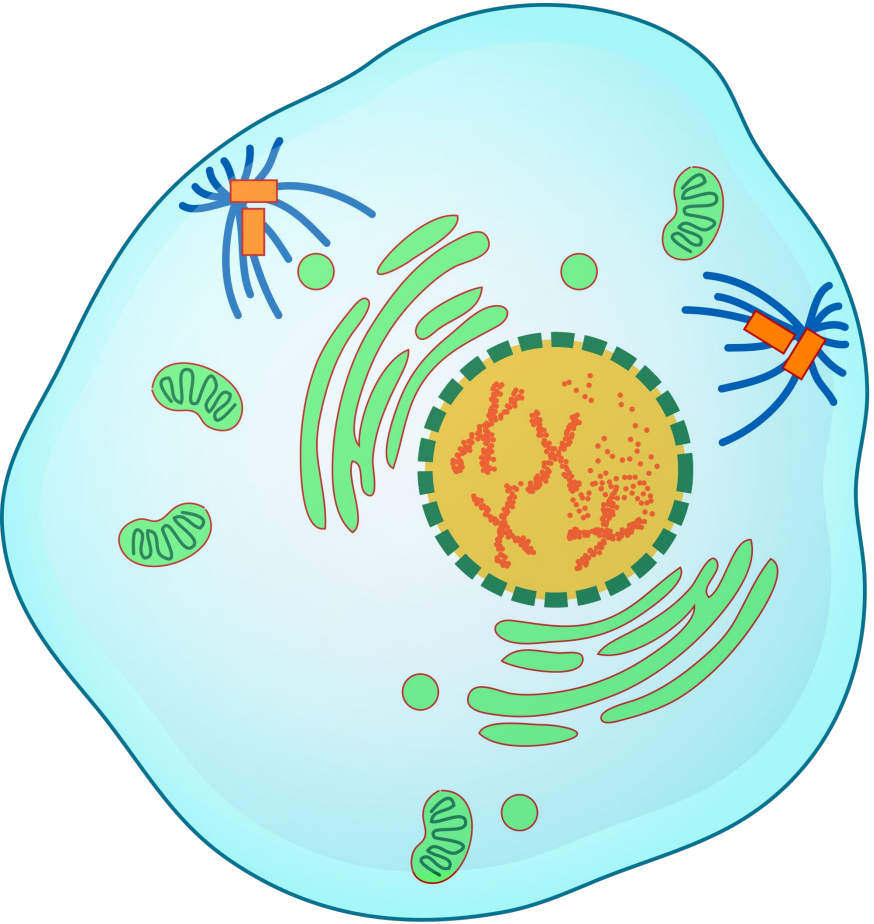




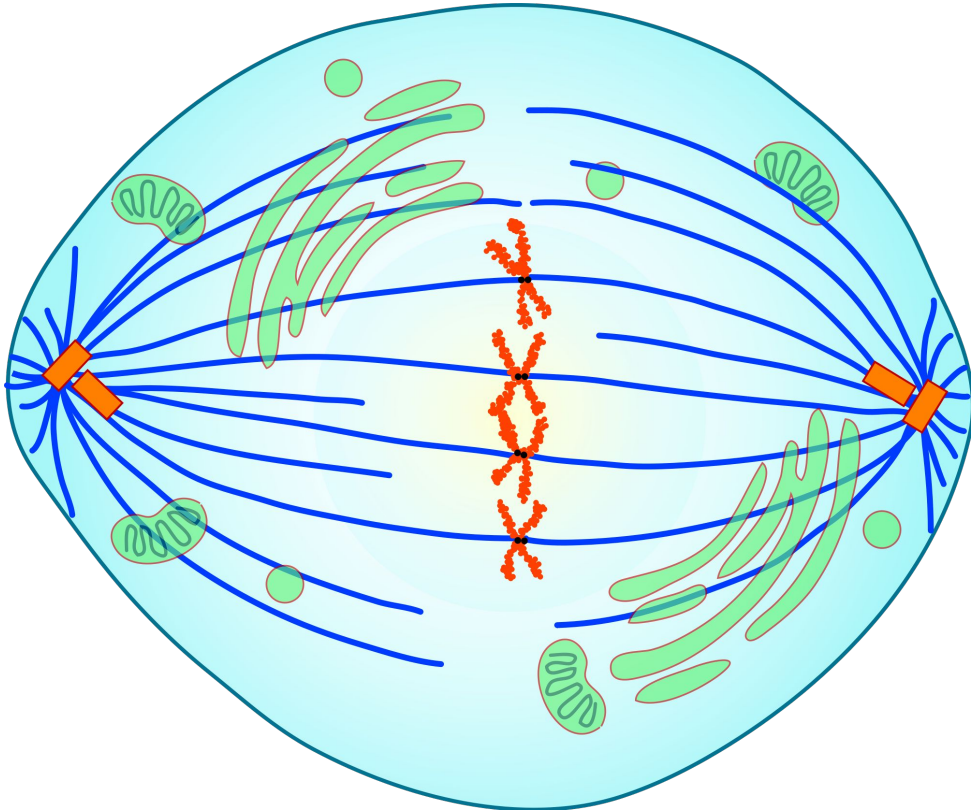
Cytokinesis in Plant Cells vs. Cytokinesis in Animal Cells

<u>Let's watch a video!!!!</u>

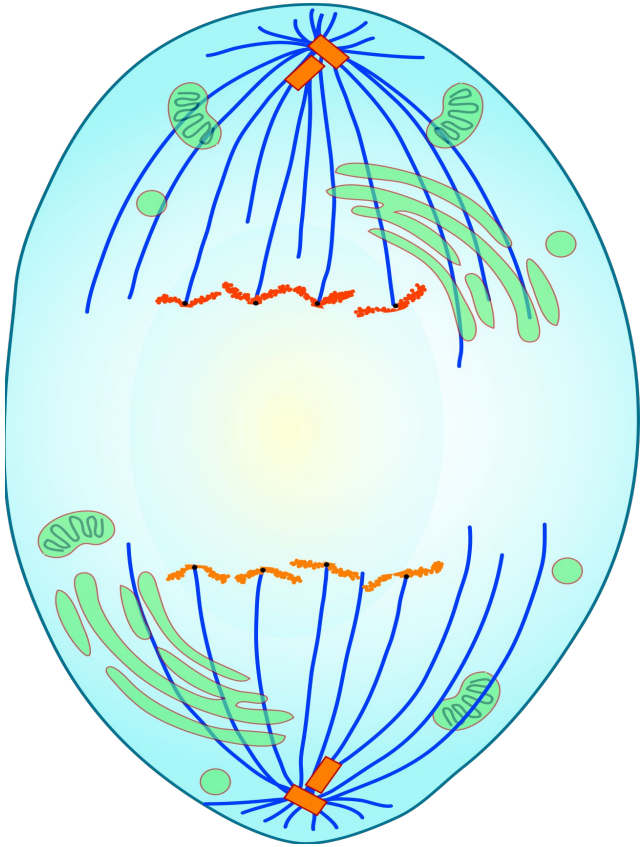
<u>RAP SONG</u>



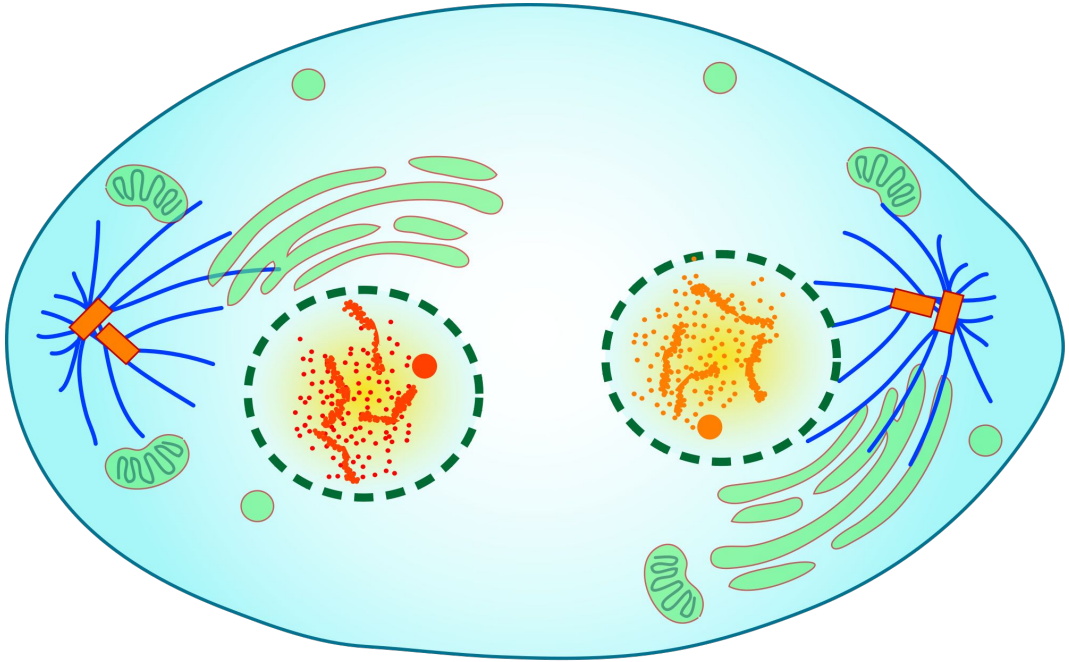
Prophase



Metaphase



Anaphase



Telophase