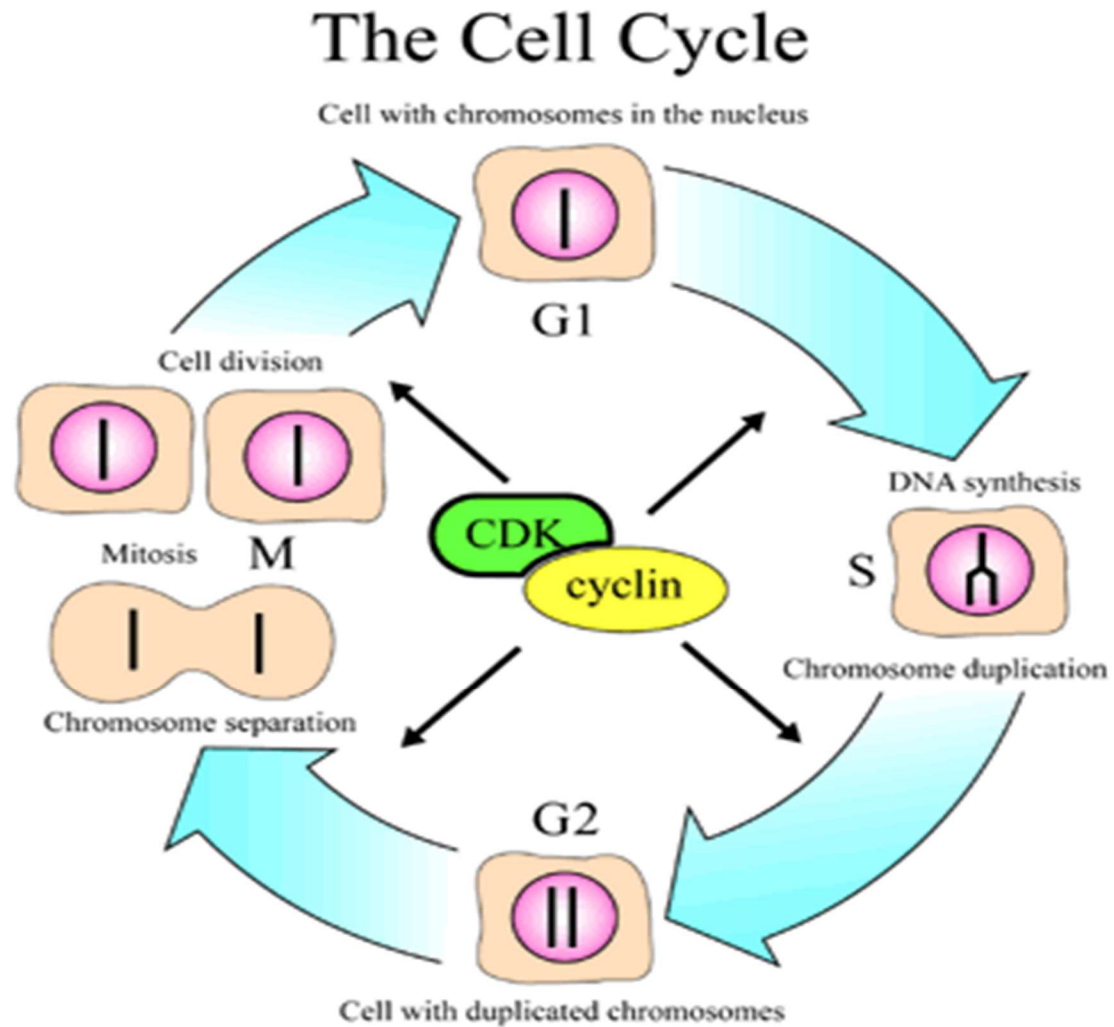
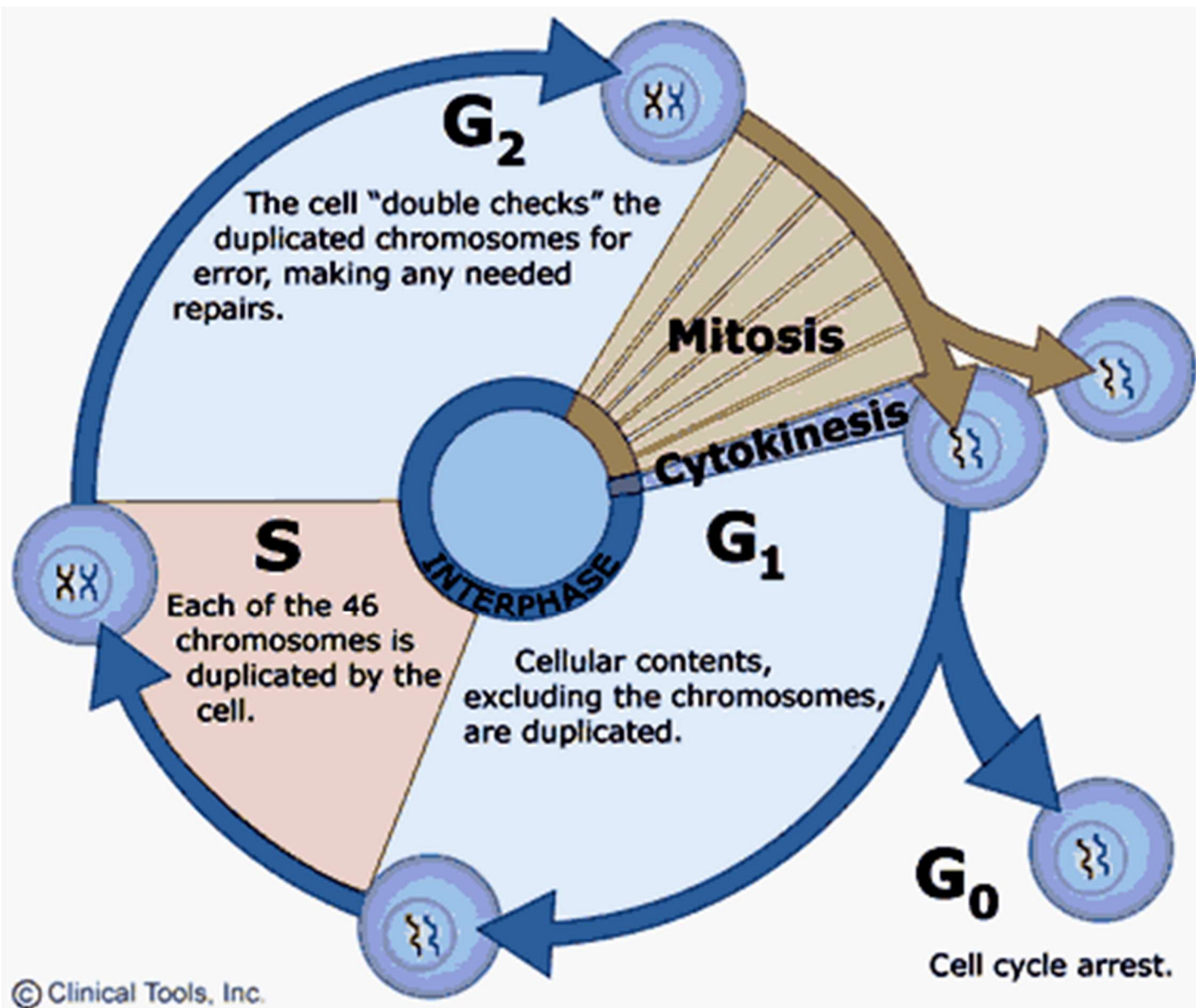


The Cell Cycle & Cell Division

The Cell Cycle





Some Definitions

- Somatic Cells – body cells
 - Produced through mitosis
 - Has 46 chromosomes (23 pairs)
 - Homolog – each member of a chromosome pair
 - Diploid ($2n$) – total of 46 chromosomes in people – zygote & somatic cells
 - Haploid (n) – total of 23 chromosomes in people, gametes (sperm & egg)
-

Mitosis can be divided into stages

- Interphase
 - Prophase
 - Metaphase
 - Anaphase
 - Telophase & Cytokinesis
-

Interphase

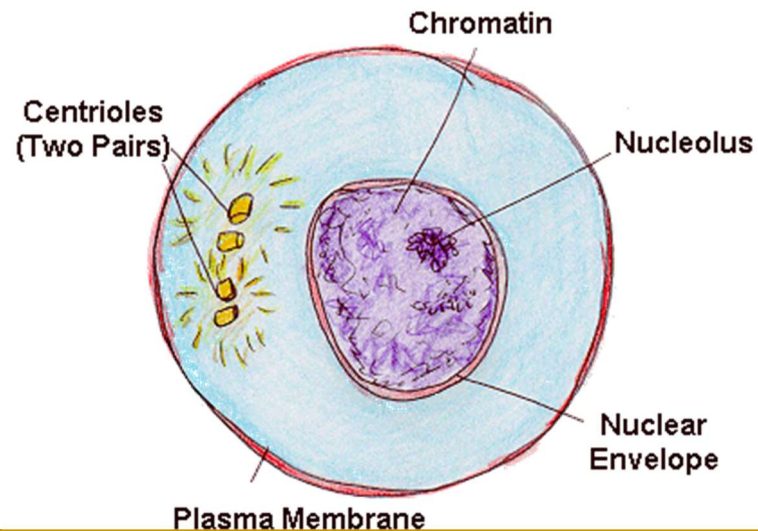
The cell prepares for division

■ Animal Cell

- ❑ DNA replicated
- ❑ Organelles replicated
- ❑ Cell increases in size

■ Plant Cell

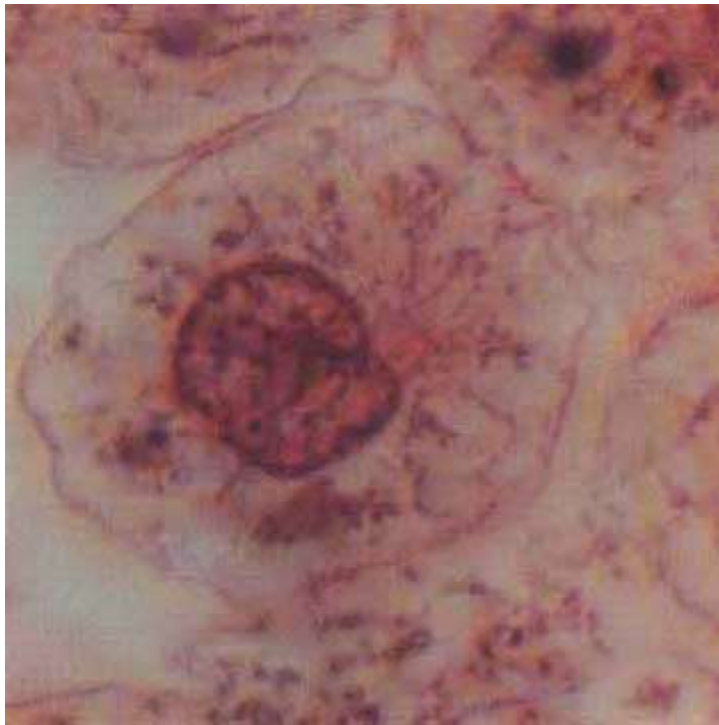
- ❑ DNA replicated
- ❑ Organelles replicated
- ❑ Cell increases in size



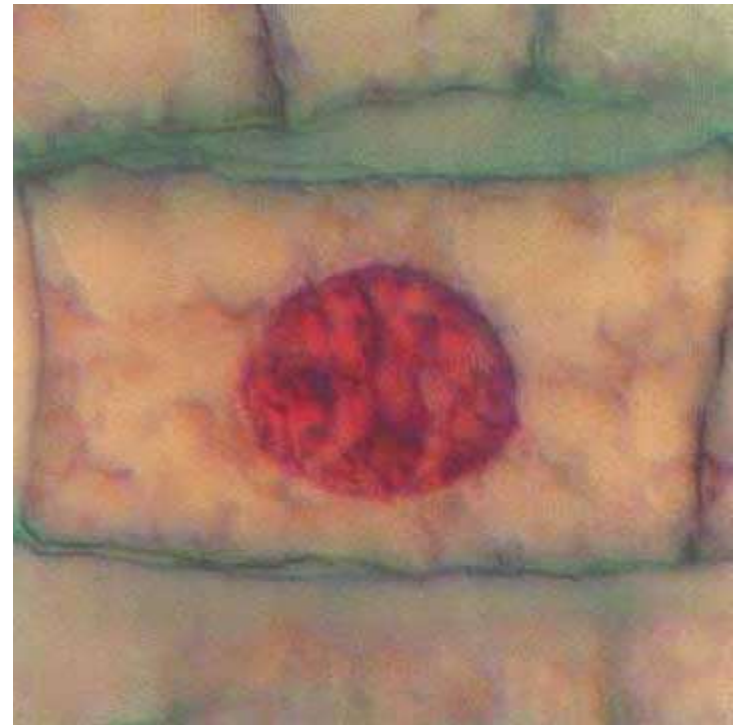
Interphase

Interphase

Animal Cell



Plant Cell



Photographs from: <http://www.bioweb.uncc.edu/biol1110/Stages.htm>

Prophase

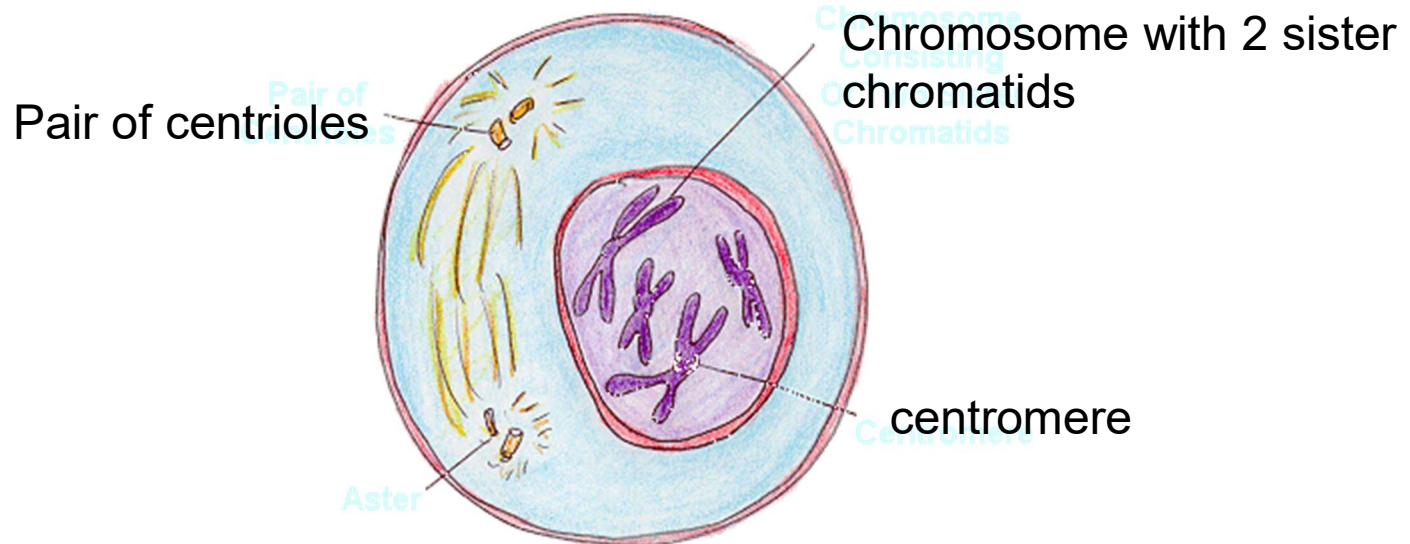
The cell prepares for nuclear division

■ Animal Cell

- Packages DNA into chromosomes

■ Plant cell

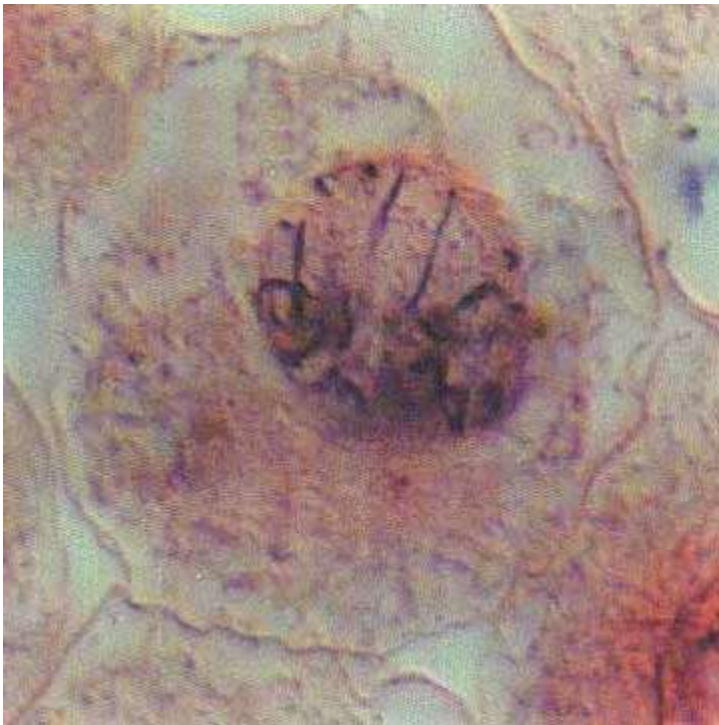
- Packages DNA into chromosomes



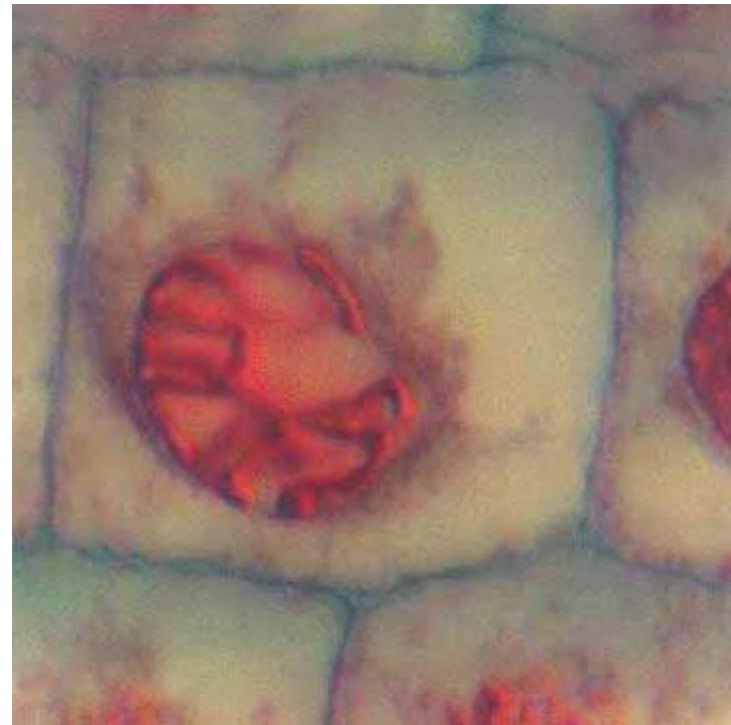
Prophase

Prophase

Animal Cell



Plant Cell



Photographs from: <http://www.bioweb.uncc.edu/biol1110/Stages.htm>

Metaphase

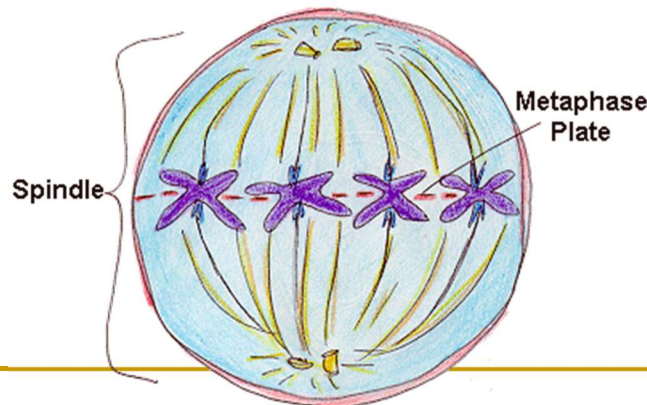
The cell prepares chromosomes for division

■ Animal Cell

- ❑ Chromosomes line up at the center of the cell
- ❑ Spindle fibers attach from daughter cells to chromosomes at the centromere

■ Plant Cell

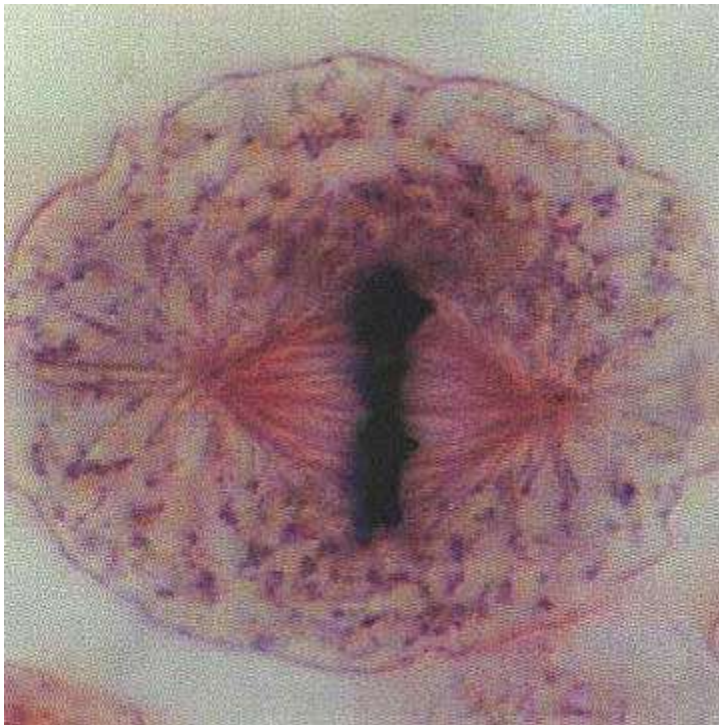
- ❑ Chromosomes line up at the center of the cell
- ❑ Spindle fibers attach from daughter cells to chromosomes at the centromere



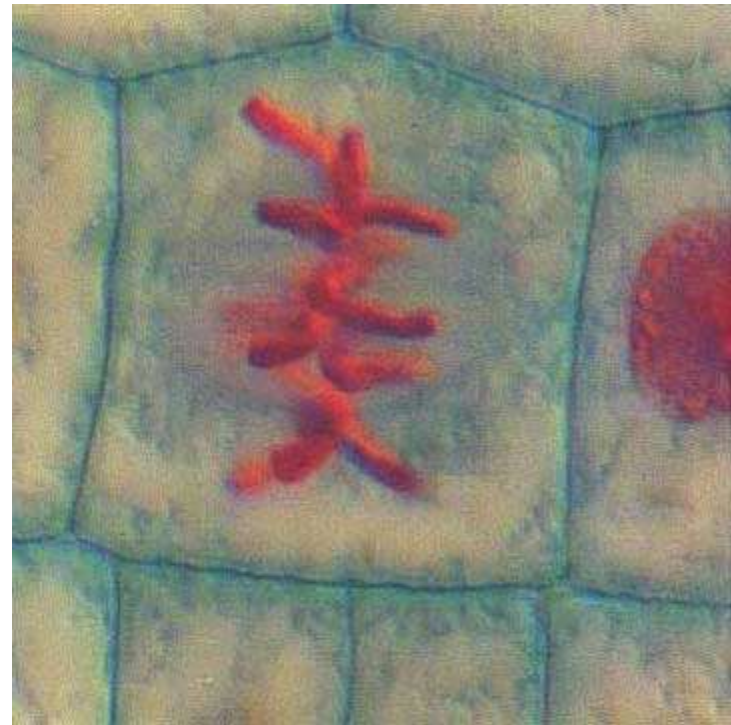
Metaphase

Metaphase

Animal Cell



Plant Cell



Photographs from: <http://www.bioweb.uncc.edu/biol1110/Stages.htm>

Anaphase

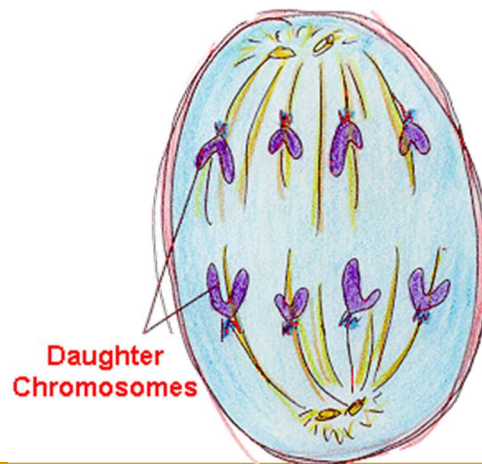
The chromosomes divide

■ Animal Cell

- ❑ Spindle fibers pull chromosomes apart
- ❑ $\frac{1}{2}$ of each chromosome (called chromatid) moves to each daughter cell

■ Plant Cell

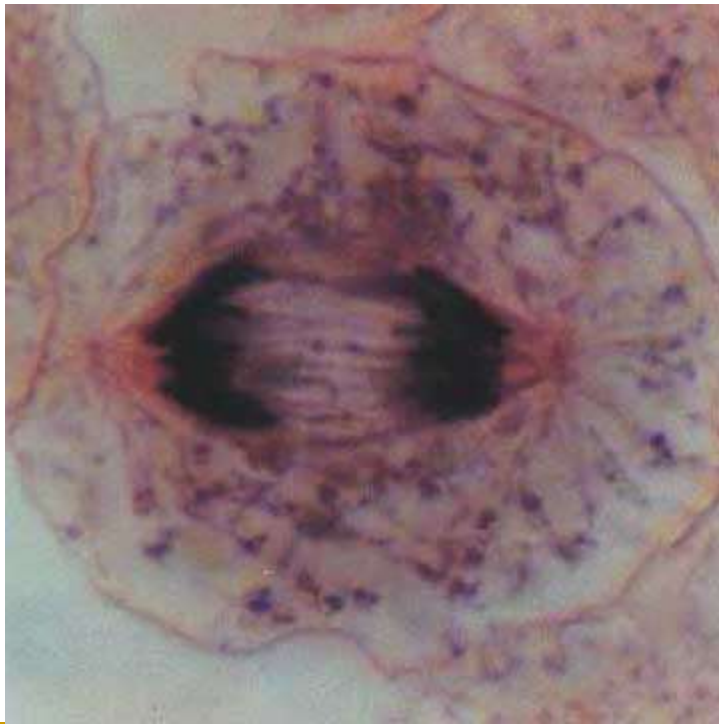
- ❑ Spindle fibers pull chromosomes apart
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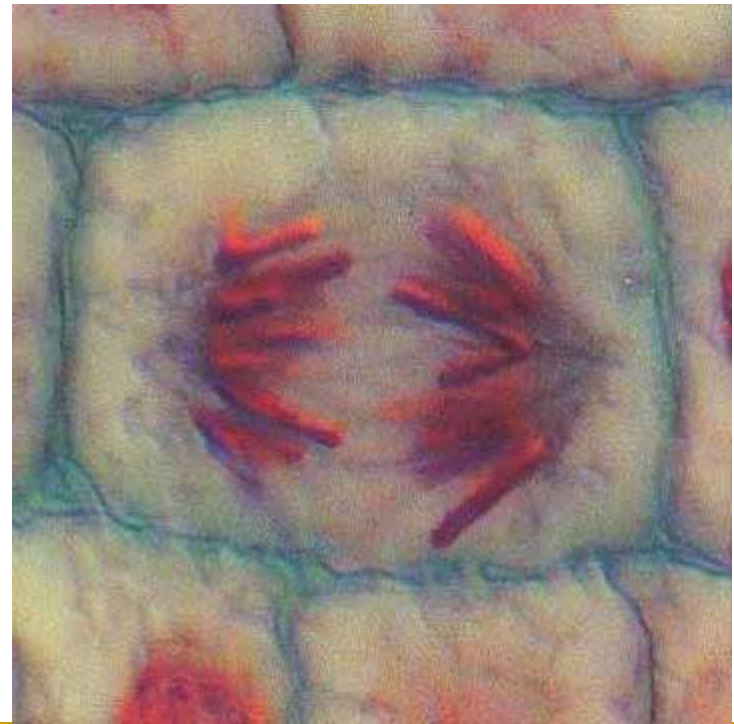
Anaphase

Anaphase

Animal Cell



Plant Cell



Photographs from: <http://www.bioweb.uncc.edu/biol1110/Stages.htm>

Telophase

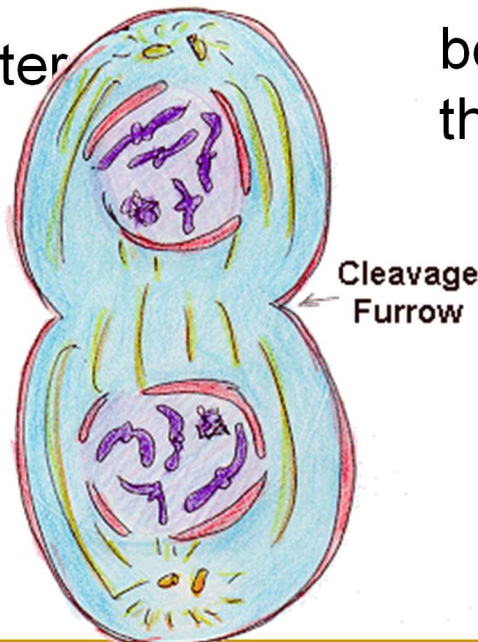
The cytoplasm divides

■ Animal Cell

- DNA spreads out
- 2 nuclei form
- Cell wall pinches in to form the 2 new daughter cells

■ Plant Cell

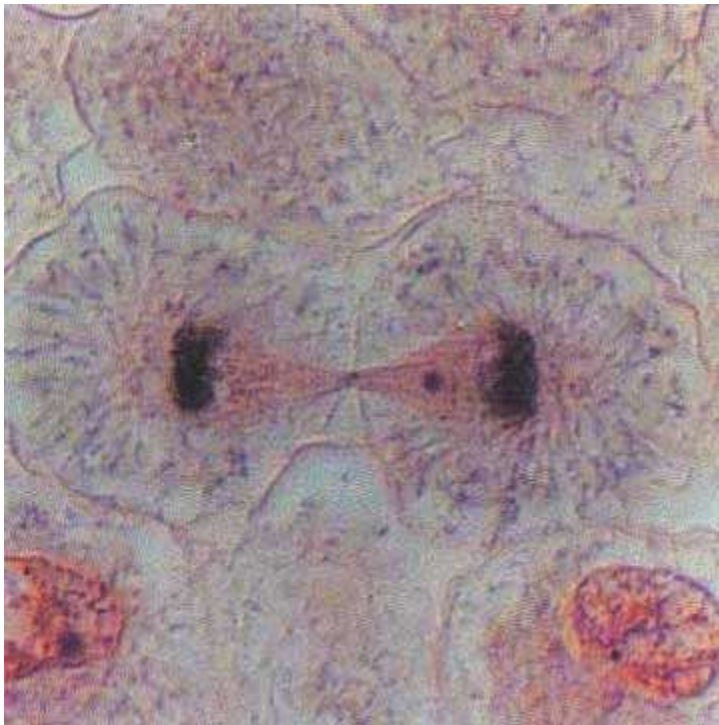
- DNA spreads out
- 2 nuclei form
- New cell wall forms between to nuclei to form the 2 new daughter cells



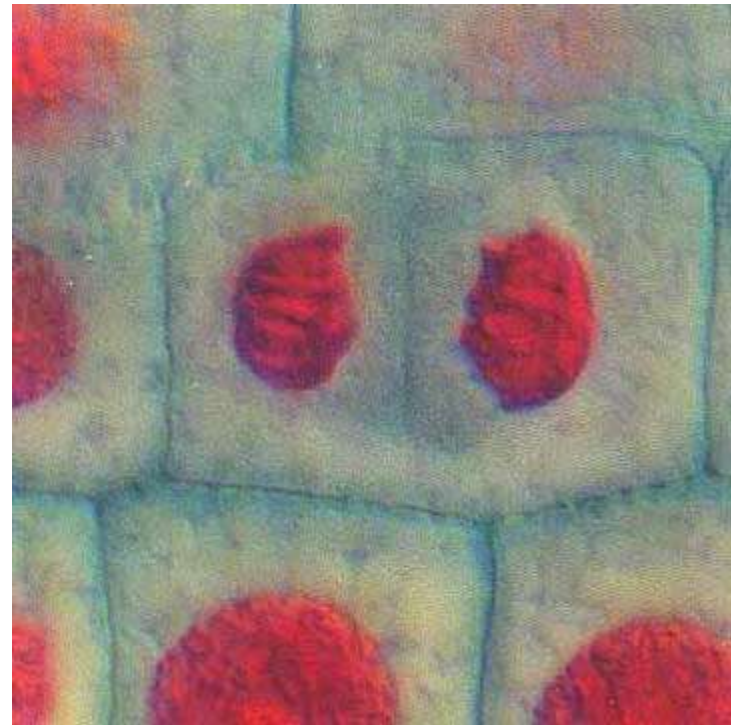
Telophase and Cytokinesis

Telophase

Animal Cell



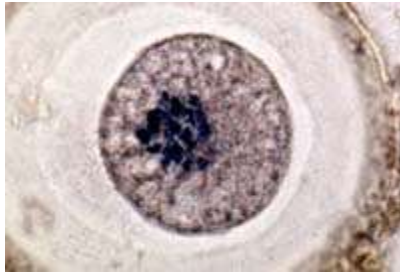
Plant Cell



Photographs from: <http://www.bioweb.uncc.edu/biol1110/Stages.htm>

Animal Mitosis -- Review

Interphase



Prophase



Metaphase



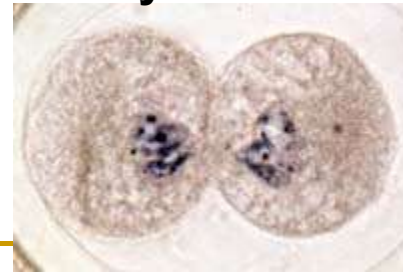
Anaphase



Telophase

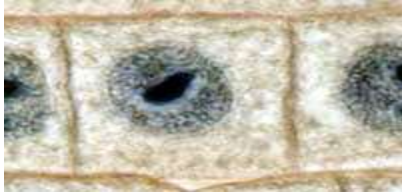


cytokinesis



Plant Mitosis -- Review

Interphase



Prophase



Metaphase



Anaphase



Telophase



cytokinesis



<https://youtu.be/xsrH050wnIA>
