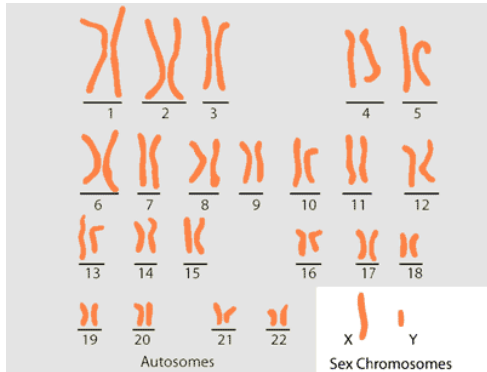


# Cell Division Lab

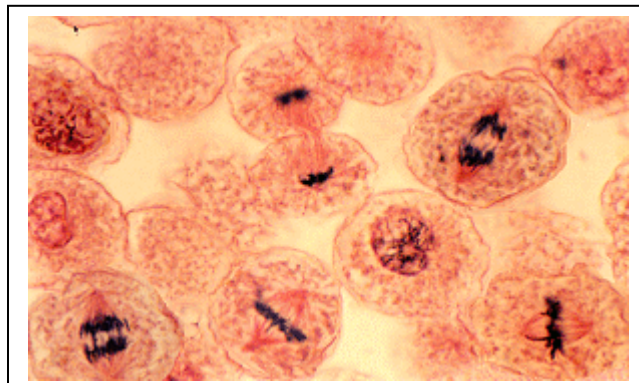
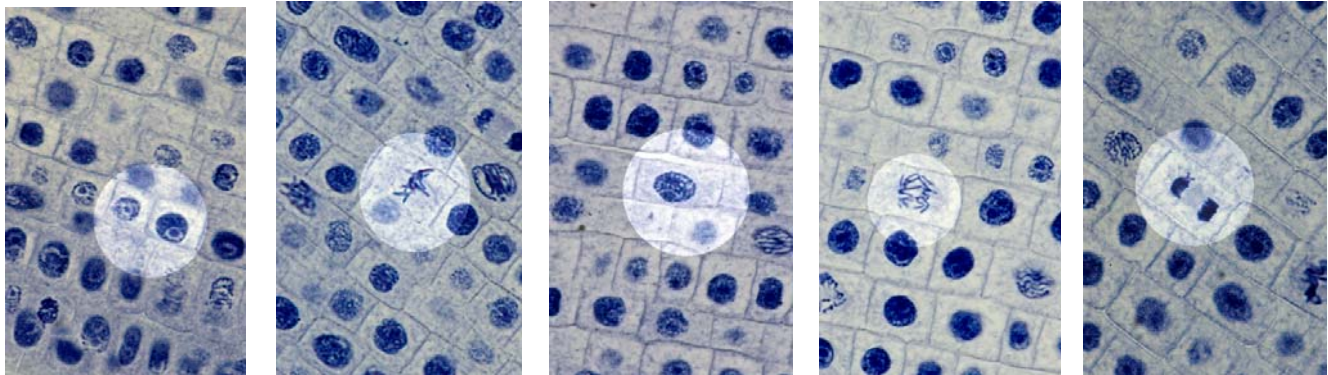
In this assignment you will study the two ways in which cells divide to make new cells. The processes of mitosis and meiosis can be modeled to illustrate the behavior of

DNA (chromosomes) during cell division. The process of mitosis, which occurs during growth and repair of tissues results in the production of new “daughter” cells that are diploid and identical the parent cell. The process of meiosis occurs in the gonads (ovaries & testes) exclusively for the production of gametes (eggs & sperm) and results in cells that are haploid and not identical to the parent cell.



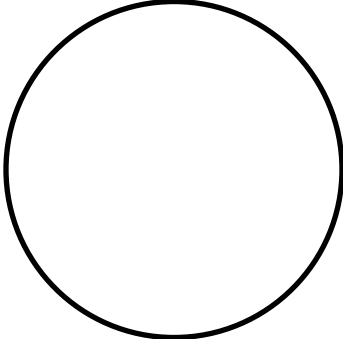
**The Human Genome**  
 The Human Genome is the total of the genetic information that is held in each human cell. It is usually made up of 46 chromosomes: 22 pairs of autosomes and 1 pair of sex chromosomes, which are usually X and X for females and X and Y for males.

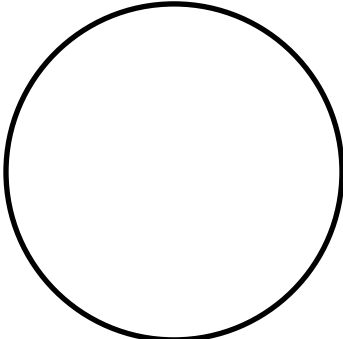
Plants grow rapidly at the tips of their roots, so looking at the cells that are found at root tips is a good way to find cells undergoing mitosis. Below is a set of microscope images taken at about 160X magnification. These images show onion root tip cells in the various stages of mitosis. Use these images and the images in your textbook as guide to complete the assignment. You may also find additional images if you do a Google search.

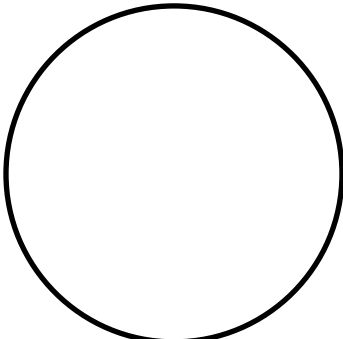


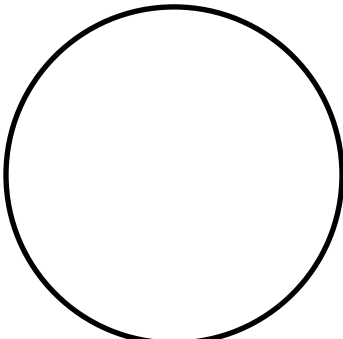
## Cell Division

Use various sources to find images of cells undergoing mitosis. Find an example of each phase and draw what you see. Be sure to label all the relevant parts of the nucleus during each phase. **In the box next to each circle list the important events of that phase.**

	<b>PROPHASE: Label the nucleus and describe the events of prophase.</b>
	Mag. _____

	<b>METAPHASE: Label the nucleus and describe the events of metaphase.</b>
	Mag. _____

	<b>ANAPHASE: Label the nucleus and describe the events of anaphase.</b>
	Mag. _____

	<b>TELOPHASE: Label the nucleus and describe the events of telophase.</b>
	Mag. _____

1. What happens in the nucleus during Interphase?
2. What happens in the rest of the cell?
3. What is cytokinesis and when does it occur?

**Sequencing the Phases of Mitosis**

1. Use the last sheet of this handout. Put the phases in the correct order and record the order below.

Order of Mitosis Cards \_\_\_\_\_

**Compare Mitosis and Meiosis**

1. Complete the chart below comparing the phases of the two types of cell division.

**Comparison of Mitosis & Meiosis**

<b>Characteristic</b>	<b>Mitosis</b>	<b>Meiosis</b>
<b>Are daughter cells identical?</b>		
<b>What kinds of cells do it?</b>		
<b>Number of daughter cells produced</b>		
<b>Functions of daughter cells</b>		

**Questions:**

1. What is the purpose of mitosis? In other words, what kinds of cells do it? Why? And when?

2. What is the purpose of Meiosis? In other words, what kinds of cells do it? Why? And when?

**Vocabulary: Define each term briefly.**

Diploid

Haploid

Chromatid

Chromatin

Chromosome

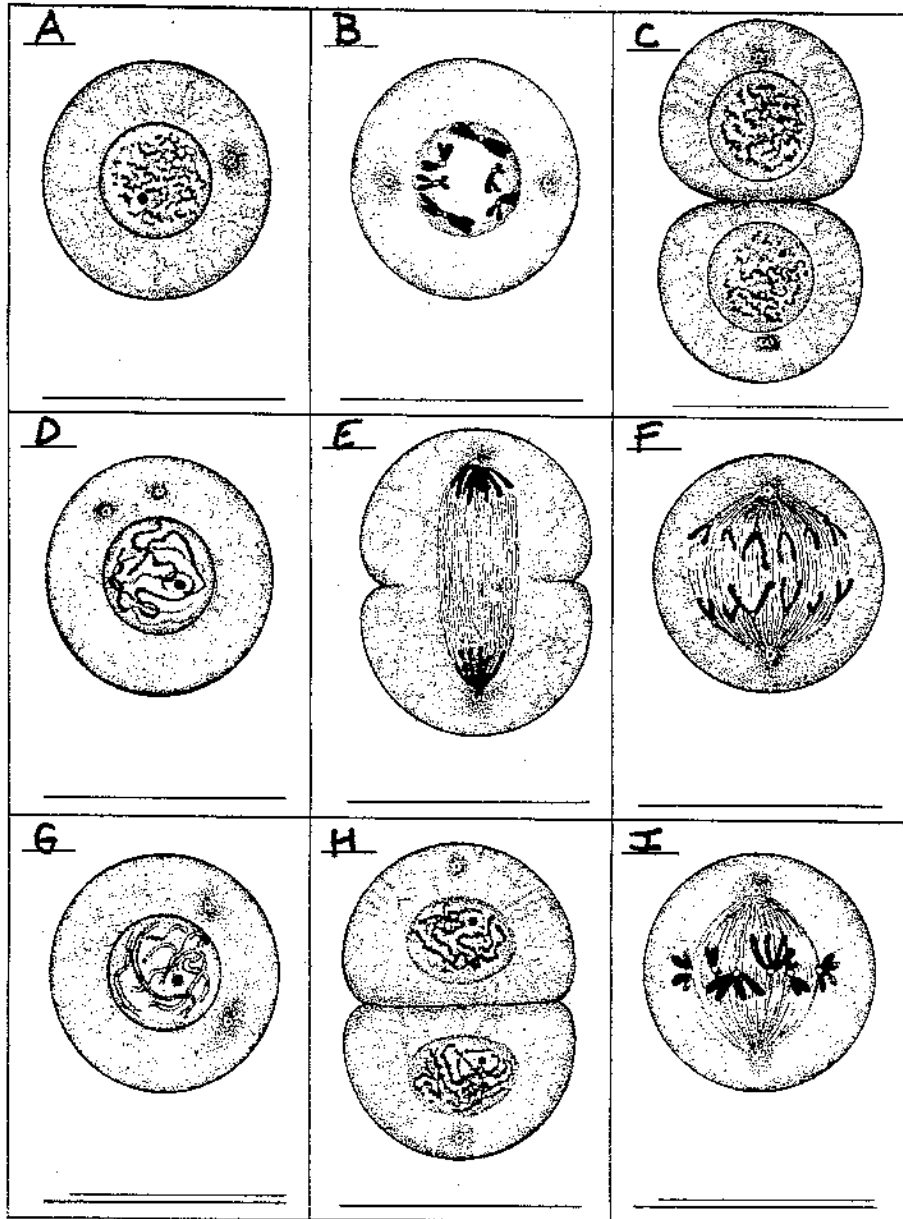
Spindle fibers

Daughter cell

# Activity: Sequencing Mitotic Stages

Label the stage of mitosis in each box below each diagram. Then, cut out each figure and arrange the cells so they reflect the proper order of stages of mitosis -starting with a cell in interphase and ending with the completion of mitosis. Write the letter sequence of the cells in your Lab, Activity #8.

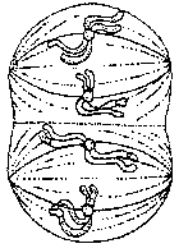
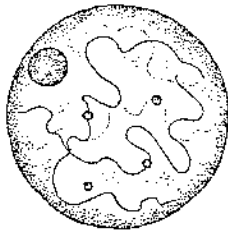
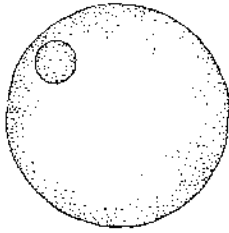
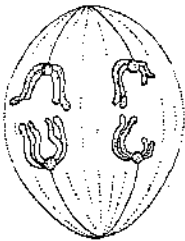
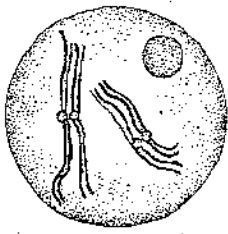
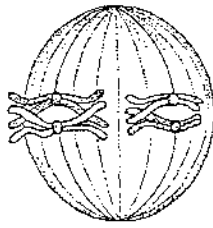
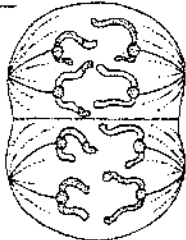
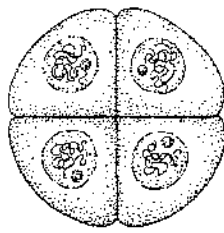
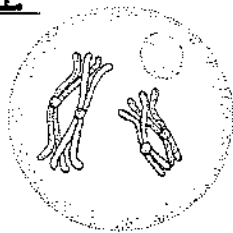
## Mitosis in an Animal Cell



# Activity: Sequencing Meiotic Stages

Label the stage of meiosis in each box below each diagram. Then, cut out each figure and arrange the cells so they reflect the proper order of stages of meiosis -starting with a cell in interphase and ending with the completion of meiosis. Write the letter sequence of the cells in your Lab, Activity #8.

## Meiosis in an Animal Cell

<p><u>A</u></p>  <p>_____</p>	<p><u>B</u></p>  <p>_____</p>	<p><u>C</u></p>  <p>_____</p>
<p><u>D</u></p>  <p>_____</p>	<p><u>E</u></p>  <p>_____</p>	<p><u>F</u></p>  <p>_____</p>
<p><u>G</u></p>  <p>_____</p>	<p><u>H</u></p>  <p>_____</p>	<p><u>I</u></p>  <p>_____</p>