

## Lab #7: Mitosis and Meiosis

### Objectives:

1. To begin to understand Reproduction and Life Cycles.
2. To get hands-on experience with mitosis.
3. To get hands-on experience with meiosis.
4. To compare experimental vs. observational studies.

As we discussed in class, biological growth is a multi-dimensional phenomena. Basically, the basic unit of life, the cell, must duplicate itself. One "mother" cell must become two "daughter" cells, through the process of Cell Division, mostly **MITOSIS**. This is a completely asexual event and involves replication of the nucleus and its constituents and dividing up of the cytoplasm, to make two identical cells....

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.....**MEIOSIS**, on the other hand, is involved only in sexual reproduction, and is the main source of genetic variation. In **meiosis**, cells with a full compliment of chromosomes divide to yield cells with one-half as many chromosomes. These cells become the "Egg" and the "Sperm" that unite later in a process known as **FERTILIZATION**.

Mitosis and meiosis also allow us to see science from a non-experimental perspective. Sometimes, science just records what it observes. Cells in actively growing regions of plants (meristematic regions), such as roots and shoots tips, have cells that are easily stained to show the process of mitosis. From these cells we can see cells actively dividing and at different steps in the process. The process of mitosis is ubiquitous in all diploid organisms. Often times, original, detailed descriptions of observations of processes have been the basis of future, experimental work. The observational descriptions we make today about mitosis and meiosis will allow us to develop hypothesis about genetic relationships in the next few labs. Actually it will be very important that you do not lose track of these basic principles of heredity for all the kernels of corn that you count.