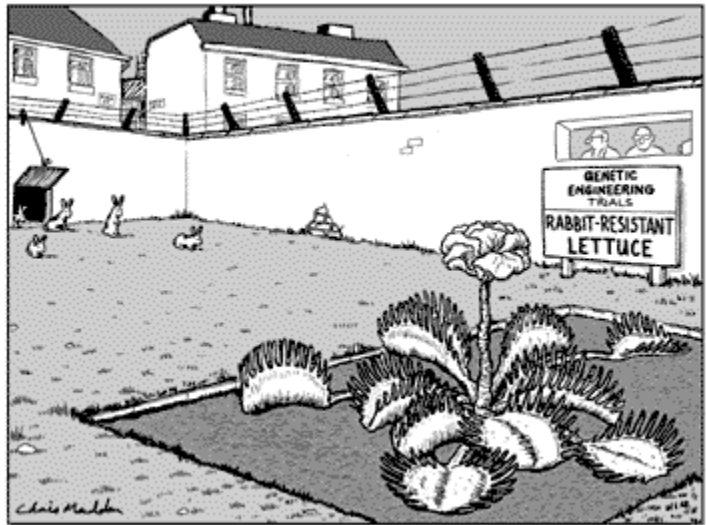


## Examining the Cell Cycle

The cell cycle is the miraculous, yet efficient process by which cells divide to form new cells containing the exact genetic information of the parental line. Once again, we will be using [www.cellsalive.com](http://www.cellsalive.com) to further investigate cellular processes at the microscopic level. The objectives of this exercise will be to familiarize you with the stages in the cell cycle, to understand the intricate stage of mitosis (and its implications), and to apply your mastery of the information.



1. Access [www.cellsalive.com](http://www.cellsalive.com), and find the cell cycle listing on the left menu. The cell cycle is made up of several stages, as indicated by the animation. Observe what is occurring in this cycle and read the stage descriptions. What are some characteristics of each stage or phase?

M stage: (what does M mean?)

G<sub>1</sub> stage:

G<sub>0</sub> stage:

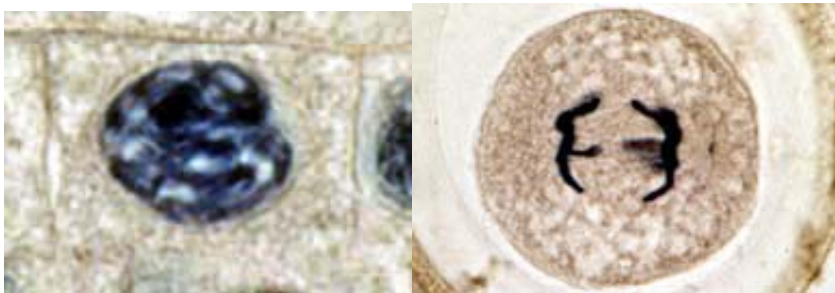
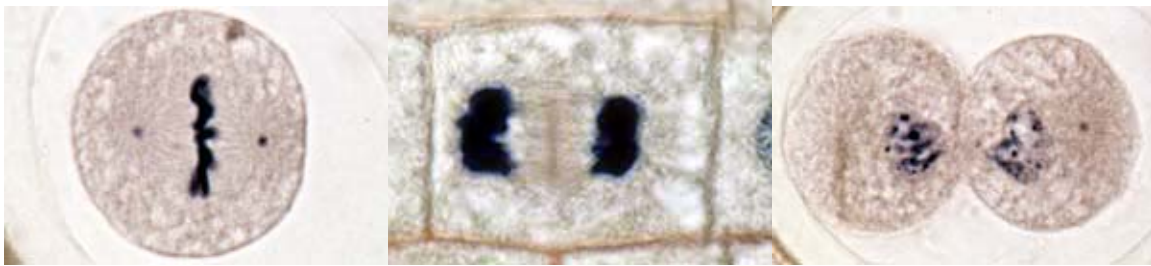
S stage: (what does S mean?)

G<sub>2</sub> stage:

*What does a “checkpoint” allow a cell to do? What are some situations that would not allow a cell to pass through the checkpoint? (Think about what checkpoints allow cells to accumulate!)*

## Mitosis Matching Game

The following illustrations, from the University of Nebraska-Wesleyan, depict plant and animal cells in various stages of mitosis. Match the image to the correct stage and kingdom (plant or animal). If you have difficulty remembering the stages of mitosis, you can find descriptions at <http://www.cellsalive.com/mitosis.htm>. Keep in mind what distinguishes an animal cell from a plant cell!



- A. Plant metaphase
- B. Plant anaphase
- C. Plant telophase
- D. Plant interphase

- E. Animal prophase
- F. Animal metaphase
- G. Animal telophase
- H. Animal interphase

## Determining Stage Duration

A geneticist examining cells in the root of a plant is trying to determine the length of the various stages of the cell cycle. She examines 2000 cells from the growing root tip of a specimen and finds that 320 cells are in prophase, 150 cells are in metaphase, 80 cells are in anaphase, and 120 cells are in telophase.

*The total number of cells counted does not add up to 2000; in what stage are the unaccounted cells?*

*Of the phases accounted for, which is the longest? Which is the shortest? Why?*