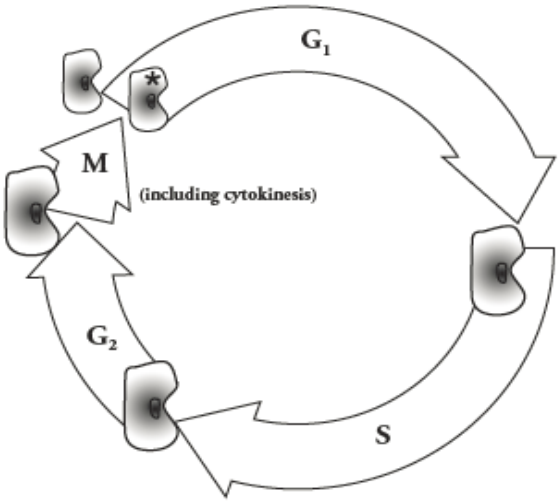
The Cell Cycle

What controls the life and development of a cell?

Why?

An old piece of poetry says "to everything there is a season... a time to be born, a time to die." For cells, the line might say "a time to divide and a time to grow." In multicellular organisms, different types of cells have different roles and need to complete specific tasks. For example, a cell that isn't large enough is not useful for storing nutrients for later, but a cell that is too large will not be useful for transportation through a tiny capillary. In this activity, you will learn about the seasons of a cell's life, and in turn better understand how organisms function.

Model 1 – The Cell Cycle



1. How many phases are in the cell cycle as shown in the diagram in Model 1?

2. Starting at the starred cell, what is the order of the stages of a cell's life?

3. During which phase does the size of the cell increase?

4. During which phase does the number of cells increase?

5. Considering your answer to Questions 3 and 4, identify two ways that the growth of an organism can be accomplished through the events of the cell cycle.

6. Cancer, the uncontrolled growth of cells, often results in a tumor, or mass of abnormal cells. Some cancerous tumors consist of many cells that are much smaller than normal. According to Model 1, what part(s) of the cell cycle is (are) most likely being affected?

7. In Model 1, if the length of the arrow represents time, then for those cancerous cells, what happens to the time that is necessary for the cell cycle? What implication might this have for doctors who are treating cancer patients?