**Cell Cycle Control and Cancer-Chapter 10 Section 3 Notes and Essential Knowledge**

<https://prezi.com/hr4lv9l82fuc/biology-chapter-10-section-3-regulating-the-cell-cycle/>

**Controls on Cell Division**

1. What is contact inhibition? How does it affect a cell?

**Cell Cycle Regulators**

1. How is the cell cycle regulated?
2. When do these occur?
3. The cell cycle is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ by a specific \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. The amount of this protein in the cell \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in time with the cell cycle.
4. What does an internal regulator allow to occur during the cell cycle? Include an example.
5. Which checkpoint should be controlled by the p53 gene?
6. What is an external regulator?
7. What do external regulators allow to occur during the cell cycle?

**Uncontrolled Cell Growth**

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a disorder in which some of the body’s \_\_\_\_\_\_\_\_\_\_ cells \_\_\_\_\_\_\_\_\_\_\_\_ the ability to control \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
2. How are cancer cells different from other cells?

1. Cancer cells divide \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and form masses of cells called \_\_\_\_\_\_\_\_\_\_\_\_\_\_ that can damage the surrounding tissues.
   1. Benign-
   2. Malignant-
   3. Metastatic-
2. How can you tell if it is cancer?
   1. A=
   2. B=
   3. C=
   4. D=

**Essential Knowledge (H.B.2D.3)**

The cell cycle is driven by a chemical control system that both triggers and coordinates key events in the cell cycle. The cell cycle control system is regulated at certain checkpoints.

• Proteins regulate the progress of cell division at certain *checkpoints*

• A *checkpoint* in the cell cycle is a critical control point where stop and go signals can regulate the cycle. The cell division mechanism in most animal cells is in the “off” position when there is no stimulus present. Specific stimuli are required to start the processes.

• Other types of control over cell division:

• Cells respond when they are too closely packed and cell division is turned off.

• Cells respond when they are not in contact with a surface and cell division is turned on.

If control of the cell cycle is lost, the result may be uncontrolled cell division. Cancer cells are an example of cells that do not heed the normal signals which shut down the cell division process; they continue to divide when they are very densely packed and/or if the protein(s) that regulate cell division are not functioning properly due to a mutation.

• Cancer begins when a single cell is transformed into a cancer cell, one that does not heed the regulation mechanism.

• Normally the body’s immune system will recognize that the cell is damaged and destroy it, but if it evades destruction, it will continue to divide by mitosis and each daughter cell will be a cancer cell.

• A mass of these cells that invades and impairs the functions of one or more organs is called a *malignant tumor*.

• A *benign tumor* is a mass of abnormal cells that remains at the original site.

• Cancer cells may also separate from the original tumor, enter the blood and lymph vessels of the circulatory system, and invade other parts of the body, where they grow to form new tumors.