**Close Reading**

**How are cancer and mitosis connected?**

**Objectives:**

* 1. Explain how mitosis and cancer are connected

**Close Reading Activity:**

We will be examining how cancer cells and mitosis are related to one another today to gain a better understanding of what happens when mitosis has a negative effect on the body.

**Article:**

*Out of Control Cell Division: How Mitosis Can Increase the Risk for Cancer*

Written by: [Paul Arnold](http://www.brighthub.com/members/Paul.aspx)•edited by: [Paul Arnold](http://www.brighthub.com/members/Paul.aspx)•updated: 9/9/2011

Without the process of mitosis there would be no cancer. Cancerous cells ignore or override some of the control measures of this type of cell division.

* slide 1 of 3

Cancer and mitosis are closely related. Mitosis is the process by which cells reproduce, and without it cancerous cells wouldn't be able to form tumors and spread through the body.

Mitosis is the most common form of cell division and it's where once cell becomes two. It is necessary because:

1) Cells wear out, die and need to be replaced

2) New cells are needed to repair damaged tissues

3) They allow a body to grow. It is mitosis that makes it possible for new skin tissue, bone tissue and muscle tissue to be made, and the only source material is other cells.

* slide 2 of 3

Cancer and Mitosis

Cancer starts in the body's cells. All of our organs and tissues are made up of cells. Each cell contains genes that determine how the cell grows, functions, and eventually dies.

There are a number of stages that a cell has to go through in order to replicate itself and they have to be accurate so that an exact copy of its chromosomes is distributed to the daughter cell. This means that each new cell contains an exact copy of the 46 chromosomes of the original chromosome and it's the reason why cells in a person's body are genetically identical.

Cancer starts with one normal cell changing into a cancerous cell; this may be due to a mutation in the cell's DNA that affects its growth. Once a cell in the body has changed in this way, it tends to multiply at a much more rapid [rate](http://www.brighthub.com/science/genetics/articles/33788.aspx) than normal, and the bad cancerous cells proliferate and pile up. They undergo uncontrolled abnormal mitosis. These renegade cells escape the normal controls of mitotic cell division.

This mass of cancer cells is called a tumor and as it grows it releases proteins into the body to attract blood vessel growth to supply it with a steady stream of food (glucose) and oxygen.

Cancer cells that have broken away from the tumor travel through the bloodstream and are taken to different parts of the body. From there they can start new tumors. This is a process known as metastasis. When someone is described as having a form of cancer, the term refers to the part of the body where the disease started.

* slide 3 of 3

Cancer Cells are Unusual

Unlike "normal" cells in the body, which multiply up to a set number of times and then die, cancerous cells continue to reproduce indefinitely as long as they have a regular supply of food and oxygen. Cancer cells also have an unusual appearance and behavior. This type of cell is more likely to break away from surrounding ones and move to other locations in the body. Normal cells have a less rounded appearance and are "stickier" than malignant ones

**In the space below, write 3 questions you have based on the reading. Respond to these questions with the best of your knowledge based on this reading, topics covered in class, and personal experiences. Your writing should be no less than this page. Use the back if needed:**

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