THE CELL CYCLE & CANCER WEBQUEST

The human body is made up of trillions of cells that continually grow, reproduce and die. How do our bodies make more cells? And, what does this process have to do with cancer? In today’s webquest you investigate the answer to these questions as you learn about the highly-controlled and complex processes that our cells regularly undergo and what happens when this goes awry.

)(((Cell Reproduction Virtual Lab –

Visit:

http://www.glencoe.com/sites/common_assets/advanced_placement/mader10e/virtual_labs_2K8/labs/BL_03/

Or search for cancer virtual lab and click on the first link

Click on the INFORMATION button (at the bottom) for information on cancer.

Click on the microscope. You will identify the phases of various cells in normal and cancerous tissue by clicking and dragging the label to the slide. Click and hold the slide box to change the slide.

Complete the chart for the number of cells in each phase of the cell cycle:

<table>
<thead>
<tr>
<th></th>
<th>Interphase</th>
<th>Prophase</th>
<th>Metaphase</th>
<th>Anaphase</th>
<th>Telophase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal Lung</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cancerous Lung</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal Stomach</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cancerous Stomach</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Based on your data and observations, what are some of the differences between normal cells and cancer cells?

___________________________________________________________________________________________
_________________________________________________________________

2. When studying cell division in tissue samples, scientists often calculate a mitotic index (the ratio of dividing cells to the total number of cells in the sample). Which type of tissue would have a higher mitotic index, normal tissue or cancerous tissue? Why?

___________________________________________________________________________________________
_________________________________________________________________

3. If you designed a medication to treat cancer, what would your medication do? What cell process or parts would be targeted? Why?

___________________________________________________________________________________________
_________________________________________________________________
THE CELL CYCLE
The cell cycle is a highly-regulated process that our cells undergo to continually produce new cells. Visit the following sites and answer the questions that follow:


http://eishinoguchi.com/checkpoint.htm

1) What are the stages of the cell cycle?

2) What are checkpoints and where do the checkpoints occur during the cell cycle?

3) What happens during the first check point?

4) What happens during the second checkpoint and why is it important?

5) Is the last checkpoint necessary? Why or why not?

6) What are the names of the molecules that help regulate and coordinate the cell cycle?
Cancer Basics

- Go to the following site: [www.cancer.org](http://www.cancer.org)
- Click on the link labeled “Learn about Cancer” in the top left of the page.
- Click on the link labeled “Cancer Basics” on the right side of the page under the “Quick Finder” tab.
- Click on the “What is Cancer?” Section.
- Answer the questions below.

1. There are many types of cancers, but what do all kinds of cancers start as? ____________________________

2. When a person becomes an adult, most cells continue to divide for what two reasons? ________________

3. How is cancer cell growth different from normal cell growth? ________________________________

4. Why do cells become cancer cells? _______________________________________________________

5. What are two obvious things that cause damage to DNA and, therefore, cause cancer cells to develop?
   __________________________________________________________
   __________________________________________________________

6. Cancer can spread throughout an organism’s body. What is this process called? ________________

7. What is a cancer named after (or named for)? _____________________________________________

8. What is a tumor called if it is not cancer? ________________________________________________
Research a Cancer

Choose a cancer from the list below that interests you and then fill out the Cancer Information Sheets on the next pages.

- Breast
- Leukemia
- Mouth
- Eye
- Colon
- Non-Hodgkin’s Lymphoma
- Stomach
- Kaposi’s Sarcoma
- Lung
- Brain
- Pancreatic
- Head and Neck
- Ovarian
- Liver
- Thyroid
- Endometrial
- Skin
- Stomach
- Bladder
- Hodgkin’s Lymphoma
- Bone
- Esophageal

Use the internet to locate answers. Please answer using COMPLETE SENTENCES and in your own words. Make sure to include the link where you found your answers.

1. **Type of Cancer.** What is the name of the Cancer you are researching? ____________________________
   a. What other common names is this cancer listed under? ________________________________________
   ______________________________________________________________________________________

2. **Organ Affected.** What specific organ in the human body does this cancer affect? ______________________
   ______________________________________________________________________________________

3. **Normal Function of the Organ.** How does this organ typically work (function)? ______________________
   ______________________________________________________________________________________
   ______________________________________________________________________________________
   ______________________________________________________________________________________

4. **Symptoms.** What are the common symptoms? _____________________________________________
   ______________________________________________________________________________________
   ______________________________________________________________________________________
   ______________________________________________________________________________________

5. **Diagnosis.** What are the common procedures a doctor might do in order to determine that you have this cancer? List each and give a quick summary. _____________________________________________
   ______________________________________________________________________________________
   ______________________________________________________________________________________
   ______________________________________________________________________________________
   ______________________________________________________________________________________

6. **Treatment options.** What are the treatment options? Highlight the most important ones.
   ______________________________________________________________________________________
   ______________________________________________________________________________________
   ______________________________________________________________________________________
   ______________________________________________________________________________________
   ______________________________________________________________________________________

7. **Causes.** What environmental or genetic factors might cause this cancer?
   ______________________________________________________________________________________
   ______________________________________________________________________________________
8. Statistics. In what group of people does this cancer most occur and why? (Race, ethnicity, male, female, young, old, specific part of the world/country, etc.)

________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________

9. Other. Write down any other interesting facts about this cancer that you learned.

________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________

10. Works Cited. Include the links to any websites or titles of any books or articles that you used in order to complete this assignment.

________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________
________________________________________________________________________________