

Cancer

Date: September 17, 2014

Grade: 9

Class: Science

Curriculum Outcome: RE9.2

Observe and describe the significance of cellular reproductive processes, including mitosis and meiosis.

Achievement Indicators:

- g. Relate cancer to cellular processes

Learning Activities:

Set

-Watch video

<http://www.youtube.com/watch?v=llV9hExXZnM>

-Give students 15 minutes to finish work from previous days

Development

-Show intro video to cancer

<http://ed.ted.com/lessons/how-do-cancer-cells-behave-differently-from-healthy-ones-george-zaidan#watch>

-Go through notes on cancer, its causes and its treatments

-Show video on radiation

<http://www.youtube.com/watch?v=VyoCUWxgcNQ>

Closure

Have students do an exit slip, if time permits

Teacher Notes

Cancer

Normally, a cell's DNA controls the cell cycle and ensures that cells reproduce only as needed. It also makes sure that they die as they age or are damaged. Usually when cell division creates errors they are detected and the cell destroys itself and does not continue to duplicate. However, if the cell cycle is damaged the cells can begin to divide uncontrollably. This is called cancer (show video)

Cancer is a disease in which uncontrolled cell division creates tumours.

Cancer is responsible for 30% of all deaths in Canada

Cancer mostly affects Canadians over the age of 50 but can affect any age

2 out of 5 Canadians are expected to develop cancer in their lifetime

1 out of 4 Canadians are expected to die from cancer

Two types of tumours are:

1. Benign

- Non-cancerous

- Crowd the surrounding cells

- Does not spread to other parts of the body

- Can push on tissues, cause nerve damage, reduce blood flow and/or organ damage.

- The mass effect of tumours is more prominent if the tumour is within an enclosed space. (Skull, sinus, bones)

2. Malignant

- Cancerous

- Invade and damage surrounding cells and/or organs by interrupting their normal functions

- Cells separate from the main tumour and travel in the bloodstream

Causes:

- Errors in DNA replication

- Environmental factors

- Chemicals and toxins that damage DNA (these are called carcinogens) ex. UV rays, tobacco

Treatment:

Treating cancer is difficult because healthy cells and cancer cells are very similar.

Most treatments kill both healthy and cancer cells (How would this affect your body? Weak tired)

Types of Treatment:

1. Surgery
 - Most effective on benign tumours and when used with another form of cancer treatment
2. Chemotherapy
 - A combination of drugs that are taken orally or injected into the body to kill fast growing cells, both cancerous and healthy cells
 - This is the reason patients' hair falls out; hair cells are fast growing cells
3. Radiation (Show video)
 - Involves the use of radiation energy to damage cancer cells in order to prevent them from reproducing. Radiation can also damage healthy cells
 - To minimize the risk radiation beams are aimed at the tumour and minimize the exposure to healthy cells

Often more than one type of treatment is used.

Exit Slip:

3- Things you learned about cancer

2-Questions you still have about cancer

1- Interesting fact about yourself