

Science 9 – Week 6

This week, we will be looking at mutations. Take a look at the notes below and then answer the following questions.

Questions:

1. What are mutations?
2. What is a carcinogen and what are some examples?
3. What are the differences between normal cells and cancer cells?
4. What is a tumour?
5. What is the difference between a malignant tumour and a benign tumour?

When finished, email me your responses and I will provide feedback.

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Have a great week! 😊

Ms. Doucet

Notes:

DNA, Mutations and Cancer

- DNA floats in solutions that contain many chemicals that come from outside the cell and may be harmful.
- DNA may be exposed to radiation from the Sun or to viruses which can cause changes to the sequence of nitrogen bases.
- Changes in the genetic code are called **MUTATIONS**.
- Mutations can be beneficial to the cell, but most are either neutral or damaging.
- Damaging mutations of cells and DNA is what can lead to cancer.

Cancer

- Cancer occurs when cell division goes out of control.
- Cancer cells can divide more quickly than they should.
- All cancers are caused by mutations in the genes that regulate cell division.
- Any substance or energy that causes a mutation of the gene is called a **carcinogen**.

Example: Ultraviolet radiation from the sun

Cigarettes (cigarette smoke)

Cancer Cells

- Normal cells in multicellular organisms cannot divide when isolated from one another.
- Cell to cell “communication” is essential for normal cell division.
- However, cancer cells can divide in isolation.
- Human body has many different types of cells that each has a unique shape that carries out a specialized function.

- As the organism grows from a fertilized egg, different clumps of cells specialize, forming nerve cells, liver cells, or bones cells just to name a few.
- Unlike normal cells, cancer cells do not change shape and do not specialize as they mature.
- Because cancer cells do not carry out the regular functions of a normal cell they are inefficient. They use up the energy and resources of the other cells of the body to reproduce but do not do the same work as normal cells.

Tumours

- Rapid cell growth can result in a mass of cells called a **Tumour**.
- Harmless tumours are called **BENIGN**. These tumors remain in a confined area causing little damage to the organism.
- Dangerous tumours spawn cells that can break away and move to other areas of the body. These tumours are **MALIGNANT**.