Most of your body cells undergo mitosis and make more cells to replace cells that are damaged, diseased, or worn out. Some cells divide rapidly to replace dead cells. Millions of cells in your body die every day. For example, blood cells and skin cells constantly need to be replaced. A red blood cell might live for only a few months. New blood cells are made by stem cells in your bone marrow. Dead cells in the outer layer of your skin are replaced every few days by new cells made in a lower layer of the skin.

Sometimes, cells continue to make more cells even when they are not needed, or cells might not die when they should. This uncontrolled, unregulated growth and division of cells is cancer. Cancer cells can crowd out and kill healthy cells. Cancer can affect different parts of the body, such as the stomach, lungs, and brain. Cancer is the second leading cause of death in the United States. In this activity, you will examine some cancer risks and lifestyle choices that can help reduce those risks.

**Part A: Examining the Risks**

Cancer is caused by changes in parts of a cell that control the growth and death of the cell. Certain substances, called carcinogens, can cause these changes. Scientists do research and collect evidence to determine what substances are carcinogens. Some research takes place in laboratories. Other research involves studying the lifestyles of people with different types of cancer. Scientists have identified some substances as known carcinogens; other substances have been identified as possible carcinogens. The table lists the cancer risks of three known carcinogens.

### Analyze and Conclude

*Respond to each question.*

1. **Explain** Why are tobacco, alcohol, and ultraviolet radiation listed as carcinogens in the table?

2. **Identify** What carcinogens in the table are known to cause cancer of the esophagus, the tube leading from the mouth to the stomach?
3. Apply  Why are people who work outdoors at greater risk of getting skin cancer?

Part B: Reducing the Risks

Carcinogens can cause changes in cells that result in cancer, but that does not mean everyone exposed to carcinogens will get cancer. Some people inherit a tendency to develop cancer. For people who have a family history of cancer, regular checkups are important. Many kinds of cancer can be treated successfully if they are detected early enough.

Avoiding or reducing exposure to known carcinogens reduces a person’s risk of getting cancer. In addition, numerous studies indicate that a healthy diet and exercise might protect people from cancer. Steps that people can take to reduce their risks of developing cancer are listed below.

Analyse and Conclude

Respond to each question.

1. Explain  How do the lifestyle choices listed above help reduce a person’s risk of cancer?

2. Identify  In addition to following the lifestyle choices above, what should a person who has a family history of cancer do to reduce his or her risk of dying from cancer? How does this help?

3. Compare  Which diet would give a person a higher risk of cancer—one with lots of fat and few vegetables, fruits, and whole grains, or one with little fat and lots of vegetables, fruits, and whole grains?

Lifestyle Choices for Reducing Cancer Risks

- Avoid smoking and secondhand smoke.
- Avoid alcohol.
- Avoid exposure to UV radiation, use sunscreen, and wear protective clothing.
- Choose foods with less fat and eat more vegetables, fruits, and whole grains.
- Exercise regularly and maintain a healthy weight.

CAREERS IN BIOLOGY

Cancer Research  Visit biologygmh.com for information on cancer research. What are the responsibilities of a scientist who works in cancer research?