Cancer or malignant neoplasm biology essay

Science, Biology

CancerAnnaliese WiensBiology 2 period 3Cancer, or malignant neoplasm, is a general term for a group of diseases characterized by uncontrolled cell growth. A cancer patient’s cells grow and divide at an uncontrolled rate, forming tumors, which intrude on nearby body parts. Approximately 1. 6 million people are diagnosed with cancer in the United States alone. Cancer accounts for about 13% of all deaths worldwide, which is about 7. 9 million people. The average age for cancer diagnosis is 66 years old. Cancer is more likely to affect men than women and is more commonly found in African Americans and Caucasians. There are many signs and symptoms of cancer, and they are classified in three categories. The first category is local effects, or symptoms caused by the tumor’s ulceration or mass. Some examples of local effects are pressure of a lung tumor on the bronchus, causing pneumonia or coughing, and esophagus tumors causing difficulty in swallowing. Local effects can also wear out the body’s immune system in the blood or lymph and cause the person to experience disease easier. The second category of cancer symptoms is systematic. Systematic symptoms are symptoms that are not directly related to the tumor but are a side effect. Some examples are weight loss, fatigue, and skin discoloration. Liver and blood cancer can cause extreme fever, with an unknown cause. One severe type of systematic symptom is a paraneoplastic syndrome, which is a group of cancer side effects caused by humoral factors. The third category of cancer syndrome is metastasis, which is the spread of cancer from one part of the body to another. Some examples are enlarged spleen, liver, or lymph nodes and stress and fracture of bones. Metastatic tumors are most commonly found in late stages of cancer. Metastatic tumors typically spread

through the lymphatic system or blood. To accomplish metastasis, malignant cells detach from the main tumor and attach to the proteins of the extracellular matrix. Most cancer is caused by the environment. Cancer is caused by mutagens, or DNA mutations, and substances that cause these mutations are called carcinogens. Alcohol and tobacco are examples of carcinogens. Tobacco is the cause of about one-third of cancer deaths. Inactivity, diet, and obesity have also been linked to cancer issues. This is because the increased weight causes stress on the immune system. Diets that are low in fresh produce and high in salts and red meat can cause gastric and colon cancer. About 18% of cancer cases are caused by infection. Bacteria, parasites, and viruses can all spread disease leading to cancer. Viruses that cause cancer are called oncoviruses. About one-tenth of cancers are caused by some form of radiation exposure. The sources of radiation include the sun, medical imaging equipment, and radon gases. Other common cancer causes are heredity and hormones. Carcinogenesis is the process of cancer formation. The first step in carcinogenesis is that the mutation, caused by some carcinogen, deactivates the tumor suppressor genes that are found in the cell. Then, the cell divides and reproduces at an uncontrollable rate. After this, the mutation inactivates the DNA’s repair gene. The mutation affects the proto-oncogene and turns it into an oncogene. Then, the tumor is able to deactivate several other tumor suppressor genes, resulting in cancer. Cancer can be identified through screening or symptoms. However, the only way to know for sure if someone has cancer is and examination of tissue by a pathology doctor. After someone is believed to have cancer, they undergo many medical tests,

including blood samples, CT scans, x Rays, and endoscopies. The cancer classification system is determined by the type of cell that the tumor imitates or the origin of the tumor. Carcinoma, the mutation of epithelial cells, is the most common type of cancer. Most lung, breast, prostate, colon, and pancreas cancers are classified as carcinoma . Carcinoma begins in the tissue that lines a surface of the body and has damaged or altered genomes that cause cells to be changed into malignant tumors. The second type of cancer is sarcoma. Sarcoma originates in the connective tissues. Cancers of the cartilage, bone, fat, vascular tissue, and muscles are sarcomas. Sarcomas are very rare and most often successfully treatable. Leukemia and lymphoma are cancer classifications that come from the blood. Leukemia is the most common cancer in children. Lymphoma usually affects the lymph nodes. The affected cells are usually in the blood-forming marrow of the bones. Cancers of the testicles or ovaries are classified as germ cell tumors. These cancers originate outside the gonads. They are most often birth defects caused by defection of the embryo. The final classification of cancer, blastoma, originates in the precursor cells, which are often called " blasts". This type of cancer is most common in children. A pathologist is able to look at cancerous tissue and determine its genetic abnormalities, proliferation, and histological grade, which can determine what the best treatment may be. Pathologists can also use immunohistochemistry and cytogenetic tests to describe the tumor. These allow information about fusion genes, mutations, and chromosome changes. They can usually help the pathologist predict what the cancer cells will do in the future. Most causes of cancers are avoidable. About one-third of cancers can be prevented by avoiding alcohol,

inactivity, obesity, STDs, air pollution, and tobacco. A good diet for cancer prevention consists of whole grains, vegetables, fruits, and fish and is low in animal fats, red meats, and refined carbohydrates. The only medicine that has been proven to reduce the risk of cancer is aspirin, which is shown to prevent about 7% of cancer deaths. Vitamins can assists cells in fighting cancer, but are not proven to prevent it. There are some vaccines that prevent against certain cancer types, including liver and cervical cancers. Cancer is usually treated in one of four ways. Palliative care is the effort to make the patient feel better. This treatment aims to improve the quality of life for the patient instead of aggressively fighting the cancer cells. Palliative care is used with patients with low response to previous treatments, low performance status, and ineligibility for participation in clinical trials. Oncologists usually practice palliative care in patients with an expected life span of less than twelve months. Surgery is the most common treatment in localized cancers. The surgery tries to remove the mass and usually the lymph nodes from the area in order to perform a biopsy. The biopsy determines the type and stage of cancer. However, sometimes tumor removal is the complete treatment and removes all cancer. Chemotherapy and radiation are the most aggressive types of cancer treatment. Chemotherapy is the placement of chemicals in the body system that is designed to kill cells. Chemotherapy is usually used in bone, lung, prostate, breast, and pancreatic cancers. Chemotherapy if often used alongside radiation to reduce the symptoms of cancer. Head, neck, and bone cancer are the cancers that radiation is most commonly used in. For many years, cancer has had the reputation of being a very deadly disease. Indeed, about

half of patients receiving treatment for cancer die from its treatment or symptoms. People with cancer experience a lower quality of life in their remaining time. However, scientists are working very hard on a cure for cancer. In the future, scientists may discover a way to prevent cancer, causing life improvement and a longer life span for millions of people.