

Reducing the Risk of Cancer

HEALTH GOAL

- I will choose behaviors to reduce my risk of cancer.

Cancer is a disease that affects people of all ages, races, and nationalities. Next to cardiovascular disease, cancer is the most common cause of death in the United States. Some types of cancer cannot be prevented, but some can if people take preventative measures. If a person does get cancer, early treatment can increase the chances for a cure. This lesson will provide information about different aspects of cancer.

What You'll Learn

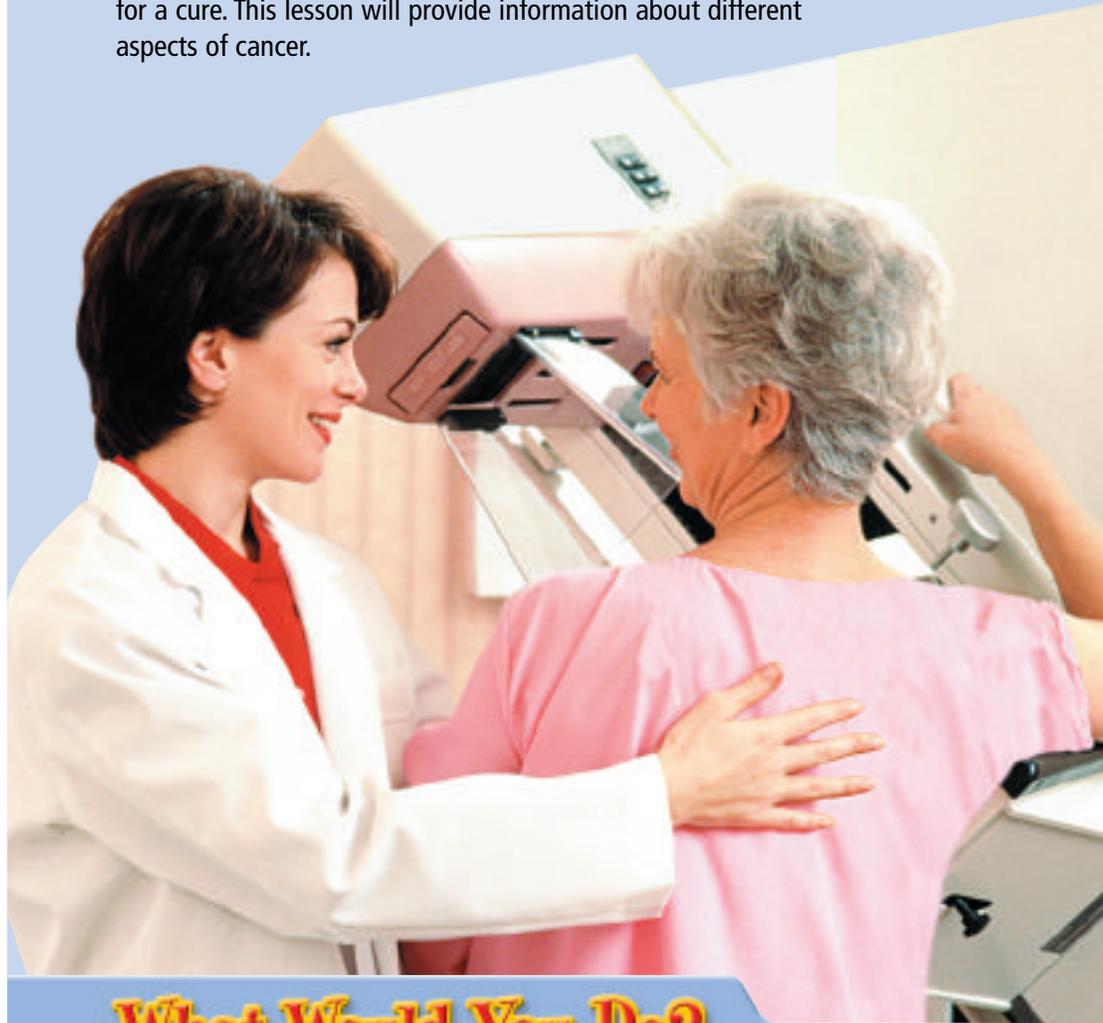
1. Describe how cancerous cells grow and spread. (p. 531)
2. Describe the basic facts about common types of cancers. (p. 533)
3. Develop and analyze strategies to reduce the risk of cancer. (p. 534)
4. Discuss different treatment procedures for cancer. (p. 536)

Why It's Important

To some degree, cancer is an illness that results from lifestyle choices. For example, overexposure to the Sun increases the risk of developing skin cancer. You can make lifestyle choices that reduce your risk of developing cancer.

Key Terms

- cancer
- tumor
- benign tumor
- malignant tumor
- metastasis
- ultraviolet (UV) radiation
- malignant melanoma
- radon
- basal cell carcinoma
- chemotherapy

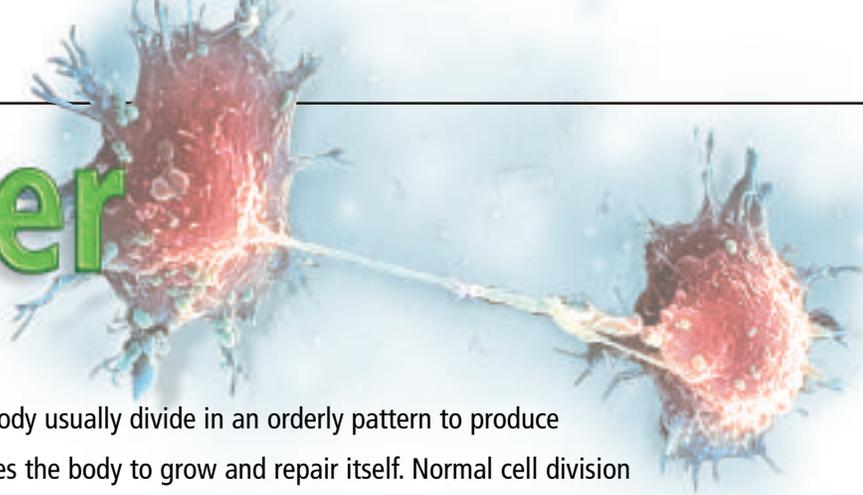


What Would You Do?

Writing About Reducing Risk Suppose that your aunt has breast cancer. You decide to run in the Race for the Cure, an annual national event that raises money for breast cancer research. Running in the event also is beneficial to you because exercising and controlling your weight helps reduce your risk of developing cancer. After you read the information about reducing your risk on page 534, write an entry in your health journal about other ways you can reduce your risk.



Cancer



All cells in a person's body usually divide in an orderly pattern to produce more cells. This enables the body to grow and repair itself. Normal cell division is under precise control. Sometimes there are problems and cells do not divide in the usual way. **Cancer** is a group of diseases in which cells divide in an uncontrolled manner.

What to Know About Cancer

How cancer forms When cells divide in an uncontrolled manner, they can form a tumor. A **tumor** is an abnormal growth of tissue. Tumors can be benign or malignant. A **benign tumor** is a tumor that is not cancerous and does not spread to other parts of the body. Benign tumors rarely are life-threatening. They usually can be removed and do not grow back.

A **malignant tumor** is a tumor that is cancerous and may spread to other parts of the body. **Metastasis** (muh TAS tuh suhs) is the spread of cancer. Cancer cells can break away from a malignant tumor and enter the bloodstream or lymphatic system. They can form new tumors in other parts of the body.

Causes of cancer Cancer is not contagious. You cannot get cancer from another person. Cancer also is not caused by an injury, such as a bump or bruise. Although the causes of cancer are not completely understood, many risk factors for cancer have been identified. These risk factors can increase a person's chances of getting cancer.

How cancer is detected Some people are fearful of cancer. They do not realize that many types of cancer can be prevented or successfully treated when detected early.

They can improve the chance that cancer will be detected early if they have regular physical examinations, perform certain self-examinations, and are aware of risk factors for, and signs and symptoms of cancer.

Great strides have been made in the early detection and treatment of cancer due to improved technology. In many cases a needle-sharp probe replaces a scalpel in the detection and treatment of breast cancer. The survival rate for all types of cancers greatly improves with early detection.

A Guide to Common Cancers (on page 533) contains information on risk factors, signs and symptoms, and early detection of several types of cancer.

Did You Know?

Risk Factors You can control many factors that can put you at risk for cancer.



◀ A change in a mole or other change in the skin should be checked by a physician.

Mini-Review

1. What is cancer?
2. What is metastasis?

A Guide to Common Cancers

There are many different types of cancer. This section includes A Guide to Common Cancers, which makes each type of cancer easy to understand. Cancers are categorized by their risk factors, signs and symptoms, and early detection.

Early Detection of Cancer

Health TEKS

6B (covered on page 532): Relate the importance of early detection and warning signs that prompt individuals...to seek health care.

Quick Quiz:

How can you reduce your risks of skin cancer?

Many kinds of cancer can be treated and cured if detected early. Get to know your body.

Early detection of cancer Examination of the bladder by a physician can aid in early detection for **bladder cancer**, while regular dental and physical checkups plus watching for symptoms can help detect **oral cancer**. People can reduce their risk of **skin cancer** by doing a monthly skin self-examination and by noticing when there are changes in their skin and moles.

Women can reduce their risk of **breast cancer** by controlling their weight through diet and exercise, doing monthly breast self exams, having a physical exam every three years for women 20 to 40 and every year for women over 40, and by having an mammogram every 1–2 years, beginning at age 40.

Women can reduce their risk of **cervical can-**

cer by having regular pelvic examinations and annual Pap smears. **Endometrial cancer** can be detected early if women age 40 and up have an annual pelvic exam by a physician.

Men can help reduce their risk of prostate cancer by having an annual rectal examination after age 40 and an annual blood test after age 50. Men and women can help reduce their risk of colon and rectal cancer by having an annual rectal examination after age 40.

For some types of cancer, including **Hodgkin's disease** and **non-Hodgkin's disease**, there are no early detection tests available. For other types, early detection is difficult. One example is **leukemia**, because symptoms often appear late in the disease. The same is true for **lung cancer**; it can be detected late in the disease with chest X rays and an examination of bronchial tubes and mucus.

Ovarian cancer also is difficult to detect early because symptoms are often attributed to other conditions. **Pancreatic cancer** can be detected late in the disease with ultrasound imaging and CT scans.

A regular physical examination is important in the early detection and treatment of cancer. ▼



TABLE 49.1 A Guide to Common Cancers

Type of Cancer/Risk Factors	Signs and Symptoms
Bladder Cigarette smoking, air pollution, exposure to industrial chemicals	Increased frequency of urination, weight loss and loss of appetite, blood in urine
Breast Family history of breast cancer, early start of menstruation, late menopause, never having children, late age when first having children	Breast tenderness, lumps or thickenings in the breast, changes in a nipple, discharge from a nipple, dimpling or puckering of the skin on a breast
Cervical Early age at first sexual intercourse, having multiple sexual partners, cigarette smoking, infection with human papilloma virus (HPV)	Pain, abnormal vaginal discharge, abnormal bleeding from the uterus or spotting
Colon and rectal Family history of colorectal cancer, polyps in the colon or rectum, inflammatory bowel disease, high-fat and low-fiber diet, physical inactivity	Changes in bowel habits (such as constipation or diarrhea), bleeding in the rectum, blood in the stool, unexplained weight loss
Endometrial Obesity, early start of menstruation, late menopause, family history of infertility, failure to ovulate, use of estrogen drugs	Pain, weight loss, irregular menstrual cycles, abnormal vaginal bleeding after menopause
Lymphoma: Hodgkin's disease Largely unknown, reduced immune function, exposure to certain infectious agents	Enlarged lymph nodes, unexplained fever, unexplained weight loss, itching, fatigue, night sweats
Leukemia Exposure to radiation, exposure to certain chemicals, infection with human T-lymphotropic virus: Type I, cigarette smoking	Fever, weight loss, fatigue, easy bleeding, repeated infections, enlarged lymph nodes, swelling of liver and spleen
Lung Cigarette smoking, exposure to secondhand smoke, air pollution, exposure to asbestos, exposure to radon, family history of lung cancer, exposure to industrial chemicals, exposure to radiation	Chronic coughing, blood in mucus, wheezing, chest pain, weight loss, hoarseness, shortness of breath, recurring pneumonia or bronchitis
Oral Chewing tobacco use, heavy alcohol use, smoking and using drugs multiplies the risk	Lump or thickening in the mouth, leukoplakia, bad breath, loose teeth, pain, a sore that bleeds easily and doesn't heal in the mouth, difficulty chewing and swallowing
Ovarian Never having children, family history of ovarian cancer, increased risk with age	Enlarged abdomen, abdominal pain and discomfort, abnormal vaginal bleeding
Pancreatic Cigarette smoking, chronic pancreatitis, diabetes, cirrhosis of the liver, high-fat diet	Weight loss, pain, change in bowel habits
Prostate Risk increases with age, high-fat diet, family history of prostate cancer, highest incidence among African-Americans	Frequent urination, painful or burning urination, weak or interrupted urine flow, bloody urine, persistent pain in the back, hips, or pelvis
Skin Exposure to UV radiation from the Sun, tanning booths, and sunlamps, repeated sunburn, fair complexion, family history of skin cancer, exposure to coal, tar, pitch, creosote, arsenic, or radium	Changes in skin pigmentation, skin sores that do not heal, pain, tenderness, or itchiness of the skin, changes in the size, shape, color, thickness, or number of moles

Reducing Your Risk

Some risk factors for cancer cannot be controlled. For example, people cannot control their heredity. However, almost all cancers are associated with choices over which people do have control.

What You Can Do to Reduce Your Risk

Make the Connection

Weight For more information on the importance of weight management, see page 324 in Lesson 29.

Reducing exposure to secondhand smoke will reduce risk of lung cancer. ▼

This facility is smoke free.



Know the warning signs of cancer.

There are common warning signs that may indicate cancer.

- Change in bowel or bladder habits
- A sore that does not heal
- Unusual bleeding or discharge
- Thickening or lump in a breast or elsewhere
- Indigestion or difficulty swallowing
- Obvious change in a wart or mole
- Nagging cough or hoarseness

These also may be symptoms of less serious conditions, so see a doctor if you have any of these signs.

Choose a tobacco-free lifestyle.

Tobacco use is the most preventable cause of cancer death. Tobacco products contain many carcinogens. A carcinogen is a chemical that is known to cause cancer. Using tobacco products and being exposed to secondhand smoke are leading causes of cancer death. Cases of lung cancer would be greatly reduced if people never began to smoke and reduced their exposure to secondhand smoke. The use of smokeless, or chewing tobacco increases the risk of cancers of the mouth, gums, and throat.

Protect yourself from UV radiation.

A type of radiation that comes from the Sun and also is emitted by sunlamps and tanning booths is **ultraviolet (UV) radiation**. Repeated exposure to UV radiation increases the risk of skin cancer, including malignant melanoma. **Malignant melanoma** is the form of skin cancer that is most often fatal. Avoid exposure to the Sun between 10 a.m. and 3 p.m. If you are in the sun, wear protective clothing. Use sunscreen lotions that have a sun protective factor (SPF) of at least 15. Never use a tanning booth or sunlamp. Check your skin regularly. If you notice any abnormal growths, consult your physician.

Follow dietary guidelines. Eat a variety of foods so that your body has a combination of nutrients. Follow the recommended number of servings of each food on the Food Guide Pyramid.

Maintain desirable weight. People who are overweight and have a high percentage of body fat are more at risk for developing cancer. Exercise regularly and manage your weight.



Avoid drinking alcohol. Drinking alcohol may cause changes in body cells. Alcohol also takes vitamins needed for optimal health away from your body. Drinking alcohol increases the risk of cancer of the liver, throat, mouth, breast, and stomach. Chances of developing cancer are multiplied further if you drink alcohol and use tobacco products.

Avoid exposure to dangerous chemicals and airborne fibers. The following have been found to increase risk of cancer: benzene, benzidine, vinyl chloride, uranium, radon, nickel, cadmium, asbestos, and pesticides. Wear rubber gloves and a mask when exposed to dangerous chemicals. Wear protective clothing if you will be exposed to airborne fibers.

Avoid air pollution. Polluted air contains many carcinogens. Avoid the exhaust from cars, buses, and trucks. Have your home tested for radon. **Radon** is an odorless, colorless radioactive gas that is released by rocks and soil. It can collect and be trapped in basements and crawl spaces. Inhaling radon can increase the risk of lung cancer.

Avoid infection with HIV and sexually transmitted diseases (STDs). Many people who are infected with HIV develop Kaposi's sarcoma and other cancers. People who have genital warts are at increased risk for cervical cancer. Choose abstinence to reduce your risk of cancer. Do not inject drugs, such as steroids and heroin. Discuss any procedure that involves piercing the skin with a parent or guardian beforehand. Avoid contact with blood and bodily fluids.

Know your family's cancer history. Some cancers, such as breast, colon, and ovarian cancers, occur more frequently in certain families. If a family member or other relative has had cancer, have regular cancer checkups and keep your physician informed.

Reducing the Risk of the Most Common Cancer: Skin Cancer

Skin cancer often begins to develop in young people who are overexposed to the Sun for many years. Skin cancer is most easily detected because it is plainly visible to the eye. There are three types of skin cancer.

Basal cell carcinoma is the most common form of skin cancer. It develops on sun-exposed areas of the body in the form of a small, round, raised red spot. It is almost always cured if discovered early. **Squamous cell carcinoma**, the second most common skin cancer, also occurs on the parts of the body exposed to the Sun. It is a slower growing cancer with a tendency to spread to other parts of the body. Malignant melanoma is the most dangerous skin cancer. It appears as a mole that changes its appearance and attacks other body parts. Most skin cancers can be prevented by avoiding the Sun and wearing a sunscreen with a Sun protection factor of at least 15.

The use of tanning beds significantly increases the risk of squamous cell carcinoma. The younger people are when they first start using tanning beds, the greater the risk of developing skin cancer.

▲ Frequent sun exposure can cause skin cancer.

Make the Connection

Air Pollution For more information on air pollution, see page 603 in Lesson 57.

Mini-Review

1. What is ultraviolet (UV) radiation?
2. What is the most dangerous skin cancer?

Treatment Approaches

Treatment for cancer depends upon a number of factors. These factors include the type of cancer, how much the cancer has spread, the location of the cancer, and the patient's choice of treatment. Common treatment approaches for cancer include surgery, radiation therapy, chemotherapy, and immunotherapy.

What to Know About Treatment Approaches

Radiation therapy is used to treat some types of cancer. ▼

Surgery The most common treatment for cancer is surgery. If tumors are confined to a particular site, physicians may remove the cancerous tissue from the body. If tumors are spread out, surgery is more difficult to perform.

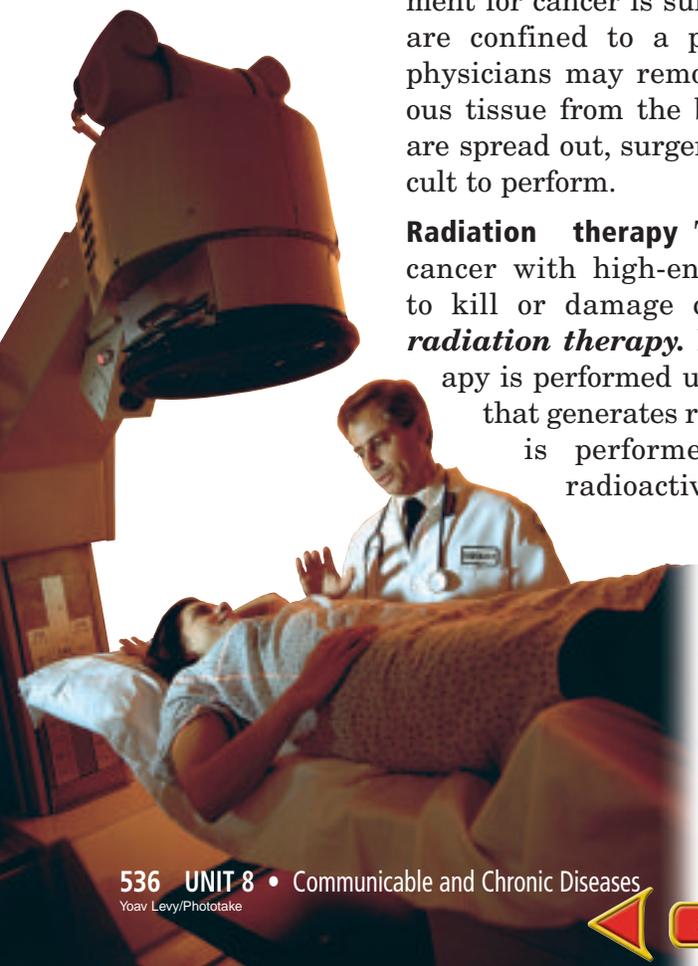
Radiation therapy Treatment of cancer with high-energy radiation to kill or damage cancer cells is **radiation therapy**. Radiation therapy is performed using a machine that generates radiation. It also is performed by placing radioactive materials in

or near the cancer site. Radiation therapy may produce side effects, such as fatigue, nausea, and vomiting.

The skin also may become red and blistered in the areas that are treated with radiation.

Chemotherapy The treatment of cancer with anti-cancer drugs is **chemotherapy**. These drugs kill cancer inside the body. Chemotherapy works mainly on cancer cells. However, healthy cells can be harmed as well. Side effects may include nausea, vomiting, hair loss, and fatigue. Most of these side effects do not last long and will gradually go away. Fatigue may last several months.

Immunotherapy A process in which the immune system is stimulated to fight cancer cells is **immunotherapy**. Immunotherapy involves injecting patients with cancer cells that have been made harmless by radiation or injecting patients with other substances that stimulate the immune system.



basal cell carcinoma
benign tumor
cancer
chemotherapy
immunotherapy
malignant melanoma
malignant tumor
metastasis
radiation therapy
radon
tumor
ultraviolet (UV)
radiation



Key Terms Review

Complete these fill-in-the-blank statements with the lesson Key Terms on the left. Do not write in this book.

1. A noncancerous tumor is a(n) _____.
2. An odorless, colorless gas associated with cancer is _____.
3. The spread of cancer to other body parts is _____.
4. Being treated with anti-cancer drugs is called _____.
5. The general name for a disease in which there is uncontrollable growth of cells is _____.
6. The most dangerous type of skin cancer is _____.
7. The most common form of skin cancer is _____.
8. An abnormal growth of tissue forms a(n) _____.
9. Sunlamps emit a dangerous ray called _____.
10. A cancerous tumor also is called a(n) _____.

Recalling the Facts

11. Distinguish between a benign tumor and a malignant tumor.
12. What are three risk factors for developing lung cancer?
13. What are three treatments for cancer?
14. What are the seven early warning signs of cancer?
15. What methods are used for early detection of breast cancer?
16. Why is early detection for leukemia difficult?
17. What are three risk factors that might contribute to oral cancer?
18. Describe signs that might indicate skin cancer.

Critical Thinking

19. Discuss why a benign tumor is considered less harmful than a malignant tumor.
20. Why is cancer not considered a contagious disease?
21. Why should a woman infected with HPV have cervical examinations on a regular basis?
22. Explain why a person who has swollen lymph nodes, fever, weight loss, and fatigue should seek medical attention?
List the types of cancer that these symptoms are signs of.

Real-Life Applications

23. How could you be supportive toward a friend who is feeling sick from receiving chemotherapy?
24. Why should you know the warning signs of cancer?
25. You notice that a classmate who smokes has a chronic cough and often complains of chest pains. What would you say to your classmate?
26. Describe why the use of tanning beds by people your age is particularly risky.

Activities

Responsible Decision Making

27. **Discuss** One of your friends works at a tanning salon and offers you three free sessions in the tanning booth. Your friend says you will look great. Write a response to this situation. Refer to the Responsible Decision-Making Model on page 61 for help.

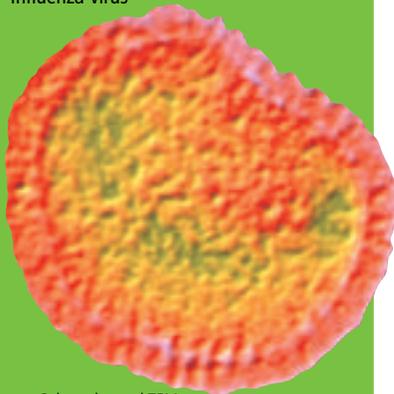
Sharpen Your Life Skills

28. **Practice Healthful Behaviors** Plan a three-day menu of foods known to prevent cancer. Choose foods that are high in fiber. Include several fruits and vegetables each day. Avoid fatty foods. Avoid foods that are smoked, salted, or nitrate-cured.

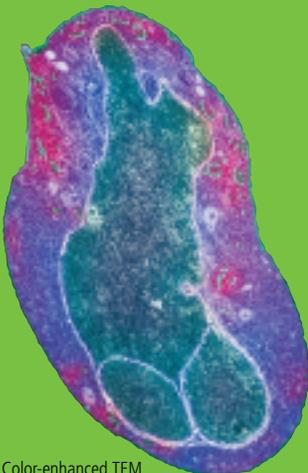
8

STUDY GUIDE

Influenza virus

Color-enhanced TEM
Magnification: 250,000x

Malaria parasite

Color-enhanced TEM
Magnification: 5700x

Key Terms Review

Match the following definitions with the correct Key Terms. Do not write in this book.

- | | | |
|------------------------|------------------------------|--------------------------|
| a. aneurysm (p. 516) | e. immune system (p. 485) | i. pubic lice (p. 503) |
| b. antibody (p. 485) | f. Kaposi's sarcoma (p. 505) | j. strep throat (p. 492) |
| c. asthma (p. 494) | g. metastasis (p. 531) | k. stroke (p. 516) |
| d. hemophilia (p. 527) | h. plaque (p. 515) | l. tumor (p. 531) |

1. hardened deposits in the blood vessels
2. a condition caused by a bacterial infection of the throat
3. a condition caused by a blocked or broken blood vessel in the brain
4. removes harmful organisms from the blood and combats pathogens
5. a weakened area of a blood vessel
6. a protein that helps fight infection
7. the spreading of cancer cells to other body parts
8. crab lice that pierce the skin and feed on human blood
9. a type of cancer that affects people who are infected with HIV
10. a condition in which the bronchial tubes become inflamed and constrict

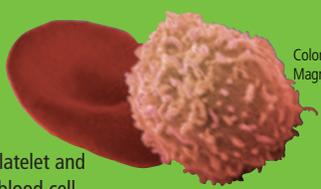
Recalling the Facts

11. What are three diseases caused by bacteria? (Lesson 44)
12. Identify three signs of an asthma attack. (Lesson 45)
13. What takes place in an ectopic pregnancy? (Lesson 46)
14. How is gonorrhea diagnosed? (Lesson 46)
15. How does nitroglycerin work? (Lesson 47)
16. What is an antioxidant? (Lesson 47)
17. What is metabolism? (Lesson 48)
18. What are the two major types of arthritis? (Lesson 48)
19. What is a benign tumor? (Lesson 49)
20. How could the number of cases of lung cancer be greatly reduced? (Lesson 49)

Critical Thinking

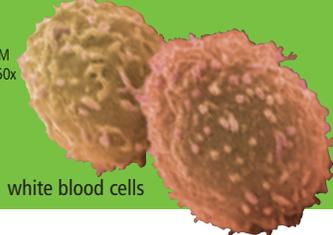
21. Describe the quality of life today if there were no vaccines. (Lesson 44)
22. You have been exposed to the flu and your white blood cell count is high. How can this be a benefit to you? (Lesson 44)
23. Why would a physician not necessarily provide an antibiotic for flu? (Lesson 45)
24. Why might a female have PID and yet not know she has chlamydia? (Lesson 46)
25. Explain how pubic lice could become a public health problem among teens. (Lesson 46)
26. Why should a person with high blood pressure avoid too many salty foods? (Lesson 47)
27. Why are oral medications often avoided for a woman if she has gestational diabetes? (Lesson 48)
28. Why might a person with narcolepsy seek a support group? (Lesson 48)
29. What probably happened if a person had colon cancer, which was treated, but now has liver cancer? (Lesson 49)
30. Why should people who are overweight reduce their percentage of body fat? (Lesson 49)



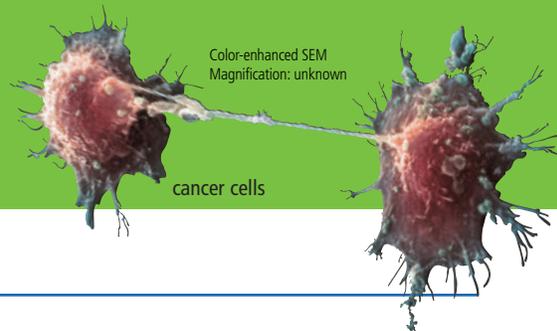


a blood platelet and a white blood cell

Color-enhanced SEM
Magnification: 3,750x



white blood cells



Color-enhanced SEM
Magnification: unknown

cancer cells

Health Literacy Activities



What Do You Know?

Self-Directed Learning Write questions about common types of diseases—including respiratory, cardiovascular, and chronic diseases, as well as cancer, STDs, and HIV—that are factual, but difficult or challenging to answer. You might research information beyond what you learned in this unit. Form teams with classmates and compete by answering the other teams' questions. Keep score and declare a winner.



Connection to World Cultures

Effective Communication People of certain cultures and countries are more at risk than others for certain diseases and health conditions because of differences in diet, climate, and other factors. Find an article in a medical journal or other periodical that discusses a disease or health condition that is common in a certain culture or country. Write a summary of this article and share the information with your classmates.



Family Involvement

Responsible Citizenship Write a health plan with family members in which each member will play a role in reducing the risk of heart disease in the family. Analyze the roles and responsibilities of each family member.



Investigating Health Careers

Problem Solving Interview a family physician or a dermatologist to obtain information about the effects of sunbathing or using a tanning booth on the skin. Prepare a poster to share with the class.



Group Project

Critical Thinking Prepare a 30-second public service announcement explaining ten ways to reduce the risk of certain types of cancer. Record your announcement and send the tape to a local radio station, or get permission to play it over your school's PA system. Visit tx.healthmh.com/cancer for more information.



Reading and Writing TAKS: 1:6B, 1:7F, 3:7G, 3:10B, 4:1B, 4:1C, 5:3A, 5:3B, 5:3C, 6:2C

Standardized Test Practice

Reading & Writing

Read the following selection and answer the questions that follow.

Scientists have been reporting for many years about the healthful qualities of drinking black or green tea. Substances called antioxidants, found in many kinds of hot or cold tea, may reduce the risk of heart disease and cancer, strengthen bones, improve allergies, and even help prevent cavities. A 2003 National Academy of Sciences study shows that drinking five cups of tea a day may boost the body's ability to fight diseases. Researchers found that the T-cells in the blood of tea drinkers released up to five times the normal amount of a chemical called interferon. Interferon fights infection and can even shrink some kinds of tumors. Scientists are hopeful that the new discovery will lead to important breakthroughs in the ongoing battle against disease.

Multiple Choice

- In this paragraph, the word *breakthroughs* means
 - experiments
 - failures
 - successes
 - reports
- Which statement best describes the author's attitude toward the new findings about tea?
 - Everyone should start drinking tea.
 - The findings are opinion, not fact.
 - More research is needed in order to apply research findings about tea to treatments for disease.
 - Scientists are exaggerating the healthful qualities of tea.

Open-Ended

- Write a letter to a friend summarizing this paragraph and making a recommendation about drinking tea.



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