

Patient Education

HOW DOES CANCER DEVELOP?

Nearly one out of every two Americans will be diagnosed with cancer in his or her lifetime, and worldwide, cancer incidence is predicted to increase from 12.8 million new cases in 2008 to 24 million cases in 2035. Recently, research into the growth of cancer has led to the development of better targeted cancer therapies and better strategies for prevention. Read below for more information about how cancer develops and what you can do to help prevent it.

Developing Cancer

Cancer arises when the orderly processes that control the multiplication and life span of normal cells go awry. This occurs predominantly as a result of changes in the genetic material of the cells.

The length of time it takes for a cancer to develop and gain the ability to invade local tissues, or the blood stream, and spread (metastasize) to distant sites varies widely and depends on the identity, order, and speed at which changes in the genetic material accumulate. Numerous interrelated factors, such as a person's genetic makeup and environmental factors like tobacco use, diet, associated illnesses, and other exposures, also influence this rate.

What Factors Influence Cancer Growth?

Many different types of changes in the genetic material of a cell can lead to cancer. Research has revealed, however, that interaction between cancer cells and their environment, known as the tumor microenvironment, as well as interactions with systemic factors, are an important part of cancer development.

Key influencers include: genetic mutations, the growth of blood and lymphatic vessel networks, systemic factors, epigenetic marks, the immune system, and the matrix of proteins that surround cancer cells. These factors are explained in **FIGURE 1**.

Preventing Cancer

As scientists' knowledge of the biology of cancer has grown, so has their ability to exploit it to develop new and improved approaches to cancer prevention, detection, diagnosis, and treatment. Most of these new approaches target cancer biology more precisely than traditional approaches, providing patients with not just longer but also higher quality lives. Of course, preventing cancer from developing in the first place is the most effective way to reduce cancer's burden. According to the *AACR Cancer Progress Report 2014*, more than 50 percent of the 585,720 cancer deaths expected to occur in 2014 would be related to preventable causes. See **FIGURE 2** for more information about what lifestyle changes you can undertake to lower your risk of developing cancer.

This "Patient Education" tear sheet was produced in collaboration with the American Association for Cancer Research (www.aacr.org), with information from the *AACR Cancer Progress Report 2014* (www.cancerprogressreport.org).

FIGURE 1

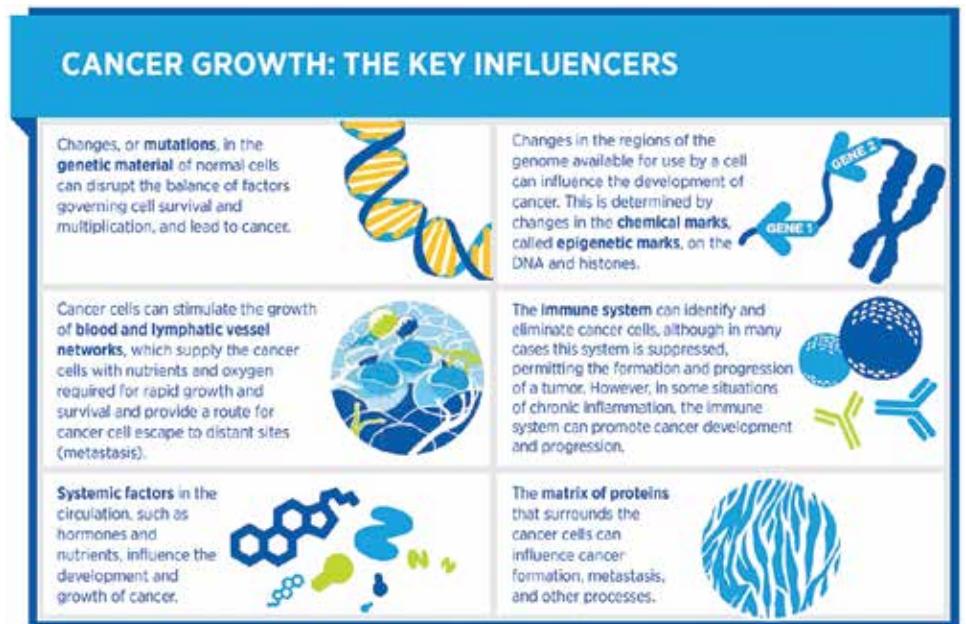
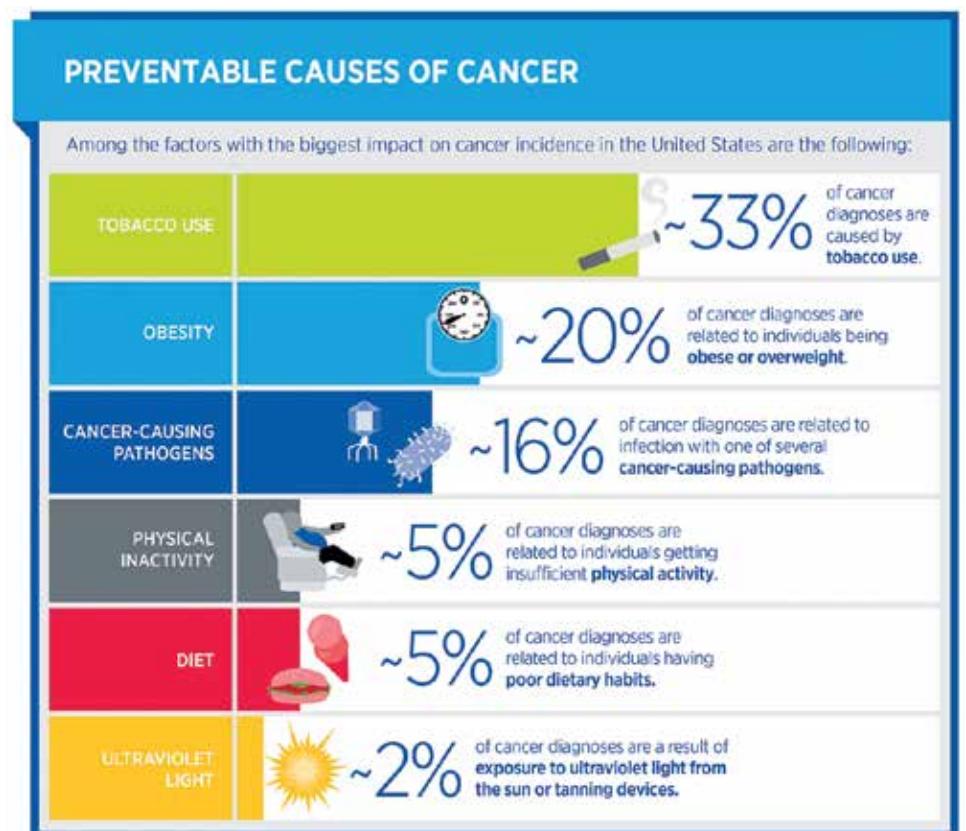


FIGURE 2



About the AACR

The mission of the American Association for Cancer Research (AACR) is to prevent and cure cancer through research, education, communication, and collaboration. Through programs like the Survivor & Patient Advocacy Program (S&PA), the AACR fosters partnerships among leaders of the cancer survivor, patient advocacy, and scientific communities.

For more information about the AACR, visit www.aacr.org and follow the AACR on Twitter (@AACR) and Facebook (www.facebook.com/aacr.org). Read the AACR's blog, *Cancer Research Catalyst*: blog.aacr.org.

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