

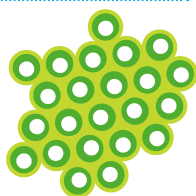
# WHAT IS BASIC RESEARCH AND HOW DOES IT DRIVE PROGRESS AGAINST CANCER?

The National Institutes of Health (NIH) defines basic research (also referred to as basic science research) as “the systematic study directed toward fuller knowledge or understanding of the fundamental aspects of a phenomenon and of observable facts without specific applications toward processes or products in mind.” Basic research, however, has broad implications because it is fundamental to our understanding and treatment of human diseases, including cancer. The NIH spends more than half of its budget supporting basic research. NIH-funded basic research projects significantly contribute to novel target identification and drug development (23, 24).



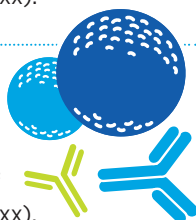
Discovery of **DNA and its 3-dimensional structure** paved the way for understanding **genetic mutations**, the underlying basis of most cancers.

Understanding the basic molecular biology of **DNA replication and cell division** led to the development of **chemotherapies** that kill rapidly dividing cancer cells.



Basic research on normal cellular **DNA repair** elucidated how abnormalities in repair mechanisms can contribute to cancer development and led to the FDA approval of **targeted therapies** for breast and ovarian cancer treatment (see **Figure 14**, p. xx).

Decades of basic research in **immunology** underpinned the development of **immunotherapies** that have revolutionized the field of cancer treatment (see **Figure 16**, p. xx).



Basic research into the immune system of bacteria led to the development of **CRISPR technology**, and its utility to treat cancer, is being investigated.