

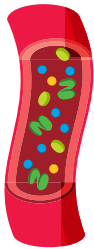
The Tumor Microenvironment: External Influences on Cancer Development and Progression

Solid tumors are much more complex than an isolated mass of proliferating cancer cells because cancer initiation, development, and progression are strongly influenced by interactions among cancer cells and numerous factors in their tissue environment. Among the components of the tumor microenvironment are:



Tumor Matrix

The matrix is the platform upon which tumor cells grow, and components of the matrix can influence the aggressiveness of a cancer.



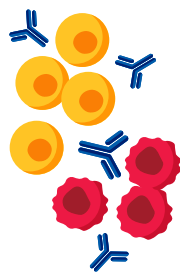
Hormones

Hormones are chemicals that circulate throughout the body and can influence tumor growth and development. While hormones have been shown to be a cause of differential cancer risks between males and females, their role in cancer development among individuals receiving gender-affirming hormonal therapy is just beginning to be understood. Differences in cancer development have been shown in breast and prostate of transgender people that were receiving hormone therapy compared to cisgender individuals not receiving hormone-based, gender-affirming therapy.



Tumor Blood and Lymphatic Networks

Tumors can grow blood vessels by releasing chemicals into their microenvironment, which, in turn, aids in tumor growth. The degree to which this occurs differs across ancestral groups, and may explain why cancers are more aggressive in one population versus another.



Immune Cells

The immune system is a large network of organs, tissues, cells, and the substances they produce that helps keep the body safe from harmful substances, pathogens, and cellular changes, including cancer. Immune cells within a tumor can identify and eliminate cancer cells, although in many cases the immune system is suppressed, permitting the formation and progression of a tumor. Targeting of cancer by unleashing the immune system is an exciting area of research. Cancer immunotherapies have demonstrated efficacy against multiple cancers including in patients with triple-negative breast cancer (TNBC), with some studies showing particular effectiveness of these therapies in certain racial/ethnic groups. For instance, it has been observed that there was a distinct signature in the T cells (one type of immune cell) of African American women compared with women of European ancestry with TNBC. These immunobiological differences indicate that Black women may have better responses and provide rationale for the use of checkpoint inhibitors in this group compared to White patients.