

Cancer biology

Cancer biology is the study of the biology and behavior of cancer cells. It involves the investigation of the mechanisms by which normal cells become cancerous and the study of the various factors that contribute to the development and progression of cancer.

Cancer is a complex disease that arises from the uncontrolled growth and division of abnormal cells in the body. These abnormal cells can form tumors and invade nearby tissues, and they can also spread to other parts of the body through the bloodstream or lymphatic system. Cancer biology seeks to understand the underlying genetic, molecular, and cellular mechanisms that drive this process.

Some of the key areas of research in cancer biology include:

Oncogenes and **tumor suppressor genes**: These are genes that are involved in regulating **cell growth** and division. Mutations in these genes can lead to the development of cancer.

Cell signaling pathways: These are the complex networks of molecular signals that control cell behavior. Abnormalities in these pathways can contribute to cancer development.

Epigenetics: This refers to the changes in gene expression that occur without changes to the underlying DNA sequence. Epigenetic changes can play a role in cancer development and progression.

Tumor microenvironment: This includes the surrounding tissue and cells that interact with cancer cells. The tumor microenvironment can influence cancer cell behavior and response to treatment.

Understanding the biology of cancer is critical for the development of new and more effective treatments. By identifying the underlying mechanisms of cancer, researchers can develop targeted therapies that specifically address the abnormalities driving cancer growth and progression.

The discovery of **somatic mutations** in the **isocitrate dehydrogenase** (IDH) enzymes through a genome-wide mutational analysis in **glioblastoma** represents a milestone event in **cancer biology**.

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