

# VIRUSOLOGICAL THEORY IN CARCINOGENESIS

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**Introduction.** The viral theory of cancer has gone unrecognized for over 40 years. In the twentieth century, there were three theories of cancer development. The development of malignant tumors was based on carcinogens, oncogenic mutations and oncogenic viruses.

**Aim.** The aim of the work was to analyze the modern scientific literature in the field of carcinogenesis and identify problems of oncotherapy.

**Materials and methods.** Analysis of scientific literature and results of advanced research in the field of microbiology, virology, pathology and immunology.

**Results and discussion.** Analyzing the literature data, it was found that

1. Currently recognized and experimentally validated viral-genetic concept of malignant neoplasms L.A. Zilber. The main provisions of this concept the following:

- Tumors are caused by viruses;
- Tumor transformation of cells occurs as a result of the inclusion (integration) of viral DNA into the genome of cells of a macroorganism;
- Due to this integration, cells acquire new properties, and namely, the ability to uncontrolled and unlimited division.

2. DNA-containing oncogenic viruses include: hepatitis B virus (HBV), human papillomaviruses (HPV) (especially HPV-16 and HPV-18), human herpesvirus type 8 (HHV-8); Epstein-Barr virus (EBV); merkel cell polyoma virus (MCV); human cytomegalovirus (CMV or HHV-5) associated with mucoepidermoid carcinoma and possibly other malignant neoplasms. RNA oncogenic viruses include: Human T-lymphotropic Virus (HTLV-1) and hepatitis C virus (HCV).

3. Most oncogenic viruses have a specific cellular tropism. A hallmark of virus-associated tumors is that the tumor cells contain the viral genome.

4. All known dangerous oncogenic viruses are transmitted only through blood or sexually.

5. Viruses, by changing the genetic apparatus of the cell, are able to activate either oncogenes of the host cell or their own; in both cases, this activation results in tumor growth.

**Conclusions.** In most cases, the presence of oncogenic viruses is not enough for 100% of cancer development. In many people, cells can become infected for decades, but only 1% of them develop a tumor. The transition to the active stage requires the presence of at least two oncogenes.