

Tumor metastasis is the process in which malignant tumor cells spread from the primary site, through different routes, to secondary tissues or organs in order to proliferate and form secondary tumors, which are the same type of cancer as the original one. One of the characteristics of malignant neoplasms is their ability to metastasize, which is the leading cause of death among tumor patients.

Tumor metastasis is an extremely complex multi-step process influenced by different factors. In 1929, Ewing explained the occurrence of metastasis in the context of the blood of organs and the direction in which lymph flows.

In 2011, Muller was among the first to propose that tumor cells accomplish their spread to a targeted destination through the specific pairing between chemokines and their receptors. Further studies showed that tumor cells express chemokine receptors in a nonrandom way. The most commonly found chemokine receptors on the surface of tumor cells are CXCR4, whose ligands CXCL12 are generally expressed in lung, liver, bone marrow, and lymph nodes, making these sites common organs to which tumor metastasize.

Molecular biology techniques revealed that metastasis of lung cancer is a complex process mediated by cancer and anticancer genes, which regulate the whole process of tumor metastasis through the overexpression of genes related to tumor spreading and the participation of relevant gene products.