Tumor initiation is defined as “a process in which normal cells are changed so that they are able to form tumors”. It is the first phase in tumor development. Mutagens, substances that cause cancer can be tumor initiators.

Tumor initiation refers to the process by which a normal cell transforms into a cancer cell. This process involves a series of genetic and epigenetic alterations that enable the cell to acquire characteristics that are hallmarks of cancer, such as uncontrolled proliferation, evasion of apoptosis (programmed cell death), and the ability to invade and metastasize to other tissues. In the context of glioblastoma, tumor initiation is thought to be driven by glioblastoma stem-like cells, which are a subpopulation of cells within the tumor that have stem cell-like properties and are capable of self-renewal and differentiation into various cell types found within the tumor. Understanding the molecular mechanisms that underlie tumor initiation and the role of glioblastoma stem-like cells in this process is critical for developing more effective therapies for glioblastoma and improving patient outcomes.