The balance between anti- and pro-tumor activities shapes the fate of the tumor.

**Anti-tumor activity**

In the early stages of tumor growth, the innate and adaptive immune responses cooperate to identify and eliminate intra-tumoral cells. The immune system activism of immune cells leads to the recruitment of innate immune cells that recognize and kill tumor cells via different mechanisms, including secretion of cytotoxic molecules. Differentiation of tumor-infiltrating lymphocytes (TILs) and γδ T cells enable a cytotoxic lysis of tumor cells. NKT cells can also directly kill tumor cells. Both T and γδ T cells are involved in the production of IFN-γ and TNF. T cells also express FasL and TRAIL, which induce apoptosis of tumor cells. FasL and TRAIL signaling also contribute to tumor cell death. The presence of these cytotoxic molecules can lead to the induction of cytokine secretion and target cell lysis.

**Pro-tumor activity**

In later stages of tumor growth, the immune response is often dampened by the production of immunosuppressive molecules. Tumor-associated macrophages (TAMs) and T-regulatory (Treg) cells secrete cytokines that promote T-cell dysfunction and inhibit immune responses. Tumor-associated macrophages can switch to a M2-like phenotype, which promotes tumorigenesis and inhibits immune responses. Treg cells secrete cytokines such as TGF-β, IL-10, and IL-35, which suppress T-cell activation. The presence of these molecules can lead to the inhibition of immune responses and the promotion of tumor growth.

**Escape**

This phase is not completely understood. In the elimination phase, the remaining tumor cells either escape or undergo apoptosis due to the combined action of tumor suppressor genes and tumor suppressor proteins. Changes in tumor cells that confer increased survival of tumors, angiogenesis, and evasion of T-cell and antibody responses are key determinants. The immune system, through its activation and regulation of immune responses, plays a crucial role in controlling tumor growth and progression. The balance between anti- and pro-tumor activities shapes the fate of the tumor.