The RNAse III endonuclease DICER is a key regulator of microRNA (MicroRNA) biogenesis and is frequently decreased in a variety of malignancies.

Mansouri et al characterized the role of DICER in glioblastoma(GB), specifically demonstrating its effects on the ability of glioma stem cells (GSCs) to form tumors in a mouse model of GB. DICER silencing in GSCs reduced their stem cell characteristics, while tumors arising from these cells were more aggressive, larger in volume, and displayed a higher proliferation index and lineage differentiation. The resulting tumors, however, were more sensitive to radiation treatment.

The results demonstrate that DICER silencing enhances the tumorigenic potential of GSCs, providing a platform for analysis of specific relevant MicroRNAs and development of potentially novel therapies against GB [1].

1)
Mansouri S, Singh S, Alamsahebpour A, Burrell K, Li M, Karabork M, Ekinci C, Koch E, Solaroglu I, Chang JT, Wouters B, Aldape K, Zadeh G. DICER governs characteristics of glioma stem cells and the resulting tumors in xenograft mouse models of glioblastoma. Oncotarget. 2016 Jul 13. doi: 10.18632/oncotarget.10570. [Epub ahead of print] PubMed PMID: 27421140.