An inverse relationship between the expression of miR-221/miR-222 and the cell cycle inhibitor p27Kip1 was identified in U251 glioma cells. Co-suppression of miR-221/222 directly resulted in the up-regulation of p27Kip1 in the tested cells, consequently, affects their growth potential by reducing a G1 to S phase shift in the cell cycle. Consistently, miR-221/222 knocked-down through antisense 2'-OME-oligonucleotides increased p27Kip1 in U251 glioma subcutaneous mice and strongly reduced tumor growth in vivo through up regulation of p27Kip1.

The results suggest that miR-221/222 is a regulator of the tumor suppressor gene p27Kip1, and co-suppression of miR-221/222 expression in advanced gliomas may inhibit glioma cell proliferation by a mechanism involving the up-regulation of p27Kip1 in vitro and in vivo [1)].

1)
Zhang C, Kang C, You Y, Pu P, Yang W, Zhao P, Wang G, Zhang A, Jia Z, Han L, Jiang H. Co-suppression of miR-221/222 cluster suppresses human glioma cell growth by targeting p27kip1 in vitro and in vivo. Int J Oncol. 2009 Jun;34(6):1653-60. PubMed PMID: 19424584.