HOTAIR

HOTAIR (for HOX transcript antisense RNA) is a human gene located on chromosome 12. It is the first example of an RNA expressed on one chromosome that has been found to influence transcription on another chromosome.

It has been considered as a negative prognostic factor in liver, colon, and laryngeal squamous cancer patients, and identified as a critical glioma biomarker for tumor grade, molecular subtype, diagnosis, and prognosis. [1) 2) 3)].

HOTAIR was reported to promote glioblastoma (GBM) cell cycle by regulating a predominant PRC2 complex component EZH2 [4)].

Knockdown of HOTAIR was found to exert a glioma-suppressive function by regulating the miR 326/FGF1- signaling pathway in vitro and in vivo, indicating the HOTAIRmiR-326-FGF1 axis as a potential therapeutic strategy for glioma treatment [5)].

Knockdown of HOTAIR can also increase permeability of the blood-tumor barrier (BTB) by reducing tight junction-related proteins in glioma microvascular endothelial cells via the miR148b-3p/USF1 pathway, facilitating the delivery of antineoplastic drugs [6)].

In addition, HOTAIR is a direct target of bromodomain and extraterminal (BET) domain proteins in GBM [7)] BET proteins are functional requisites for GBM cell growth and malignancy; [8)] thus, targeting HOTAIR may block BET protein-induced malignancy of GBM and overcome resistance of GBM to BET bromodomain inhibitors (BBIs), which show broad anticancer effects.

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