MIR200A (microRNA 200a)

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Abstract
Review on MIR200A, with data on RNA, and where it is implicated.

Keywords: MIR200A

Identity
HGNC (Hugo): MIR200A
Location: 1p36.33

Note
MicroRNA 200a belongs to microRNA 200 family. MicroRNA 200 family consists of five microRNAs, microRNA 200b, microRNA 200a, microRNA 429, microRNA 200c and microRNA 141. MicroRNA 200b, microRNA 200a and microRNA 429 were transcribed as a single ploycistronic transcript from chromosome 1. And microRNA 200 family were demonstrated important roles in EMT (epithelial-mesenchymal transition) progress.

DNA/RNA

Description
microRNA 200a located in chromosome 1 and microR 200a was transcribed with microRNA 200b and microRNA 429 as a ploycistronic transcript. The putative transcription start site locates about 4987 bp upstream of the precursor of microRNA 200a.

Transcription
MiR-200a precursor: 5’-CCGGGGCCUCUGUGAGCAUCUUACCAGGACACUGCAUUCCAGCUGUACUAACAACUGUCGUAAACGAGGUUCUCAAGGUGACC CGC-3’
Mature miR-200a: 5’-UAACACUGUCUUACGAGGUU-3’

Pseudogene
No pseudogene was found.
MicroRNAs are not translated into proteins.

**Implicated in**

**Tumor cell proliferation**

MiR-200a showed its roles in regulation of tumor cell proliferation.

In human endometrial adenocarcinoma cell line HEC-1B, repression of miR-200a could increase the tumor suppressor gene PTEN and thus inhibit cell proliferation and promote cell apoptosis, which showed the oncogenic role of miR-200a (Li, He et al. 2014). However, studies in breast cancer also demonstrated that miR-200a could attenuate cell proliferation by targeting Mitochondrial Transcription Factor A (Yao, Zhou et al. 2014). As well, miR-200a was also proved to impair glioma cell growth by targeting SIM2-s (Su, He et al. 2014).

**Tumor cells invasion and cancer metastasis**

As a member of miR-200 family, miR-200a showed its regulation roles in cancer cells invasion and migration.

By targeting SIM-2, miR-200a could inhibit glioma cell migration and invasion (Su, He et al. 2014). In CD133/1+ ovarian cancer stem cells, miR-200a could inhibit cell migration and invasion by repressing expression of Zeb2 (which is a repressor of E-cadherin) (Wu, Guo et al. 2011). However, in human breast cancer cells, it was found that miR-200a could target YAP1 thus induce anoikis resistance and metastasis (Yu, Hu et al. 2013).

**Repression of epithelial-mesenchymal transition (EMT)**

Roles of miR-200 family in EMT regulation were intensively studied. As miR-200a, it was reported that miR-200a could regulate EMT by targeting SIRT1 and mammary epithelial cells (Eades, Yao et al. 2011). In hepatic oval cells, downregulation of miR-200a induces EMT phenotypes and CSC-like signatures by directly targeting beta-catenin (Liu, Ruan et al. 2013).

**References**


Li R, He JL, Chen XM, Long CL, Yang DH, Ding YB, Qi HB, Liu XO. MiR-200a is involved in proliferation and apoptosis in the human endometrial adenocarcinoma cell line HEC-1B by targeting the tumor suppressor PTEN. Mol Biol Rep. 2014;41(4):1977-84


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