

PTEN mRNA translation negatively regulated by microRNAs

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Introduction

Reactome is open-source, open access, manually curated and peer-reviewed pathway database. Pathway annotations are authored by expert biologists, in collaboration with Reactome editorial staff and cross-referenced to many bioinformatics databases. A system of evidence tracking ensures that all assertions are backed up by the primary literature. Reactome is used by clinicians, geneticists, genomics researchers, and molecular biologists to interpret the results of high-throughput experimental studies, by bioinformaticians seeking to develop novel algorithms for mining knowledge from genomic studies, and by systems biologists building predictive models of normal and disease variant pathways.

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Literature references

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Reactome database release: 74

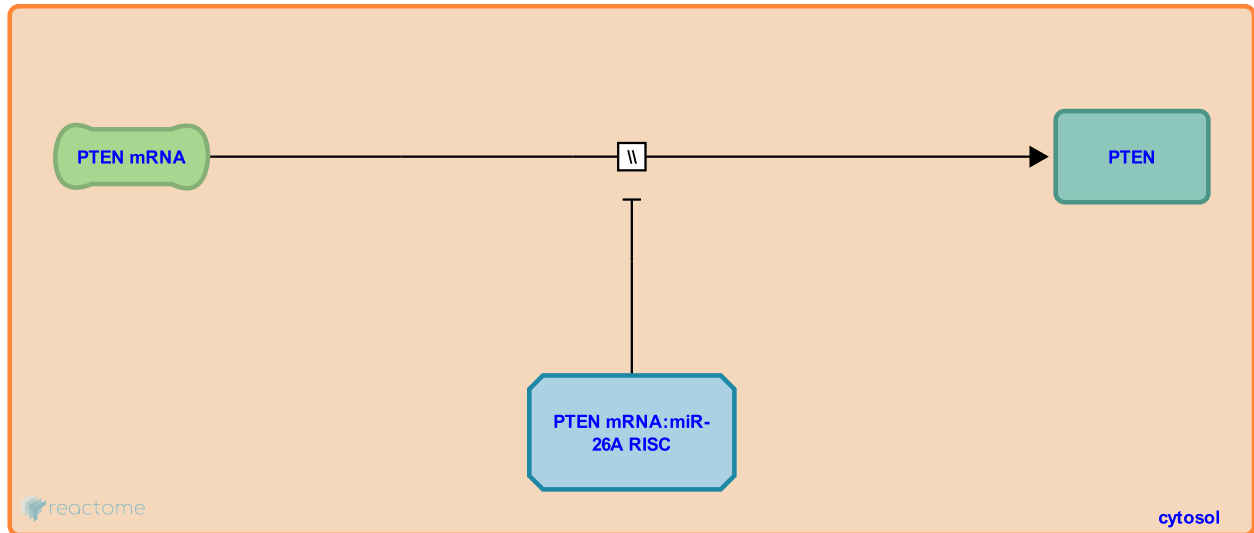
This document contains 1 reaction ([see Table of Contents](#))

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Stable identifier: R-HSA-2321904

Type: omitted

Compartments: cytosol



PTEN protein synthesis is negatively regulated by microRNAs miR-26A1 and miR-26A2, which recruit the RISC complex to PTEN mRNA. Overexpression of miR-26A2, caused by genomic amplification of MIR26A2 locus on chromosome 12, is frequently observed in human brain glioma tumors possessing one wild-type PTEN allele, and is thought to contribute to tumor progression by repressing PTEN protein expression from the remaining allele (Huse et al. 2009). Other microRNAs, which may also be altered in cancer, such as miR-17, miR-19a, miR-19b, miR-20a, miR-20b, miR-21, miR-22, miR-25, miR-93, miR-106a, miR-106b, miR 205, and miR 214, also bind PTEN mRNA and inhibit its translation into protein (Meng et al. 2007, Xiao et al. 2008, Yang et al. 2008, Kim et al. 2010, Poliseno, Salmena, Riccardi et al. 2010, Zhang et al. 2010, Tay et al. 2011, Qu et al. 2012, Cai et al. 2013).

Literature references

Huse, JT., Brennan, C., Hambarzumyan, D., Wee, B., Pena, J., Rouhanifard, SH. et al. (2009). The PTEN-regulating microRNA miR-26a is amplified in high-grade glioma and facilitates gliomagenesis in vivo. *Genes Dev.*, 23, 1327-37 . ↗

Editions

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