

Gene Section

Mini Review

ZFH3 (zinc finger homeobox 3)

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Identity

Other names: AT motif-binding factor 1; Alpha-fetoprotein enhancer binding protein

HGNC (Hugo): ZFH3

Location: 16q22.3-q23.1



Probe(s) - Courtesy Mariano Rocchi, Resources for Molecular Cytogenetics.

DNA/RNA

Description

10 exons, DNA size: 261.32 kb.

Transcription

Two isoforms ATBF1-A and ATBF1-B, due to alternative promoter usage combined with alternative splicing, mRNA-size: 11893 bp.

Protein

Description

3703 amino acids; 404 kDa; four homeodomains and 23 zinc fingers including 1 pseudo zinc finger motif, one DEAD and one DEAH box, a RNA and an ATP binding site, two large RS domains and multiple phosphorylation sites.

Expression

Embryonic and neonatal brain.

Localisation

Nuclear.

Function

Transcription factor that binds to the AT-rich core sequence of the enhancer element of the AFP gene and downregulates AFP gene expression, possibly involved in neuronal differentiation (ATBF1-A).

Homology

Mouse atbf1, drosophila zfh2 and C. Elegans ZC 123.3.

Mutations

Somatic

Amplification, in one early neural crest derived cell line SJNB-12 under the form of extrachromosomally double minutes, non-syntenic co-amplification with MYC.

Absence of ATBF1 expression in alpha-fetoprotein expressing gastric cancer cell lines, lack of ATBF1 expression not due to mutation, deletion or translocation but to strong repression at the transcriptional level.

Implicated in

Early neural crest derived cell line (SJNB-12)

Prognosis

Unknown.

Cytogenetics

Several structural and numerical chromosomal aberrations and presence of extrachromosomally double minutes and homogenously staining regions, presence of a reciprocal unbalanced t(8;16)(q24.3;q22.3).

Oncogenesis

Amplification in one neural crest derived cell line (SJNB-12), non-syntenic co-amplification with MYC.

Alpha-fetoprotein producing gastric cancer cell lines (GC1Y and Ist-1)**Prognosis**

Poor (very malignant and highly metastatic cancer).

Oncogenesis

Alpha-fetoprotein producing cancer cell lines show absence of ATBF1 expression, lack of ATBF1 expression not due to deletion mutation or translocation but to strong repression at the transcriptional level.

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