

Gene Section

Mini Review

SLC39A6 (solute carrier family 39 (zinc transporter), member 6)

Shin Hamada, Kennichi Satoh, Tooru Shimosegawa

Division of Gastroenterology, Tohoku University Graduate School of Medicine, Sendai city, Miyagi, Japan (SH, KS, TS)

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Identity

Other names: LIV-1; ZIP6

HGNC (Hugo): SLC39A6

Location: 18q12.2

DNA/RNA

Description

SLC39A6 gene contains ten exons. The length of this gene is 20864 bases. This gene encodes two transcript variants. Isoform 1 utilizes all of ten exons, while isoform 2 lacks exon 2 and 10. Consequently, isoform 2 gives rise to shorter protein than isoform 1.

Transcription

Isoform 1; 3637 bases mRNA; 2265 bases of coding region. Isoform 2; 1681 bases mRNA; 1299 bases of coding region.

Pseudogene

None reported.

Protein

Description

SLC39A6 encodes the zinc transporter ZIP6. Isoform 1 consists of 755 amino acids; Isoform 2 consists of 433 amino acids. The molecular weight of ZIP6 is 85 kDa. SLC39A6 is a multi-pass membrane protein and showing the characteristics of zinc transporter (Taylor and Nicholson, 2003).

Expression

ZIP6 is highly expressed in normal breast tissue,

prostate, placenta, kidney, pituitary and corpus callosum (Taylor et al., 2003). Elevated expressions in malignancy of epithelial origin, such as pancreatic cancer are reported (Unno et al., 2009). Its expression is also reported in the second heart field progenitors, which contribute to the cardiac outflow tract formation (Barth et al., 2010).

Localisation

Located at cell membrane.

Function

According to the structural similarity, may act as a zinc influx transporter. Accelerates nuclear translocation of the transcriptional factor Snail, the inducer of epithelial-mesenchymal transition (EMT), as a downstream target of STAT3 pathway in the zebrafish gastrula organizer (Yamashita et al., 2004). SLC39A6 is induced by histone deacetylase inhibitors' treatment in cancer cells, and involved in the apoptosis induction by histone deacetylase inhibitors (Ma et al., 2009).

Homology

Mus musculus Slc39a6; Rattus norvegicus Slc39a6; Bos Taurus SLC39A6; Pan troglodytes SLC39A6.

Mutations

Note

No disease related mutations are reported.

Implicated in

Pancreatic cancer

Note

SLC39A6 is highly expressed in pancreatic cancer cell

line and pancreatic cancer tissue. Knockdown of SLC39A6 expression in the human pancreatic cancer cell line Panc-1 resulted in the reduced tumorigenicity in nude mice and acquisition of epithelial phenotype, such as increased E-cadherin expression (Unno et al., 2009).

Breast cancer

Note

SLC39A6 regulates the expression level of E-cadherin, a epithelial marker in human breast cancer cell line MCF-7 (Shen et al., 2009). Higher expression of SLC39A6 in breast cancer tissue correlates with the better outcome of breast cancer patients (Kasper et al., 2005).

SLC39A6 is induced upon the treatment of breast cancer and cervical cancer cell lines by the histone deacetylase inhibitor, TSA. Knockdown of SLC39A6 resulted in the decreased cell death of TSA-treated cancer cells, which indicates the requirement of SLC39A6 during the apoptosis induction (Ma et al., 2009).

Cervical cancer

Note

SLC39A6 is involved in the cellular invasion of HeLa cells by controlling the ERK-mediated Snail and Slug expression (Zhao et al., 2007).

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