

# SMVT (D-11): sc-390080



The Power to Question

## BACKGROUND

The sodium-dependent multivitamin transporter (SMVT) is a 635 amino acid protein that belongs to the sodium-coupled glucose transporter family. SMVT contains 12 putative transmembrane domains with the N and C termini both facing towards the cytoplasm. Its function is to transport the essential vitamins pantothenate, biotin, and the metabolite lipoate into cells of various human tissues. Biotin, also known as vitamin B6, is important in synthesizing fatty acids gluconeogenesis, and metabolizing leucine, while pantothenate, or vitamin B5, is critical in the metabolism and synthesis of carbohydrates, proteins, and fats. Lipoate is involved in oxidative metabolism. SMVT uses a specialized carrier-mediated system to take up these vitamins and metabolites into the cells. This process is active and uses energy from the transmembrane sodium ion gradient as well as the membrane potential.

## REFERENCES

1. Prasad, P.D., et al. 1998. Clonin vitamin transporter mediating the uptake of pantothenate, biotin, and lipoate. *J. Biol. Chem.* 273: 7501-7506.
2. Prasad, P.D., et al. 1999. Molecular and functional characterization of the intestinal Na<sup>+</sup>-dependent multivitamin transporter. *Arch. Biochem. Biophys.* 366: 95-106.
3. Wang, H., et al. 1999. Human placental Na<sup>+</sup>-dependent multivitamin transporter. Cloning, functional expression, gene structure, and chromosomal localization. *J. Biol. Chem.* 274: 14875-14883.
4. Prasad, P.D. and Ganapathy, V. 2000. Structure and function of mammalian sodium-dependent multivitamin transporter. *Curr. Opin. Clin. Nutr. Metab. Care* 3: 263-266.
5. Online Mendelian Inheritance in Man, OMIM™. 2002. Johns Hopkins University, Baltimore, MD. MIM Number: 604024. World Wide Web URL: <http://www.ncbi.nlm.nih.gov/omim/>
6. Balamurugan, K., et al. Biotin uptake by human intestinal and liver epithelial cells: role of the SMVT system. *Am. J. Physiol. Gastrointest. Liver Physiol.* 285: G73-G77.

## CHROMOSOMAL LOCATION

Genetic locus: SLC5A6 (human) mapping to 2p23.3; Slc5a6 (mouse) mapping to 5 B1.

## SOURCE

SMVT (D-11) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 571-607 near the C-terminus of SMVT of human origin.

## PRODUCT

Each vial contains 200 µg IgM kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-390080 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

## APPLICATIONS

SMVT (D-11) is recommended for detection of SMVT of human origin, Slc5a6 of mouse origin, and the corresponding rat homolog by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for SMVT siRNA (h): sc-61573, Slc5a6 siRNA (m): sc-61574, SMVT shRNA Plasmid (h): sc-61573-SH, Slc5a6 shRNA Plasmid (m): sc-61574-SH, SMVT shRNA (h) Lentiviral Particles: sc-61573-V and Slc5a6 shRNA (m) Lentiviral Particles: sc-61574-V.

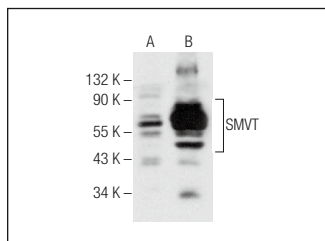
Molecular Weight of SMVT: 69 kDa.

Positive Controls: K-562 whole cell lysate: sc-2203, IMR-32 cell lysate: sc-2409 or COLO 320DM cell lysate: sc-2226.

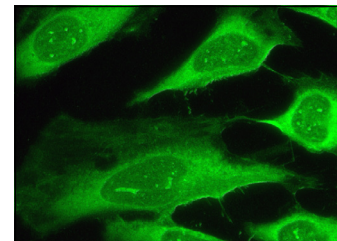
## RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein L-Agarose: sc-2336 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

## DATA



SMVT (D-11): sc-390080. Western blot analysis of SMVT expression in COLO 320DM (A) and IMR-32 (B) whole cell lysates.



SMVT (D-11): sc-390080. Immunofluorescence staining of methanol-fixed HeLa cells showing membrane and cytoplasmic localization.

## SELECT PRODUCT CITATIONS

1. Biancalana, 2020. Conjugating biotin to ruthenium(ii) arene units via phosphineligand functionalization. *Eur. J. Inorg. Chem.* 2020: 1061-1072.

## STORAGE

Store at 4° C, \*\*DO NOT FREEZE\*\*. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

## RESEARCH USE

For research use only, not for use in diagnostic procedures.