SANTA CRUZ BIOTECHNOLOGY, INC.

# MCT1 (M-45): sc-50325

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*The Power to Question*

## BACKGROUND

Monocarboxylates, such as lactate and pyruvate, play an integral role in cellular metabolism. Lactic acid is produced in large quantities as a result of glycolysis, which provides the majority of ATP to cells under normal physiological conditions. However, accumulation of lactic acid leads to a decrease in intracellular pH and cessation of glycolysis. In order for glycolysis to continue at a high rate, lactic acid must be transported out of the cell. This transport process is carried out by a family of monocarboxylate transporters (MCTs), which function as proton symports and are stereoselective for L-lactate.The MCT family consists of at least 8 members, MCT 1-8, which contain between 10-12 transmembrane-helical (TM) domains, with the amino and carboxy termini located in the cytoplasm. MCT1 is widely expressed and is the major form of MCT in tumor cells and erythrocytes. MCT2 is highly expressed in liver and testis, while MCT3 and MCT4 are predominantly expressed in skeletal muscle.

## REFERENCES


1. Halestrap, A.P., et al. 1997. Lactate transport in heart in relation to myocardial ischemia. Am. J. Cardiol. 80: 17A-25A.
2 Gerhart, D.Z., et al. 1997. Expression of monocarboxylate transporter MCT1 by brain endothelium and glia in adult and suckling rats. Am. J. Physiol. 273: E207-E213.
3. Lin, R.Y., et al. 1998. Human monocarboxylate transporter 2 (MCT2) is a high affinity pyruvate transporter. J. Biol. Chem. 273: 28959-28965.
4. Price, N.T., et al. 1998. Cloning and sequencing of four new mammalian monocarboxylate transporter (MCT) homologues confirms the existence of a transporter family with an ancient past. Biochem. J. 329: 321-328.
5. Juel, C., et al. 1999. Lactate transport in skeletal muscle-role and regulation of the monocarboxylate transporter. J. Physiol. 517: 633-642.
6. Halestrap, A.P., et al. 1999. The proton-linked monocarboxylate transporter (MCT) family: structure, function and regulation. Biochem. J. 343: 281-299.
7. Bonen, A., et al. 2000. Lactate transporters (MCT proteins) in heart and skeletal muscles. Med. Sci. Sports Excer. 32: 778-789.
8. Bonen, A., et al. 2000. Abundance and subcellular distribution of MCT1 and MCT4 in heart and fast-twitch skeletal muscle. Am. J. Physiol. Endocrinol. Metab. 278: E1067-E1077.


## CHROMOSOMAL LOCATION

Genetic locus: Slc16a1 (mouse) mapping to 3 F2.2.

## SOURCE

MCT1 (M-45) is a rabbit polyclonal antibody raised against amino acids 441-485 mapping within a C-terminal cytoplasmic domain of MCT1 of mouse origin.

## PRODUCT

Each vial contains 200 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

## APPLICATIONS

MCT1 (M-45) is recommended for detection of MCT1 of mouse and rat origin by Western Blotting (starting dilution 1:200, 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 MCT1 siRNA (m): sc-40115, MCT1 shRNA Plasmid (m): sc-40115-SH and MCT1 shRNA (m) Lentiviral Particles: sc-40115-V.

Molecular Weight of MCT10: 40-48 kDa.

Positive Controls: mouse heart extract: sc-2254 or rat skeletal muscle extract: sc-364810.

## RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use goat anti-rabbit IgG-HRP: sc-2004 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible goat anti-rabbit IgG-HRP: sc-2030 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use goat anti-rabbit IgG-FITC: sc-2012 (dilution range: 1:100-1:400) or goat anti-rabbit IgG-TR: sc-2780 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

## SELECT PRODUCT CITATIONS


1. Nguyen, T.T. and Bonanno, J.A. 2011. Bicarbonate, NBCe1, NHE, and carbonic anhydrase activity enhance lactate-$H^+$ transport in bovine corneal endothelium. Invest. Ophthalmol. Vis. Sci. 52: 8086-8093.
2. Nguyen, T.T. and Bonanno, J.A. 2012. Lactate-$H^+$ transport is a significant component of the *in vivo* corneal endothelial pump. Invest. Ophthalmol. Vis. Sci. 53: 2020-2029.


## 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.

## PROTOCOLS

See our web site at www.scbt.com or our catalog for detailed protocols and support products.