Revision 8

Store at -20C

#14997

MCU (D2Z3B) Rabbit mAb

Cell Signaling TECHNOLOGY®

Orders: 877-616-CELL (2355) orders@cellsignal.com

Support: 877-678-TECH (8324)

Web: info@cellsignal.com cellsignal.com

3 Trask Lane | Danvers | Massachusetts | 01923 | USA

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Applications:	Reactivity:	Sensitivity:	MW (kDa):	Source/Isotype:	UniProt ID:	Entrez-Gene Id:
W, IP, IF-F, IF-IC	H M R Mk	Endogenous	30	Rabbit IgG	#Q8NE86	90550

Product Usage Information

Application	Dilution
Western Blotting	1:1000
Immunoprecipitation	1:50
Immunofluorescence (Frozen)	1:800 - 1:1600
Immunofluorescence (Immunocytochemistry)	1:1600 - 1:3200

Storage

Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100 µg/ml BSA, 50% glycerol and less than 0.02% sodium azide. Store at –20°C. Do not aliquot the antibody.

For a carrier free (BSA and azide free) version of this product see product #50261.

Specificity/Sensitivity

MCU (D2Z3B) recognizes endogenous levels of total MCU protein. The antibody non-specifically labels the nucleus in fixed frozen mouse brain by immunofluorescence.

Source / Purification

Monoclonal antibody is produced by immunizing animals with a synthetic peptide corresponding to residues near the carboxy terminus of human MCU protein.

Background

The mitochondrial calcium uniporter (MCU) is an inner membrane transport protein that is essential for the regulation of calcium uptake and the maintenance of mitochondrial calcium homeostasis (1). MCU is responsible for the rapid transport of calcium ions across the inner membrane and into the mitochondrial matrix, taking advantage of the membrane potential generated by the electron transport chain. Subsequent release of calcium from the matrix through antiporter proteins regulates a number of biological processes, including signal transduction, bioenergetics, and cell death and survival (2,3). The MCU protein contains a pair of transmembrane domains with both carboxy- and amino-terminal ends within the mitochondrial matrix (3). The surrounding uniporter complex contains a number of proteins that regulate calcium ion transport, including the mitochondrial calcium uniporter regulator 1 (MCUR1), mitochondrial calcium uptake proteins 1 and 2 (MICU1, MICU2), and the essential MCU regulator EMRE (3). MICU1 stabilizes the closed state of the transport complex and preserves the normal mitochondrial calcium concentration below the equilibrium level during resting conditions (4). The MCUR1 protein is an essential regulator of calcium uptake, with decreased ion transport in cells with reduced MCUR1 expression (2). EMRE is also essential for MCU transport function where it functions as bridge between MCU uniporter activity and the calcium-sensing MICU1/2 proteins (5).

Background References

1. Patron, M. et al. (2013) *J Biol Chem* 288, 10750-8.
2. Mallilankaraman, K. et al. (2012) *Nat Cell Biol* 14, 1336-43.
3. Marchi, S. and Pinton, P. (2014) *J Physiol* 592, 829-39.
4. Mallilankaraman, K. et al. (2012) *Cell* 151, 630-44.
5. Sancak, Y. et al. (2013) *Science* 342, 1379-82.

Species Reactivity

Species reactivity is determined by testing in at least one approved application (e.g., western blot).

Western Blot Buffer

IMPORTANT: For western blots, incubate membrane with diluted primary antibody in 5% w/v nonfat dry milk, 1X TBS, 0.1% Tween® 20 at 4°C with gentle shaking, overnight.

Applications Key

W: Western Blotting **IP:** Immunoprecipitation **IF-F:** Immunofluorescence (Frozen) **IF-IC:** Immunofluorescence (Immunocytochemistry)

Cross-Reactivity Key

H: Human **M:** Mouse **R:** Rat **Mk:** Monkey

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