Revision 1

Store at -20C

#47767

Tricarboxylic Acid Cycle Antibody Sampler Kit

1 Kit (9 x 20 microliters)

Cell Signaling TECHNOLOGY®

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Product Includes	Product #	Quantity	Mol. Wt	Isotype/Source
Fumarase (D9C5) Rabbit mAb	4567	20 µl	49 kDa	Rabbit IgG
IDH2 (D8E3B) Rabbit mAb	56439	20 µl	43 kDa	Rabbit IgG
Citrate Synthase (D7V8B) Rabbit mAb	14309	20 µl	45 kDa	Rabbit IgG
ACO2 (D6D9) XP® Rabbit mAb	6571	20 µl	85 kDa	Rabbit IgG
MPC2 (D4I7G) Rabbit mAb	46141	20 µl	14 kDa	Rabbit IgG
MPC1 (D2L9I) Rabbit mAb	14462	20 µl	12 kDa	Rabbit IgG
DLST (D22B1) XP® Rabbit mAb	11954	20 µl	50 kDa	Rabbit IgG
SDHA (D6J9M) XP® Rabbit mAb	11998	20 µl	70 kDa	Rabbit IgG
Anti-rabbit IgG, HRP-linked Antibody	7074	100 µl		Goat
IDH1 Antibody	3997	20 µl	46 kDa	Rabbit

Please visit cellsignal.com for individual component applications, species cross-reactivity, dilutions, protocols, and additional product information.

Description

The Tricarboxylic Acid Cycle Sampler Kit provides an economical means of detecting select components involved in tricarboxylic acid cycle. The kit contains enough primary antibodies to perform at least two western blot experiments per antibody.

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.

Background

The tricarboxylic acid (TCA) cycle includes various enzymatic reactions that constitute a key part of cellular aerobic respiration. The transport of the glycolytic end product pyruvate into mitochondria and the decarboxylation of pyruvate in the TCA cycle generate energy through oxidative phosphorylation under aerobic conditions (1,2). Two inner mitochondrial membrane proteins, mitochondrial pyruvate carrier 1 (MPC1) and mitochondrial pyruvate carrier 2 (MPC2), form a 150 kDa complex and are essential proteins in the facilitated transport of pyruvate into mitochondria (1,2). Citrate synthase catalyzes the first and rate-limiting reaction of the TCA cycle (3). Mitochondrial aconitase 2 (ACO2) catalyzes the conversion of citrate to isocitrate via cis-aconitate (4). IDH1 and IDH2 are two of the three isocitrate dehydrogenases that catalyze oxidative decarboxylation of isocitrate to α-ketoglutarate (α-KG) (5). IDH1 functions as a tumor suppressor in the cytoplasm and peroxisomes, whereas IDH2 is in mitochondria and is involved in the TCA cycle (5). Mutations in IDH2 have also been identified in malignant gliomas (6). Dihydrolipoamide succinyltransferase (DLST) is a subunit of the α-ketoglutarate dehydrogenase complex, a key enzymatic complex in the TCA cycle (7). Succinate dehydrogenase subunit A (SDHA) is a component of the TCA cycle and the electron transport chain and is involved in the oxidation of succinate (8). Fumarase catalyzes the conversion of fumarate to malate (9). Fumarase deficiency leads to the accumulation of fumarate, an oncometabolite that has been shown to promote epithelial-to-mesenchymal-transition (EMT), a developmental process that has been implicated in oncogenesis (10).

Background References

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3. Lin, C.C. et al. (2012) *Sci Rep* 2, 785.
4. Tohyama, S. et al. (2016) *Cell Metab* 23, 663-74.
5. Zhao, S. et al. (2009) *Science* 324, 261-5.
6. Yan, H. et al. (2009) *N Engl J Med* 360, 765-73.
7. Diaz-Muñoz, M.D. et al. (2015) *Nat Immunol* 16, 415-25.
8. Renkema, G.H. et al. (2015) *Eur J Hum Genet* 23, 202-9.
9. Wang, T. et al. (2017) *Nat Cell Biol* 19, 833-843.
10. Sciacovelli, M. et al. (2016) *Nature* 537, 544-547.

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