

COX5a (A-5): sc-376907

BACKGROUND

The cytochrome c oxidase (COX) family of proteins function as the final electron donor in the respiratory chain to drive a proton gradient across the inner mitochondrial membrane, ultimately resulting in the production of water. The mammalian COX apoenzyme is a dimer, with each monomer consisting of 13 subunits, some of which are mitochondrial and some of which are nuclear. Found in the inner mitochondrial membrane, COX5a, one of two subunits of the COX5 protein, is the heme A-containing chain of the oxidase family that converts one molecule of oxygen and four molecules of hydrogen to two molecules of water. When oxygen levels within the cell are high, transcription of COX5a, the aerobic subunit of the COX5 protein, is up-regulated as the rate of cellular respiration increases. Conversely, when oxygen levels are low, COX5a transcription decreases as the cell works to conserve oxygen by slowing the creation of water.

REFERENCES

1. Cumsky, M.G., et al. 1985. Two nonidentical forms of subunit V are functional in yeast cytochrome c oxidase. *Proc. Natl. Acad. Sci. USA* 82: 2235-2239.
2. Waterland, R.A., et al. 1991. The isoforms of yeast cytochrome c oxidase subunit V alter the *in vivo* kinetic properties of the holoenzyme. *J. Biol. Chem.* 266: 4180-4186.
3. Burke, P.V., et al. 1997. Effects of oxygen concentration on the expression of cytochrome c and cytochrome c oxidase genes in yeast. *J. Biol. Chem.* 272: 14705-14712.

CHROMOSOMAL LOCATION

Genetic locus: COX5A (human) mapping to 15q24.2; Cox5a (mouse) mapping to 9 B.

SOURCE

COX5a (A-5) is a mouse monoclonal antibody raised against amino acids 1-150 representing full length COX5a of human origin.

PRODUCT

Each vial contains 200 µg IgG₁ kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

COX5a (A-5) is available conjugated to agarose (sc-376907 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-376907 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-376907 PE), fluorescein (sc-376907 FITC), Alexa Fluor® 488 (sc-376907 AF488), Alexa Fluor® 546 (sc-376907 AF546), Alexa Fluor® 594 (sc-376907 AF594) or Alexa Fluor® 647 (sc-376907 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-376907 AF680) or Alexa Fluor® 790 (sc-376907 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

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STORAGE

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

APPLICATIONS

COX5a (A-5) is recommended for detection of cytochrome c oxidase Va of mouse, rat and human origin 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), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

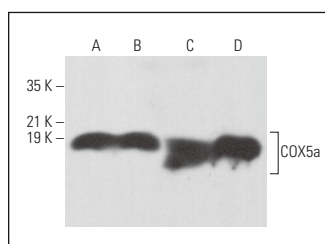
COX5a (A-5) is also recommended for detection of cytochrome c oxidase Va in additional species, including equine and canine.

Suitable for use as control antibody for COX5a siRNA (h): sc-62150, COX5a siRNA (m): sc-62151, COX5a shRNA Plasmid (h): sc-62150-SH, COX5a shRNA Plasmid (m): sc-62151-SH, COX5a shRNA (h) Lentiviral Particles: sc-62150-V and COX5a shRNA (m) Lentiviral Particles: sc-62151-V.

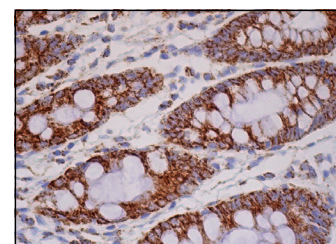
Molecular Weight of COX5a: 16 kDa.

Positive Controls: HeLa whole cell lysate: sc-2200, RT-4 whole cell lysate: sc-364257 or human heart extract: sc-363763.

DATA



COX5a (A-5): sc-376907. Western blot analysis of COX5a expression in HeLa (A) and RT-4 (B) whole cell lysates and mouse stomach (C) and human heart (D) tissue extracts.



COX5a (A-5): sc-376907. Immunoperoxidase staining of formalin fixed, paraffin-embedded human rectum tissue showing cytoplasmic staining of glandular cells.

SELECT PRODUCT CITATIONS

1. Ding, S.Y., et al. 2017. Muscular dystrophy in PTFR/cavin-1 null mice. *JCI Insight* 2: e91023.
2. An, Y.A., et al. 2019. Dysregulation of amyloid precursor protein impairs adipose tissue mitochondrial function and promotes obesity. *Nat. Metab.* 1: 1243-1257.
3. Quinn, K.M., et al. 2020. Metabolic characteristics of CD8⁺ T cell subsets in young and aged individuals are not predictive of functionality. *Nat. Commun.* 11: 2857.
4. Yao, X., et al. 2022. Myricetin restores Aβ-induced mitochondrial impairments in N2a-SW cells. *ACS Chem. Neurosci.* 13: 454-463.
5. Lomas-Soria, C., et al. 2023. Maternal obesity programs the premature aging of rat offspring liver mitochondrial electron transport chain genes in a sex-dependent manner. *Biology* 12: 1166.

RESEARCH USE

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