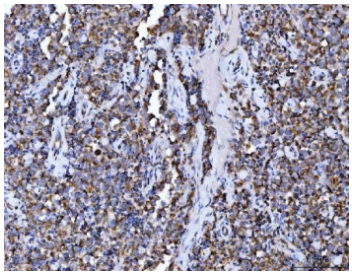
ACO2 Antibody 4C12D1 / Aconitase 2 Monoclonal Antibody [clone 4C12D1] (RQ7281)

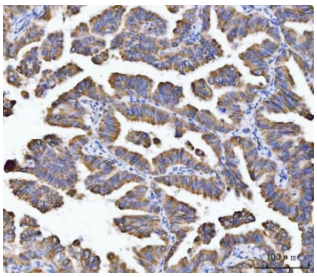
Catalog No.	Formulation	Size
RQ7281	0.5mg/ml if reconstituted with 0.2ml sterile DI water	100 ug

Bulk quote request

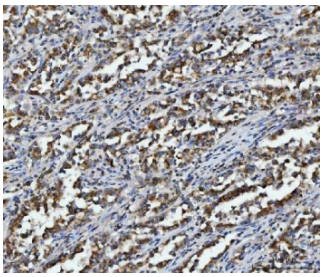
Availability	1-3 business days
Species Reactivity	Human, Mouse, Rat
Format	Antigen affinity purified
Host	Mouse
Clonality	Monoclonal (mouse origin)
Isotype	Mouse IgG1
Clone Name	4C12D1
Purity	Antigen affinity purified
Buffer	Lyophilized from 1X PBS with 2% Trehalose
UniProt	Q99798
Localization	Cytoplasmic (mitochondria)
Applications	Western blot: 0.5-1ug/ml Immunohistochemistry (FFPE): 2-5ug/ml
Limitations	This ACO2 Antibody 4C12D1 / Aconitase 2 Monoclonal Antibody is available for research use only.



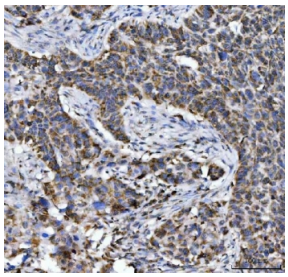
ACO2 Antibody 4C12D1 staining of testicular germ cell tumor by IHC. Immunohistochemistry of FFPE human testicular germ cell tumor sections using the ACO2 Antibody. Brown staining is broadly distributed through the tumor cells, with a predominantly granular cytoplasmic appearance consistent with the mitochondrial localization of Aconitase 2. Stromal regions show comparatively less staining, while nuclei are counterstained blue. Heat-induced epitope retrieval was performed by boiling sections in pH 8 EDTA for 20 minutes followed by cooling before testing with this Aconitase 2 Monoclonal Antibody.



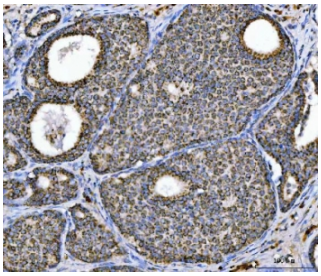
ACO2 Antibody 4C12D1 staining of lung adenocarcinoma by IHC. Immunohistochemistry of FFPE human lung adenocarcinoma sections using the ACO2 Antibody. Brown granular cytoplasmic staining is visible throughout the malignant glandular epithelial cells, while nuclei remain predominantly blue. The intracellular distribution is consistent with the mitochondrial localization of Aconitase 2 and clearly delineates the tumor epithelium. Heat-induced epitope retrieval was performed by boiling sections in pH 8 EDTA for 20 minutes followed by cooling before testing with this Aconitase 2 Monoclonal Antibody.



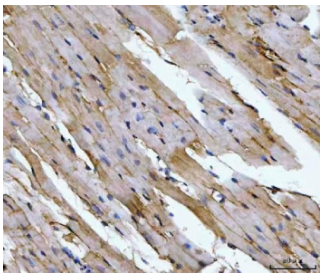
ACO2 Antibody 4C12D1 staining of hepatocellular carcinoma by IHC. Immunohistochemistry of FFPE human hepatocellular carcinoma sections using the ACO2 Antibody. Brown granular cytoplasmic staining is visible throughout many of the malignant cells, with variable staining intensity across the tumor and comparatively less signal in the intervening stromal regions. Nuclei are counterstained blue. The predominantly cytoplasmic pattern is consistent with the mitochondrial localization of Aconitase 2 and demonstrates detection with this Aconitase 2 Monoclonal Antibody.



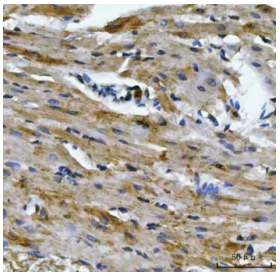
ACO2 Antibody 4C12D1 staining of laryngeal squamous cell carcinoma by IHC. Immunohistochemistry of FFPE human laryngeal squamous cell carcinoma sections using the ACO2 Antibody. Brown cytoplasmic staining is distributed across the malignant epithelial cells, with variable intensity among individual tumor cells and comparatively less signal in intervening stromal areas. Nuclei are counterstained blue. Heat-induced epitope retrieval was performed by boiling sections in pH 8 EDTA for 20 minutes followed by cooling before testing with this Aconitase 2 Monoclonal Antibody.



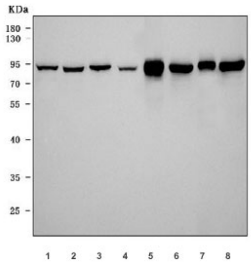
ACO2 Antibody 4C12D1 staining of breast cancer by IHC. Immunohistochemistry of FFPE human breast cancer sections using the ACO2 Antibody. Brown cytoplasmic staining is visible throughout the neoplastic epithelial cells, including cells surrounding glandular lumina, with a finely granular appearance consistent with mitochondrial Aconitase 2 localization. Nuclei are counterstained blue and remain readily distinguishable. Heat-induced epitope retrieval was performed by boiling sections in pH 8 EDTA for 20 minutes followed by cooling before testing with this Aconitase 2 Monoclonal Antibody.



ACO2 Antibody 4C12D1 staining of mouse cardiac muscle by IHC. Immunohistochemistry of FFPE mouse heart sections using the ACO2 Antibody. Brown cytoplasmic staining is visible throughout the cardiac muscle fibers, consistent with the high mitochondrial content and metabolic demands of cardiomyocytes. Blue nuclear counterstaining provides contrast to the elongated positively stained fibers. Heat-induced epitope retrieval was performed by boiling sections in pH 8 EDTA for 20 minutes followed by cooling before testing with this Aconitase 2 Monoclonal Antibody.



ACO2 Antibody 4C12D1 staining of rat cardiac muscle by IHC. Immunohistochemistry of FFPE rat heart sections using the ACO2 Antibody. Strong brown cytoplasmic staining extends along the cardiac muscle fibers, with a distribution consistent with abundant mitochondrial Aconitase 2 in metabolically active cardiomyocytes. Nuclei are counterstained blue and remain distinct from the predominantly cytoplasmic signal. Heat-induced epitope retrieval was performed by boiling sections in pH 8 EDTA for 20 minutes followed by cooling before testing with this Aconitase 2 Monoclonal Antibody.



ACO2 Antibody 4C12D1 detection of Aconitase 2 across human, rat and mouse samples by WB. Western blot testing with the ACO2 Antibody. Lane 1: human HeLa; lane 2: human U-87 MG; lane 3: human Jurkat; lane 4: human SH-SY5Y; lane 5: rat skeletal muscle; lane 6: rat brain; lane 7: mouse skeletal muscle; lane 8: mouse brain. A strong predominant band is detected at approximately 85 kDa across all eight samples, closely matching the predicted molecular weight of ACO2. The clean cross-species signal demonstrates recognition of mitochondrial Aconitase 2 by clone 4C12D1 in human, rat and mouse lysates.

Description

ACO2 Antibody 4C12D1 / Aconitase 2 Monoclonal Antibody recognizes aconitase 2, a mitochondrial enzyme encoded by the ACO2 gene. Also known as mitochondrial aconitase or aconitate hydratase, ACO2 belongs to the aconitase/IPM isomerase family and functions as an important component of the tricarboxylic acid cycle. The enzyme catalyzes the reversible isomerization of citrate to isocitrate through the intermediate cis-aconitate. ACO2 is encoded in the nucleus and transported into mitochondria, where it localizes primarily within the mitochondrial matrix and contributes to cellular energy metabolism.

Aconitase 2 contains an iron-sulfur cluster that is essential for its catalytic activity. This cluster participates directly in substrate binding and enables the dehydration and subsequent rehydration reactions required for citrate-isocitrate interconversion. Because the iron-sulfur center is sensitive to oxidation, ACO2 activity can be altered by reactive oxygen and nitrogen species. This sensitivity has made mitochondrial aconitase an important subject in studies examining the relationship between oxidative stress, mitochondrial function and metabolic regulation. An ACO2 Antibody 4C12D1 provides a clone-specific reagent for investigating this central mitochondrial metabolic protein.

ACO2 occupies an important position in intermediary metabolism because the TCA cycle integrates the oxidation of carbohydrates, fatty acids and amino acids with mitochondrial energy production. Changes in aconitase activity can influence citrate utilization, isocitrate formation and downstream metabolic flux. Oxidatively modified ACO2 can also become susceptible to mitochondrial protein quality-control mechanisms, linking aconitase biology with maintenance of mitochondrial protein integrity. An Aconitase 2 Monoclonal Antibody can therefore support research into mitochondrial metabolism, oxidative stress and mechanisms that maintain mitochondrial homeostasis.

Altered ACO2 expression or activity has been investigated in the context of metabolic dysfunction, neurodegenerative processes, cardiovascular biology and cancer metabolism. Its dual importance as a TCA cycle enzyme and oxidation-sensitive mitochondrial protein makes ACO2 useful for examining interactions between cellular metabolism and oxidative damage. NSJ Bioreagents provides clone 4C12D1 for researchers investigating mitochondrial aconitase biology. An ACO2 Antibody 4C12D1 provides a clone-specific tool for studying Aconitase 2 and its relationship to mitochondrial energy metabolism and cellular redox homeostasis.

This ACO2 Antibody is part of our Mitochondria Marker Antibody collection.

Application Notes

Optimal dilution of the ACO2 Antibody 4C12D1 / Aconitase 2 Monoclonal Antibody should be determined by the researcher.

Immunogen

Amino acids 561-596 (TSQRLQLLEPFDKWDGKDLEDLQILIKVKGKCTTDH) were used as the immunogen for the ACO2 Antibody 4C12D1.

Storage

After reconstitution, the ACO2 Antibody 4C12D1 can be stored for up to one month at 4oC. For long-term, aliquot and

store at -20oC. Avoid repeated freezing and thawing.

Alternate Names

Aconitase 2 antibody, Aconitase-2 antibody, Aconitate hydratase mitochondrial antibody, Mitochondrial aconitase antibody, ACONM antibody

Copyright © NSJ Bioreagents. All rights reserved.