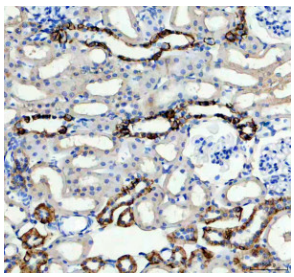
Carbonic Anhydrase XII Antibody / CA12 Polyclonal Antibody (FY13510)

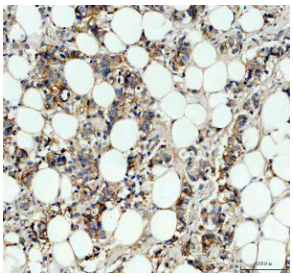
Catalog No.	Formulation	Size
FY13510	Adding 0.2 ml of distilled water will yield a concentration of 500 ug/ml	100 ug

Bulk quote request

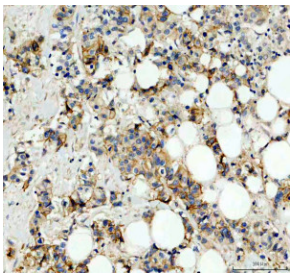
Species Reactivity	Human, Rat
Format	Lyophilized
Host	Rabbit
Clonality	Polyclonal (rabbit origin)
Isotype	Rabbit IgG
Purity	Antigen Affinity
Buffer	Each vial contains 4mg Trehalose, 0.9mg NaCl, 0.2mg Na2HPO4
UniProt	O43570
Applications	Western Blot: 0.5-1ug/ml Immunohistochemistry (FFPE): 2-5ug/ml ELISA: 0.1-0.5ug/ml Immunofluorescence: 5ug/ml
Limitations	This Carbonic Anhydrase XII Antibody / CA12 Polyclonal Antibody is available for research use only.



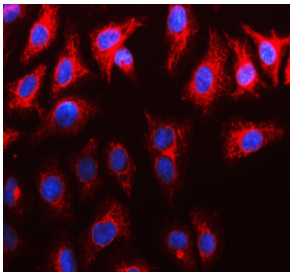
Carbonic Anhydrase XII Antibody by IHC in rat kidney. Immunohistochemistry of FFPE rat kidney tissue using Carbonic Anhydrase XII Antibody at 2 ug/ml. Strong brown immunoreactivity is observed along the membranes of selected renal tubular epithelial cells, with comparatively weak staining in surrounding structures. The well-defined tubular architecture and localized staining pattern are consistent with the membrane-associated distribution of CA12 in renal tissue. Hematoxylin counterstaining highlights blue-purple nuclei. Heat-mediated antigen retrieval was performed using EDTA buffer at pH 8.0, followed by overnight primary antibody incubation at 4oC. This CA12 Polyclonal Antibody demonstrates prominent tubular epithelial immunoreactivity.



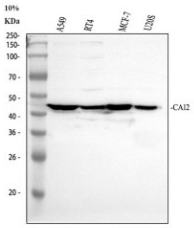
Carbonic Anhydrase XII Antibody by IHC in human breast cancer with membranous staining. Immunohistochemistry of FFPE human breast cancer tissue using Carbonic Anhydrase XII Antibody at 2 ug/ml. Brown immunoreactivity is distributed along the membranes and cytoplasm of numerous tumor-associated cells, with distinct cellular boundaries and relatively limited background staining. Hematoxylin counterstaining identifies blue-purple nuclei throughout the section. Heat-mediated antigen retrieval was performed in EDTA buffer at pH 8.0, followed by overnight primary antibody incubation at 4oC. This CA12 Polyclonal Antibody demonstrates membrane-associated immunoreactivity consistent with the localization of carbonic anhydrase XII.



Carbonic Anhydrase XII Antibody by IHC in human breast cancer with heterogeneous tumor staining. Immunohistochemistry of FFPE human breast cancer tissue using Carbonic Anhydrase XII Antibody at 2 ug/ml. Moderate-to-strong brown immunoreactivity is observed in tumor-associated cells, with predominantly membranous and cytoplasmic staining. Signal intensity varies among neighboring cells, producing a heterogeneous distribution. Hematoxylin counterstaining highlights blue-purple nuclei. Heat-mediated antigen retrieval was performed using EDTA buffer at pH 8.0, followed by overnight incubation at 4oC. This CA12 Polyclonal Antibody demonstrates immunoreactivity within the cellular components of breast cancer tissue.



Carbonic Anhydrase XII Antibody by IF in A549 cells. Immunofluorescence staining of human A549 cells using Carbonic Anhydrase XII Antibody at 5 ug/ml. Red Cy3 fluorescence highlights intracellular structures and portions of the cell periphery, indicating a predominantly cytoplasmic and partially membrane-associated staining pattern. Nuclei are counterstained blue with DAPI. Enzymatic antigen retrieval was performed for 15 minutes, followed by overnight primary antibody incubation at 4oC. Cy3-conjugated goat anti-rabbit IgG was used as the secondary antibody at 1:500. This CA12 Polyclonal Antibody demonstrates immunofluorescent detection of carbonic anhydrase XII in cultured cells.



Carbonic Anhydrase XII Antibody by WB in A549, RT4, MCF-7 and U2OS cells. Western blot analysis of human whole-cell lysates using rabbit polyclonal Carbonic Anhydrase XII Antibody. Lane 1: A549; lane 2: RT4; lane 3: MCF-7; lane 4: U2OS. Samples were separated by 10% SDS-PAGE under reducing conditions, with 30 ug of protein loaded per lane. A prominent band is detected at approximately 45 kDa in all four samples, compared with the calculated CA12 molecular weight of 39.5 kDa. The slightly higher apparent molecular weight is consistent with glycosylation of this membrane-associated protein, although this has not been experimentally confirmed. The CA12 Polyclonal Antibody was used at 0.5 ug/ml.

Description

Carbonic Anhydrase XII Antibody recognizes carbonic anhydrase XII (CA12), a zinc-dependent metalloenzyme that catalyzes the reversible conversion of carbon dioxide and water into bicarbonate and hydrogen ions. Also known as carbonic anhydrase 12 or CA XII, this membrane-associated enzyme belongs to the alpha-carbonic anhydrase family and plays an important role in acid-base balance, carbon dioxide transport, and cellular pH homeostasis. Its extracellular catalytic domain allows it to regulate the pH of the surrounding cellular environment.

The human CA12 gene is located on chromosome 15 and encodes a type I transmembrane glycoprotein of approximately 354 amino acids. The protein contains an extracellular zinc-binding catalytic domain, a single transmembrane region, and a short intracellular tail. Glycosylation can influence its apparent molecular weight and biochemical properties. Carbonic anhydrase XII shares structural similarities with carbonic anhydrase IX (CA9), although their expression patterns and regulatory mechanisms differ.

Carbonic anhydrase XII contributes to extracellular pH regulation by facilitating bicarbonate production and transport. In cancer cells, altered metabolism and increased glycolysis can promote extracellular acidification. Membrane-associated carbonic anhydrases help maintain intracellular pH while contributing to the acidic tumor microenvironment. The CA12 Polyclonal Antibody is relevant to research investigating tumor metabolism, cellular adaptation, and pH-dependent signaling.

CA12 expression has been documented in several malignancies, including breast and kidney cancers. Although hypoxia-associated signaling can influence its expression, CA12 is not exclusively regulated by hypoxia. In certain breast cancers, CA12 expression correlates with estrogen receptor signaling and differentiated tumor phenotypes, distinguishing it from the more strongly hypoxia-associated CA9. These characteristics have generated interest in carbonic anhydrase XII as a potential cancer biomarker and therapeutic target.

Beyond oncology, CA12 participates in epithelial ion transport, bicarbonate regulation, and fluid homeostasis. Inherited CA12 mutations have been associated with disorders affecting salt balance and sweating, highlighting its physiological importance. Understanding this enzyme may provide insight into normal epithelial function and disease-associated changes in acid-base metabolism. NSJ Bioreagents offers this antibody for research into these biological processes. A Carbonic Anhydrase XII Antibody provides a tool for investigating CA12 expression, extracellular pH regulation, and cancer-associated metabolic adaptations.

Explore our Cancer Marker Antibodies collection for additional antibodies targeting proteins involved in tumor biology, cancer-associated signaling, and disease biomarker research.

Application Notes

Optimal dilution of the Carbonic Anhydrase XII Antibody / CA12 Polyclonal Antibody should be determined by the researcher.

Immunogen

E.coli-derived human Carbonic Anhydrase XII recombinant protein (amino acids K45-A298) was used as the immunogen for the Carbonic Anhydrase XII Antibody.

Storage

After reconstitution, the Carbonic Anhydrase XII Antibody 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

CA12 antibody, Carbonic Anhydrase 12 antibody, Carbonic Anhydrase XII Polyclonal antibody, Carbonic Anhydrase 12 Polyclonal antibody, Carbonate Dehydratase XII antibody

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