Revision 1

Store at -20C

#8612

CA2 Antibody

Cell Signaling TECHNOLOGY®

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For Research Use Only. Not for Use in Diagnostic Procedures.

Applications:	Reactivity:	Sensitivity:	MW (kDa):	Source:	UniProt ID:	Entrez-Gene Id:
WB, IP	H	Endogenous	28	Rabbit	#P00918	760

Product Usage Information

Application	Dilution
Western Blotting	1:1000
Immunoprecipitation	1:50

Storage

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

Specificity / Sensitivity

CA2 Antibody recognizes endogenous levels of total CA2 protein.

Source / Purification

Polyclonal antibodies are produced by immunizing animals with a synthetic peptide corresponding to residues surrounding Lys169 of human CA2 protein. Antibodies are purified by protein A and peptide affinity chromatography.

Background

Carbonic anhydrases (CA) are a family of ancient zinc metalloenzymes found in almost all living organisms. All CA can be divided into 3 distinct classes (α, β, and γ) that evolved independently and have no significant homology in sequence and overall folding. All functional CA catalyze the reversible hydration of CO_2 into HCO_3- and H+ and contain a zinc atom in the active sites essential for catalysis. There are many isoforms of CA in mammals and they all belong to the α class (1,2).
CA2 is a cytosolic member of the α class. It is the most widely distributed isoform among the mammalian CAs (1). Defects in CA2 are associated with osteopetrosis and renal tubular acidosis (3-5). Elevated expression of CA2 is observed in patients with Alzheimer's disease and the developing brains of Down syndrome patients (6,7). CA2 is also overexpressed in Gastrointestinal Stromal Tumors (GISTs) and is considered a useful marker for diagnosis (8). Recently, CA2 was reported to facilitate transporter activity of the monocarboxylate transporter isoform 1 and 4 (MCT1/4) independent of its own catalytic activity (9,10)

Background References

1. Smith, K.S. et al. (1999) *Proc Natl Acad Sci USA* 96, 15184-9.
2. Tripp, B.C. et al. (2001) *J Biol Chem* 276, 48615-8.
3. McMahon, C. et al. (2001) *Blood* 97, 1947-50.
4. Borthwick, K.J. et al. (2003) *J Med Genet* 40, 115-21.
5. Lai, L.W. et al. (1998) *J Clin Invest* 101, 1320-5.
6. Palminiello, S. et al. (2008) *Brain Res* 1190, 193-205.
7. Jang, B.G. et al. (2010) *J Alzheimers Dis* 21, 939-45.
8. Parkkila, S. et al. (2010) *Mod Pathol* 23, 743-50.
9. Becker, H.M. et al. (2005) *J Biol Chem* 280, 39882-9.
10. Becker, H.M. et al. (2011) *Proc Natl Acad Sci USA* 108, 3071-6.

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 BSA, 1X TBS, 0.1% Tween® 20 at 4°C with gentle shaking, overnight.

Applications Key

WB: Western Blotting **IP:** Immunoprecipitation

Cross-Reactivity Key

H: human **M:** mouse **R:** rat **Hm:** hamster **Mk:** monkey **Vir:** virus **Mi:** mink **C:** chicken **Dm:** D. melanogaster **X:** Xenopus **Z:** zebrafish **B:** bovine **Dg:** dog **Pg:** pig **Sc:** S. cerevisiae **Ce:** C. elegans **Hr:** horse **GP:** Guinea Pig **Rab:** rabbit **All:** all species expected

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