

CA XIV (E-3): sc-166306

BACKGROUND

Carbonic anhydrases (CAs) are members of a large family of zinc metallo-enzymes that catalyze the reversible hydration of carbon dioxide. CAs are involved in a variety of biological processes, including respiration, calcification, acid-base balance and bone resorption, as well as the formation of aqueous humor, cerebrospinal fluid, saliva and gastric juice. They show extensive diversity in distribution and in their subcellular localization. The human CA2 gene, which maps to chromosome 8q22, encodes CA II, a cytoplasmic protein that has the highest turnover rate and widest tissue distribution of any known human CA isozyme. The human CA4 gene, which maps to chromosome 17q23, encodes CA IV, a membrane-anchored isozyme that is expressed on the luminal surfaces of pulmonary capillaries and proximal renal tubules. The human CA9, CA12 and CA14 genes, which map to chromosomes 9p13-p12, 15q22 and 1q21, respectively, encode transmembrane proteins that have unique patterns of tissue-specific expression. CA IX is specifically expressed in clear-cell renal carcinomas, whereas CA XII is highly expressed in normal tissues, such as kidney, colon and pancreas. Human CA XIV is also expressed in normal tissues, such as brain, but differs from CA XII in its expression pattern.

REFERENCES

1. Dodgson, S.J., Tashian, R.E., Gross, G. and Carter, N.D., eds. 1991. *The Carbonic Anhydrases: Cellular Physiology and Molecular Genetics*. New York: Plenum Publishing Corporation.
2. Venta, P.J., Welty, R. J., Johnson, T.M., Sly, W.S. and Tashian, R.E. 1991. Carbonic anhydrase II deficiency syndrome in a Belgian family is caused by a point mutation at an invariant histidine residue (107 His→Tyr): complete structure of the normal human CA II gene. *Am. J. Hum. Genet.* 49: 1082-1090.
3. Okuyama, T., Sato, S., Zhu, X.L., Waheed, A. and Sly, W.S. 1992. Human carbonic anhydrase IV: cDNA cloning, sequence comparison, and expression in COS cell membranes. *Proc. Natl. Acad. Sci. USA* 89: 1315-1319.
4. Sly, W.S. and Hu, P.Y. 1995. Human carbonic anhydrases and carbonic anhydrase deficiencies. *Annu. Rev. Biochem.* 64: 375-401.
5. Ivanov, S.V., Kuzmin, I., Wei, M.H., Pack, S., Geil, L., Johnson, B.E., Stanbridge, E.J. and Lerman, M.I. 1998. Downregulation of transmembrane carbonic anhydrases in renal cell carcinoma cell lines by wildtype von Hippel-Lindau transgenes. *Proc. Natl. Acad. Sci. USA* 95: 12596-12601.

CHROMOSOMAL LOCATION

Genetic locus: CA14 (human) mapping to 1q21; Car14 (mouse) mapping to 3 F2.1.

SOURCE

CA XIV (E-3) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 21-48 near the N-terminus of CA XIV of human origin.

PRODUCT

Each vial contains 200 µg IgG_{2a} in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

CA XIV (E-3) is recommended for detection of CA XIV 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) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

CA XIV (E-3) is also recommended for detection of CA XIV in additional species, including equine, bovine and porcine.

Suitable for use as control antibody for CA XIV siRNA (h): sc-41465, CA XIV siRNA (m): sc-41466, CA XIV shRNA Plasmid (h): sc-41465-SH, CA XIV shRNA Plasmid (m): sc-41466-SH, CA XIV shRNA (h) Lentiviral Particles: sc-41465-V and CA XIV shRNA (m) Lentiviral Particles: sc-41466-V.

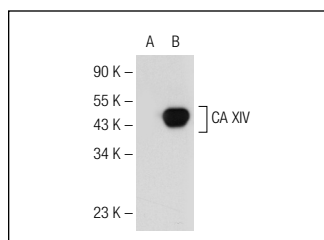
Molecular Weight of CA XIV: 50 kDa.

Positive Controls: mouse heart extract: sc-2254, mouse ovary extract: sc-2404 or CA XIV (m): 293T Lysate: sc-118937.

RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use goat anti-mouse IgG-HRP: sc-2005 (dilution range: 1:2000-1:32,000) or Cruz Marker™ compatible goat anti-mouse IgG-HRP: sc-2031 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use goat anti-mouse IgG-FITC: sc-2010 (dilution range: 1:100-1:400) or goat anti-mouse IgG-TR: sc-2781 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

DATA



CA XIV (E-3): sc-166306. Western blot analysis of CA XIV expression in non-transfected: sc-117752 (A) and mouse CA XIV transfected: sc-118937 (B) 293T whole cell lysates.

STORAGE

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

RESEARCH USE

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