

# CA XII (A-3): sc-374313

## 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 8q21, 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, 15q22.2 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., et al. 1991. The Carbonic Anhydrases: Cellular Physiology and Molecular Genetics. New York: Plenum.
2. Venta, P.J., et al. 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., et al. 1992. Human carbonic anhydrase IV: cDNA cloning, sequence comparison, and expression in COS cell membranes. *Proc. Natl. Acad. Sci. USA* 89: 1315-1319.

## CHROMOSOMAL LOCATION

Genetic locus: CA12 (human) mapping to 15q22.2; Car12 (mouse) mapping to 9 C.

## SOURCE

CA XII (A-3) is a mouse monoclonal antibody raised against amino acids 241-354 of CA XII of human origin.

## PRODUCT

Each vial contains 200 µg IgG<sub>2b</sub> kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

CA XII (A-3) is available conjugated to agarose (sc-374313 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-374313 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-374313 PE), fluorescein (sc-374313 FITC), Alexa Fluor® 488 (sc-374313 AF488), Alexa Fluor® 546 (sc-374313 AF546), Alexa Fluor® 594 (sc-374313 AF594) or Alexa Fluor® 647 (sc-374313 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-374313 AF680) or Alexa Fluor® 790 (sc-374313 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

## APPLICATIONS

CA XII (A-3) is recommended for detection of CA XII 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).

Suitable for use as control antibody for CA XII siRNA (h): sc-41463, CA XII siRNA (m): sc-41464, CA XII shRNA Plasmid (h): sc-41463-SH, CA XII shRNA Plasmid (m): sc-41464-SH, CA XII shRNA (h) Lentiviral Particles: sc-41463-V and CA XII shRNA (m) Lentiviral Particles: sc-41464-V.

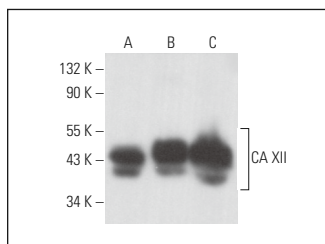
Molecular Weight of CA XII: 43/44 kDa.

Positive Controls: A549 cell lysate: sc-2413, ZR-75-1 cell lysate: sc-2241 or T-47D cell lysate: sc-2293.

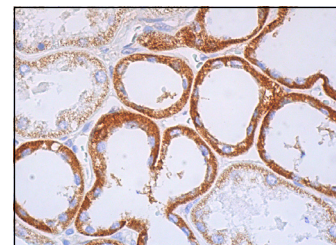
## RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 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 m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850. 4) Immunohistochemistry: use m-IgGκ BP-HRP: sc-516102 with DAB, 50X: sc-24982 and Immunohistomount: sc-45086, or Organo/Limonene Mount: sc-45087.

## DATA



CA XII (A-3): sc-374313. Western blot analysis of CA XII expression in A549 (A), ZR-75-1 (B) and T-47D (C) whole cell lysates.



CA XII (A-3): sc-374313. Immunoperoxidase staining of formalin fixed, paraffin-embedded human kidney tissue showing cytoplasmic staining of cells in tubules.

## 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.

Alexa Fluor® is a trademark of Molecular Probes, Inc., Oregon, USA