

## CA I (C-6): sc-393528



The Power to Question

## BACKGROUND

Carbonic anhydrases (CAs), also designated carbonate dehydratases or carbonate hydrolyases, form a large family of genes that encode zinc metalloenzymes of great physiologic importance. As catalysts of the reversible hydration of carbon dioxide, these enzymes participate in a variety of biologic processes, including respiration, acid-base balance, bone resorption and calcification as well as the formation of aqueous humor, cerebrospinal fluid, saliva and gastric acid. Genes in the  $\alpha$ -carbonic anhydrase family encode either active carbonic anhydrase isozymes or "acatalytic" (devoid of CO<sub>2</sub> hydration activity) carbonic anhydrase-related proteins. Human CA I (CA1) is encoded by the CA1 gene, which maps to a region on chromosome 8 that harbors a cluster of CA genes. CA I localizes to the cytoplasm and research indicates that a severe deficiency of CA I does not result in any obvious hematological or renal consequences.

## REFERENCES

- Hopkinson, D.A., et al. 1974. The detection and differentiation of the products of the human carbonic anhydrase loci, CA I and CA II using fluorogenic substrates. *Ann. Hum. Genet.* 38: 155-162.
- Edwards, Y.H., et al. 1986. Assignment of the gene determining human carbonic anhydrase, CA I, to chromosome 8. *Ann. Hum. Genet.* 50: 123-129.
- Davis, M.B., et al. 1987. Regional localization of carbonic anhydrase genes CA1 and CA3 on human chromosome 8. *Somat. Cell Mol. Genet.* 13: 173-178.
- Hewett-Emmett, D. and Tashian, R.E. 1996. Functional diversity, conservation and convergence in the evolution of the  $\alpha$ -,  $\beta$ - and  $\gamma$ -carbonic anhydrase gene families. *Mol. Phylogenet. Evol.* 5: 50-77.
- Ichihara, N., et al. 1997. Immunohistological localization of carbonic anhydrase isozymes (CA I, CA II and CA III) in bovine male reproductive tracts. *Okajimas Folia Anat. Jpn.* 74: 193-198.
- Asari, M., et al. 2000. Immunohistochemistry of carbonic anhydrase isozymes (CA I, II and III) in canine salivary glands: a distributional and comparative assessment. *Anat. Histol. Embryol.* 29: 9-12.

## CHROMOSOMAL LOCATION

Genetic locus: CA1 (human) mapping to 8q21.2; Car1 (mouse) mapping to 3 A1.

## SOURCE

CA I (C-6) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 46-65 near the N-terminus of CA I of human origin.

## PRODUCT

Each vial contains 200  $\mu$ g IgG<sub>1</sub> kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-393528 P, (100  $\mu$ g peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

## APPLICATIONS

CA I (C-6) is recommended for detection of CA I of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2  $\mu$ g per 100-500  $\mu$ g 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).

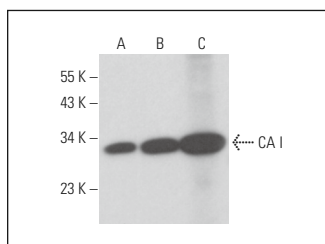
CA I (C-6) is also recommended for detection of CA I in additional species, including canine and porcine.

Suitable for use as control antibody for CA I siRNA (h): sc-60307, CA I siRNA (m): sc-60308, CA I shRNA Plasmid (h): sc-60307-SH, CA I shRNA Plasmid (m): sc-60308-SH, CA I shRNA (h) Lentiviral Particles: sc-60307-V and CA I shRNA (m) Lentiviral Particles: sc-60308-V.

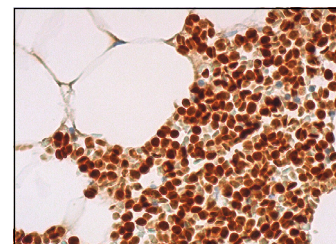
Molecular Weight of CA I: 29 kDa.

Positive Controls: human spleen extract: sc-363779, TF-1 cell lysate: sc-2412 or MEG-01 cell lysate: sc-2283.

## DATA



CA I (C-6): sc-393528. Western blot analysis of CA I expression in TF-1 (A) and MEG-01 (B) whole cell lysates and human spleen tissue extract (C). Detection reagent used: m-IgG $\kappa$  BP-HRP: sc-516102.



CA I (C-6): sc-393528. Immunoperoxidase staining of formalin fixed, paraffin-embedded human bone marrow tissue showing nuclear and cytoplasmic staining of hematopoietic cells.

## SELECT PRODUCT CITATIONS

- Agbani, E.O., et al. 2020. Carbonic anhydrase inhibitors suppress platelet procoagulant responses and *in vivo* thrombosis. *Platelets* 31: 853-859.

## 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.

## PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) for detailed protocols and support products.