

# CA IV (H-5): sc-74446

## BACKGROUND

Carbonic anhydrase IV (CA IV) is glycosylphosphatidylinositol-anchored to the outer surface of the plasma membrane where it catalyzes hydration-dehydration of  $\text{CO}_2/\text{HCO}_3^-$ . CA IV is present on the plasma face of microcapillaries and in the choriocapillaris of the human eye. CA IV facilitates renal acidification in the kidney and is responsible for the regulation of interstitial pH ( $\text{pH}_i$ ) transients in brain. Impairment in targeting leads to disruption of  $\text{HCO}_3^-$  secretion and associates with malfunction in cystic fibrosis cells. Carbonic anhydrases are zinc metalloenzymes that catalyze the reversible hydration of carbon dioxide. They participate in respiration, calcification, acid-base balance, bone resorption, and the formation of aqueous humor, cerebrospinal fluid, saliva, and gastric acid. Carbonic anhydrases show extensive diversity in tissue distribution and in their subcellular localization.

## REFERENCES

1. Tong, C.K., et al. 2000. Interstitial carbonic anhydrase (CA) activity in brain is attributable to membrane-bound CA type IV. *J. Neurosci.* 20: 8247-8253.
2. Fanjul, M., et al. 2002. Targeting of carbonic anhydrase IV to plasma membranes is altered in cultured human pancreatic duct cells expressing a mutated ( $\delta\text{F508}$ ) CFTR. *Eur. J. Cell Biol.* 8: 437-447.
3. Schwartz, G.J., et al. 2002. Carbonic anhydrase XII mRNA encodes a hydratase that is differentially expressed along the rabbit nephron. *Am. J. Physiol. Renal Physiol.* 284: F399-F410.
4. Sterling, D., et al. 2002. The extracellular component of a transport metabolon. Extracellular loop 4 of the human  $\text{AE}_1 \text{ Cl}^-/\text{HCO}_3^-$  exchanger binds carbonic anhydrase IV. *J. Biol. Chem.* 277: 25239-25246.
5. Alvarez, B.V., et al. 2003. Direct extracellular interaction between carbonic anhydrase IV and the human  $\text{NBC}_1$  sodium/bicarbonate co-transporter. *Biochemistry* 42: 12321-12329.

## CHROMOSOMAL LOCATION

Genetic locus: CA4 (human) mapping to 17q23.1; Car4 (mouse) mapping to 11 C.

## SOURCE

CA IV (H-5) is a mouse monoclonal antibody raised against amino acids 1-50 of CA IV of mouse origin.

## PRODUCT

Each vial contains 200  $\mu\text{g}$  IgG<sub>2a</sub> kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

CA IV (H-5) is available conjugated to agarose (sc-74446 AC), 500  $\mu\text{g}$ /0.25 ml agarose in 1 ml, for IP; to HRP (sc-74446 HRP), 200  $\mu\text{g}$ /ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-74446 PE), fluorescein (sc-74446 FITC), Alexa Fluor® 488 (sc-74446 AF488), Alexa Fluor® 546 (sc-74446 AF546), Alexa Fluor® 594 (sc-74446 AF594) or Alexa Fluor® 647 (sc-74446 AF647), 200  $\mu\text{g}$ /ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-74446 AF680) or Alexa Fluor® 790 (sc-74446 AF790), 200  $\mu\text{g}$ /ml, for Near-Infrared (NIR) WB, IF and FCM.

## APPLICATIONS

CA IV (H-5) is recommended for detection of CA IV of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2  $\mu\text{g}$  per 100-500  $\mu\text{g}$  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).

Suitable for use as control antibody for CA IV siRNA (h): sc-29867, CA IV siRNA (m): sc-29868, CA IV shRNA Plasmid (h): sc-29867-SH, CA IV shRNA Plasmid (m): sc-29868-SH, CA IV shRNA (h) Lentiviral Particles: sc-29867-V and CA IV shRNA (m) Lentiviral Particles: sc-29868-V.

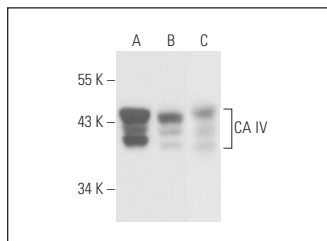
Molecular Weight of CA IV: 39 kDa.

Positive Controls: HeLa whole cell lysate: sc-2200, KNRK whole cell lysate: sc-2214 or NIH/3T3 whole cell lysate: sc-2210.

## RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgG $\kappa$  BP-HRP: sc-516102 or m-IgG $\kappa$  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-IgG $\kappa$  BP-FITC: sc-516140 or m-IgG $\kappa$  BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

## DATA



CA IV (H-5): sc-74446. Western blot analysis of CA IV expression in HeLa (A), NIH/3T3 (B) and KNRK (C) 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.

## PROTOCOLS

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

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