

CA IV (G-11): sc-74527



The Power to Question

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 (pH_i) transients in brain. Impairment in targeting leads to disruption of 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 (δF508) 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 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 NBC1 sodium/bicarbonate co-transporter. *Biochemistry* 42: 12321-12329.
6. Bonapace, G., et al. 2004. Chemical chaperones protect from effects of apoptosis-inducing mutation in carbonic anhydrase IV identified in retinitis pigmentosa 17. *Proc. Natl. Acad. Sci. USA* 101: 12300-12305.

CHROMOSOMAL LOCATION

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

SOURCE

CA IV (G-11) is a mouse monoclonal antibody raised against amino acids 1-50 of CA IV of mouse origin.

PRODUCT

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

STORAGE

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

APPLICATIONS

CA IV (G-11) 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 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).

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.

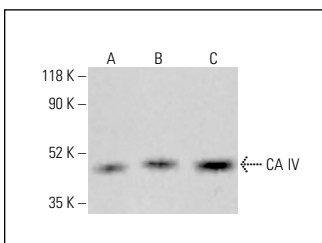
Molecular Weight of CA IV: 39 kDa.

Positive Controls: CA IV (m): 293T Lysate: sc-125085, HeLa whole cell lysate: sc-2200 or K-562 whole cell lysate: sc-2203.

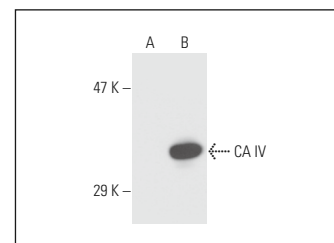
RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgG κ BP-HRP: sc-516102 or m-IgG κ 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 κ BP-FITC: sc-516140 or m-IgG κ 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 (G-11): sc-74527. Western blot analysis of CA IV expression in HeLa (A), K-562 (B) and HCT-116 (C) whole cell lysates. Detection reagent used: m-IgG Fc BP-HRP: sc-525409.



CA IV (G-11): sc-74527. Western blot analysis of CA IV expression in non-transfected: sc-117752 (A) and mouse CA IV transfected: sc-125085 (B) 293T whole cell lysates.

SELECT PRODUCT CITATIONS

1. Ji, M., et al. 2019. Enhanced activity by NKCC1 and Slc26a6 mediates acidic pH and Cl^- movement after cardioplegia-induced arrest of db/db diabetic heart. *Mediators Inflamm.* 2019: 7583760.
2. Wang, B., et al. 2020. Carbonic anhydrase IV inhibits cell proliferation in gastric cancer by regulating the cell cycle. *Oncol. Lett.* 20: 4.

RESEARCH USE

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