SANTA CRUZ BIOTECHNOLOGY, INC.

CA II (G-2): sc-48351

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Carbonic anhydrases (CAs) are members of a large family of zinc metalloenzymes that catalyze the reversible hydration of carbon dioxide. CAs are involved in a variety of biological processes, including respiration, calcification, acid-base balance, bone resorption and 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 8q21.2, 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 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 tis-sues, 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.

CHROMOSOMAL LOCATION

Genetic locus: CA2 (human) mapping to 8q21.2; Car2 (mouse) mapping to 3 A1.

SOURCE

CA II (G-2) is a mouse monoclonal antibody raised against amino acids 191-260 of CA II of human origin.

PRODUCT

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

CA II (G-2) is available conjugated to agarose (sc-48351 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-48351 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-48351 PE), fluorescein (sc-48351 FITC), Alexa Fluor® 488 (sc-48351 AF488), Alexa Fluor® 546 (sc-48351 AF546), Alexa Fluor® 594 (sc-48351 AF594) or Alexa Fluor® 647 (sc-48351 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-48351 AF680) or Alexa Fluor® 790 (sc-48351 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

STORAGE

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

APPLICATIONS

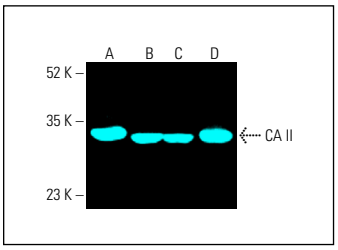
CA II (G-2) is recommended for detection of CA II of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), 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 II siRNA (h): sc-29865, CA II siRNA (m): sc-29866, CA II shRNA Plasmid (h): sc-29865-SH, CA II shRNA Plasmid (m): sc-29866-SH, CA II shRNA (h) Lentiviral Particles: sc-29865-V and CA II shRNA (m) Lentiviral Particles: sc-29866-V.

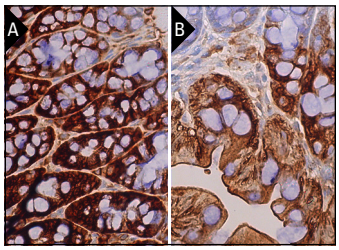
Molecular Weight of CA II: 29 kDa.

Positive Controls: c4 whole cell lysate: sc-364186, Caki-1 cell lysate: sc-2224 or HEL 92.1.7 cell lysate: sc-2270.

DATA



CA II (G-2): sc-48351. Fluorescent western blot analysis of CA II expression in c4 (**A**), Caki-1 (**B**) and HEL 92.1.7 (**C**) whole cell lysates and rat kidney tissue extract (**D**). Blocked with UltraCruz® Blocking Reagent: sc-516214. Detection reagent used: m-IgG_{2a} BP-CFL 647: sc-542738.



CA II (G-2): sc-48351. Immunoperoxidase staining of formalin fixed, paraffin-embedded mouse colon tissue (**A**) and rat colon tissue (**B**) showing cytoplasmic staining of glandular cells.

SELECT PRODUCT CITATIONS

1. Iuchi, Y., et al. 2007. Elevated oxidative stress in erythrocytes due to a SOD1 deficiency causes anaemia and triggers autoantibody production. Biochem. J. 402: 219-227.
2. Matsuike, R., et al. 2019. Continuous compressive force induces differentiation of osteoclasts with high levels of inorganic dissolution. Med. Sci. Monit. 25: 3902-3909.
3. Agbani, E.O., et al.| 2020. Carbonic anhydrase inhibitors suppress platelet procoagulant responses and *in vivo* thrombosis. Platelets 31: 853-859.
4. Gao, C., et al. 2021. Generation of distal renal segments involves a unique population of Aqp2+ progenitor cells. J. Am. Soc. Nephrol. 32: 3035-3049.
5. Gao, C., et al. 2022. Aqp2+ progenitor cells maintain and repair distal renal segments. J. Am. Soc. Nephrol. 33: 1357-1376.

RESEARCH USE

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