SANTA CRUZ BIOTECHNOLOGY, INC.

ATP7A (D-9): sc-376467

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

The copper efflux transporters ATP7A and ATP7B sequester intracellular copper into the vesicular secretory pathway for export from the cell. ATP7A (also known as copper-transporting ATPase 1) functions as a transmembrane copper-translocating P-type ATPase and plays a vital role in systemic copper absorption in the gut and copper reabsorption in the kidney. Polarized epithelial cells such as Madin-Darby canine kidney cells are a physiologically relevant model for systemic copper absorption and reabsorption *in vivo*. Although ATP7A is not detectable in most normal tissues, it is expressed in a considerable fraction of many common tumor types. Increased expression of ATP7A renders cells resistant to cisplatin and carboplatin. Mutations in the ATP7A gene result in Menkes disease, which is fatal in early childhood. Mutations in the ATP7B gene lead to the autosomal recessive disorder, Wilson disease, characterized by neurological symptoms and hepatic damage.

CHROMOSOMAL LOCATION

Genetic locus: ATP7A (human) mapping to Xq21.1.

SOURCE

ATP7A (D-9) is a mouse monoclonal antibody raised against amino acids 1-180 mapping within an N-terminal cytoplasmic domain of ATP7A 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.

ATP7A (D-9) is available conjugated to agarose (sc-376467 AC), 500 µg/ 0.25 ml agarose in 1 ml, for IP; to HRP (sc-376467 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-376467 PE), fluorescein (sc-376467 FITC), Alexa Fluor® 488 (sc-376467 AF488), Alexa Fluor® 546 (sc-376467 AF546), Alexa Fluor® 594 (sc-376467 AF594) or Alexa Fluor® 647 (sc-376467 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-376467 AF680) or Alexa Fluor® 790 (sc-376467 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

APPLICATIONS

ATP7A (D-9) is recommended for detection of ATP7A isoforms 1, 2, 4 and 5 of 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 ATP7A siRNA (h): sc-105107, ATP7A shRNA Plasmid (h): sc-105107-SH and ATP7A shRNA (h) Lentiviral Particles: sc-105107-V.

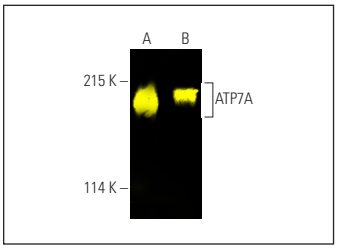
Molecular Weight of ATP7A: 178 kDa.

Positive Controls: SH-SY5Y cell lysate: sc-3812, HCT-8 cell lysate: sc-24675 or Hep G2 cell lysate: sc-2227.

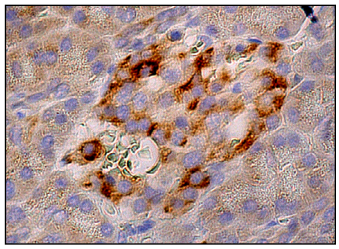
STORAGE

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

DATA



ATP7A (D-9) Alexa Fluor® 488: sc-376467 AF488. Direct fluorescent western blot analysis of ATP7A expression in Hep G2 (**A**) and SH-SY5Y (**B**) whole cell lysates. Blocked with UltraCruz® Blocking Reagent: sc-516214.



ATP7A (D-9): sc-376467. Immunoperoxidase staining of formalin fixed, paraffin-embedded human pancreas tissue showing cytoplasmic staining of Islets of Langerhans and glandular cells.

SELECT PRODUCT CITATIONS

1. Steinberg, F., et al. 2013. A global analysis of SNX27-retromer assembly and cargo specificity reveals a function in glucose and metal ion transport. Nat. Cell Biol. 15: 461-471.
2. Pierson, H., et al. 2018. The function of ATPase copper transporter ATP7B in intestine. Gastroenterology 154: 168-180.e5.
3. Stangl, A., et al. 2019. Regulation of the endosomal SNX27-retromer by OTULIN. Nat. Commun. 10: 4320.
4. Zhang, Y., et al. 2019. Cx32 mediates cisplatin resistance in human ovarian cancer cells by affecting drug efflux transporter expression and activating the EGFR-Akt pathway. Mol. Med. Rep. 19: 2287-2296.
5. Curnock, R. and Cullen, P.J. 2020. Mammalian copper homeostasis requires retromer-dependent recycling of the high-affinity copper transporter 1. J. Cell Sci. 133: jcs249201.
6. Mansournia, M.A., et al. 2021. Reflections on modern methods: demystifying robust standard errors for epidemiologists. Int. J. Epidemiol. 50: 346-351.
7. Manyanga, J., et al. 2021. Electronic cigarette aerosols alter the expression of cisplatin transporters and increase drug resistance in oral cancer cells. Sci. Rep. 11: 1821.
8. Sluysmans, S., et al. 2021. PLEKHA5, PLEKHA6 and PLEKHA7 bind to PDZD11 to target the Menkes ATPase ATP7A to the cell periphery and regulate copper homeostasis. Mol. Biol. Cell 32: ar34.
9. Grasso, M., et al. 2021. The copper chaperone CCS facilitates copper binding to MEK1/2 to promote kinase activation. J. Biol. Chem. 297: 101314.
10. Kondo, M., et al. 2021. 6-hydroxydopamine disrupts cellular copper homeostasis in human neuroblastoma SH-SY5Y cells. Metallomics 13: mfab041.

RESEARCH USE

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