

# $\alpha$ -actinin-4 (A-8): sc-393495

## BACKGROUND

The spectrin gene family encodes a diverse group of cytoskeletal proteins that include spectrins, dystrophins and  $\alpha$ -actinins. There are four tissue-specific  $\alpha$ -actinins, namely  $\alpha$ -actinin-1,  $\alpha$ -actinin-2,  $\alpha$ -actinin-3 and  $\alpha$ -actinin-4, which are localized to muscle and non-muscle cells, including skeletal, cardiac and smooth muscle cells, as well as within the cytoskeleton. Each  $\alpha$ -actinin protein contains one Actin-binding domain, two calponin-homology domains, two EF-hand domains and four spectrin repeats, through which they function as bundling proteins that can cross-link F-Actin, thus anchoring Actin to a variety of intracellular structures. Defects in the gene encoding  $\alpha$ -actinin-4 are the cause of focal segmental glomerulosclerosis 1 (FSGS1), a common renal lesion characterized by decreasing kidney function and, ultimately, renal failure.

## REFERENCES

1. Yousoufian, H., et al. 1990. Cloning and chromosomal localization of the human cytoskeletal  $\alpha$ -actinin gene reveals linkage to the  $\beta$ -spectrin gene. *Am. J. Hum. Genet.* 47: 62-72.
2. Nishiyama, M., et al. 1990. Expression of human  $\alpha$ -actinin in human hepatocellular carcinoma. *Cancer Res.* 50: 6291-6294.

## CHROMOSOMAL LOCATION

Genetic locus: ACTN4 (human) mapping to 19q13.2; Actn4 (mouse) mapping to 7 A3.

## SOURCE

$\alpha$ -actinin-4 (A-8) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 1-22 at the N-terminus of  $\alpha$ -actinin-4 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.

$\alpha$ -actinin-4 (A-8) is available conjugated to agarose (sc-393495 AC), 500  $\mu$ g/0.25 ml agarose in 1 ml, for IP; to HRP (sc-393495 HRP), 200  $\mu$ g/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-393495 PE), fluorescein (sc-393495 FITC), Alexa Fluor® 488 (sc-393495 AF488), Alexa Fluor® 546 (sc-393495 AF546), Alexa Fluor® 594 (sc-393495 AF594) or Alexa Fluor® 647 (sc-393495 AF647), 200  $\mu$ g/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-393495 AF680) or Alexa Fluor® 790 (sc-393495 AF790), 200  $\mu$ g/ml, for Near-Infrared (NIR) WB, IF and FCM.

Blocking peptide available for competition studies, sc-393495 P, (100  $\mu$ g peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

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## STORAGE

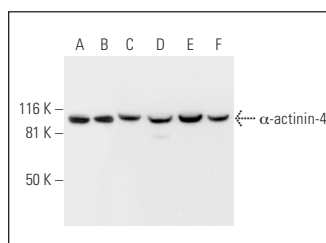
Store at 4° C, \*\*DO NOT FREEZE\*\*. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

## APPLICATIONS

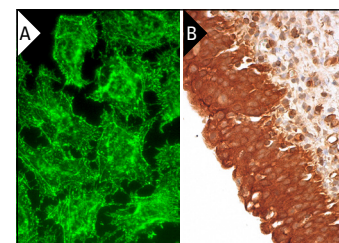
$\alpha$ -actinin-4 (A-8) is recommended for detection of  $\alpha$ -actinin-4 of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2  $\mu$ g per 100-500  $\mu$ g of total protein (1 ml of cell lysate)], immunofluorescence (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).  $\alpha$ -actinin-4 (A-8) is also recommended for detection of  $\alpha$ -actinin-4 in additional species, including canine, bovine and porcine.

Molecular Weight of  $\alpha$ -actinin-4: 105 kDa.

## DATA



$\alpha$ -actinin-4 (A-8): sc-393495. Western blot analysis of  $\alpha$ -actinin-4 expression in HeLa (A), A-673 (B), MCF7 (C), SJRH30 (D), K-562 (E) and A-431 (F) whole cell lysates.



$\alpha$ -actinin-4 (A-8): sc-393495. Immunofluorescence staining of methanol-fixed HeLa cells showing cytoskeletal localization (A). Immunoperoxidase staining of formalin fixed, paraffin-embedded human urinary bladder tissue showing cytoplasmic and nuclear staining of urothelial cells (B).

## SELECT PRODUCT CITATIONS

1. Rao, J., et al. 2017. Advillin acts upstream of phospholipase C  $\epsilon$ 1 in steroid-resistant nephrotic syndrome. *J. Clin. Invest.* 127: 4257-4269.
2. Kemp, J.P. and Brieher, W.M. 2018. The Actin filament bundling protein  $\alpha$ -actinin-4 actually suppresses Actin stress fibers by permitting Actin turnover. *J. Biol. Chem.* 293: 14520-14533.
3. Toniyan, K.A., et al. 2021. Organization of the cytoskeleton in ectopic foci of the endometrium with rare localization. *Biomedicines* 9: 998.
4. Morris, T., et al. 2022. Synaptopodin stress fiber and contractomere at the epithelial junction. *J. Cell Biol.* 221: e202011162.
5. Haines, A., et al. 2023. *Chlamydia trachomatis* subverts  $\alpha$ -actinins to stabilize its inclusion. *Microbiol. Spectr.* 11: e0261422.
6. Gorbacheva, E.Y., et al. 2023. The oxidative phosphorylation and cytoskeleton proteins of mouse ovaries after 96 hours of hindlimb suspension. *Life* 13: 2332.
7. Ogneva, I.V., et al. 2024. The motility of mouse spermatozoa changes differentially after 30-minute exposure under simulating weightlessness and hypergravity. *Int. J. Mol. Sci.* 25: 13561.

## RESEARCH USE

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