SANTA CRUZ BIOTECHNOLOGY, INC.

14-3-3 σ (E-11): sc-166473

BACKGROUND

14-3-3 proteins regulate many cellular processes relevant to cancer biology, notably apoptosis, mitogenic signaling and cell-cycle checkpoints. Seven isoforms, denoted 14-3-3 β, γ, ε, ζ, η, θ and σ, comprise this family of signaling intermediates. 14-3-3 σ, also known as SFN, stratifin, HME1 or YWHAS, is a secreted adaptor protein that is involved in regulating both general and specific signaling pathways. Expressed predominately in stratified squamous keratinising epithelium, 14-3-3 σ is able to bind and modify the activity of a large number of proteins, such as KRT17 (Keratin 17), through recognition of a phosphothreonine or phosphoserine motif. When bound to Keratin 17, for example, 14-3-3 σ acts to stimulate the Akt/mTOR signaling pathway by upregulating protein synthesis and cell growth. 14-3-3 σ also functions to positively mediate IGF-I-induced cell cycle progression and can bind to a variety of translation initiation factors, thus controlling mitotic translation. In response to tumor growth, 14-3-3 σ positively regulates the tumor suppressor p53 and increases the rate of p53-regulated inhibition of G_2/M cell cycle progression. Multiple isoforms of 14-3-3 σ exist due to alternative splicing events.

CHROMOSOMAL LOCATION

Genetic locus: SFN (human) mapping to 1p36.11; Sfn (mouse) mapping to 4 D2.3.

SOURCE

14-3-3 σ (E-11) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 8-38 at the N-terminus of 14-3-3 σ of human origin.

PRODUCT

Each vial contains 200 µg IgG_3 kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-166473 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

APPLICATIONS

14-3-3 σ (E-11) is recommended for detection of 14-3-3 σ 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 14-3-3 σ siRNA (h): sc-29590, 14-3-3 σ siRNA (m): sc-29591, 14-3-3 σ shRNA Plasmid (h): sc-29590-SH, 14-3-3 σ shRNA Plasmid (m): sc-29591-SH, 14-3-3 σ shRNA (h) Lentiviral Particles: sc-29590-V and 14-3-3 σ shRNA (m) Lentiviral Particles: sc-29591-V.

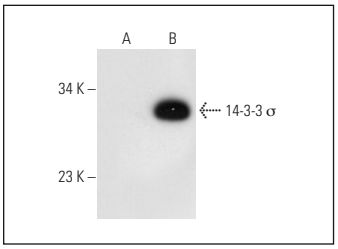
Molecular Weight of 14-3-3 σ: 30 kDa.

Positive Controls: A-431 whole cell lysate: sc-2201, 14-3-3 σ (h): 293T Lysate: sc-110782 or HeLa whole cell lysate: sc-2200.

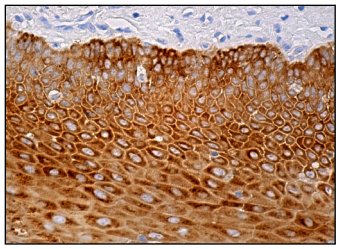
STORAGE

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

DATA



14-3-3 σ (E-11): sc-166473. Western blot analysis of 14-3-3 σ expression in non-transfected: sc-117752 (**A**) and human 14-3-3 σ transfected: sc-110782 (**B**) 293T whole cell lysates.



14-3-3 σ (E-11): sc-166473. Immunoperoxidase staining of formalin fixed, paraffin-embedded human esophagus tissue showing cytoplasmic staining of squamous epithelial cells.

SELECT PRODUCT CITATIONS

1. Sakuma, T., et al. 2014. Murine leukemia virus uses NXF1 for nuclear export of spliced and unspliced viral transcripts. J. Virol. 88: 4069-4082.
2. Zheng, D., et al. 2015. Dysregulation of the PI3K/Akt signaling pathway affects cell cycle and apoptosis of side population cells in nasopharyngeal carcinoma. Oncol. Lett. 10: 182-188.
3. Ben-David, U., et al. 2016. The landscape of chromosomal aberrations in breast cancer mouse models reveals driver-specific routes to tumorigenesis. Nat. Commun. 7: 12160.
4. Schudrowitz, N., et al. 2017. Germline factor DDX4 functions in blood-derived cancer cell phenotypes. Cancer Sci. 108: 1612-1619.
5. Cowen, L.E., et al. 2019. Characterization of SMG7 14-3-3-like domain reveals phosphoserine binding-independent regulation of p53 and UPF1. Sci. Rep. 9: 13097.
6. Xia, X., et al. 2019. EspF is crucial for *Citrobacter rodentium*-induced tight junction disruption and lethality in immunocompromised animals. PLoS Pathog. 15: e1007898.
7. Abdrabou, A., et al. 2020. Differential subcellular distribution and translocation of seven 14-3-3 isoforms in response to EGF and during the cell cycle. Int. J. Mol. Sci. 21: 318.
8. Tivon, B., et al. 2021. Covalent flexible peptide docking in Rosetta. Chem. Sci. 12: 10836-10847.

RESEARCH USE

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