SANTA CRUZ BIOTECHNOLOGY, INC.

HSC 70 (6i2): sc-71270

BACKGROUND

The HSP 70 family is composed of four highly-conserved proteins: HSP 70, HSC 70, GRP 75 and GRP 78. These proteins serve a variety of roles, acting as molecular chaperones to facilitate the assembly of multi-protein complexes, participating in the translocation of polypeptides across cell membranes and to the nucleus, and aiding in the proper folding of nascent polypeptide chains. All members of the family, except HSP 70, are constitutively expressed in primate cells. HSP 70 expression is strongly induced in response to heat stress. HSP 70 and HSC 70 (heat shock cognate protein 70) play key roles in the cytosolic endoplasmic reticulum and mitochondrial import machinery and are found in both the cytosol and nucleus of mammalian cells. Both HSP 70 and HSC 70 are involved in the chaperoning of nascent polypeptide chains and in protecting cells against the accumulation of improperly folded proteins. GRP 78 is localized in the endoplasmic reticulum, where it receives imported secretory proteins and is involved in the folding and translocation of nascent peptide chains. GRP 75 expression is restricted to the mitochondrial matrix and aids in the translocation and folding of nascent polypeptide chains of both nuclear and mitochondrial origin. GRP 75 and GRP 78 are unresponsive to heat stress and are induced by glucose deprivation. It has been postulated that members of the HSP 70 family act as force-generating motors, relying on the hydrolysis of ATP for their activity.

REFERENCES

1. Martin, J., et al. 1992. Prevention of protein denaturation under heat stress by the chaperonin HSP 60. Science 258: 995-998.
2. Hatayama, T., et al. 1992. Effects of low culture temperature on the induction of HSP 70 mRNA and the accumulation of HSP 70 and HSP 105 in mouse FM3A cells. J. Biochem. 111: 484-490.
3. Haas, I.G. 1995. Protein-mediated protein maturation in eukaryotes. FEBS Lett. 369: 72-75.
4. Glick, B.S. 1995. Can HSP 70 proteins act as force-generating motors? Cell 80: 11-14.
5. Bhattacharyya, T., et al. 1995. Cloning and subcellular localization of human mitochondrial HSP 70. J. Biol. Chem. 270: 1705-1710.
6. Massa, S.M., et al. 1995. Cloning of rat GrP 75, an HSP 70 family member, and its expression in normal and ischemic brain. J. Neurosci. Res. 40: 807-819.

CHROMOSOMAL LOCATION

Genetic locus: HSPA8 (human) mapping to 11q24.1; Hspa8 (mouse) mapping to 9 A5.1.

SOURCE

HSC 70 (6i2) is a rat monoclonal antibody raised against full length native HSC 70 purified from sodium arsenite treated heat-resistant variants of Chinese hamster cells.

PRODUCT

Each vial contains 100 µg IgG_{2a} in 1.0 ml PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

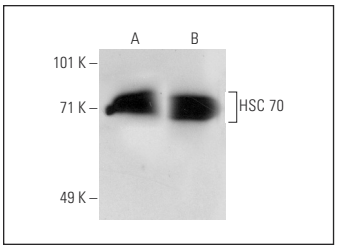
HSC 70 (6i2) is recommended for detection of HSC 70 of mouse, rat, human, hamster, bovine and canine origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)] and immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

Suitable for use as control antibody for HSC 70 siRNA (h): sc-29349, HSC 70 siRNA (m): sc-35593, HSC 70 shRNA Plasmid (h): sc-29349-SH, HSC 70 shRNA Plasmid (m): sc-35593-SH, HSC 70 shRNA (h) Lentiviral Particles: sc-29349-V and HSC 70 shRNA (m) Lentiviral Particles: sc-35593-V.

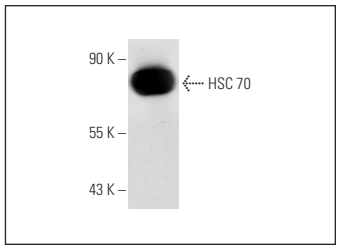
Molecular Weight of HSC 70: 70 kDa.

Positive Controls: HeLa + heat shock cell lysate: sc-2272, HeLa whole cell lysate: sc-2200 or NIH/3T3 whole cell lysate: sc-2210.

DATA



HSC 70 (6i2): sc-71270. Western blot analysis of HSC 70 expression in 293 (**A**) and HeLa (**B**) whole cell lysates.



HSC 70 (6i2): sc-71270. Western blot analysis of HSC 70 expression in NIH/3T3 whole cell lysate.

SELECT PRODUCT CITATIONS

1. Callens, C., et al. 2010. Targeting iron homeostasis induces cellular differentiation and synergizes with differentiating agents in acute myeloid leukemia. J. Exp. Med. 207: 731-750.
2. Leu, J.I., et al. 2011. HSP70 inhibition by the small-molecule 2-phenylethynesulfonamide impairs protein clearance pathways in tumor cells. Mol. Cancer Res. 9: 936-947.
3. Athuluri-Divakar, S.K., et al. 2016. A small molecule Ras-mimetic disrupts Ras association with effector proteins to block signaling. Cell 165: 643-655.

STORAGE

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

RESEARCH USE

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

CONJUGATES

See **HSC 70 (B-6): sc-7298** for HSC 70 antibody conjugates, including AC, HRP, FITC, PE, and Alexa Fluor® 488, 546, 594, 647, 680 and 790.