SANTA CRUZ BIOTECHNOLOGY, INC.

HSP 70/HSC 70 (2A4): sc-59570

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

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: they act as molecular chaperones facilitating the assembly of multi-protein complexes, participate in the translocation of polypeptides across cell membranes and to the nucleus, and aid 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 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.

CHROMOSOMAL LOCATION

Genetic locus: HSPA1A/HSPA1B (human) mapping to 6p21.33, HSPA8 (human) mapping to 11q24.1; Hspa1a/Hspa1b (mouse) mapping to 17 B1, Hspa8 (mouse) mapping to 9 A5.1.

SOURCE

HSP 70/HSC 70 (2A4) is a mouse monoclonal antibody raised against recombinant HSP 70/HSC 70 of human origin.

PRODUCT

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

APPLICATIONS

HSP 70/HSC 70 (2A4) is recommended for detection of several members of the heat shock protein 70 kDa (HSP 70) gene family including HSP 70, HSC 70 and, following heat shock, HSP 72 of mouse, rat, human and *Drosophila melanogaster* 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)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500).

Molecular Weight of HSP 70/HSC 70: 70 kDa.

Positive Controls: HeLa whole cell lysate: sc-2200, HCT-116 whole cell lysate: sc-364175 or K-562 whole cell lysate: sc-2203.

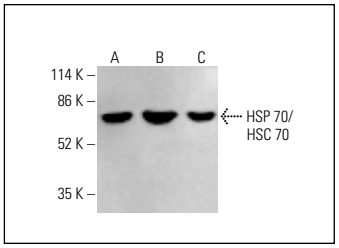
STORAGE

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

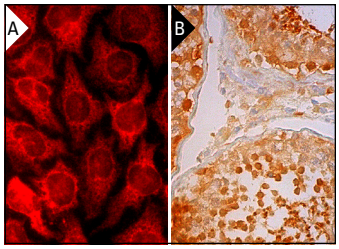
RESEARCH USE

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

DATA



HSP 70/HSC 70 (2A4): sc-59570. Western blot analysis of HSP 70/HSC 70 expression in HeLa (**A**), K-562 (**B**) and HCT-116 (**C**) whole cell lysates. Detection reagent used: m-IgGκ BP-HRP: sc-516102.



HSP 70/HSC 70 (2A4): sc-59570. Immunofluorescence staining of methanol-fixed HeLa cells showing cytoplasmic localization (**A**). Immunoperoxidase staining of formalin fixed, paraffin-embedded human testis tissue showing cytoplasmic and nuclear staining of cells in seminiferous ducts and cytoplasmic staining of Leydig cells (**B**).

SELECT PRODUCT CITATIONS

1. Goodman, C.L., et al. 2012. A cell line derived from the red flour beetle *Tribolium castaneum* (Coleoptera: Tenebrionidae). In Vitro Cell. Dev. Biol. Anim. 48: 426-433.
2. Ellis, J.M., et al. 2015. Metabolic and tissue-specific regulation of acyl-CoA metabolism. PLoS ONE 10: e0116587.
3. Lin, X., et al. 2015. Candesartan ameliorates acute myocardial infarction in rats through inducible nitric oxide synthase, nuclear factor-κB, monocyte chemoattractant protein-1, activator protein-1 and restoration of heat shock protein 72. Mol. Med. Rep. 12: 8193-8200.
4. Cheimonidi, C., et al. 2018. Selective cytotoxicity of the herbal substance acteoside against tumor cells and its mechanistic insights. Redox Biol. 16: 169-178.
5. Zeng, H., et al. 2018. Dioscin prevents LPS-induced acute lung injury through inhibiting the TLR4/MyD88 signaling pathway via upregulation of HSP 70. Mol. Med. Rep. 17: 6752-6758.
6. Xu, H., et al. 2019. Exosomes derived from PM2.5-treated lung cancer cells promote the growth of lung cancer via the Wnt3a/β-catenin pathway. Oncol. Rep. 41: 1180-1188.
7. Wang, Y.L., et al. 2020. *Buxus* alkaloid compound destabilizes mutant p53 through inhibition of the HSF1 chaperone axis. Phytomedicine 68: 153187.
8. Gialluisi, A., et al. 2021. Identification of sixteen novel candidate genes for late onset Parkinson's disease. Mol. Neurodegener. 16: 35.

CONJUGATES

See **HSP 70/HSC 70 (W27): sc-24** for HSP 70/HSC 70 antibody conjugates, including AC, HRP, FITC, PE, and Alexa Fluor® 488, 546, 594, 647, 680 and 790.