SANTA CRUZ BIOTECHNOLOGY, INC.

# HSP 70 (4E7): sc-69705

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.

## 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.


## CHROMOSOMAL LOCATION

Genetic locus: HSPA1A/HSPA1B (human) mapping to 6p21.33.

## SOURCE

HSP 70 (4E7) is a mouse monoclonal antibody raised against a recombinant protein corresponding to amino acids 1-641 of HSP 70 of human origin.

## PRODUCT

Each vial contains 50 µg $IgG_1$ in 500 µl of PBS with < 0.1% sodium azide, 0.1% gelatin and 1% glycerol.

## APPLICATIONS

HSP 70 (4E7) is recommended for detection of HSP 70 of human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) and immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)].

Suitable for use as control antibody for HSP 70 siRNA (h): sc-29352, HSP 70 shRNA Plasmid (h): sc-29352-SH and HSP 70 shRNA (h) Lentiviral Particles: sc-29352-V.

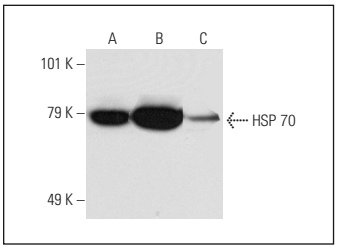
Molecular Weight of HSP 70: 70 kDa.

Positive Controls: HSP 70 (h): 293T Lysate: sc-116686, HeLa + heat shock cell lysate: sc-2272 or HeLa whole cell lysate: sc-2200.

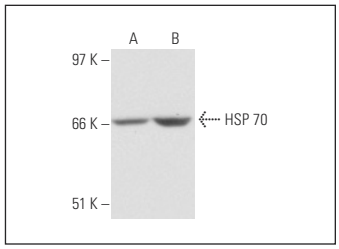
## STORAGE

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

## DATA




HSP 70 (4E7): sc-69705. Western blot analysis of HSP 70 expression in non-transfected 293T: sc-117752 (**A**), human HSP 70 transfected 293T: sc-116686 (**B**) and HUV-EC-C (**C**) whole cell lysates.




HSP 70 (4E7): sc-69705. Western blot analysis of HSP 70 expression in HeLa (**A**) and heat shock treated HeLa (**B**) whole cell lysates.

## SELECT PRODUCT CITATIONS


1. Emanuele, S., et al. 2007. SAHA induces apoptosis in hepatoma cells and synergistically interacts with the proteasome inhibitor Bortezomib. Apoptosis 12: 1327-1338.
2. Subramaniyam, D., et al. 2010. Cholesterol rich lipid raft microdomains are gateway for acute phase protein, SERPINA1. Int. J. Biochem. Cell Biol. 42: 1562-1570.
3. Kosmider, B., et al. 2011. Human alveolar epithelial cell injury induced by cigarette smoke. PLoS ONE 6: e26059.
4. Ibrahim, M.Y., et al. 2014. α-mangostin from *Cratoxylum arborescens* demonstrates apoptogenesis in MCF7 with regulation of NFκB and HSP 70 protein modulation *in vitro,* and tumor reduction *in vivo.* Drug Des. Devel. Ther. 8: 1629-1647.
5. Jiang, Q.W., et al. 2015. Synergistic anticancer effects of triptolide and celastrol, two main compounds from thunder god vine. Oncotarget 6: 32790-32804.
6. Huang, Z., et al. 2016. Hyperthermia enhances 17-DMAG efficacy in hepatocellular carcinoma cells with aggravated DNA damage and impaired $G_2$/M transition. Sci. Rep. 6: 38072.
7. Kamalidehghan, B., et al. 2018. Inhibition of human prostate cancer (PC-3) cells and targeting of PC-3-derived prostate cancer stem cells with koenimbin, a natural dietary compound from *Murraya koenigii (L)* Spreng. Drug Des. Devel. Ther. 12: 1119-1133.
8. Tan, W., et al. 2022. HCP 90 Inhibitor STA9090 induced VPS35 related extracellular vesicle release and metastasis in hepatocellular carcinoma. Transl. Oncol. 26: 101502.


## RESEARCH USE

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