

# HSP 70 (6D444): sc-71278

## 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

- Martin, J., et al. 1992. Prevention of protein denaturation under heat stress by the chaperonin HSP 60. *Science* 258: 995-998.
- 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.
- Bhattacharyya, T., et al. 1995. Cloning and subcellular localization of human mitochondrial HSP 70. *J. Biol. Chem.* 270: 1705-1710.
- Haas, I.G. 1995. Protein-mediated protein maturation in eukaryotes. *FEBS Lett.* 369: 72-75.
- Glick, B.S. 1995. Can HSP 70 proteins act as force-generating motors? *Cell* 80: 11-14.
- Csermely, P., et al. 1995. Autophosphorylation of GRP 94 (endoplasmic reticulum chaperonin). *J. Biol. Chem.* 270: 6381-6388.

## CHROMOSOMAL LOCATION

Genetic locus: HSPA1A/HSPA1B (human) mapping to 6p21.33; Hspa1a/Hspa1b (mouse) mapping to 17 B1.

## SOURCE

HSP 70 (6D444) is a mouse monoclonal antibody raised against recombinant HSP 70 of human origin.

## PRODUCT

Each vial contains 200 µg IgG<sub>2b</sub> kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

## APPLICATIONS

HSP 70 (6D444) is recommended for detection of HSP 70 of mouse, rat and 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)]; non cross-reactive with other members of the HSP 70 family.

Suitable for use as control antibody for HSP 70 siRNA (h): sc-29352, HSP 70 siRNA (m): sc-35605, HSP 70 siRNA (r): sc-270278, HSP 70 shRNA Plasmid (h): sc-29352-SH, HSP 70 shRNA Plasmid (m): sc-35605-SH, HSP 70 shRNA Plasmid (r): sc-270278-SH, HSP 70 shRNA (h) Lentiviral Particles: sc-29352-V, HSP 70 shRNA (m) Lentiviral Particles: sc-35605-V and HSP 70 shRNA (r) Lentiviral Particles: sc-270278-V.

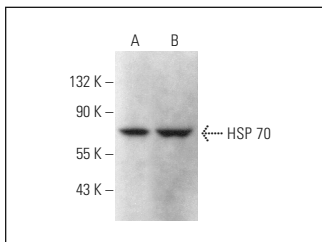
Molecular Weight of HSP 70: 70 kDa.

Positive Controls: MCF7 whole cell lysate: sc-2206, HeLa whole cell lysate: sc-2200 or HCT-116 whole cell lysate: sc-364175.

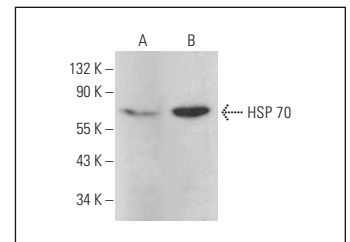
## RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml).

## DATA



HSP 70 (6D444): sc-71278. Western blot analysis of HSP 70 expression in HeLa (A) and MCF7 (B) whole cell lysates.



HSP 70 (6D444): sc-71278. Western blot analysis of HSP 70 expression in HUV-EC-C (A) and HCT-116 (B) whole cell lysates.

## SELECT PRODUCT CITATIONS

- Sindi, H.A., et al. 2020. Therapeutic potential of KLF2-induced exosomal microRNAs in pulmonary hypertension. *Nat. Commun.* 11: 1185.

## 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.