

HSP 70/HSC 70 (W27): sc-24

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 (W27) is a mouse monoclonal antibody raised against HSP 70 from HeLa cells of human origin.

PRODUCT

Each vial contains 200 µg IgG_{2a} lambda light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin. Also available as TransCruz reagent for ChIP application, sc-24 X, 200 µg/0.1 ml.

HSP 70/HSC 70 (W27) is available conjugated to agarose (sc-24 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-24 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-24 PE), fluorescein (sc-24 FITC), Alexa Fluor[®] 488 (sc-24 AF488), Alexa Fluor[®] 546 (sc-24 AF546), Alexa Fluor[®] 594 (sc-24 AF594) or Alexa Fluor[®] 647 (sc-24 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor[®] 680 (sc-24 AF680) or Alexa Fluor[®] 790 (sc-24 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

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STORAGE

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

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.

APPLICATIONS

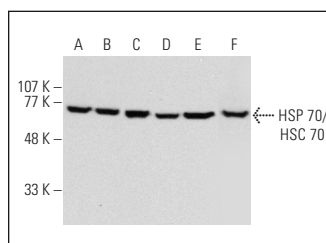
HSP 70/HSC 70 (W27) is recommended for detection of HSP 70 and HSC 70 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and flow cytometry (1 µg per 1 x 10⁶ cells).

HSP 70/HSC 70 (W27) X TransCruz antibody is recommended for ChIP assays.

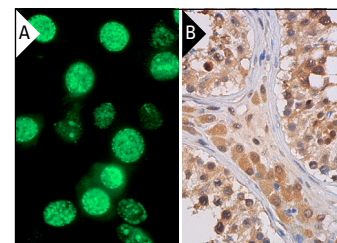
Molecular Weight of HSP 70/HSC 70: 70 kDa.

Positive Controls: HeLa whole cell lysate: sc-2200, C6 whole cell lysate: sc-364373 or MCF7 whole cell lysate: sc-2206.

DATA



HSP 70/HSC 70 (W27) HRP: sc-24 HRP. Direct western blot analysis of HSP 70/HSC 70 expression in HeLa (A), heat shocked HeLa (B), C6 (C), MCF7 (D) and HUVEC-C (E) whole cell lysates and HeLa nuclear extract (F).



HSP 70/HSC 70 (W27): sc-24. Immunofluorescence staining of methanol-fixed NIH/3T3 cells following heat shock, showing nuclear localization (A). HSP 70/HSC 70 (W27) HRP: sc-24 HRP. Direct immunoperoxidase staining of formalin fixed, paraffin-embedded human testis tissue showing cytoplasmic and nuclear staining of cells in seminiferous ducts and Leydig cells (B).

SELECT PRODUCT CITATIONS

- Ralhan, R. and Kaur, J. 1995. Differential expression of M₁ 70,000 heat shock protein in normal, premalignant, and malignant human uterine cervix. *Clin. Cancer Res.* 1: 1217-1222.
- Brincks, E.L., et al. 2015. Triptolide enhances the tumoricidal activity of TRAIL against renal cell carcinoma. *FEBS J.* 282: 4747-4765.
- Stolwijk, J.A., et al. 2016. Calcium signaling is dispensable for receptor regulation of endothelial barrier function. *J. Biol. Chem.* 291: 22894-22912.
- Takii, R., et al. 2017. HSF1 and HSF3 cooperatively regulate the heat shock response in lizards. *PLoS ONE* 12: e0180776.
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- Choi, S., et al. 2019. A nuclear phosphoinositide kinase complex regulates p53. *Nat. Cell Biol.* 21: 462-475.
- Wasserman, D., et al. 2020. Cell cycle oscillators underlying orderly proteolysis of E2F8. *Mol. Biol. Cell* 31: 725-740.

RESEARCH USE

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