

GRP 78 (E-4): sc-166490

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: HSPA5 (human) mapping to 9q33.3; Hspa5 (mouse) mapping to 2 B.

SOURCE

GRP 78 (E-4) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 19-50 near the N-terminus of GRP 78 of human origin.

PRODUCT

Each vial contains 200 µg IgG₃ kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

GRP 78 (E-4) is available conjugated to agarose (sc-166490 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-166490 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-166490 PE), fluorescein (sc-166490 FITC), Alexa Fluor® 488 (sc-166490 AF488), Alexa Fluor® 546 (sc-166490 AF546), Alexa Fluor® 594 (sc-166490 AF594) or Alexa Fluor® 647 (sc-166490 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-166490 AF680) or Alexa Fluor® 790 (sc-166490 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

Alexa Fluor® is a trademark of Molecular Probes, Inc., Oregon, USA

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

GRP 78 (E-4) is recommended for detection of GRP 78 of mouse, rat and human origin by Western Blotting (starting dilution 1:100, 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 solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

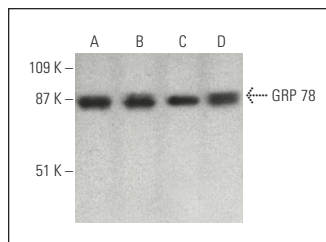
GRP 78 (E-4) is also recommended for detection of GRP 78 in additional species, including canine, bovine, porcine and avian.

Suitable for use as control antibody for GRP 78 siRNA (h): sc-29338, GRP 78 siRNA (m): sc-35522, GRP 78 shRNA Plasmid (h): sc-29338-SH, GRP 78 shRNA Plasmid (m): sc-35522-SH, GRP 78 shRNA (h) Lentiviral Particles: sc-29338-V and GRP 78 shRNA (m) Lentiviral Particles: sc-35522-V.

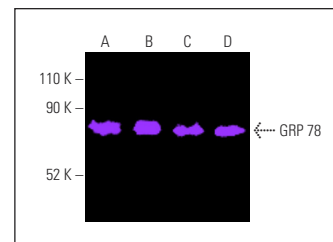
Molecular Weight of GRP 78: 78 kDa.

Positive Controls: HeLa whole cell lysate: sc-2200, NIH/3T3 whole cell lysate: sc-2210 or KNRK whole cell lysate: sc-2214.

DATA



GRP 78 (E-4) HRP: sc-166490 HRP. Direct western blot analysis of GRP 78 expression in NIH/3T3 (A), Jurkat (B), KNRK (C) and Hep G2 (D) whole cell lysates.



GRP 78 (E-4): sc-166490. Fluorescent western blot analysis of GRP 78 expression in HeLa (A), NIH/3T3 (B), Jurkat (C) and KNRK (D) whole cell lysates. Blocked with UltraCruz® Blocking Reagent: sc-516214. Detection reagent used: m-IgG₃ BP-CFL 555: sc-533674.

SELECT PRODUCT CITATIONS

- Kuo, T.C., et al. 2011. WJ9708012 exerts anticancer activity through PKC-α related crosstalk of mitochondrial and endoplasmic reticulum stresses in human hormone-refractory prostate cancer cells. *Acta Pharmacol. Sin.* 32: 89-98.
- Chu, Y.M., et al. 2022. Fuzheng Nizeng Decoction regulated ferroptosis and endoplasmic reticulum stress in the treatment of gastric precancerous lesions: a mechanistic study based on metabolomics coupled with transcriptomics. *Front. Pharmacol.* 13: 1066244.
- Burikhanov, R., et al. 2023. Crizotinib induces Par-4 secretion from normal cells and GRP78 expression on the cancer cell surface for selective tumor growth inhibition. *Am. J. Cancer Res.* 13: 976-991.
- Zhao, F., et al. 2024. GRP75-dependent mitochondria-ER contacts ensure cell survival during early mouse thymocyte development. *Dev. Cell* 59: 2643-2658.e7.

RESEARCH USE

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