SANTA CRUZ BIOTECHNOLOGY, INC.

GRP 78 (76-E6): sc-13539

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 (76-E6) is a rat monoclonal antibody raised against full length GRP 78 of mouse origin.

PRODUCT

Each vial contains 200 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

GRP 78 (76-E6) is available conjugated to agarose (sc-13539 AC), 500 µg/ 0.25 ml agarose in 1 ml, for IP; to HRP (sc-13539 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-13539 PE), fluorescein (sc-13539 FITC), Alexa Fluor® 488 (sc-13539 AF488), Alexa Fluor® 546 (sc-13539 AF546), Alexa Fluor® 594 (sc-13539 AF594) or Alexa Fluor® 647 (sc-13539 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-13539 AF680) or Alexa Fluor® 790 (sc-13539 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

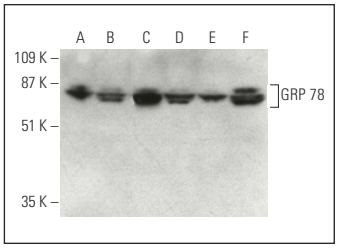
GRP 78 (76-E6) is recommended for detection of GRP 78 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) and immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)].

Suitable for use as control antibody for GRP 78 siRNA (h): sc-29338, GRP 78 siRNA (m): sc-35522, GRP 78 siRNA (r): sc-156167, sc-44261, sc-44303, GRP 78 shRNA Plasmid (h): sc-29338-SH, GRP 78 shRNA Plasmid (m): sc-35522-SH, GRP 78 shRNA Plasmid (r): sc-156167-SH, GRP 78 shRNA (h) Lentiviral Particles: sc-29338-V, GRP 78 shRNA (m) Lentiviral Particles: sc-35522-V and GRP 78 shRNA (r) Lentiviral Particles: sc-156167-V.

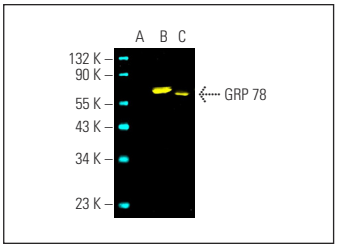
Molecular Weight of GRP 78: 78 kDa.

Positive Controls: HeLa whole cell lysate: sc-2200, Hep G2 cell lysate: sc-2227 or Jurkat whole cell lysate: sc-2204.

DATA



GRP 78 (76-E6) HRP: sc-13539 HRP. Direct western blot analysis of GRP 78 expression in Jurkat (**A**), HeLa (**B**), Hep G2 (**C**), A549 (**D**), SK-N-SH (**E**) and HeLa (Heat Shocked) (**F**) whole cell lysates.



GRP 78 (76-E6) Alexa Fluor® 488: sc-13539 AF488. Direct fluorescent western blot analysis of GRP 78 expression in HeLa (**A**), heat-shocked HeLa (**B**) and Hep G2 (**C**) whole cell lysates. Blocked with UltraCruz® Blocking Reagent: sc-516214. Cruz Marker™ Molecular Weight Standards detected with Cruz Marker MW Tag-Alexa Fluor® 647: sc-516791.

SELECT PRODUCT CITATIONS

1. Lee, A.S. 2005. The ER chaperone and signaling regulator GRP 78/BiP as a monitor of endoplasmic reticulum stress. Methods 35: 373-381.
2. Lee, H.Y., et al. 2020. Phosphatidylinositol 3-kinase-δ controls endoplasmic reticulum membrane fluidity and permeability in fungus-induced allergic inflammation in mice. Br. J. Pharmacol. 177: 1556-1567.
3. Gaborit, B., et al. 2021. The aminosterol Claramine inhibits β-secretase 1-mediated insulin receptor cleavage. J. Biol. Chem. 297: 100818.
4. Pranke, I.M., et al. 2022. Keratin 8 is a scaffolding and regulatory protein of ERAD complexes. Cell. Mol. Life Sci. 79: 503.
5. Wang, L., et al. 2023. AGO4 suppresses tumor growth by modulating autophagy and apoptosis via enhancing TRIM21-mediated ubiquitination of GRP 78 in a p53-independent manner. Oncogene 42: 62-77.
6. Tindall, C.A., et al. 2024. LRP1 is the cell-surface endocytosis receptor for vaspin in adipocytes. FEBS J. 291: 2134-2154.

RESEARCH USE

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