

Anti-PERK EIF2AK3 Antibody

Catalog Number: A01992

About EIF2AK3

The PKR-like endoplasmic reticulum kinase (PERK, also known as Eukaryotic translation initiation factor 2- α kinase 3) is a type I transmembrane protein localized to the endoplasmic reticulum (ER). PERK consists of an N-terminal ER luminal domain, a membrane-spanning region, and a cytosolic C-terminal serine/threonine kinase domain (1). The luminal domain of PERK is bound to the ER chaperone GRP78 in unstressed cells (2). PERK activation occurs upon accumulation of misfolded proteins in the ER lumen, which triggers GRP78 dissociation from PERK thereby allowing PERK dimerization and autophosphorylation (3, 4). PERK phosphorylates two established targets: the eukaryotic translation initiation factor 2 α (eIF2, (1)) and the Nrf2 transcription factor (5). Phosphorylation of eIF2 results in attenuation of translation initiation (6). The translational block also contributes to cell cycle arrest due to loss of the G1 regulatory protein, cyclin D1 (7). PERK-dependent phosphorylation of Nrf2 promotes transcription of phase II detoxifying enzymes which is critically important for elimination of intracellular reactive oxygen species (8). Thus, while inhibiting new protein synthesis and thereby decreasing the ER protein load PERK simultaneously induces expression of genes that help restore cellular redox homeostasis and promote survival.

Overview

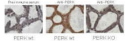
Product Name	Anti-PERK EIF2AK3 Antibody
Reactive Species	Mouse
Description	Boster Bio Anti-PERK EIF2AK3 Antibody (Catalog # A01992). Tested in IHC, IP, WB applications. This antibody reacts with Mouse.
Application	ELISA, IP, IF, IHC, WB
Clonality	Polyclonal
Formulation	0.02 M Potassium Phosphate, 0.15 M Sodium Chloride, pH 7.2, 0.01% (w/v) Sodium Azide
Storage Instructions	Store vial at -20°C prior to opening. Aliquot contents and freeze at -20°C or below for extended storage. Avoid cycles of freezing and thawing. Centrifuge product if not completely clear after standing at room temperature. This product is stable for several weeks at 4°C as an undiluted liquid. Dilute only prior to immediate use. Expiration date is one (1) year from date of opening. (Ship on dry ice.)
Host	Rabbit
Uniprot ID	Q9Z2B5

Technical Details

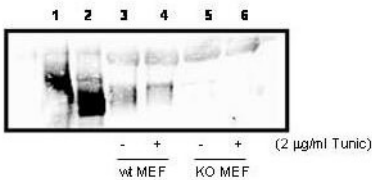
Immunogen	This whole rabbit serum was prepared by repeated immunizations with a recombinant fusion protein from amino acids 601-1115 of mouse deltaN PERK.
Predicted Reactive Species	Bovine, Canine, Equine, Guinea Pig, Rabbit

Isotype	Antiserum
Form	Liquid (sterile filtered)
Concentration	80 mg/mL by Refractometry
Purification	This antiserum is directed against PERK and reacts with the PERK from mouse tissues. Reactivity to other species is unknown.
Suggested Dilutions	ELISA: 1:4,000 - 1:20,000 IHC: 1:1,000 IF Microscopy: User optimized IP: 10-30ul WB: 1:500 - 1:3000 This antiserum has been tested for use in western blotting, immunoprecipitation and immunohistochemistry. Specific conditions for reactivity should be optimized by the end user. Expect bands approximately 150kDa by western blotting in the appropriate cell lysate or extract.

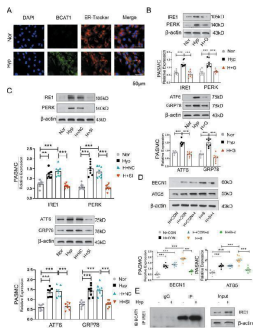
Anti-PERK EIF2AK3 Antibody (A01992) Images



Immunohistochemistry staining of mouse mammary gland samples from lactating mice (L10) with Boster Immunochemical's anti-PERK. Positive staining signal observed in wild type mouse sample with anti-PERK staining only (middle image), but not in the knock out mouse sample (right image) and pre-immune serum staining (left image). The anti-PERK was diluted 1:1,000 in 5% goat serum in PBS and allowed to incubate for 2h at room temperature in a humidified chamber. Personal Communication. A, Diehl, Univ. of Pennsylvania, Philadelphia, PA.



Western blot analysis using Boster Immunochemical's anti-PERK to detect PERK in cell lysates. 300µg PERK over-expressing 293T cell lysate (lanes 1 & 2), or 800ug wild type (Lanes 3 & 4), and PERK knock out (lanes 5 & 6) MEF cell lysate were immunoprecipitated with 15µl anti-PERK, followed by western blotting with 1:1000 dilution of anti-PERK in 5% milk/TBST buffer. Lane 1, 293T cells over-expressing Myc-PERK wt, Lane 2, 293T cells over-expressing Myc-PERK K618A. Personal Communication. A, Diehl, Univ. of Pennsylvania, Philadelphia, PA.



BCAT1 regulates autophagy through the endoplasmic reticulum stress pathway. a Expression of BCAT1 and ER-Tracker Red staining in PSMCs exposed to NOR or HYP for 24 h. Scale bar = 50 µm (n = 3). b Western blot analysis of PERK, IRE1, ATF6, and GRP78 protein expression in the ERs pathway in PSMCs treated with gabapentin (n = 8). c Western blot analysis of IRE1, PERK, ATF6, and GRP78 expression in PSMCs transfected with BCAT1 siRNA (n = 8). d Western blot analysis of BECN1 and Atg5 in PSMCs treated with the ERs pathway inhibitor 4-PBA and BCAT1 plasmid (n = 8). e Coimmunoprecipitation of the whole-cell lysates of PSMCs exposed to normoxia or hypoxia for 24 h with anti-IRE1, followed by probing with anti-BCAT1 (n = 3). Nor normoxia, Hyp hypoxia, H + G hypoxia plus gabapentin, H + NC hypoxia plus control siRNA, H + SI hypoxia plus BCAT1 siRNA, N + Con normoxia plus control vector, H + Con hypoxia plus control vector, H + B hypoxia plus BCAT1 plasmid, H + Con+4 hypoxia plus control vector plus 4-phenylbutyric acid, H + B + 4 hypoxia plus BCAT1 plasmid plus 4-phenylbutyric acid, IP immunoprecipitation, IB immunoblotting. Statistical analysis was performed with one-way ANOVA. All values are presented as the mean ± SEM. ** p

2 Publications Citing This Product

1. PubMed ID: 10.1038/s41419-020-02930-y, BCAT1 binds the RNA-binding protein ZNF423 to activate autophagy via the IRE1-XBP-1-RIDD axis in hypoxic PSMCs

2. PubMed ID: 27293989, Recombinant Newcastle disease virus (rL-RVG) triggers autophagy and apoptosis in gastric carcinoma cells by inducing

ER stress

Visit bosterbio.com/anti-perk-antibody-a01992-boster.html to see all 2 publications.

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