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Certificate of Analysis

Product: Anti-PKR-like Endoplasmic Reticulum Kinase (PERK) [Rabbit]

Code: 100-401-962

Lot #: 18324

Size: 100 μ l

Physical State: Liquid (sterile filtered)

Protein Concentration: 85 mg/ml (by Refractometry)

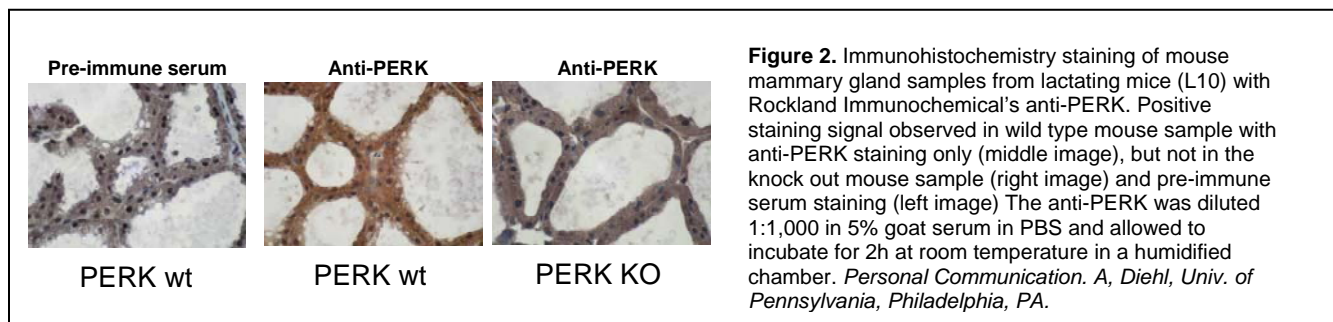
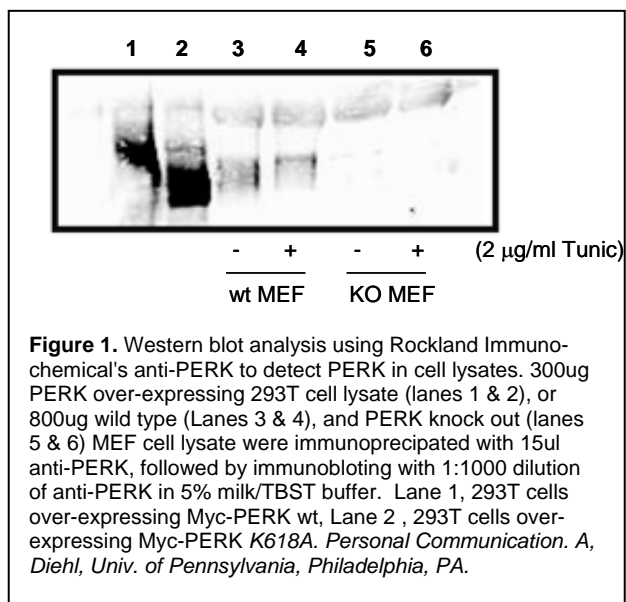
Buffer: 0.02 M Potassium Phosphate, 0.15 M Sodium Chloride, pH 7.2

Stabilizer: None

Preservative: 0.01% (w/v) Sodium Azide

Storage Conditions: Store vial at -20° C or below prior to opening. Dilute only prior to immediate use. Aliquot contents and freeze at -20° C or below. Avoid cycles of freezing and thawing. Expiration date is six (6) months from date of opening product.

Background Information: 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 and 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 α , (1)) and the Nrf2 transcription factor (5). Phosphorylation of eIF2 α 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.



Application Note(s): 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.

Recommended Dilutions:

IMMUNOPRECIPITATION	10-30ul
WESTERN BLOT	1:500 – 1:3000
IF MICROSCOPY	User Optimized
OTHER APPLICATIONS	User Optimized

Purity and Specificity: This antiserum is directed against PERK and reacts with the PERK from mouse tissues. Reactivity to other species is unknown.

Immunogen: This whole rabbit serum was prepared by repeated immunizations with a recombinant fusion protein from amino acids 601-1115 of mouse deltaN PERK (see link below for the full length sequence of the mouse gene product).

Relevant Links: NCBI [AAH54809](#). Swis-Prot [Q9Z2B5](#)

Related Product(s):

#611-703-127	Peroxidase Conjugated Affinity Purified Anti-RABBIT IgG (H&L) (DONKEY) MX10	
#611-132-122	IRDye800 Conjugated Affinity Purified Anti-RABBIT IgG (H&L) (GOAT) MX10	
#B501-0500	500 g	BLOTTO
#BSA-30	500 ml	30% BOVINE SERUM ALBUMIN SOL'N in 0.85% sodium chloride (no preservative or stabilizer)
#B304	10 ml	NORMAL GOAT SERUM (NGS)
#KIA-003	MaxTag™ Anti-RABBIT IgG Kit for Immunoblotting	
#MB-070	Blocking Buffer for Fluorescent Western Blotting	

General References:

- Harding, H. P., Zhang, Y., and Ron, D. Protein translation and folding are coupled by an endoplasmic reticulum-resident kinase. *Nature*, 397: 271-274, 1999.
- Bertolotti, A., Zhang, Y., Hendershot, L. M., Harding, H. P., and Ron, D. Dynamic interaction of BiP and ER stress transducers in the unfolded-protein response. *Nat Cell Biol*, 2: 326-332, 2000.
- Liu, C. Y., Schroder, M., and Kaufman, R. J. Ligand-independent dimerization activates the stress response kinases IRE1 and PERK in the lumen of the endoplasmic reticulum. *J Biol Chem*, 275: 24881-24885, 2000.
- Ma, K., Vatter, K. M., and Wek, R. C. Dimerization and release of molecular chaperone inhibition facilitate activation of eukaryotic initiation factor-2 kinase in response to endoplasmic reticulum stress. *J Biol Chem*, 277: 18728-18735, 2002.
- Cullinan, S. B., Zhang, D., Hannink, M., Arvisais, E., Kaufman, R. J., and Diehl, J. A. Nrf2 Is a Direct PERK Substrate and Effector of PERK-Dependent Cell Survival. *Mol Cell Biol*, 23: 7198-7209, 2003.
- Kimball, S. R. Eukaryotic initiation factor eIF2. *Int J Biochem Cell Biol*, 31: 25-29, 1999.
- Brewer, J. W., Hendershot, L. M., Sherr, C. J., and Diehl, J. A. Mammalian unfolded protein response inhibits cyclin D1 translation and cell-cycle progression. *Proc Natl Acad Sci U S A*, 96: 8505-8510, 1999.
- Lee, J. S. and Surh, Y. J. Nrf2 as a novel molecular target for chemoprevention. *Cancer Lett*, 224: 171-184, 2005.

USDA Certification: All products of animal origin manufactured by Rockland Immunochemicals are derived from starting materials of North American origin. Collection was performed in United States Department of Agriculture (USDA) inspected facilities and all materials have been inspected and certified to be free of disease and suitable for exportation.

Note: This product is for research use only and is not intended for therapeutic or diagnostic applications. Please contact a technical service representative for more information.