

PERK (phospho Thr981) Polyclonal Antibody
Catalog # AP67987**Specification****PERK (phospho Thr981) Polyclonal Antibody - Product Information**

Application	IF
Primary Accession	O9NZJ5
Reactivity	Human, Mouse, Rat
Host	Rabbit
Clonality	Polyclonal

PERK (phospho Thr981) Polyclonal Antibody - Additional Information

Gene ID 9451

Other Names

EIF2AK3; PEK; PERK; Eukaryotic translation initiation factor 2-alpha kinase 3; PRKR-like endoplasmic reticulum kinase; Pancreatic eIF2-alpha kinase; HsPEK

Dilution

IF~IF: 1:50-200 Immunohistochemistry: 1/100 - 1/300. ELISA: 1/40000. Not yet tested in other applications.

Format

Liquid in PBS containing 50% glycerol, 0.5% BSA and 0.09% (W/V) sodium azide.

Storage Conditions

-20°C

PERK (phospho Thr981) Polyclonal Antibody - Protein Information**Name** EIF2AK3 {ECO:0000303|PubMed:10932183, ECO:0000312|HGNC:HGNC:3255}**Function**

Metabolic-stress sensing protein kinase that phosphorylates the alpha subunit of eukaryotic translation initiation factor 2 (EIF2S1/eIF-2-alpha) in response to various stress, such as unfolded protein response (UPR) (PubMed: [10026192](http://www.uniprot.org/citations/10026192) target="_blank">10026192, PubMed: [10677345](http://www.uniprot.org/citations/10677345) target="_blank">10677345, PubMed: [11907036](http://www.uniprot.org/citations/11907036) target="_blank">11907036, PubMed: [12086964](http://www.uniprot.org/citations/12086964) target="_blank">12086964, PubMed: [25925385](http://www.uniprot.org/citations/25925385) target="_blank">25925385, PubMed: [31023583](http://www.uniprot.org/citations/31023583) target="_blank">31023583). Key effector of the integrated stress response (ISR) to unfolded proteins: EIF2AK3/PERK specifically recognizes and binds misfolded proteins, leading to its activation and EIF2S1/eIF-2-alpha phosphorylation (PubMed: [10677345](http://www.uniprot.org/citations/10677345) target="_blank">10677345, PubMed: [27917829](http://www.uniprot.org/citations/27917829) target="_blank">27917829, PubMed: [31023583](http://www.uniprot.org/citations/31023583) target="_blank">31023583).

EIF2S1/eIF-2-alpha phosphorylation in response to stress converts EIF2S1/eIF-2-alpha in a global protein synthesis inhibitor, leading to a global attenuation of cap-dependent translation, while concomitantly initiating the preferential translation of ISR-specific mRNAs, such as the transcriptional activators ATF4 and QRICH1, and hence allowing ATF4- and QRICH1-mediated reprogramming (PubMed:10026192, PubMed:10677345, PubMed:31023583, PubMed:33384352). The EIF2AK3/PERK- mediated unfolded protein response increases mitochondrial oxidative phosphorylation by promoting ATF4-mediated expression of COX7A2L/SCAF1, thereby increasing formation of respiratory chain supercomplexes (PubMed:31023583). In contrast to most subcellular compartments, mitochondria are protected from the EIF2AK3/PERK-mediated unfolded protein response due to EIF2AK3/PERK inhibition by ATAD3A at mitochondria-endoplasmic reticulum contact sites (PubMed:39116259). In addition to EIF2S1/eIF-2-alpha, also phosphorylates NFE2L2/NRF2 in response to stress, promoting release of NFE2L2/NRF2 from the BCR(KEAP1) complex, leading to nuclear accumulation and activation of NFE2L2/NRF2 (By similarity). Serves as a critical effector of unfolded protein response (UPR)-induced G1 growth arrest due to the loss of cyclin-D1 (CCND1) (By similarity). Involved in control of mitochondrial morphology and function (By similarity).

Cellular Location

Endoplasmic reticulum membrane {ECO:0000250|UniProtKB:Q9Z2B5}; Single-pass type I membrane protein. Note=Localizes to the Localizes to endoplasmic reticulum membrane (By similarity). Also present at mitochondria-endoplasmic reticulum contact sites; where it interacts with ATAD3A (PubMed:39116259). {ECO:0000250|UniProtKB:Q9Z2B5, ECO:0000269|PubMed:39116259}

Tissue Location

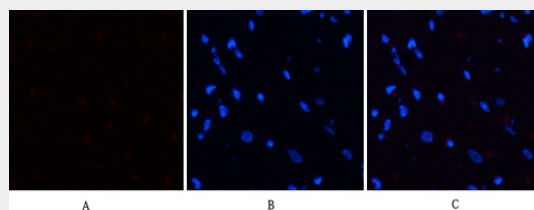
Ubiquitous. A high level expression is seen in secretory tissues.

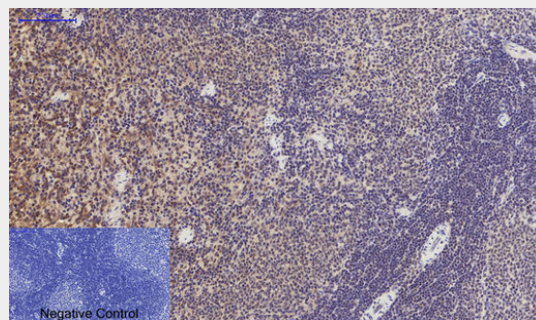
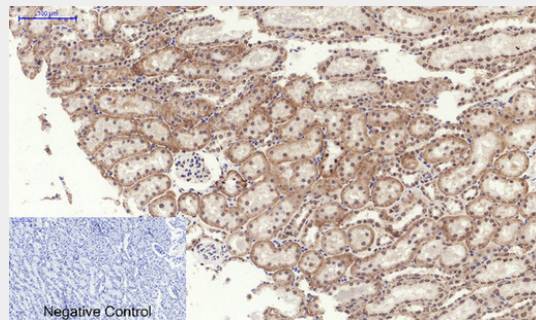
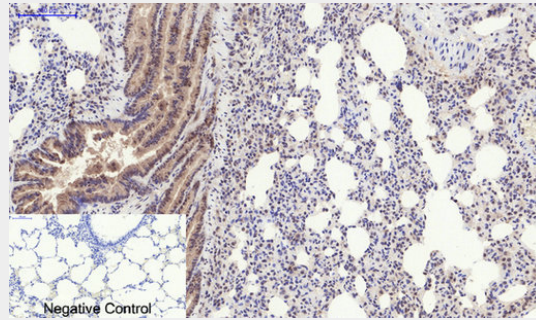
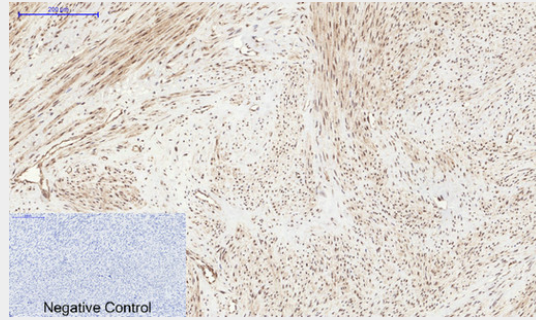
PERK (phospho Thr981) Polyclonal Antibody - Protocols

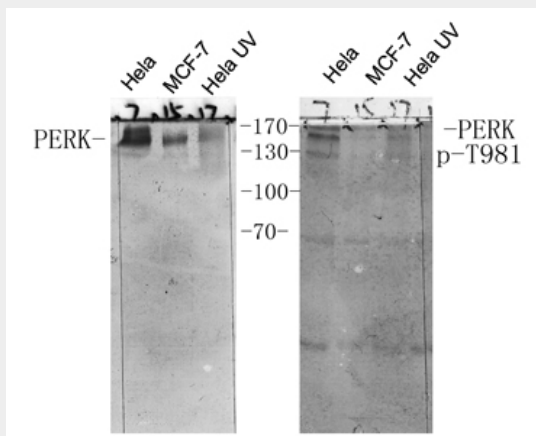
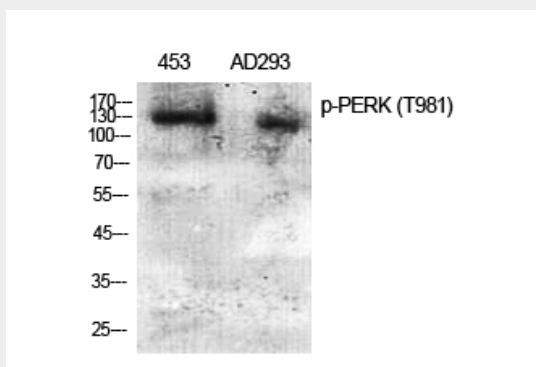
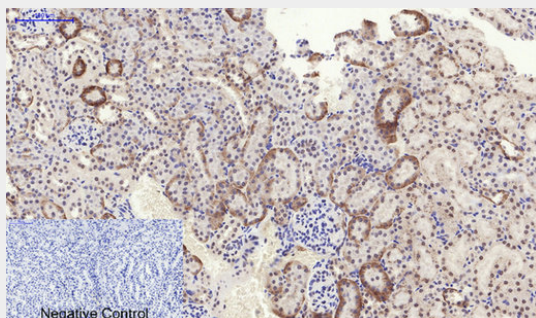
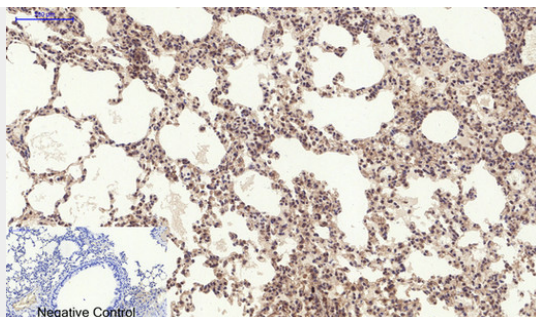
Provided below are standard protocols that you may find useful for product applications.

- [Western Blot](#)
- [Blocking Peptides](#)
- [Dot Blot](#)
- [Immunohistochemistry](#)
- [Immunofluorescence](#)
- [Immunoprecipitation](#)
- [Flow Cytometry](#)
- [Cell Culture](#)

PERK (phospho Thr981) Polyclonal Antibody - Images







PERK (phospho Thr981) Polyclonal Antibody - Background

Metabolic-stress sensing protein kinase that phosphorylates the alpha subunit of eukaryotic

translation initiation factor 2 (eIF-2-alpha/EIF2S1) on 'Ser-52' during the unfolded protein response (UPR) and in response to low amino acid availability. Converts phosphorylated eIF-2-alpha/EIF2S1 either in a global protein synthesis inhibitor, leading to a reduced overall utilization of amino acids, or to a translation initiation activator of specific mRNAs, such as the transcriptional activator ATF4, and hence allowing ATF4-mediated reprogramming of amino acid biosynthetic gene expression to alleviate nutrient depletion. Serves as a critical effector of unfolded protein response (UPR)- induced G1 growth arrest due to the loss of cyclin-D1 (CCND1). Involved in control of mitochondrial morphology and function.