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PKR Rabbit mAb

Catalog # AP74922

Product Information

Application	WB, FC, IP
Primary Accession	Q03963
Reactivity	Rat, Human, Mouse
Host	Rabbit
Clonality	Monoclonal Antibody
Isotype	IgG
Conjugate	Unconjugated
Purification	Affinity Purified
Calculated MW	58280

Additional Information

Gene ID	19106
Other Names	Eif2Ak2
Dilution	WB~~1:500-1:1000 FC~~1:50-1:100 IP~~1:20-1:50
Format	Liquid in 50mM Tris-Glycine(pH 7.4), 0.15M NaCl, 40%Glycerol, 0.01% sodium azide and 0.05% BSA.
Storage	Store at 4°C short term. Aliquot and store at -20°C long term. Avoid freeze/thaw cycles.

Protein Information

Name	Eif2ak2
Synonyms	Pkr, Prkr, Tik
Function	IFN-induced dsRNA-dependent serine/threonine-protein kinase that phosphorylates the alpha subunit of eukaryotic translation initiation factor 2 (EIF2S1/eIF-2-alpha) and plays a key role in the innate immune response to viral infection (PubMed:20038207, PubMed:20478537, PubMed:21123651). Inhibits viral replication via the integrated stress response (ISR): EIF2S1/eIF-2-alpha phosphorylation in response to viral infection converts EIF2S1/eIF-2-alpha in a global protein synthesis inhibitor, resulting to a shutdown of cellular and viral protein synthesis, while concomitantly initiating the preferential translation of ISR-specific mRNAs, such as the transcriptional activator ATF4 (PubMed:20631127, PubMed:21123651). Exerts its antiviral activity on a wide range of DNA and RNA viruses including west nile virus (WNV), sindbis virus (SV), foot-and-mouth virus (FMDV), semliki Forest virus (SFV) and lymphocytic choriomeningitis virus (LCMV) (PubMed:19264662,

PubMed:20585572, PubMed:20631127, PubMed:21994357). Also involved in the regulation of signal transduction, apoptosis, cell proliferation and differentiation: phosphorylates other substrates including p53/TP53, PPP2R5A, DHX9, ILF3, and IRS1 (PubMed:19229320, PubMed:23403623). In addition to serine/threonine-protein kinase activity, also has tyrosine-protein kinase activity and phosphorylates CDK1 at 'Tyr-4' upon DNA damage, facilitating its ubiquitination and proteasomal degradation (By similarity). Either as an adapter protein and/or via its kinase activity, can regulate various signaling pathways (p38 MAP kinase, NF- kappa-B and insulin signaling pathways) and transcription factors (JUN, STAT1, STAT3, IRF1, ATF3) involved in the expression of genes encoding pro-inflammatory cytokines and IFNs (PubMed:22948222, PubMed:23392680). Activates the NF-kappa-B pathway via interaction with IKBKB and TRAF family of proteins and activates the p38 MAP kinase pathway via interaction with MAP2K6 (By similarity). Can act as both a positive and negative regulator of the insulin signaling pathway (ISP) (By similarity). Negatively regulates ISP by inducing the inhibitory phosphorylation of insulin receptor substrate 1 (IRS1) at 'Ser-312' and positively regulates ISP via phosphorylation of PPP2R5A which activates FOXO1, which in turn up-regulates the expression of insulin receptor substrate 2 (IRS2) (By similarity). Can regulate NLRP3 inflammasome assembly and the activation of NLRP3, NLRP1, AIM2 and NLRC4 inflammasomes (PubMed:22801494, PubMed:23401008). Plays a role in the regulation of the cytoskeleton by binding to gelsolin (GSN), sequestering the protein in an inactive conformation away from actin (PubMed:22633459).

Cellular Location

Cytoplasm {ECO:0000250|UniProtKB:P19525}. Nucleus {ECO:0000250|UniProtKB:P19525}. Cytoplasm, perinuclear region {ECO:0000250|UniProtKB:P19525}

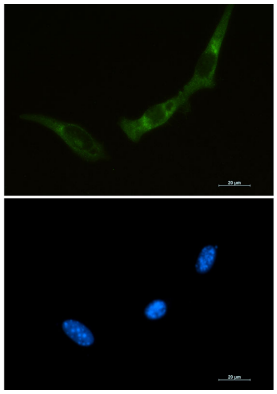
Tissue Location

Expressed in heart, lung, brain, kidney, testes, thymus and bone marrow

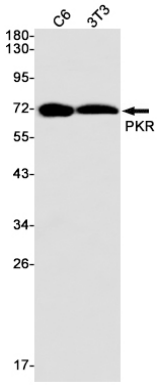
Background

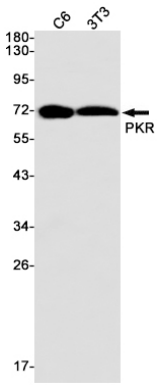
Enables double-stranded RNA binding activity and protein kinase activity. Involved in several processes, including negative regulation of viral genome replication; regulation of hematopoietic stem cell differentiation; and regulation of intracellular signal transduction. Acts upstream of or within several processes, including endoplasmic reticulum unfolded protein response; protein phosphorylation; and translation. Predicted to be located in cytosol and perinuclear region of cytoplasm. Predicted to be active in cytoplasm and nucleus. Is expressed in several structures, including brain; genitourinary system; mandible condylar process; sensory organ; and skeletal musculature. Human ortholog(s) of this gene implicated in Alzheimer's disease; Huntington's disease; Parkinson's disease; dystonia 33; and hepatitis B. Orthologous to human EIF2AK2 (eukaryotic translation initiation factor 2 alpha kinase 2).

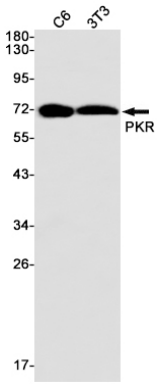
Images



Immunocytochemistry analysis of PKR (green) in 3T3 using PKR antibody,and DAPI(blue).







Western blot analysis of PKR in C6, 3T3 lysates using PKR antibody.

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