

Recombinant Mouse Eif2ak2 Protein, Myc/DDK-tagged

Cat. No. Eif2ak2-2771M **Lot. No.** (See product label)

SPECIFICATION

Product Overview	Purified recombinant protein of mouse full-length eukaryotic translation initiation factor 2-alpha kinase 2 (Eif2ak2), with C-terminal MYC/DDK tag, expressed in HEK293T cells.
Species	Mouse
Source	HEK293
Description	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. 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. 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). Also involved in the regulation of signal transduction, apoptosis, cell proliferation and differentiation: phosphorylates other substrates including p53/TP53, PPP2R5A, DHX9, ILF3, and IRS1. 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 proteosomal degradation. Either as an adapter protein and/or via its kinase activity,

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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 proinflammatory cytokines and IFNs. 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. Can act as both a positive and negative regulator of the insulin signaling pathway (ISP). 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). Can regulate NLRP3 inflammasome assembly and the activation of NLRP3, NLRP1, AIM2 and NLRC4 inflammasomes. Plays a role in the regulation of the cytoskeleton by binding to gelsolin (GSN), sequestering the protein in an inactive conformation away from actin.

Molecular Mass	58.7 kDa
Purity	> 80% as determined by SDS-PAGE and Coomassie blue staining
Stability	Stable for 12 months from the date of receipt of the product under proper storage and handling conditions. Avoid repeated freeze-thaw cycles.
Storage	Store at -80 centigrade after receiving vials.
Concentration	>50 µg/mL as determined by microplate BCA method
Storage Buffer	25 mM Tris.HCl, pH 7.3, 100 mM glycine, 10% glycerol.

GENE INFORMATION

Gene Name Eif2ak2 eukaryotic translation initiation factor 2-alpha kinase 2 [Mus musculus (house mouse)]

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Official Symbol	Eif2ak2
Synonyms	EIF2AK2; eukaryotic translation initiation factor 2-alpha kinase 2; interferon-induced, double-stranded RNA-activated protein kinase; p68 kinase; eIF-2 alpha; dsRNA-activated kinase; eIF-2A protein kinase 2; P1/eIF-2A protein kinase; protein kinase RNA-activated; T-cell viral integration site; tyrosine-protein kinase EIF2AK2; serine/threonine-protein kinase TIK; IFN- type I-induced and dsRNA-activated kinase; interferon-inducible RNA-dependent protein kinase; IFN-induced and double-stranded RNA-activated kinase; eukaryotic translation initiation factor 2 alpha kinase 2; protein kinase, interferon inducible double stranded RNA dependent; protein kinase, interferon-inducible double stranded RNA dependent; Pkr; Tik; Prkr; AI467567; AI747578; 2310047A08Rik; 4732414G15Rik
Gene ID	19106
mRNA Refseq	NM_011163
Protein Refseq	NP_035293
UniProt ID	Q03963