

# Recombinant Rat KPCD2 Protein

**For Research Use Only**

## 1. Basic Product Information

Catalog No.: REP52478

Size: 10ug, 100ug

Protein Name: Serine/threonine-protein kinase D2 (EC 2.7.11.13) (nPKC-D2)

Synonym: Prkd2

UniProt ID: Q5XIS9

UniProt Link: [www.uniprot.org/uniprotkb/Q5XIS9/entry](http://www.uniprot.org/uniprotkb/Q5XIS9/entry)

Species Source: Rat

Expression System: HEK293T eukaryotic cell expression system Sequence

Length: 875 AA

Molecular Weight: 96 KD

Protein Tag: C-terminal His6

## 2. Amino Acid Sequence

MAAAPSHPAGLPCSPGPGSPPPPGGSDLQSLPPLLQIPAPGSGVSFHIQIGLTREFVLLPAASELAH  
VKQLACSIVDQKFPECGFYGLYDKILLFKHDPTSANLLQLVRSAAADIQEGDLVEVVLASATFEDFQIR  
PHALTVHSYRAPAFCDHCGEMLFGLVRQGLKCDGCGLNHYHKRCAFSIPNNCSGARKRRLSSTSLAS  
GHSVRLGSSESLPCTAEELSRSTTDLLPRRPPSSSSSSSSSSSSSYTGRPIELDKMLMSKVVPHTFLIH  
SYTRPTVCQACKLLKGLFRQGLQCKDKFNCHKRCATRPNDCLGEALINGDVPMEEAADYSEAD  
KSSLSDELED SGVIPGSHAENALHASEEEEEEGEGGKAQSSLGYIPLMRVVQSVRHTTRKSSTTLREG  
WVVHYSNKDTLRKRHYWRDLCKCITLFQNNNTNRYYYKEIPLSEILAVEPAQNFSLVPPGTNPHCFEIT  
ANVTYFVGETPGGAPGGPSGQGTEAARGWETAIRQALMPVILQDAPSAPGHTPHRQASLSISVSNS  
QIQENVDIATVYQIFPDEVLGSGQFGVVYGGKHKRKTGRDVAVKVIDKLRFPKQESQLRNEVAILQSL  
RHPGIVNLECMFETPEKVFVMEKLGDMLEMILSSEKGRLPRLTKFLITQILVALRHLHFKNIVHCD  
LKPENVLLASADPFQVKLCDFGFARIIGEKSFRRSVVGTPAYLAPEVLLNQGYNRSLDMWSVGVM  
YVSLSGTFPFNEDEDINDQIQNAAFMYPASPWSHISGAIDLINLLQVKMRKRYSDKSLSHPWLQ  
EYQTWLDLRELEGKMGERYITHESDDARWDQFVSERHGTPAEGDLGGACLPQDHEMQGLAERISIL

## 3. Buffer Composition



Liquid format: PBS-based buffer containing 50% glycerol. Glycerol concentration can be customized upon customer request; please state special requirements when placing your order.

Lyophilized format: Buffer before lyophilization is PBS supplemented with 6% trehalose.

## 4. Storage Conditions

Upon receipt, store the product at -20 °C or -80 °C. Aliquot the product for on-demand use to preserve protein activity and prevent denaturation and inactivation caused by repeated freeze-thaw cycles.

## 5. Product Description

This product is recombinant Serine/threonine-protein kinase D2 (EC 2.7.11.13) (nPKC-D2) produced using the HEK293T eukaryotic cell expression system. It is suitable for in-vitro functional assays, protein-protein interaction studies, antibody preparation and other biomedical research applications.

**Protein Function:** Serine/threonine-protein kinase that converts transient diacylglycerol (DAG) signals into prolonged physiological effects downstream of PKC, and is involved in the regulation of cell proliferation via MAPK1/3 (ERK1/2) signaling, oxidative stress-induced NF-kappa-B activation, inhibition of HDAC7 transcriptional repression, signaling downstream of T-cell antigen receptor (TCR) and cytokine production, and plays a role in Golgi membrane trafficking, angiogenesis, secretory granule release and cell adhesion. May potentiate mitogenesis induced by the neuropeptide bombesin by mediating an increase in the duration of MAPK1/3 (ERK1/2) signaling, which leads to accumulation of immediate-early gene products including FOS that stimulate cell cycle progression. In response to oxidative stress, is phosphorylated at Tyr-438 and Tyr-718 by ABL1, which leads to the activation of PRKD2 without increasing its catalytic activity, and mediates activation of NF-kappa-B. In response to the activation of the gastrin receptor CCKBR, is phosphorylated at Ser-244 by CSNK1D and CSNK1E, translocates to the nucleus, phosphorylates HDAC7, leading to nuclear export of HDAC7 and inhibition of HDAC7 transcriptional repression of NR4A1/NUR77. Upon TCR stimulation, is activated independently of ZAP70, translocates from the cytoplasm to the nucleus and is required for interleukin-2 (IL2) promoter up-regulation. During adaptive immune responses, is required in peripheral T-lymphocytes for the production of the effector cytokines IL2 and IFNG after TCR engagement and for optimal induction of antibody responses to antigens. In epithelial cells stimulated with lysophosphatidic acid (LPA), is activated through a PKC-dependent pathway and mediates LPA-stimulated interleukin-8 (IL8) secretion via a NF-kappa-B-dependent pathway. During TCR-induced T-cell activation, interacts with and is activated by the tyrosine kinase LCK, which results in the activation of the NFAT transcription factors. In the trans-Golgi network (TGN), regulates the fission of transport vesicles that are on their way to the plasma membrane and in polarized cells is involved in the transport of proteins from the TGN to the basolateral membrane. Plays an important role in endothelial cell proliferation and migration prior to angiogenesis, partly through modulation of the expression of KDR/VEGFR2 and FGFR1, two key growth factor receptors involved in angiogenesis. In secretory pathway, is required for the release of chromogranin-A (CHGA)-containing secretory granules from the TGN. Downstream of PRKCA, plays important roles in angiotensin-2-induced monocyte adhesion to endothelial cells.

**Subcellular Localization:** Cytoplasm . Cell membrane . Golgi apparatus, trans-Golgi network .

Note=Translocation to the cell membrane is required for kinase activation. Accumulates in the nucleus upon CK1-mediated phosphorylation after activation of G protein-coupled receptors. Nuclear accumulation is regulated by blocking nuclear export of active PRKD2 rather than by increasing import.

## 6. Notes

- Avoid repeated freeze-thaw cycles to maintain protein stability and biological activity.
- Please specify special buffer- composition requirements at the time of order placement.
- For research use only. Not intended for clinical diagnosis, therapeutic use or commercial manufacturing.