SANTA CRUZ BIOTECHNOLOGY, INC.

# p-PKR (Thr 451): sc-101784

SANTA CRUZ BIOTECHNOLOGY

*The Power to Question*

## BACKGROUND

An interferon-inducible, RNA-dependent protein serine/threonine kinase, PKR has various designations. Mouse PKR is known as DAI, dsJ, PI kinase, p65, p67 or TIK, whereas human PKR is known as p68 or p69. PKR phosphorylates its substrate, a subunit of protein synthesis initiation factor eIF2 on Ser 51 to inhibit translation. PKR contains two dsRNA binding motifs required for its activation by dsRNA. Three kinds of regulation of PKR enzymatic activity occur, and these include transcriptional regulation in response to interferon, an autoregulatory mechanism controlling PKR expression at the level of translation, and posttranslational regulation by RNA mediated autophosphorylation. Human PKR contains at least 15 autophosphorylation sites, but only Thr 446 and Thr 451 in the activation loop are critical for its kinase activity. Thr 446 is the *in vivo* autophosphorylation site of PKR. Mutation of threonine to alanine at position 446 substantially reduces PKR function, and mutant kinase containing Ala 451 is completely inactive.

## REFERENCES


1. Hershey, J.W. 1989. Protein phosphorylation controls translation rates. J. Biol. Chem. 264: 20823-20826.
2. Samuel C.E. 1993. The eIF2$\alpha$ protein kinases, regulators of translation in eukaryotes from yeasts to humans. J. Biol. Chem. 268: 7603-7606.


## CHROMOSOMAL LOCATION

Genetic locus: EIF2AK2 (human) mapping to 2p22.2.

## SOURCE

p-PKR (Thr 451) is a rabbit polyclonal antibody raised against a short amino acid sequence containing Thr 451 phosphorylated PKR of human origin.

## PRODUCT

Each vial contains 100 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

## APPLICATIONS

p-PKR (Thr 451) is recommended for detection of Thr 451 phosphorylated PKR of human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500).

Suitable for use as control antibody for PKR siRNA (h): sc-36263, PKR shRNA Plasmid (h): sc-36263-SH and PKR shRNA (h) Lentiviral Particles: sc-36263-V.

Molecular Weight of p-PKR: 68 kDa.

Positive Controls: HeLa whole cell lysate: sc-2200 or HeLa + Calyculin A cell lysate: sc-2271.

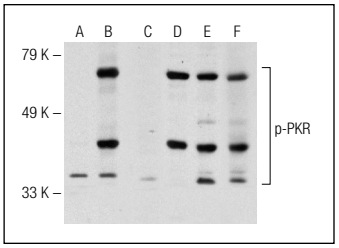
## STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

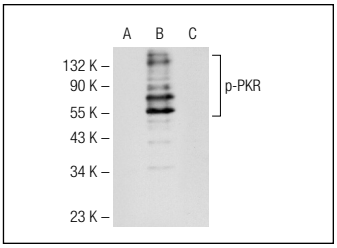
## RESEARCH USE

For research use only, not for use in diagnostic procedures.

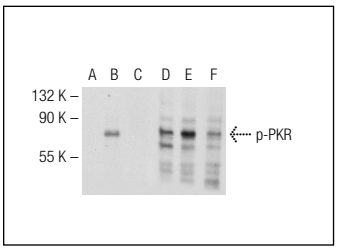
## DATA



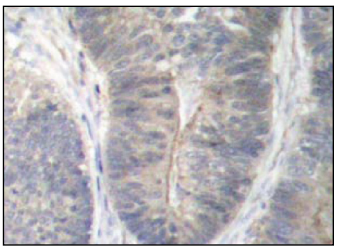

Western blot analysis of PKR phosphorylation in untreated (**A**,**D**), calyculin A treated (**B**,**E**) and lambda protein phosphatase (sc-200312A) treated (**C**,**F**) HeLa whole cell lysates. Antibodies tested include p-PKR (Thr 451): sc-101784 (**A**,**B**,**C**) and PKR (B-10): sc-6282 (**D**,**E**,**F**).




p-PKR (Thr 451): sc-101784. Western blot analysis of PKR phosphorylation in untreated (**A**), calyculin A and IFN$\alpha$ treated (**B**) and calyculin A, IFN$\alpha$ and lambda protein phosphatase treated (**C**) HeLa whole cell lysates.




Western blot analysis of PKR phosphorylation in untreated (**A**,**D**), calyculin treated (**B**,**E**) and calyculin and lambda protein phosphatase (sc-200312A) treated (**C**,**F**) HeLa whole cell lysates. Antibodies tested include p-PKR (Thr 451): sc-101784 (**A**,**B**,**C**) and PKR (M-515): sc-1702 (**D**,**E**,**F**).



p-PKR (Thr 451): sc-101784. Immunoperoxidase staining of formalin-fixed, paraffin-embedded human colon carcinoma tissue showing cytoplasmic staining.

## SELECT PRODUCT CITATIONS


1. Pataer, A., et al. 2009. Inhibition of RNA-dependent protein kinase (PKR) leads to cancer cell death and increases chemosensitivity. Cancer Biol. Ther. 8: 245-252.
2. Doria, M., et al. 2009. Editing of HIV-1 RNA by the double-stranded RNA deaminase ADAR1 stimulates viral infection. Nucleic Acids Res. 37: 5848-5458.
3. Pataer, A., et al. 2010. Prognostic significance of RNA-dependent protein kinase on non-small cell lung cancer patients. Clin. Cancer Res. 16: 5522-5528.
4. Chen, L.L., et al. 2010. Molecular basis for an attenuated cytoplasmic dsRNA response in human embryonic stem cells. Cell Cycle 9: 3552-3564.
5. Thapa, R.J., et al. 2013. Interferon-induced RIP1/RIP3-mediated necrosis requires PKR and is licensed by FADD and caspases. Proc. Natl. Acad. Sci. USA 110: E3109-E3118.


## PROTOCOLS

See our web site at www.scbt.com or our catalog for detailed protocols and support products.