SANTA CRUZ BIOTECHNOLOGY, INC.

PKR (13): sc-136038

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Interferon-inducible RNA-dependent protein serine/threonine kinase, PKR, is variously designated in earlier literature as DAI, dsJ, PI kinase, p65, p67 or TIK for the mouse kinase; and p68, eIF-2α protein kinase or p69 for the human kinase. The PKR kinase substrate is the α subunit of protein synthesis initiation factor eIF-2. Phosphorylation of eIF-2α on serine-51 results in inhibition of translation. Molecular cDNA clones have been isolated from both human and mouse cells. The serine/threonine kinase catalytic domains map to the carboxy terminal half of the protein while the RNA-binding domains are located in the amino terminal region. Three kinds of regulation of PKR enzymatic activity have been described. These include transcriptional regulation in response to interferon, an autoregulatory mechanism controlling PKR expression at the level of translation and post-translational regulation by RNA-mediated autophosphorylation.

REFERENCES

1. Hershey, J.W.B. 1989. Protein phosphorylation controls translation rates. J. Biol. Chem. 264: 20823-20826.
2. Meurs, E., et al. 1990. Molecular cloning and characterization of the human double-stranded RNA-activated protein kinase induced by interferon. Cell 62: 379-390.
3. Icely, P.L., et al. 1991. TIK, a novel serine/threonine kinase, is recognized by antibodies directed against phosphotyrosine. J. Biol. Chem. 266: 16073-16077.
4. Thomis, D.C., et al. 1992. Mechanism of interferon action: cDNA structure expression, and regulation of the interferon-induced, RNA-dependent P1/eIF-2α protein kinase from human cells. Virology 188: 33-46.
5. McCormack, S.J., et al. 1992. Mechanism of interferon action: identification of a RNA binding domain within the N-terminal region of the human RNA-dependent P1/eIF-2α protein kinase. Virology 188: 47-56.
6. Samuel, C.E. 1993. The eIF-2α protein kinases, regulators of translation in eukaryotes from yeasts to humans. J. Biol. Chem. 268: 7603-7606.
7. Baier, L.J., et al. 1993. The mouse antiphosphotyrosine immunoreactive kinase, TIK, is indistinguishable from the double-stranded RNA-dependent, interferon-induced protein kinase, PKR. Nucleic Acids Res. 21: 4830-4835.
8. Tanaka, H., et al. 1994. Mechanism of interferon action: structure of the mouse PKR gene encoding the interferon-inducible RNA-dependent protein kinase. Proc. Natl. Acad. Sci. USA 91: 7995-7999.

CHROMOSOMAL LOCATION

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

SOURCE

PKR (13) is a mouse monoclonal antibody raised against amino acids 117-250 of PKR of human origin.

PRODUCT

Each vial contains 50 µg IgG_1 in 500 µl PBS with < 0.1% sodium azide, 0.1% gelatin, 20% glycerol and 0.04% stabilizer protein.

APPLICATIONS

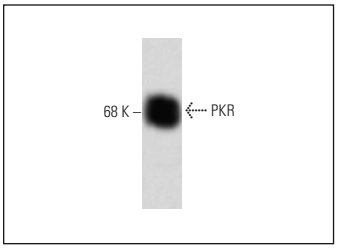
PKR (13) is recommended for detection of PKR of human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)] and immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

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.

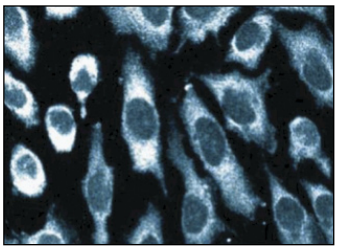
Molecular Weight of PKR: 68 kDa.

Positive Controls: A-431 whole cell lysate: sc-2201, HeLa whole cell lysate: sc-2200 or BJAB whole cell lysate: sc-2207.

DATA



PKR (13): sc-136038. Western blot analysis of PKR expression in A-431 whole cell lysate.



PKR (13): sc-136038. Immunofluorescence staining of human endothelial cells showing cytoplasmic localization.

SELECT PRODUCT CITATIONS

1. Maarifi, G., et al. 2018. Differential effects of SUMO1 and SUMO3 on PKR activation and stability. Sci. Rep. 8: 1277.
2. Qiao, Y., et al. 2020. Human cancer cells sense cytosolic nucleic acids through the RIG-I-MAVS pathway and cGAS-STING pathway. Front. Cell Dev. Biol. 8: 606001.

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. Not for resale.

PROTOCOLS

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

CONJUGATES

See **PKR (B-10): sc-6282** for PKR antibody conjugates, including AC, HRP, FITC, PE, and Alexa Fluor® 488, 546, 594, 647, 680 and 790.