

# Rb (769): sc-4112

## BACKGROUND

Pediatric cancer retinoblastoma and the formation of other human tumors can be attributed to mutations in the retinoblastoma tumor suppressor gene. The retinoblastoma tumor suppressor gene product, known as Rb or pRb, regulates differentiation, apoptosis and cell cycle control by coordinating the cell cycle, at G<sub>1</sub>/S, with transcriptional machinery that includes the heterodimeric E2F family. During G<sub>1</sub>, cyclin D (D1, D2, D3)-dependent kinase-mediated phosphorylation of Rb at Ser 795 marks the conversion of Rb from a transcriptionally repressive, hypophosphorylated state to an inactive, phosphorylated state, which may be sustained through mitosis by differential phosphorylation of up to 16 putative serine or threonine residues, including Ser 249/Thr 252, Thr 373, Thr 356, Ser 780, Ser 807/Ser 811 and Thr 821/Thr 826. Hypophosphorylated Rb represses the transcription of genes controlling cell cycle through direct protein-protein interactions, by binding and inactivating the promoters of transcription factors, and through recruitment of histone deacetylase, which deacetylates promoter regions and enhances nucleosome formation, thereby masking transcription enhancing *cis* elements.

## CHROMOSOMAL LOCATION

Genetic locus: RB1 (human) mapping to 13q14.2; Rb1 (mouse) mapping to 14 D3.

## SOURCE

Rb (769) is expressed in *E. coli* as a 46 kDa tagged fusion protein corresponding to amino acids 769-921 mapping within the carboxy-terminal domain of Rb of mouse origin.

## PRODUCT

Rb (769) is purified (>95%) by glutathione affinity chromatography; supplied as 50 µg purified protein.

## APPLICATIONS

Rb (769) functions as a substrate for Cdk4 and Cdk6 (8); suitable as a Western blotting control for sc-50, sc-50-G, sc-1538 and sc-7905.

Molecular Weight (predicted) of Rb: 106 kDa.

Molecular Weight (observed) of Rb: 107-140 kDa.

## RECONSTITUTION

In order to avoid freeze/thaw damaging of the active protein, dilute protein when first used to desired working concentration. Either a sterile filtered standard buffer (such as 50mM TRIS or 1X PBS) or water can be used for the dilution. Store any thawed aliquot in refrigeration at 2° C to 8° C for up to four weeks, and any frozen aliquot at -20° C to -80° C for up to one year. It is recommended that frozen aliquots be given an amount of standard cryopreservative (such as Ethylene Glycol or Glycerol 5-20% v/v), and refrigerated samples be given an amount of carrier protein (such as heat inactivated FBS or BSA to 0.1% v/v) or non-ionic detergent (such as Triton X-100 or Tween 20 to 0.005% v/v), to aid stability during storage.

## SELECT PRODUCT CITATIONS

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- Mohibi, S., et al. 2012. Mammalian alteration/deficiency in activation 3 (ada3) is essential for embryonic development and cell cycle progression. *J. Biol. Chem.* 287: 29442-29456.

## STORAGE

Store desiccated at -20° C. 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.