

Rad1 (Q-18): sc-14316

BACKGROUND

DNA damage or incomplete replication of DNA results in inhibition of cell cycle progression at the G₁/S or G₂/M checkpoints by conserved regulatory mechanisms. Rad17 is involved in regulation of cell cycle arrest at the G₁ checkpoint, whereas Chk1, Rad1, Rad9 and Hus1 are involved in regulation of cell cycle arrest at the G₂ checkpoint. Overexpression of Rad17 results in p53 activation and an accumulation of cells in G₁ phase. Chk1 functions as an essential component in the G₂ DNA damage checkpoint by phosphorylating Cdc25C in response to DNA damage, thus inhibiting mitosis. Hus1 and Rad9 exhibit conserved function in fission yeast and higher eukaryotes. Hus1 has been shown to be phosphorylated in response to DNA damage, a process which requires Rad checkpoint genes. Rad9 is thought to be a candidate tumor suppressor gene because it is localized to human chromosome 11 containing a number of tumor suppressor loci.

REFERENCES

1. Carr, A.M., et al. 1995. The Chk1 pathway is required to prevent mitosis following cell-cycle arrest at "start". *Curr. Biol.* 5: 1179-1190.
2. Lieberman, H.B., et al. 1996. A human homolog of the *Schizosaccharomyces pombe* Rad9⁺ checkpoint control gene. *Proc. Natl. Acad. Sci. USA* 93: 13890-13895.
3. Sanchez, Y., et al. 1997. Conservation of the Chk1 checkpoint pathway in mammals: linkage of DNA damage to Cdk regulation through Cdc25. *Science* 277: 1497-1501.
4. O'Connell, M.J., et al. 1997. Chk1 is a Wee1 kinase in the G₂ DNA damage checkpoint inhibiting Cdc2 by Y15 phosphorylation. *EMBO. J.* 16: 545-554.
5. Peng, C.Y., et al. 1997. Mitotic and G₂ checkpoint control: regulation of 14-3-3 protein binding by phosphorylation of Cdc25C on Serine 216. *Science* 277: 1501-1505.

CHROMOSOMAL LOCATION

Genetic locus: RAD1 (human) mapping to 5p13.2; Rad1 (mouse) mapping to 15 A1.

SOURCE

Rad1 (Q-18) is an affinity purified goat polyclonal antibody raised against a peptide mapping near the C-terminus of Rad1 of human origin.

PRODUCT

Each vial contains 200 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-14316 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

STORAGE

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

APPLICATIONS

Rad1 (Q-18) is recommended for detection of Rad1 of mouse, rat and 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 solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

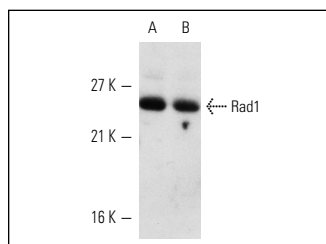
Rad1 (Q-18) is also recommended for detection of Rad1 in additional species, including equine, canine, bovine, porcine and avian.

Suitable for use as control antibody for Rad1 siRNA (h): sc-36356, Rad1 siRNA (m): sc-36357, Rad1 shRNA Plasmid (h): sc-36356-SH, Rad1 shRNA Plasmid (m): sc-36357-SH, Rad1 shRNA (h) Lentiviral Particles: sc-36356-V and Rad1 shRNA (m) Lentiviral Particles: sc-36357-V.

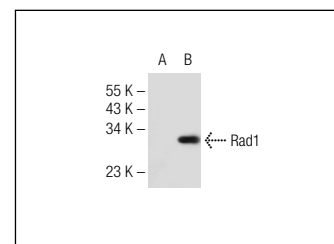
Molecular Weight of Rad1: 126 kDa.

Positive Controls: Rad1 (h): 293T Lysate: sc-110519, HeLa whole cell lysate: sc-2200 or K-562 whole cell lysate: sc-2203.

DATA



Rad1 (Q-18): sc-14316. Western blot analysis of Rad1 expression in HeLa (A) and K-562 (B) whole cell lysates.



Rad1 (Q-18): sc-14316. Western blot analysis of Rad1 expression in non-transfected: sc-117752 (A) and human Rad1 transfected: sc-110519 (B) 293T whole cell lysates.

SELECT PRODUCT CITATIONS

1. Verdun, R.E., et al. 2006. The DNA damage machinery and homologous recombination pathway act consecutively to protect human telomeres. *Cell* 127: 709-720.

RESEARCH USE

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

PROTOCOLS

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



Try **Rad1 (G-6): sc-166495** or **Rad1 (D-6): sc-166515**, our highly recommended monoclonal alternatives to Rad1 (Q-18).