

Rad51 (SPM214): sc-56469

BACKGROUND

Rad52 family members (Rad50, Rad51B/C/D, Rad52, Rad54, MRE11) mediate DNA double-strand break repair (DSBR) for DNA damage that otherwise could cause cell death, mutation or neoplastic transformation. Rad51 (RECA, BRCC5) interacts with BRCA1 and BRCA2 to influence subcellular localization and cellular response to DNA damage. BRCA2 inactivation may be a key event leading to genomic instability and tumorigenesis from deregulation of Rad51. Rad52 forms a heptameric ring that binds single-stranded DNA ends and catalyzes DNA-DNA interaction necessary for the annealing of complementary strands. Rad52 can interact with Rad51. Rad54A of the DEAD-like helicase superfamily binds to double-strand DNA and induces a DNA topological change, which is thought to facilitate homologous DNA pairing and stimulate DNA recombination. Rad54B of the DEAD-like helicase superfamily binds to double-stranded DNA and displays ATPase activity in the presence of DNA. Rad54B is abundant in testis and spleen, and mutations of this gene occur in primary lymphoma and colon cancer. MRE11 (meiotic recombination 11, ATLD, HNGS1) is a nuclear 3'-5' exonuclease/endonuclease that associates with Rad50 and influences homologous recombination, telomere length maintenance, and DNA double-strand break repair. MRE11 is most abundant in proliferating tissues.

REFERENCES

1. Tsukamoto, Y., et al. 1996. Effects of mutations of RAD50, RAD51, RAD52, and related genes on illegitimate recombination in *Saccharomyces cerevisiae*. *Genetics* 142: 383-391.
2. Zhong, Q., et al. 2002. Deficient nonhomologous end-joining activity in cell-free extracts from BRCA1-null fibroblasts. *Cancer Res.* 62: 3966-3970.
3. Lisby, M., et al. 2003. Colocalization of multiple DNA double-strand breaks at a single Rad52 repair centre. *Nat. Cell Biol.* 5: 572-577.
4. Sugawara, N., et al. 2003. *In vivo* roles of Rad52, Rad54, and Rad55 proteins in Rad51-mediated recombination. *Mol. Cell* 12: 209-219.
5. O'Connor, M.S., et al. 2004. The human Rap1 protein complex and modulation of telomere length. *J. Biol. Chem.* 279: 28585-28591.
6. Miyazaki, T., et al. 2004. *In vivo* assembly and disassembly of Rad51 and Rad52 complexes during double-strand break repair. *EMBO J.* 23: 939-949.
7. Bekker-Jensen, S., et al. 2006. Spatial organization of the mammalian genome surveillance machinery in response to DNA strand breaks. *J. Cell Biol.* 173: 195-206.
8. Wu, Y., et al. 2006. DNA annealing mediated by Rad52 and Rad59 proteins. *J. Biol. Chem.* 281: 15441-15449.

CHROMOSOMAL LOCATION

Genetic locus: RAD51 (human) mapping to 15q15.1; Rad51 (mouse) mapping to 2 E5.

SOURCE

Rad51 (SPM214) is a mouse monoclonal antibody raised against recombinant Rad51 protein of human origin.

PRODUCT

Each vial contains 200 µg IgG₁ in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

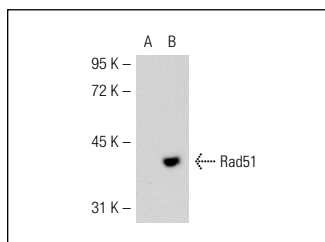
Rad51 (SPM214) is recommended for detection of Rad51 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500).

Suitable for use as control antibody for Rad51 siRNA (h): sc-36361, Rad51 siRNA (m): sc-36360, Rad51 shRNA Plasmid (h): sc-36361-SH, Rad51 shRNA Plasmid (m): sc-36360-SH, Rad51 shRNA (h) Lentiviral Particles: sc-36361-V and Rad51 shRNA (m) Lentiviral Particles: sc-36360-V.

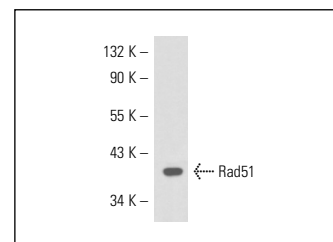
Molecular Weight of Rad51: 37 kDa.

Positive Controls: K-562 nuclear extract: sc-2130, A-431 whole cell lysate: sc-2201 or Rad51 (m): 293T Lysate: sc-127439.

DATA



Rad51 (SPM214): sc-56469. Western blot analysis of Rad51 expression in non-transfected: sc-117752 (A) and mouse Rad51 transfected: sc-127439 (B) 293T whole cell lysates.



Rad51 (SPM214): sc-56469. Western blot analysis of Rad51 expression in K-562 nuclear extract.

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.

PROTOCOLS

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



See **Rad51 (F-11): sc-398587** for Rad51 antibody conjugates, including AC, HRP, FITC, PE, Alexa Fluor® 488 and Alexa Fluor® 647.