

# Rad51D (5B3/6): sc-53432

## 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. French, C.A., et al. 2002. Role of mammalian Rad51L2 (Rad51C) in recombination and genetic stability. *J. Biol. Chem.* 277: 1922-1930.
3. Zhong, Q., et al. 2002. Deficient nonhomologous end-joining activity in cell-free extracts from BRCA1-null fibroblasts. *Cancer Res.* 62: 3966-3970.
4. Lisby, M., et al. 2003. Co-localization of multiple DNA double-strand breaks at a single Rad52 repair centre. *Nat. Cell Biol.* 5: 572-577.
5. Sugawara, N., et al. 2003. *In vivo* roles of Rad52, Rad54, and Rad55 proteins in Rad51-mediated recombination. *Mol. Cell* 12: 209-219.
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.

## CHROMOSOMAL LOCATION

Genetic locus: RAD51D (human) mapping to 17q12.

## SOURCE

Rad51D (5B3/6) is a mouse monoclonal antibody raised against His-tagged recombinant Rad51D of human origin.

## PRODUCT

Each vial contains 200 µg IgG<sub>1</sub> kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

## RESEARCH USE

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

## APPLICATIONS

Rad51D (5B3/6) is recommended for detection of Rad51D of human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) and immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)].

Suitable for use as control antibody for Rad51D siRNA (h): sc-44933, Rad51D shRNA Plasmid (h): sc-44933-SH and Rad51D shRNA (h) Lentiviral Particles: sc-44933-V.

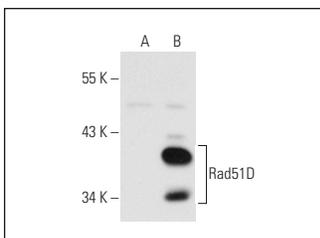
Molecular Weight of Rad51D: 33 kDa.

Positive Controls: Rad51D (h): 293T Lysate: sc-175080, NTERA-2 cl.D1 whole cell lysate: sc-364181 or ES-2 cell lysate: sc-24674.

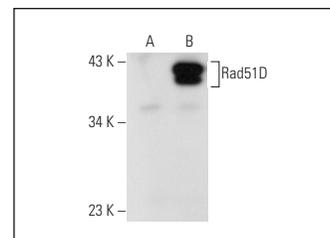
## RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml).

## DATA



Rad51D (5B3/6): sc-53432. Western blot analysis of Rad51D expression in non-transfected: sc-117752 (A) and human Rad51D transfected: sc-175080 (B) 293T whole cell lysates.



Rad51D (5B3/6): sc-53432. Western blot analysis of Rad51D expression in non-transfected: sc-117752 (A) and human Rad51D transfected: sc-175084 (B) 293T whole cell lysates.

## SELECT PRODUCT CITATIONS

1. Gildemeister, O.S., et al. 2009. Cellular redistribution of Rad51 in response to DNA damage novel role for Rad51C. *J. Biol. Chem.* 284: 31945-31952.
2. Yang, C.C., et al. 2016. Up-regulation of HB-EGF by the COX-2/PGE2 signaling associates with the cisplatin resistance and tumor recurrence of advanced HNSCC. *Oral Oncol.* 56: 54-61.
3. Saxena, S., et al. 2018. XRCC2 regulates replication fork progression during dNTP alterations. *Cell Rep.* 25: 3273-3282.
4. Mishra, A., et al. 2018. Rad51C/XRCC3 facilitates mitochondrial DNA replication and maintains integrity of the mitochondrial genome. *Mol. Cell. Biol.* 38 pii: e00489-17.

## STORAGE

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