

Rad51 (G-9): sc-377467

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.

CHROMOSOMAL LOCATION

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

SOURCE

Rad51 (G-9) is a mouse monoclonal antibody raised against amino acids 1-92 of Rad51 of human origin.

PRODUCT

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

Rad51 (G-9) is available conjugated to agarose (sc-377467 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-377467 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-377467 PE), fluorescein (sc-377467 FITC), Alexa Fluor® 488 (sc-377467 AF488), Alexa Fluor® 546 (sc-377467 AF546), Alexa Fluor® 594 (sc-377467 AF594) or Alexa Fluor® 647 (sc-377467 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-377467 AF680) or Alexa Fluor® 790 (sc-377467 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

STORAGE

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

APPLICATIONS

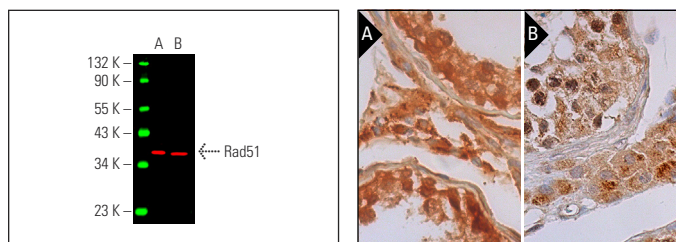
Rad51 (G-9) is recommended for detection of Rad51 of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

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: Jurkat whole cell lysate: sc-2204 or Caco-2 cell lysate: sc-2262.

DATA



Rad51 (G-9) Alexa Fluor® 790: sc-377467 AF790. Direct near-infrared western blot analysis of Rad51 expression in Jurkat (A) and Caco-2 (B) whole cell lysates. Blocked with UltraCruz® Blocking Reagent: sc-516214. Cruz Marker™ Molecular Weight Standards detected with Cruz Marker™ MW Tag-Alexa Fluor® 680: sc-516730.

Rad51 (G-9): sc-377467. Immunoperoxidase staining of formalin fixed, paraffin-embedded human testis tissue showing nuclear and cytoplasmic staining of cells in seminiferous ducts and cytoplasmic staining of Leydig cells (A,B).

SELECT PRODUCT CITATIONS

1. Zhao, M., et al. 2018. Ginsenosides synergize with mitomycin C in combating human non-small cell lung cancer by repressing Rad51-mediated DNA repair. *Acta Pharmacol. Sin.* 39: 449-458.
2. Foertsch, F., et al. 2019. Determination of the number of Rad51 molecules in different human cell lines. *Cell Cycle* 18: 3581-3588.
3. Tian, X.P., et al. 2020. BRD2 induces drug resistance through activation of the RasGRP1/Ras/ERK signaling pathway in adult T-cell lymphoblastic lymphoma. *Cancer Commun.* 40: 245-259.
4. Mattiello, L., et al. 2021. The targeting of MRE11 or RAD51 sensitizes colorectal cancer stem cells to CHK1 inhibition. *Cancers* 13: 1957.
5. Xu, S., et al. 2021. ASPM promotes homologous recombination-mediated DNA repair by safeguarding BRCA1 stability. *iScience* 24: 102534.

RESEARCH USE

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

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