SANTA CRUZ BIOTECHNOLOGY, INC.

Rad50 (13B3/2C6): sc-56209

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. Rad54A of the DEAD-like helicase superfamily binds to double-stranded 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.

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. Wu, Y., et al. 2006. DNA annealing mediated by rad52 and rad59 proteins. J. Biol. Chem. 281: 5441-5449.

CHROMOSOMAL LOCATION

Genetic locus: RAD50 (human) mapping to 5q31.1; Rad50 (mouse) mapping to 11 B1.3.

SOURCE

Rad50 (13B3/2C6) is a mouse monoclonal antibody raised against amino acids 1-425 of Rad50 of human origin.

PRODUCT

Each vial contains 50 µg IgG_1 in 0.5 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

STORAGE

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

APPLICATIONS

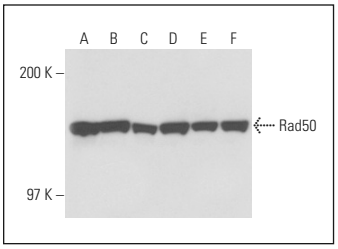
Rad50 (13B3/2C6) is recommended for detection of Rad50 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 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 Rad50 siRNA (h): sc-37397, Rad50 siRNA (m): sc-37398, Rad50 shRNA Plasmid (h): sc-37397-SH, Rad50 shRNA Plasmid (m): sc-37398-SH, Rad50 shRNA (h) Lentiviral Particles: sc-37397-V and Rad50 shRNA (m) Lentiviral Particles: sc-37398-V.

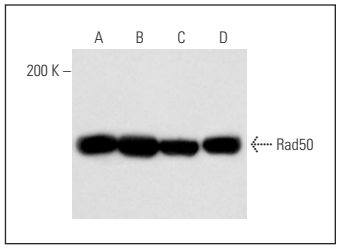
Molecular Weight of Rad50: 150 kDa.

Positive Controls: HeLa nuclear extract: sc-2120, Jurkat nuclear extract: sc-2132 or K-562 nuclear extract: sc-2130.

DATA



Rad50 (13B3/2C6): sc-56209. Western blot analysis of Rad50 expression in HeLa (**A**), K-562 (**B**), MCF7 (**C**), Ramos (**D**), SW480 (**E**) and Jurkat (**F**) nuclear extracts.



Rad50 (13B3/2C6): sc-56209. Western blot analysis of Rad50 expression in HeLa (**A**), K-562 (**B**), Jurkat (**C**) and HEL 92.1.7 (**D**) nuclear extracts.

SELECT PRODUCT CITATIONS

1. Roth, S., et al. 2014. Rad50-CARD9 interactions link cytosolic DNA sensing to IL-1β production. Nat. Immunol. 15: 538-545.
2. Flores-Pérez, A., et al. 2014. Rad50 targeting impairs DNA damage response and sensitizes human breast cancer cells to cisplatin therapy. Cancer Biol. Ther. 15: 777-788.
3. Lou, D.I., et al. 2016. An intrinsically disordered region of the DNA repair protein Nbs1 is a species-specific barrier to herpes simplex virus 1 in primates. Cell Host Microbe 20: 178-188.
4. Harada, K., et al. 2017. Gimeracil enhances the antitumor effect of cisplatin in oral squamous cell carcinoma cells *in vitro* and *in vivo*. Oncol. Lett. 14: 3349-3356.
5. Li, C.G., et al. 2019. PPARγ interaction with UBR5/ATMIN promotes DNA repair to maintain endothelial homeostasis. Cell Rep. 26: 1333-1343.

RESEARCH USE

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

PROTOCOLS

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