SANTA CRUZ BIOTECHNOLOGY, INC.

Rad54 (F-11): sc-374598

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

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 main-tenance, and DNA double-strand break repair. MRE11 is most abundant in proliferating tissues.

CHROMOSOMAL LOCATION

Genetic locus: RAD54L (human) mapping to 1p34.1; Rad54l (mouse) mapping to 4 D1.

SOURCE

Rad54 (F-11) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 11-47 near the N-terminus of Rad54 of human origin.

PRODUCT

Each vial contains 200 µg IgG_1 kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Rad54 (F-11) is available conjugated to agarose (sc-374598 AC), 500 µg/ 0.25 ml agarose in 1 ml, for IP; to HRP (sc-374598 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-374598 PE), fluorescein (sc-374598 FITC), Alexa Fluor® 488 (sc-374598 AF488), Alexa Fluor® 546 (sc-374598 AF546), Alexa Fluor® 594 (sc-374598 AF594) or Alexa Fluor® 647 (sc-374598 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-374598 AF680) or Alexa Fluor® 790 (sc-374598 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

Blocking peptide available for competition studies, sc-374598 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

STORAGE

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

PROTOCOLS

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

APPLICATIONS

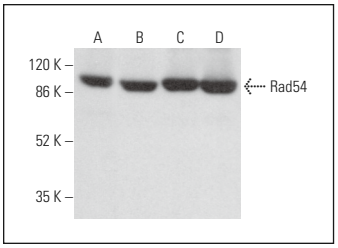
Rad54 (F-11) is recommended for detection of Rad54 of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for Rad54 siRNA (h): sc-36362, Rad54 siRNA (m): sc-36363, Rad54 shRNA Plasmid (h): sc-36362-SH, Rad54 shRNA Plasmid (m): sc-36363-SH, Rad54 shRNA (h) Lentiviral Particles: sc-36362-V and Rad54 shRNA (m) Lentiviral Particles: sc-36363-V.

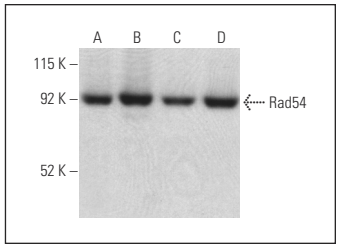
Molecular Weight of Rad54: 85 kDa.

Positive Controls: K-562 nuclear extract: sc-2130, CCRF-CEM cell lysate: sc-2225 or Jurkat nuclear extract: sc-2132.

DATA



Rad54 (F-11): sc-374598. Western blot analysis of Rad54 expression in K-562 nuclear extract (**A**) and CCRF-CEM (**B**), RAW 264.7 (**C**) and F9 (**D**) whole cell lysates.



Rad54 (F-11): sc-374598. Western blot analysis of Rad54 expression in Jurkat (**A**) and K-562 (**B**) nuclear extracts and Raji (**C**) and CCRF-CEM (**D**) whole cell lysates. Detection reagent used: m-IgG_1 BP-HRP: sc-525408.

SELECT PRODUCT CITATIONS

1. Choi, E.H., et al. 2017. Cellular dynamics of Rad51 and Rad54 in response to postreplicative stress and DNA damage in HeLa cells. Mol. Cells 40: 143-150.
2. Choi, E.H., et al. 2018. Combined ectopic expression of homologous recombination factors promotes embryonic stem cell differentiation. Mol. Ther. 26: 1154-1165.
3. Hustedt, N., et al. 2019. Control of homologous recombination by the HROB-MCM8-MCM9 pathway. Genes Dev. 33: 1397-1415.
4. Mason-Osann, E., et al. 2020. Rad54 promotes alternative lengthening of telomeres by mediating branch migration. EMBO Rep. 21: e49495.
5. Pires, E., et al. 2021. RAD51AP1 mediates RAD51 activity through nucleosome interaction. J. Biol. Chem. 297: 100844.
6. Selemenakis, P., et al. 2022. RAD51AP1 and RAD54L can underpin two distinct RAD51-dependent routes of DNA damage repair via homologous recombination. Front. Cell Dev. Biol. 10: 866601.

RESEARCH USE

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