SANTA CRUZ BIOTECHNOLOGY, INC.

Rad50 (yQ-20): sc-30566

BACKGROUND

Multiple pathways promote short-sequence recombination (SSR) in *Saccharomyces cerevisiae*. When gene conversion is initiated by a double-strand break (DSB), any nonhomologous DNA that may be present at the ends must be removed before new DNA synthesis can be initiated. Removal of a 3' non-homologous tail in *S. cerevisiae* depends on the nucleotide excision repair endonuclease Rad1/Rad10, and also on the mismatch repair proteins Msh2 and Msh3. Also important for SSR is the MRE11 complex (also known as M/R/X), which is a multisubunit nuclease composed of MRE11, Rad50 and Nbs1/Xrs2. Genetic evidence suggests that Rad1/10 and M/R/X act on the same class of substrates during SSR. The MRE11 complex plays a central role in chromosomal maintenance and functions in homologous recombination, telomere maintenance and sister chromatid association. Mutations in the genes that encode components of the MRE11 complex result in DNA-damage sensitivity, genomic instability, telomere shortening and aberrant meiosis. Specifically, Rad50 contains a zinc-hook structure involved in joining MRE11 complexes in DNA recombination and repair.

REFERENCES

1. Sugawara, N., Paques, F., Colaiacovo, M. and Haber, J.E. 1997. Role of *Saccharomyces cerevisiae* Msh2 and Msh3 repair proteins in double-strand break-induced recombination. Proc. Natl. Acad. Sci. USA 94: 9214-9219.
2. Paques, F. and Haber, J.E. 1997. Two pathways for removal of nonhomologous DNA ends during double-strand break repair in *Saccharomyces cerevisiae*. Mol. Cell. Biol.17: 6765-6771.
3. Kearney, H.M., Kirkpatrick, D.T., Gerton, J.L. and Petes, T.D. 2001. Meiotic recombination involving heterozygous large insertions in *Saccharomyces cerevisiae*: formation and repair of large, unpaired DNA loops. Genetics 158: 1457-1476.
4. D'Amours, D. and Jackson, S.P. 2002. The MRE11 complex: at the crossroads of DNA repair and checkpoint signalling. Nat. Rev. Mol. Cell Biol. 3: 317-327.
5. Hopfner, K.P., Craig, L., Moncalian, G., Zinkel, R.A., Usui, T., Owen, B.A., Karcher, A., Henderson, B., Bodmer, J.L., McMurray, C.T., Carney, J.P., Petrini, J.H. and Tainer, J.H. 2002. The Rad50 zinc-hook is a structure joining MRE11 complexes in DNA recombination and repair. Nature 418: 562-566.
6. Manthey, G.M. and Bailis, A.M. 2002. Multiple pathways promote short-sequence recombination in *Saccharomyces cerevisiae*. Mol. Cell. Biol. 22: 5347-5356.

SOURCE

Rad50 (yQ-20) is an affinity purified goat polyclonal antibody raised against a peptide mapping within an internal region of Rad50 of *Saccharomyces cerevisiae* origin.

STORAGE

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

PRODUCT

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

Blocking peptide available for competition studies, sc-30566 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

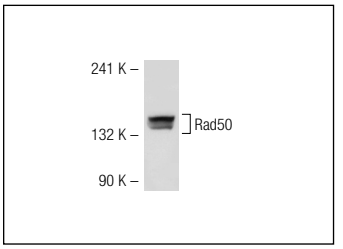
Rad50 (yQ-20) is recommended for detection of Rad50 of *Saccharomyces cerevisiae* origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Molecular Weight of Rad50: 180 kDa.

RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use donkey anti-goat IgG-HRP: sc-2020 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible donkey anti-goat IgG-HRP: sc-2033 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use donkey anti-goat IgG-FITC: sc-2024 (dilution range: 1:100-1:400) or donkey anti-goat IgG-TR: sc-2783 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

DATA



Rad50 (yQ-20): sc-30566. Western blot analysis of Rad50 expression in K-562 whole cell lysate.

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.