SANTA CRUZ BIOTECHNOLOGY, INC.

Rad50 (yD-18): sc-30563

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' nonhomologous 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 (yD-18) 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-30563 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

Rad50 (yD-18) is recommended for detection of Rad50 of *Saccaromyces cerevisiae* origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) and immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

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) 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.

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.