SANTA CRUZ BIOTECHNOLOGY, INC.

Rad1 (yE-19): sc-26235

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The Power to Question

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. MRE11, Rad50, and XRS2, which encode the subunits of M/R/X, another complex with nuclease activity, are also crucially important for short-sequence recombination. Genetic evidence suggests that Rad1/10 and M/R/X act on the same class of substrates during SSR. MSH2 and MSH3, which encode subunits of Msh2/3, a complex active during mismatch repair and recombination, play a more restricted role in SSR. The Rad1/Rad10 endonuclease is required to trim intermediates formed during single-strand annealing. Rad1 is the first gene identified that controls specifically the expansion of minisatellite tracts. Minisatellite DNA is repetitive DNA with a repeat unit length from 15 to 100 bp.

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. Kang, L.E. and Symington, L.S.2000. Aberrant double-strand break repair in Rad51 mutants of *Saccharomyces cerevisiae*. Mol. Cell. Biol. 20: 9162-9172.
4. 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.
5. Jauert, P.A., Edmiston, S.N., Conway, K. and Kirkpatrick, D.T. 2002. Rad1 controls the meiotic expansion of the human HRAS1 minisatellite in *Saccharomyces cerevisiae*. Mol. Cell. Biol. 22: 953-964.
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

Rad1 (yE-19) is an affinity purified goat polyclonal antibody raised against a peptide mapping near the N-terminus of Rad1 of *Saccharomyces cerevisiae* origin.

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-26235 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

Rad1 (yE-19) is recommended for detection of Rad1 of *Saccharomyces cerevisiae* origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Molecular Weight of Rad1: 126 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.

STORAGE

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

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.