

SMC5 (C-20): sc-47627

BACKGROUND

Breaks in double stranded DNA often arise during DNA replication or as a result of exposure to DNA-damaging agents. Quick and accurate repair of these breaks is crucial for cell survival and genomic stability. Structural maintenance of chromosomes (SMC) family members form heterodimeric complexes that modulate sister chromatid cohesion and chromosome condensation during mitosis. Two distinct SMC protein complexes are the SMC1/SMC3 heterodimer and the SMC2/SMC4 heterodimer. SMC5 and SMC6 play a crucial role in DNA repair as they form a complex that along with SUMO ligase, is also important in preventing DNA damage-induced apoptosis. This complex made up of SMC5 and SMC6 is crucial for sister chromatid homologous recombination DNA repair and also for prevention of chromosomal rearrangements.

REFERENCES

1. Lehmann, A.R. 2005. The role of SMC proteins in the responses to DNA damage. *DNA Repair* 4: 309-314.
2. Lee, K.M. and O'Connell, M.J. 2005. A new SUMO ligase in the DNA damage response. *DNA Repair* 5: 138-141.
3. Potts, P.R. and Yu, H. 2005. Human MMS21/NSE2 is a SUMO ligase required for DNA repair. *Mol. Cell. Biol.* 25: 7021-7032.
4. Watanabe, Y. 2005. The importance of being SMC5/6. *Nat. Cell Biol.* 7: 329-331.
5. Eydmann, T., et al. 2005. SMC5 and SMC6 genes are required for the segregation of repetitive chromosome regions. *Nat. Cell Biol.* 7: 412-419.
6. De Piccoli, G., et al. 2006. SMC5-SMC6 mediate DNA double-strand-break repair by promoting sister-chromatid recombination. *Nat. Cell Biol.* 8: 1032-1034.
7. Lindroos, H.B., et al. 2006. Chromosomal association of the SMC5/6 complex reveals that it functions in differently regulated pathways. *Mol. Cell* 22: 755-767.
8. Potts, P.R., et al. 2006. Human SMC5/6 complex promotes sister chromatid homologous recombination by recruiting the SMC1/3 cohesin complex to double-strand breaks. *EMBO J.* 25: 3377-3388.

CHROMOSOMAL LOCATION

Genetic locus: SMC5 (human) mapping to 9q21.12; Smc5 (mouse) mapping to 19 B.

SOURCE

SMC5 (C-20) is an affinity purified goat polyclonal antibody raised against a peptide mapping near the C-terminus of SMC5 of human 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-47627 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

Available as TransCruz reagent for Gel Supershift and ChIP applications, sc-47627 X, 200 µg/0.1 ml.

APPLICATIONS

SMC5 (C-20) is recommended for detection of SMC5 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), 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).

SMC5 (C-20) is also recommended for detection of SMC5 in additional species, including equine, canine, bovine, porcine and avian.

Suitable for use as control antibody for SMC5 siRNA (h): sc-61563, SMC5 siRNA (m): sc-61564, SMC5 shRNA Plasmid (h): sc-61563-SH, SMC5 shRNA Plasmid (m): sc-61564-SH, SMC5 shRNA (h) Lentiviral Particles: sc-61563-V and SMC5 shRNA (m) Lentiviral Particles: sc-61564-V.

SMC5 (C-20) X TransCruz antibody is recommended for Gel Supershift and ChIP applications.

Molecular Weight of SMC5: 120 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.

SELECT PRODUCT CITATIONS

1. Stephan, A.K., et al. 2011. Roles of vertebrate Smc5 in sister chromatid cohesion and homologous recombinational repair. *Mol. Cell. Biol.* 31: 1369-1381.
2. Wu, N., et al. 2012. Scc1 sumoylation by Mms21 promotes sister chromatid recombination through counteracting Wapl. *Genes Dev.* 26: 1473-1485.

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.