SANTA CRUZ BIOTECHNOLOGY, INC.

SMC6 (A-3): sc-365742

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

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. Potts, P.R. and Yu, H. 2005. Human Mms21/NSE2 is a SUMO ligase required for DNA repair. Mol. Cell. Biol. 25: 7021-7032.
3. Watanabe, Y. 2005. The importance of being SMC5/6. Nat. Cell Biol. 7: 329-331.
4. Eydmann, T., et al. 2005. SMC5 and SMC6 genes are required for the segregation of repetitive chromosome regions. Nat. Cell Biol. 7: 412-419.

CHROMOSOMAL LOCATION

Genetic locus: SMC6 (human) mapping to 2p24.2; Smc6 (mouse) mapping to 12 A1.1.

SOURCE

SMC6 (A-3) is a mouse monoclonal antibody raised against amino acids 845-1072 mapping near the C-terminus of SMC6 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. Also available as TransCruz reagent for Gel Supershift and ChIP applications, sc-365742 X, 200 µg/0.1 ml.

SMC6 (A-3) is available conjugated to agarose (sc-365742 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-365742 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-365742 PE), fluorescein (sc-365742 FITC), Alexa Fluor® 488 (sc-365742 AF488), Alexa Fluor® 546 (sc-365742 AF546), Alexa Fluor® 594 (sc-365742 AF594) or Alexa Fluor® 647 (sc-365742 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-365742 AF680) or Alexa Fluor® 790 (sc-365742 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

STORAGE

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

APPLICATIONS

SMC6 (A-3) is recommended for detection of SMC6 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 SMC6 siRNA (h): sc-61565, SMC6 siRNA (m): sc-61566, SMC6 shRNA Plasmid (h): sc-61565-SH, SMC6 shRNA Plasmid (m): sc-61566-SH, SMC6 shRNA (h) Lentiviral Particles: sc-61565-V and SMC6 shRNA (m) Lentiviral Particles: sc-61566-V.

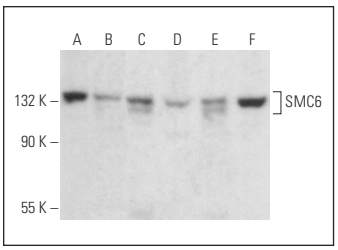
SMC6 (A-3) X TransCruz antibody is recommended for Gel Supershift and ChIP applications.

Molecular Weight (predicted) of SMC6 isoforms: 126/129 kDa.

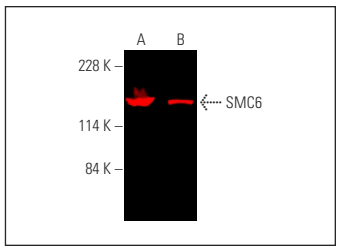
Molecular Weight (observed) of SMC6: 136 kDa.

Positive Controls: HeLa nuclear extract: sc-2120, MCF7 whole cell lysate: sc-2206 or NTERA-2 cl.D1 whole cell lysate: sc-364181.

DATA



SMC6 (A-3): sc-365742. Western blot analysis of SMC6 expression in HeLa nuclear extract (**A**) and MCF7 (**B**), Jurkat (**C**), RAW 264.7 (**D**), Hep G2 (**E**) and NTERA-2 cl.D1 (**F**) whole cell lysates.



SMC6 (A-3): sc-365742. Near-infrared western blot analysis of SMC6 expression in HeLa nuclear extract (**A**) and NTERA-2 cl.D1 whole cell lysate (**B**). Blocked with UltraCruz® Blocking Reagent: sc-516214. Detection reagent used: m-IgGκ BP-CFL 790: sc-516181.

SELECT PRODUCT CITATIONS

1. Wu, N., et al. 2012. Scc1 sumoylation by Mms21 promotes sister chromatid recombination through counteracting Wapl. Genes Dev. 26: 1473-1485.
2. Gallego-Paez, L.M., et al. 2014. SMC5/6-mediated regulation of replication progression contributes to chromosome assembly during mitosis in human cells. Mol. Biol. Cell 25: 302-317.
3. Murphy, C.M., et al. 2016. Hepatitis B virus X protein promotes degradation of SMC5/6 to enhance HBV replication. Cell Rep. 16: 2846-2854.
4. Rossi, F., et al. 2020. SMC5/6 acts jointly with Fanconi anemia factors to support DNA repair and genome stability. EMBO Rep. 21: e48222.
5. Funato, K., et al. 2022. Hepatitis B virus-associated hepatocellular carcinoma with Smc5/6 complex deficiency is susceptible to PARP inhibitors. Biochem. Biophys. Res. Commun. 607: 89-95.

RESEARCH USE

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