SANTA CRUZ BIOTECHNOLOGY, INC.

SA-2 (J-12): sc-81852

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

The cohesion complex is a multi-protein structure that is required for cohesion of sister chromatids after DNA replication and may be involved in mitotic spindle pole assembly. There are several versions of the cohesion complex, all of which are composed of a heterodimer between SMC1 (SMC1A or SMC1B) and SMC3, as well as a linker protein called Rad21 and an additional binding protein. Depending on the complex, the additional protein can be SA-1 (stromal antigen 1), SA-2 (stromal antigen 2) or SA-3 (stromal antigen 3). SA-2, also known as STAG2, is a 1,231 amino acid component of the cohesion complex that interacts directly with RAD21. Localized to the nucleus, SA-2 associates with chromatin and, upon phosphorylation by Plk, dissociates from chromatin to allow proper chromosome separation during anaphase. SA-2 is able to enhance the activity of tumor necrosis factor α (TNFα) and may be a putative transcriptional regulator.

REFERENCES

1. Sumara, I., et al. 2000. Characterization of vertebrate cohesin complexes and their regulation in prophase. J. Cell Biol. 151: 749-762.
2. Prieto, I., et al. 2002. STAG2 and Rad21 mammalian mitotic cohesins are implicated in meiosis. EMBO Rep. 3: 543-550.

CHROMOSOMAL LOCATION

Genetic locus: STAG2 (human) mapping to Xq25; Stag2 (mouse) mapping to X A4.

SOURCE

SA-2 (J-12) is a mouse monoclonal antibody raised against a recombinant protein with epitope mapping at the C-terminus of SA-2 of human origin.

PRODUCT

Each vial contains 100 µg IgG_1 kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

SA-2 (J-12) is recommended for detection of SA-2 of mouse, rat and human 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), immunohistochemistry (including paraffin-embedded sections) (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 SA-2 siRNA (h): sc-62970, SA-2 siRNA (m): sc-62971, SA-2 shRNA Plasmid (h): sc-62970-SH, SA-2 shRNA Plasmid (m): sc-62971-SH, SA-2 shRNA (h) Lentiviral Particles: sc-62970-V and SA-2 shRNA (m) Lentiviral Particles: sc-62971-V.

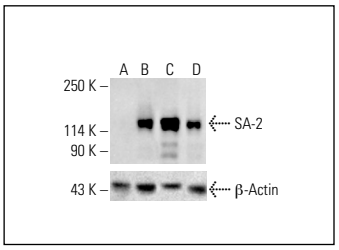
Molecular Weight of SA-2: 141 kDa.

Positive Controls: HeLa nuclear extract: sc-2120, K-562 nuclear extract: sc-2130 or Jurkat nuclear extract: sc-2132.

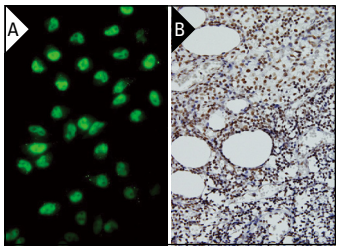
STORAGE

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

DATA



SA-2 (J-12): sc-81852. Western blot analysis of SA-2 expression in untreated HeLa (**A**), chemically-treated HeLa (**B**), K-562 (**C**) and HCT-116 (**D**) whole cell lysates. β-Actin (C4): sc-47778 used as loading control. Detection reagent used: m-IgG Fc BP-HRP: sc-525409.



SA-2 (J-12): sc-81852. Immunofluorescence staining of paraformaldehyde-fixed HeLa cells showing nuclear localization (**A**). Immunoperoxidase staining of formalin-fixed, paraffin-embedded human lymph node tissue showing nuclear localization (**B**).

SELECT PRODUCT CITATIONS

1. Solomon, D.A., et al. 2011. Mutational inactivation of STAG2 causes aneuploidy in human cancer. Science 333: 1039-1043.
2. Wu, N., et al. 2012. Scc1 sumoylation by Mms21 promotes sister chromatid recombination through counteracting Wapl. Genes Dev. 26: 1473-1485.
3. Solomon, D.A., et al. 2013. Frequent truncating mutations of STAG2 in bladder cancer. Nat. Genet. 45: 1428-1430.
4. Evers, L., et al. 2014. STAG2 is a clinically relevant tumor suppressor in pancreatic ductal adenocarcinoma. Genome Med. 6: 9.
5. Li, X., et al. 2015. Loss of STAG2 causes aneuploidy in normal human bladder cells. Genet. Mol. Res. 14: 2638-2646.
6. Shen, C.H., et al. 2016. Loss of cohesin complex components STAG2 or STAG3 confers resistance to BRAF inhibition in melanoma. Nat. Med. 22: 1056-1061.
7. Hurst, C.D., et al. 2017. Genomic subtypes of non-invasive bladder cancer with distinct metabolic profile and female gender bias in KDM6A mutation frequency. Cancer Cell 32: 701-715.e7.
8. Lelo, A., et al. 2018. STAG2 is a biomarker for prediction of recurrence and progression in papillary non-muscle-invasive bladder cancer. Clin. Cancer Res. 24: 4145-4153.
9. Mullenders, J., et al. 2019. Mouse and human urothelial cancer organoids: a tool for bladder cancer research. Proc. Natl. Acad. Sci. USA 116: 4567-4574.
10. Chen, Y., et al. 2020. Transcriptome profiling of Ewing sarcomas—treatment resistance pathways and IGF—dependency. Mol. Oncol. 14: 1101-1117.

RESEARCH USE

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