SANTA CRUZ BIOTECHNOLOGY, INC.

XRCC4 (C-4): sc-271087

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

DNA repair proteins are necessary for the maintenance of chromosome integrity and are involved in the elimination of premutagenic lesions from DNA. The DNA-repair proteins Rad51 and Rad52 are key components of the double-strand-break repair pathway. Rad51 and Rad52 are essential for mitotic and meiotic recombination, and Rad51 mutation in yeast and mammalian cells results in chromosome loss. Rad51 has been shown in separate studies to interact with breast cancer susceptibility gene products BRCA1 and BRCA2, suggesting that these proteins may function as essential cofactors in Rad51-dependent DNA repair. Rad52 has been shown to associate with the RPA complex, a complex involved in DNA replication, nucleotide excision repair and homologous recombination. An additional protein involved in the DSBR pathway has been identified as XRCC4. XRCC4 has been shown to restore DSBR activity as well as V(D)J recombination in cells with impaired DSBR and V(D)J recombination.

CHROMOSOMAL LOCATION

Genetic locus: XRCC4 (human) mapping to 5q14.2; Xrcc4 (mouse) mapping to 13 C3.

SOURCE

XRCC4 (C-4) is a mouse monoclonal antibody raised against amino acids 1-233 mapping at the N-terminus of XRCC4 of human origin.

PRODUCT

Each vial contains 200 µg IgG_{2a} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

XRCC4 (C-4) is available conjugated to agarose (sc-271087 AC), 500 µg/ 0.25 ml agarose in 1 ml, for IP; to HRP (sc-271087 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-271087 PE), fluorescein (sc-271087 FITC), Alexa Fluor® 488 (sc-271087 AF488), Alexa Fluor® 546 (sc-271087 AF546), Alexa Fluor® 594 (sc-271087 AF594) or Alexa Fluor® 647 (sc-271087 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-271087 AF680) or Alexa Fluor® 790 (sc-271087 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

APPLICATIONS

XRCC4 (C-4) is recommended for detection of XRCC4 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), 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 XRCC4 siRNA (h): sc-37405, XRCC4 siRNA (m): sc-37406, XRCC4 shRNA Plasmid (h): sc-37405-SH, XRCC4 shRNA Plasmid (m): sc-37406-SH, XRCC4 shRNA (h) Lentiviral Particles: sc-37405-V and XRCC4 shRNA (m) Lentiviral Particles: sc-37406-V.

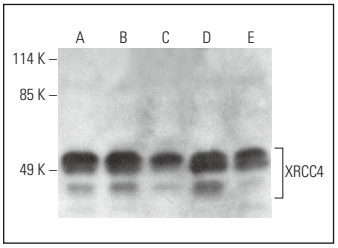
Molecular Weight of XRCC4: 55 kDa.

Positive Controls: MOLT-4 cell lysate: sc-2233 or Hep G2 cell lysate: sc-2227.

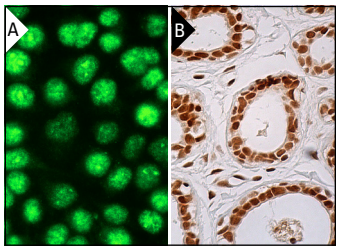
STORAGE

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

DATA



XRCC4 (C-4) HRP: sc-271087 HRP. Direct western blot analysis of XRCC4 expression in MOLT-4 (**A**), HEK293 (**B**), HeLa (**C**), IB4 (**D**) and Hep G2 (**E**) whole cell lysates.



XRCC4 (C-4): sc-271087. Immunofluorescence staining of methanol-fixed A-431 cells showing nuclear localization (**A**). Immunoperoxidase staining of formalin fixed, paraffin-embedded human breast tissue showing nuclear staining of glandular cells (**B**).

SELECT PRODUCT CITATIONS

1. Guo, C., et al. 2015. XRCC4 deficiency in human subjects causes a marked neurological phenotype but no overt immunodeficiency. J. Allergy Clin. Immunol. 136: 1007-1017.
2. Liermann, J., et al. 2017. Phytotherapeutics oridonin and ponicidin show additive effects combined with irradiation in pancreatic cancer *in vitro*. Radiol. Oncol. 51: 407-414.
3. He, H., et al. 2018. UHRF1 depletion sensitizes retinoblastoma cells to chemotherapeutic drugs via downregulation of XRCC4. Cell Death Dis. 9: 164.
4. Lu, H., et al. 2019. DNA-PK_{CS} promotes chromatin decondensation to facilitate initiation of the DNA damage response. Nucleic Acids Res. 47: 9467-9479.
5. Sengupta, S., et al. 2020. Ligand-induced gene activation is associated with oxidative genome damage whose repair is required for transcription. Proc. Natl. Acad. Sci. USA 117: 22183-22192.
6. Maruoka, M., et al. 2021. Caspase cleavage releases a nuclear protein fragment that stimulates phospholipid scrambling at the plasma membrane. Mol. Cell 81: 1397-1410.e9.
7. Cisneros-Aguirre, M., et al. 2022. The importance of DNAPKcs for blunt DNA end joining is magnified when XLF is weakened. Nat. Commun. 13: 3662.
8. Lu, H., et al. 2023. ATM phosphorylates the FATC domain of DNA-PK_{cs} at threonine 4102 to promote non-homologous end joining. Nucleic Acids Res. 51: 6770-6783.
9. Randolph, M.E., et al. 2024. RNA helicase DDX3 regulates RAD51 localization and DNA damage repair in Ewing sarcoma. iScience 27: 108925.

RESEARCH USE

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