

# XRCC1 (AP-39): sc-517377

## BACKGROUND

The x-ray repair cross-complementing (XRCC) proteins are responsible for efficiently repairing and maintaining genetic stability following DNA base damage. These genes share sequence similarity with the yeast DNA repair protein Rad5. XRCC1 is a protein that facilitates the DNA base excision repair pathway by interacting with DNA ligase III and DNA polymerase to repair DNA single-strand breaks. XRCC2 and XRCC3 are both involved in maintaining chromosome stability during cell division. XRCC2 is required for efficient repair of DNA double-strand breaks by homologous recombination between sister chromatids, and XRCC3 interacts directly with Rad51 to cooperate with Rad51 during recombinational repair. XRCC4 is an accessory factor of DNA ligase IV that preferentially binds DNA with nicks or broken ends. XRCC4 binds to DNA ligase IV and enhances its joining activity, and it is also involved in V(D)J recombination. Any defect in one of the known components of the DNA repair/V(D)J recombination machinery (Ku-70, Ku-80, DNA-PK<sub>CS</sub>, XRCC4 and DNA ligase IV) leads to abortion of the V(D)J rearrangement process and early block in both T and B cell maturation.

## REFERENCES

1. Nash, R.A., et al. 1997. XRCC1 protein interacts with one of two distinct forms of DNA ligase III. *Biochemistry* 36: 5207-5211.
2. Liu, N., et al. 1998. XRCC2 and XRCC3, new human Rad51-family members, promote chromosome stability and protect against DNA cross-links and other damages. *Mol. Cell* 1: 783-793.
3. Thacker, J. 1999. The role of homologous recombination processes in the repair of severe forms of DNA damage in mammalian cells. *Biochimie* 81: 77-85.
4. Thacker, J. 1999. A surfeit of RAD51-like genes? *Trends Genet.* 15: 166-168.
5. Johnson, R.D., et al. 1999. Mammalian XRCC2 promotes the repair of DNA double-strand breaks by homologous recombination. *Nature* 401: 397-399.
6. Pierce, A.J., et al. 1999. XRCC3 promotes homology-directed repair of DNA damage in mammalian cells. *Genes Dev.* 13: 2633-2638.
7. Modesti, M., et al. 1999. DNA binding of Xrcc4 protein is associated with V(D)J recombination but not with stimulation of DNA ligase IV activity. *EMBO J.* 18: 2008-2018.
8. Moshous, D., et al. 2000. A new gene involved in DNA double-strand break repair and V(D)J recombination is located on human chromosome 10p. *Hum. Mol. Genet.* 9: 583-588.

## CHROMOSOMAL LOCATION

Genetic locus: XRCC1 (human) mapping to 19q13.31.

## SOURCE

XRCC1 (AP-39) is a mouse monoclonal antibody raised against a recombinant protein corresponding to XRCC1 of human origin.

## PRODUCT

Each vial contains 100 µg IgG<sub>1</sub> in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

## APPLICATIONS

XRCC1 (AP-39) is recommended for detection of XRCC1 of human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) and immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)].

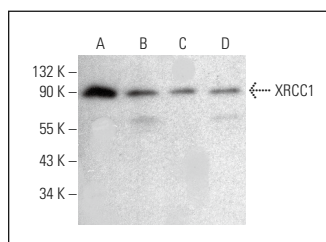
Suitable for use as control antibody for XRCC1 siRNA (h): sc-36859, XRCC1 shRNA Plasmid (h): sc-36859-SH and XRCC1 shRNA (h) Lentiviral Particles: sc-36859-V.

Molecular Weight (predicted) of XRCC1: 69 kDa.

Molecular Weight (observed) of XRCC1: 71-92 kDa.

Positive Controls: Raji whole cell lysate: sc-364236, K-562 whole cell lysate: sc-2203 or HeLa whole cell lysate: sc-2200.

## DATA



XRCC1 (AP-39): sc-517377. Western blot analysis of XRCC1 expression in Raji (A), K-562 (B), HeLa (C) and Jurkat (D) whole cell lysates.

## 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](http://www.scbt.com) for detailed protocols and support products.