

XRCC4 (h): 293T Lysate: sc-178146

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 Rad51. 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-PKCS, 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. Johnson, R.D., et al. 1999. Mammalian XRCC2 promotes the repair of DNA double-strand breaks by homologous recombination. *Nature* 401: 397-399.
4. Pierce, A.J., et al. 1999. XRCC3 promotes homology-directed repair of DNA damage in mammalian cells. *Genes Dev.* 13: 2633-2638.
5. 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.
6. Muylaert, I., et al. 2007. Knock-down of DNA ligase IV/XRCC4 by RNAi inhibits herpes simplex virus type I DNA replication. *J. Biol. Chem.* 282: 10865-10872.
7. Lu, H., et al. 2007. Length-dependent binding of human XLF to DNA and stimulation of XRCC4: DNA ligase IV activity. *J. Biol. Chem.* 282: 11155-11562.
8. Gu, J., et al. 2007. XRCC4: DNA ligase IV can ligate incompatible DNA ends and can ligate across gaps. *EMBO J.* 26: 1010-1023.

CHROMOSOMAL LOCATION

Genetic locus: XRCC4 (human) mapping to 5q14.2.

PRODUCT

XRCC4 (h): 293T Lysate represents a lysate of human XRCC4 transfected 293T cells and is provided as 100 µg protein in 200 µl SDS-PAGE buffer.

RESEARCH USE

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

APPLICATIONS

XRCC4 (h): 293T Lysate is suitable as a Western Blotting positive control for human reactive XRCC4 antibodies. Recommended use: 10-20 µl per lane.

Control 293T Lysate: sc-117752 is available as a Western Blotting negative control lysate derived from non-transfected 293T cells.

STORAGE

Store at -20° C. Repeated freezing and thawing should be minimized. Sample vial should be boiled once prior to use. Non-hazardous. No MSDS required.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.