

XPA (2A4): sc-53467

BACKGROUND

Xeroderma pigmentosum (XP) is an autosomal recessive disorder characterized by a genetic predisposition to sunlight-induced skin cancer due to deficiencies in the DNA repair enzymes. The most frequent mutations are found in the XP genes of group A through G and group V, which encode nucleotide excision repair proteins. Nucleotide excision repair (NER) is the normal cellular response to DNA damage induced by UV irradiation and is disrupted in patients with XP. Xeroderma pigmentosum group A (XPA) is an essential NER factor that coordinates the collection of a preincision complex during the processing of DNA damage. XPA may also have a role in the repair of oxidized DNA bases. XPA is sensitive not only to the structure of the DNA double helix, but also to bulky groups incorporated into DNA. XPA forms a homodimer in the absence of DNA, but binds to DNA in both monomeric and dimeric forms. The dimerically bound XPA is much more efficient, so cells probably regulate XPA activity in a concentration-dependent manner. XPA deficient organisms cannot repair UV-induced DNA damage and thus acquire skin cancers by UV irradiation very easily.

REFERENCES

1. Tateishi, S., et al. 1995. Separation of protein factors that correct the defects in the seven complementation groups of xeroderma pigmentosum cells. *J. Biochem.* 118: 819-824.
2. Nakane, H., et al. 1995. High incidence of ultraviolet-B or chemical-carcinogen-induced skin tumours in mice lacking the xeroderma pigmentosum group A gene. *Nature* 377: 165-168.
3. Kuraoka, I., et al. 1996. Identification of a damaged-DNA binding domain of the XPA protein. *Mut. Res.* 362: 87-95.
4. Riou, L., et al. 1999. The relative expression of mutated XPB genes results in xeroderma pigmentosum/Cockayne's syndrome or trichothiodystrophy cellular phenotypes. *Hum. Mol. Genet.* 8: 1125-1133.
5. Horio, T., et al. 2001. Photobiologic and photoimmunologic characteristics of XPA gene-deficient mice. *J. Investig. Dermatol. Symp. Proc.* 6: 58-63.
6. Patrick, S.M. and Turchi, J.J. 2002. Xeroderma pigmentosum complementation group A protein (XPA) modulates RPA-DNA interactions via enhanced complex stability and inhibition of strand separation activity. *J. Biol. Chem.* 277: 16096-16101.
7. Liu, Y., et al. 2005. Cooperative interaction of human XPA stabilizes and enhances specific binding of XPA to DNA damage. *Biochemistry* 44: 7361-7368.
8. Bomgarden, R.D., et al. 2006. Opposing effects of the UV lesion repair protein XPA and UV bypass polymerase η on ATR checkpoint signaling. *EMBO J.* 25: 2605-2614.
9. Wu, X., et al. 2007. ATR-dependent checkpoint modulates XPA nuclear import in response to UV irradiation. *Oncogene* 26: 757-764.

STORAGE

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

CHROMOSOMAL LOCATION

Genetic locus: XPA (human) mapping to 9q22.33.

SOURCE

XPA (2A4) is a mouse monoclonal antibody raised against recombinant XPA protein of human origin.

PRODUCT

Each vial contains 200 μ g IgG₁ kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

XPA (2A4) is recommended for detection of XPA of human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000).

Suitable for use as control antibody for XPA siRNA (h): sc-36853, XPA shRNA Plasmid (h): sc-36853-SH and XPA shRNA (h) Lentiviral Particles: sc-36853-V.

Molecular Weight of XPA: 40 kDa.

Positive Controls: BJAB nuclear extract: sc-2145, MCF7 nuclear extract: sc-2149 or HeLa whole cell lysate: sc-2200.

RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended:
 1) Western Blotting: use m-IgG κ BP-HRP: sc-516102 or m-IgG κ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™
 Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048.

RESEARCH USE

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

PROTOCOLS

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