

# ATRX (2193-2492): sc-4446 WB

## BACKGROUND

ATRX is a member of the SNF2 family of helicase/ATPases, which contribute to the remodeling of the nucleosome structure in an ATP-dependent manner, and facilitate the initiation of transcription and replication. Structurally, ATRX contains a PHD zinc finger motif and is expressed as a 280 kDa protein. ATRX is regulated throughout the cell cycle where it is differentially distributed within the nucleus. During interphase, ATRX predominately associates with the nuclear matrix, while during mitosis, ATRX localizes with condensed chromatin. At the onset of M phase, phosphorylation rapidly induces this redistribution of ATRX to the short arms of human acrocentric chromosomes, where it then specifically complexes with heterochromatin protein 1 alpha to mediate chromosomal segregation. Mutations in the ATRX gene correlate with a high incidence of severe X-linked form of syndromal mental retardation associated with alpha thalassaemia, or ATR-X syndrome.

## REFERENCES

- Picketts, D.J., Higgs, D.R., Bachoo, S., Blake, D.J., Quarrell, O.W., and Gibbons, R.J. 1996. ATRX encodes a novel member of the SNF2 family of proteins: mutations point to a common mechanism underlying the ATR-X syndrome. *Hum. Mol. Genet.* 5: 1899-1907.
- Villard, L., Lossi, A.M., Cardoso, C., Proud, V., Chiaroni, P., Colleaux, L., Schwartz, C., and Fontes, M. 1997. Determination of the genomic structure of the XNP/ATR-X gene encoding a potential zinc finger helicase. *Genomics* 43: 149-155.
- Fichera, M., Romano, C., Castiglia, L., Failla, P., Ruberto, C., Amata, S., Greco, D., Cardoso, C., Fontes, M., and Ragusa, A. 1998. New mutations in XNP/ATR-X gene: a further contribution to genotype/phenotype relationship in ATR-X syndrome. *Mutations in brief no. 176. Online Hum. Mutat.* 12: 214.
- McDowell, T.L., Gibbons, R.J., Sutherland, H., O'Rourke, D.M., Bickmore, W.A., Pombo, A., Turley, H., Gatter, K., Picketts, D.J., Buckle, V.J., Chapman, L., Rhodes, D., and Higgs, D.R. 1999. Localization of a putative transcriptional regulator (ATR-X) at pericentromeric heterochromatin and the short arms of acrocentric chromosomes. *Proc. Natl. Acad. Sci. USA* 96: 13983-13988.
- Berube, N.G., Smeenk, C.A., and Picketts, D.J. 2000. Cell cycle-dependent phosphorylation of the ATRX protein correlates with changes in nuclear matrix and chromatin association. *Hum. Mol. Genet.* 9: 539-547.
- Xue, Y., Gibbons, R., Yan, Z., Yang, D., McDowell, T.L., Sechi, S., Qin, J., Zhou, S., Higgs, D., Wang, W. 2003. The ATR-X syndrome protein forms a chromatin-remodeling complex with Daxx and localizes in promyelocytic leukemia nuclear bodies. *Proc Natl Acad Sci USA.* 100: 10635-10660.
- Rossi, L., Deri, P., Andreoli, I., Gremigni, V., Salvetti, A., Batistoni, R. 2003. Expression of DjXnp, a novel member of the SNF2-like ATP-dependent chromatin remodelling genes, in intact and regenerating planarians. *Int. J. Dev. Biol.* 47: 293-298.
- Garrick, D., Samara, V., McDowell, T.L., Smith, A.J., Dobbie, L., Higgs, D.R., Gibbons, R.J. 2004. A conserved truncated isoform of the ATR-X syndrome protein lacking the SWI/SNF-homology domain. *Gene* 326: 23-34.

## SOURCE

ATRX (2193-2492) is expressed in *E. coli* as a 60 kDa tagged fusion protein corresponding to amino acids 2193-2492 of ATRX of human origin.

## PRODUCT

ATRX (2193-2492) is purified from bacterial lysates (>98%) by glutathione agarose affinity chromatography; supplied as 10 µg in 0.1 ml SDS-PAGE loading buffer.

## APPLICATIONS

ATRX (2193-2492) is suitable as a Western blotting control for sc-10080 and sc-15408.

## STORAGE

Store at -20° C; stable for one year from the date of shipment.

## RESEARCH USE

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