

Protamine 1 (M-51): sc-30174

BACKGROUND

Protamines are small, arginine-rich (basic) nuclear proteins that mediate normal sperm head condensation and DNA stabilization. Mice, humans and certain fish have two or more different Protamines, whereas the sperm of bull, boar, rat, rabbit, guinea pig and ram have one form of Protamine. The majority of DNA in human sperm is bound to Protamines with only a small proportion of DNA bound to histones in a way similar to active chromatin. The retention of histone association with sperm DNA, with respect to Protamine association to sperm DNA, can change within as little as 400 bp of DNA, suggesting that there is fine control over haploid DNA organization. Protamines eventually replace histones late in the haploid phase of spermatogenesis. The human Protamine 1 gene maps to chromosome 16p13.13 and encodes a 51 amino acid protein. The human Protamine 2 gene maps to chromosome 16p13.13 and encodes a 102 amino acid protein.

REFERENCES

1. Colleu, D., et al. 1997. Changes in Protamine 1 distribution in human sperm nucleus during *in vitro* sperm-oocyte interaction: an immunoelectron microscopic study. *Fertil. Steril.* 67: 123-128.
2. Gardiner-Garden, M., et al. 1998. Histone- and Protamine-DNA association: conservation of different patterns within the β -globin domain in human sperm. *Mol. Cell Biol.* 18: 3350-3356.
3. Zhong, J., et al. 2001. A highly conserved sequence essential for translational repression of the Protamine 1 messenger RNA in murine spermatids. *Biol. Reprod.* 64: 1784-1789.
4. Giorgini, F., et al. 2001. MSY2 and MSY4 bind a conserved sequence in the 3' untranslated region of Protamine 1 mRNA *in vitro* and *in vivo*. *Mol. Cell Biol.* 21: 7010-7019.
5. Murase, K., et al. 2001. Protamine augments stretch induced calcium increase in vascular endothelium. *Br. J. Pharmacol.* 134: 1403-1410.
6. Iuchi, Y., et al. 2003. Concerted changes in the YB2/Ryb- α protein and Protamine 2 messenger RNA in the mouse testis under heat stress. *Biol. Reprod.* 68: 129-135.
7. Mengual, L., et al. 2003. Marked differences in Protamine content and P1/P2 ratios in sperm cells from Percoll fractions between patients and controls. *J. Androl.* 24: 438-447.
8. Brewer, L., et al. 2003. Dynamics of Protamine 1 binding to single DNA molecules. *J. Biol. Chem.* 278: 42403-42408.
9. Mylonis, I., et al. 2004. Temporal association of Protamine 1 with the inner nuclear membrane protein Lamin B receptor during spermiogenesis. *J. Biol. Chem.* 279: 11626-11631.

CHROMOSOMAL LOCATION

Genetic locus: Prm1 (mouse) mapping to 16 A1.

SOURCE

Protamine 1 (M-51) is a rabbit polyclonal antibody raised against amino acids 1-51 representing full length Protamine 1 of mouse origin.

PRODUCT

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

APPLICATIONS

Protamine 1 (M-51) is recommended for detection of Protamine 1 of mouse and rat origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 μ g per 100-500 μ g of total protein (1 ml of cell lysate)], immunofluorescence (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 Protamine 1 siRNA (m): sc-38204, Protamine 1 shRNA Plasmid (m): sc-38204-SH and Protamine 1 shRNA (m) Lentiviral Particles: sc-38204-V.

Positive Controls: mouse testis extract: sc-2405 or rat testis extract: sc-2400.

RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use goat anti-rabbit IgG-HRP: sc-2004 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible goat anti-rabbit IgG-HRP: sc-2030 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use goat anti-rabbit IgG-FITC: sc-2012 (dilution range: 1:100-1:400) or goat anti-rabbit IgG-TR: sc-2780 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

SELECT PRODUCT CITATIONS

1. Akerfelt, M., et al. 2010. Heat shock transcription factor 1 localizes to sex chromatin during meiotic repression. *J. Biol. Chem.* 285: 34469-34476.
2. Jia, W., et al. 2011. Retinoic acid induces myoblasts transdifferentiation into premeiotic Stra8-positive cells. *Cell Biol. Int.* 35: 365-372.
3. Korhonen, H.M., et al. 2011. Dicer is required for haploid male germ cell differentiation in mice. *PLoS ONE* 6: e24821.

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 or our catalog for detailed protocols and support products.