SANTA CRUZ BIOTECHNOLOGY, INC.

MacroH2A1 siRNA (h): sc-91790

BACKGROUND

Eukaryotic histones are water soluble, basic nuclear proteins that form hetero-octameric nucleosome particles by wrapping 146 base pairs of DNA in a left-handed super-helical turn sequentially to form chromosomal fiber. Two molecules of each of the four core histones (H2A, H2B, H3, and H4) form the octamer. The octamer consists of two H2A-H2B dimers and two H3-H4 dimers, forming two nearly symmetrical halves by tertiary structure. MacroH2A1, also known as H2AFY (H2A histone family, member Y), MacroH2A1.2, MacroH2A1.1, H2A/y, H2AFJ or mH2A1, is a 372 amino acid ubiquitously expressed nuclear histone variant that is enriched in inactive X chromosome chromatin and senescence-associated heterochromatin. Involved in augmentation of signal-regulated transcription, MacroH2A1 exists as three alternatively spliced isoforms, contains one histone H2A domain and a single Macro domain.

REFERENCES

1. Pehrson, J.R. and Fried, V.A. 1992. MacroH2A, a core histone containing a large nonhistone region. Science 257: 1398-1400.
2. Pehrson, J.R., et al. 1997. Developmental and tissue expression patterns of histone MacroH2A1 subtypes. J. Cell. Biochem. 65: 107-113.
3. Mermoud, J.E., et al. 1999. Histone MacroH2A1.2 relocates to the inactive X chromosome after initiation and propagation of X-inactivation. J. Cell Biol. 147: 1399-1408.
4. Ma, Y., et al. 2005. DNA CpG hypomethylation induces heterochromatin reorganization involving the histone variant MacroH2A. J. Cell Sci. 118: 1607-1616.
5. Chakravarthy, S., et al. 2005. Structural characterization of the histone variant MacroH2A. Mol. Cell. Biol. 25: 7616-7624.
6. Kustatscher, G., et al. 2005. Splicing regulates NAD metabolite binding to histone macroH2A. Nat. Struct. Mol. Biol. 12: 624-625.
7. Chu, F., et al. 2006. Mapping post-translational modifications of the histone variant MacroH2A1 using tandem mass spectrometry. Mol. Cell Proteomics 5: 194-203.
8. Doyen, C.M., et al. 2006. Mechanism of polymerase II transcription repression by the histone variant macroH2A. Mol. Cell. Biol. 26: 1156-1164.
9. Gamble, M.J., et al. 2010. The histone variant macroH2A1 marks repressed autosomal chromatin, but protects a subset of its target genes from silencing. Genes Dev. 24: 21-32.

CHROMOSOMAL LOCATION

Genetic locus: H2AFY (human) mapping to 5q31.1.

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.

PRODUCT

MacroH2A1 siRNA (h) is a pool of 3 target-specific 19-25 nt siRNAs designed to knock down gene expression. Each vial contains 3.3 nmol of lyophilized siRNA, sufficient for a 10 µM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see MacroH2A1 shRNA Plasmid (h): sc-91790-SH and MacroH2A1 shRNA (h) Lentiviral Particles: sc-91790-V as alternate gene silencing products.

For independent verification of MacroH2A1 (h) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-91790A, sc-91790B and sc-91790C.

STORAGE AND RESUSPENSION

Store lyophilized siRNA duplex at -20° C with desiccant. Stable for at least one year from the date of shipment. Once resuspended, store at -20° C, avoid contact with RNAses and repeated freeze thaw cycles.

Resuspend lyophilized siRNA duplex in 330 µl of the RNAse-free water provided. Resuspension of the siRNA duplex in 330 µl of RNAse-free water makes a 10 µM solution in a 10 µM Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

MacroH2A1 siRNA (h) is recommended for the inhibition of MacroH2A1 expression in human cells.

SUPPORT REAGENTS

For optimal siRNA transfection efficiency, Santa Cruz Biotechnology's siRNA Transfection Reagent: sc-29528 (0.3 ml), siRNA Transfection Medium: sc-36868 (20 ml) and siRNA Dilution Buffer: sc-29527 (1.5 ml) are recommended. Control siRNAs or Fluorescein Conjugated Control siRNAs are available as 10 µM in 66 µl. Each contain a scrambled sequence that will not lead to the specific degradation of any known cellular mRNA. Fluorescein Conjugated Control siRNAs include: sc-36869, sc-44239, sc-44240 and sc-44241. Control siRNAs include: sc-37007, sc-44230, sc-44231, sc-44232, sc-44233, sc-44234, sc-44235, sc-44236, sc-44237 and sc-44238.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor MacroH2A1 gene expression knockdown using RT-PCR Primer: MacroH2A1 (h)-PR: sc-91790-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.