SANTA CRUZ BIOTECHNOLOGY, INC.

ASTE1 siRNA (m): sc-141308

BACKGROUND

ASTE1 (asteroid homolog 1), also known as HT001, is a 679 amino acid protein that belongs to the asteroid family. Encoded by a gene that maps to human chromosome 3q22.1, ASTE1 is conserved in chimpanzee, bovine, mouse, rat and zebrafish. ASTE1 is strongly linked to tumor-infiltrating lymphocytes in colorectal cancers with microsatellite instability, with lymphocyte density correlating to frameshift mutation presence and frequency within ASTE1. Severe colorectal dysplasia with microsatellite instability also exhibits frameshift mutations within ASTE1, suggesting that ASTE1 mutations occur early during microsatellite instability-induced colorectal carcinogenesis. ASTE1 frameshift mutations may generate a premature stop codon in the last exon that does not result in nonsense-mediated mRNA decay, thereby allowing mutated ASTE1 proteins to be highly expressed and exceptionally immunogenic. Frameshift mutations in ASTE1 are also linked to the manifestation of neoantigens, potentially recognized by T cells, possibly resulting in specific immune responses against specific neoantigens.

REFERENCES

1. Perucho, M. 2003. Tumors with microsatellite instability: many mutations, targets and paradoxes. Oncogene 22: 2223-2225.
2. Woerner, S.M., et al. 2003. Pathogenesis of DNA repair-deficient cancers: a statistical meta-analysis of putative Real Common Target genes. Oncogene 22: 2226-2235.
3. Schwitalle, Y., et al. 2004. Immunogenic peptides generated by frameshift mutations in DNA mismatch repair-deficient cancer cells. Cancer Immun. 4: 14.
4. Woerner, S.M., et al. 2005. Microsatellite instability of selective target genes in HNPCC-associated colon adenomas. Oncogene 24: 2525-2535.
5. Chao, E.C., et al. 2006. Molecular models for the tissue specificity of DNA mismatch repair-deficient carcinogenesis. Nucleic Acids Res. 34: 840-852.
6. Tougeron, D., et al. 2009. Tumor-infiltrating lymphocytes in colorectal cancers with microsatellite instability are correlated with the number and spectrum of frameshift mutations. Mod. Pathol. 22: 1186-1195.
7. Poulogiannis, G., et al. 2010. DNA mismatch repair deficiency in sporadic colorectal cancer and Lynch syndrome. Histopathology 56: 167-179.

CHROMOSOMAL LOCATION

Genetic locus: Aste1 (mouse) mapping to 9 F1.

PRODUCT

ASTE1 siRNA (m) is a target-specific 19-25 nt siRNA 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 ASTE1 shRNA Plasmid (m): sc-141308-SH and ASTE1 shRNA (m) Lentiviral Particles: sc-141308-V as alternate gene silencing products.

RESEARCH USE

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

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

ASTE1 siRNA (m) is recommended for the inhibition of ASTE1 expression in mouse 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 ASTE1 gene expression knockdown using RT-PCR Primer: ASTE1 (m)-PR: sc-141308-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

PROTOCOLS

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