SANTA CRUZ BIOTECHNOLOGY, INC.

Matriptase-2 siRNA (m): sc-149299

BACKGROUND

Matriptase-2 (MT2; TMPRSS6; transmembrane serine protease 6; MT2; IRIDA) is a cell surface type II transmembrane (membrane-anchored extracellular C-terminus and cytoplasmic N-terminus) serine proteinase/protease, that contributes to liver matrix remodeling, regulation of hepatic (hormone) hepcidin expression, and systemic iron homeostasis. TMPRSS6 transcribes into several alternative splicing/mRNA variants, and translates as a zymogen (proenzyme), that undergoes auto-cleavage for activation. Human germline mutations in TMPRSS6 contribute to (oral treatment naive) phenotypic iron deficiency (iron-refractory iron deficiency anemia (IRIDA)). Matriptase-2 interacts with transferrin receptor 1 (TfR1). TMPRSS6 (Matriptase-2) indicates higher expression levels in K-Ras G12C type lung adenocarcinoma in comparison to normal tissue. TMPRSS6 polymorphisms associate with developing IRIDA. Matriptase-2 (MT-2) suppresses prostate cancer cell migration through feature modulation of epithelial-to-mesenchymal transition (EMT).

REFERENCES

1. Finberg, K.E., et al. 2008. Mutations in TMPRSS6 cause iron-refractory iron deficiency anemia (IRIDA). Nat. Genet. 40: 569-571.
2. Enns, C.A., et al. 2020. The ectodomain of Matriptase-2 plays an important nonproteolytic role in suppressing hepcidin expression in mice. Blood 136: 989-1001.
3. Alcaraz-Sanabria, A., et al. 2022. Transcriptomic mapping of non-small cell lung cancer K-RAS p.G12C mutated tumors: identification of surfaceome targets and immunologic correlates. Front. Immunol. 12: 786069.
4. Dion, S.P., et al. 2022. Functionally impaired isoforms regulate TMPRSS6 proteolytic activity. PLoS ONE 17: e0273825.
5. Lin, H.Y., et al. 2022. Matriptase-2/NR4A3 axis switches TGF-β action toward suppression of prostate cancer cell invasion, tumor growth, and metastasis. Oncogene 41: 2833-2845.
6. Duca, L., et al. 2022. Associated effect of SLC40A1 and TMPRSS6 polymorphisms on iron overload. Metabolites 12: 919.

CHROMOSOMAL LOCATION

Genetic locus: Tmprss6 (mouse) mapping to 15 E1.

PRODUCT

Matriptase-2 siRNA (m) 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 Matriptase-2 shRNA Plasmid (m): sc-149299-SH and Matriptase-2 shRNA (m) Lentiviral Particles: sc-149299-V as alternate gene silencing products.

For independent verification of Matriptase-2 (m) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-149299A, sc-149299B and sc-149299C.

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

Matriptase-2 siRNA (m) is recommended for the inhibition of Matriptase-2 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 Matriptase-2 gene expression knockdown using RT-PCR Primer: Matriptase-2 (m)-PR: sc-149299-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

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.