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### SZABO-SCANDIC HandelsgmbH

Quellenstraße 110, A-1100 Wien

T. +43(0)1 489 3961-0

F. +43(0)1 489 3961-7

[mail@szabo-scandic.com](mailto:mail@szabo-scandic.com)

[www.szabo-scandic.com](http://www.szabo-scandic.com)

[linkedin.com/company/szaboscandic](https://www.linkedin.com/company/szaboscandic) 



# Matriptase shRNA (h) Lentiviral Particles: sc-43911-V

## BACKGROUND

Matriptase (also known as MT-SP1, ST14, prostamin and epithin) is a tumor-associated type II transmembrane serine protease that is highly expressed in many human cancer-derived cell lines and is implicated in extracellular matrix remodeling, tumor growth, and metastasis. Matriptase performs pleiotropic functions in the development of the epidermis, hair follicles, and cellular immune system. Sphingosine 1-phosphate (S1P, SPP), present in serum-derived lipoproteins, activates matriptase while matriptase activates both urokinase-type plasminogen activator and hepatocyte growth factor (HGF). Hepatocyte growth factor activator inhibitor type 1 (HAI-1) is a Kunitz-type serine protease inhibitor identified as a strong inhibitor of matriptase and HGF. Advanced-stage ovarian tumors that express matriptase are more likely to do so in the absence of its inhibitor, HAI-1, indicating that an imbalance in the matriptase:HAI-1 ratio could be important in the development of advanced disease.

## REFERENCES

1. Cho, E.G., et al. 2001. N-terminal processing is essential for release of epithin, a mouse type II membrane serine protease. *J. Biol. Chem.* 276: 44581-44589.
2. Friedrich, R., et al. 2002. Catalytic domain structures of MTSP1/Matriptase, a matrix-degrading transmembrane serine proteinase. *J. Biol. Chem.* 277: 2160-2168.
3. Oberst, M.D., et al. 2002. Expression of the serine protease Matriptase and its inhibitor HAI-1 in epithelial ovarian cancer: correlation with clinical outcome and tumor clinicopathological parameters. *Clin. Cancer Res.* 8: 1101-1107.
4. List, K., et al. 2002. Matriptase/MT-SP1 is required for postnatal survival, epidermal barrier function, hair follicle development, and thymic homeostasis. *Oncogene* 21: 3765-3779.
5. Denda, K., et al. 2002. Functional characterization of Kunitz domains in hepatocyte growth factor activator inhibitor type 1. *J. Biol. Chem.* 277: 14053-14059.

## CHROMOSOMAL LOCATION

Genetic locus: ST14 (human) mapping to 11q24.3.

## PRODUCT

Matriptase shRNA (h) Lentiviral Particles is a pool of concentrated, transduction-ready viral particles containing 3 target-specific constructs that encode 19-25 nt (plus hairpin) shRNA designed to knock down gene expression. Each vial contains 200  $\mu$ l frozen stock containing  $1.0 \times 10^6$  infectious units of virus (IFU) in Dulbecco's Modified Eagle's Medium with 25 mM HEPES pH 7.3. Suitable for 10-20 transductions. Also see Matriptase siRNA (h): sc-43911 and Matriptase shRNA Plasmid (h): sc-43911-SH as alternate gene silencing products.

## STORAGE

Store lentiviral particles at  $-80^\circ$  C. Stable for at least one year from the date of shipment. Once thawed, particles can be stored at  $4^\circ$  C for up to one week. Avoid repeated freeze thaw cycles.

## APPLICATIONS

Matriptase shRNA (h) Lentiviral Particles is recommended for the inhibition of Matriptase expression in human cells.

## SUPPORT REAGENTS

Control shRNA Lentiviral Particles: sc-108080. Available as 200  $\mu$ l frozen viral stock containing  $1.0 \times 10^6$  infectious units of virus (IFU); contains an shRNA construct encoding a scrambled sequence that will not lead to the specific degradation of any known cellular mRNA.

## GENE EXPRESSION MONITORING

Matriptase (D-7): sc-365482 is recommended as a control antibody for monitoring of Matriptase gene expression knockdown by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) or immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use goat anti-mouse IgG-HRP: sc-2005 (dilution range: 1:2000-1:32,000) or Cruz Marker™ compatible goat anti-mouse IgG-HRP: sc-2031 (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) Immunofluorescence: use goat anti-mouse IgG-FITC: sc-2010 (dilution range: 1:100-1:400) or goat anti-mouse IgG-TR: sc-2781 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

## RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor Matriptase gene expression knockdown using RT-PCR Primer: Matriptase (h)-PR: sc-43911-PR (20  $\mu$ l, 597 bp). Annealing temperature for the primers should be  $55-60^\circ$  C and the extension temperature should be  $68-72^\circ$  C.

## BIOSAFETY

Lentiviral particles can be employed in standard Biosafety Level 2 tissue culture facilities (and should be treated with the same level of caution as with any other potentially infectious reagent). Lentiviral particles are replication-incompetent and are designed to self-inactivate after transduction and integration of shRNA constructs into genomic DNA of target cells.

## RESEARCH USE

The purchase of this product conveys to the buyer the nontransferable right to use the purchased amount of the product and all replicates and derivatives for research purposes conducted by the buyer in his laboratory only (whether the buyer is an academic or for-profit entity). The buyer cannot sell or otherwise transfer (a) this product (b) its components or (c) materials made using this product or its components to a third party, or otherwise use this product or its components or materials made using this product or its components for Commercial Purposes.

## PROTOCOLS

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