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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) 

# BNP shRNA (h) Lentiviral Particles: sc-43636-V

## BACKGROUND

Natriuretic peptides comprise a family of three structurally related molecules: atrial natriuretic peptide (ANP), brain natriuretic peptide (BNP) and C-type natriuretic peptide (CNP). ANP and BNP act mainly as cardiac hormones, produced primarily by the atrium and ventricle, respectively, while the gene encoding C-type natriuretic peptide is expressed mainly in the brain. These peptides possess potent natriuretic, diuretic and vasodilating activities and are implicated in body fluid homeostasis and blood pressure control. ANP, BNP and CNP are highly homologous within the 17-residue ring structure formed by an intramolecular disulfide linkage. The genes which encode for ANP and BNP map to human chromosome 1p36.22. The gene which encodes for CNP maps to human chromosome 2q24-qter.

## REFERENCES

1. Saito, T. 1975. Proceedings: Systemic-pulmonary arteriovenous fistula—a report of a case. *Jpn. Circ. J.* 39: 723.
2. Mair, J., et al. 2001. The impact of cardiac natriuretic peptide determination on the diagnosis and management of heart failure. *Clin. Chem. Lab. Med.* 39: 571-588.
3. Cowie, M.R., et al. 2002. BNP and congestive heart failure. *Prog. Cardiovasc. Dis.* 44: 293-321.
4. Hobbs, F.D., et al. 2002. Reliability of N-terminal pro-brain natriuretic peptide assay in diagnosis of heart failure: cohort study in representative and high risk community populations. *BMJ* 324: 1498.
5. Hall, C. 2004. Essential biochemistry and physiology of (NT-pro) BNP. *Eur. J. Heart Fail.* 6: 257-260.
6. Pfister, R., et al. 2004. Use of NT-proBNP in routine testing and comparison to BNP. *Eur. J. Heart. Fail.* 6: 289-293.
7. Lellouche, N., et al. 2007. Usefulness of preimplantation B-type natriuretic peptide level for predicting response to cardiac resynchronization therapy. *Am. J. Cardiol.* 99: 242-246.

## CHROMOSOMAL LOCATION

Genetic locus: NPPB (human) mapping to 1p36.22.

## PRODUCT

BNP 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 BNP siRNA (h): sc-43636 and BNP shRNA Plasmid (h): sc-43636-SH as alternate gene silencing products.

## STORAGE

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

## APPLICATIONS

BNP shRNA (h) Lentiviral Particles is recommended for the inhibition of BNP 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

BNP (D-8): sc-271185 is recommended as a control antibody for monitoring of BNP 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 IgM-HRP: sc-2064 (dilution range: 1:500-1:5,000), TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use goat anti-mouse IgM-FITC: sc-2082 (dilution range: 1:100-1:400) or goat anti-mouse IgM-TR: sc-2983 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

## RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor BNP gene expression knockdown using RT-PCR Primer: BNP (h)-PR: sc-43636-PR (20  $\mu$ l). Annealing temperature for the primers should be  $55-60^\circ\text{C}$  and the extension temperature should be  $68-72^\circ\text{C}$ .

## 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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