SANTA CRUZ BIOTECHNOLOGY, INC.

BMAL1 siRNA (m): sc-38166

BACKGROUND

AhR, Arnt 1, Arnt 2 and BMAL1 are members of a family of transcription factors that contain a basic helix-loop-helix motif and a common "PAS" motif. The aromatic (aryl) hydrocarbon receptor, AhR, is a ligand dependent transcription factor that interacts with specific DNA sequences termed xenobiotic responsive elements (XREs) to activate several genes including CYP1A1, glutathione S-transferase Ya subunit and DT-diaphorase. The Ah Receptor nuclear translocator proteins (Arnt 1 or Arnt 2) are required for ligand-dependent nuclear translocation of the Ah receptor and are also necessary for Ah Receptor binding to the XRE element. BMAL1 (brain and muscle Arnt-like protein 1), also designated Arnt3, TIC, JAP3 or MOP3, has been shown to dimerize with Clock and bind to the promoter region of mPer1, suggesting that this protein plays a role in regulation of circadian oscillation in mammals.

CHROMOSOMAL LOCATION

Genetic locus: Arntl (mouse) mapping to 7 F1.

PRODUCT

BMAL1 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 BMAL1 shRNA Plasmid (m): sc-38166-SH and BMAL1 shRNA (m) Lentiviral Particles: sc-38166-V as alternate gene silencing products.

For independent verification of BMAL1 (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-38166A, sc-38166B and sc-38166C.

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

BMAL1 siRNA (m) is recommended for the inhibition of BMAL1 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.

GENE EXPRESSION MONITORING

BMAL1 (B-1): sc-365645 is recommended as a control antibody for monitoring of BMAL1 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 reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor BMAL1 gene expression knockdown using RT-PCR Primer: BMAL1 (m)-PR: sc-38166-PR (20 µl, 588 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Gaddameedhi, S., et al. 2012. Effect of circadian Clock mutations on DNA damage response in mammalian cells. Cell Cycle 11: 3481-3491.
2. Tsukamoto-Yamauchi, N., et al. 2015. Interaction of pituitary hormones and expression of Clock genes modulated by bone morphogenetic protein-4 and melatonin. Biochem. Biophys. Res. Commun. 459: 172-177.
3. Xu, L., et al. 2016. Mammalian retinal Müller cells have circadian Clock function. Mol. Vis. 22: 275-283.
4. Akladious, A., et al. 2018. BMAL1 knockdown suppresses wake and increases immobility without altering orexin A, corticotrophin-releasing hormone, or glutamate decarboxylase. CNS Neurosci. Ther. 24: 549-563.
5. Speed, J.S., et al. 2018. High dietary sodium causes dyssynchrony of the renal molecular Clock in rats. Am. J. Physiol. Renal Physiol. 314: F89-F98.
6. Hodge, B.A., et al. 2019. MYOD1 functions as a Clock amplifier as well as a critical co-factor for downstream circadian gene expression in muscle. Elife 8: e43017.
7. Hou, J.B., et al. 2021. Ubiquitin-specific protease 29 exacerbates cerebral ischemia-reperfusion injury in mice. Oxid. Med. Cell. Longev. 2021: 6955628.

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.