SANTA CRUZ BIOTECHNOLOGY, INC.

Ah Receptor siRNA (m): sc-29655

BACKGROUND

2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) is the prototype for a family of toxic halogenated aromatic compounds that are thought to cause adverse reproductive, immunologic and metabolic effects. Many biological responses to TCDD are mediated through ligand binding to the aromatic hydrocarbon (Ah) receptor, also known as AhR. Ah Receptor is a ligand-dependent transcription factor that interacts with specific DNA sequences, termed xenobiotic responsive elements (XREs), and that lies upstream of TCDD-inducible genes. Upon binding to the ligand, Ah Receptor binds to the Ah Receptor nuclear translocator (Arnt) and the complex is translocated from the cytoplasm to the nucleus. Arnt is required for Ah Receptor to bind to XRE. Ah Receptor and Arnt are members of a family of transcription factors that contain a basic helix-loop-helix motif and a common "PAS" motif.

CHROMOSOMAL LOCATION

Genetic locus: Ahr (mouse) mapping to 12 A3.

PRODUCT

Ah Receptor 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 Ah Receptor shRNA Plasmid (m): sc-29655-SH and Ah Receptor shRNA (m) Lentiviral Particles: sc-29655-V as alternate gene silencing products.

For independent verification of Ah Receptor (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-29655A, sc-29655B and sc-29655C.

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

Ah Receptor siRNA (m) is recommended for the inhibition of Ah Receptor 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

Ah Receptor (A-3): sc-133088 is recommended as a control antibody for monitoring of Ah Receptor 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).

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor Ah Receptor gene expression knockdown using RT-PCR Primer: Ah Receptor (m)-PR: sc-29655-PR (20 µl, 470 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Nishiumi, S., et al. 2010. 2,3,7,8-tetrachlorodibenzo-p-dioxin impairs an Insulin signaling pathway through the induction of tumor necrosis factor-α in adipocytes. Toxicol. Sci. 115: 482-491.
2. Rico de Souza, A., et al. 2011. Genetic ablation of the aryl hydrocarbon receptor causes cigarette smoke-induced mitochondrial dysfunction and apoptosis. J. Biol. Chem. 286: 43214-43228.
3. Hecht, E., et al. 2014. Aryl hydrocarbon receptor-dependent regulation of miR-196a expression controls lung fibroblast apoptosis but not proliferation. Toxicol. Appl. Pharmacol. 280: 511-525.
4. Szychowski, K.A., et al. 2016. Triclosan activates aryl hydrocarbon receptor (AhR)-dependent apoptosis and affects Cyp1a1 and Cyp1b1 expression in mouse neocortical neurons. Environ. Res. 151: 106-114.
5. Zago, M., et al. 2017. Low levels of the AhR in chronic obstructive pulmonary disease (COPD)-derived lung cells increases Cox-2 protein by altering mRNA stability. PLoS ONE 12: e0180881.
6. Parmar, N., et al. 2018. *Leishmania donovani* exploits tollip, a multitasking protein, to impair TLR/IL-1R signaling for its survival in the host. J. Immunol. 201: 957-970.
7. Duan, Z., et al. 2019. Nuclear localization of Newcastle disease virus matrix protein promotes virus replication by affecting viral RNA synthesis and transcription and inhibiting host cell transcription. Vet. Res. 50: 22.
8. Wnuk, A., et al. 2020. Autophagy-related neurotoxicity is mediated via AHR and CAR in mouse neurons exposed to DDE. Sci. Total Environ. 742: 140599.
9. Guerrina, N., et al. 2021. The aryl hydrocarbon receptor reduces LC3II expression and controls endoplasmic reticulum stress. Am. J. Physiol. Lung Cell. Mol. Physiol. 320: L339-L355.
10. Qian, C., et al. 2021. Activating AhR alleviates cognitive deficits of Alzheimer's disease model mice by upregulating endogenous Aβ catabolic enzyme Neprilysin. Theranostics 11: 8797-8812.

RESEARCH USE

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