

# Ah Receptor siRNA (r): sc-72178

## 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.

## REFERENCES

1. Reyes, H., et al. 1992. Identification of the Ah Receptor nuclear translocator protein (Arnt) as a component of the DNA-binding form of the Ah Receptor. *Science* 256: 1193-1195.
2. Okey, A.B., et al. 1994. The Ah Receptor: mediator of the toxicity of 2,3,7,8-tetrachlorobenzo-p-dioxin (TCDD) and related compounds. *Toxicol. Lett.* 70: 1-22.
3. Bacsi, S.G., et al. 1996. Functional characterization of DNA-binding domains of the subunits of the heterodimeric aryl hydrocarbon receptor complex imputing novel and canonical basic helix-loop-helix protein-DNA interactions. *J. Biol. Chem.* 271: 8843-8850.

## CHROMOSOMAL LOCATION

Genetic locus: Ahr (rat) mapping to 6q16.

## PRODUCT

Ah Receptor siRNA (r) 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  $\mu$ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see Ah Receptor shRNA Plasmid (r): sc-72178-SH and Ah Receptor shRNA (r) Lentiviral Particles: sc-72178-V as alternate gene silencing products.

For independent verification of Ah Receptor (r) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-72178A, sc-72178B and sc-72178C.

## 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  $\mu$ l of the RNase-free water provided. Resuspension of the siRNA duplex in 330  $\mu$ l of RNase-free water makes a 10  $\mu$ M solution in a 10  $\mu$ M Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

## APPLICATIONS

Ah Receptor siRNA (r) is recommended for the inhibition of Ah Receptor expression in rat 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  $\mu$ M in 66  $\mu$ l. 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).

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgG $\kappa$  BP-HRP: sc-516102 or m-IgG $\kappa$  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-IgG $\kappa$  BP-FITC: sc-516140 or m-IgG $\kappa$  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 Ah Receptor gene expression knockdown using RT-PCR Primer: Ah Receptor (r)-PR: sc-72178-PR (20  $\mu$ l). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

## SELECT PRODUCT CITATIONS

1. Volkova, M., et al. 2011. Activation of the aryl hydrocarbon receptor by doxorubicin mediates cytoprotective effects in the heart. *Cardiovasc. Res.* 90: 305-314.
2. Rzemieniec, J., et al. 2016. Selective aryl hydrocarbon receptor modulator 3,3'-diindolylmethane impairs AhR and ARNT signaling and protects mouse neuronal cells against hypoxia. *Mol. Neurobiol.* 53: 5591-5606.
3. Kajta, M., et al. 2019. Triclocarban disrupts the epigenetic status of neuronal cells and induces AhR/CAR-mediated apoptosis. *Mol. Neurobiol.* 56: 3113-3131.

## RESEARCH USE

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