

# AIRE-1 siRNA (h): sc-37669

## BACKGROUND

The autoimmune regulator gene, which is defective in the hereditary autoimmune disease APECED, encodes the transcriptional activator AIRE-1. AIRE-1 is expressed in the medullary epithelial cells and monocyte-dendritic cells of the thymus, with lower expression in the spleen, fetal liver and lymph nodes. In adult tissue, AIRE-1 expression in the thymus is confined to the medulla and the cortico-medullary junction, where it is modulated by thymocytes undergoing negative selection. At the cellular level, AIRE-1 is located in microtubular structures of the cyto-skeleton and in discrete nuclear dots resembling ND10 nuclear bodies. AIRE-1 is induced by developing early thymocytes and is associated with the correct establishment of a regular thymic environment. AIRE-1 regulates thymic architecture via transcriptional control of downstream target genes. AIRE-1 mutations in APECED patients may affect thymic T cell selection and the formation of self-tolerance.

## REFERENCES

- Zuklys, S., et al. 2000. Normal thymic architecture and negative selection are associated with AIRE expression, the gene defective in the autoimmune-polyendocrinopathy-candidiasis-ectodermal dystrophy (APECED). *J. Immunol.* 165: 1976-1983.
- Pitkanen, J., et al. 2001. Subcellular localization of the autoimmune regulator protein. Characterization of nuclear targeting and transcriptional activation domain. *J. Biol. Chem.* 276: 19597-19602.
- Vogel, A., et al. 2001. Autoimmune regulator AIRE: evidence for genetic differences between autoimmune hepatitis and hepatitis as part of the autoimmune polyglandular syndrome type 1. *Hepatology* 33: 1047-1052.

## CHROMOSOMAL LOCATION

Genetic locus: AIRE (human) mapping to 21q22.3.

## PRODUCT

AIRE-1 siRNA (h) 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 AIRE-1 shRNA Plasmid (h): sc-37669-SH and AIRE-1 shRNA (h) Lentiviral Particles: sc-37669-V as alternate gene silencing products.

For independent verification of AIRE-1 (h) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-37669A, sc-37669B and sc-37669C.

## 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

AIRE-1 siRNA (h) is recommended for the inhibition of AIRE-1 expression in human 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

AIRE-1 (C-2): sc-373703 is recommended as a control antibody for monitoring of AIRE-1 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<sup>™</sup> Molecular Weight Standards: sc-2035, UltraCruz<sup>®</sup> 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<sup>®</sup> Mounting Medium: sc-24941 or UltraCruz<sup>®</sup> Hard-set Mounting Medium: sc-359850.

## RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor AIRE-1 gene expression knockdown using RT-PCR Primer: AIRE-1 (h)-PR: sc-37669-PR (20  $\mu$ l, 521 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

## SELECT PRODUCT CITATIONS

- Shi, L., et al. 2010. Autoimmune regulator regulates autophagy in THP-1 human monocytes. *Front. Med. China* 4: 336-341.
- Padmanabhan, R.A., et al. 2023. Autoimmune regulator (AIRE): takes a hypoxia-inducing factor 1A (HIF1A) route to regulate FOXP3 expression in PCOS. *Am. J. Reprod. Immunol.* 89: e13637.

## RESEARCH USE

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

## PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) for detailed protocols and support products.