SANTA CRUZ BIOTECHNOLOGY, INC.

Arg2 siRNA (h): sc-29729

BACKGROUND

Arginase I (also designated liver-type arginase), which is expressed almost exclusively in the liver, catalyzes the conversion of arginine to ornithine and urea. The human arginase I gene, which maps to chromosome 6q23.2, encodes a 322 amino acid protein. Arginase I exists as a homotrimeric protein and contains a binuclear manganese cluster. Arg2 catalyzes the same reaction as arginase 1, but differs in its tissue specificity and subcellular location. Specifically, Arg2 localizes to the mitochondria. Arg2 is expressed in non-hepatic tissues, with the highest levels of expression in the kidneys, but, unlike arginase 1, is not expressed in liver. The human Arg2 gene, which maps to chromosome 14q24.1, encodes a 354 amino acid protein. In addition, Arg2 contains a putative amino-terminal mitochondrial localization sequence.

CHROMOSOMAL LOCATION

Genetic locus: ARG2 (human) mapping to 14q24.1.

PRODUCT

Arg2 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 µM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see Arg2 shRNA Plasmid (h): sc-29729-SH and Arg2 shRNA (h) Lentiviral Particles: sc-29729-V as alternate gene silencing products.

For independent verification of Arg2 (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-29729A, sc-29729B and sc-29729C.

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

Arg2 siRNA (h) is recommended for the inhibition of Arg2 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 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

Arg2 (A-10): sc-393496 is recommended as a control antibody for monitoring of Arg2 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 Arg2 gene expression knockdown using RT-PCR Primer: Arg2 (h)-PR: sc-29729-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. Huang, Y.C., et al. 2008. Identification of gene biomarkers for respiratory syncytial virus infection in a bronchial epithelial cell line. Genomic Med. 2: 113-125.
2. Scalera, F., et al. 2009. Paradoxical effect of L-arginine: acceleration of endothelial cell senescence. Biochem. Biophys. Res. Commun. 386: 650-655.
3. Mandal, A., et al. 2017. l-arginine uptake by cationic amino acid transporter promotes intra-macrophage survival of *Leishmania donovani* by enhancing arginase-mediated polyamine synthesis. Front. Immunol. 8: 839.
4. Koo, B.H., et al. 2018. Arginase II contributes to the Ca^{2+}/CaMKII/eNOS axis by regulating Ca^{2+} concentration between the cytosol and mitochondria in a p32-dependent manner. J. Am. Heart Assoc. 7: e009579.
5. Koo, B.H., et al. 2019. Arginase II activity regulates cytosolic Ca^{2+} level in a p32-dependent manner that contributes to Ca^{2+}-dependent vasoconstriction in native low-density lipoprotein-stimulated vascular smooth muscle cells. Exp. Mol. Med. 51: 60.
6. Koo, B.H., et al. 2020. p32-dependent p38 MAPK activation by arginase II downregulation contributes to endothelial nitric oxide synthase activation in HUVECs. Cells 9: 392.
7. Choi, K., et al. 2020. Overexpressed p32 localized in the endoplasmic reticulum and mitochondria negatively regulates calcium-dependent endothelial nitric oxide synthase activit. Mol. Med. Rep. 22: 2395-2403.
8. Kim, H.J., et al. 2021. Resolvin D1 suppresses H_2O_2-induced senescence in fibroblasts by inducing autophagy through the miR-1299/Arg2/ARL1 axis. Antioxidants 10: 1924.

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.