

# Hemoglobin $\theta$ siRNA (h): sc-105451

## BACKGROUND

Hemoglobin (Hgb) is coupled to four iron-binding, methene-linked tetrapyrrole rings (heme). The  $\alpha$  (16p13.3; 5'- $\zeta$ -pseudoz-pseudo  $\alpha$ 2-pseudo  $\alpha$ 1- $\alpha$ 2- $\alpha$ 1- $\theta$ 1-3') and  $\beta$  (11p15.5) globin loci determine the basic hemoglobin structure. The globin portion of hemoglobin consists of two  $\alpha$  chains and two  $\beta$  chains arranged in pairs forming a tetramer. Each of the four globin chains covalently associates with a heme group. The bonds between  $\alpha$  and  $\beta$  chains are weaker than between similar globin chains, thereby forming a cleavage plane that is important for oxygen binding and release. High affinity for oxygen occurs upon relaxation of the  $\alpha$ 1- $\beta$ 2 cleavage plane. When the two  $\alpha$ 1- $\beta$ 2 interfaces are closely bound, hemoglobin has a low affinity for oxygen. Hb A, which contains two  $\alpha$  chains plus two  $\beta$  chains, comprises 97% of total circulating hemoglobin. The remaining 3% of total circulating hemoglobin is comprised of Hb A-2, which consists of two  $\alpha$  chains plus two  $\delta$  chains, and fetal hemoglobin (Hb F), which consists of two  $\alpha$  chains together with two  $\gamma$  chains.

## REFERENCES

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7. Baudin-Creuz, V., Vasseur-Godbillon, C., Pato, C., Prehu, C., Wajzman, H. and Marden, M.C. 2004. Transfer of human  $\alpha$ - to  $\beta$ -hemoglobin via its chaperone protein: evidence for a new state. *J. Biol. Chem.* 279: 36530-36533.

## CHROMOSOMAL LOCATION

Genetic locus: HBQ1 (human) mapping to 16p13.3.

## PROTOCOLS

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

## PRODUCT

Hemoglobin  $\theta$  siRNA (h) is a target-specific 19-25 nt siRNA 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 Hemoglobin  $\theta$  shRNA Plasmid (h): sc-105451-SH and Hemoglobin  $\theta$  shRNA (h) Lentiviral Particles: sc-105451-V as alternate gene silencing products.

## 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

Hemoglobin  $\theta$  siRNA (h) is recommended for the inhibition of Hemoglobin  $\theta$  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.

## RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor Hemoglobin  $\theta$  gene expression knockdown using RT-PCR Primer: Hemoglobin  $\theta$  (h)-PR: sc-105451-PR (20  $\mu$ l). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

## RESEARCH USE

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