



# G6Pase- $\alpha$ siRNA (h): sc-105380

## BACKGROUND

Glucose-6-phosphatase (G6Pase), is a multicomponent enzyme system that hydrolyzes glucose-6-phosphate (G6P) in the final step of gluconeogenesis and gluconeolysis. G6Pase localizes to the endoplasmic reticulum, and while liver, kidney, and intestine are the only tissues that express the first identified isoform, G6Pase- $\alpha$ , a second form, designated G6Pase- $\beta$ , contributes to blood glucose homeostasis in a wider range of tissues. Glucocorticoids stimulate the expression of the G6Pase gene while Insulin rapidly inhibits expression via the thymine-rich Insulin response element located within the promoter of the G6Pase gene. Due to its necessary involvement in normal glucose metabolism, G6Pase plays an integral role in diabetes and glycogen storage diseases (GSDs). The presence of different isoforms may explain the ability of some individuals with GSDs to still produce glucose, despite their lack of functional G6Pase- $\alpha$ .

## REFERENCES

1. Goh, B.H., et al. 2003. Evidence for the expression of both the hydrolase and translocase components of hepatic glucose-6-phosphatase in murine pancreatic islets. *Biochem. Biophys. Res. Commun.* 307: 935-941.
2. Guionie, O., et al. 2003. Identification and characterization of a new human glucose-6-phosphatase isoform. *FEBS Lett.* 551: 159-164.
3. Shieh, J.J., et al. 2003. A glucose-6-phosphate hydrolase, widely expressed outside the liver, can explain age-dependent resolution of hypoglycemia in glycogen storage disease type 1a. *J. Biol. Chem.* 278: 47098-47103.
4. Barthel, A., et al. 2003. Novel aspects in the mechanisms of steroid diabetes and the regulation of hepatic glucose production by insulin and steroids. *Med. Klin.* 98: 283-286.
5. Ghosh, A., et al. 2005. Brain contains a functional glucose-6-phosphatase complex capable of endogenous glucose production. *J. Biol. Chem.* 280: 11114-11119.
6. Thiel, G., et al. 2005. cAMP response element binding protein (CREB) activates transcription via two distinct genetic elements of the human glucose-6-phosphatase gene. *BMC Mol. Biol.* 6: 2.

## CHROMOSOMAL LOCATION

Genetic locus: G6PC (human) mapping to 17q21.31.

## PRODUCT

G6Pase- $\alpha$  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 G6Pase- $\alpha$  shRNA Plasmid (h): sc-105380-SH and G6Pase- $\alpha$  shRNA (h) Lentiviral Particles: sc-105380-V as alternate gene silencing products.

For independent verification of G6Pase- $\alpha$  (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-105380A, sc-105380B and sc-105380C.

## 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

G6Pase- $\alpha$  siRNA (h) is recommended for the inhibition of G6Pase- $\alpha$  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 G6Pase- $\alpha$  gene expression knockdown using RT-PCR Primer: G6Pase- $\alpha$  (h)-PR: sc-105380-PR (20  $\mu$ l, 477 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

## SELECT PRODUCT CITATIONS

1. Khan, M.W., et al. 2015. mTORC2 controls cancer cell survival by modulating gluconeogenesis. *Cell Death Discov.* 1: 15016.

## 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.