SANTA CRUZ BIOTECHNOLOGY, INC.

Glycogenin-1 siRNA (h): sc-60701

BACKGROUND

Glycogen synthesis is initiated by the autoglucosylation of Glycogenin-1. Specifically, Glycogen-1 glucosylates itself to begin the synthesis of glycogen in mammalian skeletal muscle. It acts as the primer to which further glucose monomers may be added. All of the Glycogenin-1 molecules contain at least one glucosyl residue before auto-glucosylation begins. The first step of the glycogen synthesis occurs when a glucose molecule from UDP-glucose binds to the hydoxyl group of Tyr 194 on the Glycogenin-1 molecule. Using its glucosyltransferase activity, Glycogenin-1 adds more glucoses, each one coming from UDP-glucose. The glycosylation process reaches a plateau when five new glucose residues have been added, at which point glycogen synthase (GS) takes over and further elongates the chain. Glycogenin-1 remains covalently attached to the reducing end of the glycogen molecule.

REFERENCES

1. Pitcher, J., et al. 1988. Glycogenin is the priming glucosyltransferase required for the initiation of glycogen biogenesis in rabbit skeletal muscle. Eur. J. Biochem. 176: 391-395.
2. van Maanen, M., et al. 1999. Characterization of mouse glycogenin-1 cDNA and promoter region. Biochim. Biophys. Acta 1447: 284-290.
3. Skurat, A.V., et al. 2002. GNIP, a novel protein that binds and activates glycoge initiator of glycogen biosynthesis. J. Biol. Chem. 277: 19331-19338.
4. Ugalde, J.E., et al. 2003. *De novo* synthesis of bacterial glycogen: *Agrobacterium tumefacien* synthase is involved in glucan initiation and elongation. Proc. Nat. Acad. Sci. USA 100: 10659-10663.
5. van Loon, L.J., et al. 2003. Creatine supplementation increases glycogen storage but not GLUT-4 expression in human skeletal muscle. Clin. Sci. 106: 99-106.
6. Lomako, J., et al. 2004. Glycogenin: the primer for mammalian and yeast glycogen synthesis. Biochim. Biophys. Acta 1673: 45-55.
7. Schilling, S., et al. 2004. Glutaminyl cyclases unfold glutamyl cyclase activity under mild acid conditions. FEBS Lett. 563: 191-196.
8. Berrou, L., et al. 2004. The C-termina CaV β subunit interaction and modulation of CaV2.3 channels. J. Biol. Chem. 280: 494-505.

CHROMOSOMAL LOCATION

Genetic locus: GYG (human) mapping to 3q24.

PRODUCT

Glycogenin-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 µM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see Glycogenin-1 shRNA Plasmid (h): sc-60701-SH and Glycogenin-1 shRNA (h) Lentiviral Particles: sc-60701-V as alternate gene silencing products.

For independent verification of Glycogenin-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-60701A, sc-60701B and sc-60701C.

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

Glycogenin-1 siRNA (h) is recommended for the inhibition of Glycogenin-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 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

Glycogenin-1 (E-11): sc-271109 is recommended as a control antibody for monitoring of Glycogenin-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-IgGκ BP-HRP: sc-516102 or m-IgGκ 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-IgGκ BP-FITC: sc-516140 or m-IgGκ 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 Glycogenin-1 gene expression knockdown using RT-PCR Primer: Glycogenin-1 (h)-PR: sc-60701-PR (20 µl). 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.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.