

Glycogenin-1 (4H8): sc-100537

BACKGROUND

Glycogen synthesis is initiated by the autoglucosylation of Glycogenin-1. Specifically, Glycogenin-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 autoglucosylation begins. The first step of the glycogen synthesis occurs when a glucose molecule from UDP-glucose binds to the hydroxyl 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-1 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 glycogenin, the self-glucosylating initiator of glycogen biosynthesis. *J. Biol. Chem.* 277: 19331-19338.
4. Ugalde, J.E., et al. 2003. *De novo* synthesis of bacterial glycogen: *Agrobacterium tumefaciens* glycogen synthase is involved in glucan initiation and elongation. *Proc. Natl. Acad. Sci. USA* 100: 10659-10663.
5. van Loon, L.J., et al. 2004. 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-1: the primer for mammalian and yeast glycogen synthesis. *Biochim. Biophys. Acta* 1673: 45-55.
7. Schilling, S., et al. 2004. Glutamyl cyclases unfold glutamyl cyclase activity under mild acid conditions. *FEBS Lett.* 563: 191-196.

CHROMOSOMAL LOCATION

Genetic locus: YG1 (human) mapping to 3q24; Gyg (mouse) mapping to 3 A2.

SOURCE

Glycogenin-1 (4H8) is a mouse monoclonal antibody raised against recombinant Glycogenin-1 of human origin.

PRODUCT

Each vial contains 100 µg IgG_{2a} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

STORAGE

Store at 4° C, ****DO NOT FREEZE****. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

APPLICATIONS

Glycogenin-1 (4H8) is recommended for detection of Glycogenin-1 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for Glycogenin-1 siRNA (h): sc-60701, Glycogenin-1 siRNA (m): sc-60702, Glycogenin-1 shRNA Plasmid (h): sc-60701-SH, Glycogenin-1 shRNA Plasmid (m): sc-60702-SH, Glycogenin-1 shRNA (h) Lentiviral Particles: sc-60701-V and Glycogenin-1 shRNA (m) Lentiviral Particles: sc-60702-V.

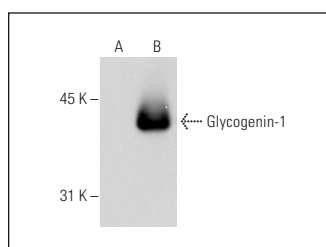
Molecular Weight of Glycogenin-1: 37 kDa.

Positive Controls: HeLa whole cell lysate: sc-2200, Glycogenin-1 (m): 293T Lysate: sc-120524 or SJRH30 cell lysate: sc-2287.

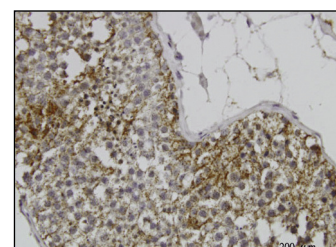
RECOMMENDED SUPPORT REAGENTS

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) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) 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. 4) Immunohistochemistry: use m-IgGκ BP-HRP: sc-516102 with DAB, 50X: sc-24982 and Immunohistomount: sc-45086, or Organo/Limonene Mount: sc-45087.

DATA



Glycogenin-1 (4H8): sc-100537. Western blot analysis of Glycogenin-1 expression in non-transfected: sc-117752 (A) and mouse Glycogenin-1 transfected: sc-120524 (B) 293T whole cell lysates.



Glycogenin-1 (4H8): sc-100537. Immunoperoxidase staining of formalin-fixed, paraffin-embedded human testis tissue showing cytoplasmic localization.

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.