

# GFAT1 (N-13): sc-48514

## BACKGROUND

Glutamine:fructose-6-phosphate amidotransferase (GFAT1) is the first and rate-limiting enzyme for the entry of glucose into the hexosamine biosynthesis pathway (HBP) in mammals. GFAT1, a member of the N-terminal nucleophile class of amidotransferases, converts fructose-6-phosphate into N-acetylglucosamine-6-phosphate. Hyperglycemia-induced Insulin resistance, a condition in which exposure to high concentrations of glucose and Insulin results in Insulin resistance, may result from increased glucose metabolism through the HBP. Hyperglycemia-induced Insulin resistance is a characteristic feature of type 2 diabetes. Consequently, GFAT1 is a potential therapeutic target in the treatment of type 2 diabetes.

## REFERENCES

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2. DeHaven, J.E., et al. 2001. A novel variant of mRNA is selectively expressed in striated muscle. *Diabetes* 50: 2419-2424.
3. Niimi, M., et al. 2001. Identification of GFAT1-L, a novel splice variant of human glutamine: fructose-6-phosphate amidotransferase (GFAT1) that is expressed abundantly in skeletal muscle. *J. Hum. Genet.* 46: 566-571.
4. Kaneto, H., et al. 2001. Activation of the hexosamine pathway leads to deterioration of pancreatic  $\beta$ -cell function through the induction of oxidative stress. *J. Biol. Chem.* 276: 31099-31104.
5. Broschat, K.O., et al. 2002. A radiometric assay for glutamine: fructose-6-phosphate amidotransferase. *Anal. Biochem.* 305: 10-15.
6. Broschat, K.O., et al. 2002. Kinetic characterization of human glutamine-fructose-6-phosphate amidotransferase I: potent feedback inhibition by glucosamine 6-phosphate. *J. Biol. Chem.* 277: 14764-14770.
7. Chou, K.C. et al. 2004. Molecular therapeutic target for type-2 diabetes. *J. Proteome Res.* 3: 1284-1288.
8. Elbein, S.C. et al. 2004. Molecular screening of the human glutamine-fructose-6-phosphate amidotransferase 1 (GFPT1) gene and association studies with diabetes and diabetic nephropathy. *Mol. Genet. Metab.* 82: 321-328.
9. Burt, D. et al. 2005. Partial characterisation of the human GFAT promoter: effect of single nucleotide polymorphisms on promoter function. *Biochim. Biophys. Acta* 1740: 85-90.

## CHROMOSOMAL LOCATION

Genetic locus: GFPT1 (human) mapping to 2p13.3; Gfpt1 (mouse) mapping to 6 D1.

## SOURCE

GFAT1 (N-13) is an affinity purified goat polyclonal antibody raised against a peptide mapping within an internal region of GFAT1 of human origin.

## PRODUCT

Each vial contains 200  $\mu$ g IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-48514 P, (100  $\mu$ g peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

## APPLICATIONS

GFAT1 (N-13) is recommended for detection of GFAT1 isoforms 1 and 2 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

GFAT1 (N-13) is also recommended for detection of GFAT1 isoforms 1 and 2 in additional species, including equine, canine, bovine, porcine and avian.

Suitable for use as control antibody for GFAT1 siRNA (h): sc-60681, GFAT1 siRNA (m): sc-60682, GFAT1 shRNA Plasmid (h): sc-60681-SH, GFAT1 shRNA Plasmid (m): sc-60682-SH, GFAT1 shRNA (h) Lentiviral Particles: sc-60681-V and GFAT1 shRNA (m) Lentiviral Particles: sc-60682-V.

Molecular Weight of GFAT1: 77 kDa.

## RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use donkey anti-goat IgG-HRP: sc-2020 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible donkey anti-goat IgG-HRP: sc-2033 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use donkey anti-goat IgG-FITC: sc-2024 (dilution range: 1:100-1:400) or donkey anti-goat IgG-TR: sc-2783 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

## STORAGE

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

## 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) or our catalog for detailed protocols and support products.



Try **GFAT1 (D-9): sc-377479**, our highly recommended monoclonal alternative to GFAT1 (N-13).