SANTA CRUZ BIOTECHNOLOGY, INC.

GFAT1 (D-9): sc-377479

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

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. Hypergylcemia-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.

CHROMOSOMAL LOCATION

Genetic locus: GFPT1 (human) mapping to 2p13.3.

SOURCE

GFAT1 (D-9) is a mouse monoclonal antibody raised against amino acids 226-274 mapping within an internal region of GFAT1 of human origin.

PRODUCT

Each vial contains 200 µg IgG_1 kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

GFAT1 (D-9) is available conjugated to agarose (sc-377479 AC), 500 µg/ 0.25 ml agarose in 1 ml, for IP; to HRP (sc-377479 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-377479 PE), fluorescein (sc-377479 FITC), Alexa Fluor® 488 (sc-377479 AF488), Alexa Fluor® 546 (sc-377479 AF546), Alexa Fluor® 594 (sc-377479 AF594) or Alexa Fluor® 647 (sc-377479 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-377479 AF680) or Alexa Fluor® 790 (sc-377479 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

RESEARCH USE

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

APPLICATIONS

GFAT1 (D-9) is recommended for detection of GFAT1 of human origin by Western Blotting (starting dilution 1:100, 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) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

GFAT1 (D-9) is also recommended for detection of GFAT1 in additional species, including canine and porcine.

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

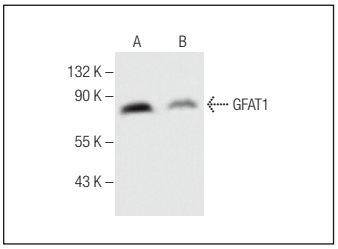
Molecular Weight of GFAT1: 77 kDa.

Positive Controls: SJRH30 cell lysate: sc-2287 or Hs 732.Sk/Mu whole cell lysate: sc-364362.

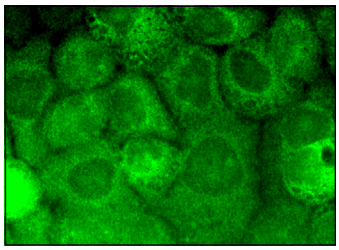
RECOMMENDED SUPPORT REAGENTS

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.

DATA



GFAT1 (D-9): sc-377479. Western blot analysis of GFAT1 expression in SJRH30 (**A**) and Hs 732.Sk/Mu (**B**) whole cell lysates.



GFAT1 (D-9): sc-377479. Immunofluorescence staining of formalin-fixed A-431 cells showing cytoplasmic and membrane localization.

SELECT PRODUCT CITATIONS

1. Kaushik, A.K., et al. 2016. Inhibition of the hexosamine biosynthetic pathway promotes castration-resistant prostate cancer. Nat. Commun. 7: 11612.
2. Liu, B., et al. 2019. Mammalian target of rapamycin 2 (MTOR2) and c-Myc modulate glucosamine-6-phosphate synthesis in glioblastoma (GBM) cells through glutamine: fructose-6-phosphate aminotransferase 1 (GFAT1). Cell. Mol. Neurobiol. 39: 415-434.
3. Wu, J., et al. 2021. Melatonin reduces proliferation and promotes apoptosis of bladder cancer cells by suppressing O-GlcNAcylation of cyclin-dependent-like kinase 5. J. Pineal Res. 71: e12765.
4. Feinberg, D., et al. 2022. Inhibition of O-GlcNAcylation decreases the cytotoxic function of natural killer cells. Front. Immunol. 13: 841299.
5. da Silva, R.C., et al. 2022. What does not kill mesangial cells makes it stronger? The response of the endoplasmic reticulum stress and the O-GlcNAc signaling to ATP depletion. Life Sci. 311: 121070.

STORAGE

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

PROTOCOLS

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