SANTA CRUZ BIOTECHNOLOGY, INC.

β-Gal (B-12): sc-377257

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

The human β-galactosidase gene, known as the LacZ gene, maps to chromosome 3p22.3 and encodes a 677 amino acid protein with an optimum functional pH range of 6 to 8. Catalytically active β-galactosidaseis (β-Gal) is a tetramer of four identical subunits, each with an active site, which can independently catalyze the cleavage of terminal galactose. Monovalent cations have a stimulatory effect on the enzymatic reaction, which likely involves a galactosyl-enzyme complex intermediate. β-Gals are widespread in animals, microorganisms and plants. The LacZ gene is widely used as a reporter gene with a variety of colored or fluorescent compounds capable of being produced from appropriate substrates, such as Xgal, which produces a blue color. For this reason, LacZ is incorporated into numerous plasmid vectors as a marker.

CHROMOSOMAL LOCATION

Genetic locus: GLB1 (human) mapping to 3p22.3; Glb1 (mouse) mapping to 9 F3.

SOURCE

β-Gal (B-12) is a mouse monoclonal antibody raised against amino acids 496-575 of β-Gal of human origin.

PRODUCT

Each vial contains 200 µg IgG_{2a} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

β-Gal (B-12) is available conjugated to agarose (sc-377257 AC), 500 µg/ 0.25 ml agarose in 1 ml, for IP; to HRP (sc-377257 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-377257 PE), fluorescein (sc-377257 FITC), Alexa Fluor® 488 (sc-377257 AF488), Alexa Fluor® 546 (sc-377257 AF546), Alexa Fluor® 594 (sc-377257 AF594) or Alexa Fluor® 647 (sc-377257 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-377257 AF680) or Alexa Fluor® 790 (sc-377257 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

APPLICATIONS

β-Gal (B-12) is recommended for detection of β-Gal of mouse, rat and 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), 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 β-Gal siRNA (h): sc-43792, β-Gal siRNA (m): sc-61342, β-Gal shRNA Plasmid (h): sc-43792-SH, β-Gal shRNA Plasmid (m): sc-61342-SH, β-Gal shRNA (h) Lentiviral Particles: sc-43792-V and β-Gal shRNA (m) Lentiviral Particles: sc-61342-V.

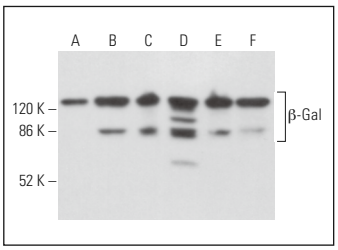
Molecular Weight of β-Gal: 76 kDa.

Positive Controls: HeLa whole cell lysate: sc-2200, A549 cell lysate: sc-2413 or Jurkat whole cell lysate: sc-2204.

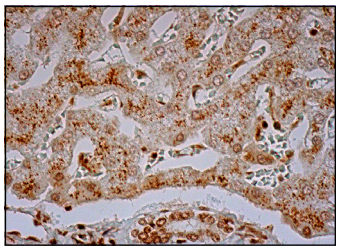
STORAGE

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

DATA



β-Gal (B-12): sc-377257. Western blot analysis of β-Gal expression in SH-SY5Y (**A**), HeLa (**B**), A549 (**C**), Jurkat (**D**), MCF7 (**E**) and MIA PaCa-2 (**F**) whole cell lysates.



β-Gal (B-12): sc-377257. Immunoperoxidase staining of formalin fixed, paraffin-embedded human liver tissue showing cytoplasmic and nuclear staining of hepatocytes and perinuclear staining of bile duct cells.

SELECT PRODUCT CITATIONS

1. Dun, Y., et al. 2013. Independent roles of methionine sulfoxide reductase A in mitochondrial ATP synthesis and as antioxidant in retinal pigment epithelial cells. Free Radic. Biol. Med. 65: 1340-1351.
2. Ho, D.H., et al. 2019. Upregulation of the p53-p21 pathway by G2019S LRRK2 contributes to the cellular senescence and accumulation of α-synuclein. Cell Cycle 18: 467-475.
3. Chung, Y.P., et al. 2020. Arsenic induces human chondrocyte senescence and accelerates rat articular cartilage aging. Arch. Toxicol. 94: 89-101.
4. Müller, A., et al. 2020. The CDK4/6-EZH2 pathway is a potential therapeutic target for psoriasis. J. Clin. Invest. 130: 5765-5781.
5. Ho, D.H., et al. 2021. LRRK2 kinase inhibitor rejuvenates oxidative stress-induced cellular senescence in neuronal cells. Oxid. Med. Cell. Longev. 2021: 9969842.
6. Bhattarai, K.R., et al. 2021. TMBIM6 regulates redox-associated post-translational modifications of IRE1α and ER stress response failure in aging mice and humans. Redox Biol. 47: 102128.
7. Zou, C., et al. 2022. CASPorter: a novel inducible human CASP1/NALP3/ ASC inflammasome biosensor. J. Inflamm. Res. 15: 1183-1194.
8. Chen, S.Y., et al. 2022. Amelioration of experimental tendinopathy by lentiviral CD44 gene therapy targeting senescence-associated secretory phenotypes. Mol. Ther. Methods Clin. Dev. 26: 157-168.
9. Ruz, C., et al. 2022. Saposin C, key regulator in the α-synuclein degradation mediated by lysosome. Int. J. Mol. Sci. 23: 12004.
10. Shen, Q.Q., et al. 2024. Cell senescence induced by toxic interaction between α-synuclein and iron precedes nigral dopaminergic neuron loss in a mouse model of Parkinson's disease. Acta Pharmacol. Sin. 45: 268-281.

RESEARCH USE

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