SANTA CRUZ BIOTECHNOLOGY, INC.

GCH-I (G-8): sc-376483

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

GTP cyclohydrolase I (GCH-I), a homodecamer, catalyzes the conversion of GTP into dihydroneopterin triphosphate and folate. GCH-I is the first and rate limiting enzyme in tetrahydrobiopterin (BH4) biosynthesis. BH4 is the cofactor for tyrosine hydroxylase, a rate-limiting enzyme for dopamine synthesis and tryptophan hydroxylase, the rate-limiting enzyme for serotonin biosynthesis. Dopamine and serotonin are neurotransmitters involved in depression, which may be associated with a deficiency of BH4. Mutations in the gene encoding GCH-I cause malignant hyperphenylalaninemia, a genetic neurological disorder characterized by abnormally high levels of serum phenylalanine, and dopa-responsive dystonia (DRD), a group of movement disorders characterized by a progressive difficulty in walking which respond to L-dopa.

CHROMOSOMAL LOCATION

Genetic locus: GCH1 (human) mapping to 14q22.2; Gch1 (mouse) mapping to 14 C1.

SOURCE

GCH-I (G-8) is a mouse monoclonal antibody raised against amino acids 1-250 representing full length GCH-I 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.

GCH-I (G-8) is available conjugated to agarose (sc-376483 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-376483 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-376483 PE), fluorescein (sc-376483 FITC), Alexa Fluor® 488 (sc-376483 AF488), Alexa Fluor® 546 (sc-376483 AF546), Alexa Fluor® 594 (sc-376483 AF594) or Alexa Fluor® 647 (sc-376483 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-376483 AF680) or Alexa Fluor® 790 (sc-376483 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

APPLICATIONS

GCH-I (G-8) is recommended for detection of GCH-I isoforms GCH-1, GCH-2, GCH-3 and GCH-4 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) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for GCH-I siRNA (h): sc-60675, GCH-I siRNA (m): sc-60676, GCH-I shRNA Plasmid (h): sc-60675-SH, GCH-I shRNA Plasmid (m): sc-60676-SH, GCH-I shRNA (h) Lentiviral Particles: sc-60675-V and GCH-I shRNA (m) Lentiviral Particles: sc-60676-V.

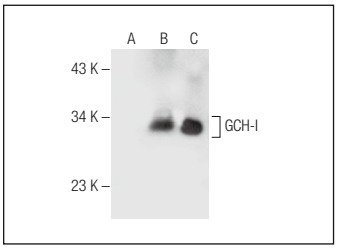
Molecular Weight of GCH-I: 26 kDa.

Positive Controls: IMR-32 cell lysate: sc-2409, SK-N-SH cell lysate: sc-2410 or GCH-I (h): 293T Lysate: sc-159287.

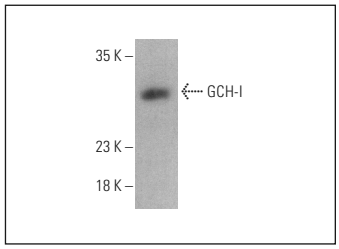
RECOMMENDED SUPPORT REAGENTS

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



GCH-I (G-8): sc-376483. Western blot analysis of GCH-I expression in non-transfected 293T: sc-117752 (**A**), human GCH-I transfected 293T: sc-159287 (**B**) and IMR-32 (**C**) whole cell lysates.



GCH-I (G-8) HRP: sc-376483 HRP. Direct western blot analysis of GCH-I expression in SK-N-SH whole cell lysate.

SELECT PRODUCT CITATIONS

1. Jones, L., et al. 2017. Translational effects and coding potential of an upstream open reading frame associated with DOPA responsive dystonia. Biochim. Biophys. Acta Mol. Basis Dis. 1863: 1171-1182.
2. Nasser, A., et al. 2018. Heterozygous mutations in GTP-cyclohydrolase-1 reduce BH4 biosynthesis but not pain sensitivity. Pain 159: 1012-1024.
3. Shin, N., et al. 2019. Uncoupled endothelial nitric oxide synthase enhances p-Tau in chronic traumatic encephalopathy mouse model. Antioxid. Redox Signal. 30: 1601-1620.
4. Sampath, C., et al. 2019. Impairment of Nrf2- and nitrergic-mediated gastrointestinal motility in an MPTP mouse model of Parkinson's disease. Dig. Dis. Sci. 64: 3502-3517.
5. Lindsay, A., et al. 2021. Tetrahydrobiopterin synthesis and metabolism is impaired in dystrophin-deficient mdx mice and humans. Acta Physiol. 231: e13627.

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.