SANTA CRUZ BIOTECHNOLOGY, INC.

PGD (G-2): sc-398977

SANTA CRUZ®
BIOTECHNOLOGY

The Power to Question

BACKGROUND

PGD (phosphogluconate dehydrogenase), also referred to as 6PGD, is a 483 amino acid enzyme that is involved in the pentose phosphate shunt. Pentose is required for nucleic acid biosynthesis and the pentose phosphate cycle is a major source of NADPH. As the second dehydrogenase in the pentose phosphate cycle, PGD catalyzes the oxidative decarboxylation of PGD to ribulose 5-phosphate, following the release of CO_2 and the reduction of NADP. PGD deficiency increases the level of erythrocyte pyruvate kinase (PK) activity and reduces glutathione synthetase (GSH), resulting in hemolysis. Defects in PGD are generally asymptomatic and are inherited in an autosomal dominant fashion. Catalytic active regions of PGD, such as those forming the substrate and coenzyme binding sites, are highly conserved in most species.

CHROMOSOMAL LOCATION

Genetic locus: PGD (human) mapping to 1p36.22; Pgd (mouse) mapping to 4 E2.

SOURCE

PGD (G-2) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 417-443 near the C-terminus of PGD 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.

PGD (G-2) is available conjugated to agarose (sc-398977 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-398977 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-398977 PE), fluorescein (sc-398977 FITC), Alexa Fluor® 488 (sc-398977 AF488), Alexa Fluor® 546 (sc-398977 AF546), Alexa Fluor® 594 (sc-398977 AF594) or Alexa Fluor® 647 (sc-398977 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-398977 AF680) or Alexa Fluor® 790 (sc-398977 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

Blocking peptide available for competition studies, sc-398977 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

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APPLICATIONS

PGD (G-2) is recommended for detection of PGD 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 PGD siRNA (h): sc-78779, PGD siRNA (m): sc-152188, PGD shRNA Plasmid (h): sc-78779-SH, PGD shRNA Plasmid (m): sc-152188-SH, PGD shRNA (h) Lentiviral Particles: sc-78779-V and PGD shRNA (m) Lentiviral Particles: sc-152188-V.
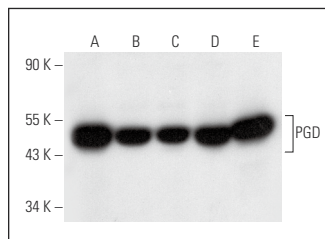
Molecular Weight of PGD: 52 kDa.

Positive Controls: MOLT-4 cell lysate: sc-2233, Jurkat whole cell lysate: sc-2204 or A549 cell lysate: sc-2413.
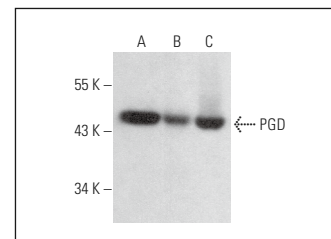
STORAGE

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

DATA

PGD (G-2): sc-398977. Western blot analysis of PGD expression in NCI-H460 (**A**), MOLT-4 (**B**), Jurkat (**C**), Raji (**D**) and A549 (**E**) whole cell lysates.

PGD (G-2): sc-398977. Western blot analysis of PGD expression in MOLT-4 (**A**), HL-60 (**B**) and THP-1 (**C**) whole cell lysates.

SELECT PRODUCT CITATIONS

1. Qu, J., et al. 2017. Phosphoglycerate mutase 1 regulates dNTP pool and promotes homologous recombination repair in cancer cells. J. Cell Biol. 216: 409-424.

2. Ngo, H.K.C., et al. 2017. Nrf2 mutagenic activation drives hepatocarcinogenesis. Cancer Res. 77: 4797-4808.

3. Tao, R., et al. 2017. Genetically encoded fluorescent sensors reveal dynamic regulation of NADPH metabolism. Nat. Methods 14: 720-728.

4. Xiao, G., et al. 2018. B-cell-specific diversion of glucose carbon utilization reveals a unique vulnerability in B cell malignancies. Cell 173: 470-484.e18.

5. Kang, H., et al. 2018. PARIS reprograms glucose metabolism by HIF-1α induction in dopaminergic neurodegeneration. Biochem. Biophys. Res. Commun. 495: 2498-2504.

6. Hwang, S., et al. 2018. Correcting glucose-6-phosphate dehydrogenase deficiency with a small-molecule activator. Nat. Commun. 9: 4045.

7. Zhong, Z., et al. 2019. PORCN inhibition synergizes with PI3K/mTOR inhibition in Wnt-addicted cancers. Oncogene 38: 6662-6677.

8. Li, H., et al. 2019. 6-phosphogluconate dehydrogenase links cytosolic carbohydrate metabolism to protein secretion via modulation of glutathione levels. Cell Chem. Biol. 26: 1306-1314.e5.

9. Zhang, H., et al. 2019. 1-hydroxy-8-methoxy-anthraquinon reverses Cisplatin resistance by inhibiting 6PGD in cancer cells. Open Life Sci. 14: 454-461.

10. Zou, Y., et al. 2020. Illuminating NAD+ metabolism in live cells and *in vivo* using a genetically encoded fluorescent sensor. Dev. Cell 53: 240-252.e7.

11. Li, Z., et al. 2021. Octamer transcription factor-1 induces the Warburg effect via up-regulation of hexokinase 2 in non-small cell lung cancer. Mol. Cell. Biochem. 476: 3423-3431.

RESEARCH USE

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