SANTA CRUZ BIOTECHNOLOGY, INC.

PRPS1/2 (EE-17): sc-100822

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

PRPS (phosphoribosyl pyrophosphate synthetase) proteins catalyze the synthesis of phosphoribosyl pyrophosphate (PRPP). Three human PRPS isoforms exist and are encoded by three different genes. PRPS1 and PRPS2 (also known as PRS1 and PRS2, respectively) are ubiquitously expressed, while PRPS3 (also known as PRPS1L1) is specific to the testis. PRPP is an important substrate synthesized from MgATP and ribose-5-phosphate in a reaction that requires inorganic phosphate and magnesium as a cofactor. PRPP is essential in the synthesis of nearly all nucleotides, implying that PRPS1/2 play an important role in nucleotide biosynthesis and purine metabolism. A mutation in the gene encoding PRPS1 may result in PRPS superactivity, a disease characterized by gout and the overproduction of purine nucleotides, uric acid and PRPP. PRPS1 mutations can also lead to a reduction in PRPS1 activity resulting in ARTS syndrome or CMTX5 (Charcot-Marie-Tooth disease X-linked recessive type 5).

REFERENCES

1. Kunjara, S., et al. 1992. Phosphoribosyl pyrophosphate formation in the rat adrenal gland in relation to adrenal growth in experimental diabetes. Diabetes 41: 1429-1435.
2. Ishizuka, T., et al. 1992. Promoter regions of the human X-linked housekeeping genes PRPS1 and PRPS2 encoding phosphoribosylpyrophosphate synthetase subunit I and II isoforms. Biochim. Biophys. Acta 1130: 139-148.
3. Fujimori, S. 1996. PRPP synthetase superactivity. Nippon Rinsho 54: 3309-3314.
4. Ahmed, M., et al. 1999. Accelerated transcription of PRPS1 in X-linked overactivity of normal human phosphoribosylpyrophosphate synthetase. J. Biol. Chem. 274: 7482-7488.
5. García-Pavía, P., et al. 2003. Phosphoribosylpyrophosphate synthetase overactivity as a cause of uric acid overproduction in a young woman. Arthritis Rheum. 48: 2036-2041.
6. Tang, W., et al. 2006. Expression, purification, crystallization and preliminary X-ray diffraction analysis of human phosphoribosyl pyrophosphate synthetase 1 (PRS1). Acta Crystallogr. Sect. F Struct. Biol. Cryst. Commun. 62: 432-434.
7. de Brouwer, A.P., et al. 2007. Arts syndrome is caused by loss-of-function mutations in PRPS1. Am. J. Hum. Genet. 81: 507-518.

CHROMOSOMAL LOCATION

Genetic locus: PRPS1(human) mapping to Xq22.3, PRPS2 (human) mapping to Xp22.2; Prps1 (mouse) mapping to X F1, Prps2 (mouse) mapping to X F5.

SOURCE

PRPS1/2 (EE-17) is a mouse monoclonal antibody raised against recombinant PRPS1/2 of human origin.

PRODUCT

Each vial contains 100 µg IgG_3 in 1.0 ml PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

PRPS1/2 (EE-17) is recommended for detection of PRPS1 and PRPS2 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) and immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)].

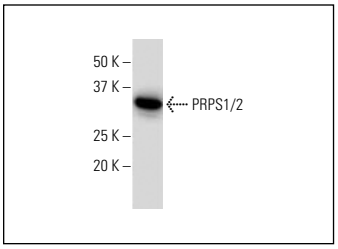
Suitable for use as control antibody for PRPS1/2 siRNA (h): sc-62894, PRPS1/2 siRNA (m): sc-62895, PRPS1/2 shRNA Plasmid (h): sc-62894-SH, PRPS1/2 shRNA Plasmid (m): sc-62895-SH, PRPS1/2 shRNA (h) Lentiviral Particles: sc-62894-V and PRPS1/2 shRNA (m) Lentiviral Particles: sc-62895-V.

Molecular Weight of PRPS1: 35 kDa.

Molecular Weight of PRPS2: 34 kDa.

Positive Controls: HeLa whole cell lysate: sc-2200.

DATA



PRPS1/2 (EE-17): sc-100822. Western blot analysis of PRPS1/2 expression in HeLa whole cell lysate.

SELECT PRODUCT CITATIONS

1. Xu, D., et al. 2019. The protein kinase activity of fructokinase A specifies the antioxidant responses of tumor cells by phosphorylating p62. Sci. Adv. 5: eaav4570.
2. Li, J., et al. 2019. Down-regulation of phosphoribosyl pyrophosphate synthetase 1 inhibits neuroblastoma cell proliferation. Cells 8: 955.
3. Zhang, Y., et al. 2020. Upregulation of antioxidant capacity and nucleotide precursor availability suffices for oncogenic transformation. Cell Metab. 33: 94-109.e8.
4. Srivastava, S., et al. 2021. Notch1-driven UBR7 stimulates nucleotide biosynthesis to promote T cell acute lymphoblastic leukemia. Sci. Adv. 7: eabc9781.

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.