

# PRPS1/2/3 (A-11): sc-376440

## 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).

## SOURCE

PRPS1/2/3 (A-11) is a mouse monoclonal antibody raised against amino acids 143-270 mapping near the C-terminus of PRPS2 of human origin.

## PRODUCT

Each vial contains 200 µg IgG<sub>1</sub> kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

PRPS1/2/3 (A-11) is available conjugated to agarose (sc-376440 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-376440 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-376440 PE), fluorescein (sc-376440 FITC), Alexa Fluor® 488 (sc-376440 AF488), Alexa Fluor® 546 (sc-376440 AF546), Alexa Fluor® 594 (sc-376440 AF594) or Alexa Fluor® 647 (sc-376440 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-376440 AF680) or Alexa Fluor® 790 (sc-376440 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

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## STORAGE

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

## APPLICATIONS

PRPS1/2/3 (A-11) is recommended for detection of PRPS1, PRPS2 and PRPS3 (PRPS1L1) 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).

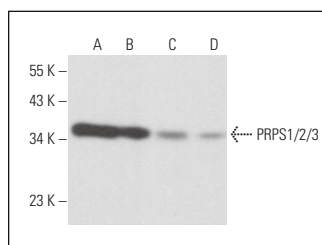
PRPS1/2/3 (A-11) is also recommended for detection of PRPS1, PRPS2 and PRPS3 (PRPS1L1) in additional species, including canine and porcine.

Positive Controls: Jurkat whole cell lysate: sc-2204, HeLa whole cell lysate: sc-2200 or HL-60 whole cell lysate: sc-2209.

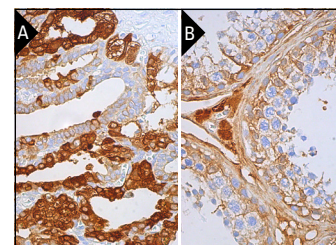
## RECOMMENDED SUPPORT REAGENTS

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. 4) Immunohistochemistry: use m-IgGκ BP-HRP: sc-516102 with DAB, 50X: sc-24982 and Immunohistomount: sc-45086, or Organo/Limonene Mount: sc-45087.

## DATA



PRPS1/2/3 (A-11): sc-376440. Western blot analysis of PRPS1/2/3 expression in Jurkat (A), HeLa (B), HL-60 (C) and Neuro-2A (D) whole cell lysates.



PRPS1/2/3 (A-11): sc-376440. Immunoperoxidase staining of formalin fixed, paraffin-embedded human seminal vesicle tissue showing cytoplasmic and nuclear staining of glandular cells (A). Immunoperoxidase staining of formalin fixed, paraffin-embedded human testis tissue showing cytoplasmic and membrane staining of cells in seminiferous ducts and cytoplasmic staining of Leydig cells (B).

## SELECT PRODUCT CITATIONS

- Zhang, F., et al. 2015. Arginylation regulates purine nucleotide biosynthesis by enhancing the activity of phosphoribosyl pyrophosphate synthase. *Nat. Commun.* 6: 7517.
- Qian, X., et al. 2018. Conversion of PRPS hexamer to monomer by AMPK-mediated phosphorylation inhibits nucleotide synthesis in response to energy stress. *Cancer Discov.* 8: 94-107.
- Miao, W. and Wang, Y. 2019. Targeted quantitative kinome analysis identifies PRPS2 as a promoter for colorectal cancer metastasis. *J. Proteome Res.* 18: 2279-2286.
- Watanabe, M., et al. 2020. A substrate-trapping strategy to find E3 ubiquitin ligase substrates identifies Parkin and TRIM28 targets. *Commun. Biol.* 3: 592.
- Liu, T., et al. 2023. Nucleus-exported CLOCK acetylates PRPS to promote de novo nucleotide synthesis and liver tumour growth. *Nat. Cell Biol.* 25: 273-284.

## RESEARCH USE

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