

# PRODUCT INFORMATION



## ENPP1 (human, recombinant)

Item No. 33397

### Overview and Properties

**Synonyms:** CD203a, Ectonucleotide Pyrophosphatase/Phosphodiesterase 1, Ectonucleotide Pyrophosphatase/Phosphodiesterase Family Member 1, Membrane Component Chromosome 6 Surface Marker 1, PDNP1, Plasma Cell Membrane Glycoprotein PC-1

**Source:** Active C-terminal 10x-His-tagged human ENPP1 expressed in HEK293 cells

**Amino Acids:** 107-925

**Uniprot No.:** P22413

**Molecular Weight:** 98.7 kDa

**Storage:** -80°C (as supplied)

**Stability:** ≥2 years

**Purity:** *batch specific* (≥90% estimated by SDS-PAGE)

**Supplied in:** TBS, pH 7.4, with 5% glycerol

**Protein Concentration:** *batch specific* mg/ml

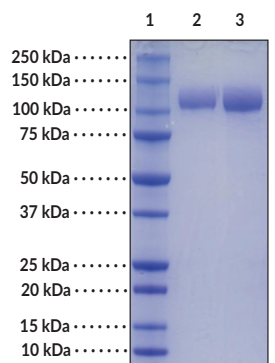
**Activity:** *batch specific* U/ml

**Specific Activity:** *batch specific* U/mg

**Unit Definition:** One unit is defined as the amount of enzyme required to produce 1 nmol of *p*-nitrophenol (*p*NP) per minute at 25°C in 100 mM Tris, pH 9.0, with 150 mM sodium chloride, and 1 mM *p*NP-TMP.

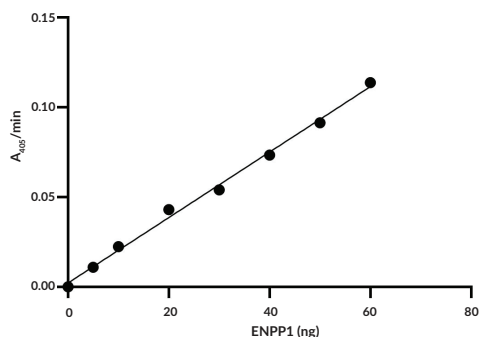
Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

### Images

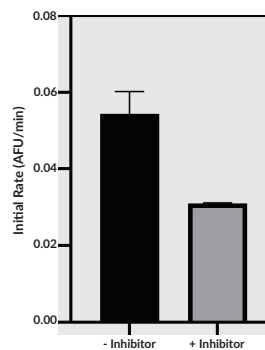


Lane 1: MW Markers  
Lane 2: ENPP1 (2 µg)  
Lane 3: ENPP1 (4 µg)

SDS-PAGE Analysis of ENPP1.



ENPP1 activity was determined by measuring the hydrolysis of thymidine monophosphate *p*-nitrophenol (TMP-*p*NP). Production of the *p*-nitrophenol is measured by monitoring the increase in absorbance at 405 nm.



ENPP1 initial rate with and without 30 µM ENPP1 Inhibitor C (Item No. 29809).

WARNING  
THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA  
This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the [complete](#) Safety Data Sheet, which has been sent via email to your institution.

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## Description

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Ectonucleotide pyrophosphatase/phosphodiesterase family member 1 (ENPP1) is a type II transmembrane glycoprotein with nucleotide pyrophosphatase and phosphodiesterase enzyme activities.<sup>1</sup> It is expressed in skeletal, adipose, hepatic, renal, cardiac, and placental tissues, as well as pancreatic islets, salivary glands, chondrocytes, fibroblasts, and lymphocytes.<sup>2</sup> ENPP1 is a critical regulator of purinergic signaling that catalyzes the hydrolysis of ATP or GTP to AMP or GMP, respectively, as well as the hydrolysis of cGAMP, and has roles in platelet aggregation, muscle contraction, hypoxia, ischemia, cGAS-STING signaling, and cell proliferation, migration, apoptosis, and differentiation.<sup>1,3</sup> This nucleotide hydrolysis also generates inorganic pyrophosphates, which inhibit bone and cartilage mineralization, implicating ENPP1 as a regulator of bone and cartilage development. Loss-of-function mutations in *ENPP1* are associated with various calcification-related disorders, including autosomal recessive hypophosphatemic rickets type 2 (ARHR2) generalized arterial calcification of infancy (GACI), and pseudoxanthoma elasticum (PXE).<sup>1,4</sup> *ENPP1* SNPs are associated with insulin resistance and the development of diabetic nephropathy.<sup>2,5</sup> ENPP1 hydrolysis of cGAMP in the tumor microenvironment decreases STING activation, facilitates immunosuppression, and is associated with enhanced bone metastasis in mouse xenograft models of breast cancer.<sup>1,3</sup> Inhibition of ENPP1 promotes STING activation and increases survival in various mouse xenograft models.<sup>1</sup> Cayman's ENPP1 (human, recombinant) protein can be used for enzyme activity assays.

## References

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1. Onyedibe, K.I., Wang, M., and Sintim, H.O. ENPP1, an old enzyme with new functions, and small molecule inhibitors - A STING in the tale of ENPP1. *Molecules* **24**(22), E4192 (2019).
2. Sortica, D.A., Crispim, D., Zaffari, G.P., *et al.* The role of ecto-nucleotide pyrophosphatase/phosphodiesterase 1 in diabetic nephropathy. *Arq. Bras. Endocrinol. Metab.* **55**(9), 677-685 (2011).
3. Li, L., Yin, Q., Kuss, P., *et al.* Hydrolysis of 2'3'-cGAMP by ENPP1 and design of nonhydrolyzable analogs. *Nat. Chem. Biol.* **10**(12), 1043-1048 (2014).
4. Bowman, M.A.H. and McNally, E.M. Genetic pathways of vascular calcification. *Trends Cardiovasc. Med.* **22**(4), 93-98 (2012).
5. Bacci, S., De Cosmo, S., Prudente, S., *et al.* ENPP1 gene, insulin resistance and related clinical outcomes. *Curr. Opin. Clin. Nutr. Metab. Care* **10**(4), 403-409 (2007).

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