

Recombinant Human ACPP (carrier-free)

Catalog# / Size	789302 / 10 µg 789304 / 25 µg 789306 / 100 µg 789308 / 500 µg
Regulatory Status	RUO
Other Names	Prostatic acid phosphatase, PAP, 5'-nucleotidase, 5'-NT, Ecto-5'-nucleotidase, Thiamine monophosphatase, TMPase, ACPP
Description	ACPP, also known as prostatic acid phosphatase, belongs to the histidine acid phosphatase family. It has phosphotyrosyl phosphatase activity. It is predominantly expressed in the prostate gland, and restricted to glandular and ductal epithelial cells, and mainly in the secreted form. It is also widely expressed in non-prostatic tissues, such as bladder, kidney, pancreas, lung, cervix, testis, and ovary, as a type I transmembrane protein with N-terminal phosphatase activity. A mutation at Trp206 reduces ACPP activity, causing its structural instability and increased binding to the L(+)-tartrate inhibitor. The expression of ACPP correlates with prostate cell proliferation. High levels of ACPP leads to slow cell growth. Though the level of ACPP in the circulation is increased in prostate cancer patients, its level and activity are reduced in prostate cancer cells. ACPP serves as a tumor suppressor. Reduced ACPP levels result in hyperphosphorylation of HER-2 (human epidermal growth factor receptor-2), activating downstream MAPK signaling, prostate cancer progression and androgen-independent growth. In addition, ACPP dephosphorylates ErbB-2, blocking downstream ERK1/2 and AKT signaling and tumorigenicity. Several studies indicate that ACPP is cleaved into amyloidogenic fragments, which greatly enhance XMRV (xenotropic murine leukemia virus-related virus) infection in prostate cancer tissues and HIV infection.

Product Details

Host Species	293E cells
Source	Human ACPP, amino acid Lys33-Gln379 (Accession # P15309.3), with a-C-terminal 6His tag, was expressed in 293E cells.
Molecular Mass	The 353 amino acid recombinant protein has a predicted molecular mass of approximately 41.12 kD. The DTT-reduced and non-reduced protein migrates at approximately 50 kD by SDS-PAGE. The predicted N-terminal amino acid is Lys.
Purity	> 95%, as determined by Coomassie stained SDS-PAGE
Formulation	0.22 µm filtered protein solution is in 20 mM Tris, 150 mM NaCl, pH 7.5.
Endotoxin Level	Less than 0.1 EU per µg cytokine as determined by the LAL method
Concentration	10 and 25 µg sizes are bottled at 200 µg/mL. 100 µg and larger sizes are bottled at the concentration indicated on the vial. To obtain lot-specific concentration, please enter the lot number in our Concentration and Expiration Lookup or Certificate of Analysis online tools.
Storage & Handling	Unopened vial can be stored at -20°C or -70°C for six months. For maximum results, quick spin vial prior to opening. Avoid repeated freeze/thaw cycles.
Activity	The activity of ACPP is determined by its ability to hydrolyze p-nitrophenyl phosphate (PNPP). The specific activity is > 100,000 pmol/min/µg.
Application	Bioassay
Application Notes	Human ACPP Activity Assay <ol style="list-style-type: none"> 1. Dilute the recombinant human ACPP at 0.1 µg/mL in assay buffer. 2. Dilute the substrate at 2 mM in assay buffer. 3. In a plate, combine 50 µL of hACPP and 50 µL of 2 mM Substrate. Include a substrate blank containing 50 µL of assay buffer and 50 µL of 2 mM substrate. 4. Incubate the reaction at room temperature for 5 minutes. 5. Add 100 µL of 0.2 M NaOH to stop the reaction and develop the color. 6. Read the absorbance in endpoint mode at 410 nm. 7. Calculate the specific activity:

$$\text{Specific Activity (pmol/min/}\mu\text{g)} = \frac{((\text{Adjusted } V_{\text{max}}^* (\text{OD}/\text{min}) \times \text{Conversion Factor}^{**} (\text{pmol}/\text{OD}))}{\text{Incubation time (min)} \times \text{amount of enzyme } (\mu\text{g})}$$

*Adjusted for substrate blank

**Derived using calibration standard p-Nitrophenol (Sigma-Aldrich, Catalog No. 241326).

Per Well:

- Recombinant human ACPD: 0.005 μg
- Substrate: 0.5 mM

Materials

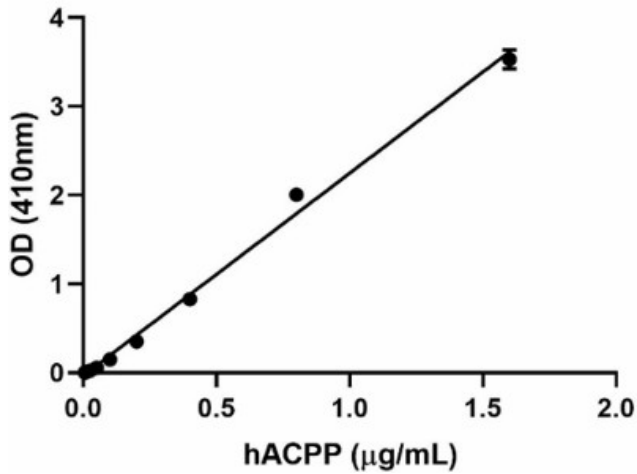
- Assay buffer: 50 mM NaOAc, pH 4.5
- Recombinant human Prostatic Acid Phosphatase/ACPD (hACPD)
- Substrate: p-Nitrophenyl phosphate (Sigma-Aldrich, Catalog No. N2765)
- 96-well clear plate (Costar, Catalog No. 92592)
- Plate reader (Model: SpectraMax Plus by Molecular Devices) or equivalent)
- NaOH, 0.2 M in deionized water

BioLegend carrier-free recombinant proteins provided in liquid format are shipped on blue ice. Our comparison testing data indicates that when handled and stored as recommended, the liquid format has equal or better stability and shelf-life compared to commercially available lyophilized proteins after reconstitution. Our liquid proteins are verified in-house to maintain activity after shipping on blue ice and are backed by our [100% satisfaction guarantee](#). If you have any concerns, contact us at tech@biolegend.com.

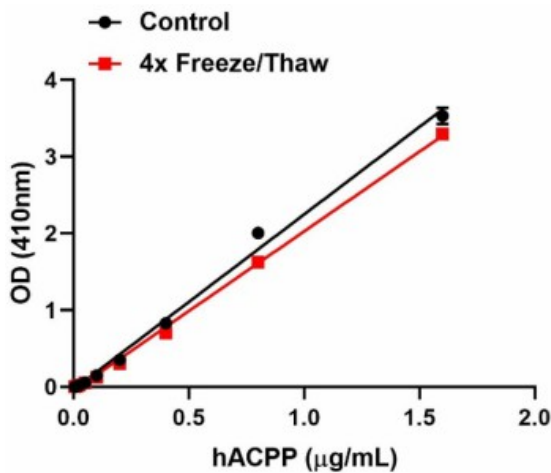
Antigen Details

Structure	Monomer
Distribution	Secreted by epithelial cells and synthesized under androgen regulation. Highly expressed in the prostate, also detectable in the bladder, kidney, pancreas, lung, ovary, testis, lung, and cervix; secreted, lysosome membrane, and plasma membrane
Function	ACPD is a non-specific phosphatase. It has phosphotyrosyl phosphatase activity.
Interaction	Dephosphorylates ERBB2
Ligand/Receptor	Converts orthophosphoric monoester to alcohol and orthophosphate
Bioactivity	ACPD hydrolyzes p-nitrophenyl phosphate (PNPP).
Cell Type	Epithelial cells
Biology Area	Cancer Biomarkers, Cell Biology, Immuno-Oncology
Molecular Family	Enzymes and Regulators, Proteases
Antigen References	<ol style="list-style-type: none"> 1. Lin MF, Clinton GM. 1986. <i>Biochem. J.</i> 235:351. 2. Schröder B <i>et al.</i> 2007. <i>Traffic</i> 8:1676. 3. Quintero IB, <i>et al.</i> 2007. <i>Cancer Res.</i> 67:6549. 4. Veeramani S, <i>et al.</i> <i>Endocr. Relat. Cancer</i> 12:805. 5. Zhang Z <i>et al.</i> 1997. <i>Acta Biochim Pol.</i> 44: 659. 6. Hong S, <i>et al.</i> 2009. <i>J. Virol.</i> 83:6995. 7. Münch J, <i>et al.</i> 2007. <i>Cell</i> 131:1059. 8. Chuang TD, <i>et al.</i> 2010. <i>J. Biol. Chem.</i> 285:23598.
Gene ID	55

Product Data



The activity of ACPP is determined by its ability to hydrolyze p-nitrophenyl phosphate (PNPP). The specific activity is > 100,000 pmol/min/µg.



Stability Testing for Recombinant Human ACPP. Human ACPP was aliquoted in 20 mM Tris, 150 mM NaCl, pH 7.5. One aliquot was frozen and thawed four times (4x Freeze/Thaw) and compared to the control that was kept at 4°C (control). The samples were tested for their ability to hydrolyze p-nitrophenyl phosphate (PNPP). The specific activity is > 100,000 pmol/min/µg.

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BioLegend Inc., 8999 BioLegend Way, San Diego, CA 92121 www.biolegend.com
 Toll-Free Phone: 1-877-Bio-Legend (246-5343) Phone: (858) 768-5800 Fax: (877) 455-9587