



## Product Manual

**Product name:** Lambda Protein Phosphatase (Lambda PP), Recombinant.  
**Catalog#** LPP-301-1, **Size:** 20,000 Units

Lambda Protein Phosphatase is supplied as a solution containing 400,000 units per ml of 50 mM HEPES, pH 7.5, 100 mM NaCl, 0.1 mM MnCl<sub>2</sub>, 0.1 mM EGTA, 2 mM dithiothreitol, 0.01% BRIJ 35, and 50% glycerol.

Components	Size
Lambda PP	20,000 Units
10X Lambda PP Buffer (500 mM HEPES, pH 7.5, 1 mM EGTA, 50 mM dithiothreitol, and 0.1% BRIJ 35)	0.2 ml
10X MnCl <sub>2</sub> (20 mM)	0.2 ml

### Product Description

Lambda Protein Phosphatase (Lambda PP) is a Mn<sup>2+</sup>-dependent protein phosphatase with activity towards phosphorylated serine, threonine and tyrosine residues (1, 2). It is the 221 amino-acid product of the ORF221 open reading frame on bacteriophage lambda (1). The enzyme is inhibited by vanadate ions and can be heat inactivated at 65° C for 1 hour in the presence of 50 mM Na<sub>2</sub>EDTA (3).

Amid Biosciences recombinant full-length Lambda Protein Phosphatase expressed in *E. coli* and purified to >90% homogeneity (SDS-PAGE) with no detectable protease, DNase or RNase activity.

Molecular Weight: 25 kDa

Specific activity: ~600,000 units/mg

Unit Definition: One unit will hydrolyze 1 nmol of p-nitrophenyl phosphate (pNPP) in 1 minute at 30° C and pH 7.5 in a total reaction volume of 50 µl.

### Recommended Usage

Lambda Phosphatase can be used to release phosphate groups from phosphorylated serine, threonine and tyrosine residues in proteins. The enzyme is also active on phosphorylated histidine residues (1, 2).

The dephosphorylation activity of the enzyme will vary depending on the protein substrate. One must empirically determine the optimal reaction conditions for a particular phosphorylated substrate. The reaction buffer is prepared by a 10-fold dilution of the supplied 10X Lambda Protein Phosphatase Buffer. The reaction buffer is supplemented with 10X MnCl<sub>2</sub> solution to a final concentration of 2 mM and incubated at 30 °C.

General guideline for the dephosphorylation reaction: 100-1000 Units/ml for dephosphorylation of proteins, cell lysates or western immunoblots

If phosphorylated protein source is a crude cellular or tissue extract, it may be necessary to include the appropriate protease inhibitors in your buffer.

### Storage

The product is shipped on dry ice and storage at or below -70 °C is recommended. After initial thawing, it is recommended that the product be stored in working aliquots and refrozen at -70 °C to avoid repeated freeze/thaw cycles.

### References

1. Cohen, P.T.W., and Cohen, P., Discovery of a protein phosphatase activity encoded in the genome of bacteriophage lambda. Probable identity with open reading frame 221. *Biochem. J.*, 1989, 260, 931-934.
2. Zhuo, S. et al., Expression, purification, crystallization, and biochemical characterization of a recombinant protein phosphatase. *J. Biochem.*, 1993, 268, 17754-17761.
3. Gordon, J.A. Use of vanadate as protein-phosphotyrosine phosphatase inhibitor. *Meth. Enzymol.* 1991, 201: 477-482.