

## Recombinant PRL-1 (2–173) Active Enzyme

### BACKGROUND

The product of the PRL-1 gene (alternate gene names PTP4A1 Synonyms: DKFZp779M0721, hPTPCAAX1) is a protein tyrosine phosphatase also known as phosphatase of regenerating liver, Protein tyrosine phosphatase type IVA, member 1, PTPCAAX1 or Hypothetical protein DKFZp779M0721. Protein tyrosine phosphatases play important roles in the regulation of cell growth, development, and differentiation. PRL-1 is one of the most interesting immediate early growth response genes in regenerating liver. The gene encodes a novel 20-kDa nuclear protein tyrosine phosphatase. Other than the signature sequence for PTPases, PRL-1 is not homologous to either the dual specificity PTPases (cdc25 and MKP-1) or monospecific PTPases. PRL-1 is elevated throughout the major proliferative phase of liver regeneration when hepatocytes and nonparenchymal cells in the liver are rapidly proliferating. PRL-1 is also expressed at high levels in other proliferating cells including tumor cell lines such as hepatomas. PRL-1-transfected cells showed altered growth characteristics, including a faster doubling time, growth to a greater saturation density, altered morphology, and evidence of anchorage-independent growth. Overexpression of human PRL-1 in epithelial cells results in tumor formation in nude mice.

### ACTIVITY

3.3 pmole/min/ $\mu$ g of enzyme; Determined using DiFMUP; Reaction conditions: 100  $\mu$ M DiFMUP, 10 min incubation at 30°C, 5  $\mu$ g enzyme.

### PURITY

>90% pure as determined by Coomassie-stained SDS gel

### ASSAY METHODS

#### MATERIALS

1. Assay Buffer: 50 mM Bis-Tris, pH 7.63, 2 mM EDTA, 2 mM DTT
3. 10 mM DiFMUP
4. 96-well black microtiter plate
5. Microtiter plate reader capable of reading fluorescence at an excitation of 355 nm and emission at 460 nm
6. Water bath or incubator at 30°C

#### PROCEDURE

1. Prepare reaction mixture in a 96-well **black plate**:
  - a. 90  $\mu$ l assay buffer
  - b. 1  $\mu$ l DiFMUP (Final concentration of DiFMUP is 100  $\mu$ M)
  - c. 1  $\mu$ l of PRL-1
2. Mix well and start reaction at 30°C in water bath and incubate for 10 min.
3. Add 100  $\mu$ l per well of 2 M  $K_2CO_3$  to stop the reaction.
4. Read fluorescence at 355/460 nm using a microtiter plate reader.

### ORDERING INFORMATION

#### CATALOG NUMBER

X1657E

#### SIZE

10  $\mu$ g

#### STORAGE CUSTOMER

Product should be stored at -20°C. Aliquot to avoid freeze/thaw cycles

#### STABILITY

Products are stable for one year from purchase when stored properly

#### SHIP CONDITIONS

Ship on gel ice, freeze upon arrival

#### FORMULATION

Provided in 25 mM Tris-HCl, 75 mM NaCl, pH 8.0, 0.05% Tween, 5 mM DTT and 50% glycerol

#### CONCENTRATION

1.5 mg/ml

#### SOURCE

Recombinant enzyme produced in E. coli

For research use only. Not for use in human diagnostics or therapeutics.

## REFERENCES

- [1] Cates C.A., Michael R.L., Stayrook K.R., Harvey K.A., Burke Y.D., Randall S.K., Crowell P.L., Crowell D.N.; "Prenylation of oncogenic human PTP(CAAX) protein tyrosine phosphatases."; *Cancer Lett.* 110:49–55(1996).
- [2] Peng Y., Genin A., Spinner N.B., Diamond R.H., Taub R.; "The gene encoding human nuclear protein tyrosine phosphatase, PRL-1. Cloning, chromosomal localization, and identification of an intron enhancer."; *J. Biol. Chem.* 273:17286–17295(1998).
- [3] Gjorloff-Wingren A, Saxena M, Han S, Wang X, Alonso A, Renedo M, Oh P, Williams S, Schnitzer J, Mustelin T. Subcellular localization of intracellular protein tyrosine phosphatases in T cells. *Eur J Immunol.* 2000 Aug;30(8):2412–21.
- [4] Yarovinsky TO, Rickman DW, Diamond RH, Taub R, Hageman GS, Bowes Rickman C. Expression of the protein tyrosine phosphatase, phosphatase of regenerating liver 1, in the outer segments of primate cone photoreceptors. *Brain Res Mol Brain Res.* 2000 Apr 14;77(1):95–103.
- [5] Carter DA. Expression of a novel rat protein tyrosine phosphatase gene. *Biochim Biophys Acta.* 1998 Nov 8;1442(2–3):405–8.
- [6] Zeng Q, Hong W, Tan YH. Mouse PRL-2 and PRL-3, two potentially prenylated protein tyrosine phosphatases homologous to PRL-1. *Biochem Biophys Res Commun.* 1998 Mar 17;244(2):421–7.
- [7] Cates CA, Michael RL, Stayrook KR, Harvey KA, Burke YD, Randall SK, Crowell PL, Crowell DN. Prenylation of oncogenic human PTP(CAAX) protein tyrosine phosphatases. *Cancer Lett.* 1996 Dec 20;110(1–2):49–55.
- [8] Takano S, Fukuyama H, Fukumoto M, Kimura J, Xue JH, Ohashi H, Fujita J. PRL-1, a protein tyrosine phosphatase, is expressed in neurons and oligodendrocytes in the brain and induced in the cerebral cortex following transient forebrain ischemia. *Brain Res Mol Brain Res.* 1996 Aug;40(1):105–15.

**For research use only. Not for use in human diagnostics or therapeutics.**