Data Sheet (Cat.No.TMPY-02010)

TargetMol

DMP1 Protein, Human, Recombinant (His)

General Information

Synonyms:	ARHR;dentin matrix acidic phosphoprotein 1;ARHP;DMP-1
Protein Construction:	A DNA sequence encoding the human DMP1 (Q13316-1) (Met 1-Tyr 513) was expressed, with a polyhistidine tag at the C-terminus. Predicted N terminal: Leu 17
Species:	Human
Expression Host:	HEK293 Cells
Accession:	Q13316-1
Molecular Weight:	55.4 kDa (predicted); 53 kDa (reducing conditions)

QC Testing

Biological Activity:	Measured by its ability to bind human CFH in a functional ELISA.
Purity:	> 85% as determined by SDS-PAGE
Endotoxin:	< 1.0 EU/μg of the protein as determined by the LAL method.
Formulation:	Lyophilized from a solution filtered through a 0.22 μm filter, containing PBS, pH 7.4. Typically, a mixture containing 5% to 8% trehalose, mannitol, and 0.01% Tween 80 is incorporated as a protective agent before lyophilization.

Preparation and Storage

Reconstitution:

A Certificate of Analysis (CoA) containing reconstitution instructions is included with the products. Please refer to the CoA for detailed information.

Stability & Storage:

It is recommended to store recombinant proteins at -20°C to -80°C for future use. Lyophilized powders can be stably stored for over 12 months, while liquid products can be stored for 6-12 months at -80°C. For reconstituted protein solutions, the solution can be stored at -20°C to -80°C for at least 3 months. Please avoid multiple freeze-thaw cycles and store products in aliquots.

Actual storage temperature shall be subject to the COA.

Shipping:

In general, lyophilized powders are shipped with blue ice, while solutions are shipped with dry ice.

Protein Background

Dentin matrix acidic phosphoprotein (DMP1) is an extracellular matrix protein and a member of the small integrin binding ligand N-linked glycoprotein family. This protein, which is critical for proper mineralization of bone and dentin, is present in diverse cells of bone and tooth tissues. DMP1 contains a large number of acidic domains, multiple phosphorylation sites, a functional arg-gly-asp cell attachment sequence, and a DNA binding domain. In undifferentiated osteoblasts it is primarily a nuclear protein that regulates the expression of osteoblast-specific

genes. During osteoblast maturation, DMP1 becomes phosphorylated and is exported to the extracellular matrix, where it orchestrates mineralized matrix formation. Mutations in DMP1 are known to cause autosomal recessive hypophosphatemia, a disease that manifests as rickets and osteomalacia. DMP1 may have a dual function during osteoblast differentiation. In the nucleus of undifferentiated osteoblasts, unphosphorylated form acts as a transcriptional component for activation of osteoblast-specific genes like osteocalcin. During the osteoblast to osteocyte transition phase it is phosphorylated and exported into the extracellular matrix, where it regulates nucleation of hydroxyapatite.

Reference

Aplin HM, et al. (1996) Mapping of the human dentin matrix acidic phosphoprotein gene (DMP1) to the dentinogenesis imperfecta type II critical region at chromosome 4q2Genomics. 30 (2): 347-9.
Hirst KL, et al. (1997) Elucidation of the sequence and the genomic organization of the human dentin matrix acidic phosphoprotein 1 (DMP1) gene: exclusion of the locus from a causative role in the pathogenesis of dentinogenesis imperfecta type II. Genomics. 42 (1): 38-45.
Chen S, et al. (2005) Binding of two nuclear factors to a novel silencer element in human dentin matrix protein 1 (DMP1) promoter regulates the cell type-specific DMP1 gene expression. J Cell Biochem. 92 (2): 332-49.