

DMP-1 (LFMb-31): sc-73633

BACKGROUND

DMP-1 (dentin matrix protein-1), also known as dentin matrix acidic phosphoprotein-1, is a member of the small Integrin ligand N-linked glycoprotein family. It is important for the mineralization of bone and dentin. DMP-1 is expressed in bone, tooth and hypertrophic cartilage. It is synthesized by preosteoblasts and contains a large number of acidic domains. DMP-1 localizes to the nucleus of undifferentiated osteoblasts where it functions as a transcriptional regulator for osteoblast-specific gene activation and induces osteoblast differentiation. During osteoblast maturation, DMP-1 undergoes a conformational change and becomes phosphorylated by casein kinase II in response to an influx of calcium ions to the nucleus. DMP-1 is then exported to the extracellular matrix (ECM) where it regulates the nucleation of hydroxyapatite and the formation of calcified tissue. DMP-1 is proteolytically processed into N- and C-terminal fragments in the ECM of bone and dentin. The protein has also been identified in bone as a high molecular weight proteoglycan comprised of the N-terminal DMP-1 fragment and chondroitin sulfate. The loss of DMP-1 can result in hypomineralized bone.

CHROMOSOMAL LOCATION

Genetic locus: DMP1 (human) mapping to 4q22.1.

SOURCE

DMP-1 (LFMb-31) is a mouse monoclonal antibody raised against the last exon in pET15b of DMP-1 of human origin.

PRODUCT

Each vial contains 200 µg IgG₁ kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

DMP-1 (LFMb-31) is available conjugated to agarose (sc-73633 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-73633 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-73633 PE), fluorescein (sc-73633 FITC), Alexa Fluor® 488 (sc-73633 AF488), Alexa Fluor® 546 (sc-73633 AF546), Alexa Fluor® 594 (sc-73633 AF594) or Alexa Fluor® 647 (sc-73633 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-73633 AF680) or Alexa Fluor® 790 (sc-73633 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

APPLICATIONS

DMP-1 (LFMb-31) is recommended for detection of dentin matrix protein 1 epitope maps to RGD domain of human and monkey origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500).

Suitable for use as control antibody for DMP-1 siRNA (h): sc-72287, DMP-1 shRNA Plasmid (h): sc-72287-SH and DMP-1 shRNA (h) Lentiviral Particles: sc-72287-V.

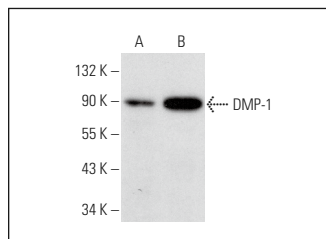
Molecular Weight of DMP-1 N-terminal fragment: 37 kDa.

Molecular Weight of DMP-1 C-terminal fragment: 57 kDa.

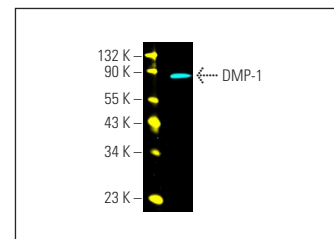
STORAGE

Store at 4° C, ****DO NOT FREEZE****. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

DATA



DMP-1 (LFMb-31): sc-73633. Western blot analysis of DMP-1 expression in human spleen (A) and human testis (B) tissue extracts.



DMP-1 (LFMb-31) Alexa Fluor® 647: sc-73633 AF647. Direct fluorescent western blot analysis of DMP-1 expression in human testis tissue extract. Blocked with UltraCruz® Blocking Reagent: sc-516214. Cruz Marker™ Molecular Weight Standards detected with Cruz Marker MW Tag-Alexa Fluor® 488: sc-516790.

SELECT PRODUCT CITATIONS

1. Song, J.S., et al. 2009. Differentiation and regenerative capacities of human odontoma-derived mesenchymal cells. *Differentiation* 77: 29-37.
2. Yalvaç, M.E., et al. 2011. Differentiation and neuro-protective properties of immortalized human tooth germ stem cells. *Neurochem. Res.* 36: 2227-2235.
3. Kashima, T.G., et al. 2013. Dentine matrix protein 1 (DMP-1) is a marker of bone-forming tumours. *Virchows Arch.* 462: 583-591.
4. Al-Sharabi, N., et al. 2014. Bone marrow stromal cell paracrine factors direct osteo/odontogenic differentiation of dental pulp cells. *Tissue Eng. Part A* 20: 3063-3072.
5. Choi, J.K., et al. 2015. The efficiency of the *in vitro* osteo/dentinogenic differentiation of human dental pulp cells, periodontal ligament cells and gingival fibroblasts. *Int. J. Mol. Med.* 35: 161-168.
6. Wang, H.S., et al. 2016. Increased apoptosis of inflamed odontoblasts is associated with CD47 loss. *J. Dent. Res.* 95: 697-703.
7. Yang, X., et al. 2017. Role of transient receptor potential channel 6 in the odontogenic differentiation of human dental pulp cells. *Exp. Ther. Med.* 14: 73-78.
8. Shen, Y.F., et al. 2018. Mineral trioxide aggregate mixed with 5-amino-levalulinic acid for the photodynamic antimicrobial strategy in hard tissue regeneration. *Materials* 11: 1734.
9. Li, F., et al. 2019. Pigment epithelium-derived factor (PEDF) reduced expression and synthesis of SOST/sclerostin in bone explant cultures: implication of PEDF-osteocyte gene regulation *in vivo*. *J. Bone Miner. Metab.* 37: 773-779.

RESEARCH USE

For research use only, not for use in diagnostic procedures.

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