Human DMP-1 Antibody

Monoclonal Mouse IgG_1 Clone # 560716

Catalog Number: MAB4129

DESCRIPTION

Species Reactivity	Human
Specificity	Detects human DMP-1 in ELISAs. In sandwich immunoassays, no cross-reactivity with recombinant mouse DMP-1, recombinant human (rh) CD44, and rhComplement Factor H is observed.
Source	Monoclonal Mouse IgG_1 Clone # 560716
Purification	Protein A or G purified from hybridoma culture supernatant
Immunogen	Mouse myeloma cell line NS0-derived recombinant human DMP-1 isoform 2 Leu17-Tyr497 Accession # NP_001073380
Formulation	Lyophilized from a 0.2 μm filtered solution in PBS with Trehalose. See Certificate of Analysis for details. *Small pack size (-SP) is supplied either lyophilized or as a 0.2 μm filtered solution in PBS.

APPLICATIONS

Please Note: *Optimal dilutions should be determined by each laboratory for each application. General Protocols are available in the Technical Information section on our website.*

Human DMP-1 Sandwich Immunoassay		**Reagent**
ELISA Capture	2-8 µg/mL	Human DMP-1 Antibody (Catalog # MAB4129)
ELISA Detection	0.5-2.0 µg/mL	Human DMP-1 Biotinylated Antibody (Catalog # BAM41291)
Standard		Recombinant Human DMP-1 (Catalog # 4129-DM)

PREPARATION AND STORAGE

Reconstitution	Sterile PBS to a final concentration of 0.5 mg/mL.
Shipping	The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below. *Small pack size (-SP) is shipped with polar packs. Upon receipt, store it immediately at -20 to -70 °C
Stability & Storage	**Use a manual defrost freezer and avoid repeated freeze-thaw cycles.** ● 12 months from date of receipt, -20 to -70 °C as supplied. ● 1 month, 2 to 8 °C under sterile conditions after reconstitution. ● 6 months, -20 to -70 °C under sterile conditions after reconstitution.

BACKGROUND

Dentin matrix protein 1 (DMP-1) is a member of the SIBLING family that also includes bone sialoprotein, dentin sialophosphoprotein, MEPE, and osteopontin. These highly phosphorylated integrin-binding proteins are rich in acidic amino acids and function in the formation of calcified bone and tooth matrix (1, 2). The phosphate content, spacing of acidic residues, and calcium-dependent dimerization of DMP-1 contribute to its ability to sequester calcium phosphate clusters and promote hydroxyapatite (HA) crystal formation (3-5). Rodent DMP-1 is cleaved by BMP-1 family proteases at a single site which is conserved in human, generating a 37 kDa N-terminal and a 57 kDa C-terminal fragment (6). The N-terminal fragment in rat carries chondroitin sulfate (7). The C-terminal fragment alone can nucleate HA crystals, while crystal growth into a needle-like morphology is inhibited by the N-terminal fragment (3, 4). Crystal maturation is dependent on the presence of type I collagen (4). DMP-1 is required for odontoblast differentiation as well as dentin formation (8). Nonphosphorylated DMP-1 is targeted to the nucleus, where it activates the transcription of odontoblast and osteoblast specific genes (9, 10). Early in osteoblast maturation, nuclear DMP-1 is extensively phosphorylated by casein kinase II, triggering its secretion (9). DMP-1 mutations in humans are associated with hypophosphatemia and FGF23 overexpression (11, 12). DMP-1 induces the activation of proMMP-9 and displaces mature MMP-9 from TIMP1 (13). DMP-1 tethering of MMP-9 to the cell surface via CD44 and integrins $\alpha v\beta 3$ and $\alpha v\beta 5$ promotes tumor cell invasiveness in vitro (14). Full length DMP-1 circulates in human serum in a tight complex with complement factor H (13, 14). When first bound to CD44 or integrin $\alpha v\beta 3$, DMP-1 can anchor factor H to the cell surface and protect the cell from complement-mediated lysis (15). Mature human DMP-1 shares 61%-67% amino acid sequence identity with bovine, mouse, and rat DMP-1.

References:

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Global bio-techne.com info@bio-techne.com techsupport@bio-techne.com TEL +1 612 379 2956
USA TEL 800 343 7475 Canada TEL 855 668 8722 China TEL +86 (21) 52380373
Europe | Middle East | Africa TEL +44 (0)1235 529449