

# MGP (A-11): sc-271906

## BACKGROUND

Matrix Gla protein, or MGP, is involved in regulating calcification in the extracellular matrix, in particular in cartilage and arteries. MGP is a vitamin K-dependent protein containing five to six residues of  $\gamma$ -carboxy-glutamic acid (Gla), a  $\text{Ca}^{2+}$  binding amino acid requiring vitamin K-dependent  $\gamma$  carboxylase for its formation. In humans MGP is an 84 residue protein along with a 19 amino acid transmembrane signal peptide. A shortened 77 residue form of MGP is found in human bone extracts, likely formed by COOH-terminal processing by carboxypeptidase B-like enzymatic activity. High levels of expression occur in heart, kidney and lung, and over-expression of MGP occurs in the breast cancer cell line 600 PEI. Retinoic acid induces MGP expression in chondrocytes, fibroblasts and osteoblasts. Mutations in the gene coding for MGP can cause Keutel syndrome (KS), associated with abnormal cartilage calcification, substantiating the role of MGP in extracellular matrix calcification regulation. MGP can bind Vitronectin and Fibronectin via its C-terminus; phosphorylation of MGP occurs near the N-terminus at three serine residues, which are part of a tandemly repeated Ser-X-Glu sequence.

## CHROMOSOMAL LOCATION

Genetic locus: MGP (human) mapping to 12p12.3.

## SOURCE

MGP (A-11) is a mouse monoclonal antibody raised against amino acids 1-103 representing full length MGP of human origin.

## PRODUCT

Each vial contains 200  $\mu\text{g}$  IgG $\kappa$  light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

MGP (A-11) is available conjugated to agarose (sc-271906 AC), 500  $\mu\text{g}$ /0.25 ml agarose in 1 ml, for IP; to HRP (sc-271906 HRP), 200  $\mu\text{g}$ /ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-271906 PE), fluorescein (sc-271906 FITC), Alexa Fluor<sup>®</sup> 488 (sc-271906 AF488), Alexa Fluor<sup>®</sup> 546 (sc-271906 AF546), Alexa Fluor<sup>®</sup> 594 (sc-271906 AF594) or Alexa Fluor<sup>®</sup> 647 (sc-271906 AF647), 200  $\mu\text{g}$ /ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor<sup>®</sup> 680 (sc-271906 AF680) or Alexa Fluor<sup>®</sup> 790 (sc-271906 AF790), 200  $\mu\text{g}$ /ml, for Near-Infrared (NIR) WB, IF and FCM.

## APPLICATIONS

MGP (A-11) is recommended for detection of MGP of human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2  $\mu\text{g}$  per 100-500  $\mu\text{g}$  of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for MGP siRNA (h): sc-44626, MGP shRNA Plasmid (h): sc-44626-SH and MGP shRNA (h) Lentiviral Particles: sc-44626-V.

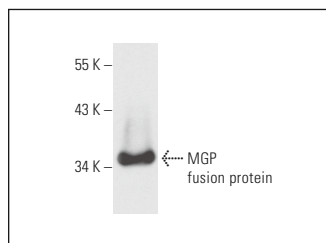
Molecular Weight of MGP: 10 kDa.

Positive Controls: SHP-77 whole cell lysate: sc-364258.

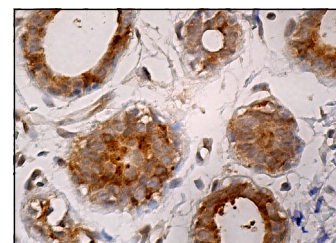
## RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgG $\kappa$  BP-HRP: sc-516102 or m-IgG $\kappa$  BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker<sup>™</sup> Molecular Weight Standards: sc-2035, UltraCruz<sup>®</sup> Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use m-IgG $\kappa$  BP-FITC: sc-516140 or m-IgG $\kappa$  BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz<sup>®</sup> Mounting Medium: sc-24941 or UltraCruz<sup>®</sup> Hard-set Mounting Medium: sc-359850. 4) Immunohistochemistry: use m-IgG $\kappa$  BP-HRP: sc-516102 with DAB, 50X: sc-24982 and Immunohistomount: sc-45086, or Organo/Limonene Mount: sc-45087.

## DATA



MGP (A-11): sc-271906. Western blot analysis of full length human recombinant MGP fusion protein.



MGP (A-11): sc-271906. Immunoperoxidase staining of formalin fixed, paraffin-embedded human breast tissue showing cytoplasmic staining of glandular cells.

## SELECT PRODUCT CITATIONS

- Janson, D.G., et al. 2012. Different gene expression patterns in human papillary and reticular fibroblasts. *J. Invest. Dermatol.* 132: 2565-2572.
- Josipovic, I., et al. 2016. PAFAH1B1 and the lncRNA NONHSAT073641 maintain an angiogenic phenotype in human endothelial cells. *Acta Physiol.* 218: 13-27.
- Okubo, Y., et al. 2017. Calcification in dermal fibroblasts from a patient with GGXX syndrome accompanied by upregulation of osteogenic molecules. *PLoS ONE* 12: e0177375.
- Du, T., et al. 2022. Matrix Gla protein (MGP), GATA3, and TRPS1: a novel diagnostic panel to determine breast origin. *Breast Cancer Res.* 24: 70.
- Wu, X., et al. 2024. Silibinin attenuates TGF- $\beta$ 2-induced fibrogenic changes in human trabecular meshwork cells by targeting JAK2/STAT3 and PI3K/AKT signaling pathways. *Exp. Eye Res.* 244: 109939.

## STORAGE

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

## RESEARCH USE

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

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