

osteocalcin (ABOC-5021): sc-73464

BACKGROUND

Bone γ -carboxyglutamic acid (Gla) protein, known as BGLAP, BGP or osteocalcin, is an abundant, non-collagenous protein component of bone that is produced by osteoblasts. In mice, osteocalcin is composed of a cluster of three genes known as OG1, OG2 and ORG, all of which can be found within a 23 kb span of genomic DNA. Human osteocalcin is a highly conserved, 46-50 amino acid, single chain protein that contains three vitamin K-dependent γ -carboxyglutamic acid residues. Osteocalcin appears transiently in embryonic bone at the time of mineral deposition, where it binds to hydroxyapatite in a calcium-dependent manner. In addition, osteocalcin is one of the most abundant, non-collagenous proteins found in mineralized adult bone. Genetic variation at the osteocalcin locus on chromosome 1q impacts postmenopausal bone mineral density (BMD) levels and may predispose some women to osteoporosis.

REFERENCES

1. Chenu, C., et al. 1994. Osteocalcin induces chemotaxis, secretion of matrix proteins and calcium-mediated intracellular signaling in human osteoclast-like cells. *J. Cell Biol.* 127: 1149-1158.
2. Desbois, C., et al. 1994. The mouse osteocalcin gene cluster contains three genes with two separate spatial and temporal patterns of expression. *J. Biol. Chem.* 269: 1183-1190.

CHROMOSOMAL LOCATION

Genetic locus: BGLAP (human) mapping to 1q22.

SOURCE

osteocalcin (ABOC-5021) is a mouse monoclonal antibody raised against unfractionated bone extract of bovine origin.

PRODUCT

Each vial contains 100 μ g IgG₁ in 1.0 ml of PBS with < 0.1% sodium azide, 0.1% gelatin and 1% glycerol.

APPLICATIONS

osteocalcin (ABOC-5021) is recommended for detection of osteocalcin of human and bovine origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunofluorescence (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 osteocalcin siRNA (h): sc-40790, osteocalcin shRNA Plasmid (h): sc-40790-SH and osteocalcin shRNA (h) Lentiviral Particles: sc-40790-V.

Molecular Weight of osteocalcin: 6 kDa.

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.

SELECT PRODUCT CITATIONS

1. Buschmann, J., et al. 2012. Tissue engineered bone grafts based on biomimetic nanocomposite PLGA/amorphous calcium phosphate scaffold and human adipose-derived stem cells. *Injury* 43: 1689-1697.
2. Kang, Y., et al. 2012. The osteogenic differentiation of human bone marrow MSCs on HUVEC-derived ECM and β -TCP scaffold. *Biomaterials* 33: 6998-7007.
3. Johnstone, S.A., et al. 2015. Comparison of human olfactory and skeletal MSCs using osteogenic nanotopography to demonstrate bone-specific bioactivity of the surfaces. *Acta Biomater.* 13: 266-276.
4. Llopis-Hernández, V., et al. 2016. Material-driven Fibronectin assembly for high-efficiency presentation of growth factors. *Sci. Adv.* 2: e1600188.
5. Allan, C., et al. 2018. Osteoblast response to disordered nanotopography. *J. Tissue Eng.* 9: 2041731418784098.
6. McCully, M., et al. 2018. Nanoparticle-antagomiR based targeting of miR-31 to induce osterix and osteocalcin expression in mesenchymal stem cells. *PLoS ONE* 13: e0192562.
7. Campsie, P., et al. 2019. Design, construction and characterisation of a novel nanovibrational bioreactor and cultureware for osteogenesis. *Sci. Rep.* 9: 12944.
8. Xiao, M., et al. 2019. Synergistic effects of stromal cell-derived factor-1 α and bone morphogenetic protein-2 treatment on odontogenic differentiation of human stem cells from apical papilla cultured in the VitroGel 3D system. *Cell Tissue Res.* 378: 207-220.
9. Liu, X., et al. 2019. Molecular recognition-directed site-specific release of stem cell differentiation inducers for enhanced joint repair. *Biomaterials* 232: 119644.
10. Cheng, Z.A., et al. 2019. Nanoscale coatings for ultralow dose BMP-2-driven regeneration of critical-sized bone defects. *Adv. Sci.* 6: 1800361.
11. Yin, N., et al. 2019. MiR-135-5p promotes osteoblast differentiation by targeting HIF1AN in MC3T3-E1 cells. *Cell. Mol. Biol. Lett.* 24: 51.
12. Zhou, L., et al. 2020. MicroRNA-1-3p enhances osteoblast differentiation of MC3T3-E1 cells by interacting with hypoxia-inducible factor 1 α inhibitor (HIF1AN). *Mech. Dev.* 162: 103613.
13. Tang, Q., et al. 2020. Fabrication of a hydroxyapatite-PDMS microfluidic chip for bone-related cell culture and drug screening. *Bioact. Mater.* 6: 169-178.


 CONJUGATES

See **osteocalcin (G-5): sc-365797** for osteocalcin antibody conjugates, including AC, HRP, FITC, PE, and Alexa Fluor[®] 488, 546, 594, 647, 680 and 790.