

OPG (I-20): sc-21039

BACKGROUND

Bone morphogenesis and remodeling involve the formation of bone from osteoblasts and the resorption of bone by osteoclasts. The cytokine osteoprotegerin (OPG), also designated osteoclastogenesis inhibitory factor (OCIF), is known to inhibit osteoclast formation. A secreted glycoprotein, OPG is a member of the TNF receptor family that increases bone density and volume. OPG is thought to inhibit osteoclastogenesis by disrupting the cell-to-cell signaling between osteoblastic stromal cells and osteoclast progenitors. OPG is known to bind to TRAIL, a death domain-containing protein, and to inhibit TRAIL apoptosis in Jurkat cells. OPG also binds to osteoclast differentiation factor (ODF), also known as TRANCE/RANKL, a membrane-bound protein belonging to the TNF ligand family. Both TNF α and TNF β upregulate OPG expression, while the bone resorbing agent prostaglandin E2 down-regulates OPG.

REFERENCES

1. Simonet, W.S., et al. 1997. Osteoprotegerin: a novel secreted protein involved in the regulation of bone density. *Cell* 89: 309-319.
2. Hill, P.A. 1998. Bone remodeling. *Br. J. Orthod.* 25: 101-107.
3. Yasuda, H., et al. 1998. Identity of osteoclastogenesis inhibitory factor (OCIF) and osteoprotegerin (OPG): a mechanism by which OPG/OCIF inhibits osteoclastogenesis *in vitro*. *Endocrinology* 139: 1329-1337.
4. Emery, J.G., et al. 1998. Osteoprotegerin is a receptor for the cytotoxic ligand TRAIL. *J. Biol. Chem.* 273: 14363-14367.
5. Yasuda, H., et al. 1998. Osteoclast differentiation is a ligand for osteoprotegerin/osteoclastogenesis-inhibitory factor and is identical to TRANCE/RANKL. *Proc. Natl Acad. Sci. USA* 95: 3597-3602.
6. Brandstrom, H., et al. 1998. Regulation of osteoprotegerin mRNA levels by prostaglandin E2 in human bone marrow stroma cells. *Biochem. Biophys. Res. Commun.* 247: 338-341.
7. Brandstrom, H., et al. 1998. Tumor necrosis factor α and β upregulate the levels of osteoprotegerin mRNA in human osteosarcoma MG-63 cells. *Biochem. Biophys. Res. Commun.* 248: 454-457.

CHROMOSOMAL LOCATION

Genetic locus: TNFRSF11B (human) mapping to 8q24.12; Tnfrsf11b (mouse) mapping to 15 D1.

SOURCE

OPG (I-20) is an affinity purified goat polyclonal antibody raised against a peptide mapping within an internal region of OPG of human origin.

PRODUCT

Each vial contains 200 μ g IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-21039 P, (100 μ g peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

OPG (I-20) is recommended for detection of OPG of mouse, rat and human 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).

OPG (I-20) is also recommended for detection of OPG in additional species, including equine, canine, bovine and porcine.

Suitable for use as control antibody for OPG siRNA (h): sc-40152, OPG siRNA (m): sc-40153, OPG shRNA Plasmid (h): sc-40152-SH, OPG shRNA Plasmid (m): sc-40153-SH, OPG shRNA (h) Lentiviral Particles: sc-40152-V and OPG shRNA (m) Lentiviral Particles: sc-40153-V.

Molecular Weight of OPG monomer: 60 kDa.

Molecular Weight of OPG homodimer: 120 kDa.

RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use donkey anti-goat IgG-HRP: sc-2020 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible donkey anti-goat IgG-HRP: sc-2033 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use donkey anti-goat IgG-FITC: sc-2024 (dilution range: 1:100-1:400) or donkey anti-goat IgG-TR: sc-2783 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

SELECT PRODUCT CITATIONS

1. Lu, H.K., et al. 2006. Identification of the osteoprotegerin/receptor activator of nuclear factor- κ B ligand system in gingival crevicular fluid and tissue of patients with chronic periodontitis. *J. Periodontal Res.* 41: 354-360.

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.

PROTOCOLS

See our web site at www.scbt.com or our catalog for detailed protocols and support products.



Try **OPG (E-10): sc-390518** or **OPG (4H219): sc-71747**, our highly recommended monoclonal alternatives to OPG (I-20). Also, for AC, HRP, FITC, PE, Alexa Fluor[®] 488 and Alexa Fluor[®] 647 conjugates, see **OPG (E-10): sc-390518**.