



## Product Information

**RANK/Fc CHIMERA**  
**Mouse, Recombinant**  
**Expressed in mouse NSO cells**

Product Number **R0775**

### Product Description

RANK, receptor activator of NF- $\kappa$ B, also known as TRANCE receptor and osteoclast differentiation factor (ODFR), is a member of the tumor necrosis factor receptor (TNFR) family. The full-length mouse RANK cDNA encodes a type I transmembrane protein with an extracellular and a cytoplasmic domain. The extracellular domain contains two potential N-linked glycosylation sites. RANK shares significant amino acid homology with other members of the TNFR family in its extracellular four cysteine-rich repeats. Human and murine RANK share 81% amino acid identity in their extracellular domains.

RANK is widely expressed, with highest levels in skeletal muscle, thymus, liver, colon, small intestine and adrenal gland. RANK is also expressed in dendritic cells. RANK (receptor activator of NF- $\kappa$ B) and RANK ligand (RANKL) are important regulators of interactions between T cells and dendritic cells.<sup>1</sup> RANK is the essential signaling receptor for osteoclast differentiation factor in osteoclastogenesis.<sup>2</sup> Multiple tumor necrosis factor receptor-associated factors (TRAFs) are involved in the signaling of RANK. TRANCE, TNF-related activation-induced cytokines, also known as RANK ligand (RANKL), osteoprotegerin ligand (OPGL) and osteoclast differentiation factor (ODF) is the ligand for RANK. The biological functions mediated by RANK include activation of NF- $\kappa$ B and c-jun N-terminal kinase, enhancement of T cell growth and dendritic cell function, induction of osteoclastogenesis and lymph node organogenesis. The soluble form of RANK is able to block TRANCE induced biological activity.

### Reagents

A mouse recombinant form of RANK/Fc is expressed in a mouse myeloma cell line, NSO. The cDNA sequence encoding the extracellular domain of mouse RANK<sup>2</sup> is fused to the carboxy-terminal 6X histidine-tagged Fc region of human IgG, via a polypeptide linker. Molecular Mass: Recombinant mouse RANK/Fc chimera, generated after removal of amino acid

residues of the CD33 signal peptide, is a disulfide-linked homodimer. Each monomer contains 429 amino acid residues with a calculated molecular mass of approximately 48 kDa. As a result of glycosylation, monomeric mouse RANK/Fc migrates as a 60 kDa protein in SDS-PAGE under reducing conditions. Purity: >95% as determined by SDS-PAGE, visualized by silver stain.

Package size: 100  $\mu$ g

Formulation: Lyophilized from a 0.2  $\mu$ m filtered solution in phosphate-buffered saline (PBS)

Endotoxin: < 0.1 ng/ $\mu$ g of RANK/Fc, determined by the LAL method

### Preparation Instructions

Reconstitute the contents of the vial using sterile phosphate-buffered saline (PBS) containing at least 0.1% human serum albumin or bovine serum albumin. Prepare a stock solution of no less than 10  $\mu$ g/ml.

### Storage/Stability

Store at -20°C. Upon reconstitution, store at 2°-8°C for one month. For extended storage, freeze in working aliquots. Repeated freezing and thawing is not recommended.

### Product Profile

RANK/Fc chimera is measured by its ability to inhibit TRANCE-induced osteoclast differentiation on mouse splenocytes. The EC<sub>50</sub> for this effect is typically 5-15 ng/ml in the presence of 12 ng/ml of rmTRANCE and 2.5  $\mu$ g/ml of a cross-linking antibody (mouse anti-6X-histidine). The EC<sub>50</sub> is defined as the effective concentration of growth factor that elicits a 50% increase in cell growth in a cell based bioassay.

## References

1. Anderson, D. M., et al., A homologue of the TNF receptor and its ligand enhance T-cell growth and dendritic-cell function, *Nature*, **390**, 175-179 (1997).
2. Nakagawa, N., et al., RANK is the essential signaling receptor for osteoclast differentiation factor in osteoclastogenesis, *Biochem. Biophys. Res. Commun.*, **253**, 395-400 (1998).

KAA 05/00

Sigma brand products are sold through Sigma-Aldrich, Inc.

Sigma-Aldrich, Inc. warrants that its products conform to the information contained in this and other Sigma-Aldrich publications. Purchaser must determine the suitability of the product(s) for their particular use. Additional terms and conditions may apply. Please see reverse side of the invoice or packing slip.