3050 Spruce Street, St. Louis, MO 63103 USA
Tel: (800) 521-8956 (314) 771-5765 Fax: (800) 325-5052 (314) 771-5757
email: techservice@sial.com sigma-aldrich.com

# Product Information

**RANK Ligand/TRANCE human**
recombinant, expressed in NSO cells

Product Number **T3573**
Storage Temperature –20 °C

Synonyms: Osteoclast Differentiation Factor (ODF), Receptor Activator of NF-KB Ligand (RANKL), TNF-related activation-induced cytokines (TRANCE), Osteoprotegerin Ligand (OPGL)

## Product Description

RANK Ligand (receptor activator of NF-κB ligand (RANKL), also known as TNF-related activation-induced cytokines (TRANCE), osteoprotegerin ligand (OPGL), and osteoclast differentiation factor (ODF), is a member of the tumor necrosis factor (TNF) family. It was originally identified as an immediate early gene upregulated by T cell receptor stimulation. RANK Ligand/TRANCE is a type II transmembrane protein of 317 amino acids with a predicted cytoplasmic domain of 47 amino acids, a 21 amino acid transmembrane region, and an extracellular domain of 249 amino acids. The extracellular domain contains two potential N-linked glycosylation sites. Mouse and human RANK Ligand/TRANCE share 85% amino acid identity.

RANK Ligand/TRANCE is a key regulator of the immune system, and of bone development and homeostasis.[1] The multi-functions of RANK Ligand/TRANCE include induction of activation of the c-jun N-terminal kinase,[2] enhancement of T cell growth and dendritic cell function,[3] induction of osteoclasto-genesis,[3,4] and lymph node organogenesis.[3] The cell surface signaling receptor of RANK Ligand/TRANCE is RANK, which undergoes receptor clustering during signal transduction.

RANK Ligand/TRANCE is primarily expressed in T cells and T cell rich organs, such as thymus and lymph nodes. It is abundantly expressed in T cells but not in B cells.[2] RANK Ligand/TRANCE activates mature dendritic cells, inducing cytokine production, suggesting it is a factor in the T cell-dendritic cell interaction during an immune response.[5] Osteoblasts, expressing RANK Ligand/TRANCE, regulate osteoclast differentiation.[6]

Recombinant, human RANK Ligand/TRANCE is expressed with amino acid residues ($Gly^{136}$–$Asp^{317}$) of the extracellular domain of human TRANCE/RANK Ligand[7] fused to the signal peptide of CD33 and a polypeptide linker. It is expressed in mouse myeloma NSO cells.

The recombinant, human RANK Ligand/ TRANCE product, generated after removal of the 16 amino acid residue signal peptide, contains 209 amino acids with a calculated mass of 23 kDa. Due to glycosylation, the recombinant protein migrates to ~35 kDa in SDS-PAGE under reducing and non-reducing conditions.

The recombinant product is supplied as ~10 µg of protein lyophilized from a 0.2 µm filtered solution in 20 mM MOPS and 500 mM NaCl, pH 6.5, with 50 µg BSA per 1 µg as a carrier protein.

Purity: >90% (SDS-PAGE)

The biological activity of Rank Ligand/TRANCE is measured by its ability to induce osteoclast differentiation on mouse splenocytes. The $ED_{50}$ for this effect is 1.5–7.5 ng/ml in the presence of 2.5 µg/ml of a crosslinking mouse Anti-6X-histidine antibody.

Endotoxin: <0.1 ng/µg of protein
[Limulus amebocyte lysate (LAL) method]

## Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Safety Data Sheet for information regarding hazards and safe handling practices.

## Preparation Instructions

Reconstitute the contents of the vial using 0.2 µm filtered phosphate buffered saline containing at least 0.1% human serum albumin or bovine serum albumin. Prepare a stock solution of no less than 10 µg/ml.

**Storage/Stability**
Store the product at –20 °C.

The reconstituted product may be stored at 2–8 °C for up to one month. For extended storage, freeze working in aliquots. Repeated freezing and thawing is not recommended. Do not store in a “frost-free” freezer.

**References**

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7. 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).


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