

## Animal-Free RANK L/TNFSF11 Protein, Mouse (His)

<b>Cat. No.:</b>	HY-P700226AF
<b>Synonyms:</b>	soluble Receptor Activator of NF- $\kappa$ B Ligand; TNFSF11; TRANCE (TNF-Related Activation-induced Cytokine); OPGL; ODF (Osteoclast Differentiation Factor); CD254; sRNAK Ligand
<b>Species:</b>	Mouse
<b>Source:</b>	E. coli
<b>Accession:</b>	O35235 (P143-D316)
<b>Gene ID:</b>	21943
<b>Molecular Weight:</b>	Approximately 20.35 kDa

### PROPERTIES

<b>AA Sequence</b>	<pre> M P A M M E G S W L   D V A Q R G K P E A   Q P F A H L T I N A   A S I P S G S H K V T L S S W Y H D R G   W A K I S N M T L S   N G K L R V N Q D G   F Y Y L Y A N I C F R H H E T S G S V P   T D Y L Q L M V Y V   V K T S I K I P S S   H N L M K G G S T K N W S G N S E F H F   Y S I N V G G F F K   L R A G E E I S I Q   V S N P S L L D P D Q D A T Y F G A F K   V Q D I D           </pre>
<b>Biological Activity</b>	Measure by its ability to induce osteoclast differentiation in RAW264.7 cells. The ED <sub>50</sub> for this effect is <2 ng/mL.
<b>Appearance</b>	Lyophilized powder.
<b>Formulation</b>	Lyophilized from a solution containing 1X PBS, pH 8.0.
<b>Endotoxin Level</b>	<0.1 EU per 1 $\mu$ g of the protein by the LAL method.
<b>Reconstitution</b>	It is not recommended to reconstitute to a concentration less than 100 $\mu$ g/mL in ddH <sub>2</sub> O.
<b>Storage &amp; Stability</b>	Stored at -20°C for 2 years. After reconstitution, it is stable at 4°C for 1 week or -20°C for longer (with carrier protein). It is recommended to freeze aliquots at -20°C or -80°C for extended storage.
<b>Shipping</b>	Room temperature in continental US; may vary elsewhere.

### DESCRIPTION

<b>Background</b>	<p>RANKL (TNFSF11) belongs to TNF family. RANKL is a type II transmembrane protein and is a receptor activator of NF-<math>\kappa</math>B (RANK) ligand. RANKL is an activator of RANK. RANKL binds to RANK and induces the differentiation of monocyte/macrophage-lineage cells into osteoclasts and leads to osteoclast precursor maturation. In bone tissue, RANKL is expressed by osteoblasts, osteocytes and immune cells, especially in osteoblasts and osteocytes<sup>[1]</sup>. RANKL is also expressed by T cells and increases proliferation and survival of dendritic cells<sup>[2]</sup>. In mice, RANKL/RANK signaling attenuates inflammation in ischemic brains through a Toll-like receptor signaling pathway<sup>[4]</sup>.</p>
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RANKL consists of cytoplasmic domain (1-47), helical domain (48-68), and extracellular domain (69-317). The soluble chain (140-317) is released when cleaved by enzymes such as matrix metalloproteinases (MMP3 or 7) and ADAM<sup>[1][3]</sup>. RANKL is critical for osteoclasts maturation, bone modeling, and bone remodeling, as well as the development of lymph nodes (LNs)<sup>[1]</sup>.

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## REFERENCES

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- [1]. Ono T, et al. RANKL biology: bone metabolism, the immune system, and beyond. *Inflamm Regen*. 2020 Feb 7;40:2.
- [2]. Li B, et al. Roles of the RANKL-RANK Axis in Immunity-Implications for Pathogenesis and Treatment of Bone Metastasis. *Front Immunol*. 2022 Mar 21;13:824117.
- [3]. Tobeiha M, et al. RANKL/RANK/OPG Pathway: A Mechanism Involved in Exercise-Induced Bone Remodeling. *Biomed Res Int*. 2020 Feb 19;2020:6910312.
- [4]. Shimamura M, et al. OPG/RANKL/RANK axis is a critical inflammatory signaling system in ischemic brain in mice. *Proc Natl Acad Sci U S A*. 2014 Jun 3;111(22):8191-6.
- [5]. He X, et al. Resveratrol prevents RANKL-induced osteoclast differentiation of murine osteoclast progenitor RAW 264.7 cells through inhibition of ROS production. *Biochem Biophys Res Commun*. 2010 Oct 22;401(3):356-62.
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**Caution: Product has not been fully validated for medical applications. For research use only.**

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