

Background

Rat Jagged1 was the first ligand for Notch identified in mammals. Since both the ligands and receptors are transmembrane proteins, direct cell-cell interactions are thought to be required for activating Notch signaling. Jagged1 is synthesized as a precursor protein that contains a 21 aa signal sequence, a 1048 aa extracellular region, a 25 aa transmembrane (TM) segment and a short, 226 aa cytoplasmic domain. The large extracellular region has a DSL (Delta, Serrate, Lag-2 consensus sequence) domain followed by 16 EGF-like repeats, and a cysteine-rich (CR) region (1). The extracellular region of rJagged1 binds to multiple Notch receptors on the cell surface as well as in solid phase binding studies. The DSL motif is necessary for binding to Notch receptors and the EGF repeats modulate the affinity of the interaction with Notch receptors (2). Notch signaling is implicated in many developmental processes in a variety of cell types. Jagged-Notch signaling specifies cell fate, regulates pattern formation, defines boundaries between different cell types, and modulates cell proliferation and differentiation. Some specific areas where Jagged is involved include hematopoiesis, myogenesis, neurogenesis and development of the vasculature (3). For instance soluble, non-transmembrane forms of Jagged1 influence behavior in fibroblast cells leading to characteristics exhibited by endothelial cells during angiogenesis (4). Soluble Jagged1 is also capable of maintaining the survival and enhancing the expansion of human stem cells that are capable of reconstituting hematopoietic lineages *in vivo* (5). Furthermore, Jagged1 is implicated in human disease: Alagille syndrome, an autosomal dominant disorder characterized by defects in liver, heart, eye, skeletal, craniofacial tissues, and kidney, is caused by mutations in Jagged1 (6). Depending on cell types and how soluble forms of the ligand are presented, ligand binding can result in activation or inhibition of Notch signaling (7). Rat Jagged1 shows 98% and 99% aa identity to human and mouse Jagged1 extracellular domains respectively. Relative to the extracellular region of rat Jagged2, the aa identity is 58%.

References:

- Lindsell, C.E. *et al.* (1995) *Cell* **80**:909.
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- Lewis, J. (1998) *Stem Cell & Dev. Biol.* **9**:583.
- Small, D. *et al.* (2001) *J. Biol. Chem.* **276**:32022.
- Karanu, F. *et al.* (2000) *J. Exp. Med.* **192**:1365.
- Joutel, A. and E. Tounier-Lasserve (1998) *Stem Cell & Dev. Biol.* **9**:619.
- Hicks, C. *et al.* (2002) *J. Neurosci. Res.* **68**:655.

Description

Source	Murine myeloma cell line, NS0-derived			
	Rat Jagged 1 Ser32 - Asp1068 (Gly57 - Arg59 del, Asp63Thr, Arg64Leu, and Val-Arg-Pro-Tyr ins before Lys69) Accession # Q63722.2	IEGRMD	Human IgG ₁ (Pro100 - Lys330)	6-His tag
	N-terminus		C-terminus	
N-terminal Sequence	Ser32			
Analysis				
Structure / Form	Disulfide-linked homodimer			
Predicted Molecular Mass	141.7 kDa (monomer)			

Specifications

SDS-PAGE	180 kDa, reducing conditions
Activity	<p>Measured by the ability of immobilized protein to enhance BMP-2 induced alkaline phosphatase activity in C3H10T1/2 mouse cells. Nobta, M. <i>et al.</i> (2005) <i>J. Biol. Chem.</i> 280:15842.</p> <p>The ED₅₀ for this effect is typically 0.5 - 2.0 µg/mL.</p> <p>Measured by the ability of the immobilized protein to inhibit C2C12 mouse myogenesis. Lindsell, C.E. <i>et al.</i> (1995) <i>Cell</i> 80:909; Varnum-Finney, B. <i>et al.</i> (2000) <i>J. Cell Sci.</i> 113:4313.</p> <p>Measured by its binding ability in a functional ELISA. Immobilized rrNotch-1 at 5 µg/mL (100 µL/well) binds rrJagged-1 with an apparent K_D < 10 nM.</p>
Endotoxin Level	<1.0 EU per 1 µg of the protein by the LAL method.
Purity	>90%, by SDS-PAGE under reducing conditions and visualized by silver stain.
Formulation	Lyophilized from a 0.2 µm filtered solution in PBS. See Certificate of Analysis for details.

Preparation and Storage

Reconstitution	Reconstitute at 200 µg/mL in sterile PBS.
Shipping	The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.
Stability & Storage	<p>Use a manual defrost freezer and avoid repeated freeze-thaw cycles.</p> <ul style="list-style-type: none"> ● 12 months from date of receipt, -20 to -70 °C as supplied. ● 1 month, 2 to 8 °C under sterile conditions after reconstitution. ● 3 months, -20 to -70 °C under sterile conditions after reconstitution.

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NOT FOR USE IN HUMANS.