

## R-Spondin 1/RSP01 Protein, Human, Recombinant (aa 1-146, His)

### General Information

Synonyms:	R-Spondin 1;CRISTIN3;RSP0
Protein Construction:	A DNA sequence encoding the amino acids (Met 1-Ala 146) of human RSP01 (NP_001033722.1) was expressed, fused with a polyhistidine tag at the C-terminus. Predicted N terminal: Ser 21
Species:	Human
Expression Host:	HEK293 Cells
Accession:	Q2MKA7-1
Molecular Weight:	14 kDa (predicted); 23 kDa (reducing condition, due to glycosylation)

### QC Testing

Biological Activity:	1. Measured by its ability to bind recombinant mouse CD36 in a functional ELISA. 2. Measured by its ability to induce activation of $\beta$ -catenin response in a Topflash Luciferase assay using HEK293T human embryonic kidney cells. The ED50 for this effect is typically 0.1-0.5 $\mu$ g/mL in the presence of 5 ng/mL recombinant mouse Wnt3a.
Purity:	> 98 % as determined by SDS-PAGE
Endotoxin:	< 1.0 EU/ $\mu$ g of the protein as determined by the LAL method.
Formulation:	Lyophilized from a solution filtered through a 0.22 $\mu$ m filter, containing PBS, pH 7.4. Typically, a mixture containing 5% to 8% trehalose, mannitol, and 0.01% Tween 80 is incorporated as a protective agent before lyophilization.

### Preparation and Storage

**Reconstitution:**  
Reconstituted with sterile deionized water to 0.25 mg/mL. Reconstitution conditions may vary depending on the lot.

#### Stability & Storage:

It is recommended to store recombinant proteins at -20°C to -80°C for future use. Lyophilized powders can be stably stored for over 12 months, while liquid products can be stored for 6-12 months at -80°C. For reconstituted protein solutions, the solution can be stored at -20°C to -80°C for at least 3 months. Please avoid multiple freeze-thaw cycles and store products in aliquots.

Actual storage temperature shall be subject to the COA.

#### Shipping:

In general, lyophilized powders are shipped with blue ice, while solutions are shipped with dry ice.

### Protein Background

RSP01 gene is a member of the R-spondin family. It encodes RSP01 which is known as a secreted activator protein with two cystein-rich, furin-like domains and one thrombospondin type 1 domain. In mice, RSP01 induces the

rapid onset of crypt cell proliferation and increases intestinal epithelial healing, providing a protective effect against chemotherapy-induced adverse effects. This protein is an activator of the beta-catenin signaling cascade, leading to TCF-dependent gene activation. RSPO1 acts both in the canonical Wnt/beta-catenin-dependent pathway and in non-canonical Wnt signaling pathway, probably by acting as an inhibitor of ZNRF3, an important regulator of the Wnt signaling pathway. It also acts as a ligand for frizzled FZD8 and LRP6.

### Reference

Kamata T, et al. (2004) R-spondin, a novel gene with thrombospondin type 1 domain, was expressed in the dorsal neural tube and affected in Wnts mutants. *Biochim Biophys Acta*. 1676(1):51-62.

Ota T, et al. (2004) Complete sequencing and characterization of 21,243 full-length human cDNAs. *Nat Genet*. 36(1):40-5.

Strausberg RL, et al. (2003) Generation and initial analysis of more than 15,000 full-length human and mouse cDNA sequences. *Proc Natl Acad Sci*. 99(26):16899-903.

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