

## R-Spondin 1/RSP01 Protein, Mouse, Recombinant (His)

### General Information

|                       |   |
|-----------------------|---|
| Synonyms:             | R-spondin;R-spondin 1;Rspodin   |
| Protein Construction: | A DNA sequence encoding the full length of mouse RSP01 (NP_619624.2) (Met 1-Gln 265) was fused with a polyhistidine tag at the C-terminus. Predicted N terminal: Ser 21 |
| Species:              | Mouse   |
| Expression Host:      | CHO Cells   |
| Accession:            | Q9Z132  |
| Molecular Weight:     | 28.5 kDa (predicted); 44 kDa (reducing condition, due to glycosylation)   |

### QC Testing

|                      |   |
|----------------------|---|
| Biological Activity: | 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 0.1-0.9 $\mu$ g/ml in the presence of 5 ng/mL recombinant mouse Wnt3a. |
| Purity:              | > 95 % 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 cysteine-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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