

|                            | Recombinant Human R-Spondin 1   |
|----------------------------|---|
| Accession #                | Q2MKA7  |
| Alternate Names            | Cristin 3; HRspo1; roof plate-specific spondin; RSPO1; RSpondin 1; R-Spondin 1  |
| Source                     | Human embryonic kidney cell, HEK293-derived human R-Spondin 1 protein   |
| Protein sequence           | Ser21-Ala263  |
| M.Wt                       | 25.6 kDa  |
| Appearance                 | Solution protein.   |
| Stability & Storage        | Avoid repeated freeze-thaw cycles. It is recommended that the protein be aliquoted for optimal storage. 3 years from date of receipt, -20 to -70 °C as supplied.                                  |
| Concentration              | 0. 2 mg/mL  |
| Formulation                | Dissolved in sterile PBS buffer.  |
| Reconstitution             | We recommend that this vial be briefly centrifuged prior to opening to bring the contents to the bottom. This solution can be diluted into other aqueous buffers.                                 |
| <b>Biological Activity</b> | Measured by its ability to induce Topflash reporter activity in HEK293T human embryonic kidney cells. The EC50 for this effect is 1-10 ng/mL in the presence of 5 ng/mL Recombinant Mouse Wnt-3a. |
| Shipping Condition         | Shipping with dry ice.  |
| Handling                   | Centrifuge the vial prior to opening.   |
| Usage                      | For Research Use Only! Not to be used in humans.  |
| Quality Control            | en man  |
| Purity and and             | > 95%, determined by SDS-PAGE.  |
| Endotoxin                  | < 0.010 EU per 1 ug of the protein by the LAL method.   |

## Description

R-Spondin 1 (RSPO1), also known as cysteine-rich and single thrombospondin domain containing protein 3 (Cristin 3), is a 27 kDa secreted protein that shares ~40% amino acid (aa) identity with three other R-Spondin family members <sup>[1, 2]</sup>. All R-Spondins regulate Wnt/ beta-Catenin signaling but have distinct expression patterns <sup>[1-3]</sup>. Human R-Spondin 1 (aa21-263) shares 89%, 87%, 92%, 91%, 91% and 89% aa identity with mouse, rat, horse, dog, goat, and cow RSPO-1, respectively. R-Spondin 1 competes with the Wnt antagonist DKK-1 for binding to the Wnt co-receptors, Kremen and LRP-6, reducing their DKK-1-mediated internalization <sup>[4]</sup>. However, reports are mixed on whether R-Spondin 1 binds LRP-6 directly <sup>[4-6]</sup>. R-Spondin 1 is expressed in early development at the roof plate boundary and is thought to contribute to dorsal neural tube development <sup>[3, 7]</sup>. Interest in R-Spondin 1 as a cell culture supplement has grown with the expansion of the organoid field. R-Spondin 1 is widely

used in organoid cell culture workflows as a vital component that promotes both growth and survival of 3D organoids <sup>[8]</sup>. Structurally similar to other R-Spondins, R-Spondin 1 contains two adjacent cysteine-rich furin-like domains (aa 34-135) with one potential N-glycosylation site, followed by a thrombospondin (TSP-1) motif (aa 147-207) and a region rich in basic residues (aa 211-263). Only the furin-like domains are needed for beta-catenin stabilization <sup>[2, 9]</sup>. A putative nuclear localization signal at the C-terminus may allow some expression in the nucleus <sup>[10]</sup>. Potential isoforms of 200 and 236 aa have an alternate, shorter N-terminus or are missing aa 146-208, respectively <sup>[11]</sup>.

## Reference

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