# Recombinant Human 4-1BB Ligand

Recombinant Proteins - CD137L / TNFSF9 co-stimulation for DC and T-cell assays.

| CATALOGUE NO. | FAMILY | REVISION | EFFECTIVE |
|---|---|---|---|
| **TL-PR-130** | **Recombinant Proteins** | **2.1** | **01 Oct 2026** |

## DESCRIPTION

A TNF superfamily member expressed on activated antigen-presenting cells. 4-1BBL provides costimulation that sustains $CD8^+$ T-cell responses and DC maturation.

## ORDERING INFORMATION

| Pack size | Order code | List price (USD) | Lead time |
|---|---|---|---|
| 10 µg | TL-PR-130-01 | $420 | In stock |
| 50 µg | TL-PR-130-02 | $1,220 | In stock |

List prices are for research pack sizes, excluding shipping and local duties. Process-scale quantities and GMP lots are quoted individually.

## SPECIFICATIONS

| | |
|---|---|
| **Expression system** | HEK293 |
| **Purity** | ≥ 95% (SDS-PAGE) |
| **Endotoxin** | ≤ 0.1 EU/µg |
| **Format** | Lyophilised |
| **Storage** | ≤ -20 °C |
| **Shelf life** | 24 months |

## KEY FEATURES

- CD137L / TNFSF9
- DC maturation and T-cell costimulation
- Carrier-free

## Recombinant Human 4-1BB Ligand - TL-PR-130

continued

### HANDLING AND STORAGE

Store as stated in the specification table. Do not aliquot into glass unless the surface is passivated; proteins at low concentration adsorb to glass and to some low-bind plastics. Equilibrate to room temperature before use and avoid repeated freeze-thaw cycles.

Where a lot-specific value differs from the catalogue range, the value on the Certificate of Analysis takes precedence.

### WHERE IT IS USED

Catalogue applications: T Cell Therapy, Dendritic & Macrophage.

- Bench-scale process development and assay qualification
- Analytical method transfer, where the reagent is part of the readout
- Pilot and clinical manufacturing, in the GMP grade of the same design

The GMP and RUO grades share the same design and the same release panel; the grade determines the documentation package and the release criteria, not the reagent chemistry. Qualify once, then scale on the same specification.

### COMPATIBILITY

| | |
|---|---|
| **Automated platforms** | Validated on closed, functionally closed and open bench formats |
| **Bead removal** | Where applicable, removal is optional; residual beads do not interfere with downstream |
| **Downstream assays** | Flow cytometry, viability, expansion and cytotoxicity readouts |
| **Container** | Supplied in low-bind plastic; do not transfer to glass for storage |

### REVISION HISTORY

| Rev | Date | Change |
|---|---|---|
| 2.1 | 01 Oct 2026 | Ordering table aligned to 2026 list prices; handling notes expanded |
| 2.0 | 12 Mar 2025 | Specification panel harmonised across GMP and RUO grades |
| 1.0 | 05 Jun 2023 | First release |

### RELATED DOCUMENTS

| | |
|---|---|
| **Certificate of Analysis** | Supplied with every lot; representative copy available on request |
| **Safety data sheet** | Available for this product family |
| **DMF** | Referenceable filing where applicable - see the DMF summary |
| **Quality overview** | ISO 13485:2016 and ISO 9001 certification scope |

*This datasheet describes the catalogue specification. Final acceptance criteria are fixed in the lot-specific Certificate of Analysis and, for GMP material, in the quality agreement.*