

## TIM-4/TIMD4 Protein, Human, Recombinant (His)

### General Information

Synonyms:	SMUCKLER;T-cell immunoglobulin and mucin domain containing 4;TIM4
Protein Construction:	A DNA sequence encoding the human TIMD4 (AAH08988.1) extracellular domain (Met 1-Leu 315) was expressed, fused with a polyhistidine tag at the C-terminus. Predicted N terminal: Glu 25
Species:	Human
Expression Host:	HEK293 Cells
Accession:	AAH08988.1
Molecular Weight:	32.7 kDa (predicted); 60-65 kDa (reducing condition, due to glycosylation)

### QC Testing

Biological Activity:	Activity testing is in progress. It is theoretically active, but we cannot guarantee it. If you require protein activity, we recommend choosing the eukaryotic expression version first.
Purity:	≥ 90 % as determined by SDS-PAGE. ≥ 95 % as determined by SEC-HPLC.
Endotoxin:	< 1.0 EU/μg of the protein as determined by the LAL method.
Formulation:	Lyophilized from a solution filtered through a 0.22 μm 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:**  
A Certificate of Analysis (CoA) containing reconstitution instructions is included with the products. Please refer to the CoA for detailed information.

**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

A type I transmembrane protein called TIM4 (T-cell immunoglobulin- and mucin-domain-containing molecule; also known as TIMD4), which belongs to the immunoglobulin superfamily and TIM family. TIM4 is involved in regulating T-cell proliferation and lymphotoxin signaling. It is a ligand for HAVCR1/TIMD1. Recent reports indicate that dendritic cell (DC)-derived T-cell immunoglobulin and mucin domain molecule (TIM)-4, which is expressed on

dendritic cells and macrophages, plays an important role in the initiation of T(H)2 polarization. TIM4 bound apoptotic cells by recognizing phosphatidylserine via its immunoglobulin domain. The expression of TIM4 in fibroblasts enhanced their ability to engulf apoptotic cells. TIM4 is phosphatidylserine receptor for the engulfment of apoptotic cells, and may also be involved in intercellular signalling in which exosomes are involved. Modulation of TIM4 production in dendritic cells (DCs) represents a novel therapeutic approach for the treatment of peanut allergy. The interaction of TIM1/TIM4 played a critical role in sustaining the polarization status of Th2 cells in allergic rhinitis (AR) patients. Cross-linking FcγRI by antigen/IgG complexes increased the production of TIM4 by dendritic cells via upregulating tumor necrosis factor-α in DCs. Specific immunotherapy (SIT) suppresses the skewed Th2 responses via disrupting the interaction of TIM1/TIM4 in antigen-specific Th2 cells.

### Reference

- Miyanishi M, et al. (2007) Identification of Tim4 as a phosphatidylserine receptor. *Nature*. 450(7168): 435-9.
- Feng BS, et al. (2008) Disruption of T-cell immunoglobulin and mucin domain molecule (TIM)-1/TIM4 interaction as a therapeutic strategy in a dendritic cell-induced peanut allergy model. *J Allergy Clin Immunol*. 122(1): 55-61.
- Cai PC, et al. (2009) Association of TIM4 promoter polymorphism -1419GA with childhood asthma in a Chinese Han population. *Tissue Antigens*. 74(1): 11-6.
- Zhao CQ, et al. (2010) Specific immunotherapy suppresses Th2 responses via modulating TIM1/TIM4 interaction on dendritic cells. *Allergy*. 65(8): 986-95.

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