PRODUCT INFORMATION

MR1/β2-Microglobulin Complex (human, recombinant)

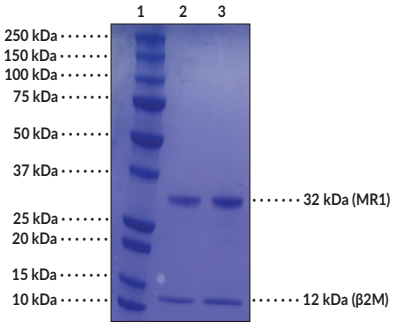
Item No. 30585

Overview and Properties

Synonyms:	**MR1:** Class I Histocompatibility Antigen-like Protein, Major Histocompatibility Complex Class I-related Gene Protein, MHC Class I-related Gene Protein **β2-Microprotein:** β2M
Source:	Recombinant human MR1 and β2-microglobulin expressed in *E. coli*
Amino Acids:	22-292 (MR1), 21-119 (β2-microglobulin)
Uniprot No.:	Q95460 (MR1), P61769 (β2-microglobulin)
Molecular Weight:	32 (MR1) and 12 (β2-microglobulin) kDa
Storage:	-80°C (as supplied)
Stability:	≥1 year
Purity:	≥90% estimated by SDS-PAGE
Supplied in:	50 mM HEPES, pH 8.0, with 150 mM sodium chloride
Protein Concentration:	***batch specific*** mg/ml

Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

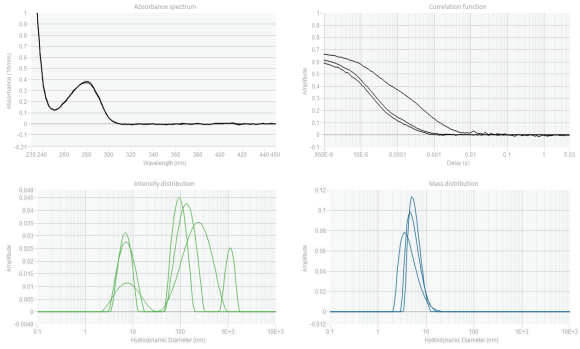
Images



Lane 1: MW Markers
Lane 2: MR1/β2-Microglobulin Complex (1 µg)
Lane 3: MR1/β2-Microglobulin Complex (2 µg)

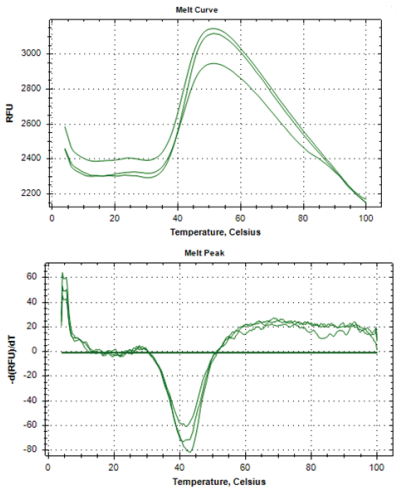
SDS-PAGE Analysis of MR1/β2-Microglobulin Complex.

MR1/β2M DLS Data



Dynamic light scattering (DLS) analysis showed that 99.8% of the protein by mass formed a complex with an average diameter of 27 nm. The PdI of this complex was 0.32. These are representative data.

MR1/β2M TSA Data



Thermal shift assay (TSA) shows that the MR1/β2M is well folded with a T_m of 43°C. These are representative data.

WARNING
THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA
This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent *via* email to your institution.

WARRANTY AND LIMITATION OF REMEDY
Buyer agrees to purchase the material subject to Cayman's Terms and Conditions. Complete Terms and Conditions including Warranty and Limitation of Liability information can be found on our website.

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Description

MHC class I-related gene protein (MR1) is a non-polymorphic MHC class Ib antigen-presenting cell surface molecule that is required for T cell receptor-mediated activation of mucosal-associated invariant T (MAIT) cells.[1,2] MR1 is composed of α1 and α2 domains, which form an antigen-binding pocket, and an α3 domain that interacts with β2-microglobulin, the light chain component of MHC class I molecules that facilitates complex transport to the cell surface and antigen presentation to cytotoxic T cells.[2,3] Upon binding of a microbial antigen, MR1 undergoes a conformational change in the endoplasmic reticulum and translocates to the cell surface with β2-microglobulin where it induces MAIT cell activation *via* an interaction with the MAIT cell T cell receptor and activates various immunomodulatory effects, including cytokine release, initiation of adaptive immune responses, and promotion of tissue repair.[4,5] The antigen-binding domain of MR1 binds to vitamin B metabolites, including metabolites of vitamin B_2, also known as riboflavin, and vitamin B_9 (folic acid; Item No. 20515).[6] MHC class I-associated β2-microglobulin exhibits equilibrium exchange with circulating soluble β2-microglobulin and serum levels of β2-microglobulin are increased in patients with cancer, renal failure, systemic amyloidosis, or various autoimmune diseases, including multiple sclerosis.[3,7-9]

References

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4. McWilliam, H.E.G., Eckle, S.B.G., Theodossis, A., *et al.* The intracellular pathway for the presentation of vitamin B-related antigens by the antigen-presenting molecule MR1. *Nat. Immunol.* **17(5)**, 531-537 (2016).
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