HLA-DRB1 Protein, Human (Myc, His-SUMO)

Cat. No.:	HY-P71505
Synonyms:	HLA class II histocompatibility antigen, DRB1 beta chain; Human leukocyte antigen DRB1
Species:	Human
Source:	E. coli
Accession:	P04229 (30G-227K)
Gene ID:	3123
Molecular Weight:	Approximately 42.9 kDa

PROPERTIES

AA Sequence	G D T R P R F L W Q L K F E C H F F N G T E R V R L L E R C I Y N Q E E S V R F D S D V G E Y R A V T E L G R P D A E Y W N S Q K D L L E Q R R A A V D T Y C R H N Y G V G E S F T V Q R R V E P K V T V Y P S K T Q P L Q H H N L L V C S V S G F Y P G S I E V R W F R N G Q E E K A G V V S T G L I Q N G D W T F Q T L V M L E T V P R S G E V Y T C Q V E H P S V T S P L T V E W R A R S E S A Q S K
Appearance	Lyophilized powder.
Formulation	Lyophilized after extensive dialysis against solution in Tris-based buffer, 50% glycerol.
Endotoxin Level	<1 EU/μg, determined by LAL method.
Reconsititution	It is not recommended to reconstitute to a concentration less than 100 μg/mL in ddH_2O.
Storage & Stability	Stored at -20°C for 2 years. After reconstitution, it is stable at 4°C for 1 week or -20°C for longer (with carrier protein). It is recommended to freeze aliquots at -20°C or -80°C for extended storage.
Shipping	Room temperature in continental US; may vary elsewhere.

DESCRIPTION

Background	The HLA-DRB1 protein serves as the beta chain of the antigen-presenting major histocompatibility complex class II (MHCII) molecule, forming a complex with the alpha chain HLA-DRA. This complex plays a pivotal role in presenting antigenic peptides on professional antigen-presenting cells (APCs), guiding alpha-beta T cell receptor (TCR) recognition by HLA-DRB1-restricted CD4-positive T cells. The process facilitates antigen-specific T-helper effector functions, including both antibody-mediated immune responses and macrophage activation, leading to the elimination of infectious agents and transformed cells. The protein typically presents extracellular peptide antigens of 10 to 30 amino acids, originating from the proteolysis of endocytosed antigens in lysosomes. In the tumor microenvironment, HLA-DRB1 presents antigenic peptides primarily generated in tumor-resident APCs, potentially via phagocytosis of apoptotic tumor cells or macropinocytosis of secreted

tumor proteins. Additionally, it presents peptides derived from intracellular proteins trapped in autolysosomes after macroautophagy, a mechanism relevant for T cell selection in the thymus and central immune tolerance. The selection of immunodominant epitopes follows distinct processing modes for pathogen-derived antigenic peptides and autoantigens/self-peptides. The anchor residue at position 1 of the peptide N-terminus, typically a large hydrophobic residue, is crucial for a high-affinity interaction with MHCII molecules. Specific alleles, such as DRB1*01:01, display immunodominant epitopes derived from various pathogens, illustrating the protein's diverse role in immune responses and tolerance mechanisms.

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