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In Vivo Star Anti-Human HLA Class I Heavy Chain Antibody

Catalog Number:	519001, 519002, 519003
Size:	1 mg, 5 mg, 25 mg
Target Name:	Major Histocompatibility Class I, MHC class I
Regulatory Status:	RUO

PRODUCT DETAILS

Clone:	HC10
Application:	Direct ELISA, functional assay, Flow Cytometry
Reactivity:	Human
Format:	Liquid
Product Description:	In vivo Grade Recombinant Anti-Human HLA Class I Heavy Chain Monoclonal Antibody
Isotype:	Mouse IgG2a Kappa
Antibody Type:	Recombinant
Purity:	>95% by reducing SDS-PAGE
Endotoxin:	< 1 EU per 1 mg of the protein by the LAL method.
Storage Conditions:	4ºC
Grade:	In vivo
Recommended Usage:	This product is suitable in in vitro functional assays or in vivo on human cells used in animal models. Optimal amounts need to be determined empirically for each experiment.
Hidden Synonyms:	InVivoMab, InVivoPlus, GoInVivo, In Vivo Gold
RRID:	AB_3739463
GeneID:	3105

BACKGROUND INFORMATION

The HLA Class I heavy chain is a critical component of the human leukocyte antigen (HLA) class I molecule, which plays a fundamental role in adaptive immunity. Together with β2-microglobulin (β2m) and peptide antigens, the heavy chain forms the trimeric HLA class I complex found on the surface of almost all nucleated cells. Its primary function is to present intracellularly derived peptide fragments, commonly from viral or tumor proteins, to cytotoxic $CD8^+$ T cells, thereby enabling immune surveillance and the elimination of infected or malignant cells.

Structurally, the HLA class I heavy chain is a transmembrane glycoprotein composed of three extracellular domains (α1, α2, and α3), a transmembrane region, and a short cytoplasmic tail. The α1 and α2 domains create the peptide-binding groove, which determines the molecule’s specificity for bound peptides. This region is highly polymorphic, giving rise to the extensive allelic diversity seen across the HLA-A, HLA-B, and HLA-C loci, diversity that is crucial for population-level adaptability to pathogens.

In research, the HLA class I heavy chain provides a versatile tool to study immune recognition, antigen processing, and disease associations. Soluble or recombinant forms of the heavy chain are widely used in structural biology to investigate peptide binding and T cell receptor interactions. Studies of allelic variations in the heavy chain have shed light on susceptibility to autoimmune diseases, infectious disease outcomes, and transplant rejection risk. Additionally, HLA class I heavy chains serve as biomarkers in cancer and viral infections, where altered expression can indicate immune evasion or stress responses.

In translational research, the heavy chain has driven advancements in immunotherapy and vaccine design. Recombinant HLA class I molecules complexed with defined peptides, known as tetramers, allow the precise identification and tracking of antigen-specific $CD8^+$ T cells, providing insights into immune responses in cancer, chronic infections, and vaccination studies. Overall, the HLA class I heavy chain remains a cornerstone in immunology, linking basic molecular mechanisms to clinical applications across transplantation, oncology, and infectious disease research.

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