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Biotin Anti-Mouse H-2 Antibody

Catalog Number:	200311, 200312
Size:	25 μg, 100 μg
Target Name:	H-2, major histocompatibility complex (MHC) H-2
Regulatory Status:	RUO

PRODUCT DETAILS

Clone:	M1/42
Application:	Flow Cytometry
Reactivity:	Mouse
Format:	Biotin
Isotype:	Rat IgG2a
Antibody Type:	Monoclonal
Formulation:	Phosphate-buffered solution, pH 7.2, containing 0.09% sodium azide and 0.2% (w/v) BSA
Protein Concentration:	0.5 mg/mL
Storage and Handling:	The antibody solution should be stored between 2°C and 8°C
Recommended Usage:	For flow cytometric staining, it is recommended to use less than 0.03 µg of this reagent per 0.5-1.0 million cells in a 100 µL volume. Optimal reagent performance should be determined by titration for each specific application.
Isotype Control:	300206
RRID:	AB_3738984

BACKGROUND INFORMATION

The mouse H-2 complex is the murine major histocompatibility complex (MHC), a highly polymorphic genomic region that plays a central role in adaptive immunity. Encoded on mouse chromosome 17, the H-2 complex governs antigen presentation to T lymphocytes and is essential for immune recognition of pathogens, tumors, and transplanted tissues. Through regulated expression of MHC class I and class II molecules, the H-2 complex enables the immune system to distinguish self from non-self and to mount appropriate cellular immune responses.

Structurally, the H-2 complex is divided into several regions, most notably the class I (H-2K, H-2D, and in some strains H-2L), class II (I-A and I-E), and class III regions. Class I H-2 molecules are composed of a polymorphic heavy α chain non-covalently associated with β2-microglobulin, forming a peptide-binding groove that presents short endogenous peptides to CD8+ T cells. Class II H-2 molecules consist of polymorphic α and β chains that together form a peptide-binding cleft for longer peptides derived from extracellular proteins, which are presented to CD4+ T cells. The class III region encodes several immune-related proteins, including complement components and cytokines, rather than antigen-presenting molecules.

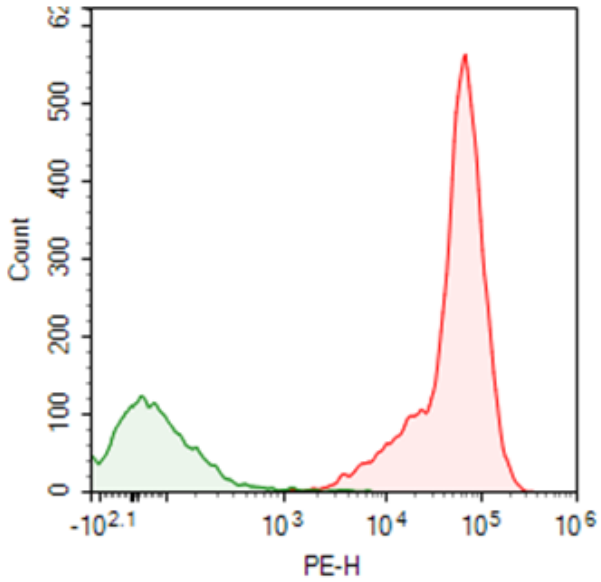
The primary ligands for H-2 class I and class II molecules are peptide antigens generated by intracellular or extracellular

antigen-processing pathways, respectively. Class I molecules bind peptides typically 8–10 amino acids in length, derived from cytosolic proteins processed by the proteasome, while class II molecules present longer peptides derived from endosomal and lysosomal processing of exogenous antigens. These peptide–MHC complexes are recognized by T cell receptors, forming the basis of antigen-specific T cell activation.

Variation within the H-2 complex has profound effects on disease susceptibility and immune outcomes in mice. Specific H-2 haplotypes are associated with resistance or susceptibility to infectious agents, autoimmune diseases, and cancer in experimental models. H-2 compatibility is also a dominant determinant of graft rejection in transplantation studies, making the complex a critical factor in experimental immunology. Differences in peptide-binding preferences among H-2 alleles influence T cell repertoire selection and immune response strength.

In therapy and biomedical research, the H-2 complex is indispensable for the development and interpretation of mouse models of human disease. It shapes responses to vaccines, immunotherapies, and infectious challenges in preclinical studies. Understanding H-2–restricted antigen presentation is also essential for designing mouse tumor models, evaluating T cell–based therapies, and translating immunological findings from mice to humans, underscoring the H-2 complex's foundational role in immunology.

PRODUCT DATA



Mouse splenocytes stained with Biotin Anti-Mouse H-2 clone M1_42 (red histogram) or an isotype control (green histogram), followed by SA-PE.

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