



MHC class II (15G4): sc-53946

BACKGROUND

Major histocompatibility complex (MHC) molecules, also designated human leukocyte antigen (HLA) molecules, are cell-surface receptors that bind foreign peptides and present them to T lymphocytes. MHC class I molecules consist of two polypeptide chains, an α or heavy chain and β -2-Microglobulin, a non-covalently associated protein. Cytotoxic T lymphocytes bind antigenic peptides presented by MHC class I molecules. Antigens that bind to MHC class I molecules are typically 8-10 residues in length and are stabilized in a peptide binding groove. MHC class II molecules are encoded by polymorphic MHC genes and consist of a non-covalent complex of an α and β chain. Helper T lymphocytes bind antigenic peptides presented by MHC class II molecules. MHC class II molecules bind 13-18 amino acid antigenic peptides. Accumulating in endosomal/lysosomal compartments and on the surface of B cells, HLA-DM and -DO molecules regulate binding of exogenous peptides to class II molecules (HLA-DR) by sustaining a conformation that favors peptide exchange. The differential structural properties of MHC class I and class II molecules account for their respective roles in activating different populations of T lymphocytes.

REFERENCES

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3. Little, A.M. and Parham, P. 1999. Polymorphism and evolution of HLA class I and II genes and molecules. *Rev. Immunogenet.* 1: 105-123.
4. Agger, R., et al. 2000. Characterization of murine dendritic cells derived from adherent blood mononuclear cells *in vitro*. *Scand. J. Immunol.* 52: 138-147.
5. Viret, C. and Janeway, C.A., Jr., 2000. Functional and phenotypic evidence for presentation of E α_{52-68} structurally related self-peptide(s) in I-E α -deficient mice. *J. Immunol.* 164: 4627-4634.
6. Fischer, G.F. and Mayr, W.R. 2001. Molecular genetics of the HLA complex. *Wien. Klin. Wochenschr.* 113: 814-824.
7. Gunther, E. and Walter, L. 2001. The major histocompatibility complex of the rat (*Rattus norvegicus*). *Immunogenetics* 53: 520-542.
8. Van Kaer, L. 2001. Accessory proteins that control the assembly of MHC molecules with peptides. *Immunol. Res.* 23: 205-214.
9. Zaliauskiene, L., et al. 2002. Enhancement of MHC class II-restricted responses by receptor-mediated uptake of peptide antigens. *J. Immunol.* 169: 2337-2345.

CHROMOSOMAL LOCATION

Genetic locus: H2-Ea-ps (mouse) mapping to 17 B1.

SOURCE

MHC class II (15G4) is a mouse monoclonal antibody raised against LPS B cell blasts of H-2M knockout mouse origin.

PRODUCT

Each vial contains 200 μ g IgG $_1$ kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

MHC class II (15G4) is available conjugated to either phycoerythrin (sc-53946 PE) or fluorescein (sc-53946 FITC), 200 μ g/ml, for WB (RGB), IF, IHC(P) and FCM.

APPLICATIONS

MHC class II (15G4) is recommended for detection of MHC class II molecule I-Ab bound to invariant chain (Ii) degradation intermediates p12 and class II-associated invariant chain peptides (CLIP) of mouse origin; not recommended for detection of MHC class II molecule I-Ab bound to human invariant chain degradation intermediates of mouse origin by immunoprecipitation [1-2 μ g per 100-500 μ g of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and flow cytometry (1 μ g per 1 x 10⁶ cells).

Molecular Weight of MHC class II α : 34 kDa.

Molecular Weight of MHC class II β : 29 kDa.

RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 2) Immunofluorescence: use m-IgG κ BP-FITC: sc-516140 or m-IgG κ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz[®] Mounting Medium: sc-24941 or UltraCruz[®] Hard-set Mounting Medium: sc-359850.

SELECT PRODUCT CITATIONS

1. Bartleson, J.M., et al. 2020. Strength of tonic T cell receptor signaling instructs T follicular helper cell-fate decisions. *Nat. Immunol.* 21: 1384-1396.
2. Clement, C.C., et al. 2021. Pleiotropic consequences of metabolic stress for the major histocompatibility complex class II molecule antigen processing and presentation machinery. *Immunity* 54: 721-736.e10.
3. Ghosh, D., et al. 2022. Regulation of the BCR signalosome by the class II peptide editor, H2-M, affects the development and repertoire of innate-like B cells. *Cell Rep.* 38: 110200.
4. Rodrigues, P.M., et al. 2023. LAMP2 regulates autophagy in the thymic epithelium and thymic stroma-dependent CD4 T cell development. *Autophagy* 19: 426-439.

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

RESEARCH USE

For research use only, not for use in diagnostic procedures.