



MHC class II (12F4): sc-53896

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 eight to ten 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

1. Murphy, D.B., et al. 1989. A novel MHC class II epitope expressed in thymic medulla but not cortex. *Nature* 338: 765-768.
2. AYu, R., et al. 1991. On the complexity of self. *Nature* 353: 660-662.
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. 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. Günther, 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.

STORAGE

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

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.

CHROMOSOMAL LOCATION

Genetic locus: HLA-DRA (human) mapping to 6p21.32.

SOURCE

MHC class II (12F4) is a mouse monoclonal antibody raised against stroma cells of human origin.

PRODUCT

Each vial contains 200 μ g IgG₁ kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

MHC class II (12F4) is recommended for detection of MHC class II of human origin by immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

Molecular Weight of MHC class II heavy chain α : 34 kDa.

Molecular Weight of MHC class II light chain β : 29 kDa.

RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended:
1) 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. Liu, T., et al. 2012. Staphylococcal enterotoxin B compromises the immune tolerant status in the airway mucosa. *Clin. Exp. Allergy* 42: 375-382.
2. Rydbirk, R., et al. 2017. Cytokine profiling in the prefrontal cortex of Parkinson's disease and multiple system atrophy patients. *Neurobiol. Dis.* 106: 269-278.
3. Xiao, S., et al. 2022. Activation of the STAT5 signaling pathway by Yiqi Jiedu formula induces regulatory T cell-mediated alleviation of corneal immunopathological damage in mice with recurrent herpes simplex keratitis. *Front. Pharmacol.* 12: 790787.

RESEARCH USE

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