CD74 Transgenic Mice

Technology ID

INV 46739

Category

Research Tools/Biological Materials/Mouse

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Biomaterial – Mouse

Biomaterial Description

Researchers in Professor Alexander Rudensky's lab have developed a transgenic mouse model to investigate the role of the Class II-associated invariant chain peptide (CLIP) in shaping the MHC class II peptide repertoire. By decreasing the affinity of CLIP for MHC class II molecules, this model allows for the study of antigen presentation dynamics in the presence or absence of H-2M, a key peptide editor. These CD74, or invariant chain, transgenic mice provide a powerful tool for dissecting the mechanisms of immune tolerance, autoimmunity, and antigen processing.

Applications

in vivo and in vitro studies of antigen presentation, including:

-Analysis of MHC class II peptide repertoires under altered CLIP affinity conditions

-Investigation of H-2M-dependent and independent peptide loading pathways

-Studies of immune tolerance and autoimmunity

-Evaluation of antigen processing in dendritic cells and B cells

-Development of immunotherapies targeting MHC class II pathways

Advantages

-in vivo model to study human invariant chain degradation and MHC class II maturation

-Genetically engineered to express altered-affinity CLIP peptides

-Enables controlled modulation of peptide loading on MHC class II molecules

-Useful in both H-2M-sufficient and H-2M-deficient backgrounds

-Facilitates mechanistic studies of antigen presentation and immune regulation

-Compatible with a wide range of immunological assays and transgenic crosses

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References

1. Honey, K., Forbush, K., Jensen, P. E., Rudensky, A. Y.(2004) , https://journals.aai.org/jimmunol/article/172/7/4142/8060134, https://academic.oup.com/jimmunol, 172, 4142-4150