MEDICAL & BIOLOGICAL LABORATORIES CO., LTD.

Monitoring Influenza-Specific T Cell Responses Using MHC Tetramers

- Insights into Seasonal Influenza Immunity -



Understanding T Cell Immunity in Seasonal Influenza Vaccination

Seasonal influenza remains a significant public health concern worldwide. While vaccination remains a key strategy for reducing influenza-related morbidity and severe disease, protection against influenza involves not only neutralizing antibody responses but also virus-specific T cell responses. Influenza-specific $CD4^+$ T cells, in particular, play important roles in coordinating adaptive immune responses and supporting protective immunity.[1)]

Increasing evidence suggests that T cells contribute to viral clearance and may contribute to broader protection against diverse influenza strains, particularly when antibody responses are suboptimal. Therefore, monitoring influenza-specific T cell responses is increasingly important for understanding vaccine-induced immunity and supporting the development of next-generation influenza vaccines.[1)]

For example, Wild *et al.* (2021) used MHC class II tetramers to longitudinally monitor influenza-specific $CD4^+$ T cells and demonstrated that early activation of virus-specific $CD4^+$ T cells following seasonal influenza vaccination was associated with subsequent hemagglutinin-specific antibody responses. These findings highlight the importance of monitoring antigen-specific T cell responses in vaccine research.[2)]

In this newsletter, we highlight MHC tetramer tools that enable direct detection and characterization of influenza-specific T cell responses for vaccine and immunology research.

References

1. Finn CM, *et al. Cells*. (2024) [PMID: 38607077]
2. Wild K, *et al. Nat Commun.* (2021) [PMID: 34795301]

◆Featured Influenza Tetramer Lineup

Class II Tetramers (for antigen-specific CD4⁺ T cells)

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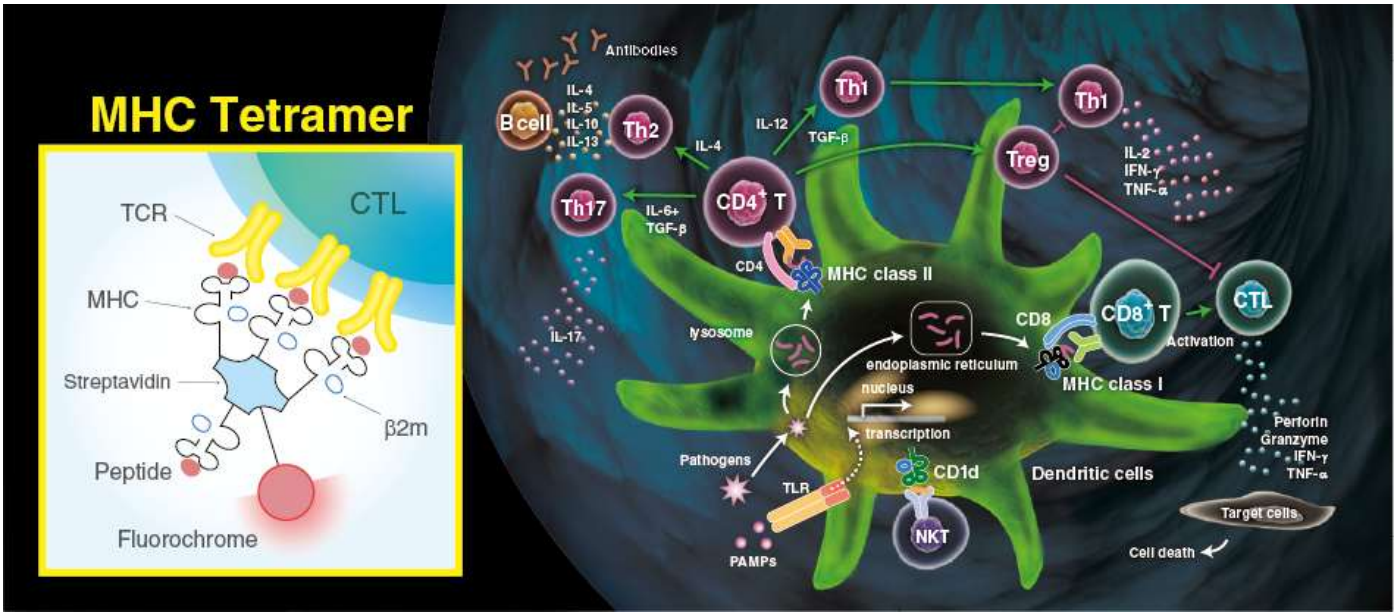
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MHC Tetramer

Reagents for direct detection of antigen-specific T cells



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MEDICAL & BIOLOGICAL LABORATORIES CO., LTD.
SUMITOMO FUDOSAN SHIBADAIMON NICHOME BLDG.
2-11-8 Shibadaimon, Minato-ku, Tokyo 105-0012 Japan
E-mail: inquiry-ruo@mbl.co.jp
https://www.mblbio.com/e/

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