

TCR Dextramer® reagents can measure antigen presentation on cells

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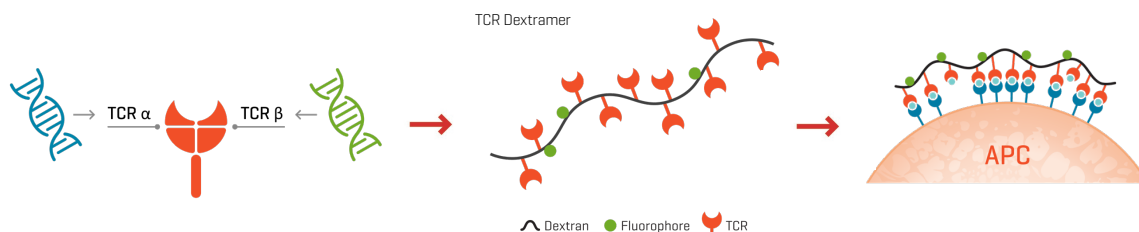
Introduction

To successfully develop and apply TCR or T cell-based immunotherapies, the specificity and sensitivity of the selected TCR must first be validated before proceeding to clinical development. Here, the detection and quantification of antigen-presenting cells [APC] is important for **1)** stratification and selection of patients with demonstrated expression of the target antigen, **2)** confirming tissue-specific expression of the target antigen, and **3)** monitoring target expression during treatment. To support such efforts, we have developed high-avidity TCR Dextramer reagents to allow detection of peptide presentation by antigen-presenting cells. This study presents the use of such reagents as an analytical tool for evaluating target expression on the cell surface of antigen-presenting cells.

Conclusions

- TCR Dextramer reagents can be used in a simple workflow to detect peptide presentation at the surface of antigen-presenting cells, here shown for peptide-pulsed T2 cells and PBMC samples.
- Peptide presentation is detectable ≥ 2 nM peptide-pulsing concentration on T2 cells, ≥ 20 nM on PBMC samples.
- TCR Dextramer detection on sensitivity T2 cells is only slightly influenced by the presence of irrelevant peptides.
- TCR Dextramer is ideally suited to develop novel techniques for the detection of antigen presenting cells.

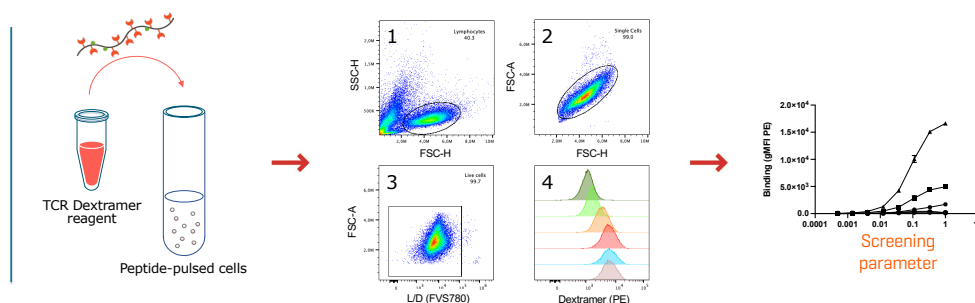
TCR Dextramer reagents



Experimental procedure

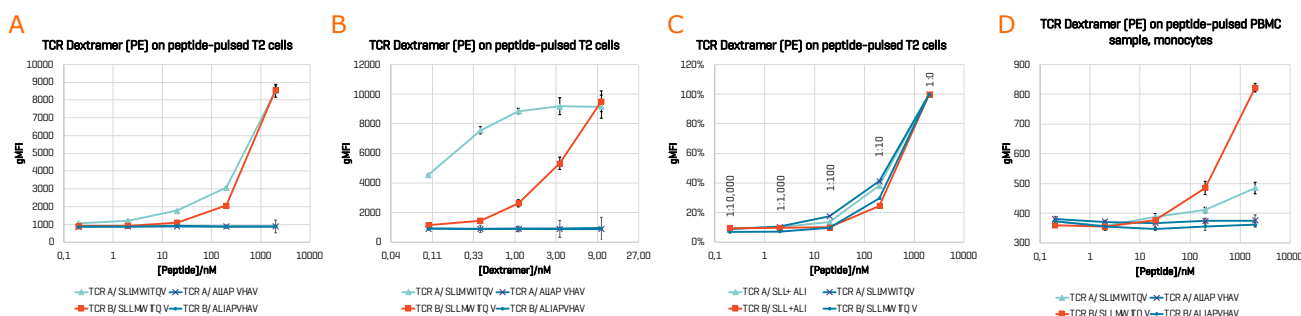
TCRs used in this study

TCR	TCR Specificity	K_d
A	HLA-A*02:01/SLLMWITQV	48 pM
B	HLA-A*02:01/SLLMWITQV	32 μ M



Peptide-pulsed cells are stained with TCR Dextramer reagents based on high and low affinity TCRs. The mean fluorescence intensity of the relevant cell population [lymphocytes/monocytes] is measured using flow cytometry.

Staining of peptide-pulsed cells using TCR Dextramer reagents



A) Peptide titration on T2 cells, **B)** TCR Dextramer titration on peptide-pulsed T2 cells, **C)** Peptide titration on peptide-pulsed T2 cells using either target peptide alone or target peptide supplemented with a control peptide to a constant total peptide concentration of 2 μ M. Target:control peptide ratio is indicated on the graph. **D)** Peptide titration on PBMC sample; data shown for monocyte population. Target peptide: SLLMWITQV, K_d (HLA-A2) = 5.6 nM; control peptide: ALIAPVHAV, K_d (HLA-A2) = 7.0 nM.