# TCR Dextramer® reagents can measure antigen presentation on cells

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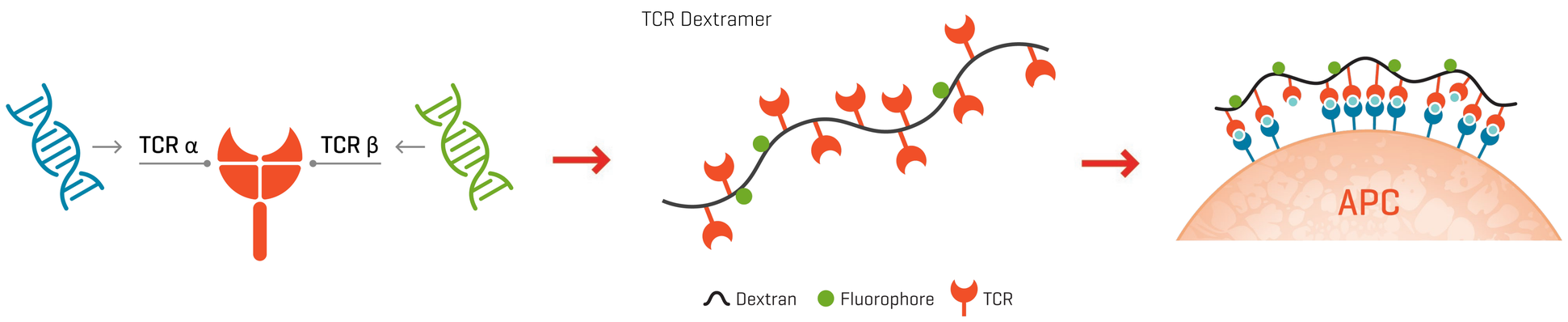
## Introduction

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 supports 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 sensitivity on 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

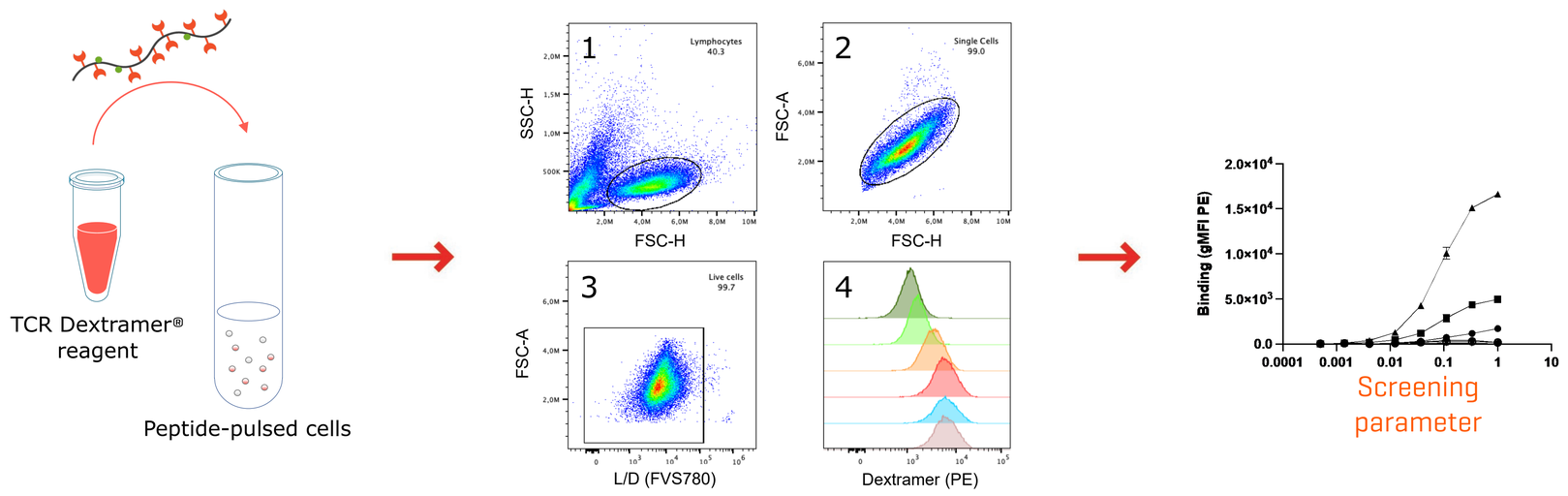



TCR monomers are produced in *E. coli,* refolded and attached to a fluorescent Dextramer® backbone. Antigen-presenting cells (APC) can be stained with TCR Dextramer® reagents like conventional pMHC Dextramer® reagents on T cells.

## Experimental procedure

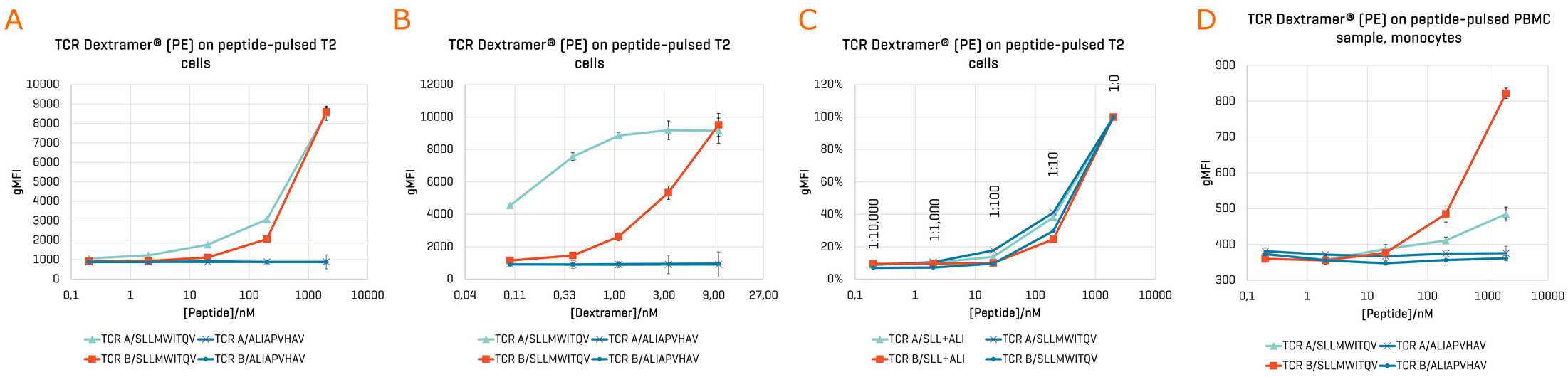
TCRs used in this study

| TCR | TCR Specificity | $K_d$ |
|---|---|---|
| A | HLA-A*02:01/ SLLMWITQV | 48 pM |
| B | HLA-A*02:01/ SLLMWITQV | 32 µM |




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 µM. 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.

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