

EVALUATING THE PERFORMANCE OF IMMUNE MONITORING LABORATORIES USING MHC MULTIMER ASSAY

¹Kivin Jacobsen*, ²Stephen Haley, ¹Niels M Frandsen, ¹Liselotte Brix. ¹Immudex, Virum, DK, Denmark; ²Immudex, Fairfax, VA, USA

Background Disease-specific T-cell immune monitoring is becoming increasingly important in immunotherapeutic research and development. MHC multimer assays are reliable and accurate tools for monitoring antigen-specific T-cell immunity making it possible to compare results generated by laboratories worldwide. Immudex conducts annual Proficiency Testing allowing laboratories worldwide to assess their immune monitoring performance with MHC multimer and T-cell ELISpot assays.

Methods 10 laboratories (including Immudex) from 8 different countries are currently participating in the MHC Multimer Proficiency Testing 2023. Each participant has received a pre-tested PBMC sample with low or high frequencies of T cells specific for two predefined EBV epitopes. In addition, this year's proficiency testing also features analysis with MR1 Multimers to enumerate MAIT cells. All laboratories will analyze samples using our instructions and their own MHC multimer assay protocols. They will report their results back to Immudex as:

- number of MHC multimer-positive CD8+ T cells out of total number of CD8+ T cells analyzed.
- number of MR1 multimer positive CD3+ CD161+ MAIT cells out of total CD3+ CD161+ cells.

Results To assess the performance of the participants, we will compare how close the measurements of each participant are to the average value reported by all participants.

Conclusions We will evaluate the reproducibility of MHC Multimer assays across the participating laboratories and check for any correlation between the overall accuracy of the assay with the frequency of the investigated T-cells. We will compare these aspects with results from our ELISpot proficiency Testing.

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