

Proficiency Panels: MHC Multimer Consistency Between Labs 2021

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Collaboration Between Immudex, CIC/CRI, and CIMT



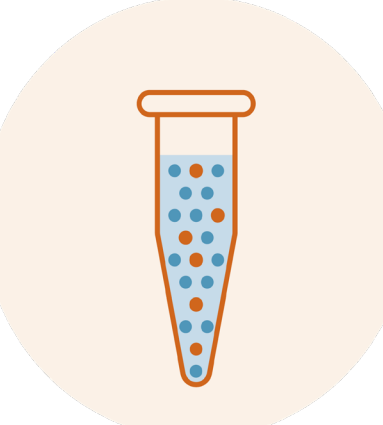


Immudex offers Proficiency Panels in collaboration with CIC (the US Cancer Immuno-therapy Consortium of the CRI) and CIMT (the European Association for Cancer Immunotherapy) to help researchers and clinicians worldwide evaluate their immune monitoring performance with the MHC Multimer and T-cell ELISpot assays. This poster focuses on the MHC Multimer Proficiency panel.

Proficiency Panels provide:

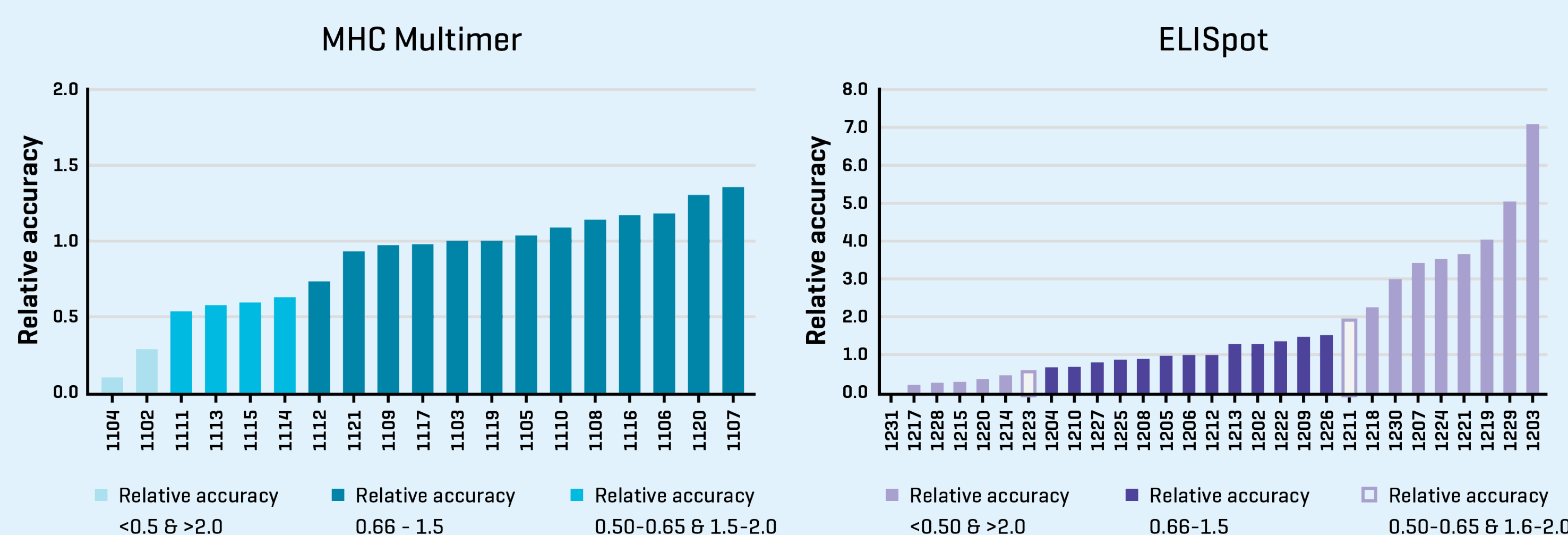
- External validation of assay performance
- Enhanced assay harmonization
- Coordinated guidelines for MHC multimer and T-cell ELISpot assays
- Proficiency panel reports

Participation is Easy!

A test cycle takes 4 months to report delivery and results are anonymous.

				
Sign up Quickly register to participate in a test cycle. Your name and affiliation are kept anonymous	Receive Samples All participants receive identical PBMC samples to analyze	Analyze Samples Use your lab-specific protocols to process the PBMC samples according to instructions	Upload Data Report your results back to Immudex	Receive Report Receive a full report on the test cycle with anonymized performance of all participants

MHC Multimer Results are Most Consistent Between Different Laboratories



When comparing ELISpot to MHC multimer technology such as Dextramer® reagents in the Proficiency Panels performed in 2020 by multiple different laboratories, MHC multimers were more consistent and reproducible.

- ELISpot Proficiency Panel:** participants determine the number of IFN-γ secreting antigen-specific T cells in CMV-positive human PBMC samples
 - Results: 13 of the 29 participants (44.8%) had a relative accuracy between 0.66-1.5 and were considered "in the average range" (dark purple columns).
- MHC Multimer Proficiency Panel:** participants determine the amount of EBV-specific T-cells in a EBV-positive sample using MHC and Negative Control MHC Multimers.
 - Results: 13 out of 19 participants (68.4%) had a relative accuracy between 0.66 – 1.5 and were considered "the average range" (dark blue columns).

MHC Multimer Assays Are Well Harmonized Between Different Laboratories

All laboratories received identical PBMC samples (HHU20181002 and HHU20190623) and performed the proficiency panel according to the coordinated multimer instructions but with their own choice of materials and laboratory-specific protocols. Results were reported as percentage MHC multimer+ CD8⁺ T cells specific to CMV and EBV and collated to assess the relative accuracy of results across the different laboratories.

Relative Accuracy

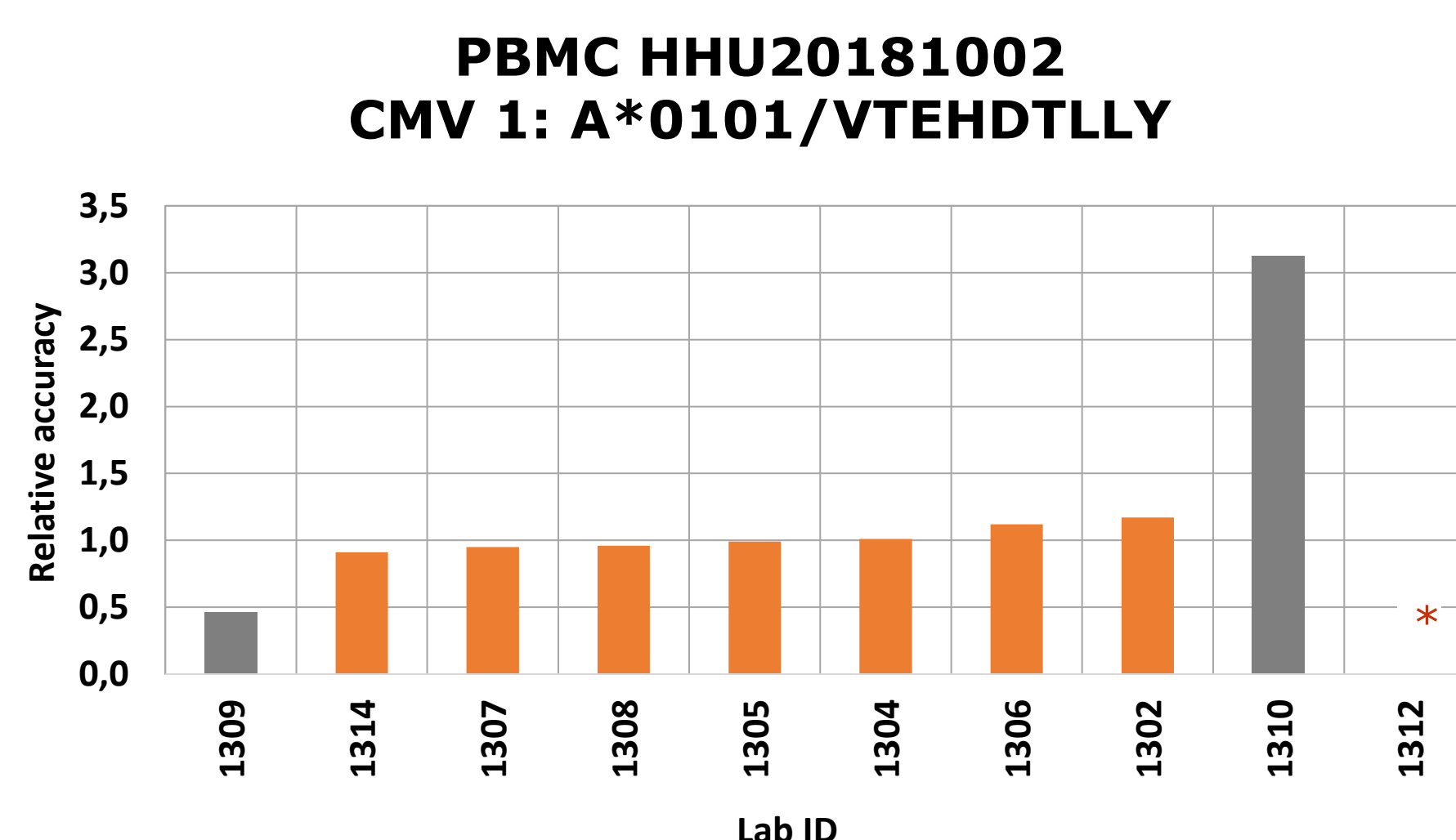
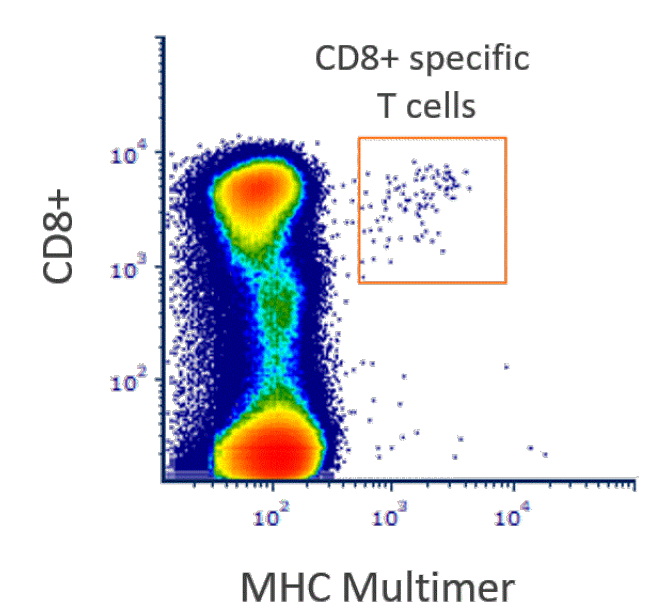
$$\text{Relative Accuracy} = \frac{\text{Mean}\%}{\frac{\text{Median}\%}{2}}$$

MHC Multimer Specificities

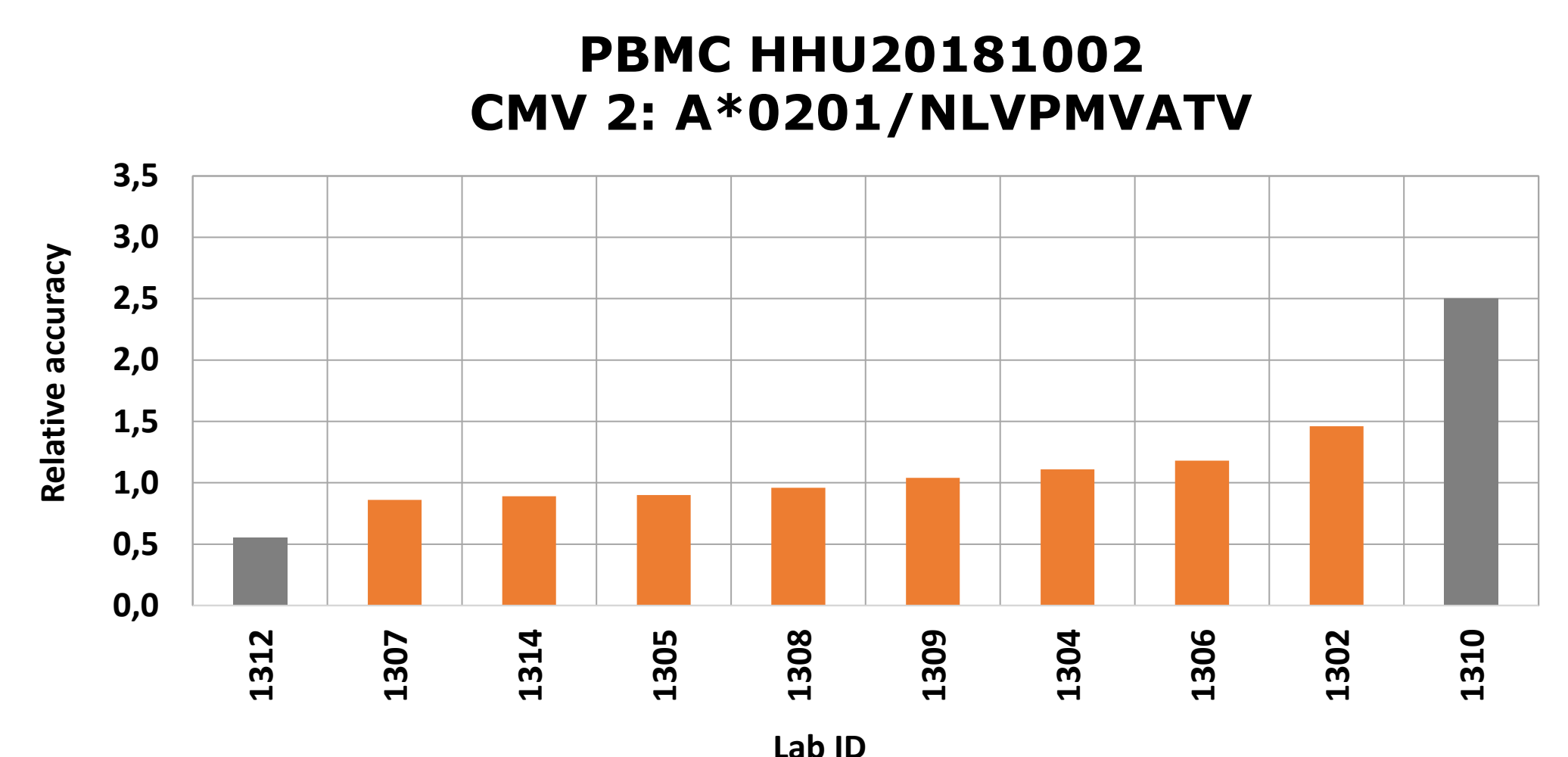
- HLA-A*0101/VTEHDTLLY (CMV)
- HLA-A*0201/NLVPMVATV (CMV)
- HLA-A*0201/GLCTLVAML (EBV)

Results

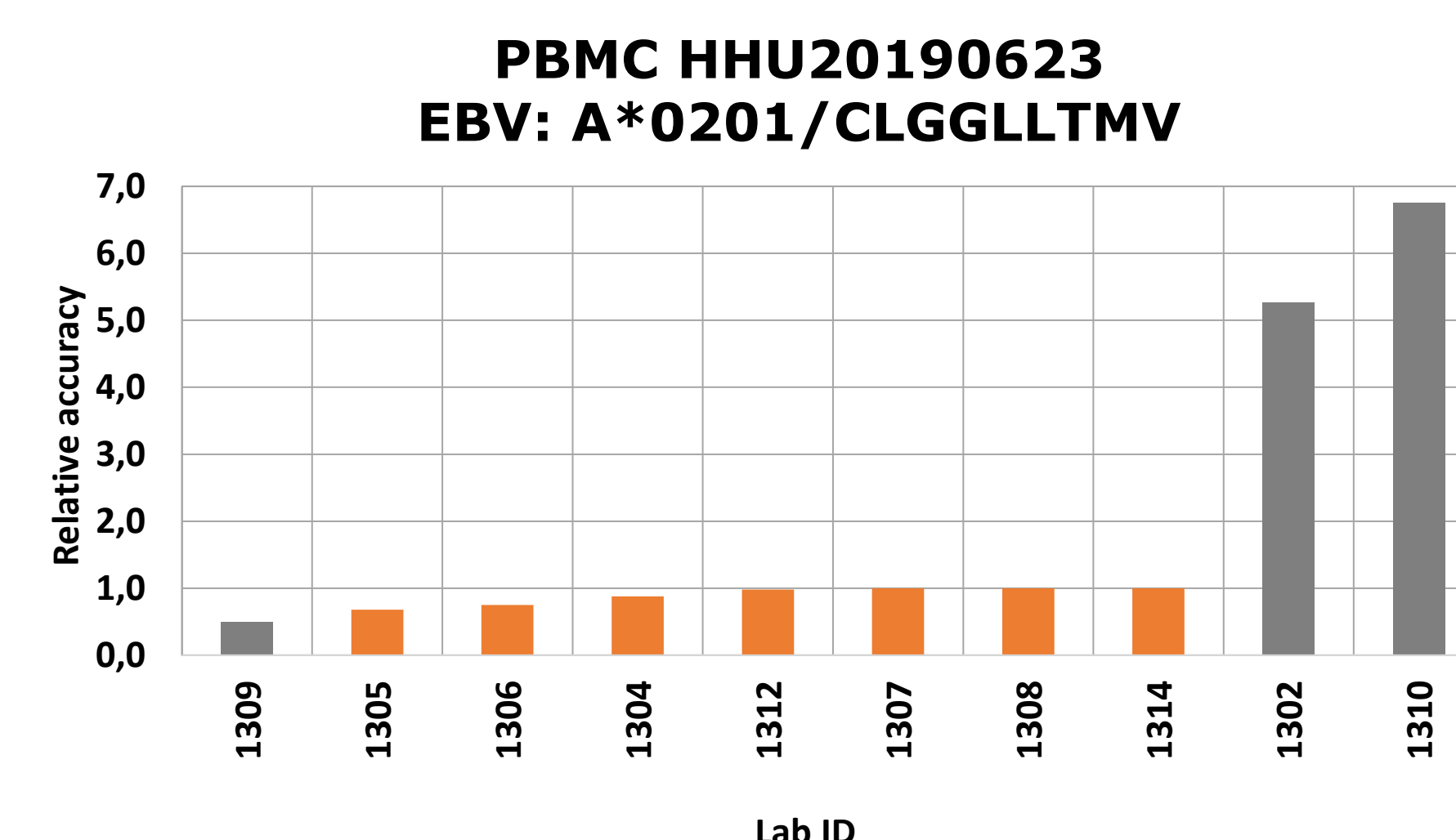
- 10 laboratories from 7 different countries participated
- 7 participants used MHC Dextramer® reagents and 3 participants used their own MHC multimer reagents
- 4 participants were from academia, and 6 participants were from industry
- 90% of the participating laboratories got a proficiency score of ≥ 2.0 . All measurements were made in duplicates, and are here presented as mean values.



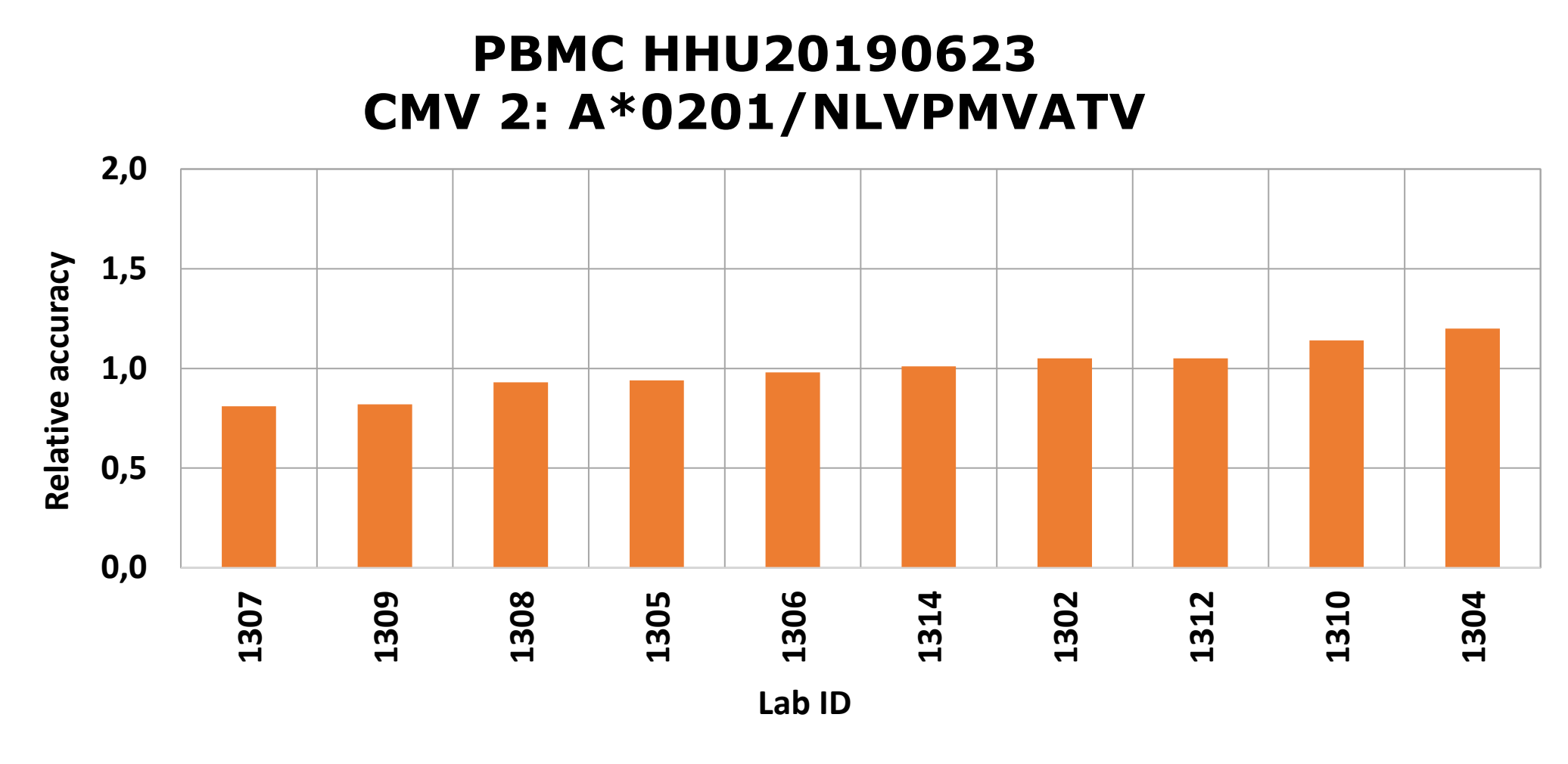
Mean for CMV-specific CD8+ T cells is 0.64%. 7 out of 10 participants are within "the average range". (orange = normal range, grey = outside normal range).
*The result reported for the lab 1312 was omitted because it was far outside the generally observed range for this assay point.



Mean for CMV-specific CD8+ T cells is 0.16%. 8 out of 10 participants are within "the average range". (orange = normal range, grey = outside normal range).



Mean for EBV-specific CD8+ T cells is 0.08%. 7 out of 9 participants are within "the average range". (orange = normal range, grey = outside normal range).



Mean for CMV-specific CD8+ T cells is 1.13%. All participants are within "the average range". (orange = normal range, grey = outside normal range).

MHC multimer+ CD8⁺ T cell percentages for all specificities reported in this year's MHC Multimer Proficiency Panels. Graphs show relative accuracy of duplicates.

Conclusions

- 90% of all reported measurements for the MHC Multimer panel 2021 were in the average range or near the average range
- The results obtained by multiple laboratories using the MHC multimer assays in the Proficiency Panel are consistent when looking at both high- and low-frequency T-cell responses.
- Proficiency Panels are a useful tool to evaluate the proficiency of immune monitoring assays across different laboratories to ensure comparable results, for example in multicentre trials.
- MHC multimers are valuable assays for evaluating the antigen-specific T-cell response in the research and development of immunotherapeutics.

The full MHC Multimer Proficiency Panel 2021 report is available at www.immudex.com