

# CPI Antigen

## A Positive Control for the Functionality of CD4+ T Cells and APC

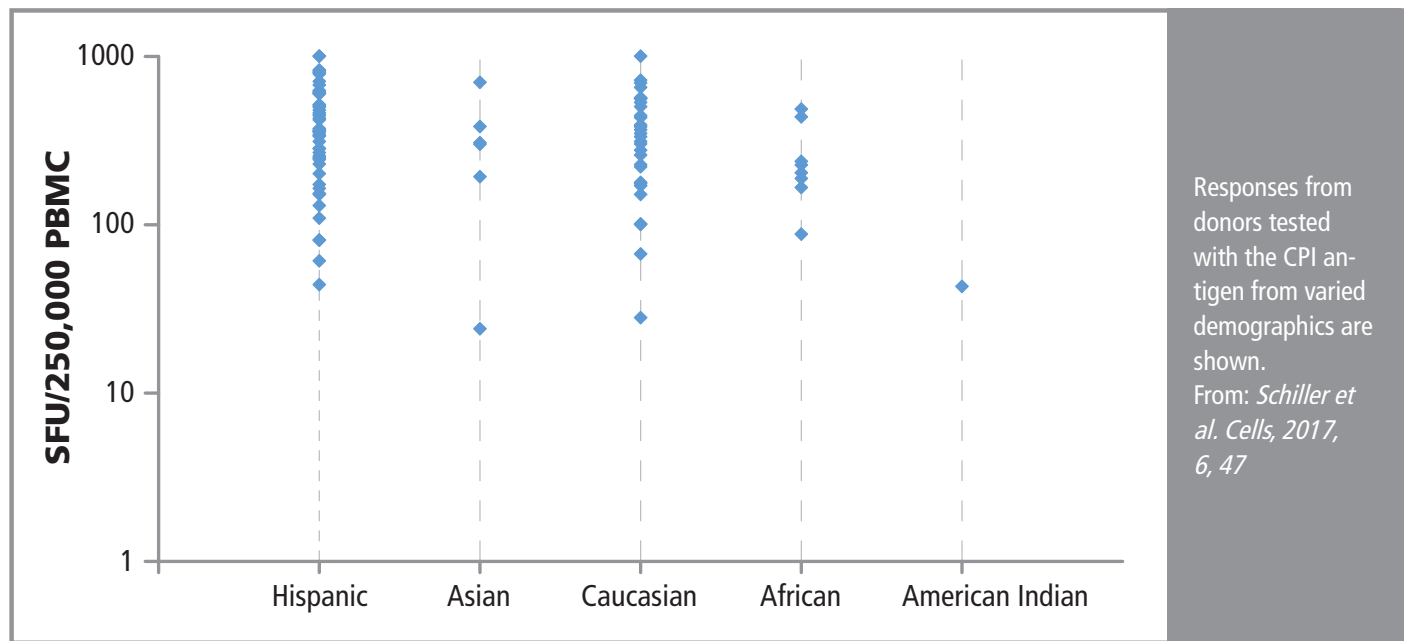
Positive controls are essential for immune monitoring. Although the CEF peptide pool has been widely used as a positive control for CD8+ T cell functionality, a comparable positive control for CD4+ T cells has been lacking. We have introduced it with CPI (*Schiller et al. Cells, 2017, 6, 47*).

CEF peptides do not control for the functionality of the antigen presenting cell (APC) compartment because they do not require processing: they are short peptides that bind directly to HLA Class I molecules. In contrast, CD4+ cells require protein antigen to be processed and presented by dedicated MHC Class II positive APC, including dendritic cells. Therefore, CD4+ T cell activation by protein antigens depends critically on the functionality of the APC, in addition to the functionality of the CD4+ cells themselves. Both need to be controlled for

immune monitoring purposes, in particular when working with PBMC that have been stored, shipped, and or cryopreserved. The CPI antigen pool consists of protein antigens that, requiring processing by APC, test the functionality of both CD4+ memory cells and APC.

We identified five viruses that are ubiquitous. When tested in an IFN- $\gamma$  ELISPOT assay, while all of them triggered CD4+ recall responses in a fraction of test subjects, none of them induced a CD4+ recall response in all of the

test subjects. However, 100% of the donors responded positively when PBMC from 100 donors were challenged with a pool of protein antigens derived from Cytomegalo-, Influenza, and Parainfluenza viruses (CPI). In addition to Caucasians, CPI elicited CD4+ recall response in all Asian, African, American Indian, and Hispanic PBMC donors tested (Figure). By comparison, only 68% of these 100 donors, primarily Caucasians, responded to CEF.



Responses from donors tested with the CPI antigen from varied demographics are shown. From: *Schiller et al. Cells, 2017, 6, 47*

**CD4 cell and APC functionality are sensitive indicators of PBMC quality. CPI reactivity tests for both. Join the team of researchers who are using the CPI Antigen for PBMC functionality assessment. Contact us today.**

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