SARS-CoV-2 peptide pools for T-cell stimulation

The Spike protein (S), Nucleoprotein (N), and Membrane protein (M) are important structural proteins of the human SARS-CoV-2 virus. The S protein is further divided into two domains S1 and S2. The Receptor Binding Domain (RBD) is part of the S1 region. The S proteins are not only structural proteins of the virus but have been shown to be key targets to develop an adaptive immune response (Li et al. J Immunol, 2008). The SARS-CoV-2 genome also encodes for other proteins such as the accessory Open Reading Frame (ORF) proteins.

Scanning pools and defined pools – what's the difference?

Scanning pools do not require prior knowledge about epitopes and are designed to cover whole proteins or domains. They are often produced as 15-mers overlapping by 11 amino acids, spanning the whole protein of interest. 15-mers enable CD4+ T-cell stimulation. In parallel, when added to cells in culture, they can be trimmed by proteases to shorter peptides, allowing for CD8+ T-cell stimulation. The scanning pool is not host-restricted and may not only be used to evaluate T-cell responses in humans but also in other model organisms.

Mabtech's **defined pools** contain selected peptides binding human HLA. The S2 N pool is based on data from the SARS-CoV-1 outbreak, and the chosen epitopes are 100% homologous to SARS-CoV-2 (Ahmed et al. Viruses, 2020). The S N M O pool is based on epitopes defined by IFN-γ ELISpot screening of PBMCs from SARS-CoV-2 convalescent COVID-19 patients. (Peng et al., BioRxiv preprint, 2020).

Validated peptide pools

Mabtech's SARS-CoV-2 peptide pools have been validated in ELISpot and FluoroSpot using PBMCs from COVID-19 convalescent individuals previously PCR-confirmed as SARS-CoV-2 positive.

3629-1

SARS-CoV-2 S1 scanning pool

- 166 peptides, 15-mers overlapping with 11 amino acids
- Peptides cover Spike S1 domain (aa 13-685)
- Synthetic peptides
- Lyophilized, two vials, 2 x 83 peptides (25 µg/peptide)

3620-1

SARS-CoV-2 S2 N defined peptide pool

- 41 peptides
- Peptides from Spike S2 domain and Nucleoprotein
- Synthetic peptides
- Lyophilized, one vial (25 µg/peptide)

3622-1

SARS-CoV-2 S N M O defined peptide pool

- 47 peptides
- Peptides from the spike protein, nucleoprotein, membrane protein, ORF3a protein, and ORF7a protein
- Synthetic peptides
- Lyophilized (25 µg/peptide)