Supplementary Materials for

**Phenotype and kinetics of SARS-CoV-2-specific T cells in COVID-19 patients with acute respiratory distress syndrome**

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**This PDF file includes:**

- Figure S1. Flow cytometry gating strategy.
- Figure S2. SARS-CoV-2-specific cytokine production in COVID-19 ARDS patients.
- Figure S3. Correlations between kinetics of viral loads, virus-specific antibodies and virus-specific T cell responses.

**Other Supplementary Material for this manuscript includes the following:**

(available at immunology.sciencemag.org/cgi/content/full/5/48/eabd2071/DC1)

- Table S1. Raw data (in Excel spreadsheet).
**Figure S1. Flow cytometry gating strategy.** (A-J) Gating strategy for detection of antigen-specific T cells after stimulation of PBMC. (A) Live cells were selected, (B) followed by the selection of lymphocytes and (C) singlets. (D) CD3+ T-cells were gated and (E) divided into CD4+ and CD8+ T cells. Both subsets were phenotyped as naïve (T_N), central memory (T_CM), effector memory (T_EM) or terminally differentiated effectors (T_EMRA) on basis of expression of CD45RA and CCR7 (F for CD4+ T-cells, G for CD8+ T-cells). (H-J) Within the different subsets, activated cells were identified via surface upregulation of activation-induced markers CD69 and CD137. Percentages of CD69+CD137+ double positive cells within the CD4 or CD8 gate, reflecting activated cells, were used for further analysis. Representative examples of DMSO (vehicle of the MP) (background control, H), CMV peptides (positive control, I) and a MP_S stimulation of PBMC from a COVID-19 patient (J).
Figure S2. SARS-CoV-2-specific cytokine production in COVID-19 ARDS patients. (A-C) Antigen-specific production of cytokines measured in cell culture supernatants from PBMC stimulated (20 hours) with MP_S. Two left panels show quantities obtained with the vehicle control (DMSO) and specific stimulation (MP) for HC and COVID-19 patients. Third panel shows the quantity corrected by subtracting the background present in the DMSO stimulation to allow comparison of both groups. Panels show individual values for n=10 patients versus n=10 HC, as well as the geometric mean. Asterisk denotes a significant difference. HC = healthy control. (D) Antigen-specific production of cytokines per COVID-19 case. Circle diagrams represent the total amount of cytokines produced by the respective donor (corrected for DMSO background), quantities of different cytokines are shown as a percentage of whole. Clinical data for cases is described in Fig. 1, symbols match throughout.
Figure S3. Correlations between kinetics of viral loads, virus-specific antibodies and virus-specific T-cell responses. (A, B, C) Correlations based on kinetics as reported in Fig. 6. (A) Viral loads were negatively correlated to presence of IgG antibodies ($r=0.6630, p<0.0001$), (B) viral loads were negatively correlated to presence of SARS-CoV-2-specific CD4$^+$ T-cells ($r=0.5675, p=0.0007$), (C) presence of antibodies and specific T-cells were positively correlated ($r=0.6360, p=0.0002$). Clinical data for cases is described in Fig. 1, symbols match throughout. Samples are color coded according to days post ICU admission: red = day 0, green = 7, blue = day 14 and purple = day 21.