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## Supplementary Material

### Supplementary Figure 1 Representative analysis of flow cytometric data

(A) Samples were initially gated on singlet events and live CD3<sup>+</sup> cells before focusing on lymphocytes and excluding any aggregates and potential disturbances in the sample flow as based on the time parameter. CD4<sup>+</sup> and CD8<sup>+</sup> T-cells were then identified. (B) Differentiation stages of CD4<sup>+</sup> and CD8<sup>+</sup> T-cells were determined by differential expression patterns of CD45RO and CCR7: CD45RO<sup>-</sup> CCR7<sup>+</sup> Naïve (T<sub>NV</sub>), CD45RO<sup>+</sup> CCR7<sup>+</sup> Central Memory (T<sub>CM</sub>), CD45RO<sup>-</sup> CCR7<sup>-</sup> Effector Memory (T<sub>EM</sub>) and CD45RO<sup>-</sup> CCR7<sup>-</sup> Terminal Effector (T<sub>TE</sub>). (C) The activation state of total CD4<sup>+</sup> and CD8<sup>+</sup> T-cells was investigated by determining the frequency of cells expressing CD27, CD28, CD127, Ki67, Granzyme B (GrB) and CD57, respectively.

### Supplementary Figure 2 Differentiation and activation of total CD8<sup>+</sup> T-cells

(A) The differentiation stage of total CD8<sup>+</sup> T-cells from PBMC of young and elderly adults was compared by flow cytometric analysis. CD45RO and CCR7 were used to define Naïve (T<sub>NV</sub>), Central Memory (T<sub>CM</sub>), Effector Memory (T<sub>EM</sub>) and Terminal Effector (T<sub>TE</sub>) cells. Pies represent relative proportions of the four subpopulations in each donor group, while the bar chart directly compares individual subpopulations between groups. (B) The activation state was investigated by measuring the frequency of total CD8<sup>+</sup> T-cells expressing CD27, CD28, CD127, Ki67, Granzyme B (GrB) or CD57, respectively.

### Supplementary Figure 3 Influenza HA-specific CD8<sup>+</sup> T-cell responses

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The frequencies of CD8<sup>+</sup> T-cells reactive to stimulation with Seasonal H1, Pandemic H1 or Avian H5 peptide pools were determined by measuring production of IFN- $\gamma$ , IL2 and/or TNF and compared between young and elderly adults. \* p<0.05.

**Supplementary Figure 4 Induction of individual cytokines by Influenza HA stimulation**

The frequency of CD4<sup>+</sup> T-cells producing either IFN- $\gamma$ , IL-2 or TNF, respectively, was compared in young and elderly adults after stimulation with Seasonal H1, Pandemic H1 or Avian H5.