Cell Reports, Volume *39*

Supplemental information

A diminished immune response underlies age-related SARS-CoV-2 pathologies

Kohei Oishi, Shu Horiuchi, Justin Frere, Robert E. Schwartz, and Benjamin R. tenOever

Fig. S1 RNAseq analysis of differentially expressed genes (DEGs) between young and older hamsters

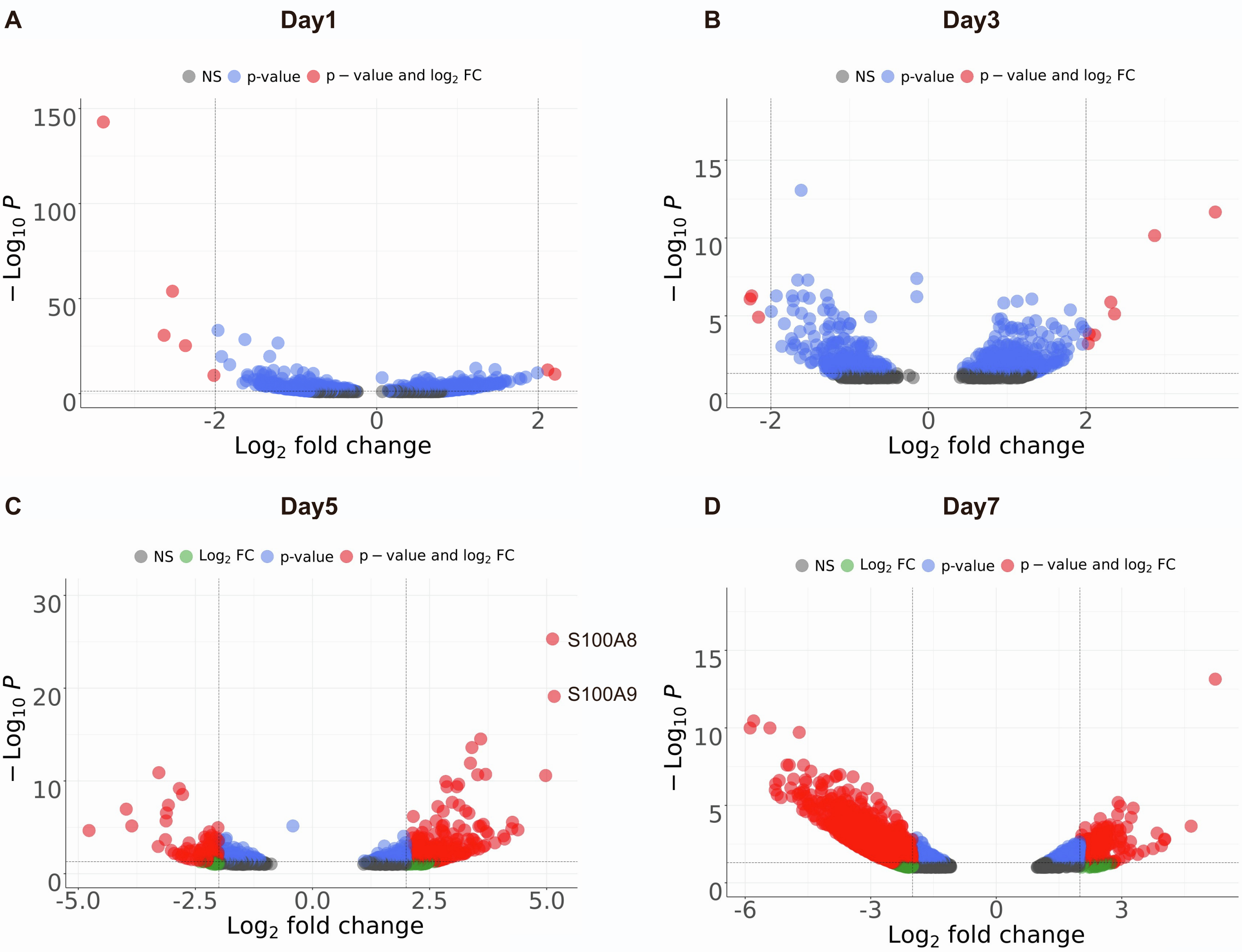

Fig. S1 RNAseq analysis of differentially expressed genes (DEGs) between young and older hamsters (Related to Figure 1). (A-D) Volcano plot comparing DEGs in young vs. older hamsters at Day 1 (A), 3 (B), 5 (C) and 7 (D).

Fig. S2 Gating strategy for hamster immune cells

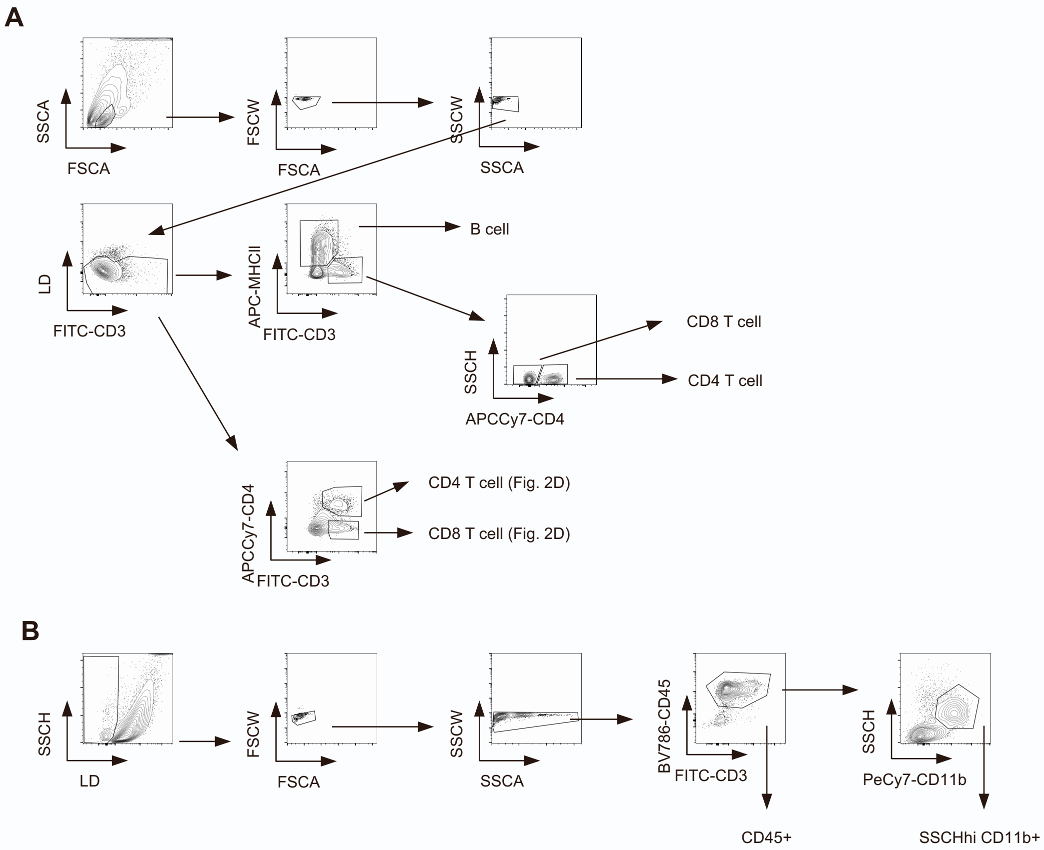

Fig. S2 Gating strategy for hamster immune cells (Related to Figure 2). (A) The Gating strategy for CD4 and CD8 T cells, and B cells for Fig. 2 C-F, Fig. 3 A-B, Fig. 4 A-B, and Fig. S5 are shown. (B) The gating strategy for CD45+ cells in Fig. 2B and SSCHhiCD11bhi cells in Fig. 3D are shown.

Fig. S3 Increase neutrophil recruitment in the airways of Golden hamsters correlates with age

Fig. S3 Increase neutrophil recruitment in the airways of golden hamsters correlates with age (Related to Figure 3). Histology of myeloperoxidase (MPO) positive cells in the lung from PBS-treated or infected hamsters at 7 dpi. A representative histology (left panel) along with the data set of the frequency with two to five individuals are shown (right panel). For IHC protein expressed cell quantification, sections of each analyzed slide were quantified by Qupath software. *$P < 0.05$.

Fig. S4 RNAseq analysis of the expression of TGFβ-related genes in hamsters and correlation of IL-17 expression and age in clinical samples

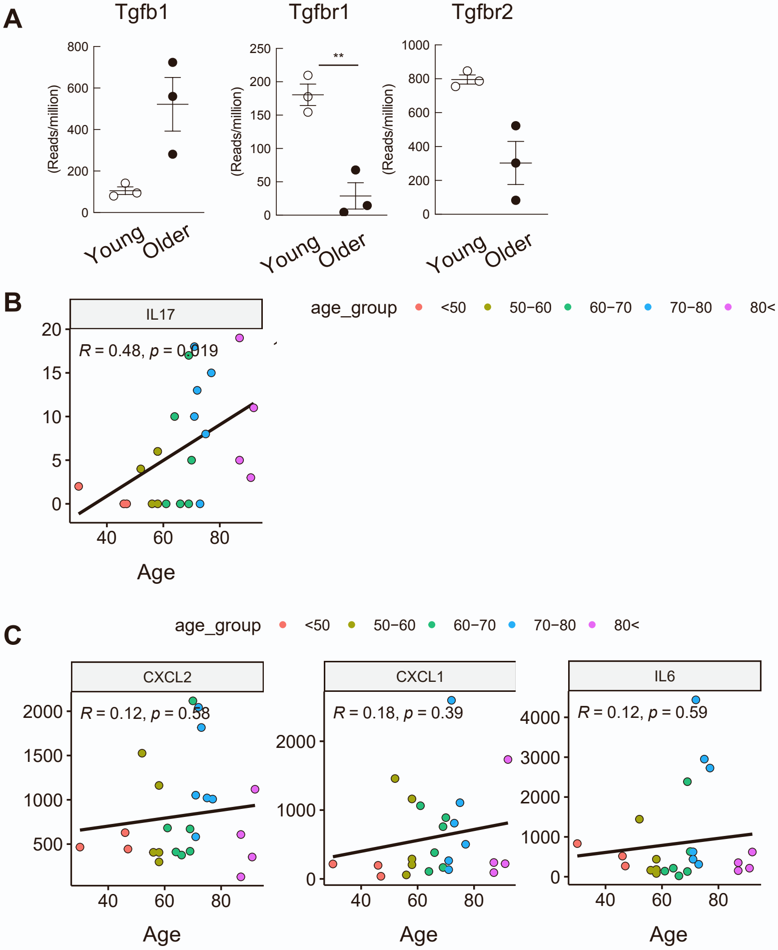

Fig. S4 RNAseq analysis of the expression of TGFβ-related genes in hamsters and correlation of IL-17 expression with age in clinical samples (Related to Figure 3). (A) Expression of Tgfb1, Tgfbr1 and Tgfb2 from young and older hamster lungs at 7 dpi. (B and C) Scatterplot to see correlations between COVID-19 lung RNAseq counts and patient ages. Pearson correlation coefficient (R) is shown for each gene with p-values. The age groups are represented as a color. ** indicates $P < 0.01$.

Fig. S5 B cell phenotype in the young and older lungs after SARS-CoV2 infection

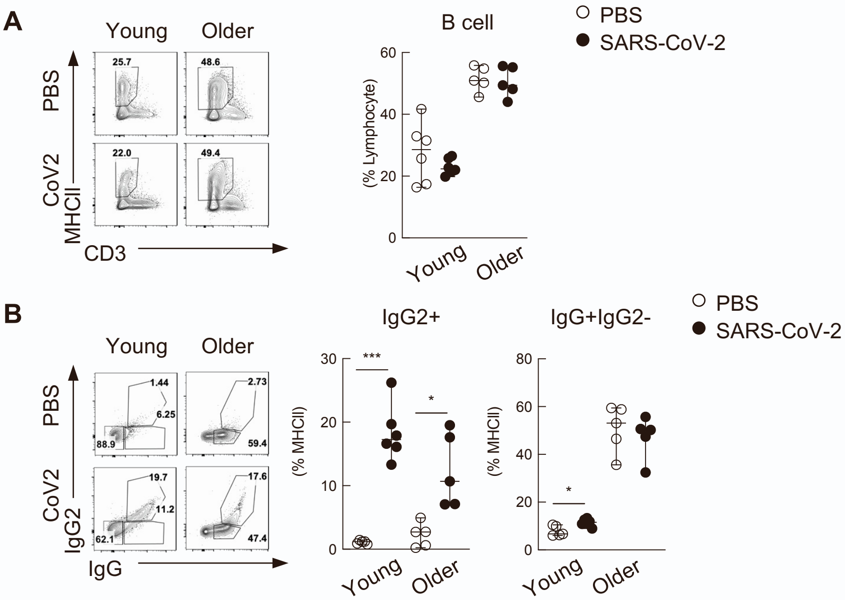

Fig. S5 B cell phenotype of the young and older lungs after SARS-CoV2 infection (Related to Figure 4). (A) Frequency of MHCll+CD3- B cell in total lymphoid cells from young and older hamsters at 7 dpi. (B) Frequency of IgG+IgG2- and IgG+IgG2+ B cells from young and older hamster lungs at 7 dpi. A representative FACS plot (left panel) along with the data set of the frequency with three to five individuals are shown (right panel). *$P < 0.05$ ***$P < 0.001$.