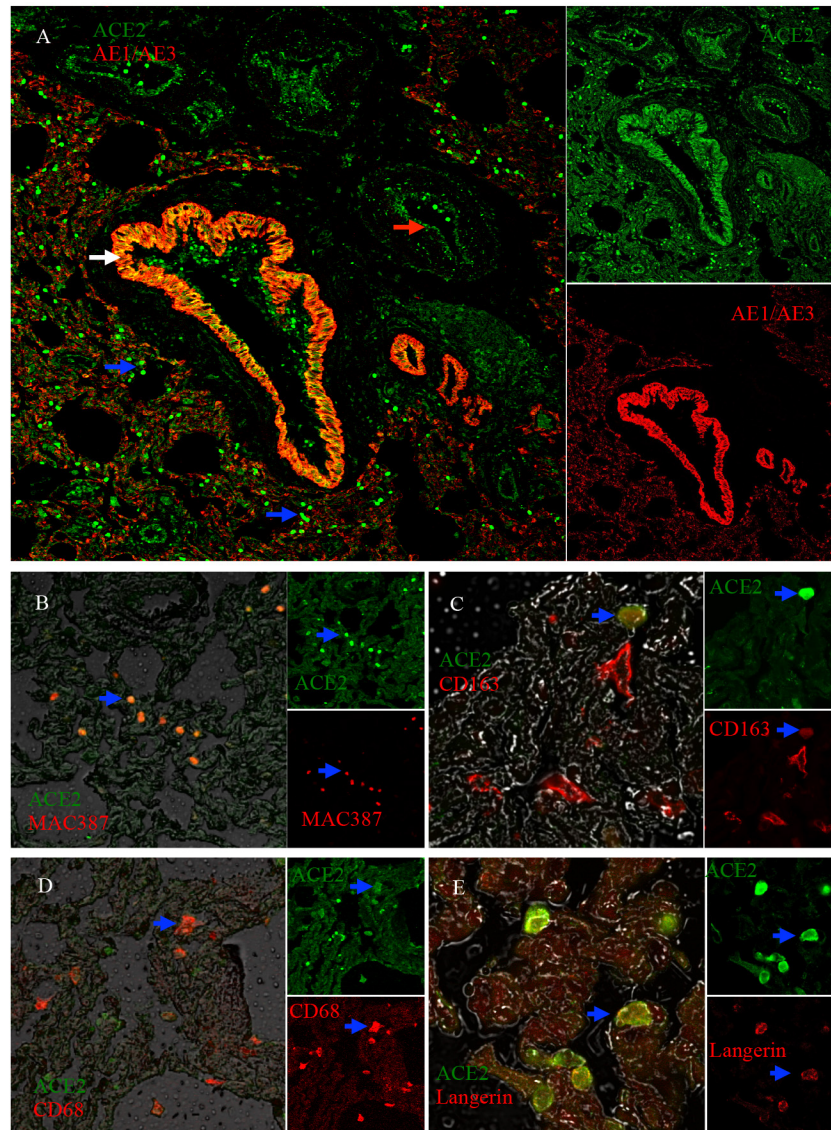
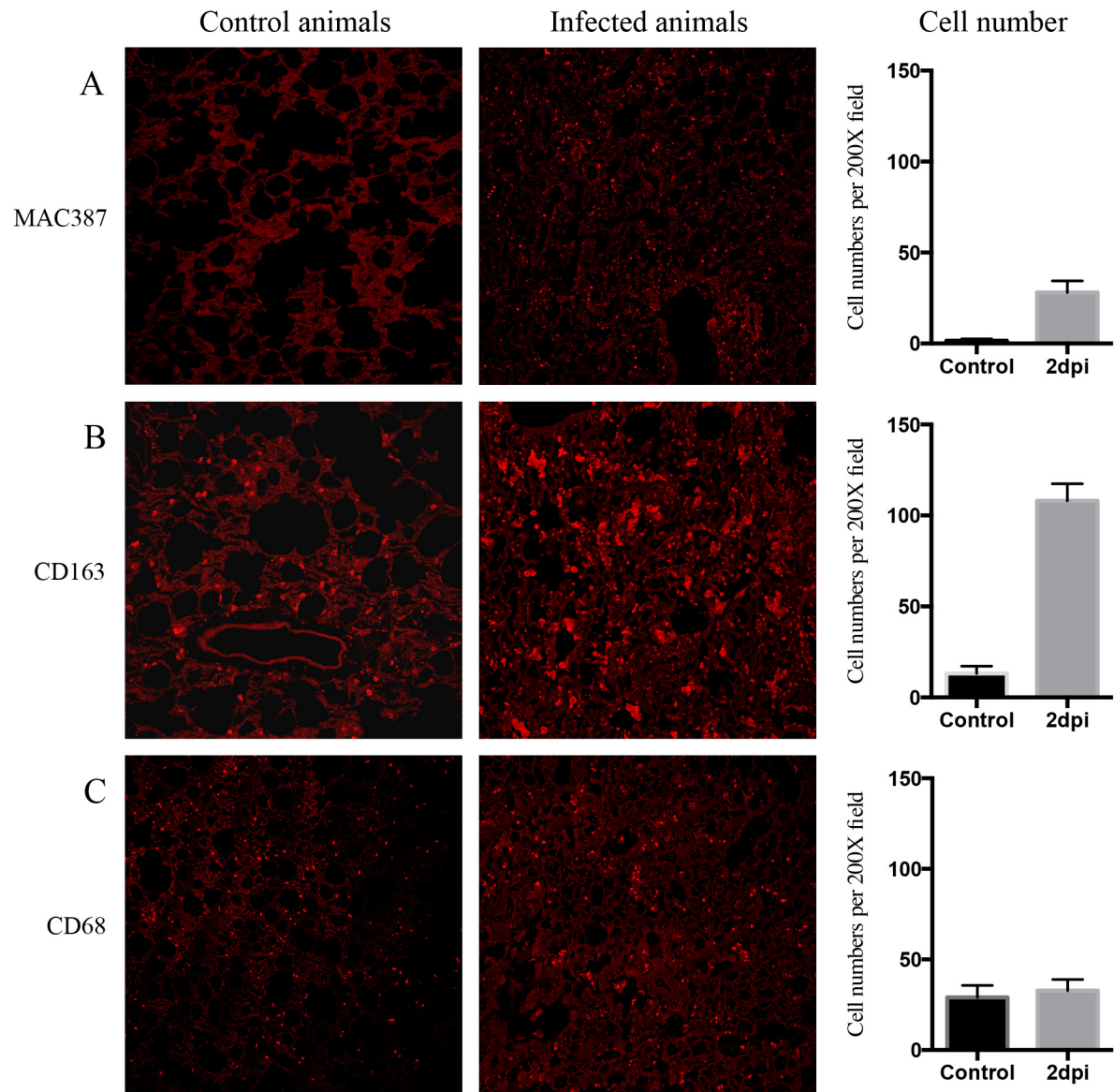


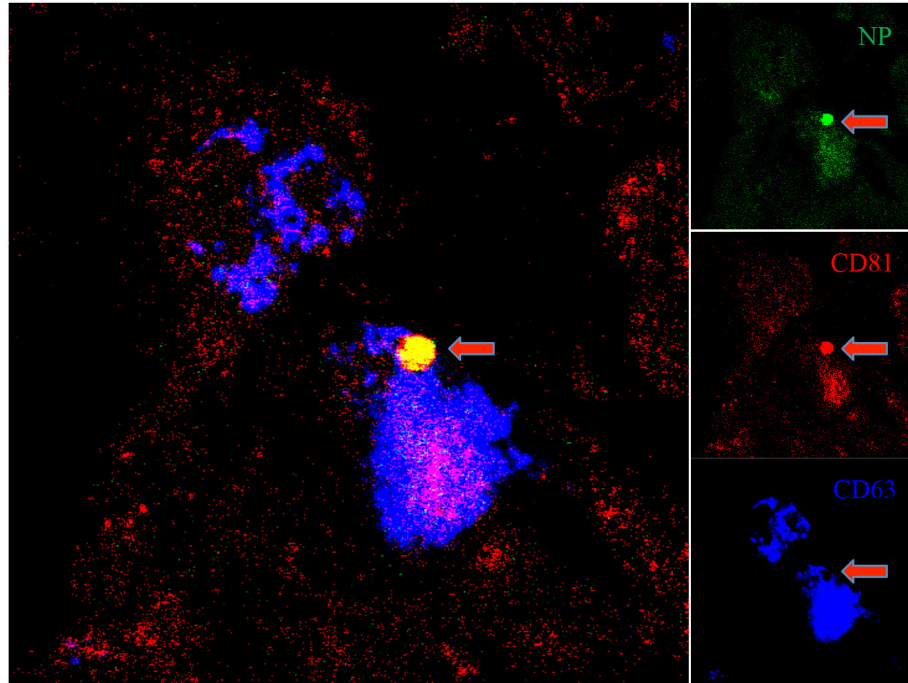
**Supplementary Figure S1. Distribution of monocytes/macrophages and DCs in the upper respiratory mucosa.** These sections are representative samples of pharyngeal mucosa tissue sections from infected animals at 2 dpi (right panel) or control animals (left panel) stained for SARS-CoV nucleoprotein, CD68, CD163, MAC387 and Langerin (400x). A. Viral NP and Langerin. B. Viral NP and CD68. C. Viral NP and CD163. D. Viral NP and MAC387. Figures A and B show that there are no significant changes in the numbers of Langerin<sup>+</sup> cells (A, red) and CD68<sup>+</sup> (B, red) cells in the pharyngeal mucosa at 2 dpi in infected animals compared with uninfected animals. C and D showed increased numbers of CD163<sup>+</sup> (B, red) and MAC387<sup>+</sup> (C, red) cells in the pharyngeal mucosa at 2 dpi in infected animals compared with uninfected animals.



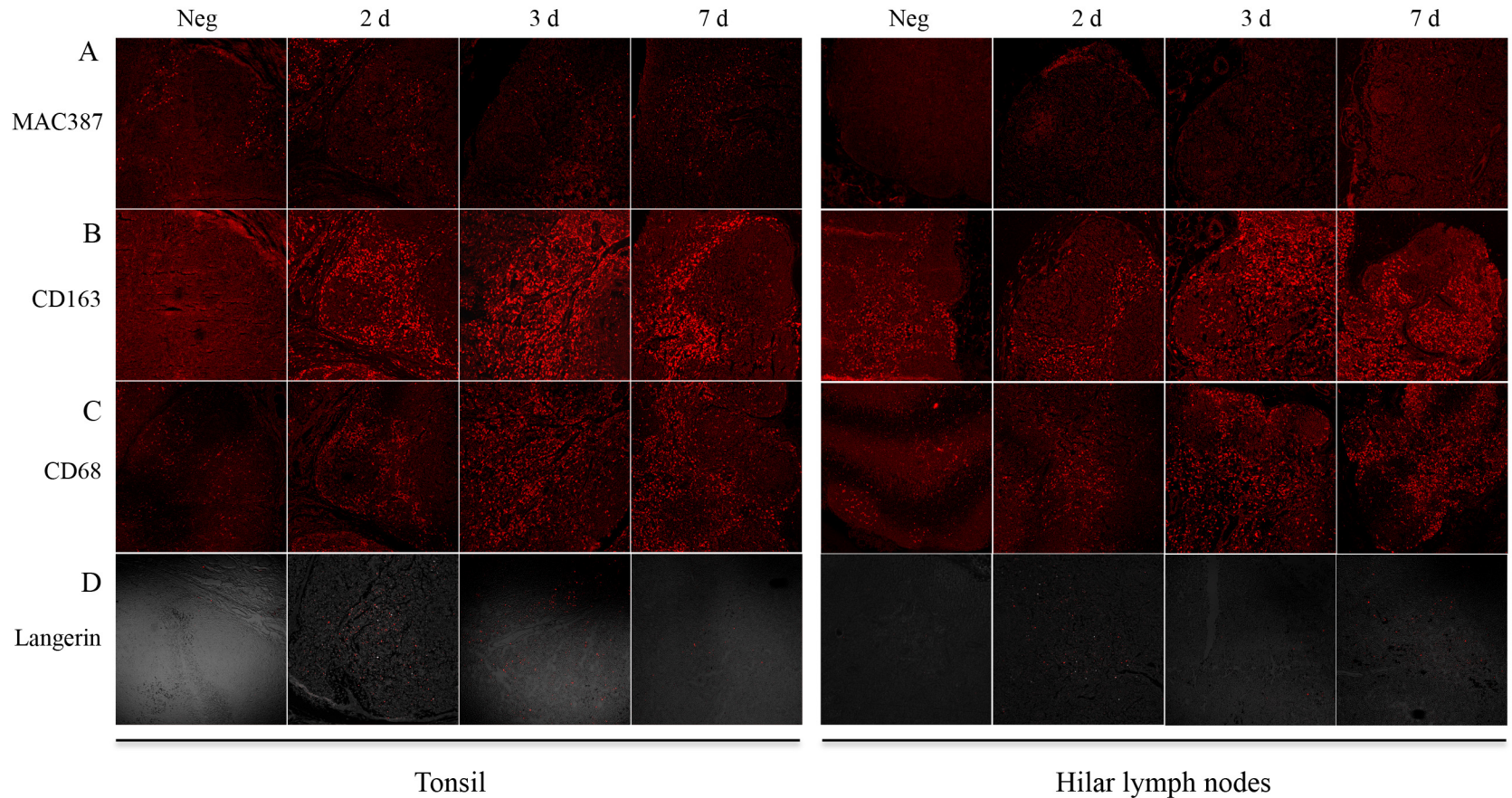
**Supplementary Figure S2. ACE2 expression on monocytes/macrophages and Langerhans cells.** These sections are representative samples of SARS-CoV receptor (ACE2)<sup>+</sup> cells in the lungs that are associated with the respiratory epithelium (A, white arrows), endothelium (A, red arrow), and MAC387<sup>+</sup> (B, blue arrow), CD163<sup>+</sup> (C, blue arrow), CD68<sup>+</sup> (D, blue arrow) and Langerin<sup>+</sup> cells (E, blue arrow). Lung tissue samples are stained for ACE2 (FITC), AE1/AE3 (TRITC) (A, 100x), MAC387 (TRITC) (B, 400x), CD163 (TRITC) (C, 630x), CD68 (TRITC) (D, 400x) and Langerin (TRITC) (E, 630x). In each figure, the left panel shows a low magnification overview. The right panel shows the single colors from the left panel.



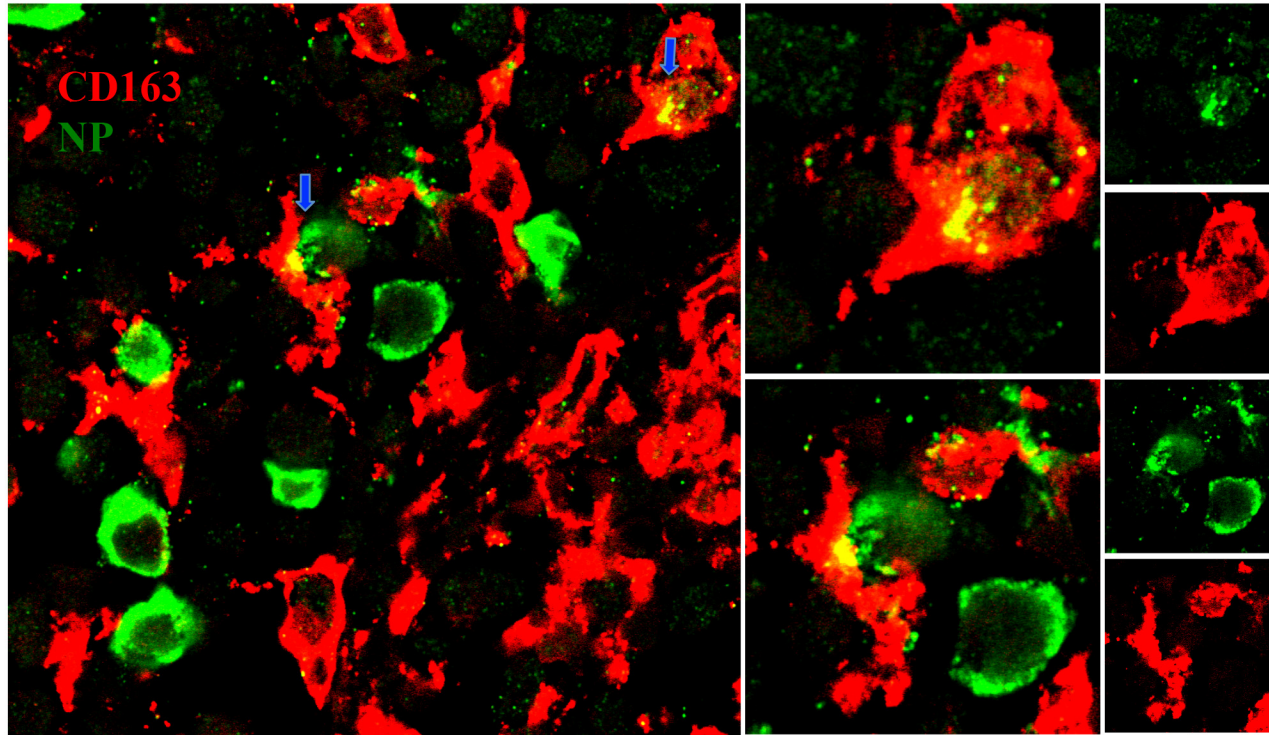
**Supplementary Figure S3. Comparison of monocyte/macrophage infiltration in the lungs from each monkey.** These sections are representative 2-dpi lung tissues from infected animals (middle panel) or control animals (left panel) that were stained for MAC387 (A), CD163 (B) and CD68 (C). Figure A, B and C shows increased number of CD68<sup>+</sup> (A, red), CD163<sup>+</sup> (B, red) and MAC387<sup>+</sup> (C, red) cells in the lungs at 2 dpi in infected animals compared with uninfected animals. The right panel shows the comparison of numbers of monocytes/macrophages between the infection group and the control group. Horizontal bars represent numbers of positive cells in a 200x field.



**Supplementary Figure S4. SARS-CoV virions accumulate in a CD81<sup>+</sup>/CD63<sup>-</sup> intracellular compartment in macrophages.** Lung tissue samples were stained for SARS-CoV nucleoprotein (FITC), CD81 (TRITC) and CD63 (blue). The left panel shows a merged image. The right panel shows the single colors from the middle panel. This section is a representative sample of the viral antigen (NP)-positive signals that are in the CD81-rich and CD63-negative intracellular monocyte/macrophages compartment in the lungs (Red arrow, 600x).



**Supplementary Figure S5. Comparison of the accumulation of monocytes/macrophages and Langerhans cells in the tonsils and hilar lymph nodes of each macaque.** These sections are representative tissue samples of tonsils (left panel) and hilar lymph nodes (right panel) from infected (2, 3 and 7 dpi) or control animals that were stained for MAC387 (A), CD163 (B), CD68 (C) and Langerin (D). Figure A shows no significantly increased number of MAC387<sup>+</sup> cells in the lymphoid tissue section of infected animals in comparison with uninfected animals. Figures B, C and D show increased numbers of CD163<sup>+</sup> (B), CD68<sup>+</sup> (C) and Langerin<sup>+</sup> (D) cells in the tonsils at 2 dpi and hilar lymph nodes at 3 dpi in infected animals, respectively, compared with uninfected animals (200x).



**Supplementary Figure S6. Infectious synapse formed between CD163<sup>+</sup> cells and NP<sup>+</sup> cells.** Hilar lymph nodes are stained for SARS-CoV NP (FITC) and CD163 (TRITC). Left panel shows a low magnification overview (600x). Right panel shows a higher magnification of the boxed area in left panel. These sections are representative samples of infectious synapses formed between CD163<sup>+</sup> monocytes and infected cells (blue arrows) and trans-infection, which is accomplished via the recruitment of virus to the sites of cell-cell contact and transfer of virions at the infectious synapse into the cytoplasm.