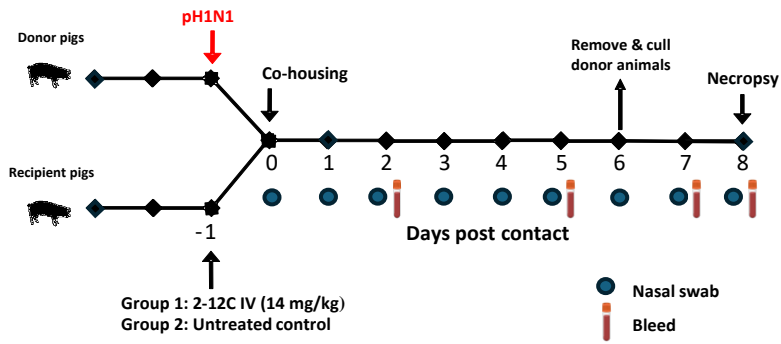
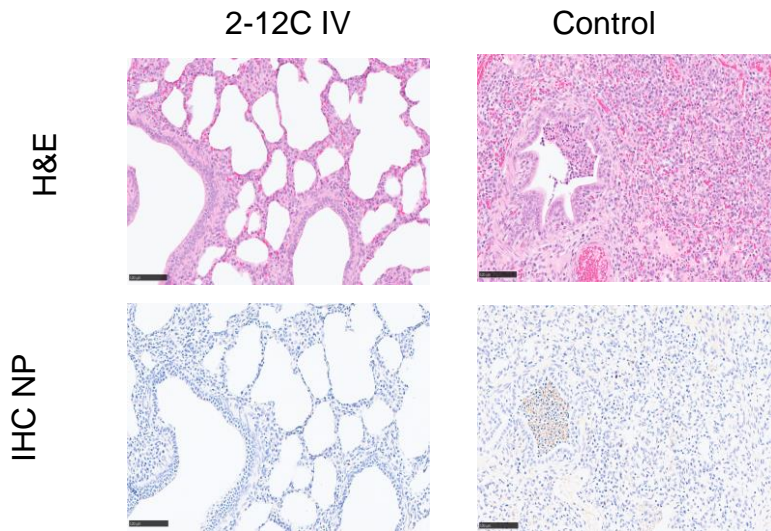
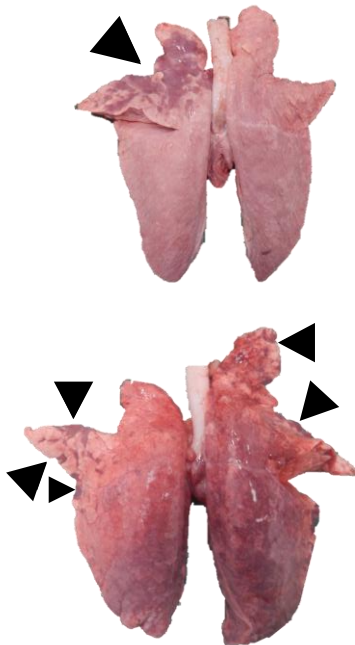


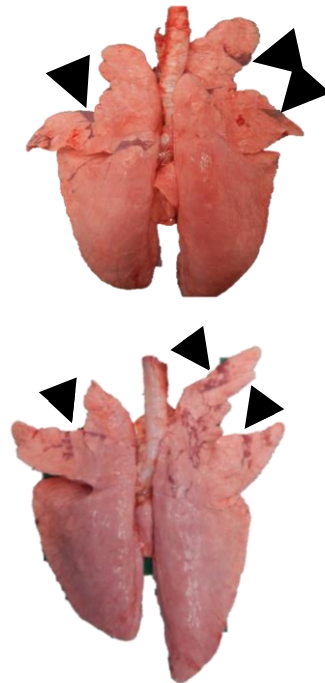
A**B**

Supplementary Figure 1 . Experiment 3, contact challenge 6 days co-housing. (A) Schematic of experimental design. **(B)** Representative histopathology (H&E staining), and immunohistochemical NP staining for each group.

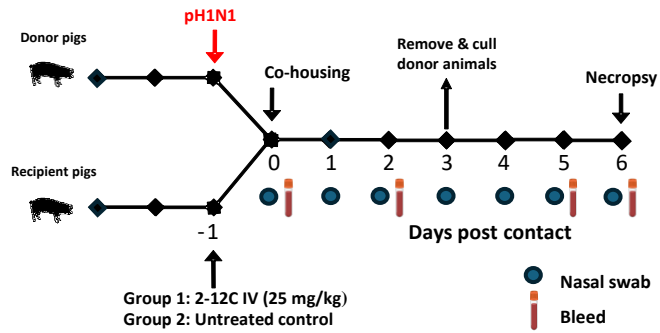
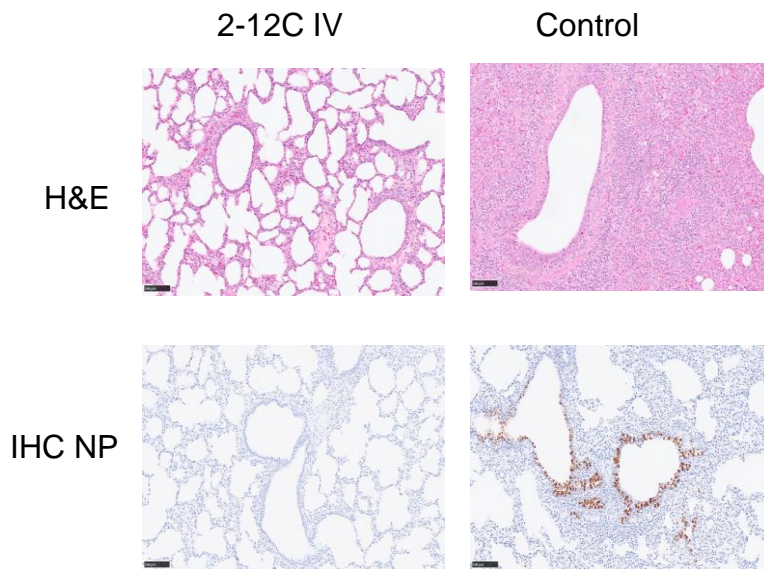
Direct challenge



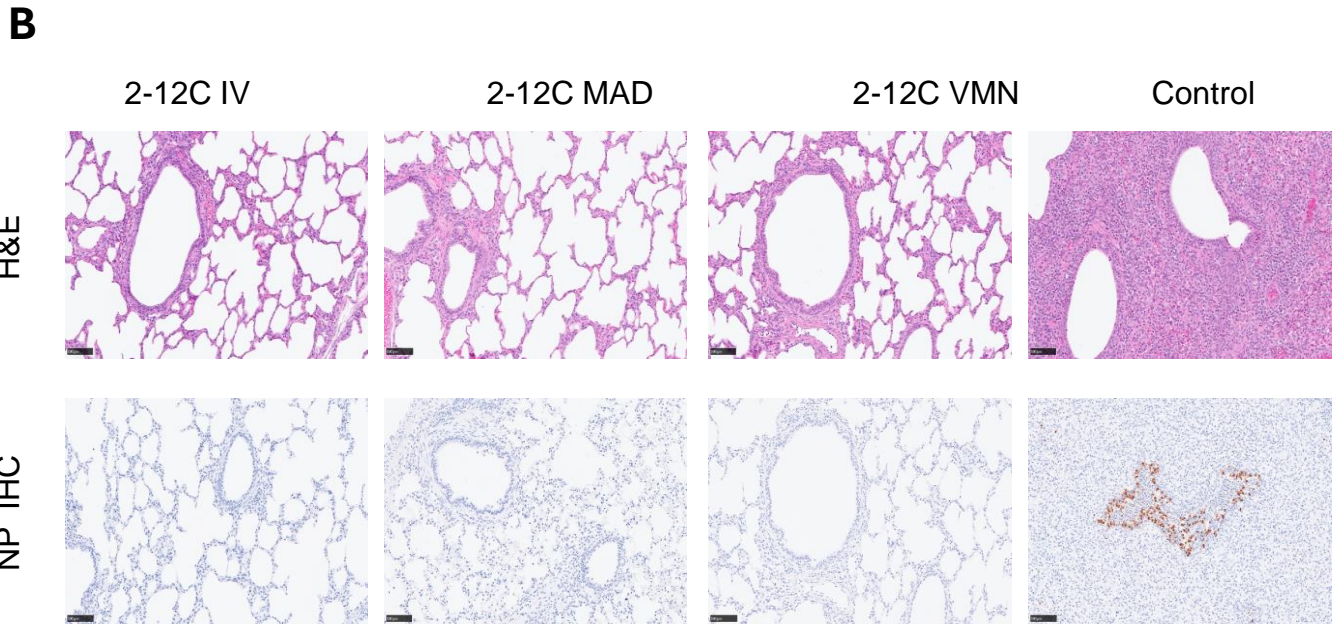
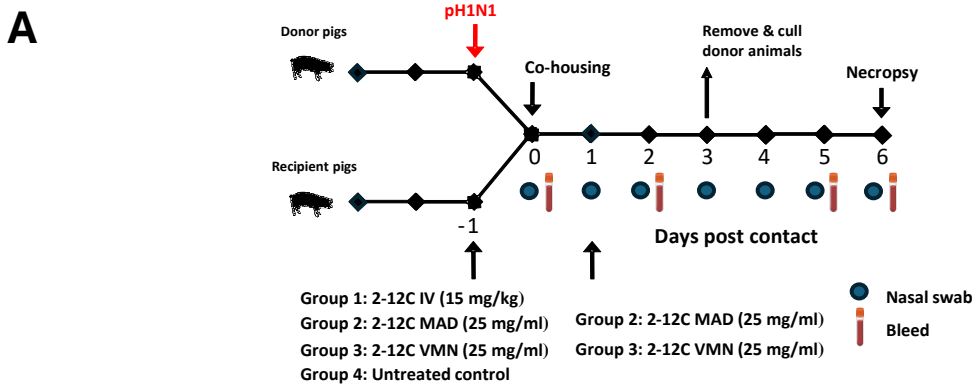
Contact challenge



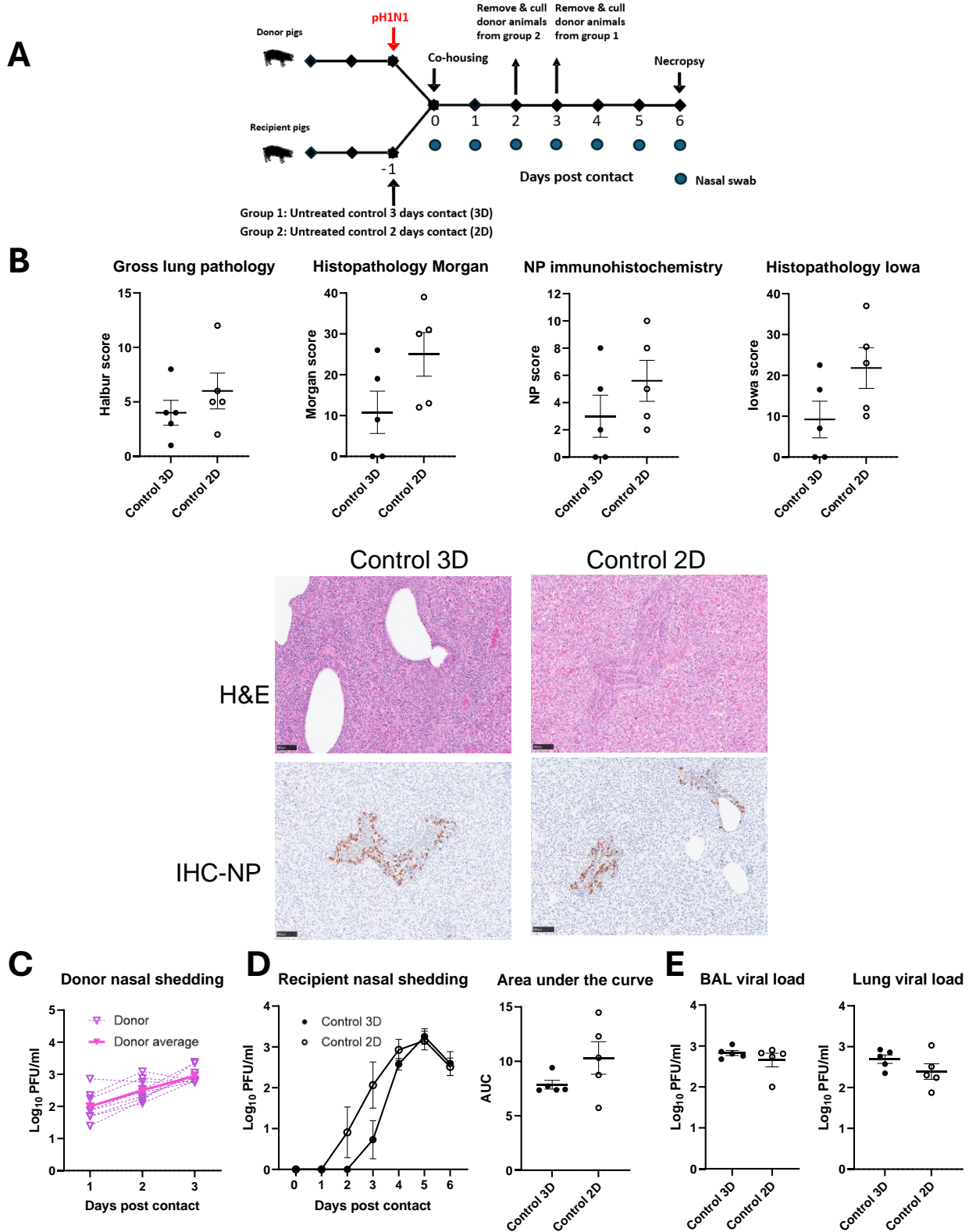
Supplementary Figure 2: Gross lung pathology after direct or contact challenge with Influenza A virus. Dorsal view of four representative pigs (two from each group) showing multifocal areas of broncho-interstitial pneumonia affecting mainly the cranial and middle lobes (arrows). A similar distribution and severity is observed in both groups.

A**B**

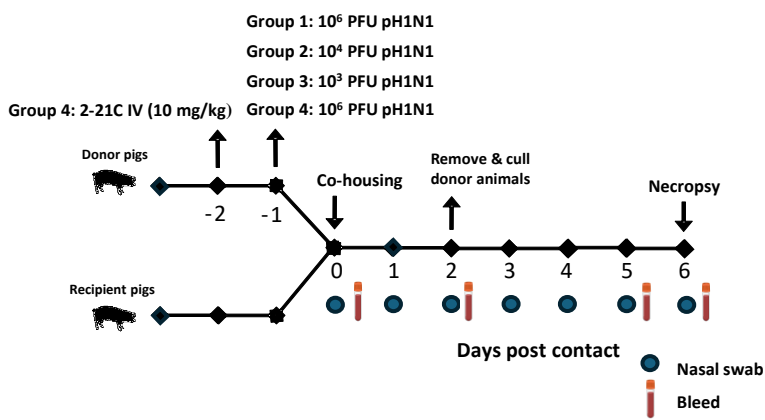
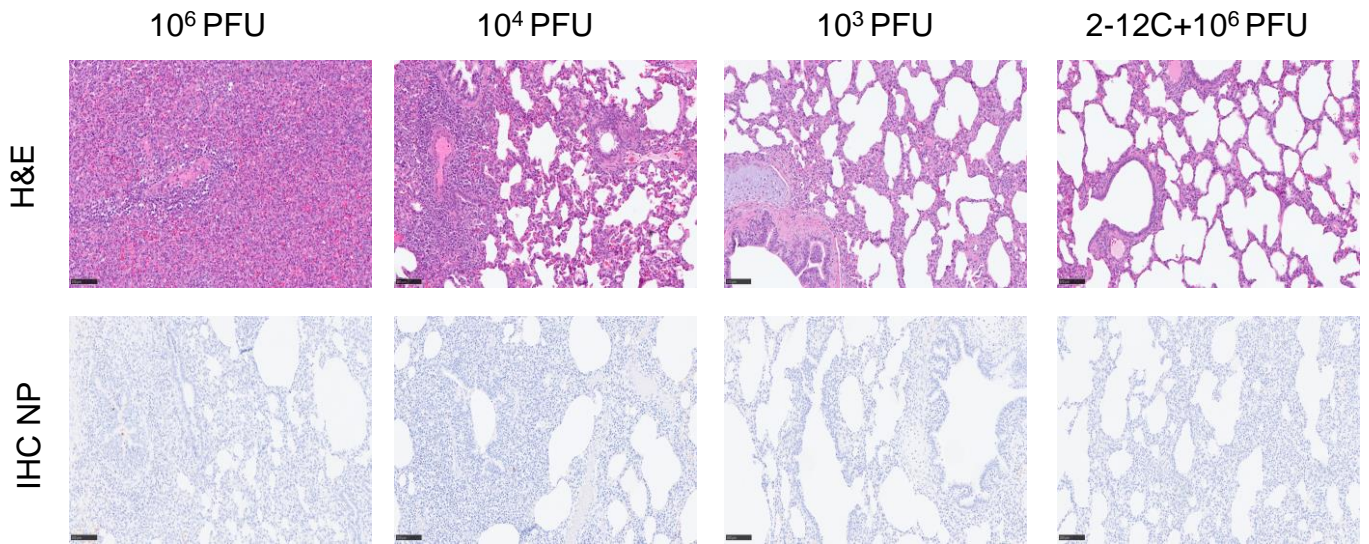
Supplementary Figure 3. Experiment 4, contact challenge 3 days co-housing (A) Schematic of experimental design. (B) Representative histopathology (H&E staining), and immunohistochemical NP staining for each group.



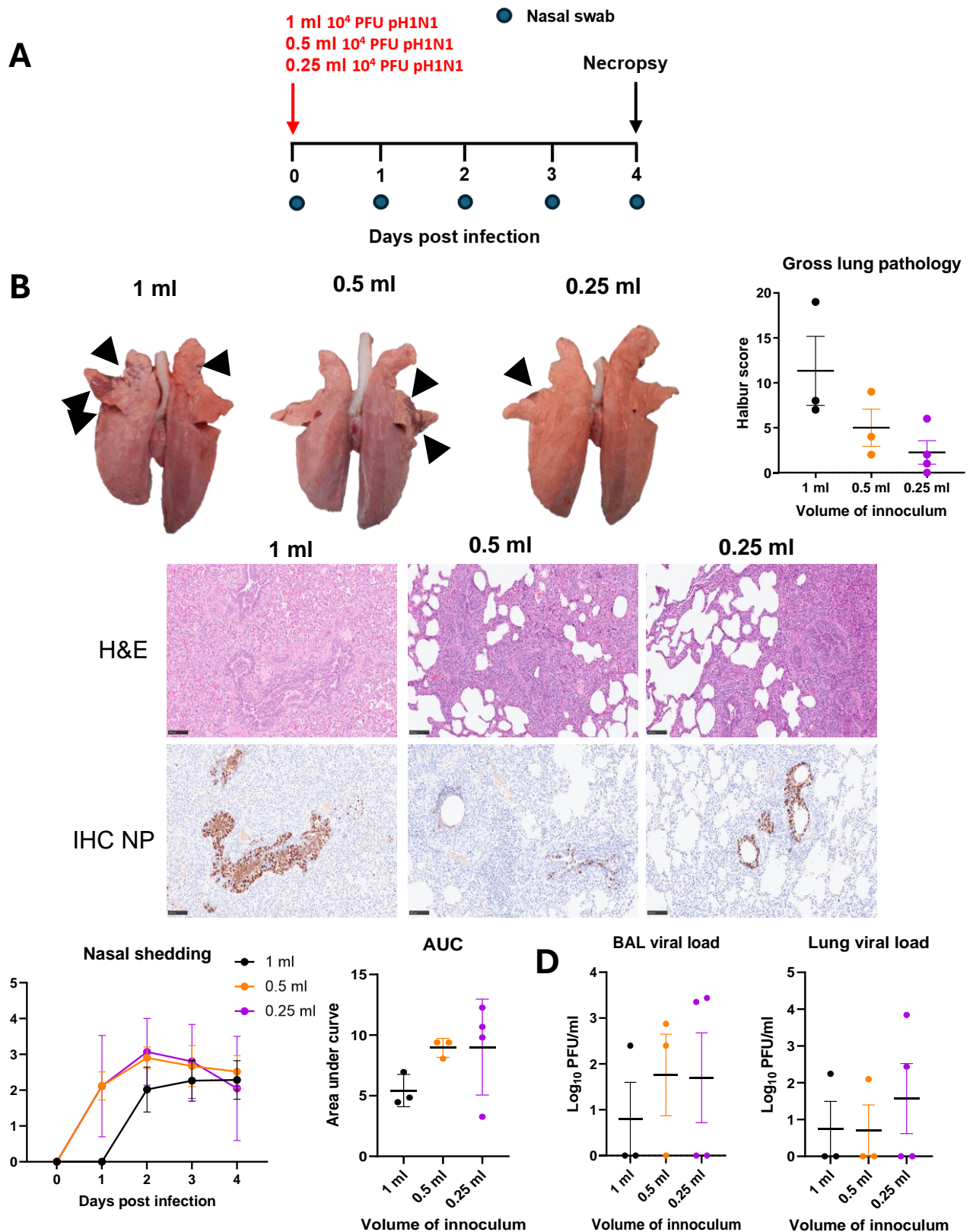
Supplementary Figure 4. Experiment 5a, contact challenge 3 days co-housing (A) Schematic of experimental design. (B) Representative histopathology (H&E staining), and immunohistochemical NP staining for each group.



Supplementary Figure 5: Experiment 5b, contact challenge 2 days. (A) Schematic of experimental design. Untreated recipient pigs were co-housed with pigs previously infected with pH1N1 for either 2 (D2) or 3 days (D3). The recipient pigs were culled after further 3 or 4 days, respectively, and the donors were culled 6 days after contact began. Nasal swabs were collected at the indicated time points. (B) Lung pathology: gross lung pathology, histopathology Morgan, nucleoprotein (NP) immunohistochemistry and histopathology IOWA scores at day 6 post contact. Representative histopathology (H&E staining), and immunohistochemical NP staining for each group. Virus shedding in nasal swabs from all (C) donor and (D) recipient pigs was analysed by plaque assay at the indicated time points. BAL and lung viral load were determined at the time of the culls (6 days post contact) (E). Each data point represents an individual pig (n=5 per group) along with the mean±SEM. Data sets were first assessed for normality and then subjected to an unpaired t-test or a Mann-Whitney U test if they did not pass the normality test.

A**B**

Supplementary Figure 6. Experiment 6, contact challenge 2 days co-housing (A) Schematic of experimental design. (B) Representative histopathology (H&E staining), and immunohistochemical NP staining for each group.



Supplementary Figure 7: Experiment 7, direct challenge with different volumes of virus inoculum.

(A) Schematic of experimental design. Pigs were intranasally inoculated with 10^4 pfu pH1N1 administered in 1ml, 0.5ml or 0.25ml using MAD. Nasal swabs were collected at the indicated time points. Necropsy was performed at 4 days post infection. **(B)** Lung pathology: images and gross lung pathology, histopathology Morgan, nucleoprotein (NP) immunohistochemistry and histopathology low scores at day 4 post infection, **Representative histopathology (H&E staining), and immunohistochemical NP staining for each group** **(C)** Virus shedding in nasal swabs from all pigs were analysed by plaque assay at the indicated time points. **(D)** BAL and lung viral load were determined at the time of the cull (day 4). Each data point represents an individual pig ($n=3-4$ per group) along with the mean \pm SEM. Data sets were first assessed for normality and then subjected to an unpaired t-test or a Mann-Whitney U test if they did not pass the normality test.