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Supplemental information

mRNA-1273 and Ad26.COV2.S vaccines protect against the B.1.621 variant of SARS-CoV-2

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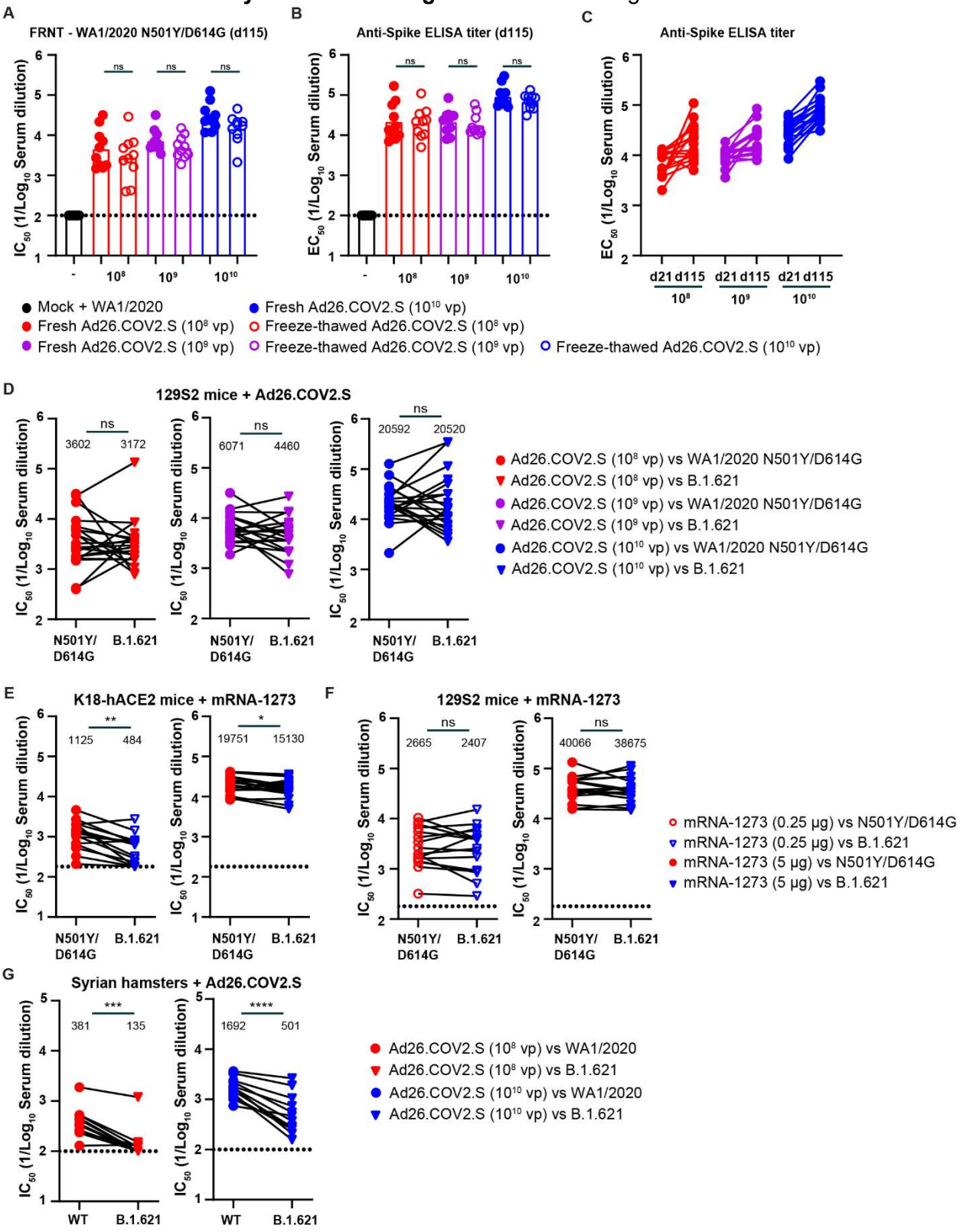
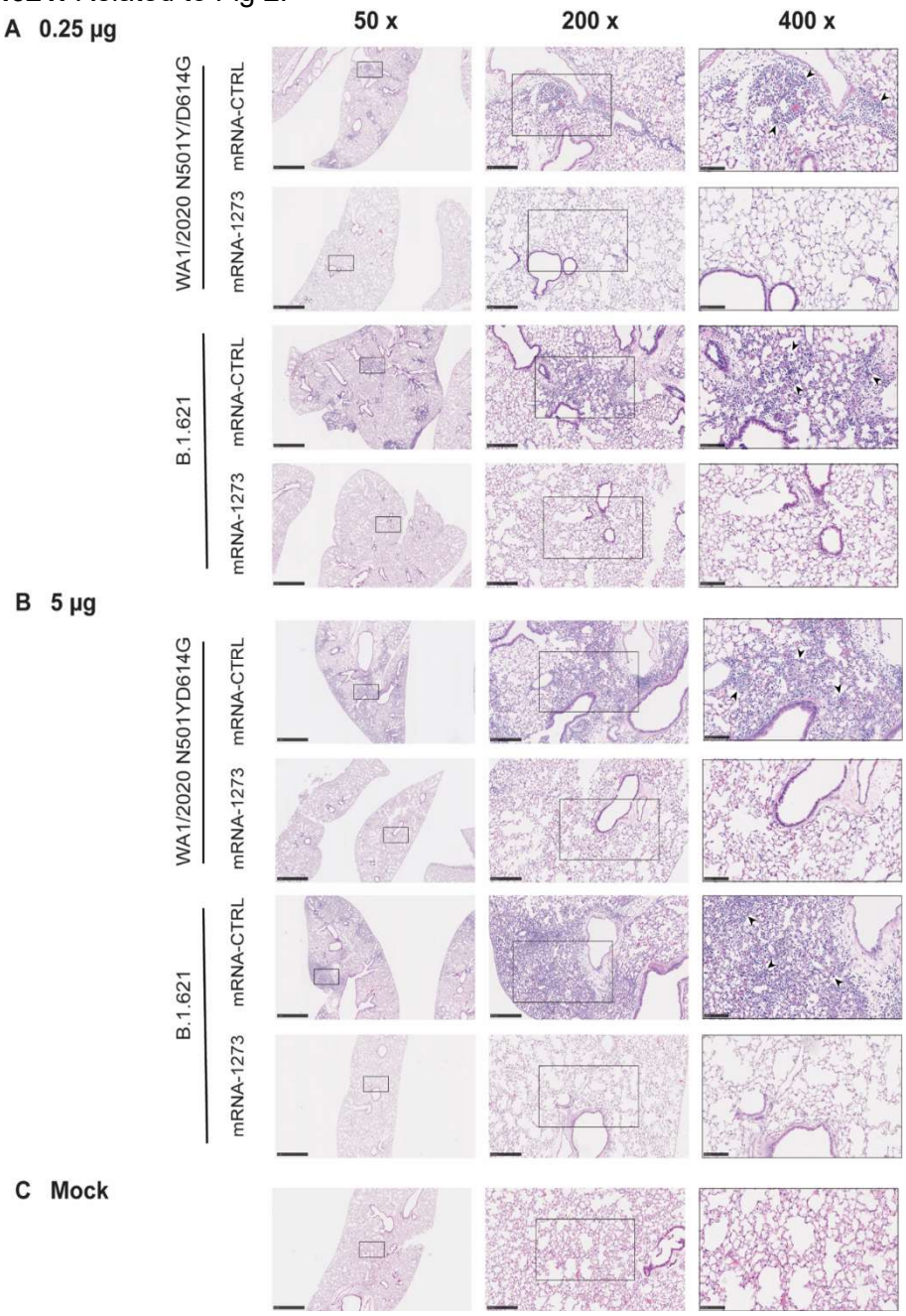
Figure S1. Serum neutralization titer of SARS-CoV-2 and B.1.621 variant by sera from immunized mice and Syrian hamsters against. Related to Fig 1 - 4.



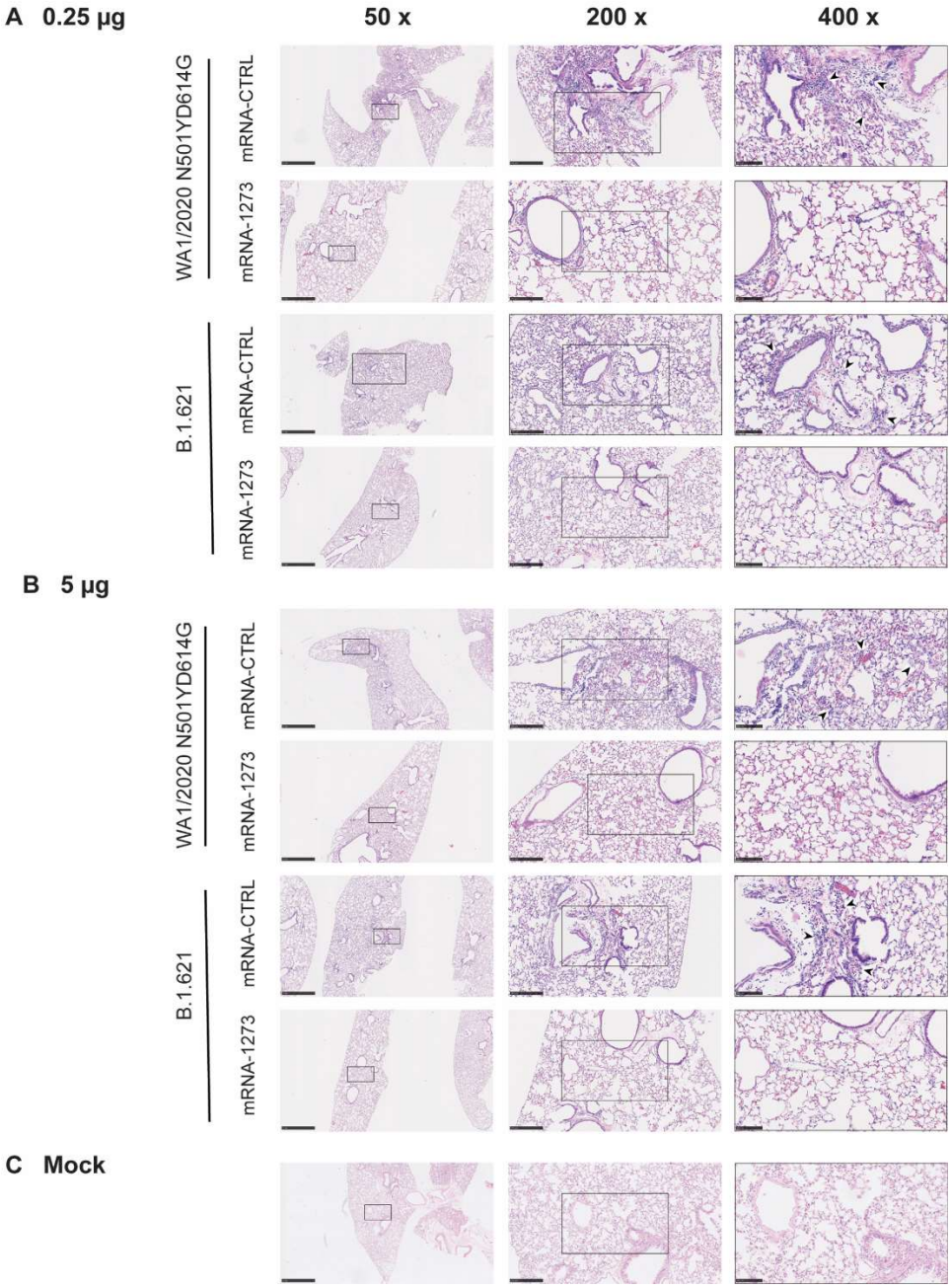
(**A**) Neutralizing titer (IC_{50}) against WA1/2020 N501Y/D614G of serum obtained from 129S2 mice immunized once with 10^8 (red symbols), 10^9 (purple symbols), or 10^{10} (blue symbols) of fresh (solid symbols) or freeze-thawed (open symbols) Ad26.COV2.S. (ns = not significant by unpaired t-test). (**B**) Serum anti-S protein antibody response (EC_{50}) in control mice (black symbols), and mice immunized with 10^8 (red symbols), 10^9 (purple symbols), or 10^{10} (blue symbols) of fresh or freeze-thawed Ad26.COV2.S (ns = not significant by unpaired t-test). (**C**) Serum anti-S protein specific antibody response (EC_{50}) in mice 21 and 115 days after immunization with 10^8 (red symbols), 10^9 (purple symbols), or 10^{10} (blue symbols) of fresh or freeze-thawed Ad26.COV2.S. Each symbol in A-C represents an individual animal. The bars indicate the geometric mean titer. Animals at the limit of detection are arbitrarily assigned this value. These values are combined with those having values above the limit to determine the GMT. (**D**) Pairwise comparison of the neutralizing titer (IC_{50}) against WA1/2020 N501Y/D614G and B.1.621 for individual sera obtained from 129S2 mice immunized once with 10^8 (red symbols), 10^9 (purple symbols), or 10^{10} (blue symbols) of fresh (solid symbols) or freeze-thawed (open symbols) Ad26.COV2.S. (ns = not significant by paired t-test). (**E**) Pairwise comparison of the neutralizing titer (IC_{50}) against WA1/2020 N501Y/D614G and B.1.621 for individual sera obtained from K18-hACE2 mice immunized twice with 0.25 µg (open symbols) or 5 µg (closed symbols) of mRNA1273 vaccine. (** $P < 0.01$, * $P < 0.05$ by paired t-test). (**F**) Pairwise comparison of the neutralizing titer (IC_{50}) against WA1/2020 N501Y/D614G and B.1.621 for individual sera obtained from 129/S2 mice immunized twice with 0.25 µg (open symbols) or 5 µg (closed symbols) of mRNA1273 vaccine. (ns = not significant by paired t-test). (**G**) Pairwise comparison of the neutralizing titer (IC_{50}) against WA1/2020 and B.1.621 for individual sera obtained from Syrian hamsters immunized once with 10^8 (red symbols) or 10^{10} (blue symbols) of fresh (solid symbols) or freeze-thawed (open symbols) Ad26.COV2.S. (**** $P < 0.0001$, *** $P < 0.001$, by paired t-test). Each symbols is an individual animal.

Figure S2. Histological analysis of lung tissue sections from mRNA-1273 and mRNA-control immunized and K18-hACE2 mice challenged with WA1/2020 N501Y/D614G or B.1.621. Related to Fig 2.



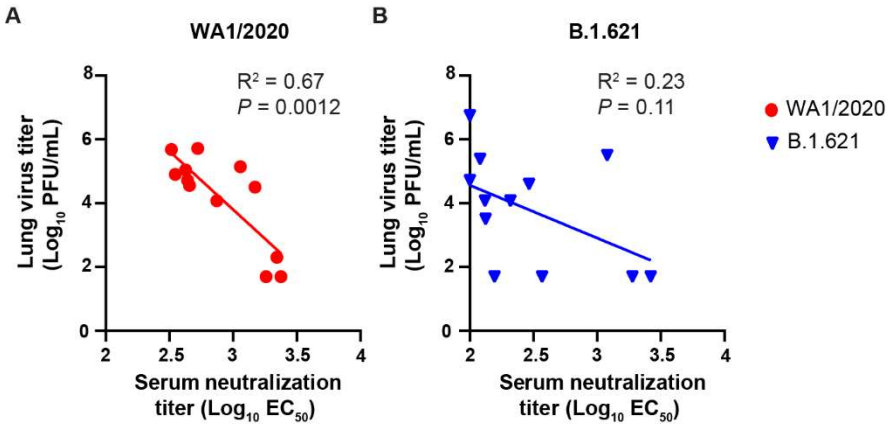
Representative images of 50x, 200x and 400x magnification of hematoxylin and eosin staining of lung sections from K18-hACE2 mice immunized with 0.25 µg (**A**) and 5 µg (**B**) of mRNA-1273 or an mRNA-control (mRNA-CTRL) vaccine and challenged 64 days later with WA1/2020 N501Y/D614G or B.1.621. (**C**) A mock infection is included as a control. Lungs were collected 7 days post challenge, fixed in 10% formalin and paraffin embedded prior to sectioning and staining. The scale bar is 1 mm, 0.25mm and 0.1mm for 50x, 200x and 400x respectively. Representative images are shown from n = 2 per group. Arrows indicate areas of inflammation and infiltration of immune cells.

Figure S3. Histological analysis of lung tissue sections from mRNA-1273 and mRNA-control immunized 129S2 mice challenged with WA1/2020 N501Y/D614G or B.1.621. Related to Fig 3.



Representative images at 50x, 200x and 400x magnification of hematoxylin and eosin staining of lung sections from 129S2 mice immunized with 0.25 µg (**A**) and 5 µg (**B**) of mRNA-1273 or an mRNA-control (mRNA-CTRL) vaccine and challenged 62 days later with WA1/2020 N501Y/D614G or B.1.621 virus. (**C**) A mock infection is included as a control. Lungs were collected 4 days post challenge, fixed in 10% formalin and paraffin embedded prior to sectioning and staining. The scale bar is 1 mm, 0.25mm and 0.1mm for 50x, 200x and 400x respectively. Representative images are shown from n = 2 per group. Arrows denote areas of inflammation and infiltration of immune cells.

Figure S4. Correlation between lung infectious virus and serum neutralizing antibody titers. Related to Fig 4.



Correlation analysis between lung infectious virus titers (PFU/mL) and serum neutralizing titers (EC_{50} values) for Ad26>COV2.S immunized Syrian hamsters challenged with WA1/2020 (**A**) or B.1.621 (**B**) variant of SARS-CoV-2. Each dot is an individual animals. The line is the linear regression curve using Log_{10} transformed virus and neutralization titer.