

Table S1: Vaccine-induced humoral immunity. Anti-SARS-CoV-2 immunoglobulin G (IgG) response after first and second immunisation with the vector vaccine AZD1222 or the messenger ribonucleic acid (mRNA)-based vaccines BNT162b2 and mRNA-1273. The IgG concentration is given in Binding Antibody Units (BAU) per ml. The median and the 95% confidence intervals (CI) were calculated for each group. The table also contains the anti-SARS-CoV-2 IgG avidity results. Furthermore, the virus neutralising titres determined in the surrogate neutralisation test (sVNT) or in the Vero-cell based virus neutralisation test (cVNT) using a B.1.1.7 (alpha) or B.1.617.2 (delta) strain as antigens are given.

| | AZD1222 heterologous 1 st vaccination | AZD1222 heterologous 2 nd vaccination | AZD1222 homologous 1 st vaccination | AZD1222 homologous 2 nd vaccination | BNT162b2 homologous 1 st vaccination | BNT162b2 homologous 2 nd vaccination |
|------------------------------------|--|--|--|--|---|---|
| Number of tested sera | 30 | 42 | 8 | 9 | 8 | 8 |
| anti-trimeric S IgG | | | | | | |
| Minimum (BAU/ml) | 17 | 480 | 34 | 131 | 168 | 4030 |
| 25% Percentile (BAU/ml) | 32 | 1973 | 49 | 267 | 312 | 5693 |
| Median (BAU/ml) | 59 | 3750 | 72 | 424 | 428 | 6240 |
| 75% Percentile (BAU/ml) | 125 | 7280 | 182 | 656 | 551 | 8200 |
| Maximum (BAU/ml) | 517 | 10400 | 274 | 811 | 835 | 9010 |
| 95%CI median, lower limit (BAU/ml) | 39 | 2460 | 34 | 146 | 168 | 4030 |
| 95%CI median, upper limit (BAU/ml) | 107 | 6170 | 274 | 729 | 835 | 9010 |
| anti-S IgG | | | | | | |
| Minimum (BAU/ml) | 7 | 68 | 6 | 58 | 48 | 1011 |
| 25% Percentile (BAU/ml) | 14 | 619 | 15 | 79 | 71 | 1093 |
| Median (BAU/ml) | 21 | 783 | 22 | 123 | 126 | 1334 |
| 75% Percentile (BAU/ml) | 45 | 1328 | 71 | 190 | 166 | 1589 |
| Maximum (BAU/ml) | 226 | 2024 | 116 | 299 | 272 | 2002 |
| 95%CI median, lower limit (BAU/ml) | 17 | 676 | 6 | 76 | 48 | 1011 |
| 95%CI median, upper limit (BAU/ml) | 40 | 1213 | 116 | 203 | 272 | 2002 |
| anti-RBD IgG | | | | | | |
| Minimum (BAU/ml) | 7 | 513 | 7 | 78 | 59 | 2470 |
| 25% Percentile (BAU/ml) | 17 | 1249 | 18 | 116 | 65 | 2993 |
| Median (BAU/ml) | 31 | 1859 | 36 | 157 | 139 | 3195 |
| 75% Percentile (BAU/ml) | 60 | 3141 | 82 | 380 | 232 | 3715 |
| Maximum (BAU/ml) | 239 | 4795 | 187 | 462 | 638 | 4676 |
| 95%CI median, lower limit (BAU/ml) | 19 | 1404 | 7 | 98 | 59 | 2470 |
| 95%CI median, upper limit (BAU/ml) | 53 | 2927 | 187 | 439 | 638 | 4676 |
| IgG-Avidity† | | | | | | |
| Number of tested sera | 30 | 36 | 8 | 7 | 8 | 7 |
| IgG avidity index 0 - 2 | 24 | 0 | 6 | 0 | 7 | 0 |
| IgG avidity index 3 | 6 | 36 | 2 | 7 | 1 | 7 |
| sVNT | | | | | | |
| Number of tested sera | 30 | 42 | 8 | 9 | 8 | 8 |
| Minimum (% inhibition) | 6 | 99 | 0 | 78 | 28 | 99 |

| | AZD1222 heterologous 1st vaccination | AZD1222 heterologous 2nd vaccination | AZD1222 homologous 1st vaccination | AZD1222 homologous 2nd vaccination | BNT162b2 homologous 1st vaccination | BNT162b2 homologous 2nd vaccination |
|--|--|--|--|--|---|---|
| 25% Percentile (% inhibition) | 17 | 100 | 15 | 89 | 39 | 100 |
| Median (% inhibition) | 42 | 100 | 25 | 98 | 67 | 100 |
| 75% Percentile (% inhibition) | 56 | 100 | 59 | 99 | 75 | 100 |
| Maximum (% inhibition) | 94 | 100 | 91 | 100 | 97 | 100 |
| 95%CI median, lower limit (% inhibition) | 20 | 100 | 0 | 86 | 28 | 99 |
| 95%CI median, upper limit (% inhibition) | 47 | 100 | 91 | 99 | 97 | 100 |
| cVNT (alpha) | | | | | | |
| Minimum (titre) | <1:10 | 1:57 | <1:10 | <1:10 | <1:10 | 1:226 |
| 25% Percentile (titre) | <1:10 | 1:320 | <1:10 | 1:30 | <1:10 | 1:283 |
| Median (titre) | 1:3 [†] | 1:640 | 1:7 [†] | 1:57 | <1:10 | 1:640 |
| 75% Percentile (titre) | 1:10 | 1:1280 | 1:13 | 1:160 | 1:11 | 1:839 |
| Maximum (titre) | 1:20 | 1:1280 | 1:20 | 1:226 | 1:57 | 1:1280 |
| 95% CI of median, lower limit (titre) | <1:10 | 1:453 | <1:10 | 1:20 | <1:10 | 1:226 |
| 95% CI of median, upper limit (titre) | 1:10 | 1:1280 | 1:20 | 1:160 | 1:57 | 1:1280 |
| | | | | | | |
| cVNT | AZD1222 heterologous 2nd vaccination | | AZD1222 homologous 2nd vaccination | | BNT162b2 homologous 2nd vaccination | |
| Variant of SARS-CoV-2 | alpha | delta | alpha | delta | alpha | delta |
| Number of tested sera | 9 | 9 | 9 | 9 | 8 | 8 |
| Minimum (titre) | 1:113 | 1:57 | <1:10 | <1:10 | 1:226 | 1:57 |
| 25% Percentile (titre) | 1:773 | 1:68 | 1:30 | 1:2 | 1:283 | 1:100 |
| Median (titre) | 1:1280 | 1:80 | 1:57 | 1:20 | 1:640 | 1:160 |
| 75% Percentile (titre) | 1:1280 | 1:113 | 1:160 | 1:24 | 1:839 | 1:297 |
| Maximum (titre) | 1:1280 | 1:160 | 1:226 | 1:40 | 1:1280 | 1:320 |
| 95% CI of median, lower limit (titre) | 1:640 | 1:57 | 1:20 | <1:10 | 1:226 | 1:57 |
| 95% CI of median upper limit (titre) | 1:1280 | 1:113 | 1:160 | 1:28 | 1:1280 | 1:320 |

† The avidity of the anti-SARS-CoV-2 IgG was not tested in all sera. For example, if an individual already presented highly avid IgG antibodies after the first vaccination, the avidity was not determined again after the second vaccination.

Titres <1:10 and ≤1:10 were included in the statistics as log(1) and log(3.2) respectively for mathematical reasons.

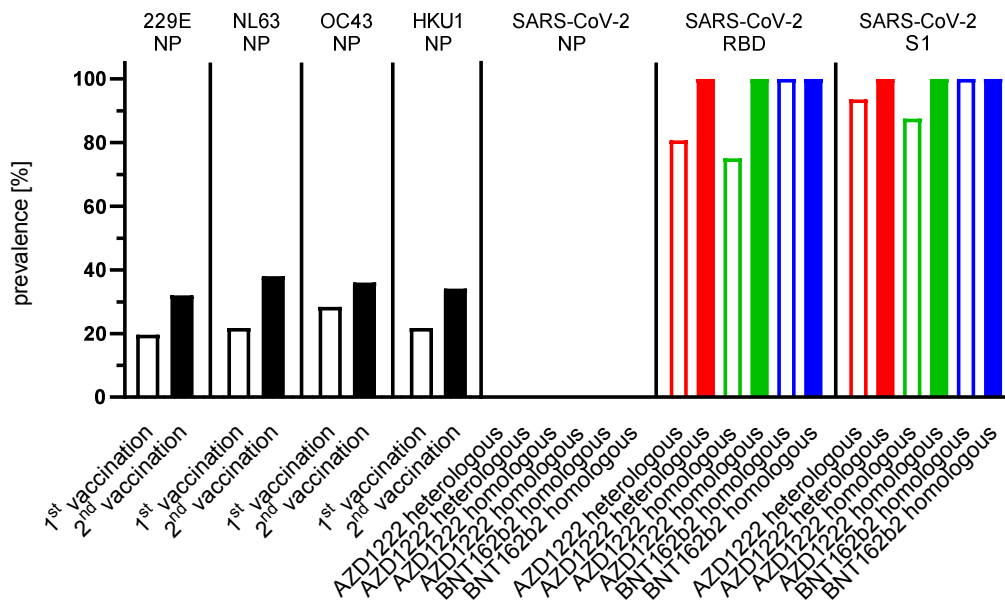


Fig. S1: Nucleoprotein (NP) specific immune response. Pattern of immunoglobuline G (IgG) reactivity against the separate NPs of seasonal human coronaviruses (HCoVs 229E, NL63, OC43, and HKU1) and the NP of SARS-CoV-2 as well as the Spike-protein subunit S1 and the receptor binding domain (RBD). For HCoVs, the prevalence of the different vaccination regimens is summarised after the first and second vaccination and given as a percentage. Reactivity was recorded after first (empty bars) and second immunisation (filled bars) with the vector vaccine AZD1222 or the messenger ribonucleic acid (mRNA)-based vaccines BNT162b2 or mRNA-1273.