**Supplementary Material**

**Supplementary Table 1.** Number of marker values used at each of the time points from the 314 participants

|  |  |
| --- | --- |
|  | **Vaccination schedule times** |
| **Response** | **T1a** | **T2b** | **T3c** | **T4d** |
| **nAbs WD614G** Overall LCD4 ICD4 HCD4 | **172**355978 | **314**56120138 | **195**408075 | **135**276048 |
| **nAbs Omicron BA.1** Overall LCD4 ICD4 HCD4 | **79**253024 | **103**333733 | **103**343633 | **80**253124 |
| **IFN-gamma** Overall LCD4 ICD4 HCD4 | **130**273964 | **299**53116130 | **188**417671 | **108**244242 |

1. One month after II dose
2. Pre III dose
3. Two weeks after III dose
4. Six months after III dose or before IV dose

**Supplementary Figure 1A.**

**Adjusted absolute mean Omicron BA.1 nAbs values over T1-T4 from fitting a mixed linear model (left panel) and box-plots (right panel) of the raw data by CD4 count groups. Y-axis reports nAbs values expressed in Log2 (cut off 5.32 log2);X-axis T1-T4 timepoints . The timepoints are: T1:  2 months after PVC , T2: 4 months after PVC , T3: 2 weeks after 3rd dose , T4: 5 months after 3rd dose.**

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**Supplementary Table 2A. Adjusted absolute mean Omicron BA.1 nAbs values over T1-T4 from fitting a mixed linear model (left panel) and mean differences (right panel) by CD4 count groups.**

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| --- | --- | --- |
|   |  |   |
|   | **Adjusted means** | **Adjusted difference in means** |   |
| **Response** |   |   |   |   |   |   |   |   |   |
|   | **T195% CI** | **T295% CI** | **T395% CI** | **T495% CI** | **T195% CI** | **T295% CI** | **T395% CIp-value** | **T495% CIp-value** | **p-value\*** |
| **NAbs Omicron** |   |   |   |   |   |   |   |   |   |
| ***CD4 group*** |   |   |   |   |   |   |   |   | 0.125 |
| HCD4 | 2.7 (2.1, 3.3) | 2.5 (2.0, 3.0) | 6.7 (6.2, 7.2) | 4.3 (3.7, 4.8) | 0 | 0 | 0 | 0 |   |
| ICD4 | 2.8 (2.2, 3.3) | 2.7 (2.3, 3.2) | 6.8 (6.3, 7.2) | 5.0 (4.5, 5.5) | 0.0 (-0.7, 0.8) | 0.2 (-0.5, 0.9) | 0.1 (-0.7, 0.8) | 0.7 (-0.1, 1.5) |   |
|   |   |   |   |   | 0.918 | 0.540 | 0.888 | 0.076 |   |
| LCD4 | 2.4 (1.8, 2.9) | 2.3 (1.8, 2.8) | 5.5 (4.9, 6.0) | 3.5 (2.9, 4.1) | -0.4 (-1.2, 0.5) | -0.2 (-1.0, 0.5) | -1.2 (-2.0, -0.5) | -0.7 (-1.6, 0.1) |   |
|   |   |   |   |   | 0.399 | 0.551 | 0.001 | 0.093 |   |
| \*F-test type 3 interaction p-value |
| &Adjusted for gender age and CD4 count nadir |

**Supplementary Table 2B. Adjusted mean changes from T2 in Omicron BA.1 nAbs values over T1-T4 from fitting a mixed linear model (left panel) and mean differences (right panel) by CD4 count groups.**

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| --- | --- | --- |
|   |  |   |
|   | **Adjusted& mean changes from T2$** | **Adjusted& difference in mean changes from T2$** |   |
| **Response** |   |   |   |   |   |   |   |   |
|   | **T195% CI** | **T295% CI** | **T395% CI** | **T495% CI** | **T195% CIp-value** | **T395% CIp-value** | **T495% CIp-value** | **p-value\*** |
| **NAbs Omicron** |   |   |   |   |   |   |   |   |
| ***CD4 group*** |   |   |   |   |   |   |   | 0.162 |
| HCD4 | 0.4 (-0.2, 0.9) | REF | 4.3 (3.8, 4.8) | 1.9 (1.4, 2.5) | 0 | 0 | 0 |   |
| ICD4 | 0.1 (-0.4, 0.6) | REF | 4.0 (3.5, 4.5) | 2.1 (1.6, 2.6) | -0.3 (-1.1, 0.4) | -0.3 (-1.0, 0.4) | 0.2 (-0.5, 1.0) |   |
|   |   |  |   |   | 0.395 | 0.401 | 0.576 |   |
| LCD4 | -0.1 (-0.6, 0.5) | REF | 3.1 (2.6, 3.6) | 1.2 (0.6, 1.7) | -0.4 (-1.3, 0.4) | -1.2 (-1.9, -0.5) | -0.8 (-1.6, 0.0) |   |
|   |   |   |   |   | 0.276 | <.001 | 0.063 |   |
| $One month after 3rd vaccine dose |
| \*F-test type 3 interaction p-value |
| &Adjusted for gender age and CD4 count nadir |