

**Supplemental Table 1. Median, arithmetic and geometric mean antibody levels at 28 days post-2<sup>nd</sup> dose, 3 months post-2<sup>nd</sup> dose, 6 months post-2<sup>nd</sup> dose and 28-days post-3<sup>rd</sup> dose, Serum and DBS cohorts**

|                                          | 28-day post 2 <sup>nd</sup> dose visit |                    |                       | 3 months post 2 <sup>nd</sup> dose |                    |                       | 6 months post 2 <sup>nd</sup> dose |                    |                       | 28-day post 3 <sup>rd</sup> dose visit |                      |                       |
|------------------------------------------|----------------------------------------|--------------------|-----------------------|------------------------------------|--------------------|-----------------------|------------------------------------|--------------------|-----------------------|----------------------------------------|----------------------|-----------------------|
|                                          | Median<br>(IQR)                        | Mean<br>(SD)       | Geom.<br>Mean<br>(SD) | Median<br>(IQR)                    | Mean<br>(SD)       | Geom.<br>Mean<br>(SD) | Median<br>(IQR)                    | Mean<br>(SD)       | Geom.<br>Mean<br>(SD) | Median<br>(IQR)                        | Mean<br>(SD)         | Geom.<br>Mean<br>(SD) |
| <b>SERUM</b>                             |                                        |                    |                       |                                    |                    |                       |                                    |                    |                       |                                        |                      |                       |
| <b>IgG RBD,</b><br>BAU/ml                | 3898.0<br>(4374.6)                     | 6168.6<br>(9833.0) | 3992.4<br>(2.5)       | 1564.7<br>(1411.3)                 | 1830.7<br>(1371.2) | 1366.4 (2.4)          | 929.0<br>(888.8)                   | 1256.7<br>(1666.9) | 792.3<br>(2.9)        | 7353.4<br>(5989.5)                     | 11722.4<br>(18057.3) | 7782.6<br>(2.2)       |
| <b>IgG Spike,</b><br>BAU/ml              | 3572.6<br>(4724.4)                     | 6085.4<br>(7364.4) | 3799.5<br>(2.6)       | 1564.7<br>(1411.3)                 | 1897.4<br>(1432.2) | 1498.5<br>(2.1)       | 1139.4<br>(834.6)                  | 1487.3<br>(1858.4) | 1089.5<br>(2.3)       | 7934.5<br>(9268.9)                     | 11256.7<br>(8591.4)  | 8604.9<br>(2.1)       |
| <b>IgG N,</b><br>BAU/ml                  | 2.3<br>(6.4)                           | 5.8<br>(10.6)      | 1.6<br>(6.8)          | 2.8<br>(6.5)                       | 5.8<br>(11.1)      | 1.7<br>(6.2)          | 3.4<br>(7.4)                       | 7.3<br>(12.1)      | 2.5<br>(5.7)          | 6.0<br>(15.9)                          | 19.7<br>(34.0)       | 6.2<br>(5.3)          |
| <b>Neutralizing</b><br>Ab, IU/ml         | 1716.7<br>(1966.9)                     | 1737.2<br>(1127.5) | 1077.9<br>(4.1)       | 274.7<br>(605.1)                   | 552.2<br>(698.1)   | 216.4<br>(5.5)        | 53.2<br>(120.5)                    | 232.3<br>(637.4)   | 42.7<br>(6.1)         | 3777.9<br>(940.6)                      | 3336.0<br>(1077.5)   | 2937.5<br>(2.0)       |
| <b>DBS</b>                               |                                        |                    |                       |                                    |                    |                       |                                    |                    |                       |                                        |                      |                       |
| <b>IgG RBD,</b><br>BAU/mm <sup>2</sup>   | 217.6<br>(122.2)                       | 250.8<br>(143.6)   | 210.7<br>(2.1)        | 125.4<br>(102.0)                   | 135.5<br>(82.8)    | 104.5<br>(2.4)        | 61.5<br>(44.9)                     | 323.7<br>(1373.9)  | 73.3<br>(3.2)         | 505.0<br>(566.0)                       | 1213.7<br>(2086.9)   | 629.1<br>(2.7)        |
| <b>IgG Spike,</b><br>BAU/mm <sup>2</sup> | 105.6<br>(54.6)                        | 140.5<br>(233.9)   | 103.6<br>(2.1)        | 95.0<br>(37.1)                     | 118.5<br>(165.9)   | 84.5<br>(2.3)         | 60.6<br>(51.4)                     | 198.3<br>(448.7)   | 80.1<br>(2.9)         | 652.3<br>(1657.3)                      | 1021.8<br>(738.4)    | 747.5<br>(2.3)        |
| <b>IgG N,</b><br>BAU/mm <sup>2</sup>     | 1.8<br>(1.3)                           | 2.3<br>(2.8)       | 1.8<br>(2.2)          | 1.6<br>(0.8)                       | 2.3<br>(2.5)       | 1.8<br>(1.7)          | 2.0<br>(0.9)                       | 5.0<br>(16.3)      | 2.5<br>(2.1)          | 2.2<br>(2.5)                           | 7.4<br>(17.8)        | 3.2<br>(2.7)          |

**Supplemental Table 2. Multivariable regression analyses demonstrating the association of between-dose interval with antibody levels for participants with serum and DBS samples, separately (estimates as percent change after back-transforming betas)**

| Variables in the regression model  | Serum (n=743)          |                          |                                | DBS (n=216)            |                          |
|------------------------------------|------------------------|--------------------------|--------------------------------|------------------------|--------------------------|
|                                    | IgG RBD<br>β (95% CI)* | IgG Spike<br>β (95% CI)* | Neutralizing Ab<br>β (95% CI)* | IgG RBD<br>β (95% CI)* | IgG Spike<br>β (95% CI)* |
| <b>Interval</b>                    |                        |                          |                                |                        |                          |
| Long                               | 27.7 (3.2, 58.0)       | 24.0 (4.1, 47.6)         | 34.9 (-2.7, 87.0)              | 66.2 (16.8, 136.5)     | 64.6 (16.4, 132.6)       |
| Short                              | Reference              | Reference                | Reference                      | Reference              | Reference                |
| <b>Age, 1-year increments</b>      | -1.7 (-2.4, -1.0)      | -1.1 (-1.6, -0.5)        | -2.6 (-3.6, -1.6)              | -0.6 (-1.8, 0.7)       | -0.3 (-1.6, 1.0)         |
| <b>Sex</b>                         |                        |                          |                                |                        |                          |
| Female                             | 36.5 (11.1, 67.7)      | 25.3 (5.9, 48.3)         | 51.5 (10.5, 107.5)             | -3.8 (-32.0, 36.2)     | 4.7 (-26.1, 48.5)        |
| Male                               | Reference              | Reference                | Reference                      | Reference              | Reference                |
| <b>Infection status</b>            |                        |                          |                                |                        |                          |
| Prior infection                    | 66.4 (34.3, 106.2)     | 53.2 (28.6, 82.4)        | 87.1 (35.4, 158.7)             | 68.4 (23.0, 130.4)     | 73.6 (28.0, 135.2)       |
| Naive                              | Reference              | Reference                | Reference                      | Reference              | Reference                |
| <b>Time since vaccine dose</b>     |                        |                          |                                |                        |                          |
| 3 months post 2 <sup>nd</sup> dose | -66.6 (-72.2, -59.9)   | -62.5 (-67.9, -56.3)     | -81.8 (-86.4, -75.8)           | -54.8 (-70.5, -31.5)   | -38.3 (-57.7, -11.3)     |
| 6 months post 2 <sup>nd</sup> dose | -86.8 (-90.4, -81.8)   | -83.2 (-87.1, -78.0)     | -97.2 (-98.3, -95.5)           | -75.5 (-86.9, -54.4)   | -64.5 (-78.9, -38.6)     |
| 28 days post 3 <sup>rd</sup> dose  | -17.0 (-50.4, 38.7)    | -7.9 (-40.2, 41.7)       | -71.6 (-87.3, -36.8)           | 113.7 (18.9, 282.0)    | 233.0 (98.2, 454.2)      |
| 28 days post 2 <sup>nd</sup> dose  | Reference              | Reference                | Reference                      | Reference              | Reference                |
| <b>Batch</b>                       |                        |                          |                                |                        |                          |
| 1                                  | 139.3 (43.2, 300.0)    | 114.4 (38.9, 230.8)      | 0.3 (-55.1, 123.7)             | -1.2 (-36.3, 52.3)     | -7.1 (-36.8, 35.1)       |
| 3                                  | -19.7 (-35.9, 0.2)     | -52.8 (-60.9, -43.1)     | 172.1 (92.0, 284.9)            | 27.0 (-19.5, 95.0)     | 81.8 (26.1, 165.9)       |
| 4                                  | -16.5 (-37.0, 10.7)    | -36.7 (-50.1, -19.7)     | 62.6 (4.7, 152.8)              | -                      | -                        |
| 5                                  | 35.5 (-4.6, 92.6)      | 5.0 (-21.9, 41.2)        | 122.4 (28.6, 284.9)            | -                      | -                        |
| 6                                  | 92.9 (10.9, 235.8)     | 45.7 (-8.5, 132.2)       | 1598.9 (617.0, 3936.8)         | -                      | -                        |
| 7                                  | 475.6 (151.0, 1221.8)  | 157.9 (28.2, 419.1)      | 940.3 (185.0, 3710.2)          | -                      | -                        |
| 2                                  | Reference              | Reference                | Reference                      | Reference              | Reference                |

\* Separate regression models evaluating the impact of dose interval (long vs. short) on log antibody response were run for each of the three antibodies, expressed as BAU/ml for serum and BAU/mm<sup>2</sup> for DBS. Models were adjusted for age as a continuous variable, sex, prior infection status, batch of analysis, and timepoint. Estimates (and 95% confidence intervals shown in parentheses) represent the percent change in back-transformed antibody levels [(2<sup>β</sup> -1)\*100] comparing long vs. short interval groups.

**Supplemental Table 3. Multivariable regression analyses demonstrating the association of between-dose interval with log antibody levels for participants with serum and DBS samples, separately (original beta estimates)**

| Variables in the regression model  | Serum (n=743)           |                          |                                | DBS (n=216)             |                          |
|------------------------------------|-------------------------|--------------------------|--------------------------------|-------------------------|--------------------------|
|                                    | IgG RBD<br>β (95% CI)*  | IgG Spike<br>β (95% CI)* | Neutralizing Ab<br>β (95% CI)* | IgG RBD<br>β (95% CI)*  | IgG Spike<br>β (95% CI)* |
| <b>Interval</b>                    |                         |                          |                                |                         |                          |
| Long                               | 0.353 (0.046, 0.660)    | 0.310 (0.058, 0.562)     | 0.432 (-0.039, 0.903)          | 0.733 (0.224, 1.242)    | 0.719 (0.219, 1.218)     |
| Short                              | Reference               | Reference                | Reference                      | Reference               | Reference                |
| <b>Age, 1-year increments</b>      | -0.025 (-0.035, -0.015) | -0.016 (-0.024, -0.007)  | -0.038 (-0.054, -0.023)        | -0.008 (-0.027, 0.010)  | -0.004 (-0.023, 0.014)   |
| <b>Sex</b>                         |                         |                          |                                |                         |                          |
| Female                             | 0.449 (0.152, 0.746)    | 0.326 (0.083, 0.568)     | 0.599 (0.144, 1.053)           | -0.056 (-0.557, 0.446)  | 0.066 (-0.437, 0.571)    |
| Male                               | Reference               | Reference                | Reference                      | Reference               | Reference                |
| <b>Infection status</b>            |                         |                          |                                |                         |                          |
| Prior infection                    | 0.752 (0.447, 1.058)    | 0.615 (0.363, 0.867)     | 0.904 (0.437, 1.371)           | 0.752 (0.299, 1.204)    | 0.796 (0.356, 1.234)     |
| Naive                              | Reference               | Reference                | Reference                      | Reference               | Reference                |
| <b>Time since vaccine dose</b>     |                         |                          |                                |                         |                          |
| 3 months post 2 <sup>nd</sup> dose | -1.577 (-1.843, -1.312) | -1.417 (-1.641, -1.193)  | -2.461 (-2.877, -2.047)        | -1.146 (-1.761, -0.545) | -0.697 (-1.240, -0.173)  |
| 6 months post 2 <sup>nd</sup> dose | -2.915 (-3.375, -2.456) | -2.569 (-2.957, -2.183)  | -5.182 (-5.902, -4.466)        | -2.030 (-2.938, -1.134) | -1.493 (-2.302, -0.704)  |
| 28 days post 3 <sup>rd</sup> dose  | -0.255 (-0.995, 0.484)  | -0.119 (-0.742, 0.503)   | -1.815 (-2.973, -0.663)        | 1.096 (0.249, 1.934)    | 1.735 (0.987, 2.470)     |
| 28 days post 2 <sup>nd</sup> dose  | Reference               | Reference                | Reference                      | Reference               | Reference                |
| <b>Batch</b>                       |                         |                          |                                |                         |                          |
| 1                                  | 1.259 (0.518, 2.000)    | 1.100 (0.474, 1.726)     | 0.004 (-1.156, 1.162)          | -0.017 (-0.650, 0.607)  | -0.106 (-0.661, 0.435)   |
| 3                                  | -0.317 (-0.639, 0.003)  | -1.084 (-1.356, -0.814)  | 1.444 (0.941, 1.945)           | 0.345 (-0.261, 0.964)   | 0.862 (0.334, 1.411)     |
| 4                                  | -0.261 (-0.668, 0.146)  | -0.660 (-1.003, -0.316)  | 0.701 (0.066, 1.338)           | -                       | -                        |
| 5                                  | 0.438 (-0.069, 0.945)   | 0.071 (-0.356, 0.498)    | 1.153 (0.362, 1.942)           | -                       | -                        |
| 6                                  | 0.948 (0.150, 1.747)    | 0.543 (-0.128, 1.216)    | 4.087 (2.842, 5.335)           | -                       | -                        |
| 7                                  | 2.525 (1.328, 3.724)    | 1.367 (0.358, 2.376)     | 3.379 (1.511, 5.252)           | -                       | -                        |
| 2                                  | Reference               | Reference                | Reference                      | Reference               | Reference                |

\* Separate regression models evaluating the impact of dose interval (long vs. short) on log antibody response were run for each of the three antibodies, expressed as BAU/ml for serum and BAU/mm<sup>2</sup> for DBS. Models were adjusted for age as a continuous variable, sex, prior infection status, batch of analysis, and timepoint. Estimates (and 95% confidence intervals shown in parentheses) represent the percent change in back-transformed antibody levels [(2<sup>β</sup> - 1)\*100] comparing long vs. short interval groups.