Hydrogel particles improve detection of SARS-CoV-2 for pooled sample methods, extraction-free saliva methods, and extraction-free transport medium methods

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Supplementary Table 1: Nanotrap® particles capture infectious SARS-CoV-2 in contrived samples. This table shows Ct values plotted in Fig. 2a (a), Fig. 2b (b) and Fig. 2c (c).

| Copies/mL | NT- Ct   | NT+ Ct  |
|-----------|----------|---------|
| 100       | Undetected | 36.75   |
| 1,000     | 36.54    | 33.78   |
| 10,000    | 32.5     | 30.09   |

| Copies/mL | NT- Ct   | NT+ Ct  |
|-----------|----------|---------|
| 100       | Undetected | 36.75   |
| 1,000     | Undetected | 33.79   |
| 10,000    | Undetected | 30.47   |

| Sample                | Ct  |
|-----------------------|-----|
| Infectious Virus      | 29.82 |
| 1:5                   | 24.84 |
| 1:10                  | 23.93 |
Supplementary Table 2: Nanotrap® particles capture SARS-CoV-2 in as little as two minutes. This table shows the Ct values plotted in Fig. 3a.

| Time (Min) | Ct Value (Average) | Ct Value (Standard Deviation) |
|------------|--------------------|-------------------------------|
| 0          | 31.17              | 0.14                          |
| 2          | 28.15              | 0.08                          |
| 5          | 27.70              | 0.00                          |
| 10         | 27.87              | 0.04                          |
| 30         | 27.65              | 0.08                          |
Supplementary Table 3: Nanotrap® particles capture SARS-CoV-2 across a range of titers. This table shows the Ct values plotted in Fig. 3b.

| Copies/mL | Ct Value without Nanotrapt particles (Average) | Ct Value without Nanotrapt particles (Standard Deviation) | Ct Value with Nanotrapt particles (Average) | Ct Value with Nanotrapt particles (Standard Deviation) |
|-----------|-----------------------------------------------|----------------------------------------------------------|--------------------------------------------|------------------------------------------------------|
| 0         | Undetected                                    | N/A                                                      | Undetected                                 | N/A                                                  |
| 100       | Undetected                                    | N/A                                                      | 34.96                                     | 0.36                                                 |
| 1,000     | 34.42                                         | 0.32                                                     | 32.56                                     | 0.63                                                 |
| 10,000    | 31.64                                         | 0.09                                                     | 29.37                                     | 0.11                                                 |
| 100,000   | 28.53                                         | 0.02                                                     | 26.08                                     | 0.04                                                 |
| 1,000,000 | 25.09                                         | 0.04                                                     | 22.65                                     | 0.01                                                 |
Supplementary Table 4: Nanotrap® particles compatible with multiple viral extraction methods in transport medium. This table shows the Ct values plotted in Fig. 4c for commercial kit extraction (a) and direct extraction (b).

| Copies/mL | Ct Value without Nanotrap particles (Average) | Ct Value without Nanotrap particles (Standard Deviation) | Ct Value with Nanotrap particles (Average) | Ct Value with Nanotrap particles (Standard Deviation) |
|-----------|-----------------------------------------------|----------------------------------------------------------|-------------------------------------------|--------------------------------------------------|
| 100       | Undetected                                    | N/A                                                      | 36.75                                     | 1.16                                             |
| 1,000     | 36.54                                         | 0.08                                                     | 33.78                                     | 0.67                                             |
| 10,000    | 32.50                                         | 0.46                                                     | 30.09                                     | 0.22                                             |

| Copies/mL | Ct Value without Nanotrap particles (Average) | Ct Value without Nanotrap particles (Standard Deviation) | Ct Value with Nanotrap particles (Average) | Ct Value with Nanotrap particles (Standard Deviation) |
|-----------|-----------------------------------------------|----------------------------------------------------------|-------------------------------------------|--------------------------------------------------|
| 100       | Undetected                                    | N/A                                                      | 36.75                                     | 1.16                                             |
| 1,000     | Undetected                                    | N/A                                                      | 33.79                                     | 0.50                                             |
| 10,000    | Undetected                                    | N/A                                                      | 30.47                                     | 0.12                                             |
Supplementary Table 5: Nanotrap® particles compatible with multiple viral extraction methods in saliva. This table shows the Ct values plotted in Fig. 3d for commercial kit extraction (a) and direct extraction (b).

| Copies/mL | Ct Value without Nanotrap particles (Average) | Ct Value without Nanotrap particles (Standard Deviation) | Ct Value with Nanotrap particles (Average) | Ct Value with Nanotrap particles (Standard Deviation) |
|-----------|--------------------------------------------|--------------------------------------------------------|------------------------------------------|--------------------------------------------------------|
| 0         | Undetected                                  | N/A                                                    | Undetected                               | N/A                                                    |
| 50        | Undetected                                  | N/A                                                    | 35.55                                    | 0.92                                                    |
| 100       | Undetected                                  | N/A                                                    | 34.15                                    | 0.35                                                    |
| 1,000     | 34.65                                       | 0.92                                                   | 31.00                                    | 0.00                                                    |
| 10,000    | 32.10                                       | 0.57                                                   | 27.55                                    | 0.07                                                    |

| Copies/mL | Ct Value without Nanotrap particles (Average) | Ct Value without Nanotrap particles (Standard Deviation) | Ct Value with Nanotrap particles (Average) | Ct Value with Nanotrap particles (Standard Deviation) |
|-----------|--------------------------------------------|--------------------------------------------------------|------------------------------------------|--------------------------------------------------------|
| 0         | Undetected                                  | N/A                                                    | Undetected                               | N/A                                                    |
| 50        | Undetected                                  | N/A                                                    | 36.55                                    | 0.49                                                    |
| 100       | Undetected                                  | N/A                                                    | 35.55                                    | 0.78                                                    |
| 1,000     | Undetected                                  | N/A                                                    | 31.75                                    | 0.07                                                    |
| 10,000    | Undetected                                  | N/A                                                    | 28.15                                    | 0.07                                                    |
Supplementary Figure 6: Nanotrap® particles capture live SARS-CoV-2 in diagnostic remnant samples previously tested by the Abbot RealTime SARS-CoV-2 EUA Test. This table shows Ct values plotted in Fig. 4a.

| Sample | Ct Value without Nanotrap particles (Average) | Ct Value without Nanotrap particles (Standard Deviation) | Ct Value with Nanotrap particles (Average) | Ct Value with Nanotrap particles (Standard Deviation) |
|--------|-----------------------------------------------|----------------------------------------------------------|------------------------------------------|----------------------------------------------------------|
| 101    | 14.55                                         | 0.21                                                     | 15.81                                    | 0.05                                                     |
| 102    | 15.05                                         | 0.09                                                     | 15.75                                    | 0.06                                                     |
| 103    | 15.69                                         | 0.28                                                     | 14.68                                    | 0.15                                                     |
| 104    | 20.33                                         | 0.04                                                     | 20.18                                    | 0.09                                                     |
| 105    | 21.65                                         | 0.13                                                     | 21.67                                    | 0.04                                                     |
| 106    | 21.90                                         | 0.08                                                     | 22.19                                    | 0.05                                                     |
| 107    | 33.53                                         | 0.31                                                     | 30.24                                    | 0.11                                                     |
| 108    | 35.11                                         | 0.01                                                     | 31.15                                    | 0.10                                                     |
| 109    | 36.46                                         | 0.37                                                     | 31.71                                    | 0.03                                                     |
| 110    | 31.62                                         | 0.12                                                     | 31.75                                    | 0.12                                                     |
| 111    | 33.23                                         | 0.18                                                     | 29.60                                    | 0.17                                                     |
| 112    | 35.08                                         | 0.36                                                     | 31.08                                    | 0.06                                                     |
| 113    | 35.82                                         | 0.06                                                     | 31.85                                    | 0.04                                                     |
| 114    | 36.36                                         | 0.37                                                     | 31.68                                    | 0.04                                                     |
Supplementary Figure 7: Nanotrap® particles capture live SARS-CoV-2 in diagnostic remnant samples previously tested by the Cepheid Xpert® Xpress SARS-CoV-2 EUA assay. This table shows Ct values plotted in Fig. 4b.

| Sample | Ct Value without Nanotrap particles (Average) | Ct Value without Nanotrap particles (Standard Deviation) | Ct Value with Nanotrap particles (Average) | Ct Value with Nanotrap particles (Standard Deviation) | Sample | Ct Value without Nanotrap particles (Average) | Ct Value without Nanotrap particles (Standard Deviation) | Ct Value with Nanotrap particles (Average) | Ct Value with Nanotrap particles (Standard Deviation) |
|--------|--------------------------------------------|----------------------------------------------------------|--------------------------------------------|----------------------------------------------------------|--------|--------------------------------------------|----------------------------------------------------------|--------------------------------------------|----------------------------------------------------------|
| 201    | 19.72                                       | 0.06                                                     | 18.32                                      | 0.11                                                     | 218    | Undetected                                | N/A                                                      | Undetected                                | N/A                                                      |
| 202    | 21.55                                       | 0.06                                                     | 21.29                                      | 0.10                                                     | 219    | Undetected                                | N/A                                                      | Undetected                                | N/A                                                      |
| 203    | 22.41                                       | 0.04                                                     | 20.45                                      | 0.15                                                     | 220    | Undetected                                | N/A                                                      | Undetected                                | N/A                                                      |
| 204    | 26.61                                       | 0.08                                                     | 26.32                                      | 0.08                                                     | 221    | Undetected                                | N/A                                                      | Undetected                                | N/A                                                      |
| 205    | 26.70                                       | 0.06                                                     | 27.34                                      | 0.13                                                     | 222    | Undetected                                | N/A                                                      | Undetected                                | N/A                                                      |
| 206    | 27.85                                       | 0.05                                                     | 25.78                                      | 0.12                                                     | 223    | Undetected                                | N/A                                                      | Undetected                                | N/A                                                      |
| 207    | 30.36                                       | 0.17                                                     | 28.87                                      | 0.07                                                     | 224    | Undetected                                | N/A                                                      | Undetected                                | N/A                                                      |
| 208    | 36.28                                       | 0.63                                                     | 34.97                                      | 0.37                                                     | 225    | Undetected                                | N/A                                                      | Undetected                                | N/A                                                      |
| 209    | Undetected                                 | N/A                                                      | 36.43                                      | 0.86                                                     | 226    | Undetected                                | N/A                                                      | Undetected                                | N/A                                                      |
| 210    | Undetected                                 | N/A                                                      | 36.39                                      | 2.15                                                     | 227    | Undetected                                | N/A                                                      | Undetected                                | N/A                                                      |
| 211    | Undetected                                 | N/A                                                      | 36.96                                      | 0.60                                                     | 228    | Undetected                                | N/A                                                      | Undetected                                | N/A                                                      |
| 212    | Undetected                                 | N/A                                                      | 36.13                                      | 0.51                                                     | 229    | Undetected                                | N/A                                                      | Undetected                                | N/A                                                      |
| 213    | 36.12                                       | 0.70                                                     | Undetected                                | N/A                                                      | 230    | Undetected                                | N/A                                                      | Undetected                                | N/A                                                      |
| 214    | Undetected                                 | N/A                                                      | Undetected                                | N/A                                                      | 231    | Undetected                                | N/A                                                      | Undetected                                | N/A                                                      |
| 215    | Undetected                                 | N/A                                                      | Undetected                                | N/A                                                      | 232    | Undetected                                | N/A                                                      | Undetected                                | N/A                                                      |
| 216    | Undetected                                 | N/A                                                      | Undetected                                | N/A                                                      | 233    | Undetected                                | N/A                                                      | Undetected                                | N/A                                                      |
| 217    | Undetected                                 | N/A                                                      | Undetected                                | N/A                                                      | 234    | Undetected                                | N/A                                                      | Undetected                                | N/A                                                      |
Supplementary Table 8: Nanotrap® particles improve SARS-CoV-2 detection in large volume samples. This table shows Ct values plotted in Fig. 5a (a) and Fig. 5b (b).

| Sample | NT- Ct | NT+ Ct |
|--------|--------|--------|
| 1:50   | 29.37  | 25.52  |
| 1:100  | 31.25  | 26.39  |