

**TABLE S1: Conditions used in iterative rounds of *E. coli* SELEX.**

| Selection Round | Bacteria (cels/mL) | Aptamer (pmols)                            | Competitor                                 | Binding time (min) | Washes (time, number, volume) ** |
|-----------------|--------------------|--|--|--------------------|----------------------------------|
| 1               | 10 <sup>7</sup>    | 1500 (4.59 x 10 <sup>14</sup> molecules) * | —  | 45                 | 3 min, 1 x, 1 mL                 |
| 2               | 10 <sup>7</sup>    | 6.8  | —  | 45                 | 3 min, 1 x, 1 mL                 |
| 3               | 10 <sup>7</sup>    | 34.4                                       | 0.1 µg/µl salmon sperm DNA                 | 45                 | 3 min, 1 x, 1 mL                 |
| 4               | 10 <sup>6</sup>    | 75.5                                       | 0.1 µg/µl salmon sperm DNA                 | 45                 | 3 min, 1 x, 1 mL                 |
| 5               | 10 <sup>6</sup>    | 22   | 0.1 µg/µl salmon sperm DNA, 0.05 µg/µl BSA | 45                 | 3 min, 3 x, 1 mL                 |
| 6               | 10 <sup>5</sup>    | 12   | 0.1 µg/µl salmon sperm DNA, BSA 0.05 µg/µl | 45                 | 3 min, 3 x, 1 mL                 |
| 7               | 10 <sup>4</sup>    | 17   | 0.05 µg/µl BSA                             | 45                 | 3 min, 3 x, 1 mL                 |
| 8               | 10 <sup>4</sup>    | 6.8  | 0.2 µg/µl salmon sperm DNA, 0.1 µg/µl BSA  | 45                 | 3 min, 3 x, 1 mL                 |
| 9               | 10 <sup>4</sup>    | 6.1  | 0.2 µg/µl salmon sperm DNA, 0.1 µg/µl BSA  | 45                 | 20 min, 3 x, 1 mL                |
| 10              | 10 <sup>3</sup>    | 8.9  | 0.2 µg/µl salmon sperm DNA, 0.1 µg/µl BSA  | 30                 | 20 min, 2 x, 1 mL                |
| 11              | 10 <sup>3</sup>    | 6.5  | 0.2 µg/µl salmon sperm DNA                 | 30                 | 20 min, 6x, 1 mL                 |
| 12              | 10 <sup>3</sup>    | 4.4  | 0.2 µg/µl BSA                              | 30                 | 20 min, 6 x, 1 mL                |
|                 |                    | 4.2  |  |                    |                                  |

\*Correspond to the library ssDNA population.

\*\* Washes were done with selection buffer (PBS containing 1.4 mM MgCl<sub>2</sub>).