Communication

Polyclonal Aptamers in Fluorescence-based Assays for *Rikenella microfusus*-specific Gut Microbiome Analyses

**Supplementary Materials**

**Table S1**. Conditions of all SELEX rounds of *R. microfusus,* including the amount of aptamer library, counter SELEX, counter SELEX times, target SELEX, washing times, and the amount of BSA/tRNA.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **SELEX rounds** | **Aptamer（pmol）** | **Counter SELEX**  **(cells)** | **Counter SELEX times** | **Target SELEX (cells)** | **Wash times** | **BSA/tRNA（pmol）** |
| 1 | 500 | - | - | 108 | 1 | 600 |
| 2 | 10 | - | - | 108 | 1 | 900 |
| 3 | 10 | - | - | 108 | 2 | 1200 |
| 4 | 10 | - | - | 108 | 2 | 1500 |
| 5 | 10 | - | - | 108 | 3 | 1800 |
| 6 | 10 | 2x107 each bacterium | 1 | 108 | 4 | 2100 |
| 7 | 10 | 2x107 each bacterium | 1 | 108 | 6 | 2400 |
| 8 | 5 | 2x107 each bacterium | 1 | 108 | 6 | 2700 |
| 9 | 5 | 2x107 each bacterium | 2 | 108 | 6 | 3300 |
| 10 | 5 | 2x107 each bacterium | 2 | 108 | 6 | 3600 |
| 11 | 1 | 2x107 each bacterium | 2 | 108 | 6 | 3900 |
| 12 | 1 | 2x107 each bacterium | 3 | 108 | 6 | 4200 |
| 13 | 1 | 2x107 each bacterium | 3 | 108 | 6 | 4500 |

1. The BSA (100mg/mL) and tRNA (10mg/mL) were incubated with *R. microfusus* to avoid non-specific binding to the cell surface.

2. Counter SELEX: Aptamer library was incubated with bacteria mix including *A. muciniphila* mucT, *A. stercoricanis*, *R. intestinalis*, *P. distasonis* and *B. producta* were co-incubated at 37℃ for 30 min

3. Target SELEX: Aptamer library was incubated with *R. microfusus* in 37℃ for 30 min.

**Table S2**. *Rikenella* abundance in fecal samples of proband 1 determined by 16S rRNA NGS.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Kingdom** | **Phylum** | **Class** | **Order** | **Family** | **Genus** | **Species** | **Absolute**  **\_counts** | **Relative**  **\_counts** |
| Bacteria | Bacteroidetes | Bacteroidia | Bacteroidales | Rikenellaceae | Alistipes | finegoldii | 2.76 | 6.01096E-03 |
| Bacteria | Bacteroidetes | Bacteroidia | Bacteroidales | Rikenellaceae | Alistipes | onderdonkii WAL 8169 = DSM 19147 | 10.83 | 2.35865E-02 |
| Bacteria | Bacteroidetes | Bacteroidia | Bacteroidales | Rikenellaceae | Alistipes | putredinis DSM 17216 | 42.85 | 9.33224E-02 |
| Bacteria | Bacteroidetes | Bacteroidia | Bacteroidales | Rikenellaceae | Alistipes | Alistipes;shahii WAL 8301 | 10.11 | 2.20184E-02 |
| Bacteria | Bacteroidetes | Bacteroidia | Bacteroidales | Rikenellaceae | Alistipes | Unspecific  \_Alistipes | 89.45 | 1.94812E-01 |
| Bacteria | Bacteroidetes | Bacteroidia | Bacteroidales | Rikenellaceae | Unspecific  \_Rikenellaceae | Unspecific  \_Rikenellaceae | 2.0 | 4.35577E-03 |

**Table S3**. *Rikenella* abundance in fecal samples of proband 2 determined by 16S rRNA NGS.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Kingdom** | **Phylum** | **Class** | **Order** | **Family** | **Genus** | **Species** | **Absolute**  **\_counts** | **Relative**  **\_counts** |
| Bacteria | Bacteroidetes | Bacteroidia | Bacteroidales | Rikenellaceae | Alistipes | finegoldii | 0.78 | 9.16639E-04 |
| Bacteria | Bacteroidetes | Bacteroidia | Bacteroidales | Rikenellaceae | Alistipes | inops | 77.83 | 9.14641E-02 |
| Bacteria | Bacteroidetes | Bacteroidia | Bacteroidales | Rikenellaceae | Alistipes | onderdonkii WAL 8169 = DSM 19147 | 1.0 | 1.17518E-03 |
| Bacteria | Bacteroidetes | Bacteroidia | Bacteroidales | Rikenellaceae | Alistipes | putredinis DSM 17216 | 1.77 | 2.08006E-03 |
| Bacteria | Bacteroidetes | Bacteroidia | Bacteroidales | Rikenellaceae | Alistipes | shahii WAL 8301 | 297.49 | 3.49604E-01 |
| Bacteria | Bacteroidetes | Bacteroidia | Bacteroidales | Rikenellaceae | Alistipes | unspecific\_Alistipes | 554.0 | 6.51048E-01 |
| Bacteria | Bacteroidetes | Bacteroidia | Bacteroidales | Rikenellaceae | DMER64 | unspecific\_DMER64 | 1.0 | 1.17518E-03 |
| Bacteria | Bacteroidetes | Bacteroidia | Bacteroidales | Rikenellaceae | Unspecific  \_Rikenellaceae | Unspecific  \_Rikenellaceae | 0.5 | 5.87589E-04 |