

**Supplementary Table 6** Intersubunit Bridge Selection Data and Phylogenetic Data

| Library | Nucleotide | Z-score | % Selected <sup>1</sup> |      |      |      |      | % Bacteria <sup>2</sup> |      |      |       |      |             |
|---------|------------|---------|-------------------------|------|------|------|------|-------------------------|------|------|-------|------|-------------|
|         |            |         | A                       | U    | C    | G    | WT   | A                       | U    | C    | G     | WT   |             |
| B2a-1   | 1405       | G       | 10.8                    | 2.1  | 10.4 | 4.2  | 83.3 | <b>83.3</b>             | 0.1  | 0.1  | 0.1   | 99.7 | <b>99.7</b> |
|         | 1407       | C       | 8.0                     | 6.3  | 10.4 | 75.0 | 8.3  | <b>75.0</b>             | 0.1  | 0.2  | 99.5  | 0.1  | <b>99.5</b> |
|         | 1494       | G       | 9.9                     | 4.2  | 10.4 | 4.2  | 81.3 | <b>81.3</b>             | 0.6  | 0.1  | 0.2   | 99.1 | <b>99.1</b> |
|         | 1495       | U       | 10.8                    | 6.3  | 83.3 | 4.2  | 6.3  | <b>83.3</b>             | 0.5  | 99.3 |       | 0.1  | <b>99.3</b> |
|         | 1496       | C       | 8.6                     | 6.3  | 10.4 | 77.1 | 6.3  | <b>77.1</b>             | 0.1  | 0.1  | 98.9  | 0.4  | <b>98.9</b> |
| B2a-2   | 1407       | C       | 20.2                    | 2.8  | 1.4  | 91.5 | 4.2  | <b>91.5</b>             | 0.1  | 0.2  | 99.5  | 0.1  | <b>99.5</b> |
|         | 1408       | A       | 11.1                    | 78.9 | 1.4  | 5.6  | 14.1 | <b>78.9</b>             | 99.6 | 0.1  | 0.1   | 0.2  | <b>99.6</b> |
|         | 1409       | C       | 7.7                     | 9.9  | 21.1 | 67.6 | 1.4  | <b>67.6</b>             | 12.8 | 0.4  | 85.7  | 1.1  | <b>85.7</b> |
|         | 1491       | G       | 5.1                     | 21.1 | 12.7 | 11.3 | 54.9 | <b>54.9</b>             | 0.4  | 12.0 | 0.2   | 87.2 | <b>87.2</b> |
|         | 1494       | G       | 22.4                    | 4.2  | 2.8  | 0.0  | 93.0 | <b>93.0</b>             | 0.6  | 0.1  | 0.2   | 99.1 | <b>99.1</b> |
| B2b-1   | 791        | G       | 28.8                    | 1.4  | 2.9  | 0.0  | 95.7 | <b>95.7</b>             | 0.0  |      | 0.1   | 99.9 | <b>99.9</b> |
|         | 792        | A       | 2.6                     | 40.6 | 21.7 | 10.1 | 27.5 | <b>40.6</b>             | 99.9 | 0.0  |       |      | <b>99.9</b> |
|         | 793        | T       | 2.4                     | 31.9 | 39.1 | 7.2  | 21.7 | <b>39.1</b>             | 0.1  | 99.5 | 0.0   | 0.4  | <b>99.5</b> |
| B2b-2   | 1514       | G       | 1.6                     | 13.0 | 29.9 | 23.4 | 33.8 | <b>33.8</b>             | 0.3  | 20.4 | 41.6  | 37.5 | <b>37.5</b> |
|         | 1515       | G       | 1.9                     | 7.8  | 42.9 | 14.3 | 35.1 | <b>35.1</b>             | 1.2  | 4.0  | 52.0  | 40.8 | <b>40.8</b> |
|         | 1516       | G       | 6.2                     | 6.5  | 24.7 | 9.1  | 59.7 | <b>59.7</b>             | 8.9  | 3.5  | 0.8   | 86.7 | <b>86.7</b> |
|         | 1520       | C       | -5.6                    | 11.7 | 49.4 | 7.8  | 31.2 | <b>7.8</b>              | 4.9  | 0.9  | 44.9  | 48.6 | <b>44.9</b> |
|         | 1521       | C       | -4.2                    | 7.8  | 55.8 | 10.4 | 26.0 | <b>10.4</b>             | 0.3  | 0.8  | 42.4  | 56.0 | <b>42.4</b> |
| B2b-3   | 1517       | G       | 21.7                    | 7.9  | 0.0  | 0.0  | 92.1 | <b>92.1</b>             | 0.7  | 1.1  | 0.3   | 97.7 | <b>97.7</b> |
|         | 1518       | A       | 32.2                    | 97.4 | 0.0  | 0.0  | 2.6  | <b>97.4</b>             | 97.6 | 0.4  | 1.0   | 1.0  | <b>97.6</b> |
| B2c-1   | 770        | C       | 2.7                     | 12.7 | 19.7 | 40.8 | 26.8 | <b>40.8</b>             | 0.0  | 4.7  | 94.5  | 0.6  | <b>94.5</b> |
|         | 771        | G       | -0.6                    | 12.7 | 33.8 | 39.4 | 14.1 | <b>14.1</b>             | 7.5  | 4.5  | 1.6   | 86.0 | <b>86</b>   |
|         | 808        | C       | -0.5                    | 11.3 | 47.9 | 22.5 | 18.3 | <b>22.5</b>             | 4.2  | 8.5  | 86.0  | 1.3  | <b>86</b>   |
|         | 809        | G       | 2.0                     | 14.1 | 25.4 | 23.9 | 36.6 | <b>36.6</b>             | 4.9  | 0.1  | 0.4   | 95.0 | <b>95</b>   |
|         | 899        | C       | 7.7                     | 12.7 | 15.5 | 67.6 | 4.2  | <b>67.6</b>             | 0.2  | 0.1  | 100.0 | 0.1  | <b>100</b>  |
|         | 900        | A       | 10.1                    | 76.1 | 7.0  | 9.9  | 7.0  | <b>76.1</b>             | 99.7 | 0.1  | 0.1   | 0.1  | <b>99.7</b> |
| B2c-2   | 772        | T       | 1.9                     | 9.2  | 35.5 | 55.3 | 0.0  | <b>35.5</b>             | 5.4  | 92.2 | 1.8   | 0.6  | <b>92.2</b> |
|         | 773        | G       | -7.1                    | 35.5 | 15.8 | 43.4 | 5.3  | <b>5.3</b>              | 1.6  | 0.1  | 0.0   | 98.2 | <b>98.2</b> |
|         | 806        | C       | -5.0                    | 9.2  | 22.4 | 7.9  | 60.5 | <b>7.9</b>              | 0.0  | 1.8  | 98.2  | 0.0  | <b>98.2</b> |
|         | 807        | A       | -1.8                    | 15.8 | 19.7 | 3.9  | 60.5 | <b>15.8</b>             | 92.2 | 5.4  | 0.5   | 1.8  | <b>92.2</b> |
| B3-1    | 1415       | G       | 1.7                     | 7.2  | 40.6 | 17.4 | 34.8 | <b>34.8</b>             | 0.2  | 0.1  | 4.6   | 95.1 | <b>95.1</b> |
|         | 1416       | G       | 2.2                     | 24.6 | 18.8 | 18.8 | 37.7 | <b>37.7</b>             | 44.9 | 0.7  | 3.6   | 50.7 | <b>50.7</b> |
|         | 1483       | A       | 10.2                    | 76.8 | 1.4  | 15.9 | 5.8  | <b>76.8</b>             | 99.4 | 0.3  | 0.2   | 0.1  | <b>99.4</b> |
|         | 1484       | C       | 1.2                     | 13.0 | 26.1 | 31.9 | 29.0 | <b>31.9</b>             | 0.6  | 43.7 | 51.6  | 3.9  | <b>51.6</b> |
|         | 1485       | T       | -2.5                    | 14.5 | 14.5 | 15.9 | 55.1 | <b>14.5</b>             | 0.4  | 93.4 | 1.2   | 4.9  | <b>93.4</b> |
| B3-2    | 1417       | G       | 9.3                     | 26.4 | 2.7  | 1.4  | 69.9 | <b>69.9</b>             | 30.0 | 0.1  | 0.1   | 69.9 | <b>69.8</b> |
|         | 1418       | A       | 28.8                    | 90.4 | 2.7  | 4.1  | 2.7  | <b>90.4</b>             | 99.7 | 0.0  | 0.0   | 0.3  | <b>99.7</b> |
|         | 1482       | G       | 35.7                    | 8.2  | 0.0  | 0.0  | 91.8 | <b>91.8</b>             | 8.1  | 0.3  | 0.2   | 91.4 | <b>91.4</b> |
|         | 1483       | A       | 30.5                    | 95.9 | 0.0  | 2.7  | 1.4  | <b>95.9</b>             | 99.4 | 0.3  | 0.2   | 0.1  | <b>99.4</b> |
| B3-3    | 1418       | A       | -1.8                    | 15.2 | 43.5 | 17.4 | 23.9 | <b>15.2</b>             | 99.7 | 0.0  | 0.0   | 0.3  | <b>99.7</b> |
|         | 1419       | G       | 2.8                     | 23.9 | 13.0 | 17.4 | 45.7 | <b>45.7</b>             | 1.7  | 0.4  | 0.1   | 97.9 | <b>97.9</b> |

|      |      |   |      |      |      |      |      |             |      |      |      |      |             |
|------|------|---|------|------|------|------|------|-------------|------|------|------|------|-------------|
|      | 1420 | T | 2.5  | 10.9 | 43.5 | 19.6 | 26.1 | <b>43.5</b> | 0.2  | 89.5 | 10.1 | 0.3  | <b>89.5</b> |
|      | 1480 | A | 0.2  | 26.1 | 34.8 | 8.7  | 30.4 | <b>26.1</b> | 38.9 | 0.2  | 0.3  | 60.5 | <b>38.9</b> |
|      | 1481 | T | 1.1  | 19.6 | 32.6 | 15.2 | 32.6 | <b>32.6</b> | 0.6  | 61.7 | 37.1 | 0.5  | <b>61.7</b> |
| B6-3 | 1424 | T | 0.8  | 31.9 | 28.6 | 28.6 | 11.0 | <b>28.6</b> | 4.7  | 60.7 | 22.4 | 12.2 | <b>60.7</b> |
|      | 1425 | T | 1.4  | 24.2 | 31.9 | 18.7 | 25.3 | <b>31.9</b> | 47.5 | 41.6 | 3.0  | 7.8  | <b>41.6</b> |
|      | 1475 | G | 2.6  | 17.6 | 30.8 | 13.2 | 38.5 | <b>38.5</b> | 13.1 | 0.8  | 0.7  | 85.1 | <b>85.1</b> |
|      | 1476 | A | -1.0 | 20.9 | 44.0 | 18.7 | 16.5 | <b>20.9</b> | 51.8 | 6.1  | 5.4  | 36.6 | <b>51.8</b> |
| B6-1 | 1426 | G | 0.6  | 39.7 | 19.5 | 13.8 | 27.0 | <b>27.0</b> | 48.7 | 18.0 | 3.5  | 29.8 | <b>29.8</b> |
|      | 1427 | C | -1.8 | 44.3 | 21.3 | 19.5 | 14.9 | <b>19.5</b> | 0.7  | 32.6 | 64.5 | 2.2  | <b>64.5</b> |
|      | 1428 | A | 11.7 | 66.7 | 5.7  | 19.5 | 8.0  | <b>66.7</b> | 86.7 | 2.5  | 0.2  | 10.6 | <b>86.7</b> |
|      | 1472 | T | -1.6 | 27.0 | 20.1 | 20.7 | 32.2 | <b>20.1</b> | 2.3  | 88.2 | 8.7  | 0.6  | <b>88.2</b> |
|      | 1473 | G | 0.9  | 20.7 | 28.2 | 23.0 | 28.2 | <b>28.2</b> | 36.0 | 0.9  | 1.7  | 61.3 | <b>61.3</b> |
|      | 1474 | T | 5.7  | 17.8 | 46.6 | 6.3  | 29.3 | <b>46.6</b> | 12.8 | 22.5 | 1.6  | 63.0 | <b>22.5</b> |
| B6-2 | 1429 | A | 5.2  | 55.6 | 6.9  | 27.8 | 9.7  | <b>55.6</b> | 5.8  | 1.5  | 92.5 | 0.2  | <b>5.8</b>  |
|      | 1430 | A | -1.5 | 18.1 | 18.1 | 45.8 | 18.1 | <b>18.1</b> | 5.7  | 3.8  | 90.3 | 0.1  | <b>5.7</b>  |
|      | 1470 | T | 2.6  | 16.7 | 40.3 | 26.4 | 16.7 | <b>40.3</b> | 2.9  | 5.1  | 0.3  | 91.6 | <b>5.1</b>  |
|      | 1471 | T | 4.5  | 18.1 | 51.4 | 6.9  | 23.6 | <b>51.4</b> | 0.6  | 4.9  | 0.4  | 93.5 | <b>4.9</b>  |
| B7a  | 700  | G | 5.7  | 12.9 | 20.0 | 8.6  | 58.6 | <b>58.6</b> | 2.4  | 2.9  | 0.1  | 94.6 | <b>94.6</b> |
|      | 701  | T | 6.3  | 14.3 | 61.4 | 15.7 | 8.6  | <b>61.4</b> | 0.0  | 79.6 | 20.2 | 0.1  | <b>79.6</b> |
|      | 702  | A | 3.7  | 47.1 | 37.1 | 5.7  | 10.0 | <b>47.1</b> | 97.0 | 2.9  | 0.0  | 0.1  | <b>97</b>   |
|      | 703  | G | 0.7  | 14.3 | 41.4 | 15.7 | 28.6 | <b>28.6</b> | 2.0  |      | 0.1  | 97.9 | <b>97.9</b> |

**Supplementary table 6.** 1) Percent selected is calculated from the data in tables 4 a-h.  
2) % Bacteria is the frequency of the *E. coli* base in bacterial sequences, available at <http://www.rna.icmb.utexas.edu/>.