**Supplementary Table 1.** List of vectors and vector components.

**Origins of replication (oriR):**

| Origin | Copy # | Host range | Code |
|---|---|---|---|
| **R6K**[1] | 10-20 | Narrow (Proteobacteria) | **K** |
| **p15A**[2] | 14-16 | Narrow (Enterobacteria) | **A** |
| **oriV**[3] | 4-7 | Broad (Gram- and Gram+) | **V** |
| **pBBR1**[4] | 15-40 | Broad (preferably Gram-) | **B** |
| **RSF1010**[5] | 12 | Broad (Gram- and Gram+) | **S** |
| **RCR**[6] | 250-350 | Broad (Eubacteria) | **W** |

**Integrative elements:**

| Transposase | Transposon inverted repeat sequence | Host range | Code |
|---|---|---|---|
| **none** | - | - | - |
| **Himar**[7] | ACAGGTTGGATGATAAGTCCCCGGTCT | Broad | h |
| **Tn5** | CTGTCTCTTATACACATCT | Broad | t |

**Regulation sequences:**

| Promoter/UTR | Expression in E. coli | Origin of sequence | Code |
|---|---|---|---|
| GATTGCATTAGGTTTTAGTTTCTTGTATAA TGCTTAATGTTGGTCACTGACAGGCTACGA TACGGAAGGTTGCTCACGCCCGGCCCCTTT GCCATGGCTAGTGTGTGGAAATTTCCGAGG AGCAAGTCTATTTCCAAAAATGGGCGAAAA AGGAGGTAATACA | +++ | *Bacillus cellulosilyticus* | 1 |
| GGGAGAGCTTCAACGGCGCTTCTACCCATT TGCTTGGAAAGGATGAGGAGCAGGAAGAAA TTCCGTCCCCAATGCGACGGCCCTTTACAT CCATGTTGTTTGATAGTATAATGGATACGG ATTGACCAAATTGTTCATTTAGTCAGTTTG AAGGATGAGGAGT | ++ | *Geobacillus sp.* | 2 |
| GTGAAGGATACGGCTGCGGCACTTCGACAT CGCCCCATGTGGCGGCTTTGAACTGGGCTT ATGAAACGCGTTCACAACCTTTTTTGACCA TCGGCGCGAACGTGGTATCATGCGTTCAGC TTTTGCCCATACATACTACGTGCTCAATCT AGGAGGATTTCATAC | +++ | *Eggerthella lenta* | 3 |

| | | | |
|---|---|---|---|
| CTCTAGAGTAGTAGATTATTTTAGGAATTT AGATGTTTTGTATGAAATAGATGCTTCGTA TGGAATTAATGAAATTTTTAGTCAGGTAAA AAAGGTAATAGGAGAATATT | +++ | *Segmented filamentous bacteria* | 4 |
| GTTTTAAATGATGAAAAGAAATATTTAGGG AAGATTGTTTCGACGCGAATTGTTGATCTG GAAAATGATCACCTTATCGGACAAGCTTTA AAATAGGAGGATATAAAAAT | ++ | *Segmented filamentous bacteria* | 5 |
| ATAAGGATTCTTTAAAGAGAGATATAGTTA TGTCAAAGACTGTAGAATTTTTAGTAAATC AAAATAAAAAAAGAGGTATTAAATAGAGTG TATTTTAAAGGAGGAGACTT | +++ | *Segmented filamentous bacteria* | 6 |
| AAACACCAATAAAATTAGAATATTTAGGAG CGACTTTAAAAAAGTTTAATAAGAATTGTT TATGAGATATTTTTATTATATTTAAACTCA ATTTAAAGTAGGGAGAATAG | + | *Segmented filamentous bacteria* | 7 |
| GCAAGTGTTCAAGAAGTTATTAAGTCGGGA GTGCAGTCGAAGTGGGCAAGTTGAAAAATT CACAAAAATGTGGTATAATATCTTTGTTCA TTAGAGCGATAAACTTGAATTTGAGAGGGA ACTTAG | + | *Clostridium perfringens* | 8 |

**Vector selection genes:**

| Resistance gene | Antibiotic selection | [Ab] in *E. coli* |
|---|---|---|
| **Beta-lactamase** | Carbenicillin | 50 µg/ml |
| **Chlor** | Chloramphenicol | 20 µg/ml |
| **Tet** | Tet | 25 µg/ml |
| **Spec** | Spec | 200 µg/ml |
| **Kan** | Kan | 50 µg/ml |

**Cargo selection cassettes:**

| Resistance cassette | Antibiotic selection | [Ab] in *E. coli* |
|---|---|---|
| **GFP-Beta-lactamase** | Carb | 50 µg/ml |
| **GFP-CatP** | Chlor | 20 µg/ml |
| **GFP-Tet** | Tet | 25 µg/ml |
| **GFP-Spec** | Spec | 250 µg/ml |
| **GFP-Kan** | Kan | 50 µg/ml |

| | | |
|---|---|---|
| **GFP-ErmG** | Erm | - |

| Vector name | Cargo selection | Cargo promoter | Vector selection | Transposase promoter |
|---|---|---|---|---|
| **pGT-Ah1** | GFP-Beta-lactamase | 4 | Chlor | 4 |
| **pGT-Ah2** | GFP-Beta-lactamase | 5 | Chlor | 5 |
| **pGT-Ah3** | GFP-Beta-lactamase | 6 | Chlor | 6 |
| **pGT-Ah4** | GFP-Beta-lactamase | 7 | Chlor | 7 |
| **pGT-Ah5** | GFP-CatP | 8 | Kan | 4 |
| **pGT-Ah6** | GFP-CatP | 8 | Kan | 5 |
| **pGT-Ah7** | GFP-CatP | 8 | Kan | 6 |
| **pGT-Ah8** | GFP-CatP | 8 | Kan | 7 |
| **pGT-Ah9** | GFP-Tet | 4 | Chlor | 4 |
| **pGT-Ah10** | GFP-Tet | 4 | Chlor | 5 |
| **pGT-Ah11** | GFP-Tet | 4 | Chlor | 6 |
| **pGT-B1** | GFP | 1 | Beta-lactamase | - |
| **pGT-B2** | GFP | 2 | Beta-lactamase | - |
| **pGT-B3** | GFP | 3 | Beta-lactamase | - |
| **pGT-S1** | GFP-Beta-lactamase | 4 | Beta-lactamase | - |
| **pGT-S2** | GFP-Beta-lactamase | 5 | Beta-lactamase | - |
| **pGT-S3** | GFP-Tet | 4 | Tet | - |
| **pGT-S4** | GFP-Tet | 5 | Tet | - |
| **pGT-Kh1** | GFP-Beta-lactamase | 4 | Chlor | 4 |
| **pGT-Kh2** | GFP-Beta-lactamase | 5 | Chlor | 5 |
| **pGT-Kh3** | GFP-Beta-lactamase | 7 | Chlor | 7 |

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**Supplementary Table 2.** Vector libraries used in this study.

| Library | Vectors |
|---|---|
| **pGT-L1** | B1, B2, B3 |
| **pGT-L2** | Ah5, Ah6, Ah7, Ah8 |
| **pGT-L3** | S1, S2, S3, S4 |
| **pGT-L4** | Ah1, Ah3, B1, B2, B3 |
| **pGT-L5** | Ah5, Ah6, Ah7, Ah8, Ah9, Ah10, Ah11 |
| **pGT-L6** | Ah1, Ah3, Ah5, Ah6, Ah7, Ah8, Ah9, Ah10, Ah11, B1, B2, B3 |
| **pGT-L7** | Ah1, Ah2, Ah3, Ah4 |
| **pGT-L8** | Kh1, Kh2, Kh3 |

**Supplementary Table 3:** Full sequences of pGT vector parts

| **Cargo selection genes** | **Sequence** | **Notes** |
|---|---|---|
| Beta-lactamase (carbenicillin/ampicillin resistance) | ATGAGTATTCAACATTTCCGTGTCGCCCTTATTCCCTTTTTTGCGGCATTTTGCCTTCCTGTTTTTGCTCACCCAGAAACGCTGGTGAAAGTAAAAGATGCTGAAGATCAGTTG<br>GGTGCACGAGTGGGTTACATCGAACTGGATCTCAACAGCGGTAAGATCCTTGAGAGTTTTCGCCCCGAAGAACGTTTTCCAATGATGAGCACTTTTAAAGTTCTGCTATGTGGC<br>GCGGTATTATCCCGTATTGACGCCGGGCAAGAGCAACTCGGTCGCCGCATACACTATTCTCAGAATGACTTGGTTGAGTACTCACCAGTCACAGAAAAGCATCTTACGGATGGC<br>ATGACAGTAAGAGAATTATGCAGTGCTGCCATAACCATGAGTGATAACACTGCGGCCAACTTACTTCTGACAACGATCGGAGGACCGAAGGAGCTAACCGCTTTTTTGCACAAC<br>ATGGGGGATCATGTAACTCGCCTTGATCGTTGGGAACCGGAGCTGAATGAAGCCATACCAAACGACGAGCGTGACACCACGATGCCTGTAGCAATGGCAACAACGTTGCGCAAA<br>CTATTAACTGGCGAACTACTTACTCTAGCTTCCCGGCAACAATTAATAGACTGGATGGAGGCGGATAAAGTTGCAGGACCACTTCTGCGCTCGGCCCTTCCGGCTGGCTGGTTT<br>ATTGCTGATAAATCTGGAGCCGGTGAGCGTGGGTCTCGCGGTATCATTGCAGCACTGGGGCCAGATGGTAAGCCCTCCCGTATCGTAGTTATCTACACGACGGGGAGTCAGGCA<br>ACTATGGATGAACGAAATAGACAGATCGCTGAGATAGGTGCCTCACTGATTAAGCATTGGTAA | |
| CatP (chloramphenicol resistance) | ATGGTATTTGAAAAAATTGATAAAAATAGTTGGAACAGAAAAGAGTATTTTGACCACTACTTTGCAAGTGTACCTTGTACATACAGCATGACCGTTAAAGTGGATATCACACAA<br>ATAAAGGAAAAGGGAATGAAACTATATCCTGCAATGCTTTATTATATTGCAATGATTGTAAACCGCCATTCAGAGTTTAGGACGGCAATCAATCAAGATGGTGAATTGGGGATA<br>TATGATGAGATGATACCAAGCTATACAATATTTCACAATGATACTGAAACATTTTCCAGCCTTTGGACTGAGTGTAAGTCTGACTTTAAATCATTTTTAGCAACAGTTGTCGCAAA<br>GATACGCAACGGTATGGAAACAATCATAGAATGGAAGGAAAGCCAAATGCTCCGGAAAACATTTTTAATGTATCTATGATACCGTGGTCAACCTTCGATGGCTTTAATCTGAAT<br>TTGCAGAAAGGATATGATTATTTGATTCCTATTTTTACTATGGGGAAATATTATAAAGAAGATAACAAAATTATACTTCCTTTGGCAATTCAAGTTCATCACGCAGTATGTGAC<br>GGATTTCACATTTGCCGTTTTGTAAACGAATTGCAGGAATTGATAAATAGTTAA | Derived from pJIR750 plasmid from *Clostridium perfringens* |
| Tet (tetracycline resistance) | ATGAATATTATAAATTTAGGAATTCTTGCTCACATTGATGCAGGAAAAACTTCCGTAACCGAGAATCTGCTGTTTGCCAGTGGAGCAACGGAAAAGTGCGGCTGTGTGGATAAT<br>GGTGACACCATAACGGACTCTATGGATATAGAGAAACGTAGAGGAATTACTGTTCGGGCTTCTACGACATCTATTATCTGGAATGGTGTGAAATGCAATATCATTGACACTCCG<br>GGACACATGGATTTTATTGCGGAAGTGGAGCGGACATTCAAAATGCTTGATGGAGCAGTCCTCATCTTATCCGCAAAGGAAGGCATACAAGCGCAGACAAAGTTGCTGTTCAAT<br>ACTTTACAGAAGCTGCAAATCCCGACAATTATATTTATCAATAAGATTGACCGAGCCGGTGTGAATTTGGAGCGTTTGTATCTGGATATAAAAGCAAATCTGTCTCAAGATGTC<br>CTGTTTATGCAAAATGTTGTCGATGGATCGGTTTATCCGGTTTGCTCCCAAACATATATAAAGGAAGAATACAAAGAATTTGTATGCAACCATGACGACAATATATTAGAACGA<br>TATTTGGCGGATAGCGAAATTTCACCGGCTGATTATTGGAATACGATAATCGCTCTTGTGGCAAAAGCCAAAGTCTATCCGGTGCTACATGGATCAGCAATGTTCAATATCGGT<br>ATCAATGAGTTGTTGGACGCCATCACTTCTTTTATACTTCCTCCGGCATCGGTCTCAAACAGACTTTCATCTTATCTTTATAAGATAGAGCATGACCCCAAAGGACATAAAAGA<br>AGTTTTCTAAAAATAATTGACGGAAGTCTGAGACTTCGAGACGTTGTAAGAATCAACGATTCGGAAAAATTCATCAAGATTAAAAATCTAAAAACTATCAATCAGGGCAGAGAG<br>ATAAATGTTGATGAAGTGGGCGCCAATGATATCGCGATTGTAGAGGATATGGATGATTTTCGAATCGGAAATTATTTAGGTGCTGAACCTTGTTTGATTCAAGGATTATCGCAT<br>CAGCATCCCGCTCTCAAATCCTCCGTCCGGCCAGACAGGCCCGAAGAGAGAAGCAAGGTGATATCCGCTCTGAATACATTGTGGATTGAAGACCCGTCTTTGTCCTTTTCCATA<br>AACTCATATAGTGATGAATTGGAAATCTCGTTATATGGTTTAACCCAAAAGGAAATCATACAGACATTGCTGGAAGAACGATTTTCCGTAAAGGTCCATTTTGATGAGATCAAG<br>ACTATATACAAAGAACGACCTGTAAAAAAGGTCAATAAGATTATTCAGATCGAAGTGCCGCCCAACCCTTATTGGGCCACAATAGGGCTGACTCTTGAACCCTTACCGTTAGGG<br>ACAGGGTTGCAAATCGAAAGTGACATCTCCTATGGTTATCTGAACCATTCTTTTCAAAATGCCGTTTTTGAAGGGATTCGTATGTCTTGCCAATCCGGGTTACATGGATGGGAA<br>GTGACTGATCTGAAAGTAACTTTTACTCAAGCCGAGTATTATAGCCCGGTAAGTACACCTGCTGATTTCAGACAGCTGACCCCTTATGTCTTCAGGCTGGCCTTGCAACAGTCA<br>GGTGTGGACATTCTCGAACCGATGCTCTATTTTGAGTTGCAGATACCCCAAGCGGCAAGTTCCAAAGCTATTACAGATTTGCAAAAAATGATGTCTGAGATTGAAGACATCAGT<br>TGCAATAATGAGTGGTGTCATATTAAAGGGAAAGTTCCATTAAATACAAGTAAAGACTATGCATCAGAAGTAAGTTCATACACTAAGGGCTTAGGCATTTTTATGGTTAAGCCA<br>TGCGGGTATCAAATAACAAAAGGCGGTTATTCTGATAATATCCGCATGAACGAAAAAGATAAACTTTTATTCATGTTCCAAAAATCAATGTCATCAAAATAA | |
| Spec (spectinomycin resistance) | ATGCGCTCACGCAACTGGTCCAGAACCTTGACCGAACGCAGCGGTGGTAACGGCGCAGTGGCGGTTTTCATGGCTTGTTATGACTGTTTTTTTGGGGTACAGTCTATGCCTCGG<br>GCATCCAAGCAGCAAGCGCGTTACGCCGTGGGTCGATGTTTGATGTTATGGAGCAGCAACGATGTTACGCAGCAGGGCAGTCGCCCTAAAACAAAGTTAAACATCATGAGGGAA<br>GCGGTGATCGCCGAAGTATCGACTCAACTATCAGAGGTAGTTGGCGTCATCGAGCGCCATCTCGAACCGACGTTGCTGGCCGTACATTTGTACGGCTCCGCAGTGGATGGCGGC<br>CTGAAGCCACACAGTGATATTGATTTGCTGGTTACGGTGACCGTAAGGCTTGATGAAACAACGCGGCGAGCTTTGATCAACGACCTTTTGGAAACTTCGGCTTCCCCTGGAGAG<br>AGCGAGATTCTCCGCGCTGTAGAAGTCACCATTGTTGTGCACGACGACATCATTCCGTGGCGTTATCCAGCTAAGCGCGAACTGCAATTTGGAGAATGGCAGCGCAATGACATT<br>CTTGCAGGTATCTTCGAGCCAGCCACGATCGACATTGATCTGGCTATCTTGCTGACAAAAGCAAGAGAACATAGCGTTGCCTTGGTAGGTCCAGCGGCGGAGGAACTCTTTGAT<br>CCGGTTCCTGAACAGGATCTATTTGAGGCGCTAAATGAAACCTTAACGCTATGGAACTCGCCGCCCGACTGGGCTGGCGATGAGCGAAATGTAGTGCTTACGTTGTCCCGCATT<br>TGGTACAGCGCAGTAACCGGCAAAATCGCGCCGAAGGATGTCGCTGCCGACTGGGCAATGGAGCGCCTGCCGGCCCAGTATCAGCCCGTCATACTTGAAGCTAGACAGGCTTAT<br>CTTGGACAAGAAGAAGATCGCTTGGCCTCGCGCGCAGATCAGTTGGAAGAATTGTCCACTACGTGAAAGGCGAGATCACCAAGGTAGTCGGCAAATAA | |
| Kan (kanamycin resistance) | ATGAGCCATATTCAACGGGAAACGTCGAGGCCGCGATTAAATTCCAACATGGATGCTGATTTATATGGGTATAAATGGGCTCGCGATAATGTCGGGCAATCAGGTGCGACAATC<br>TATCGCTTGTATGGGAAGCCCGATGCGCCAGAGTTGTTTCTGAAACATGGCAAAGGTAGCGTTGCCAATGATGTTACAGATGAGATGGTCAGACTAAACTGGCTGACGGAATTT<br>ATGCCTCTTCCGACCATCAAGCATTTTATCCGTACTCCTGATGATGCATGGTTACTCACCACTGCGATCCCCGGAAAAACAGCATTCCAGGTATTAGAAGAATATCCTGATTCA<br>GGTGAAAATATTGTTGATGCGCTGGCAGTGTTCCTGCGCCGGTTGCATTCGATTCCTGTTTGTAATTGTCCTTTTAACAGCGATCGCGTATTTCGTCTCGCTCAGGCGCAATCA<br>CGAATGAATAACGGTTTGGTTGATGCGAGTGATTTTGATGACGAGCGTAATGGCTGGCCTGTTGAACAAGTCTGGAAAGAAATGCATAAACTTTTGCCATTCTCACCGGATTCA<br>GTCGTCACTCATGGTGATTTCTCACTTGATAACCTTATTTTTGACGAGGGGAAATTAATAGGTTGTATTGATGTTGGACGAGTCGGAATCGCAGACCGATACCAGGATCTTGCC<br>ATCCTATGGAACTGCCTCGGTGAGTTTTCTCCTTCATTACAGAAACGGCTTTTTCAAAAATATGGTATTGATAATCCTGATATGAATAAATTGCAGTTTCATTTGATGCTCGAT<br>GAGTTTTTCTAA | |

| | | |
|---|---|---|
| ermG (erythromycin resistance) | ATGAACAAAGTAAATATAAAAGATAGTCAAAATTTTATTACTTCAAAATATCACATAGAAAAAATAATGAATTGCATAAGTTTAGATGAAAAAGATAACATCTTTGAAATAGGT<br>GCAGGGAAAGGTCATTTTACTGCTGGATTGGTAAAGAGATGTAATTTTGTAACGGCGATAGAAATTGATTCTAAATTATGTGAGGTAACTCGTAATAAGCTCTTAAATTATCCT<br>AACTATCAAATAGTAAATGATGATATACTGAAATTTACATTTCCTAGCCACAATCCATATAAAATATTTGGCAGCATACCTTACAACATAAGCACAAATATAATTCGAAAAATT<br>GTTTTTGAAAGTTCAGCCACAATAAGTTATTTAATAGTGGAATATGGTTTTGCTAAAATGTTATTAGATACAAACAGATCACTAGCATTGCTGTTAATGGCAGAGGTAGATATT<br>TCTATATTAGCAAAAATTCCTAGGTATTATTTCCATCCAAAACCTAAAGTGGATAGCACATTAATTGTATTAAAAAGAAAGCCAGCAAAAATGGCATTTAAAGAGAGAAAAAAA<br>TATGAAACTTTTGTAATGAAATGGGTTAACAAAGAGTACGAAAAACTGTTTACAAAAAATCAATTTAATAAAGCTTTAAAACATGCGAGAATATATGATATAAACAATATTAGT<br>TTCGAACAATTTGTATCGCTATTTAATAGTTATAAAATATTTAACGGCTAA | |
| sfGFP | ATGCGTAAAGGCGAAGAGCTGTTCACTGGTTTCGTCACTATTCTGGTGGAACTGGATGGTGATGTCAACGGTCATAAGTTTTCCGTGCGTGGCGAGGGTGAAGGTGACGCAACT<br>AATGGTAAACTGACGCTGAAGTTCATCTGTACTACTGGTAAACTGCCGGTACCTTGGCCGACTCTGGTAACGACGCTGACTTATGGTGTTCAGTGCTTTGCTCGTTATCCGGAC<br>CACATGAAGCAGCATGACTTCTTCAAGTCCGCCATGCCGGAAGGCTATGTGCAGGAACGCACGATTTCCTTTAAGGATGACGGCACGTACAAAACGCGTGCGGAAGTGAAATTT<br>GAAGGCGATACCCTGGTAAACCGCATTGAGCTGAAAGGCATTGACTTTAAAGAAGACGGCAATATCCTGGGCCATAAGCTGGAATACAATTTTAACAGCCACAATGTTTACATC<br>ACCGCCGATAAACAAAAAAATGGCATTAAAGCGAATTTTAAAATTCGCCACAACGTGGAGGATGGCAGCGTGCAGCTGGCTGATCACTACCAGCAAAACACTCCAATCGGTGAT<br>GGTCCTGTTCTGCTGCCAGACAATCACTATCTGAGCACGCAAAGCGTTCTGTCTAAAGATCCGAACGAGAAACGCGATCACATGGTTCTGCTGGAGTTCGTAACCGCAGCGGGC<br>ATCACGCATGGTATGGATGAACTGTACAAATAA | |

| **Vector selection genes** | **Sequence** | **Notes** |
|---|---|---|
| Chlor (chloramphenicol resistance) | ATGGAGAAAAAAATCACTGGATATACCACCGTTGATATATCCCAATGGCATCGTAAAGAACATTTTGAGGCATTTCAGTCAGTTGCTCAATGTACCTATAACCAGACCGTTCAG<br>CTGGATATTACGGCCTTTTTAAAGACCGTAAAGAAAAATAAGCACAAGTTTTATCCGGCCTTTATTCACATTCTTGCCCGCCTGATGAATGCTCATCCGGAATTACGTATGGCA<br>ATGAAAGACGGTGAGCTGGTGATATGGGATAGTGTTCACCCTTGTTACACCGTTTTCCATGAGCAAACTGAAACGTTTTCATCGCTCTGGAGTGAATACCACGACGATTTCCGG<br>CAGTTTCTACACATATATTCGCAAGATGTGGCGTGTTACGGTGAAAACCTGGCCTATTTCCCTAAAGGGTTATTGAGAATATGTTTTTCGTCTCAGCCAATCCCTGGGTGAGT<br>TTCACCAGTTTTGATTTAAACGTGGCCAATATGGACAACTTCTTCGCCCCCGTTTTCACCATGGGCAAATATTATACGCAAGGCGACAAGGTGCTGATGCCGCTGGCGATTCAG<br>GTTCATCATGCCGTTTGTGATGGCTTCCATGTCGGCAGAATGCTTAATGAATTACAACAGTACTGCGATGAGTGGCAGGGCGGGGCGTAA | All vector selection markers not listed here are the same as the ones in the "Cargo selection genes" section. |

| **Origins of** | **Sequence** | **Notes** |
|---|---|---|
| R6K origin of replication | ATCCCTGGCTTGTTGTCCACAACCGTTAAACCTTAAAAGCTTTAAAAGCCTTATATATTCTTTTTTTTCTTATAAAACTTAAAACCTTAGAGGCTATTTAAGTTGCTGATTTAT<br>ATTAATTTTATTGTTCAAACATGAGAGCTTAGTACGTGAAACATGAGAGCTTAGTACGTTAGCCATGAGAGCTTAGTACGTTAGCCATGAGGGTTTAGTTCGTTAAACATGAGA<br>GCTTAGTACGTTAAACATGAGAGCTTAGTACGTGAAACATGAGAGCTTAGTACGTACTATCAACAGGTTGAACTGCTGATCTTC | Requires additional pir gene for replication |
| p15A origin of replication | AACAACTTATATCGTATGGGGCTGACTTCAGGTGCTACATTTGAAGAGATAAATTGCACTGAAATCTAGAAATATTTTATCTGATTAATAAGATGATCTTCTTGAGATCGTTTT<br>GGTCTGCGCGTAATCTCTTGCTCTGAAAACGAAAAAACCGCCTTGCAGGGCGGTTTTTCGAAGGTTCTCTGAGCTACCAACTCTTTGAACCGAGGTAACTGGCTTGGAGGAGCG<br>CAGTCACCAAAACTTGTCCTTTCAGTTTAGCCTTAACCGGCGCATGACTTCAAGACTAACTCCTCTAAATCAATTACCAGTGGCTGCTGCCAGTGGTGCTTTTGCATGTCTTTC<br>CGGGTTGGACTCAAGACGATAGTTACCGGATAAGGCGCAGCGGTCGGACTGAACGGGGGGTTCGTGCATACAGTCCAGCTTGGAGCGAACTGCCTACCCGGAACTGAGTGTCAG<br>GCGTGGAATGAGACAAACGCGGCCATAACAGCGGAATGACACCGGTAAACCGAAAGGCAGGAACAGGAGAGCGCACGAGGGAGCCGCCAGGGGGAAACGCCTGGTATCTTTATA<br>GTCCTGTCGGGTTTCGCCACCACTGATTTGAGCGTCAGATTTCGTGATGCTTGTCAGGGGGGCGGAGCCTATGGAAAAACGGCTTTGCCGCGGCCCTCTCACTTCCCTGTTAAG<br>TATCTTCCTGGCATCTTCCAGGAAATCTCCGCCCCGTTCGTAAGCCATTTCCGCTCGCCGCAGTCGAACGACCGAGCGTAGCGAGTCAGTGAGCGAGGAAGCGGAATATATCC | |
| oriV | AGCGGGCCGGGAGGGTTCGAGAAGGGGGGGCACCCCCCTTCGGCGTGCGCGGTCACGCGCCAGGGCGCAGCCCTGGTTAAAAACAAGGTTTATAAATATTGGTTTAAAAGCAGG<br>TTAAAAGACAGGTTAGCGGTGGCCGAAAAACGGGCGGAAACCCTTGCAAATGCTGGATTTTCTGCCTGTGGACAGCCCCTCAAATGTCAATAGGTGCGCCCCTCATCTGTCATC<br>ACTCTGCCCCTCAAGTGTCAAGGATCGCGCCCCTCATCTGTCAGTAGTCGCGCCCCTCAAGTGTCAATACCGCAGGGCACTTATCCCCAGGCTTGTCCACATCATCTGTGGGAA<br>ACTCGCGTAAAATCAGGCGTTTTCGCCGATTTGCGAGGCTGGCCAGCTCCACGTCGCCGGCCGAAATCGAGCCTGCCCCTCATCTGTCAACGCCGCGCCGGGTGAGTCGGCCCC<br>TCAAGTGTCAACGTCCGCCCCTCATCTGTCAGTGAGGGCCAAGTTTTCCGCGTGGTATCCACAACGCCGGCGGCCGCGGTGTCTCGCACACGGCTTCGACGGCGTTTCTGGCGC<br>GTTTGCAGGGCCATAGACGGCCGCCAGCCCAGCGGCGAGGGCAACCAGCCCGGTGAGCGTCGGAAAGGGCGCTGGAAGCCCCGTAGCGACGCGGAGAGGGGCGAGACAAGCCAAG<br>GGCGCAGGCTCGATGCGCAGCACGACATAGCCGGTTCTCGCAAGGACGAGAATTTCCCTGCGGTGCCCCTCAAGTGTCAATGAAAGTTTCCAACGCGAGCCATTCGCGAGAGCC<br>TTGAGTCCACGCTAGATCTATCTCA | Requires trfA protein for replication |

| | | |
|---|---|---|
| pBBR1 origin of replication | CTACGGGCTTGCTCTCCGGGCTTCGCCCTGCGCGGTCGCTGCGCTCCCTTGCCAGCCCGTGGATATGTGGACGATGGCCGCGAGCGGCCACCGGCTGGCTCGCTTCGCTCGGCC<br>CGTGGACAACCCTGCTGGACAAGCTGATGGACAGGCTGCGCCTGCCCACGAGCTTGACCACAGGGATTGCCCACCGGCTACCCAGCCTTCGACCACATACCCACCGGCTCCAAC<br>TGCGCGGCCTGCGGCCTTGCCCCATCAATTTTTTTAATTTTCTCTGGGGAAAAGCCTCCGGCCTGCGGCCTGCGCGCTTCGCTTGCCGGTTGGACACCAAGTGGAAGGCGGGTC<br>AAGGCTCGCGCAGCGACCGCGCAGCGGCTTGGCCTTGACGCGCCTGGAACGACCCAAGCCTATGCGAGTGGGGGCAGTCGAAGGCGAAGCCCGCCCGCCTGCCCCCGAGCCTC<br>ACGGCGGCGAGTGCGGGGGTTCCAAGGGGGCAGCGCCACCTTGGGCAAGGCCGAAGGCCGCGCAGTCGATCAACAAGCCCCGGAGGGGCCACTTTTGCCGGAGGGGAGCCGC<br>GCCGAAGGCGTGGGGGAACCCCGCAGGGGTGCCCTTCTTTGGGCACCAAAGAACTAGATATAGGGCGAAATGCGAAAGACTTAAAAATCAACAACTTAAAAAAGGGGGGTACGC<br>AACAGCTCATTGCGGCACCCCCCGCAATAGCTCATTGCGTAGGTTAAAGAAAATCTGTAATTGACTGCCACTTTTACGCAACGCATAATTGTTGTCGCGCTGCCGAAAAGTTGC<br>AGCTGATTGCGCATGGTGCCGCAACCGTGCGGCACCCTACCGCATGGAGATAAGCATGGCCACGCAGTCCAGAGAAATCGGCATTCAAGCCAAGAACAAGCCCGGTCACTGGGT<br>GCAAACGGAACGCAAAGCGCATGAGGCGTGGGCCGGGCTTATTGCGAGGAAACCCACGGCGGCAATGCTGCTGCATCACCTCGTGGCGCAGATGGGCCACCAGAACGCCGTGGT<br>GGTCAGCCAGAAGACACTTTCCAAGCTCATCGGACGTTCTTTGCGGACGGTCCAATACGCAGTCAAGGACTTGGTGGCCGAGCGCTGGATCTCCGTCGTGAAGCTCAACGGCCC<br>CGGCACCGTGTCGGCCTACGTGGTCAATGACCGCGTGGCGTGGGGCCAGCCCCGCGACCAGTTGCGCCTGTCGGTGTTCAGTGCCGCCGTGGTGGTTGATCACGACGACCAGGA<br>CGAATCGCTGTTGGGGCATGGCGACCTGCGCCGCATCCCGACCCTGTATCCGGGCGAGCAGCAACTACCGACCGGCCCCGGCGAGGAGCCGCCCAGCCAGCCCGGCATTCCGGG<br>CATGGAACCAGACCTGCCAGCCTTGACCGAAACGGAGGAATGGGAACGGCGCGGGCAGCAGCGCCTGCCGATGCCCGATGAGCCGTGTTTTCTGGACGATGGCGAGCCGTTGGA<br>GCCGCCGACACGGGTCACGCTGCCGCGCCGGTAG | Includes coding sequence of required replication protein |
| RSF1010 plasmid backbone | GCTCGACCAGGCGTACGCTTATGGGTGCCTTTCCGCAGCTTGGAACGCGGATGGAGAAGAGGAGCAACGCGATCTAGCTATCGCGGCCGCGATCAAGCAGGTGCGACAGACGTC<br>ATACTAGATATCAAGCGACTTCTCCTATCCCCTGGGAACACATCAATCTCACCGGAGAATATCGCTGGCCAAAGCCTTAGCGTAGGATTCCGCCCCTTCCCGCAAACGACCCCA<br>AACAGGAAACGCAGCTGAAACGGGAAGCTCAACACCCACTGACGCATGGGTTGTTCAGGCAGTACTTCATCAACCAGCAAGGCGGCACTTTCGGCCATCCGCCGCGCCCCACAG<br>CTCGGGCAGAAACCGCGACGCTTACAGCTGAAAGCGACCAGGTGCTCGGCGTGGCAAGACTCGCAGCGAACCCGTAGAAAGCCATGCTCCAGCCGCCCGCATTGGAGAAATTCT<br>TCAAATTCCCGTTGCACATAGCCCGGCAATTCCTTTCCCTGCTCTGCCATAAGCGCAGCGAATGCCGGGTAATACTCGTCAACGATCTGATAGAGAAGGGTTTGCTCGGGTCGG<br>TGGCTCTGGTAACGACCAGTATCCCGATCCCGGCTGGCCGTCCTGGCCGCCACATGAGGCATGTTCCGCGTCCTTGCAATACTGTGTTTACATACAGTCTATCGCTTAGCGGAA<br>AGTTCTTTTACCCTCAGCCGAAATGCCTGCCGTTGCTAGACATTGCCAGCCAGTGCCCGTCACTCCCGTACTAACTGTCACGAACCCCTGCAATAACTGTCACGCCCCCCTGCA<br>ATAACTGTCACGAACCCCTGCAATAACTGTCACGCCCCCAAACCTGCAAACCCAGCAGGGGCGGGGGCTGGCGGGGTGTTGGAAAAATCCATCCATGATTATCTAAGAATAATC<br>CACTAGGCGCGGTTATCAGCGCCCTTGTGGGGCGCTGCTGCCCTTGCCCAATATGCCCGGCCAGAGGCCGGATAGCTGGTCTATTCGCTGCGCTAGGCTACACACCGCCCCACC<br>GCTGCGCGGCAGGGGGAAAGGCGGGCAAAGCCCGCTAAACCCCACACCAAACCCCGCAGAAATACGCTGGAGCGCTTTTAGCCGCTTTAGCGGCCTTTCCCCCTACCCGAAGGG<br>TGGGGGCGCGTGTGCAGCCCCGCAGGGCCTGTCTCGGTCGATCATTCAGCCCGGCTCATCCTTCTGGCGTGGCGGCAGACCGAACAAGGCGCGGTCGTGGTCGCGTTCAAGGTA<br>CGCATCCATTGCCGCCATGAGCCGATCCTCCGGCCACTCGCTGCTGTTCACCTTGGCCAAAATCATGGCCCCCACCAGCACCTTGCGCCTTGTTTCGTTCTTGCGCTCTTGCTG<br>CTGTTCCCTTGCCCGCACCCGCTGAATTTCGGCATTGATTCGCGCTCGTTGTTCTTCGAGCTTGGCCAGCCGATCCGCCGCCTTGTTGCTCCCCTTAACCATCTTGACACCCCA<br>TTGTTAATGTGCTGTCTCGTAGGCTATCATGGAGGCACAGCGGCGGCAATCCCGACCCTACTTTGTAGGGGAGGGCGCACTTACCGGTTTCTCTTCGAGAAACTGGCCTAACGG<br>CCACCCTTCGGGCGGTGCGCTCTCCGAGGGCCATTGCATGGAGCCGAAAAGCAAAAGCAACAGCGAGGCAGCATGGCGATTTATCACCTTACGGCGAAAACCGGCAGCAGGTCG<br>GGCGGCCAATCGGCCAGGGCCAAGGCCGACTACATCCAGCGCGAAGGCAAGTATGCCCGCGACATGGATGAAGTCTTGCACGCCGAATCCGGGCACATGCCGGAGTTCGTCGAG<br>CGGCCCGCCGACTACTGGGATGCTGCCGACCTGTATGAACGCGCCAATGGGCGGCTGTTCAAGGAGGTCGAATTTGCCCTGCCGGTCGAGCTGACCCTCGACCAGCAGAAGGCG<br>CTGGCGTCCGAGTTCGCCCAGCACCTGACCGGTGCCGAGCGCCTGCCGTATACGCTGGCCATCCATGCCGGTGGCGGCGAGAACCCGCACTGCCACCTGATGATCTCCGAGCGG<br>ATCAATGACGGCATCGAGCGGCCCGCCGCTCAGTGGTTCAAGCGGTACAACGGCAAGACCCCGGAGAAGGGCGGGGCACAGAAGACCGAAGCGCTCAAGCCCAAGGCATGGCTT<br>GAGCAGACCGCGAGGCATGGGCCGACCATGCCAACCGGGCATTAGAGCGGGCTGGCCACGACGCCCGCATTGACCACAGAACACTTGAGGCGCAGGGCATCGAGCGCCTGCCC<br>GGTGTTCACCTGGGGCCGAACGTGGTGGAGATGGAAGGCCGGGGCATCCGCACCGACCGGGCAGACGTGGCCCTGAACATCGACACCGCCAACGCCCAGATCATCGACTTACAG<br>GAATACCGGGAGGCAATAGACCATGAACGCAATCGACAGAGTGAAGAAATCCAGAGGCATCAACGAGTTAGCGGAGCAGATCGAACCGCTGGCCCAGAGCATGGCGACACTGGC<br>CGACGAAGCCCGGCAGGTCATGAGCCAGACCCAGCAGGCCAGCGAGGCGCAGGCGGCGGAGTGGCTGAAAGCCCAGCGCCAGACAGGGGCGGCATGGGTGGAGCTGGCCAAAGA<br>GTTGCGGGAGGTAGCCGCCGAGGTGAGCAGCGCCGCGCAGAGCGCCCGGAGCGCGTCGCGGGGGTGGCACTGGAAGCTATGGCTAACCGTGATGCTGGCTTCCATGATGCCTAC<br>GGTGGTGCTGCTGATCGCATCGTTGCTCTTGCTCGACCTGACGCCCACTGACAACCGAGGACGGCTCGATCTGGCTGCGCTTGGTGGCCCGATGAAGAACGACAGGACTTTGCAG<br>GCCATAGGCCGACAGCTCAAGGCCATGGGCTGTGAGCGCTTCGATATCGGCGTCAGGGACGCCACCACCGGCCAGATGATGAACCGGGAATGGTCAGCCGCCGAAGTGCTCCAG<br>AACACGCCATGGCTCAAGCGGATGAATGCCCAGGGCAATGACGTGTATATCAGGCCCGCCGAGCAGGAGCGGCATGGTCTGGTGCTGGTGGACGACCTCAGCGAGTTTGACCTG<br>GATGACATGAAAGCCGAGGGCCGGGAGCCTGCCCTGGTAGTGGAAACCAGCCCGAAGAACTATCAGGCATGGGTCAAGGTGGCCGACGCCGCAGGCGGTGAACTTCGGGGGCAG<br>ATTGCCCGGACGCTGGCCAGCGAGTACGACGCCGACCCGGCCAGCGCCGACAGCCGCCACTATGGCCGCTTGGCGGGCTTCACCAACCGCAAGGACAAGCACACCCACCCGCCCC<br>GGTTATCAGCCGTGGGTGCTGCTGCGTGAATCCAAGGGCAAGACCGCCACCGCTGGCCCGGCGCTGGTCGCAGCAGGCTGGCCAGCAGATCGAGCAGGCCCAGCGGCAGCAGGAG<br>AAGGCCCGCAGGCTGGCCAGCCTCGAACTGCCCGAGCGGCAGCTTAGCCGCCACCGGCGCACGGCGCTGGACGAGTACCGCAGCGAGATGGCCGGGCTGGTCAAGCGCTTCGGT<br>GATGACCTCAGCAAGTGCGACTTTATCGCCGCGCAGAAGCTGGCCAGCCGGGGCCGCAGTGCCGAGGAAATCGGCAAGGCCATGGCCGAGGCCAGCCCAGCGCTGGCAGAGCGC<br>AAGCCCGGCCACGAAGCGGATTACATCGAGCGCACCGTCAGCAAGGTCATGGGTCTGCCCAGCGTCCAGCTTGCGCGGGCCGAGCTGGCACGGGCACCGGCACCCCGCCAGCGA<br>GGCATGGACAGGGGCGGGCCAGATTTCAGCATGTAGTGCTTGCGTTGGTACTCACGCCTGTTATACTATGAGTACTCACGCACAGAAGGGGGTTTTATGGAATACGAAAAAAGC<br>GCTTCAGGGTCGGTCTACCTGATCAAAAGTGACAAGGGCTATTGGTTGCCCGGTGGCTTTGGTTATACGTCAAACAAGGCCGAGGCTGGCCGCTTTTCAGTCGCTGATATGGCC<br>AGCCTTAACCTTGACGGCTGCACCTTGTCCTTGTTCCGCGAAGACAAGCCTTTCGGCCCCGGCAAGTTTCTCGGTGACTGATATGAAAGACCAAAAGGACAAGCAGACCGGCGA<br>CCTGCTGGCCAGCCCTGACGCTGTACGCCAAGCGCGATATGCCGAGCGCATGAAGGCCAAAGGGATGCGTCAGCGCAAGTTCTGGCTGACCGACGACGAATACGAGGCGCTGCG<br>CGAGTGCCTGGAAGAACTCAGAGCGGCGCAGGGCGGGGGTAGTGACCCCGCCAGCGCCTAACCACCAACTGCCTGCAAAGGAGGCAATCAATGGCTACCCATAAGCCTATCAAT<br>ATTCTGGAGGCGTTCGCAGCAGCGCCGCCACCGCTGGACTACGTTTTGCCCAACATGGTGGCCGGTACGGTCGGGGCGCTGGTGTCGCCCGGTGGTGCCGGTAAATCCATGCTG<br>GCCCTGCAACTGGCCGCACAGATTGCAGGCGGGCCGGATCTGCTGGAGGTGGGCGAACTGCCCACCGGCCCGGTGATCTACCTGCCCGCCGAAGACCCGCCCACCGCCATTCAT<br>CACCGCCTGCACGCCCTTGGGGCGCACCTCAGCGCCGAGGAACGGCAAGCCGTGGCTGACGGCCTGCTGATCCAGCCGCTGATCGGCAGCCTGCCCAACATCATGGCCCCGGAG<br>TGGTTCGACGGCCTCAAGCGCGCCGCGAGGGCCGCCGCCTGATGGTGCTGGACACGCTGCGCCGGTTCCACATCGAGGAAGAAAACGCCAGCGGCCCCATGGCCCAGGTCATC | Includes genes for mobilization proteins A, B, C and replication proteins A, B, C |

| | | |
|---|---|---|
| RCR | TCCGCCGCCCTAGACCTAGTGTCATTTTATTTCCCCCGTTTCAGCATCAAGAACCTTTGCATAACTTGCTCTATATCCACACTGATAATTGCCCTCAAACCATAATCTAAAGGC<br>GCTAGAGTTTGTTGAAACAATATCTTTTACATCATTCGTATTTAAAATTCCAAACTCCGCTCCCCTAAGGCGAATAAAAGCCATTAAATCTTTTGTATTTACCAAATTATAGTC<br>ATCCACTATATCTAAGAGTAAATTCTTCAATTCTCTTTTTTGGCTTTCATCAAGTGTTATATAGCGGTCAATATCAAAATCATTAATGTTCAAAATATCTTTTTTGTCGTATAT<br>ATGTTTATTCTTAGCAATAGCGTCCTTTGATTCATGAGTCAAATATTCATATGAACCTTTGATATAATCAAGTATCTCAACATGAGCAACTGAACTATTCCCCAATTTTCGCTT<br>AATCTTGTTCCTAACGCTTTCTATTGTTACAGGATTTCGTGCAATATATATAACGTGATAGTGTGGTTTTTTATAGTGCTTTCCATTTCGTATAACATCACTACTATTCCATGT<br>ATCTTTATCTTTTTTTTTCGTCCATATCGTGTAAAGGACTGACAGCCATAGATACGCCCAAACTCTCTAATTTTTCCTTCCAATCATTAGGAATTGAGTCAGGATATAATAAAAA<br>TCCAAAATTTCTAGCTTTAGTATTTTTAATAGCCATGATATAATTACCTTATCAAAAACAAGTAGCGAAAACTCGTATCCTTCTAAAAACGCGAGCTTTCGCTTATTTTTTTTG<br>TTCTGATTCCTTTCTTGCATATTCTTCTATAGCTAACGCCGCAACCGCAGATTTTGAAAAACCTTTTTGTTTCGCCATATCTGTTAATTTTTTATCTTGCTCTTTTGTCAGAGA<br>AATCATAACTCTTTTTTTCGATTCTGAAATCACCATTTAAAAAACTCCAATCAAATAATTTTATAAAGTTAGTGTATCACTTTGTAATCATAAAAACAACAATAAAGCTACTTA<br>AATATAGATTTATAAAAAACGTTGGCGAAAACGTTGGCGATTCGTTGGCGATTGAAAAACCCCTTAAACCCTTGAGCCAGTTGGGATAGAGCGTTTTTGGCACAAAAATTGGCA<br>CTCGGCACTTAATGGGGGGTCGTAGTACGGAAGCAAAATTCGCTTCCTTTCCCCCCATTTTTTTCCAAATTCCAAATTTTTTTCAAAAATTTTCCAGCGCTACCGCTCGGCAAA<br>ATTGCAAGCAATTTTTAAAATCAAACCCATGAGGGAATTTCATTCCCTCATACTCCCTTGAGCCTCCTCCAACCGAAATAGAAGGGCGCTGCGCTTATTATTTCATTCAGTCAT<br>CGGCTTTCATAATCTAACAGACAACATCTTCGCTGCAAAGCCACGCTACGCTCAAGGGCTTTTACGCTACGATAACGCCTGTTTTAACGATTATGCCGATAACTAAACGAAATA<br>AACGCTAAAACGTCTCAGAAACGATTTTGAGACGTTTTAATAAAAAATCGCCTAGTGC | |

| **Transposon inverted repeat sequences** | **Sequence** | **Notes** |
|---|---|---|
| Himar | ACAGGTTGGATGATAAGTCCCCGGTCT | |
| Tn5 | CTGTCTCTTATACACATCT | |

| **Regulatory sequences (5' UTRs, incl. promoter and RBS)** | **Sequence** | **Notes** |
|---|---|---|
| 1 | GATTGCATTAGGTTTTAGTTTCTTGTATAATGCTTAATGTTGGTCACTGACAGGCTACGATACGGAAGGTTGCTCACGCCCGGCCCCTTTGCCATGGCTAGTGTGTGGAAATTT<br>CCGAGGAGCAAGTCTATTTCCAAAAATGGGCGAAAAAGGAGGTAATACA | From *Bacillus cellulosilyticus* |
| 2 | GGGAGAGCTTCAACGGCGCTTCTACCCATTTGCTTGGAAAGGATGAGGAGCAGGAAGAAATTCCGTCCCCAATGCGACGGCCCTTTACATCCATGTTGTTTGATAGTATAATGG<br>ATACGGATTGACCAAATTGTTCATTTAGTCAGTTTGAAGGATGAGGAGT | From *Geobacillus sp.* |
| 3 | GTGAAGGATACGGCTGCGGCACTTCGACATCGCCCCATGTGGCGGCTTTGAACTGGGCTTATGAAACGCGTTCACAACCTTTTTTGACCATCGGCGCGAACGTGGTATCATGCG<br>TTCAGCTTTTGCCCATACATACTACGTGCTCAATCTAGGAGGATTTCATAC | From *Eggerthella lenta* |
| 4 | CTCTAGAGTAGTAGATTATTTTAGGAATTTAGATGTTTTGTATGAAATAGATGCTTCGTATGGAATTAATGAAATTTTTAGTCAGGTAAAAAAGGTAATAGGAGAATATT | From Segmented Filamentous Bacteria (SFB) |
| 5 | GTTTTAAATGATGAAAAGAAATATTTAGGGAAGATTGTTTCGACGCGAATTGTTGATCTGGAAAATGATCACCTTATCGGACAAGCTTTAAAATAGGAGGATATAAAAAT | From Segmented Filamentous Bacteria (SFB) |
| 6 | ATAAGGATTCTTTAAAGAGAGATATAGTTATGTCAAAGACTGTAGAATTTTTAGTAAATCAAAATAAAAAAAGAGGTATTAAATAGAGTGTATTTTAAAGGAGGAGACTT | From Segmented Filamentous Bacteria (SFB) |
| 7 | AAACACCAATAAAATTAGAATATTTAGGAGCGACTTTAAAAAAGTTTAATAAGAATTGTTTATGAGATATTTTTATTATATTTAAACTCAATTTAAAGTAGGGAGAATAG | From Segmented Filamentous Bacteria (SFB) |
| 8 | GCAAGTGTTCAAGAAGTTATTAAGTCGGGAGTGCAGTCGAAGTGGGCAAGTTGAAAAATTCACAAAAATGTGGTATAATATCTTTGTTCATTAGAGCGATAAACTTGAATTTGA<br>GAGGGAACTTAG | From *Clostridium perfringens* |

**Primers for PCR validation of transconjugants**

| | |
|---|---|
| 16S forward | AGAGTTTGATCATGGCTCAG |
| 16S reverse | CGGTTACCTTGTTACGACTT |
| GFP validation primer forward | ATGCGTAAAGGCGAAGAGC |
| GFP validation primer reverse | TTATTTGTACAGTTCATCCATACCATG |
| Beta-lactamase validation primer forward | ATGAGTATTCAACATTTCCGTGTC |
| Beta-lactamase validation primer reverse | TTACCAATGCTTAATCAGTGAGGC |

| | |
|---|---|
| pGT-B backbone validation primer forward | CTGCGCAACCCAAGTGCTAC |
| pGT-B backbone validation primer reverse | CAGTCCAGAGAAATCGGCATTCA |
| pGT-Ah backbone validation primer forward | ATGGAAAAAAAGGAATTTCGTGTTTTG |
| pGT-Ah backbone validation primer reverse | TTATTCAACATAGTTCCCTTCAAGAGC |
| CarbR internal forward primer | CCGAAGAACGTTTTCCAATGATGAG |
| GFP internal reverse primer | TGATTGTCTGGCAGCAGAAC |
| catP (chlor resistance) validation primer forward | GCAAGTGTTCAAGAAGTTATTAAGTC |
| catP (chlor resistance) validation primer reverse | TTAACTATTTATCAATTCCTGCAATTCG |
| tetQ (tet resistance) internal forward primer | TGGAAGAACGATTTTCCGTAAAGGT |

**Supplementary Table 4. List of isolated transconjugant strains**

Strains are grouped by the mouse cohort they were isolated from and the vector library used in the study.
All family-level assignments were made using the RDP classifier with confidence >0.89.

**Taconic mice *in situ* conjugations**

| Vector library | Family | Genus | Genus-level assignment confidence | Vector received | Antibiotic resistance |
|---|---|---|---|---|---|
| pGT-L6 | Erysipelotrichaceae (Clostridium XVIII) | *Erysipelotrichaceae incertae sedis* | 1 | pGT-Ah | carb |
| | Bacteroidaceae | *Bacteroides* | 1 | pGT-Ah | carb |
| | Enterobacteriaceae | *Proteus* | 1 | pGT-Ah | carb |
| | Enterobacteriaceae | *Citrobacter* | 1 | pGT-Ah | carb |
| | Enterococcaceae | *Enterococcus* | 1 | pGT-Ah | carb |
| | Lachnospiraceae | *Hungatella* | 0.72 | pGT-Ah | carb |
| | Lachnospiraceae | *Clostridium XIVa* | 1 | pGT-Ah | carb |
| | Lachnospiraceae | *Anaerostipes* | 1 | pGT-Ah | carb |
| | Lachnospiraceae | *Moryella* | 0.19 | pGT-Ah | carb |
| | Lachnospiraceae | *Blautia* | 1 | pGT-Ah | carb |
| | Lactobacillaceae | *Lactobacillus* | 1 | pGT-Ah | carb |
| | Peptostreptococcaceae | *Clostridium XI* | 1 | pGT-Ah | carb |
| pGT-L3 | Coriobacteriaceae | *Eggerthella* | 1 | pGT-S | tet |
| | Enterobacteriaceae | *Cosenzaea* | 0.73 | pGT-S | tet |
| | Enterobacteriaceae | *Proteus* | 1 | pGT-S | tet |
| | Enterococcaceae | *Enterococcus* | 1 | pGT-S | carb |
| | Lachnospiraceae | *Lactonifactor* | 0.7 | pGT-S | tet |
| | Lachnospiraceae | *Clostridium XIVa* | 1 | pGT-S | carb |
| | Lachnospiraceae | *Hungatella* | 0.71 | pGT-S | tet |
| | Lachnospiraceae | *Clostridium XIVa* | 1 | pGT-S | tet |
| | Lachnospiraceae | *Blautia* | 1 | pGT-S | tet |
| | Lachnospiraceae | *Robinsoniella* | 0.42 | pGT-S | tet |
| | Lachnospiraceae | *Eisenbergiella* | 0.99 | pGT-S | tet |
| | Lactobacillaceae | *Lactobacillus* | 0.89 | pGT-S | tet |

**Charles River mice*in situ* conjugations**

| Vector library | Family | Genus | Genus-level assignment confidence | Vector received | Antibiotic resistance |
|---|---|---|---|---|---|
| pGT-L6 | Bacteroidaceae | *Bacteroides* | 1 | pGT-Ah | carb |
| | Enterococcaceae | *Enterococcus* | 1 | pGT-Ah | carb |
| | Lactobacillaceae | *Lactobacillus* | 1 | pGT-Ah | carb |
| | Porphyromonadaceae | *Parabacteroides* | 1 | pGT-Ah | carb |

***In vitro* conjugations**

| Vector library | Family | Genus | Genus-level assignment confidence | Vector received | Antibiotic resistance |
|---|---|---|---|---|---|
| pGT-L7 | Enterobacteriaceae | *Proteus* | 1 | pGT-Ah | carb |
| | Enterococcaceae | *Enterococcus* | 1 | pGT-Ah | carb |
| | Enterobacteriaceae | *Escherichia* | 1 | pGT-Ah | carb |
| | Lactobacillaceae | *Lactobacillus* | 1 | pGT-Ah | carb |
| | Bacillaceae | *Bacillus* | 1 | pGT-Ah | carb |
| pGT-L3 | Enterobacteriaceae | *Escherichia* | 1 | pGT-S | carb |
| | Enterococcaceae | *Enterococcus* | 1 | pGT-S | carb |
| | Enterobacteriaceae | *Proteus* | 1 | pGT-S | carb |
| pGT-L5 | Enterobacteriaceae | *Cosenzae* | 0.89 | pGT-Ah | chl |
| | Enterobacteriaceae | *Proteus* | 1 | pGT-Ah | chl |
| | Burkholderiaceae | *Cupriavidus* | 1 | pGT-Ah | chl |
| pGT-L4 | Enterobacteriaceae | *Escherichia* | 1 | pGT-Ah | carb |
| | Enterobacteriaceae | *Proteus* | 1 | pGT-Ah | carb |
| | Enterobacteriaceae | *Escherichia* | 1 | pGT-B | carb |