**Table S3: primers used in this study. a**

|  |  |  |
| --- | --- | --- |
| Gene deletions or insertions | | |
| stfR::cat | CGCCGTCACATGCCGGGACCATTACCGTGTATGAAGATTCCAACTTTTGGCGAAAATGAG | |
| GTTGATGCCGTTCCTGCGCTGGAAGACGCTGACTGAGCCGACGGGAACTTCATTTAAATGGCG | |
| tfaQ::cat | GTTATTTATTTCTGAACTCGGTCCGTTACCGGAAAATGTTACCTGTCCTCCTTAGTTCCTATTCC | |
| TATCCTTCACCCAGGCTGTGCCGTTCCACTTCTGAAACTCCCCTTCTGCCACTCATCGCAGTAC | |
| redβ::FRT | GATCCCGGTACGCTGCAGGATAATGTCCGGTGTCATGCTGTCCTCCTTAGTTCCTATTCC | |
| CATTGCTCACCACCAGGTTGATATTGATTCAGAGGTATAAAACGAGTGTAGGCTGGAGCTGCTTC | |
| exo::FRT | CTTGGATTCCTGAAACAGAAAGCCGCAGAGCAGAAGGTGGCAGCATGAACACAGGAACACTTAACGGC | |
| CCTACCCGGATATTATCGTGAGGATGCGTCATCGCCATTGCTCCCCTGTAGGCTGGAGCTGCTTCG | |
| orf::FRT | GGGAGAGGGAAGTCATGAAAAAACTAACCTTTGAAATTCGGCAGCATTACACGTCTTGAG | |
| CATGCAGCCCTGTCTCCCCATCTCGCTTTCCACTCCAGAGCCCATGGTCCATATGAATATCCTCC | |
| rap::FRT | GATGATGGCTAAACCAGCGCGAAGACGATGTAAAAACGATGGCAGCATTACACGTCTTGAG | |
| GTCATGCGGCCTCACTTCTGCTATTTCGCAGGTCTTTGAGCCATGGTCCATATGAATATCCTCC | |
| Φ80-*ble* | CAACAAAGAGATAAATCCAAGCCCGTTTTGTACGGGCTGTatgaccatgattacgccaag | |
| ATGCAGGTAACGCAGCCAGAATTGTTGATTGGCTGATCGTTAAGTTGGGTAACGCCAGG | |
| yecD::cat | CTTCCACGCTACGCACACGGGCGATGCGCGGGTAGATATGGTTGACAACTTTTGGCGAAAATGAG | |
| AAGACGCCTGTAGTGCCGCCAGCGCCGAGCAGCACAATAACAGTAGGAACTTCATTTAAATGGCG | |
| nohD::cat | ATTGAGTACGAACGCCATCGACTTACGCGTGCGCAGGCCGATGCACAGGACAACTTTTGGCGAAAATGAG | |
| CACCTGCGATCCGCGACAGCACGAAAGTACAGAATGCGGTTTCCACCACTGGAACTTCATTTAAATGGCG | |
| ybcN::cat | CTCCAGCTTGGGTAAAAGATGCTCTCAAACACACATATCTCGGTTATGAAGGAACTTCATTTAAATGGCG | |
| TCGGAGGTATGGCGTAACGACTGGATAGTGGTGATATCACCGGTTACGACACAACTTTTGGCGAAAATGAG | |
| Detection of excision of defective prophages | | |
| Rac | CTCCAGCATGGTATAGCTGTCTTTAC | described in [82] |
| CAGATTTCTTATGCTGGGCGTTCCG |
| Qin | CGACAATACGCGCCACATAA |
| AACGGCGAGTAAGTAGTACGC |
| Dlp12 | CAAAAGCCATTGACTCAGCAAGG |
| ACGGATAAGACGGGCATAAATGA |
| Activity of oriJ (rac), semi-qPCR | | |
| *gyrB* | GTCGAAGTGGCGTTGCAGTG | described in ([Fogg et al, 2010](#_ENREF_1)) b |
| AGCCTGCCAGGTGAGTACCG |
| λ *Q* | GAGTGCGGAAGATGCAAAGG |
| TTAACAGTGCGTGACCAGG |
| *oriJ* | GTTGAGTCAGGCGAAATCC | |
| CCACGGTAACCACAATCAC |  |
| Identification of recombination junctions in λ hybrids | | |
| Qin | GCTCATGCCCATTCTTTC | |
| ACGTTTCTGCGGCATAT | |
| Rac | ACTGGCGTACTGACGGATTC (rac 1) | |
| ACGTTTCTGCGGCATAT (rac 2) | |
|  | ACGTTTCTGCGGCATATC (rac 3) | |
| Dlp12 | TTAGCATCCGCCCATTCAAC | |
| TGGTCAGTTCGAGCATAAGG | |
| Construction of *recET* and *exo/erf* λ | | |
| recE | CGAGCTCCCGCTCGAGCTTTTGCGATTGGTGGTTGC | |
| GGAGGATGAAACTGGCGAAGTCGCA | |
| recT | CGAGCTCCATTACACCGCCAGGCTGAA | |
| CCGCTCGAGGGAGGCTGGGCTAAGGAATATGCAA | |
| exo/erf | GTTTGCCGCATGTGGCTTTG | |
| GGAGGCCATCAACAACGAAGCCC TG | |
| pKD4 | TGATTGCGCCTACCCGGATATTATCGTGAGGATGCGTCATTCCTCCTTAGTTCCTATTCC | |
| CATTGCTCACCACCAGGTTGATATTGATTCAGAGGTATAATGCAGATTGCAGCAT TACAC | |

1. Unless specified, primers were designed for this study.
2. Fogg PC, Allison HE, Saunders JR, McCarthy AJ (2010). *J Virol* **84:** 6876-6879