

Supplementary Table 1. Primers used in this study

| Primers used for knockout plasmid construction | | | |
|--|---|--|--|
| Genotype | Target (flr) | Inverse | Knockout (Koflr) |
| <i>prtA</i> | B1183f-ACAGAACATAACATTGATTTAGC B1184r-CAACATTTTTGTTAGCAGA | B1235-ATGCAATCCGCTAGCTCGTCCATAATTATTAATTCA B1236-ATGCAATCCGCTAGCATGCGAATCAAAGATATTAATA | B1282-CACGAACTACATACAAATCTGA B1283-GCAATGGCTTGTGTTTTTG |
| <i>recB</i> | B1185f-TTTTGTCTTTCTAGTAATTTGC B1186r-ACTATTAATCAACAACACAATAG | B1452-TCTTTGGTGATTTTGGCA B1453-AACAATAAAATTTTGCTTGC | B1284-GCAATTTAGCTCTGTGTTGCTC B1285-CCTATGAACAACACCTTGAGATC |
| <i>recG</i> | B1187f-CCTTTCGAAATCTGCTT B1188r-TTAATCGAAATTTGGCAG | B1239-ATGCAATCCGCTAGCTATCTCATCAATAGAAATTTTTG B1240-ATGCAATCCGCTAGCGTTTTGCAATTAACACTTTTTG | B1286-TCTAAGCCAAATGAATGATGCT B1287-GGTGTTCGAGACATTAAGC |
| <i>mag</i> | B1223f-CGCGCTTACAGAAATAATTT B1224r-AGCTATGATCCCTTAAGCATAT | B1303-CATTTCTAGCTAGCAAGAGTTTTGAATCTAGATTTTA B1304-CATTTCTAGCTAGCATACACATAAGAATATCTCCCTATT | B1388-TGTAATAAAAGCTCATTATTC B1389-ATAATATATGATGATATATATGTTTT |
| <i>rep</i> | B1299f-TCCTCTTAGTAATCTTAGGTTT B1300r-CTTCAACAGCAATAAAAAATAC | B1309-CATTTCTAGCTAGCGCAGGAATTTTGAAA B1310-CATTTCTAGCTAGCTTTTTAACAAAGTTAATGCTAGTTC | B1394-GGGCTAATTATAACAACAT B1395-CCCTCTTGGAACTTAAT |
| <i>BBG32</i> | B1369f-CTGTTTGTAGCTTTCTAAGAA B1370r-CCCTTTGTAAATCTTTTCTACATA | B1386-CATTTCTAGCTAGCATTACTACAAAATTTGATTC B1387-CATTTCTAGCTAGCTATAAAAATTTTCGAATTTGAAA | B1429-GTTGGTAAACGGCTTTT B1430-TAAGCGTCCAAGTTCACCT |
| <i>dnaB</i> | B1361f-CTAATACTGTGTGCTTGT B1362r-GCCTTTAGCAGCTTTTTC | B1378-CATTTCTAGCTAGCGCATTTTATCTGGACAAGA B1379-CATTTCTAGCTAGCAGCATGATAGAGGTTCTACTAG | B1423-TATTTGAACTTTAAAGCTATCA B1424-AAAGTATTGCAGAACGTG |
| <i>recJ</i> | B1215f-GATTTTGGACTTAATGTGAGTT B1216r-TTGGAAAGATAGCATCTATTG | B1225-ATGCAATCCGCTAGCAGTTTTGTGAGTTAATTAGGG B1226-ATGCAATCCGCTAGCGCTTGAAAAGCAGATATTG | B1288-GCATAAACATAAACACAAATGATATTAGTG B1289-CTTCCCGTTGAGTTTTAGTATTGG |
| <i>nucA</i> | B1301f-TCGATTTTACGAAAATTTG B1302r-GGCAAGATCAAAAATAATGT | B1311-CATTTCTAGCTAGCTTTTAAACAAGTTAATGCTAGTTC B1312-CATTTCTAGCTAGCAAAAACACGCAATCTTG | B1396-TTAAAGAAGTACCAAAATCTTT B1397-AAATTTTGAATCAAGTTTTTC |
| <i>recC</i> | B1365f-AATTTGGGCTTCTAGTTTAA B1366r-AAACTATGAATCTACTCTTTGTTAAAG | B1382-CATTTCTAGCTAGCGCTGAAGAAAGCTTTGAA B1383-CATTTCTAGCTAGCTGTTGTTACTTACTAGTAGGTCAAA | B1425-GATAAAAATCAATTTTTATTTTCAT B1426-TGAAAAAATTTAATATATCAACATC |
| <i>mutS1</i> | B1067f-GGGATCTTGAGAAATACTCTCCTAAAG B1068r-CAAGATCGTTGCCCTGCTTTTC | B1069-GCGCTAGCTAGCTAGGGCGCATATAGGCTCTTTTGT B1070-GCGCTAGCTAGCTAGGTCTCTTCCCAITGGCAGTTTTGC | B1140-CGAGGCTAGATCATGTTGAATTTT B1141-TAGTCTCAACAACAGGATGCC |
| <i>mutS2</i> | B1217f-CTAACCTGTCTCTCTATTTTAAA B1218r-AAAAAATTTGCTTAATGAATTTG | B1227-ATGCAATCCGCTAGCTAGTATGATGATTTAGAGACAATGC B1228-ATGCAATCCGCTAGCTTAATACATTTGAAATCTCGG | B1290-CGCATAGAAGCATTAAACA B1291-CACACCCTCTTTGTTAAAGG |
| <i>mutL</i> | B1295f-TTAATAATAGATAATGGAAAGC B1296r-AATAGTTGCGTATAAGTCAGATT | B1305-CATTTCTAGCTAGCATTTTCTATTACATTTCCATATACA B1306-CATTTCTAGCTAGCACACAAGCAATATTGACC | B1390-AATAAATTTAGGGCTTTAAAAAAA B1391-TTTTGTGTTGCTCGTTTA |
| <i>mid</i> | B1297f-GCATAAGGGTTAATCTTT B1298r-AGAAGCCGGTAAAAATATA | B1307-CATTTCTAGCTAGCTTTAAAAATTTTCCAATCAAA B1308-CATTTCTAGCTAGCTTATTCTCTTTATTGCCATAAT | B1392-TCITTTTTTAAATGATTTGAAATG B1393-AAACAAGCTCTCTTAAAAAG |
| <i>sbcC</i> | B1221f-ATTGATCGATTAGAAATGATC B1222r-TTTGCAAAAAGACAGACTAT | B1231-ATGCAATCCGCTAGCAAAATGCTTTTAAATCTCATCA B1232-ATGCAATCCGCTAGCAGATTGATGGAAAAATTT | B1292-TTGTCCAAACTTTTAAATGATGAGTTG B1293-TCAAACCTCAAAGCATTAAACCTC |
| <i>sbcD</i> | B1367f-GTGAGCAATTAATAATTCGT B1368r-TTATTTATCTCATATTCCACC | B1384-CATTTCTAGCTAGCTTCTCTGTAGGCAATTTTC B1385-CATTTCTAGCTAGCTGCATATTCATTTATGAGA | B1421-TTTTTAGAAAAACAGTATAAAGG B1422-TAGGACTCCTGAATTAACA |
| <i>ruvA</i> | B1359f-ATAAATCTCCATGGCAAT B1360r-TCCATGTATAGCTTTATGTGA | B1376-CATTTCTAGCTAGCTTGAATCCACTGGTCTT B1377-CATTTCTAGCTAGCTAACTCAACTTTGTCTGACAA | B1419-CTCGCTAATTAACAAAAGC B1420-AAATGAATTTAAACTTTTTTGG |
| <i>ruvB</i> | B1200f-CGAAAAATAGTATAAGCTTTTTAAGCTC B1201r-CTTTGGTTTTCAATTAAGACCATCC | B1202-GCGCTAGCTAGCTAGGCTCAAGAGGGACTCCTCGT B1203-GCGCTAGCTAGCTAGCCTCTCTCATCAAGACCTGTT | B1249-CATAGGCTCAGACCAATAATAGAAG B1250-TTCTCTTTATATCTCAACAAGCTC |
| <i>recA</i> | B1400f-TCGATCAATCCCTAATA B1401r-CAGGCAAGATGAATCTTA | B1402-CATTTCTAGCTAGCTTGAAGAACAAGGTTGC B1403-CATTTCTAGCTAGCACCTCTTTTTGCACCTC | B1431-TCTTAACCTTAATCTTATGGCC B1432-GGGATAGCTGCTTTTTATT |
| <i>hbbU</i> | B1444f-CAACAACATTTAACCACCTTTTT B1445r-TGTTATTTATGAGTTTAGGAAAG | B1446-CATTTCTAGCTAGCATCAGCTTGGCATTTTT B1447-CATTTCTAGCTATTCAAAGATATTTGATCAACA | B1448-GATCTAGGACCTTAACATACTCC B1449-TTAAAAATAAATCTGAAATTAGAAA |
| <i>nth</i> | B1486f-GGCCAAATTTCTCATAAAAATT B1487r-GCATTGATTCATGGATGGATT | B1488-CTAGCTAGCTAGCCGCAATATTGTAGATACTCAT B1489-CTAGCTAGCTAGCCAAATATCTGTGTTCTTGCA | B1501-CTCCATACCTTTTTGAAAGGTACG B1502-GATCCAAAGATAACATTTGCCG |

| Primers used for plasmid content screen [†] | | |
|--|---|-------------------------------------|
| Plasmid | Forward | Reverse |
| lp21 | B421-TGTGGTGTCTAAAACCCCAAGCGT | B422-TTGTTCCTAATTGCTCTGAATTGATCC |
| lp28-2 | B423-CCCTCATCAAGTTTTTCCATGTGTTTTT | B424-AGGTGGCCTTTCCGAGCTGTACCTTAC |
| lp28-3 | B425-AAACACTATCTAAATGTCCCCACAA | B426-GTGGAAAGGTTGTTATGGTCAATTTT |
| lp25 | B427-AGAATTTATGTCGGTGGCGTTGT | B428-ATTAAGGCGCCTTTTCTTGTGT |
| lp28-1 | B429-CGGGGATCCAGCAAGTTGCTGATAAGGACGACCC | B430-ACGCGAGTTCACAGAACCTGTACTATCT |
| lp56 | B431-ACTATTAAAGACGAGCAATAAAAAGTCCA | B432-GACGAAGCAAGAAAGGATTTGGATCACC |
| cp26 | B433-ATAGCCATCCAGACATTAACCCGCT | B434-AGTCCCAAATAACAGCACTGCGGA |
| lp17 | B435-ACTGCAATCTGCCAAGCTACATAATCT | B436-AAGGTAAGGACGGTTGCTACATGATT |
| cp32-9 | B437-TATCAAAAAAGTGTGTTTTATAG | B438-TAATCTCAAAATTTCTCTTTATG |
| lp38 | B439-AGCAGGCAGAACAAAACATGCAAAAAGTCTG | B440-TCCAAGCTATTTCTACGGCTCTTTAGC |
| cp32-3 | B441-GCAAGTTCCACGATAACACACCCGAT | B442-TTTTCATATCCCTCCTAGCTTTATTGCC |
| lp36 | B443-TTCTTATCCCTGACTTTTCACTTTTGAGG | B444-TCCTTTACTTATGTTTTTACTTTCTTGTGT |
| cp9 | B445-GGACTGTTTACTCCGCTGATAGAGC | B446-CCTTAATGATGAGGCCGATGAAGTTGC |
| cp32-8 | B447-GAAGATTTAAACAAAAAATTTGCG | B448-GTAATCACTTCTTTTACCATCG |
| lp54 | B449-GCAAAAATGTTAGCAGCCTTGACGAGAAA | B450-TAGATCGTACTTGGCTCTTTGTTTTT |
| cp32-1 | B451-ACGATAGGGTAATCAAAAAAGG | B452-AGTTCACTAATAAAAATCCCGCT |
| cp32-2/7 | B453-GGAATGATTAATTTGATAATTCAG | B454-GCGAACTAAATAGTGCCTTATGGG |
| cp32-6 | B455-GACTTTACATAGTATAAATGCTTTTGG | B456-TCCTGTTTTATAAAAATAGTAGG |
| lp28-4 | B457-TCACCTCAGCTAATCTATTTATCGACAC | B458-AAGCGCGGAGTTTTCCGGCTG |

| Primers used for gentamycin resistance cassette cloning and transformant screens and sequencing | |
|---|--|
| B348-CGCAGCAGCAACGATGTTAC | |
| B349-CTTGCACGTAGATCACAATAGC | |
| B1281-ATCGTCTATGCTTAAAGCTCTT | |
| B415-CATTTCTAGCTAGCGGCAATGGCGCGCCGCCCTAGG | |
| B416-CATTTCTAGCTAGCAGCGTAAGCCGATCTCGGCTTG | |
| B820-CATTTCTAGCTAGCCCTAGGTAATACCCGAGCTTCAA | |
| B1345-CATTTCTAGCTAGCCAGATCCGGATATAGTCTCTCTTTC | |
| B1349-CCCAAGTACCGCCACCTAATCAGAATGGTTAATGGTTGTAACACT | |
| B1350-AGTGTACACCAAAATTAACCAATTCGATTAGGTGGCGTACTTGGG | |
| pJET1.2forward-GGACTCACTATAGGAGAGCGGC | |

[†]Primers used for plasmid content screen first reported in Purser JE, Norris SJ (2000). PNAS 97: 13865-13870.