

Table S3. Oligonucleotides used in this study.

| Name | Sequence (5' → 3') |
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| yebG-GFP-F | AAAGGACGCCGCGAGTAAACGAAAAAGCAAGCCGCCTGATAAGAAGGAGATATACATATGAG |
| yebG-GFP-Km-R | GAAAAGCATGGTACAAAACGCCGGGAGCGCAAGTGTGGGTTTCAGGCGTAGCACCAGGCG |
| yebG-E1 | TACCTGCGCGCAGTATATAC |
| yebG-E2 | CCTTAGCACAAATGATTCAGG |
| sulA-E1 | ATAGAGTTGATCTTTCATCG |
| sulA-E2 | CTTCTGACAAGCGTTCTCGC |
| recA-P1 | GGCGACGACATACGCGCTACAAACCCTGTGGCAACAATTTGTGTAGGCTGGAGCTGCTTC |
| recA-P2 | ATGGCGGCTTCGTTTTGCCCGCCCCACCATCACCTGATGACATATGAATATCCTCCTTAG |
| recA-E1 | TGGAGAAGGGATTACGCGTC |
| recA-E2 | TTACGCCGTAATTCCTGCTC |
| recN-GFP-F | TAATACGCTGGCAAACGCAAAAGAACTGCTGGCGGCGTAATAAGAAGGAGATATACATATGAG |
| recN-GFP-Km-R | GTTTTTGTGTGAACTCAGACCTTCGGGAGATAAAAAAGTTTCAGGCGTAGCACCAGGCG |
| recN-E1 | AAGATGTGCTGATTCGCCGC |
| recN-E2 | CAGTCAGCGTTTTACAGCGC |
| sulA-GFP-F | GCATTCCGGGCTAAAAATTCACTCTAATTTGTATCATTAAATAAGAAGGAGATATACATATGAG |
| sulA-GFP-Km-R | GTTTCGCGTAAAAAAAAGTCCAGGATAAATCCTAATTTTACTTCAGGCGTAGCACCAGGCG |
| STM13_3210-GFP-F | GCAGGAAACGTGGGAAAGCGCTGACGACTGGTTTTATTAATAAGAAGGAGATATACATATGAG |
| STM14_3210-GFP-Km-R | GCGGTATTCTGAAAAATGCGCGCCAGCATTAAAGCGCAATGTTTCAGGCGTAGCACCAGGCG |
| STM14_3210-E1 | AGCCGAATGAAATTGCAGTC |
| STM14_3210-E2 | GAAAGCTAAACACCACGCAG |
| dinI-GFP-F | GACCTGGGAGAGCGCTGATGACTGGTTCATCAATGAATAATAAGAAGGAGATATACATATGAG |
| dinI-GFP-Km-R | CGGGGCGACCCGGCAAACATACATCACTGCATATCATTTTTTCAGGCGTAGCACCAGGCG |
| dinI-E1 | GATGAACAACAGATACCGGG |
| dinI-E2 | TATGAACAATAAAGCGGCAG |
| nIhH-GFP-F | CTGGCGTGTTGTAAGTCCATCAACAGGCAAAATGACCTAATAAGAAGGAGATATACATATGAG |

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|---------------------|---|
| nlhH-GFP-Km-R | CAACGTTATCCAGTTTTCAAGTTGAAAACAAAATTGAATTTTCAGGCGTAGCACCAGGCG |
| nlhH-E1 | CCAGAATCATTATCCCCTCG |
| nlhH-E2 | AACGGTTTTTCGGCTGATAAC |
| STM14_1156-GFP-F | GCAGGAAACGTGGGAAAGCGCTGACGACTGGTTTTATTAATAAGAAGGAGATATACATATGAG |
| STM14_1156-GFP-Km-R | GCGATATTCTGAAAAATGCGCGCCAGCATTAAAGCGCAATGTTTCAGGCGTAGCACCAGGCG |
| STM14_1156-E1 | TTGAATGAATGTGAACCCGC |
| STM14_1156-E2 | GATAGGACTCCCTCTGCCAC |
| dinP-GFP-F | CGACCCTCAACTGGAACGACAGTTGGTGTAGGGTTATAATAAGAAGGAGATATACATATGAG |
| dinP-GFP-Km-R | TGGCGCAATCGTAATAGTGATAAAATATTAATGGCCTGACTTCAGGCGTAGCACCAGGCG |
| dinP-E1 | ACGTTTACAATTTTCCCGCC |
| dinP-E2 | TGAGAATGAGAAAACGCGGG |
| dinJ-GFP-F | CAAAGATGCTGATGATTTGTTTGACCAGTTAGGGATCTGATAAGAAGGAGATATACATATGAG |
| dinJ-GFP-Km-R | TGGAAGTGTCCCGAATATTCAATTTCCCTTTGCCCCATAGTTCAGGCGTAGCACCAGGCG |
| dinJ-E1 | AGCATTGCAAGGCAAACATC |
| dinJ-E2 | TGCCGACATCCTTATGACGC |
| STM14_3214-GFP-F | CCACTGGAACAGCCCGGATGCATGGAGGGATTTCTATGATAAGAAGGAGATATACATATGAG |
| STM14_3214-GFP-Km-R | GCGCCATCCCGATTGTTTATTGCGCGGTAGAGTTCAGGTTTTTCAGGCGTAGCACCAGGCG |
| STM14_3214-I1 | CTCGGAGCTGACCGGCATTC |
| STM14_3214-E2 | GCTTCAGTTGCATGAACAGC |
| umuC-GFP-F | GTACACCACAAGATACTCTGATCTACTGCGTGTTAAGTAATAAGAAGGAGATATACATATGAG |
| umuC-GFP-Km-R | GGGATGATTTGGCAACCATCTCAGGCATTGATCGCACAAGTTCAGGCGTAGCACCAGGCG |
| umuC-E1 | ACTTCAATGTCTGTGCTGGAG |
| umuC-E2 | ATACTCTTTTTATTTCATGCC |
| STM14_1432-GFP-F | CCTGAATAACACTGACTGGATTTACGGAGTGGAGCTATGATAAGAAGGAGATATACATATGAG |
| STM14_1432-GFP-Km-R | TGCTCACGGTCAAAATTAACCATCTGCGCAGCAATGTTTTTTCAGGCGTAGCACCAGGCG |
| STM14_1432-E1 | GAACACCAACGGCTTTCTGG |
| STM14_1432-E2 | CTGTTCCGGCATGTTGTTGG |
| recA-GFP-F | CGATAGCGAAGGCGTTGCAGAAACCAACGAAGATTTTTAATAAGAAGGAGATATACATATGAG |
| recA-GFP-Km-R | ATGGCGGCTTCGTTTTGCCCGCCCCACCATCACCTGATGATTCAGGCGTAGCACCAGGCG |
| yigN-GFP-F | TTATCCCAATGATGAACGGGTGAAGCAGCAGTTAAGTTAATAAGAAGGAGATATACATATGAG |
| yigN-GFP-Km-R | TTGCCCTACTCTGCGCCAGGACTAACTACTCCGTATGGGTTTCAGGCGTAGCACCAGGCG |
| yigN-E1 | CCTCTCTTTTGCAAAGGCCG |

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|-------------------|---|
| yigN-E2 | CCACCATGTCAGCTTTCTGC |
| uvrD-GFP-F | ATGGCTGTTGCCGCGTATGCCAAGCTGGAAACGGTTTGATAAGAAGGAGATATACATATGAG |
| uvrD-GFP-Km-R | AGGCCGGATAAGACGCGCCATCCGGCACTATGAGAGTCGGTTCAGGCGTAGCACCAGGCG |
| uvrD-I1 | GTATGAGCAAGAAAAAGGCG |
| uvrD-E2 | GCCAGCAAAAATTTGCCGTC |
| IstR-1,2-GFP-F | CATTACGCTGTAAGAACCTCGCTTCGGCGAGGTTTTTTGTTAAGAAGGAGATATACATATGAG |
| IstR-1,2-GFP-Km-R | TCGCCGGGATTGATGATCACGCATTTTACAATGCCGGAAATTCAGGCGTAGCACCAGGCG |
| IstR-1,2-E1 | CCCGTTTCAGCCAGGACTTC |
| IstR-1,2-E2 | ACACGCTTTGAGTATAGGCG |
| ssb-GFP-F | CGAACCGCCAATGGATTTTGACGACGACATTCCGTTCTGATAAGAAGGAGATATACATATGAG |
| ssb-GFP-Km-R | AGCGAAAATGCAAATAACGCTTTGAGTTTTTTACCAAAAATTCAGGCGTAGCACCAGGCG |
| ssb-E1 | GTAGAGACTCGGATGCCTGG |
| ssb-E2 | CACCAGGCATTTTCAGCAGAC |
| polB-GFP-F | TTTTGCTACACTACTGACCGGGCAACTGGGGTTATTTTGATAAGAAGGAGATATACATATGAG |
| polB-GFP-Km-R | AGGGCGCTATGGTACTGGAAGGCGGCGCTTTCGTCACGCGTTCAGGCGTAGCACCAGGCG |
| polB-I1 | GGAAATCGGGCACAGGCTGG |
| polB-E2 | GCTTTCTGTATCGCTGATCC |
| ruvA-GFP-F | TGAAACACTGATTCGCGACGCGTTACGCGCCGCGTTATGATAAGAAGGAGATATACATATGAG |
| ruvA-GFP-Km-R | CCTGCTGAAATCAGGCGATCTGCTTCTATCATCCTTTACCTTCAGGCGTAGCACCAGGCG |
| ruvA-E1 | ACCGATTCTGAAGGGAAGGCC |
| ruvA-E2 | AGAGTCGTTTTACCTAACCC |
| uvrB-GFP-F | GTTGCACCAGTTACGCGAGTTGTTTATCGCGGCGTCCTGATAAGAAGGAGATATACATATGAG |
| uvrB-GFP-Km-R | GAGCCATGGTAACGATGACTCGCTGGCGATCGACACATTGTTTCAGGCGTAGCACCAGGCG |
| uvrB-E1 | GATAACCAGCACACTGCTGG |
| uvrB-E2 | CGTTAGTCAAAGCCTGTCAC |
| sbmC-GFP-F | CTGGGATATTGAAATGTATATTCCGGTACAGCGGAAGTGATAAGAAGGAGATATGAG |
| sbmC-GFP-Km-R | ACATTATCCGTCCGCTCTTTTCAGCCAGGAAACCAGTCGATTTCAGGCGTAGCACCAGGCG |
| sbmC-E1 | ACAAAATGATCACGCTGTCC |
| sbmC-E2 | TTGCGCTCCTTACGGGAATG |
| msgA-GFP-F | GATGTTTGAAGAGGCTGATATGTGGCTGGTCGCCGAATAATAAGAAGGAGATATACATATGAG |
| msgA-GFP-Km-R | CTGTTTTCGATCGGACATGTCGCTTTCGCAGGAGGGGACGTTTCAGGCGTAGCACCAGGCG |
| msgA-E1 | AACGTCAGGATGACAAAACG |

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|---------------------|--|
| msgA-E2 | GAATGTCGGTTCACATACC |
| uvrA-GFP-F | GTCGCATACCGCCCGCTTCCTTAAACCTATGCTCAAATAATAAGAAGGAGATATACATATGAG |
| uvrA-GFP-Km-R | ATGATGCCGCTTCCCGGCGAATCGGAAAGCGGCGTGAAGGTTTCAGGCGTAGCACCAGGCG |
| uvrA-I1 | GTGCCGGAGTCTCGCTCGCG |
| uvrA-E2 | GCGCTAAAGCGGTCAGGCAG |
| yqaB-GFP-F | GGCGGCGGGAATGGATGCCGTGGATGTCCGACTATTGTGATAAGAAGGAGATATACATATGAG |
| yqaB-GFP-Km-R | AAACTACTGGCAAACAGAGACAGGAGCGACAGTCCGTCACCTTCAGGCGTAGCACCAGGCG |
| yqaB-E1 | CTGCCCTGCAATCGCTTTTC |
| yqaB-E2 | CCCCTCCAAGGCTATTACCC |
| yejL-GFP-F | CGCCTTGCACTCTTCGATTAGCGAAGACAACGCGCACTAATAAGAAGGAGATATACATATGAG |
| yejL-GFP-Km-R | AGTTACCATACCTGTCGCTTGTTTCTCCGGAGTCGGCTTTTTTCAGGCGTAGCACCAGGCG |
| yejL-E1 | GTCATTTTCAGGCGTTATCCG |
| yejL-E2 | TTGAACAGAGCGAACCAGTG |
| corE-GFP-F | CTATTTTGGTAGCCGCATATTACAGCAATTTGTAAGCTAATAAGAAGGAGATATACATATGAG |
| corE-GFP-Km-R | GGTGGTGGAGATGTGTTCCAGGGGAACTCCTTTAAAGCTTCAGGCGTAGCACCAGGCG |
| corE-E1 | CAAACATTGTCTCTCGCCTG |
| corE-E2 | AAATAGGCCGAGATGACCAC |
| lexA-GFP-F | GCTGGCGGTAGGCGTCATTCGCAACGGGGAATGGTTGTAGTAAGAAGGAGATATACATATGAG |
| lexA-GFP-Km-R | CGATTGCCGGATGGCGGCTTACAAGGAGATTAAAAAGAGATTCAGGCGTAGCACCAGGCG |
| lexA-E1 | ACATTTTCGATAAAGGTTCC |
| lexA-E2 | CTGATAAGCGCAGCGCCATC |
| Δ recA-GFP-F | ACTATCCGGTTCAATACCAAGTTGCATGACAGGAGTAATATAAGAAGGAGATATACATATGAG |
| SNP-14028-W85 | CCGCCATTTTGCAGCCCCTTATTTACCTGTGTTTATATACACTGGCCGTCGTTTTACAAC |
| SNP-474-W85 | CCGCCATTTTGCAGCCCCTTATTTAGCTGTGTTTATATACACTGGCCGTCGTTTTACAAC |
| SNP-W86 | TTTCGAATAAATTGCTTTTCTTGCTGCCTTGCAATATACTTCGGTCATTGGCATGTTCAA |
| SNP-yebG-14028 | GTATTTAACTTCAACCGCCATTTTGCAGCCCCTTATTTAGCTGTGTTTATATACAGTATATTGCAAGGCAGCAAGAA AAGCAATTTATTC |
| SNP-yebG-474 | GTATTTAACTTCAACCGCCATTTTGCAGCCCCTTATTTACCTGTGTTTATATACAGTATATTGCAAGGCAGCAAGAA AAGCAATTTATTC |