**Table S2 Primers used in this study**

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| --- | --- | --- | --- |
| Primer name | Primer sequence (5’-3’) | Restriction Site | Production |
| AP-F/R | CGTTCCGGAGCATGGCGCAG | | gene co-transcription: *epoA-epoP* |
| TCTCGCAACGATACGAGCCTC | |
| PB-F/R | ACGCGCGGCGCCCCTCCTG | | gene co-transcription: *epoP-epoB* |
| TTCAGCCTGTAGGAGACGTG | |
| BC-F/R | GTGAACCCGCGGCTGTGGG | | gene co-transcription: *epoB-epoC* |
| GGCAGCCGAGCGACCGTGC | |
| CD-F/R | GCAGTGGGTGGAGTTCTAC | | gene co-transcription: *epoC-epoD* |
| TCTTCGCGCGGCTGGTGCGC | |
| DE-F/R | GATTGGCGCTGTGGGCGGAG | | gene co-transcription: *epoD-epoE* |
| TACGCGTCCTGCTCCTCGCG | |
| EF-F/R | CGTCATGGGGACAGCCGTG | | gene co-transcription: *epoE-epoF* |
| TCTCGTCACACTCGGCCGG | |
| PepoP-F/R | cgcggatccTGCGGTATGTGAGCGATTC | BamHⅠ | pkk-232-PepoP |
| cccaagcttCCGACCCAGCCAGTAGGA | HindⅢ |
| PepoB-F/R | cgcggatccGCTGAAGGTCTCCGAACACG | BamHⅠ | pkk-232-PepoB |
| cccaagcttCCGATAGAGCCCTCGTAAGC | HindⅢ |
| PepoC-F/R | cgcggatccGCGGTTTCGTAAGGTGATG | BamHⅠ | pkk-232-PepoC |
| cccaagcttCAATCTATCGGCTCGGTGA | HindⅢ |
| PepoD-F/R | cgcggatccTGACGGTAGCGAGGGCAGAC | BamHⅠ | pkk-232-PepoD |
| cccaagcttCCTTCTCGGTCTGTCACGCAAT | HindⅢ |
| PepoE-F/R | cgcggatccGATGGCTTTCATACCCTGCTC | BamHⅠ | pkk-232-PepoE |
| cccaagcttCTCCCTCGGTCCCTTACTCA | HindⅢ |
| PepoF-F/R | cgcggatccCTGCTTTCACGGTTCTGGC | BamHⅠ | pkk-232-PepoF |
| cccaagcttAAGCGGAGCACCTCATCG | HindⅢ |
| sgRNA-R | CCCGCGGATGGGATTAGCACTACG | | pZJY41-sgRNA-X |
| SgRNA-A-F | CATGAAAATGGCCCTTTGAGGTTTTAGAGCTAGAAATAGC | | pZJY41-sgRNA-A |
| SgRNA-P-F | TCCGGGGGATGATGCTCGAGGTTTTAGAGCTAGAAATAGC | | pZJY41-sgRNA-P |
| SgRNA-B-F | CGGGACGCCTTGGAGGAGATGTTTTAGAGCTAGAAATAGC | | pZJY41-sgRNA-B |
| SgRNA-C-F | ACCGTACCGGCAACGCTGTTGGTTTTAGAGCTAGAAATAGC | | pZJY41-sgRNA-C |
| SgRNA-D-F | TGCGGCCGGTATCCTGGACGAGTTTTAGAGCTAGAAATAGC | | pZJY41-sgRNA-D |
| SgRNA-E-F | TGGATGTATCCCAAGGTGCTGTTTTAGAGCTAGAAATAGC | | pZJY41-sgRNA-E |
| SgRNA-F-F | AGCTCTTCTTCCGAAATGCCGGTTTTAGAGCTAGAAATAGC | | pZJY41-sgRNA-F |
| BK-F | cgggatccCTCGTCGCGGCGATGAAGCA | BamHⅠ | pZJY41-sgRNA-AP; pZJY41-sgRNA-AB;  pZJY41-sgRNA-APB; pZJY41-sgRNA-DEF |
| BK-R | ggggtaccAAAAAAAGCACCGACTCGGTGCCAC | KpnⅠ |
| EcoR-F | cggaattgCTCGTCGCGGCGATGAAGCA | EcoRⅠ |
| EcoR-R | cggaattgAAAAAAAGCACCGACTCGGTGCCAC | EcoRⅠ |
| Nde-F | cccatatgCTCGTCGCGGCGATGAAGCA | NdeⅠ |
| Nde-R | cccatatgAAAAAAAGCACCGACTCGGTGCCAC | NdeⅠ |
| QgapA-F/R | GCCCTGGAAGAGCCTGAACG | | *gapA* gene (RT-qPCR) |
| TGGAGACGATGTGGTGCTTGG | |
| QA-F/R | GCGTTCCACTCACCGCTCAT | | *epoA* gene (RT-qPCR) |
| GCCTTCCCGCTCAGATTGCT | |
| QP-F/R | GCTCAACATAACGCTCTTCAACC | | *epoP* gene (RT-qPCR) |
| CTGGACCTCGATACCGCTCA | |
| QB-F/R | ATGGAAGAACAAGATTCCTC | | e*poB* gene (RT-qPCR) |
| CTCGGAGAAGCGCTGCACGG | |
| QC-F/R | GAAGATGCGGTGAGGTTGGTGG | | *epoC* gene (RT-qPCR) |
| TCGGACGCTGCGATGGCTAC | |
| QD-F/R | GTGACAGACCGAGAAGGCC | | *epoD* gene (RT-qPCR) |
| CCACGATGGCGATCGGCTCG | |
| QE-F/R | GCACCGTTTGCGTTAGTAGGG | | *epoE* gene (RT-qPCR) |
| GCTTGGCTATTATGTCGGTCTCC | |
| QF-F/R | GGAGCAAGCGAATCAGAGTG | | *epoF* gene (RT-qPCR) |
| CGTGGTATCGGGTGAGGAC | |