

Data S1. Sequence analysis of the transformants

Donor DNA (GFP) *P. variotii* chromosomal DNA Cas9 expression vector debris *E. coli* chromosomal DNA

>P_{H4}-1, 114/167/233 bp insertion

```
CCCTCCAAATTACCCCTCTATCTGCATTGAACGACCATGTCTTCAGATCGCAATTGAGATACTCTGAACGAGCAGAAACCATCCTAATGTGCTCGG
AAGAAGCTGTTGAAATAGCGGAGGCCAAAGAAGACTAATGTCACTGTATCTGCCGATGTCACGACTACGAAGGAAGTCTGGATCTAGCTAACCGTAAGT
TGGAACATTACTCTCAATTACAGCATCCGCGCATTGCAAGGTCAGGTTTTTTTTTAAGCTAACAATCTATCTGCCCTATACAGGTCTCGGCCCCCAT
ATCGCCGTGATCAAAACCCACATTGACATCCTATCCGACTTCAGCGAAGAGACCATCTCCGGCCTGACGGCGCTCGCGAAGAAGCACAACCTCCTCATCT
TTGAGGACCGCAAGTTCATCGATATCGGTAAACCCGTCAGAAAGCAGTACCATGGTGGAGCTCTCCGGATATCTGAGTGGTCCCACATTATCAATTGCGC
CATCCTCCCGGTGAGGGTATCGTCGAGGCTCTCGCCAAACTGCTTCGTCCGACGATTCCCATACGGAAGGAGAGGGGACTGCTGATTCTAGCAGAG
ATGACCTCCAAGGGATCCCTTGGCACGGGAGAGTACAGCTCTTCGTGAAGTCTCCGCTGCTAGAGAAGAAGTTCTGGTTCGTGCTGTTACCCCGTTAT
ATGTACACTGACTTGTCAACTATCTACGAACGTGCCGGCCGTGTGAGGGCATTGAACGACCCCTCGAGGTCGACAGATGAAGGCGTTGATGGAGAAAGA
ATAGAAGCTACTTACGGCCAGTCATGTTGATAGATGTGGATTAAGATTTTTAAAGTTGTAGAGACGTGGAGATGGATGAAGTTGAAACTCGTGGATAGAG
ACTTAGCTGGATGGAGAGGCCCCCATACCTCCCTTGTTAAACAATAAAAAACAACCTCCACGCTCAATAAATTCCTCCAAAGAGGTTGCTTTCCAGT
AGCTGGTTATCATTGCGATTACCGTGGCCCTCCTTTAAGCGGAGTAAATGCTAACAGAGATCTAGGATACTAAAAAAAATAAAAAAGTTAGAAATCA
GAAAGAAAACAGCATTATAATTTCAGAAAATTCAGACTTACAAACGGTGAAGGTTCTCAGTCGACTATGCCAGGAAGTACAAGGATTTTGTGTCATGGG
CTTTGTTTCGACGAGGGCATTGTGCGAGATCAAATCGGACGTGACCACGGCTTCGGATGATGAGGACTTTGTGGTTTTACCACCGGTGTCAATCTGTG
TCGAAGGGTGATAAGCTTGGACAGCAGTACCAGACACCTCAGTCAGCGATCGGCCCGGTGCGGACTTTATTATTGCTGGTCTGGGATCTACGCTGCGC
CGGATCCTGTTGAGGCTGTTACGCGCTACCAGCAGGAGGGTTGGGAGGCATATGAGGCTAGGGTTGGCAAGCAGTGAGAAATTCTATGATCTGTCTTTT
```

>P_{H4}-2, 1067 bp insertion

```
GATGGAGAAAGAATAGAAGCTACTTACGGCCAGTCATGTTGATAGATGTGGATTAAGATTTTTAAAGTTGTAGAGACGTGGAGATGGATGAAGTTGAAAC
TCGTGGATAGAGACTTAGCTGGATGGAGAGAAGAGTGACTGGTAGCTGGGGCGAGAGATATTTCTATATCTAAGGGCAGAGCGCGGGGAGTTGCTGGAAT
CAGCCTAGCAGGGAGATCGACCAATCAGCGCGCGCAGACCTAGCGCGGGTGTGATCTGCCGGTGCTTGGCCGGAACCTCTGATTCCGCTGGCAGA
GACTTGATCCTGCCGGGAGAGCCAATAACGACGGAGATCAAAGACGTTGAATTCTCAGCTGTGGCCTTTGAGACTATGTTTCATCATTCTGGAGCCCTTGA
TCGAGCCACATTACAGCGTGGTGGTTGGGATCAAGAAGGGGTGATTGGCATTCTAGATCTGTGATCCTGGGCTCCCATGGCTGGCGGGTGACATCTCGC
TTAGCGCTCCGGGAGCAAGGGTAACGTGCCTGCAGTCTTTGAGTCTCCAGCGAAACTGCCACGCCGAAATCAGGCTTATGGTGCCTGCTTCCGAT
CGGTTTTCTGATCAAAAAGAATCCGCGCTAAGACCACCCAACTCGCTGGCAGCACCAGATCAGCGCCCGCCCTCGTCTCCTACAATACCTCCCCC
ACCCACCTCCTCCATCCTTCTTACAACCTCACTCAGTCATCCACTCAACGCCCATCAATCCATCGGTTTTATCCGACTCCATCAATAACACACATCAAA
TCCATCATAAATCCTAATAAATGGCTAGAACCAGCAGACTAGTTCTAGAGCGGCCGATCCACTCGTTCACTTGTTGGTCTTCTATTCTCACAC
TCGTTTTCTCTAATGGGAATCAACATGCGTTCGAGCTTTGGCCGTAGCTGCCATCGCAGCGTCCGCCAATGCAATGGTGAGCAAGGGCGAGGAGCTGTTG
ACCGGGGTGGTGGCCATCCTGGTTCGAGCTGGACGGGACGTAACGGGCAAGTTGAGCGTGTCCGGCGAGGGCGAGGGCGATGCCACTACGGCAAGC
TGACCGAAGCTCTCAGTCGACTATGCCAGGAAGTACAAGGATTTGTCATGGGCTTTGTTTCGACGAGGGCATTGTGCGAGATCAAATCGGACGTGACCA
CGGCTTCGGATGATGAGGACTTTGTGGTTTTACCACCGGTGTCAATCTGTGTCGAAGGGTGATAAGCTTGGACAGCAGTACCAGACACCTCAGTCAGC
GATCGGCCGCGGTGCGGACTTTATTATTGCTGGTCTGGGATCTACGCTGCGCCGATCCTGTTGAGGCTGTTACGCGCTACCAGCAGGAGGGTTGGGAG
GCATATGAGGCTAGGGTTGGCAAGCAGTGAGAATATTCTATGATCTGTCTTTTATATTGTAGCAGAGTCGTGG
```

>P_{H4}-3, 1803 bp HR

```
TGCATTGAACGACCCTCGAGGTCGACAGATGAAGGCGTTGATGGAGAAAGAATAGAAGCTACTTACGGCCAGTCATGTTGATAGATGTGGATTAAGATT
TTTAAAGTTGTAGAGACGTGGAGATGGATGAAGTTGAAACTCGTGGATAGAGACTTAGCTGGATGGAGAGAAGAGTGACTGGTAGCTGGGGCGAGAGATA
TTTCTATATCTAAGGGCAGAGCGCGGGGAGTTGCTGGAATCAGCCTAGCAGGGAGATCGACCAATCAGCGCGCGCAGACCTAGCGCGGGTGTGATCT
GCCGGTGCTTGGCCGCGAACCTCTGATTCCGCTGGCAGAGACTTGATCCTGCCGGGAGAGCCAATAACGACGGAGATCAAAGACGTTGAATTCTCAGCT
GTGGCCTTTGAGACTATGTTTCATCATTCTGGAGCCCTTGATCGAGCCACATTACAGCGTGGTGGTTGGGATCAAGAAGGGGTGATTGGCATTCTAGATCT
GTGATCCTGGGCTCCCATTTGGCTGGCGGGTGACATCTCGCTTAGCGCTCCGGGAGCAAGGGTAACGTGCCTGCAGTCTTTGAGTCTCCACGCGAAACTG
CCACGCCGAAATCAGCGCTTATGGTGCCTGCTTTCCGATCGGTTTTCTGATCAAAAAGAATCCGCGCTAAGACCACCCAACTCGCTGGCAGCACCAG
ATACCCGCGCGCCCTCGTCTCCTACAATAACCTCCCCACCCACCTCCTCCATCCTTCTTACAACCTCACTCAGTCATCCACTCAACGCCCATCAATC
CATCGGTTTTATCCGACTCCATCAATAAAACACATCAAATCCATCAATAAAGATCTAACAATGGCTAGAACCAGCAGACTAGTTCTAGAGCGGCC
GCATCCACTCGTTCAGTTGTTTGGTCTTCTATTCTCACACTGTTTTCTCTAATGGGAATCAACATGCGTTCGAGCTTTGGCCGTAGCTGCCATCGCAG
CGTCCGCCAATGCAATGGTGAGCAAGGGCGAGGAGCTGTTACCGGGGTGGTGGCCATCCTGGTTCGAGCTGGACGGGACGTAACGGGCAAGTTGAG
CGTGTCCGGCGAGGGCGAGGGCGATGCCACTACGGCAAGCTGACCGTGAAGTTCATCTGACCCACGGCAAGCTGCCCGTGGCTGGCCACCCCTCGT
```

ACCACCCTGACCTACGGCGTGOAGTGCCTTACGCGGTACCCGACACATGAAGCAGCAGACTTCTTCAAGTCGGCCATGCCGAAGGCTACGTCCAGG
AGGGCACCATCTTCTTCAAGGACGACGGCACTACAAGACCCGCGCGAGGTGAAGTTGAGGGCGACACCCCTGGTGAACGGCATCGAGCTGAAGGGCAT
CGACTTCAAGGAGGACGGCAACATCCTGGGGCACAAGCTGGAGTACAACACAACGCCACAACGTCTATATCATGGCCGACAAGCAGAAGAACGGCATC
AAGGTGAACCTCAAGATCCGCCACAACATCGAGGACGGCAGCGTGCAGCTCGCCGACCCTACCAGCAGAACACCCCATCGGGACGGCCCCGTGCTGC
TGCCCGACAACCCTACCTGAGCACCCAGTCCGCCCTGAGCAAAAGACCCCAACGAGAAGCGCATCAGATGGTCTCTGGAGTTCTGTGACCCGCGCCGG
GATCACTCTCGGCATGGACGAGCTGTACAAGTAAATCATTCCACTCAACATTCAGGCTCCTCTGCGCACGTAAGTGCCAAAGGCAATACCTGCGGCCG
CCACCGCGGTGGAGCTCGAATATTCTATGATCTGTCTTTTATATTTGTAGCAGAGTCGTGGCTATATGACCCTTTTGTACCCAGATACAGTATACAT

>P_{H4}-5, 148/569 bp insertion

ATTACCCCTCTATCTGCATTGAACGACCATGTCTTCCAGATCGCAATTGAGATACTCTGAACGAGCAGCAAACCATCCTAATGTGCTCGCGAAGAAGCT
GTTCGAAATAGCGGAGGCAAGAAGACTAATGTCACTGTATCTGCCGATGTACGACTACGAAGGAACTGCTGGATCTAGCTAACCGTAAGTTGGAACCT
ATTACTCTCAATTACAGCATCCGCGCATTCGAAGGTCAAGTTTTTTTTTAAAGCTAACAATCTATCTGCCCTATACAGGTCTCGGCCCCCATATCGCCGT
GATCAAAACCCACATTGACATCCTATCCGACTTCAGCGAAGAGACCATCTCCGGCTGACGGCGCTCGCGAAGAAGCACAACCTCCTCATCTTTGAGGAC
CGCAAGTTCATCGATATCGGTAAACCCGTCCAGAAGCAGTACCATGGTGGAGCTCTCCGATATCTGAGTGGTCCCACATTATCAATTGCGCCATCCTCC
CCGGTGAGGGTATCGTCGAGGCTCTCGCCAAACTGCTTGTGCGCAGATTTCCATACGGAAGGAGAGGGGACTGCTGATTCTAGCAGAGATGACCTC
CAAGGGATCCCTTGCCACGGGAGAGTACAGCGTGTATCTGCCGTGCCTTGCCGCGAACCTCTGATTCCGCTGGCAGAGACTTGATCTGCCGGGAGA
GCCAATAACGACGGAGATCAAAGACGTTGAATCTCAGCTGTGGCCTTTGAGACTATGTTTCATCTTGGAGCCCTATGAAGCAGCAGACTTCTTCAA
GTCCGCCATGCCGAAGGCTACGTCCAGGAGCGCACCATCTTCTTCAAGGACGACGGCACTACAAGACCCGCGCGAGGTGAAGTTGAGGGCGACACC
CTGGTGAACCGCATCGAGCTGAAGGGCATCGACTTCAAGGAGGACGGCAACATCCTGGGGCACAAGCTGGAGTACAACACAACGCCACAACGTCTATA
TCATGGCCGACAAGCAGAAGAACGGCATCAAGGTGAACCTCAAGATCCGCCACAACATCGAGGACGGCAGCGTGCAGCTCGCCGACCCTACCAGCAGAA
CACCCCATCGGGCAGCGGCCCGTGTGCTGCGCCGACAACCCTACCTGAGCACCCAGTCCGCCCTGAGCAAAAGACCCCAACGAGAAGCGCATCAGATG
GTCTGTGGAGTTCTGTGACCGCGCCGGGATCACTCTCGGCATGGACGAGCTGTACAAGTAAATCATTCCACTCAACATTCAGGCTCCTCTGCGCACGT
AAAGTGCCAAAGGCAATACCTGCGGCCGCCACCGCGGTGGAGCTCGAATATTCTATGATCTGTCTTTTATATTTGTAGCAGAGTCGTGGCTATATG

>P_{H4}-7, 1803 bp HR

TTACCCCTCTATCTGCATTGAACGACCCTCGAGGTGCAGAGATGAAGGCGTTGATGGAGAAAGAATAGAAGCTACTTACGGCCAGTCATGTTGATAGAT
GTGGATTAAGATTTTTAAAGTTGTAGAGACGTGGAGATGGATGAAGTTGAAACTCGTGGATAGAGACTTAGCTGGATGGAGAGAAGAGTGAAGTGGTAGCT
GGGGCAGAGATATTTCTATATCTAAGGGCAGAGCGCGGGGAGTTGCTGGAATCAGCAGTACGAGGAGATCGACCAATCAGCGCGCGCAGACCTAGCG
GCGGGTGTATCTGCCGTGCCTTGCCGCGAACCTCTGATTCCGCTGGCAGAGACTTGATCCTGCCGGGAGAGCCAATAACGACGGAGATCAAAGACGT
TGAATCTCAGCTGTGGCCTTTGAGACTATGTTTCATCTTGGAGCCCTTGATCGAGCCACATTACAGCGTGGTGGTGGGATCAAGAAGGGGTGATTG
GCATTCTAGATCTGTATCCTGGGCTCCCATGGCTGGCGGTGACATCTCGCTTAGCGCTCGGGGAGCAAGGTAACGTGCCTGCAGTTCTTTGAGTCT
CCCAGCGAAACTGCCACGCCGAATCAGCGCTTATGGTGCAGTCTTTCCGATCGGTTTTCTGATCAAAAAGAAATCCGCGCTAAGACCACCCAACTCGC
TGGCAGCAACCCAGATCACCGCCCGCCCTCGTCTCCTACAAATACCTCCCCACCCACCTCCTCCATCCTTCTTACAACCTCACTCAGTCATCCACTCA
ACGCCCATCAAATCCATCGGTTTTATCCGACTTCCATCAATAAACACATCAAATCCATCAAATAAACATCTAAACAATGGCTAGAACCAAGCAGACTAG
TTCTAGAGCGGCCGATCCACTCGTTCACCTGTTTGGTCTTCTATTCTCACACTCGTTTTCTCTAATGGGAATCAACATGGGTGAGGTTTGGCCGTA
GGTGCCATCGCAGCGTCCGCCAATGCAATGGTGAGCAAGGGCGAGGAGCTGTTACCGGGGTGGTGCCCATCTGCTGAGCTGGACGGCGACGTAAACG
GCCACAAGTTCAAGCTGTCCGGCGAGGGCGAGGGCGATGCCACCTACGGCAAGCTGACCTGAAGTTTCATCTGCACCAACGGCAAGCTGCCGTGCCCTG
GCCACCTCTGTACCAACCTGACCTACGGCGTGCAGTGGTTACGGCGTACCCGACCCATGAAGCAGCAGCACTTCTTCAAGTCCGCCATGCCGAA
GGCTACGTCCAGGAGGGCAGCATCTTCTTCAAGGACGACGGCAACTACAAGACCCGCGCGAGGTGAAGTTGAGGGCGACAACCTGGTGAACGGCATCG
AGCTGAAGGGCATCGACTTCAAGGAGGACGGCAACATCCTGGGGCACAAGCTGGAGTACAACACAACAGCCACAACGTCTATATCATGGCCGACAAGCA
GAAGAACGGCATCAAGGTGAAGTTCAAGATCGGCCACAACATCGAGGACGGCAGCGTGCAGCTCGCCGACCCTACGAGCAGAACACCCCATCGGGAG
GGCCCCGTGGTGTGCCGACAACCACTAAGTGAGCAACCGAGTCCGCCCTGAGCAAAAGACCCCAACGAGAAGGGGATACATGGTCTGTGGAGTTGCG
TGACCGCGCGGGGATCACTCTCGGCATGGACGAGCTGTACAAGTAAATCATTCCACTCAACATTCAGGCTCCTCTGCGCACGTAAGTGCCAAAGGCAA
TACCTGCGGCCGCCACCGCGGTGGAGCTCGAATATTCTATGATCTGTCTTTTATATTTGTAGCAGAGTCGTGGCTATATGACCCTTTTGT

>P_{H4}-9, 128/165 bp insertion

TCTATCTGCATTGAACGACCATGTCTTCCAGATCGCAATTGAGATACTCTGAACGAGCAGCAAACCATCCTAATGTGCTCGCGAAGAAGCTGTTGAAAT
AGCGGAGGCAAGAAGACTAATGTCACTGTATCTGCCGATGTACGACTACGAAGGAACTGCTGGATCTAGCTAACCGTAAGTTGGAACCTTATTACTCTC
AATTACAGCATCCGCGCATTCGAAGGTCAAGTTTTTTTTTAAAGCTAACAATCTATCTGCCCTATACAGGTCTCGGCCCCCATATCGCCGTGATCAAAAC
CCACATTGACATCCTATCCGACTTCAGCGAAGAGACCATCTCCGGCTGACGGCGCTCGCGAAGAAGCACAACCTCCTCATCTTTGAGGACCGCAAGTTC
ATCGATATCGGTAAACCCGTCCAGAAGCAGTACCATGGTGGAGCTCTCCGATATCTGAGTGGTCCCACATTATCAATTGCGCCATCCTCCCGGTGAGG
GTATCGTCGAGGCTCTCGCCAAACTGCTTCGTGCGCAGATTTCCATACGGAAGGAGAGGGGACTGCTGATTCTAGCAGAGATGACCTCCAAGGGATC
CCTTGCCACGGGAGAGTACACCTTCTTGATCCCAACCACACGCTGTAATGTGGCTCGATCAAGGGCTCCAGAATGATGAACATAGTCTCAAAGGCCAC

AGCTGAGAATTCAACGCTTTTGATCTCCGTCGTTATTGGCTCTCCGGGGGGCGAGAGATATTTCTATATCTAAGGGCAGAGCGCGGGGAGTTGCTGGAA
TCACGCGACTAGCAGGGAGATCGACCAATCAGCGCGCGCAGACCTAGCGCGGGGTGATCTGCCGGTGCCTTGGCCGCGAACCTCTGATTCCGCTGGCAG
AGACTTGATCCTA **CGAAGG** TCTCAGTCGACTATGCCAGGAAGTACAAGGATTTTCGTCATGGGCTTTGTTTCGACGAGGGCATTGTGGAGATCAAATCGG
ACGTGACCACGGCTTCGGATGATGAGGACTTTGTGGTTTTCCACCACGGGTGTCATCTGTCGTCGAAGGGTGATAAGCTTGGACAGCAGTACCAGACACC
TCAGTCAGCGATCGGCCGCGGTGCGGACTTTATTATTGCTGGTGGTGGATCTACGCTGCGCCGGATCCTGTTGAGGCTGTTACAGCGCTACCAGCAGGAG
GGTTGGGAGGCATATGAGGCTAGGGTTGGCAAGCAGTGA **GAATATTCTATGATCTGTCTTTTATATTGTAGCAGAGTCGTGGCTATATGACCCCTTTG**
TTACCCAGATACAGTATACATACCACGTG

>P_{H4}-10, 338 bp insertion

ACCCCTCTATCTGCATTGAACGACC CCTCGAGGTCGACAGATGAAGGCGTTGATGGAGAAAGAATAGAAGCTACTTACGGCCAGTCATGTTGATAGATGT
GGATTAAGATTTTTAAAGTTGTAGAGACGTGGAGATGGATGAAGTTGAAACTCGTGGATAGAGACTTAGCTGGATGGAGAGAAGAGTGAAGTGGTAGCTGG
GGCGAGAGATATTTCTATATCTAAGGGCAGAGCGCGGGGAGTTGCTGGAATCAGCGACTAGCAGGGAGATCGACCAATCAGCGCGCGCAGACCTAGCGGC
GGGTGTGATCTGCCGGTGCCTTGGCCGCGAACCTCTGATTCCGCTGGCAGAGACTTGATCCTA **CGAAGG** TCTCAGTCGACTATGCCAGGAAGTACAAGGA
TTTCGTCATGGGCTTTGTTTCGACGAGGGCATTGTGGAGATCAAATCGGACGTGACCACGGCTTCGGATGATGAGGACTTTGTGGTTTTCCACCACGGT
GTCAATCTGTCGTCGAAGGGTGATAAGCTTGGACAGCAGTACCAGACACCTCAGTCAGCGATCGGCCGCGGTGCGGACTTTATTATTGCTGGTGGTGGGA
TCTACGCTGCGCCGGATCCTGTTGAGGCTGTTACAGCGCTACCAGCAGGAGGGTTGGGAGGCATATGAGGCTAGGGTTGGCAAGCAGTGA **GAATATTCTAT**
GATCTGTCTTTTATATTGTAGCAGAGTCGTGGCTATATG

>P_{P2}-2, 38 bp insertion

AGATAGATAAGTACCATACTTACTTGCATGTATCGGCGGCC **GGCAGGGCAGCTTGCCGGTGTCAGATGAAGTTCAG** **CGAAGG** TCTCAGTCGACTATG
CCAGGAAGTACAAGGATTTTCGTCATGGGCTTTGTTTCGACGAGGGCATTGTGGAGATCAAATCGGACGTGACCACGGCTTCGGATGATGAGGACTTTGT
GGTTTTCCACCACGGTGTCATCTGTCGTCGAAGGGTGATAAGCTTGGACAGCAGTACCAGACACCTCAGTCAGCGATCGGCCGCGGTGCGGACTTTATT
ATTGCTGGTGGTGGATCTACGCTGCGCCGGATCCTGTTGAGGCTGTTACAGCGCTACCAGCAGGAGGGTTGGGAGGCATATGAGGCTAGGGTTGGCAAGC
AGTGAGAAATATTCTATGATCTGTCTTTTATATTGTAGCAGAGTCGTGGCTATATGACCCCTTTGTTACCCAGATACAGTATACATACCACGTG

>P_{P2}-4, 1857 bp HR

CTGCCCTCCAAATTTACCCCTCTATCTGCATTGAACGACC CCTCGAGGTCGACGGAGCTTAAGAACTGCAAAATCAGTCAGCAAAGATGCTACTTATCGG
GGTATCCTGTATCAAAGGATGCATACACTCATCGTGAAGATTTCCAGACCAATAGATACGAGTCTAAAAGGTGGGAAAGAAGGACATTTCGTTACCCGC
CGATGGTTGGTACGACGAGGTAGCTTCATGACTTCAGCAGCAGCGCGCCAGCCATTTATGGCAGATCAAAGCGTTGGGCAGCCGGTATTACTCGATGGCG
AGGTAACGCTCTCCGTAGAGGCTTCCACGGTCCAAGACAGACACTGGAGCGGAAAAGGGCGCGTCCAGAGTCTGGTTCCCGAGAATAATCAAGACCTCAC
GATAGCTCCAGCGAGGGCAGAAGGTGAGGATAGGAGTGAAGCGGGGGAAGAAAGAGAATCACATCGACGACAACAGCCAGTGAGGCTTCTAGAAGAGA
GCGTCACGTGAGCCGTGGCAGATTGGCGTTTCTGGTCTTTGTCGTCGCCGACGCGGATGACATAATACGGTATACGCACCAAGCCACATCCACCTTCGC
TTACGGGCCAGCACCAGCCACTGCTCCGCCGCACTTTCAGAAATGTGTGGTTTCGCGAATTAATTACGGCGTCTGTTAAATCTTCGTCCACCAAGCGAT
CTCGTCTTCCGCATCTCAAACCCCTCCGACGAAGTTGACGTCTCAGTCTCCGCCAAGTTGCGGTTAAATCGATTGATTCTCCTGTTCTGTATAACGTT
CATCTTCAGTAAGTCCAGCAGTCTTTATTCTTCTCTCCAGTCTTCCGAATCGTTTCCGGATGCGTTATTTCTGGATGAAGATCGATCGAATGCGACAG
TGCAGCTGACAAGTTATCAATTTTTTTCAGAACCACTTCAAATGAAGCACCTCGCCGCTTACTAGTTCTAGAGCGGCCGATCCACTCGTTCACTTG
TTTGGGCTCTTATTCTCACACTCGTTTTCTCTA **ATGGGAATCAACATGCGTCGAGCTTTGGCCGTAGCTGCCATCGCAGCGTCCGCCAATGCAATGGT**
GAGCAAGGGGCGAGGAGCTGTTACCCGGGTGGTGCDCATCCTGGTCGAGCTGGACGGCGAGCTAAACGGCCACAAGTTACGCGTGTCCGGCGAGGGCGAG
GGCGATGCCACGTACGGCAAGGTGACCCGTGAAGTTTCATCTGCACCAACCGGCAAGGTGCCCGTGCCTTGGCCACCCCTCGTGACCCACCTGACCTACGGCG
TGCAGTGCTTCAGCCGCTACCCCGACCAATGAAGCAGCACGACTTCTTCAAGTCCGCCATGCCCGAAGGGTACGTCCAGGAGCGCACCATCTCTTCAA
GGACGACGGCAACTACAAGACCCGCGCGGAGGTGAAGTTCCAGGGCGACACCTGGTGAACCGCATCGAGCTGAAGGGCATCGACTTCAAGGAGGACGGC
AACATCCTGGGGCACAAGCTGGAGTACAACACTACAACGCCACAACGTCTATATCATGGCCGACAAGCAGAAGAAGCGCATCAAGGTGAAGTTCAAGATCG
GCCACAAGATCGAGGACGGCAGCGTGCAGCTCGCCGAACACTACGAGCAGAAGACCCCATCGGCCGACGGCCCGTGTGCTGCCGACAACCACTACCT
GAGGACCGAGTCCGCGCTGAGCAAGACCCCAACGAGAAGCGGATCAGATGGTCTGCTGGAGTTGCTGACCGCGCGCGGATCACTCTCGGATGGA
GAGCTGTACAAGTAA **ATCATTCCACTCAACATTACGGCTCCTCTGCGCAGCTAAAGTGCCAAAGGCAATACCTGCGGCCGCCACCGCGTGGAGCTCGA**
ATATTCTATGATCTGTCTTTTATATTGTAGCAGAGTCGTGGCTATATGACCCCTTTGTTACCCAGATACAGTATACATACCA

>P_{P2}-5, 1857 bp HR

CCTGCCCTCCAAATTTACCCCTCTATCTGCATTGAACGACC CCTCGAGGTCGACGGAGCTTAAGAACTGCAAAATCAGTCAGCAAAGATGCTACTTATCG
GGGTATCCTGTATCAAAGGATGCATACACTCATCGTGAAGATTTCCAGACCAATAGATACGAGTCTAAAAGGTGGGAAAGAAGGACATTTCGTTACCCG
CCGATGGTTGGTACGACGAGGTAGCTTCATGACTTCAGCAGCAGCGCGCCAGCCATTTATGGCAGATCAAAGCGTTGGGCAGCCGGTATTACTCGATGGC
GAGGTAACGCTCTCCGTAGAGGCTTCCACGGTCCAAGACAGACACTGGAGCGGAAAAGGGCGCGTCCAGAGTCTGGTTCCCGAGAATAATCAAGACCTCA
CGATAGCTCCAGCGAGGGCAGAAGGTGAGGATAGGAGTGAAGCGGGGGAAGAAAGAGAATCACATCGACGACAACAGCCAGTGAGGCTTCTAGAAGAG

AGCGTCACGTGAGCGTGGCAGATTGGCGTTTCTGGTCTTTGTCTGTCTGCCGCAGCGGATGACATAATACGGTATACGCACCAGCCACATCCACCTTGG
CTTACGGGCCAGCACCAGCCACTGCTCCGCCGCACTTTAGAAATGTGTGGGTTGCGGAATTAATTACCGGCGTCGTTAAATCTTCTGCCACCAAGCGA
TCTCGTCTTTCCGCATCTCAAACCCCTCCGACGAACTTGACGTCTCAGTCTCCGCCAACTTGCGGTTAAATCGATTGATTCTCCTGTTCTGTATAACGT
TCATCTTCAGTAAGTCCAGCAGTCCTTTATTCTTCTCTCCAGTCTTCGCAATCGTTTCCGGATGCGTTATTTCTGGATGAAGATCGATCGAATGCGACA
GTGCAAGTGAAGAATTCATCAATTTTTTTCAGAACCACTTCAAAATGAAGCACCTCGCCGCTTACTAGTTCTAGAGCGGCCGATCCACTCGTTCACCTT
GTTTGGTCTTCTATTCTCACACTCGTTTCTCTCTAATGGGAATCAACATGCGTCGAGCTTTGGCCGTAGCTGCCATCGCAGCGTCCGCCAATGCAATGG
TGAGCAAGGGCGAGGAGCTGTTACCGGGGTGGTGCCCATCCTGGTCGAGCTGGACGGCGACGTAACGGGCCACAAGTTCAGCGTGTCCGGCGAGGGCGA
GGGCGATGCCACCTACGGCAAGCTGACCTGAAGTTCATCTGCCACACGGGCAAGCTGCCCGTGGCCTGGCCGACCTCGTGACCACTGACCTACGGG
GTGGAGTGTTCAGCGGCTACCGGACGACATGAAGCAGCAAGGCTTCTTCAAGTCCGCCATGCCGGAAGGCTAAGTCCAGGAGGCGACGATCTTCTTGA
AGGACGACGGCAACTACAAGACCGCGCGGAGGTGAAGTTCGAGCGCGACACCTGCTGAACCGCATCGAGCTGAAGGCGATCGACTTCAAGGAGGACGG
CAACATCCTGGGGCACAAGCTGGAGTACAACACAGCCACAACTATATCATCGCCGACAAGCAGAAGAAGCGCATCAAGGTGAACCTTCAAGATG
CGCCACAACATCGAGGACGGCAGCGTGCAGCTCGCCGACCACTACAGCAGAACACCCCATCGGCGACGGCGCGGTGCTGCTGCCCGACAACCACTACG
TGAGCACCCAGTCCGCCCTGAGCAAGACCCCAACGAGAAGCGCGATCACATGGTCTGCTGGAGTTCTGTACCGCGCGCGGGATCACTCTCGGCATGGG
CGAGCTGTACAAGTAAATCATTCCACTCAACATTCAGGCTCCTCTGCGCACGTAAGTGCCAAAGGCAATACCCTGCGGCCGCCACCGCGGTGGAGCTCG
AATATTCTATGATCTGTCTTTTATATTTGTAGCAGAGTCGTGGCTATATGACCCTTTTGTACCCAGATACAGTATACATACCAGG

>P₂-6, 1857 bp HR

GCATTGAACGACCCTCGAGGTCGACGGAGCTTAAGAACTGCAAAATCAGTCAGCAAAGATGCTACTTATCGGGGTATCCTGTATCAAAGGATGCATACA
CTCATCGTGAAGATTTTCCAGACCAATAGATACGAGTCTAAAAGGTGGGAAAGAAGGACATTGTTTACCGCCGATGGTTGGTACGACGAGGTAGCTTCA
TGACTTCAGCAGCAGCGCGCCAGCCATTTATGGCAGATCAAAGCGTTGGGAGCGCGGTATTACTCGATGGCGAGGTAAAGCTCTCCGTAGAGGCTTCCAC
GGTCCAAGACAGACACTGGAGCGGAAAGGGCGCGTCCAGAGTCTGGTTCCCGAGAATAATCAAGACCTCACGATAGCTCCAGCGAGGGCAGAAGGTGAG
GATAGGAGTGAAGGCGGGGAAGAAAGAGAATCACATCGACGACAACAGCCAGTGAAGCTTCTAGAAGAGAGCGTCACGTGAGCCGTGGCAGGATTGGC
GTTTCTGGTCTTTGTGCTCTGCCGAGCGGATGACATAATACGGTATACGCACCAGCCACATCCACCTTCGCTTACGGGCCAGCACCAGCCACTGCTCC
GCCGCACTTTAGAAATGTGTGGGTTGCGGAATTAATTACCGGCGTCGTTAAATCTTCTGCCACCAAGCGATCTCGTCTTCCGCATCTCAAACCCCTC
CGACGAATTTGACGTCTCAGTCTCCGCCCACTTGCGGTTAAATCGATTGATTCTCCTGTTCTGTATAACGTTTCATCTTCAGTAAGTCCAGCAGTCCTTTA
TTCTTCTCTCCAGTCTTCGCAATCGTTTCCGGATGCGTTATTTCTGGATGAAGATCGATCGAATGCGACAGTGCAGCTGACAAGTTCATCAATTTTTT
CAGAACCACATTCAAAATGAAGCACCTCGCCGCTTACTAGTTCTAGAGCGGCCGATCCACTCGTTCACCTTGTGGTCTTCTATTCTCACACTCGTTT
TCCTCTAATGGGAATCAACATGCGTCGAGCTTTGGCCGTAGCTGCCATCGCAGCGTCCGCCAATGCAATGGTGAGCAAGGGCGAGGAGCTGTTACCGGG
GTGGTGCCCATCCTGGTCGAGCTGGACGGCGACGTAACGGGCCACAAGTTCAGCGTGTCCGGCGAGGGCGAGGGCGATGCCACCTACGGCAAGCTGACCC
TGAAGTTCATCTGCCACACCGGCAAGCTGCCCGTGGCCTGGCCGACCTCGTGACCACTTACGCTACGGCGTGCAGTGTTCAGCCGCTACCCCGACCA
CATGAAGCAGCAGCACTTCTTCAAGTCCGCCATGCCGGAAGGCTACGTCAGGAGCGCACCATCTTCTTCAAGGACGACGGCAACTACAAGACCGCGCGC
GAGGTGAAGTTCGAGGGCGACACCTGCTGAACCGCATCGAGCTGAAGGGCATCGACTTCAAGGAGGACGGCAACATCCTGGGGCACAAGCTGGAGTACA
ACTACAAGACGACACAAGTCTATATCATGGCCGACAAGCAGAAGAAGCGCATCAAGGTGAAGTTCAGATCGCCACAACATCGAGGACGGCAGGCTGCA
GCTGCCGACCACTACGAGCAGAAGACCCCATCGGCGACGGCGCGTGTGCTGCTGCCGACAACCACTACCTGAGCAGCCAGTCCGGCTGAGCAAGAG
GCCAAGCAGAAGCGGATCACATGGTCTGCTGGAGTTCTGTACCGCGCGCGGATGACTCTCGGCATGGACGAGCTGTACAAGTAAATCATTCCACTCA
ACATTCAGGCTCCTCTGCGCACGTAAGTGCCAAAGGCAATACCCTGCGGCCGCCACCGCGGTGGAGCTCGAATATTCTATGATCTGTCTTTTATATTT
GTAGCAGAGTCGTGGCTATATGAC

>P₂-7, 10 bp deletion, 17 bp insertion

TGCCCTCCAAATTTACCCCTCTATCTGCATTGAACGACCATGTCTTCCAGATCGCAATTGAGATACTCTGAACGAGCAGCAAAACCATCCTAATGTGCTC
GCGAAGAAGCTGTTGCAATAGCGGAGGCAAGAAGACTAATGTCACTGTATCTGCCGATGTCACGACTACGAAGGAAGTCTGGATCTAGCTAACCCTA
AGTTGGAATTTACTCTCAATTACACGCATCCGCGCATTCGAAGGTCAGGTTTTTTTTTAAGCTAACAATCTATCTGCCCTATACAGGTCTCGGCCCC
CATATCGCCGTGATCAAAACCCACATTGACATCCTATCCGACTTCAGCGAAGAGACCATCTCCGGCCTGACGGCGCTCGCGAAGAAGCACAACCTCCTCA
TCTTTGAGGACCGCAAGTTCATCGATATCGGTAACACCGTCCAGAAGCAGTACCATGGTGGAGCTCTCCGGATATCTGAGTGGTCCCACATTATCAATTG
CGCCATCCTCCCCGGTGAGGGTATCGTCGAGGCTCTCGCCCAACTGCTTCGTCGCCAGATTTCCATACGGAAAGGAGAGGGGACTGCTGATTCTAGCA
GAGATGACCTCCAAGGGATCCCTTGGCCAGG_____AAACCCCTAAACCGAGTCTCAGTCGACTATGCCAGGAAGTACAAGGATT
TCGTATGGGCTTTGTTTTCGACGAGGGCATTGTGCGAGATCAAATCGGACGTGACCACGGCTTCGGATGATGAGGACTTTGTGGTTTTACCACCGGTGT
CAATCTGTGTCGAAGGGTGATAAGCTTGGACAGCAGTACCAGACACCTCAGTCAGCGATCGGCCGCGTGCAGACTTTATTATTGCTGGTGTGGGATC
TACGCTCGCCGGATCCTGTTGAGGCTGTTACGCGTACCAGCAGGAGGTTGGGAGGCATATGAGGCTAGGTTGGCAAGCAGTGAGAATATTCTATGA
TCTGTCTTTTTATATTTGTAGCAGAGTCGTGGCTATATGACCCTTTTGTACCCAGATACAGTATACATACCAGG

>P₂-9, 58 bp insertion

GGAGAAAGGATAGGACAGAATATTTCCATCCTGCCCTCCAAATTTACCCCTCTATCTGCATTGAACGACCATGTCTTCCAGATCGCAATTGAGATACT

CTGAACGAGCACGAAACCATCCTAATGTGCTCGCGAAGAAGCTGTTGCGAAATAGCGGAGGCAAAGAAGACTAATGTCACTGTATCTGCCGATGTCACGAC
TACGAAGGAACTGCTGGATCTAGCTAACCGTAAGTTGGAACCTTACTCTCAATTACACGCATCCGCGCATTCGAAGGTCAGGTTTTTTTTTAAGCTAA
CAATCTATCTGCCCTATACAGGCTCGGCCCCCATATCGCCGTGATCAAAACCCACATTGACATCCTATCCGACTTCAGCGAAGAGACCATCTCGGCCT
GACGGCGCTCGCGAAGAAGCACAACTTCTCATCTTTGAGGACCGCAAGTTTCATCGATATCGGTAACACCGTCCAGAAGCAGTACCATGGTGGAGCTCTC
CGGATATCTGAGTGGTCCACATTATCAATTGCGCCATCTCCCGGTGAGGGTATCGTCGAGGCTCTCGCCAAACTGCTTCGTCGCGCAGATTTCCCAT
ACGGAAAGGAGAGGGGACTGCTGATTCTAGCAGAGATGACCTCCAAGGGATCCCTTGCACGCGGAGAGTACATGCAGATGAACCTTCAGGGTCAGCTTGCC
GTAGGTGGCATCGCCCTCGCCCTCGCCGGAACGAGGCTCTCAGTCGACTATGCCAGGAAGTACAAGGATTTTCGTCATGGGCTTTGTTTCGACGAGGGCATT
GTCGGAGATCAAATCGGACGTGACCACGGCTTCGGATGATGAGGACTTTGTGGTTTTACCACCGGTGTCAATCTGTCGTCGAAGGGTGATAAGCTTGA
CAGCAGTACCAGACACCTCAGTCAGCGATCGGCCCGGTGCGGACTTTATTATTGCTGGTCGTGGGATCTACGCTGCGCCGGATCCTGTTGAGGCTGTTT
AGCGCTACCAGCAGGAGGGTTGGGAGGCATATGAGGCTAGGGTTGGCAAGCAGTGAGAATATTCTATGATC

>P_{ss}-1, 121, 139 bp insertion

CCTGCCCTCCAAATTTACCCCTCTATCTGCATTGAACGACCATGTCTTCCAGATCGCAATTGAGATACTCTGAACGAGCACGAAACCATCCTAATGTGC
TCGCGAAGAAGCTGTTGCGAAATAGCGGAGGCAAAGAAGACTAATGTCACTGTATCTGCCGATGTCACGACTACGAAGGAACTGCTGGATCTAGCTAACCG
TAAGTTGGAACCTTACTCTCAATTACACGCATCCGCGCATTCGAAGGTCAGGTTTTTTTTTAAGCTAACAACTCTATCTGCCCTATACAGGTCCTCGGCC
CCCATATCGCCGTGATCAAAACCCACATTGACATCCTATCCGACTTCAGCGAAGAGACCATCTCCGGCTGACGGCGCTCGCGAAGAAGCACAACTTCT
CATCTTTGAGGACCGCAAGTTTCATCGATATCGGTAACACCGTCCAGAAGCAGTACCATGGTGGAGCTCTCCGGATATCTGAGTGGTCCACATTATCAAT
TGCGCCATCTCCCGGTGAGGGTATCGTCGAGGCTCTCGCCAAACTGCTTCGTCGCGCAGATTTCCCATACGGAAGGAGAGGGGACTGCTGATTCTAG
CAGAGATGACCTCCAAGGGATCCCTTGCACGCGGAGAGTACGGAGCTAGATAGATAAGTACCATACTTACTTGCATGTATCGGCGGCCAGCCAATCGAAG
TGCGGCACCGTCATCGCGGCCGATTCGTGAATTCAGCGAATTTTCGATGCATTACAACCTACAAGGGAAGGTGAGCTCAGCTATGCAAAGTGACGGGCA
GGGATTTGCTGTCTTGAATTCCTCGAGATATCGGGAAGTTGGGGAAGGGTGATGCGAATATAGTCTTGTGGCTAAGTTGAAGGTGGACTCGTGGAGA
G_____CTCAGTCGACTATGCCAGGAAGTACAAGGATTTTCGTCATGGGCTTTGTTTCGACGAGGGCATTGTCGGAGATCAAATCGGACGTGACCACG
GCTTCGGATGATGAGGACTTTGTGGTTTTACCACCGGTGTCAATCTGTCGTCGAAGGGTGATAAGCTTGGACAGCAGTACCAGACACCTCAGTCAGCGA
TCGGCCCGGTGCGGACTTTATTATTGCTGGTCGTGGGATCTACGCTGCGCCGGATCCTGTTGAGGCTGTTACGCGCTACCAGCAGGAGGGTTGGGAGGC
ATATGAGGCTAGGGTTGGCAAGCAGTGAGAATATTCTATGATCTGCTTTTTATATTTGTAGCAGAGTCGTGGCTATATGACCCTTTTGTTACCCAGATA
CAGTATACATACCAG

>P_{ss}-2, 1816 bp HR

CCCTCCAAATTTACCCCTCTATCTGCATTGAACGACCCTCGAGGTCGACGCGATCGTGAGAAAGGAGAAGGCCAAGAAGCAGCAGCAGAAGCCCAATCT
GTGGGCAAACCATAGAGAGAGAGCTCTCGTGTCTGGTGGTTGAGGCATGTTTGATTGTAGATGGAGTGTGAGTTTCATACCCAGTTAGACGATGTTCT
GATAGTAATAGTGGCAGTTCTTTCTGCATGAATGTGATAAATCAGTGAATAATGATAAAGGCCGTTGTGTTTCGAGGTTAACTCTCAGTATAG
TAGTAGTACTGTAAGTACTTAGAAAAATCCAGTACGAATTGGGAATGCTCGGCTGGCGGGCGTGTGTGCGCTAGTCCATATTAGGGTTAGTGCGCACT
TTGGGTAGGGCATTTCGACAAGCGAGCCACACTGCGAAATCAAGACAGCCGACGACAAGCACTTAACAATCGACCACCCACCCACATTGCCCGCGCC
GTTGTTCTGGTGAAGGACTGCAGGTTACGAGGTTAGTATATTTGATGCCGTTGTCGCCGTTTGCAATTCTCTCGAGACGAATTTGGACAACCTCGTGGTCG
GGTGATACTCCGCGCGGATTGATGGTGTGATATTTCTGTAAGGAACCAAGGTCAACAGAGCTTGGGTCAAAGAGTCCCTCGCGAGGAAAGCAGAAGA
AAGAGAAAAGAGAGACCTCGCATCTATCACCTGTCTACGAAGTTTCTACGTTTCATCATCGAGAGGATTTTTCTGCCGTCGTTGTGCTCAAGAGAAT
CGCTCACTGACATCTGAATTTCCAACCTCTACAGTAGTCCAGTCCATCAACCGCAATATGGGTATTTCTCGGACTCCGTCACAAGCGCTCGGCCACCG
GTGCGAAGAGGCGCTTCTACTAGTTCTAGAGCGCGCGCATCCACTCGTTCACTTGTGTTGTTCTTCTATTCTCACACTCGTTTTCTCTATGCGGAATCA
ACATGCGTCGAGCTTTGGCGGTAGCTGCCATCGCAGCTTCGCCAATGCAATGCTGACGAAGGGCGAGGAGCTGTTCAACCGGGTGGTGGCATCTGCT
CGAGCTGGACGGGACGTAACCGGCCACAAGTTGAGCGTGTCCGGGAGGGGCGAGGGGATGCCACCTACGGCAAGCTGACCTGAAGTTTCATCTGCAAC
ACGGGCAAGGTGCCCGTGCCCTGGCCACCTCGTGACCACTGACCTACGGCGTGCACTGCTTCAGCCGCTACCGCGACCCACATGAAGCAGCAGCACT
TCTTCAAGTCCGCAATGCCGAAGGCTACGTCCAGGAGCGCACCATCTTCTCAAGGAAGCAGGCAACTAACAAGACCGCGCGAGGTTGAAGTTGAGGG
CGACACCTGGTGAACCGCATCGAGCTGAAGGGCATCGACTTCAAGGAGGAGGGCAACATCCTGGGGCACAAGCTGGAGTACAACCTACAACAGCCACAAG
GTCTATATCATGGCCGACAAGCAGAAGAACGGCATCAAGGTGAACCTCAAGATCCGCCACAACATCGAGGACGGCAGCGTGCAGCTCGCCGACCACTACC
AGCAGAACACCCCATCGGGGACGGCCCGCTGCTGCTGCCGACAACCACTACCTGAGCACCCAGTCCGCCCTGAGCAAAAGACCCCAACGAGAAGCGGGA
TCACATGGTCTGTTGGAGTTCTGTACCGCGCGCCGGATCACTCTCGCATGGACGAGGTGTACAAGTAAATCATTCCACTCAACATTAGGGCTCCTCTG
CGCAGCTAAAGTGCCAAAGGCAATACCCTGCGGCCGCCACCGCGGTGGAGCTCGAATATTCATGATCTGTCTTTTATATTTGTAGCAGAGTCGTGGCT
ATATGACCCTTTTGTTACCCAGATACAGTATACATACCACGTG

>P_{ss}-3, 149 bp insertion

CTGCCCTCCAAATTTACCCCTCTATCTGCATTGAACGACCCTCGAGGTCGACGCGATCGTGAGAAAGGAGAAGGCATCCACTCGTTCACTTGTGTTGGT
TCTTCTATTCTCACACTCGTTTTCTCTATGCGGAATCAACATCGCTCGAGCTTTGGCCGTAGCTGCCATCGCAGCGTCCGCCAATGCAACGAGGCTCTC
AGTCGACTATGCCAGGAAGTACAAGGATTTTCGTCATGGGCTTTGTTTCGACGAGGGCATTGTCGGAGATCAAATCGGACGTGACCACGGCTTCGGATGAT

GAGGACTTTGTGGTTTTACCAACCGGTGTCAATCTGTCTGCGAAGGGTGATAAGCTTGGACAGCAGTACCAGACACCTCAGTCAGCGATCGGCCGCGGTG
CGGACTTTATTATTGCTGGTCTGCGGGATCTACGCTGCGCCGGATCCTGTTGAGGCTGTTTACGCGCTACCAGCAGGAGGGTTGGGAGGCATATGAGGCTAG
GGTTGGCAAGCAGTGAGAATATTCTATGATCTGTCTTTTTATATTGTAGCAGAGTCGTGGCTATATGACCCTTTTGTATCCAGATACAGTATACATAC
CAGCTGATGATTTCAACTAGGTATTTTCCAAACAGGAAATAAAGAAGCTCACTTTCTAACCATTTCAAATCCCAATATGCCGAATAGCAAAAAGAAAA
GACCTCACTTCTCCGACCTCTTCTGTACCATTAAGGGAAGCTGAGCTCACGTATGCAAAGTGACGGGCAGGGATTTGCTGTCTTGAGTTCTCCGAGA
TATCGGGAAAGTTGGGGAAGGGTGATGCGAATATAGTCTTGTGGCTAAGTT

>P_{ss}-4, 246 bp insertion

CCCTCCAAATTTACCCCTCTATCTGCATTGAACGACCATGTCTTCCAGATCGCAATTGAGATACTCTGAACGAGCAGCAAACCATCCTAATGTGCTCGCG
AAGAAGCTGTTTCCAAATAGCGGAGGCAAGAAGACTAATGTCACTGTATCTGCCGATGTACGACTACGAAGGAAGTCTGGATCTAGCTAACCGTAAGT
TGGAACCTATTACTCTCAATTACAGCATCCGCGCATTTCGAAGGTCAGGTTTTTTTTTAAGCTAACAATCTATCTGCCCTATACAGGTCTCGGCCCCCAT
ATCGCGGTGATCAAAACCCACATTGACATCCTATCCGACTTCAGCGAAGAGACCATCTCGGCCCTGACGGCGCTCGCGAAGAAGCACAACCTCCTCATCT
TTGAGGACCGCAAGTTCATCGATATCGGTAAACCCGTCCAGAAGCAGTACCATGGTGGAGCTCTCCGGATATCTGAGTGGTCCACATTATCAATTGCGC
CATCCTCCCCGGTGAGGGTATCGTCGAGGCTCTCGCCAAACTGCTTCGTGCGCAGATTTCCCATACGGAAGGAGAGGGGACTGCTGATTCTAGCAGAG
ATGACCTCCAAGGGATCCCTTGCACGGGAGAGTACAGGCTCCCGCATCGCTGGCCAATGTATACGACTTGAACACTACGACTCACTATA
GGTGCCACGGGAGAGTACAGGTTTTAGAGCTAGAAATAGCAAGTTAAATAAGGCTAGTCCGTTATCACTTGAAAAAGTGGCACCAGAGTCGGTGCTC
TCTGGTCTGTGCGGGGCGACAAGTGAGCTTTTCATCGTCGCTATCGTCCGCGACCGCTTGGTGGAGCTGCTATGACGGGAAGCGAAGGTTCTCAGTCGAC
TATGCCAGGAAGTACAAGGATTTCTCATGGGCTTTGTTTCGACGAGGGCATTGTGCGAGATCAAATCGGACGTGACCACGGCTTCGGATGATGAGGACT
TTGTGGTTTTTACCACCGGTGTCAATCTGTCTGCGAAGGGTGATAAGCTTGGACAGCAGTACCAGACACCTCAGTCAGCGATCGGCCGCGGTGCGGACTT
TATTATTGCTGGTCTGCGGATCTACGCTGCGCCGGATCCTGTTGAGGCTGTTTACGCGCTACCAGCAGGAGGGTTGGGAGGCATATGAGGCTAGGGTTGGC
AAGCAGTGAGAATATTCTATGATCTGTCTTTTTATATTGTAGCAGAGTCGTGGCTATATGACCCTTTTGTATCCAGATACAGTATA

>P_{ss}-5, 290 bp insertion

CCTCCAAATTTACCCCTCTATCTGCATTGAACGACCATGTCTTCCAGATCGCAATTGAGATACTCTGAACGAGCAGCAAACCATCCTAATGTGCTCGCGA
AGAAGCTGTTTCCAAATAGCGGAGGCAAGAAGACTAATGTCACTGTATCTGCCGATGTACGACTACGAAGGAAGTCTGGATCTAGCTAACCGTAAGT
GGAACCTATTACTCTCAATTACAGCATCCGCGCATTTCGAAGGTCAGGTTTTTTTTTAAGCTAACAATCTATCTGCCCTATACAGGTCTCGGCCCCCAT
TCGCCGTGATCAAAACCCACATTGACATCCTATCCGACTTCAGCGAAGAGACCATCTCGGCCCTGACGGCGCTCGCGAAGAAGCACAACCTCCTCATCTT
TGAGGACCGCAAGTTCATCGATATCGGTAAACCCGTCCAGAAGCAGTACCATGGTGGAGCTCTCCGGATATCTGAGTGGTCCACATTATCAATTGCGCC
ATCCTCCCCGGTGAGGGTATCGTCGAGGCTCTCGCCAAACTGCTTCGTGCGCAGATTTCCCATACGGAAGGAGAGGGGACTGCTGATTCTAGCAGAGA
TGACCTCCAAGGGATCCCTTGCACGGGAGAGTACAGGCTGTAATCCGGATACCGCTCGCCAGCTGATCTTTAATCTGTGCGGTTATCTGCGCTATAACA
TTGAATTAAGAGCAGTAGCAAAATCGATATCAAAAAGAGCTGTATCAAATTAAGACTATATTGCCATTGAGCAGGCGCCGCTTTGGCGACAAGCTCAC
GGTTATCTATGATATTGATGAAGAGGTGAATTGCTGCATTCCAGCGCTGCTGATCCAGCGGTTGGTGGAGAATGCCATTGTCCACGGTATCCAGCCTTG
AAAGGTAAGGCGTTGTACCATCAGCGCGAAGGTTCTCAGTCGACTATGCCAGGAAGTACAAGGATTTCTCATGGGCTTTGTTTCGACGAGGGCATTGT
CGGAGATCAAATCGGACGTGACCACGGCTTCGGATGATGAGGACTTTGTGGTTTTTACCACCGGTGTCAATCTGTCTGCGAAGGGTGATAAGCTTGGACA
GCAGTACCAGACACCTCAGTCAGCGATCGGCCGCGGTGCGGACTTTATTATTGCTGGTCTGCGGATCTACGCTGCGCCGGATCCTGTTGAGGCTGTTTCA
CGCTACCAGCAGGAGGGTTGGGAGGCATATGAGGCTAGGGTTGGCAAGCAGTGAGAATATTCTATGATCTGTCTTTTTATATTGTAGCAGAGTCGTGGC
TATATGACCCTTTTGTATCCAGATACAGTATACATA

>P_{ss}-9, 1816 bp HR

TTTACCCCTCTATCTGCATTGAACGACCCCTCGAGGTCGACGCGATCGTGAGAAAGGAGAAGGCCAAGAAGCAGCAGCAGAAGCCCAATCTGTGCGGCAA
ACCATAGAGAGAGAGCTCTCGTGTCTGGTGGTTGAGGCATGTTTGATTGTAGATGGAGTGTGAGTTTCATACCCAGTTAGACGATGTTCTGATAGTAAA
TAGTGGCAGTTCTTTCTGCATGAATGTGATAAATAATCAGTGAATAATGATAATAAGGCCGTTGTGTTTCGAGGTTTAACTCTCAGTATAGTAGTAGTAC
TGTAAGTACTTAGAAAAATCCAGTACGAATTGGGAATGCTCGGCTGGCGGGCGTGTGTGCGCTAGTCCATATTAGGGTTAGTGGCACTTTCCGGTAG
GGCATTTCGACAAGCGAGCCACACTGCGAAATTAAGACAGCCGACGACAAGCACTTAACAATCGACCACCCACCCACATTGCCCGCGCGTGTCTGT
GTGAAGGACTGCAGGTTACGAGGTTAGTATATTTGATGCCGTTGTGCGGTTTGCATTCTCTCGAGACGAAATTGGACAACCTCGTGGTGGGTGATACT
CCGCGCGCGATTGATGGTGTGATATTTCTGGAAGGAACCAAGGTCAACAGAGCTTGGGTCAAAGAGTCTCGCGAGGAAAGCAGAAGAAAGAGAAAA
GAGAGACCTCGCATCTATCACCTGTCTACGAAGTTTCTACGTTTCATCATCGAGAGGATTTTTCTGCGCTGTTGTGCTCAAGAGAATCGCTCACTG
ACATCTGAATTTCAAACCTACAGTAGTCCAGTCCATCAACCGCAAATATGGGTATTTCTCGCGACTCCCGTCACAAGCGCTCGGCCACCGGTGCGAAGA
GGGCTTCTACTAGTTCTAGAGCGGCCCATCCACTCGTTCACTTGTGTTGTTCTTCTATTCTCACACTCGTTTTCTCTAATGGGAATCAACATCGCTC
GAGCTTTGGCCGTAGTGGCATCGCAGCGTCGGCCAAATGCAATGGTGAGCAAGGGCGAGGAGGCTTTCACCGGGGTGGTGCCATCCTGGTCGAGGTGGA
CGGCGACGTAAACGGCCACAAGTTTCAGCGTGTCCGCGAGGGGCGAGGCGCATGCCACCTACGGCAAGCTGACCGTGAAAGTTTCATCTGCACCACCGGCAAG
GTGCCGCTGCCGTGGCCACCCCTCGTGACCAACCTGACCTACGCGCTGCAAGTCTTCAGCGCTACCCGACCCACATGAAGCAGCAGCACTCTTCAAGT
CGGCCATGCCCGAAGGCTACGTCCAGGAGCGCAACCATCTCTTCAAGGACGACGGCAACTACAAGACCGCGCGGAGGTGAAGTTTCGAGGGGACACCCCT

GGTGAACCGOATCGAGCTGAAGGGCATCGACTTCAAGGAGGACGGCAACATCCTGGGGOACAAGCTGGAGTACAACCTAACAACAGCCACAACGCTCTATATC
ATGGCCGACAGAAGCAGAAGAACGGCATCAAGGTGAACCTCAAGATCCGGCACAACATCGAGGAACGGCAGCGTGCAGCTCGCCGACCACTACCAGCAGAACA
CCCCCATCGGGCAGCGGCCCGGTGCTGCTGCCGACAACCACTACCTGAGCACCCAGTCCGCCCTGAGCAAAGACCCCAACAGAGAAGCGCGATCACATGGT
CCTGCTGGAGTTCTGTACCGCCCGCGGGATCACTCTCGGCATGGACGAGCTGTACAAGTAAATCATTCCACTCAACATTCAGGCTCCTCTGCCGACGTAA
AGTGCCAAAGGCAATACCTGCGGCCGCCACCGCGGTGGAGCTCGAATATTCTATGATCTGTCTTTTATATTTGTAGCAGAGTCGTGGCTATATGACCC
TTTTGTTACCCAGATACAGTATACATACCACGTG

>P_{ss}-10, 1816 bp HR

CCCCCTCAAATTTACCCCTCTATCTGCATTGAACGACCCTCGAGGTCGACGCGATCGTGAGAAAGGAGAAGGCCAAGAAGCAGCAGCAGAAGCCCAATC
TGTCGGGCAAACCATAGAGAGAGAGCTCTCGTGTCTGGTGGTTGAGGCATGTTTGATTGTAGATGGAGTGTTGAGTTTCATACCCAGTTAGACGATGTTT
TGATAGTAAATAGTGGCAGTCTTTCTGCATGAATGTGATAAATAATCAGTGAATAATGATAAATAAGGCCGTTGTGTTTCGAGGTTTAACTCTCAGTATA
GTAGTAGTACTGTAAGTACTTAGAAAAATCCAGTACGAATTGGGAATGCTCGGCTGGCGGGCGTGTGTGCGCTAGTCCATATTAGGTTAGTGCGCAC
TTTCGGGTAGGGCATTTCGACAAGCAGGACACACTGCGAAATCAAGACAGCCGACGACAAGCACTTAACAATCGACCACCCACCCACATTGCCCGCG
CGTTGTCTGGTGAAGGACTGCAGGTTACGAGTTAGTATATTTGATGCCGTTGTGCGGTTTGCATTCTCTCGAGACGAAATTGGACAACCTCGTGGTC
GGGTGATACTCCGCGCGGATTGATGGTGTGATATTTCTGTAAGGAACCAAGGTCAACAGAGCTTGGGTCAAAGAGTCTCGCGAGGAAAGCAGAAG
AAAGAGAAAAGAGAGACCTCGCGATCTATCACCTGTCTACGAAGTTTCTACGTTTCATCATCGAGAGGATTTTTCTGCCGTCGTTGTGCTCAAGAGAA
TCGCTCACTGACATCTGAATTTCCAACCTACAGTAGTCCAGTCCATCAACCGCAAATATGGGTATTTCTCGCGACTCCCGTCACAAGCGCTCGGCCACC
GGTGCGAAGAGGGCCTTCTACTAGTTCTAGAGCGGCCGCATCCACTCGTTCACCTGTTTGGTCTTCTATTCTCACACTCGTTTTCTCTAATGGGAATC
AACATGCGTCGAGCTTTGGCCGTAGCTGCCATCGCAGCGTCCGCCAATGCAATGGTGAGCAAGGGCGAGGAGCTGTTACCCGGGGTGGTGGCCATCCTGG
TCGAGCTGGACGGCGACGTAAACGGCCACAAGTTACGCGTGTCCGGCGAGGGCGAGGGCGATGCCACCTACGGCAAGCTGACCCGTAAGTTCACTGAC
CACCGGCAAGCTGCCCGTGGCCGTGGCCACCCCTCGTGACCAACCTGACCTACGGCGTGCAGTGCTTCAGCCGCTACCCCGACCACTGAAGCAGCAGCAG
TTCTTCAAGTCGCGCATGCCCGAAGGCTACGTCCAGGAGCGCACCATCTTCTTCAAGGACGACGCAACTACAAGACCCGCGCGAGGTGAAGTTGAGG
GGCAGACCCCTGGTGAACCGCATCGAGCTGAAGGGCATGCACTTCAAGGAGGACGGCAACATCTCTGGGGCACAAGCTGGAGTACAACCTACAACAGCCACA
CGTCTATATCATGGCGACAAGCAGAAGAAGGCAACAAGGTGAAGTTCAAGATCCGCCACAACATCGAGGACGGCAGGTCGAGCTCGCCGACCACTAG
CAGCAGAACACCCCATCGCGCAGCGGCCCGTGTGCTGCCGACAACCACTACCTGAGCACCCAGTCCGCCCTGAGCAAAGACCCCAACGAGAAGGCG
ATCAGATGGTCTGCTGGAGTTCTGTACCGCGCGCGGGATCACTCTCGGCATGGACGAGCTGTACAAGTAAATCATTCCACTCAACATTCAGGCTCCTCT
GCGCAGTAAAGTGCCAAAGGCAATACCTGCGGCCGCCACCGCGGTGGAGCTCGAATATTCTATGATCTGTCTTTTATATTTGTAGCAGAGTCGTGGC
TATATGACCCCTTTTGTACCCAGATACAGTATACATACCAG

>P_{ss}-11, >545 bp insertion

TACCCCTCTATCTGCATTGAACGACCCTCGAGGTCGACGCGATCGTGAGAAAGGAGAAGGCCAAGAAGCAGCAGCAGAAGCCCAATCTGTGCGGCAAAC
CATAGAGAGAGAGCTCTCGTGTCTGGTGGTTGAGGCATGTTTGATTGTAGATGGAGTGTTGAGTTTCATACCCAGTTAGACGATGTTCTGATAGTAAATA
GTGGCAGTTCTTTCTGCATGAATGTGATAAATAATCAGTGAATAATGATAAATAAGGCCGTTGTGTTTCGAGGTTTAACTCTCAGTATAGTAGTACTG
TAAGTACTTAGAAAAATCCAGTACGAATTGGGAATGCTCGGCTGGCGGGCGTGTGTGCGCTAGTCCATATTAGGTTAGTGCGCACCTTCGGGTAGGG
CATTTTCGACAAGCGAGCCACACTGCGAAATCAAGACAGCCGACGACAAGCACTTAACAATCGACCACCCACCCACATTGCCCGCGCGTGTGTTCTGGT
GAAGGACTGCAGGTTACGAGGTTAGTATATTTGATGCCGTTGTGCGGTTTGCATTCTCTCGAGACGAAATCGAAGGTCTCAGTCGACTATGCCAGGAAG
TACAAGGATTTCTGTCATGGGCTTTGTTTCGACGAGGGCATTGTGCGAGATCAAATCGGACGTGACCAAGGCTTCGGATGATGAGGACTTTGTGGTTTTCA
CCACGGGTGTCAATCTGTCTGAAGGGTGATAAGCTTGGACAGCAGTACCAGACACCTCAGTCAGCGATCGGCCGCGGTGCGGACTTTATTATTGCTGG
TCGTGGGATCTACGCTGCGCCGGATCCTGTTGAGGCTGTTACGCGCTACCAGCAGGAGGGTTGGGAGGCATATGAGGCTAGGGTTGGCAAGCAGTGAGAA
TATTCTATGATCGCCTTTTATATTTGTAGCAGAATCGTGGCTATATGACCCCTTTGTTACCCAGATACCGTATACTTACCACGTGATGATTTCAACTA
GGTATTTTCAA

>P_{ub}-1, 1583 bp HR

ACCCCTCTATCTGCATTGAACGACCCTCGAGGTCGACAGTACTGGGCATCGACGACTTGTACGGGAGATATTTCTGTATTTTAGGACAAAGCTGAC
GGGCATTTTATATCGAGGATCTCGGTGACCATCCTCTCGGGTAATTATGTTTGGGGTGGTTAGTTAGAGCGGCTAAGTACCTACTGAACACAGCGCC
CACGAAGACCACTGGTTGATGACAAATCATAACAAATAAATACTTGACCAATTGTGAGTATGTCCATCAATGGGATGTCTCAAAATGAGTATATTT
TGGCCATGAACGTAGTTATTAATTTCTGTCTCCAATGTAACCAAGAGTTCTCTATCCAGGTCGTTCTGCAATGGACAACGCGGGCTGGTCCCGTGAC
GTGGCAGAACCGGCGGATACCGGATTGAGCGCGCCCTGCCGCGCTCTGTTGTCTGTTGACTCCTGAACCTAACCTTCTAGCGCGACAACAAGG
CGTCTCCTACCGCGGACTTCTCCCAACTTCATCCTCCATCGCTGTCTTCTCCAGAACTCCTCTGTCTGGGTTTCAATCCTCTCCTCATCCTCC
CGTCCATTCCAACCTCTTATTTACGGACCTGTACCTTCTGCCACCATGCGTGAAATCGTACGTTTGTGACTAGTTCTAGAGCGCGCGATCCACT
CGTTCACTTGTTTGGTCTTCTATTCTCACACTCGTTTTCTCTAATGGGAATCAACATGCGTCGAGCTTTGGCCGTAGCTGCCATCGCAGCGTCCGCCA
ATGCAATGGTGAGCAAGGGCGAGGAGCTGTTACCCGGGGTGGTGGCCATCCTGGTCGAGCTGGACGGCGACGTAAACGGCCACAAGTTACGCGTGTCCGG
CGAGGGCGAGGGCGATGCCACCTACGGCAAGCTGACCCCTGAAGTTCACTGTGACCAACGGCAAGCTGCCCGTGGCTTGGCCACCCCTCGTGACCAACCTG

ACCTACGGCGTGCAGTGOTTGAGCCGCTAOCGCCGACACATGAAGCAGCAGACTTCTTCAAGTCCGCCATGCCGGAAGGCTACGTCCAGGACGCAACCA
TCTTCTTCAAGGAACGACGCAACTAOCAGACCCGCCGCGAGGTGAAGTTCGAGGGCGACACCCTGGTGAACCGCATCGAGGTGAAGGGCATCGACTTCAA
GGAGGACGGCAACATCCTGGGGCACAAGCTGGAGTACAACACAGCCACAACGCTATATCATGGCCGACAAGCAGAAGAAGCGCATCAAGGTGAAC
TTCAAGATCCGCCACAACATCGAGGACGGCAGCGTGCAGCTCGCCGACCCTACCAGCAGAACACCCCATCGGCCAGCGCCCGTGTGTGCTGCCCGACA
ACCACTACCTGAGCACCAGTCCGCCCTGAGCAAAGACCCCAACGAGAAGCGCGATCACATGGTCTGTGGAGTTCGTGACCGCCGCCGGGATCACCTCT
CGGCATGGACGAGGTGTACAAGTAAATCATTCCACTCAACATTGAGGCTCCTCTGCGCACGTAAAGTGCCAAAGGCAATACCCTGCGGCCGCCACCGCGG
TGGAGCTCGAATATTCTATGATCTGTCTTTTATATTGTAGCAGAGT

>P_{ub}-2, 11bp deletion

CATTGAATTGACCATTATCCTCCGTTAAACCCAAAGCAGAGCTTCGGAGAAAAGGATAGGACAGAATATTTTCCATCCTGCCCTCCAAATTTACCCCTC
TATCTGCATTGAACGACCATGTCTTCCAGATCGCAATTGAGATACTCTGAACGAGCAGCAAACCATCCTAATGTGCTCGGGAAGAAGCTGTTGCAAAATAG
CGGAGGCAAAGAAGACTAATGTCACTGTATCTGCCGATGTCAGCACTACGAAGAACTGCTGGATCTAGCTAACCCTAAGTTGGAACCTATTACTCTCAA
TTACACGCATCCGCGCATTCGAAGGTGAGGTTTTTTTTTAAAGTAACAATCTATCTGCCCTATACAGGTCTCGGCCCATATCGCCGTGATCAAAACCC
ACATTGACATCCTATCCGACTTCAGCGAAGAGACCATCTCCGGCTGACGGCGCTCGGAAGAAGCACAACCTCCTCATCTTTGAGGACCGCAAGTTCAT
CGATATCGGTAAACCGTCCAGAAGCAGTACCATGGTGGAGCTCTCCGATATCTGAGTGGTCCACATTATCAATTGCGCCATCCTCCCGGTGAGGGT
ATCGTCGAGGCTCTCGCCAAACTGCTTCGTGCGCAGATTTCCCATACGGAAGGAGAGGGGACTGCTGATTCTAGCAGAGATGACCTCCAAGGGATCCC
TTGCCACGGGAGAGTACA GTCGACTATGCCAGGAAGTACAAGGATTTGTCATGGGCTTTGTTTCGACGAGGGCATTTGTCGGAGATCAAA
TCGGACGTGACCACGGCTTCGGATGATGAGGACTTTGTGGTTTTACCAACCGGTGTCAATCTGTCGTGGAAGGGTGATAAGCTTGGACAGCAGTACCAGA
CACCTCAGTCAGCGATCGGCCGCGGTGCGGACTTTATTATTGCTGGTGGTGGATCTACGCTGCGCCGGATCCTGTTGAGGCTGTTGAGCGCTACCAGCA
GGAGGGTTGGGAGGCATATGAGGCTAGGGTTGGCAAGCAGTGAGAATATTCTATGATCTGTCTTTTATATTGTAGCAGAGTCGTGGCTATATGACCCT
TTTGTTACCCAGATACAGTATACATACCACGTGATGATTTCAACTAGGTATTTTCAAACAGGAAATAAAGAAGCTCACTTTCTAACCATTTCAAATCC
CAATATGCCGAATAGC

>P_{ub}-3, 1583 bp HR

ATTTACCCCTCTATCTGCATTGAACGACCCTCGAGGTCGACAGTACTGGGGCATCGACGACTTGTACGCGGAGATATTTCTGTATTTTAGGACAAAGC
TGACGGGCATTTTATATCGAGGATCTCGGGTGACCATCCTCTCGGGTAATTATGTTTGGGGTGGTTAGTTAGAGCGGCTAAGTACCTACTGAACACAG
CGCCACGAAGACCACTGGTTGATGACAAATCATAACAAATAAATACTTGACCAATTGTCGAGTATGTCCATCAATGGGATGTCTCAAATGAGTATA
TTTCTGGCCATGAACGTAGTTATTAATTTCTGTCTCCAATGTAACCAAGAGTTCCTCTATCCAGGTCGTTCTGTCATGGACAACGCGGGCTGGTCCG
TGACGTGGCACGAACCGCGCGATACCGGATTGAGCGCGCCCTGCCCGGCTCTTGTGTCTGTTGACTCCTGAACTAACCTTCTAGCCGCACAAC
AAGGCGTCTCCTACCGCCGACTTCTTCCAACTTCATCCTCCATCGCTGTCTTTCTCCGAACTCCTCTGTCTGGGTTCAATCCTCTCCTCATC
CTCCGTCATTCCAACCTCTTATTTACCGGACCTGTACCTTCTGCCACCATGCGTGAATCGTACGTTTGTGACTAGTTCTAGAGCGCGCGCATC
CACTCGTTCACTTGTTTGGTCTTCTATTCTCACACTCGTTTTCTCTAATGGGAATCAACATGCGTCGAGCTTTGGCCGTAGGTGCCATCGCAGCGTCC
GCCAATGCAATGGTGAGCAAGGGCGAGGAGCTGTTACCGGGGTGGTGCCCATCCTGGTCGAGCTGGACGGCGACGTAAACGGCCACAAGTTGAGCGTGT
CGCGCGAGGGCGAGGGCGATGCCACCTACGGCAAGCTGACCCCTGAAGTTTCATCTGCACCAACCGGCAAGCTGCCCGTGCCTGGCCCAACCTCGTGACCA
CCTGACCTACGGCGTCGAGTGCTTCAGCCGCTACCCCGACCACATGAAGCAGCAGCACTTCTTCAAGTCCGCCATGCCGGAAGGCTACGTCCAGGACGCG
ACCATGTTCTTCAAGGACGACGCAACTACAAGACCCGCGCGAGGTGAAGTTCGAGGGCGACACCCTGGTGAACCGCATCGAGCTGAAGGGCATCGACT
TCAAGGAGGACGCGCAACATCCTGGGGCACAAGCTGGAGTACAACACAGCCACAACGCTCTATATCATGGCCGACAAGCAGAAGAAGCGCATCAAGGT
GAACCTCAAGATCCGCCACAACATCGAGGACGGCAGCGTGCAGCTCGCCGACCCTACCAAGCAGAACACCCCATCGGCGACGGCCCGCTGCTGCTGCC
GACAACCACTACCTGAGCAGCCAGTCCGCCCTGAGCAAAGACCCCAAGCAGAGAAGCGGATGACATGGTCTGTGGAGTTCTGTACCGCGCGCGGATCA
CTCTCGGCATGGACGAGTGTACAAGTAAATCATTCCACTCAACATTGAGGCTCCTCTGCGCACGTAAAGTGCCAAAGGCAATACCCTGCGGCCGCCACC
GCGGTGGAGCTCGAATATTCTATGATCTGTCTTTTATATTGTAGCAGAGTCGTGGCTATATGACCCTTTGTTACCCAGATACAGTATACATACC

>P_{ub}-4, 1583 bp HR

CTCCAAATTTACCCCTCTATCTGCATTGAACGACCCTCGAGGTCGACAGTACTGGGGCATCGACGACTTGTACGCGGAGATATTTCTGTATTTTAGGA
CAAAGCTGACGGGCATTTTATATCGAGGATCTCGGGTGACCATCCTCTCGGGTAATTATGTTTGGGGTGGTTAGTTAGAGCGGCTAAGTACCTACTGA
ACACAGCGCCACGAAGACCACTGGTTGATGACAAATCATAACAAATAAATACTTGACCAATTGTCGAGTATGTCCATCAATGGGATGTCTCAAATG
AGTATATTTCTGGCCATGAACGTAGTTATTAATTTCTGTCTCCAATGTAACCAAGAGTTCCTCTATCCAGGTCGTTCTGTCATGGACAACGCGGGCTG
GTCCCGTGACGTGGCAGCAACCGCGCGATACCGGATTGAGCGCGCCCTGCCCGGCTCTTGTGTCTGTTGACTCCTGAACTAACCTTCTTAGCCG
CACAACAAGGGCTCTCCTACCGCCGACTTCTTCCAACTTCATCCTCCATCGCTGTCTTTCTCCGAACTCCTCTGTCTGGGTTTCAATCCTCTC
CTCATCCTCCCGTCCATTCCAACCTCTTATTTACCGGACCTGTACCTTCTGCCACCATGCGTGAATCGTACGTTTGTGACTAGTTCTAGAGCGGC
CGCATCCACTCGTTCACTTGTTTGGTCTTCTATTCTCACACTCGTTTTCTCTAATGGGAATCAACATGCGTCGAGCTTTGGCCGTAGGTGCCATCGCA
GCGTCCGCCAATGCAATGGTGAGCAAGGGCGAGGAGCTGTTACCGGGGTGGTGCCCATCCTGGTCGAGCTGGACGGCGACGTAAACGGCCACAAGTTCA
GCGTGTCCGGCGAGGGCGAGGGCGATGCCACCTACGGCAAGCTGACCCCTGAAGTTTCATCTGCACCAACGGCAAGCTGCCCGTGCCTGGCCCAACCTCGT

GACCACCCGTGACCTACGGCGTGCAGTGGTTTCAGCCGCTACCCCGACCCACATGAAGCAGCAGGACTTCTTCAAGTCCGCCATGCCCGAAGGCTACGTCCAG
GAGCGCACCATTCTTCTTCAAGGACGACGGCAACTACAAGACCCGCGCGAGGTGAAGTTCGAGGGCGACACCCTGGTGAACCGCATCGAGCTGAAGGGCA
TCGACTTCAAGGAGGACGGCAACATCCTGGGGCACAAGCTGGAGTACAACACTACAACAGCCACAACGTCTATATCATGGCCGACAGCAGAGAAGAACGGCAT
CAAGGTGAAGTTCAAGATCCGCCACAACATCGAGGACGGCAGCGTGCAGCTCGCCGACCACTACCAGCAGAACACCCCCATCGGGCAGCGGCCCGTGGTGG
CTGCCCGACAACCCTACCTGAGCACCAGTCCGCCCTGAGCAAAAGACCCCAACGAGAAGCGCGATCAGATGGTCTCTGGAGTTCGTGACCGCCCGCG
GGATCACTCTCGGCATGGACGAGCTGTACAAGTAATCATTCCACTCAACATTGAGGCTCCTCTGCGCACGTAAAGTGCCAAAGGCAATACCTGCGGCC
GCCACCGCGGTGGAGCTCGAATATTCTATGATCTGTCTTTTTATATTGTAGCAGAGTCGTGGCTATATGACCCTTTTGTACCCAGATACAGTATACAT
ACCAGG

>P_{tub}-5, 1 bp insertion

CCGTTAAACCCAAAGCAGAGCTTCGGAGAAAGGATAGGACAGAATATTTTCCATCCTGCCCTCCAAATTTACCCCTCTATCTGCATTGAACGACCATGT
CTTCAGATCGCAATTGAGATACTCTGAACGAGCAGCAAAACCATCCTAATGTGCTCGCGAAGAAGCTGTTGAAATAGCGGAGGCAAAGAAGACTAATGT
CACTGTATCTGCCGATGTCAGGACTACGAAGGAAGTCTGGATCTAGCTAACCGTAAGTTGGAACCTATTACTCTCAATTACACGCATCCGCGCATTGCA
AGGTGAGGTTTTTTTTTAAGCTAACAATCTATCTGCCCTATACAGGTCTCGGCCCCCATATCGCGTGATCAAAACCCACATTGACATCCTATCCGACTT
CAGCGAAGAGACCATCTCCGGCTGACGGCGCTCGCAAGAAGCACAACCTCCTCATCTTTGAGGACCGCAAGTTCATCGATATCGGTAACACCGTCCAG
AAGCAGTACCATTGGTGGAGCTCTCCGATATCTGAGTGGTCCACATTATCAATTGCGCCATCCTCCCGGTGAGGGTATCGTCGAGGCTCTGCCCAAA
CTGCTTCGTCGCCAGATTTCCCATACGGAAGGAGAGGGGACTGCTGATTCTAGCAGAGATGACCTCCAAGGGATCCCTTGCCACGGGAGAGTACAACGA
AGGCTCTCAGTCGACTATGCCAGGAAGTACAAGGATTTCTGTCATGGGCTTTGTTTCGACGAGGGCATTGTGAGAGTCAAATCGGACGTGACACGGGCTTC
GGATGATGAGGACTTTGTGGTTTTACCACCGGTGTCAATCTGTCGTGCGAAGGGTGATAAGCTTGGACAGCAGTACCAGACACCTCAGTCAGCGATCGGC
CGCGGTGCGGACTTTATTATTGCTGGTGGTGGATCTACGCTGCGCCGGATCCTGTTGAGGCTGTTACGCGTACCAGCAGGAGGGTTGGGAGGCATATG
AGGCTAGGGTTGGCAAGCAGTGAGAATATTCTATGATCTGTCTTTTTATATTGTAGCAGAGTCGTGGCTATATGACCCTTTTGTACCCAGATACAGTA
TACATACCACGTGATGATTTCAACTAGGTATTTTCCAAACAGGAAATAAAGAAGCTCACCTTTCAACCCATTCAAATCCCAATAT

>P_{tub}-6, 1583 bp HR

CTCCAAATTTACCCCTCTATCTGCATTGAACGACCCTCGAGGTGACAGTACTGGGGCATCGACGACTTGTACGGGAGATATTCTGTATTTTTAGGA
CAAAGCTGACGGGCATTTTATATCGAGGATCTCGGGTGACCATCCTCTCGGGTAATTATGTTTGGGGTGGGTTAGTTAGAGCGGCTAAGTACCTACTGA
ACACAGGCGCCACGAAGACCACTGGTTGATGACAAATCATAACAAATAAATACTTGACCAATTGTGAGTATGTCCATCAATGGGATGTCTCAAATG
AGTATATTTCTGGCCATGAACGTAGTTATTAATTTCTGTCTCCAATGTAAACCAAGAGTTCTCTATCCAGGTGTTCTGCTGATGGACAACCGGGCTG
GTCCCGTGACGTGGCAGAACCGGCGGATACCGGATTGAGCGCGCCCTGCCGGCCTCTTGTGCTGTTGACTCCTGAACTAACCTCTTAGCCG
CACAACAAGGCTCTCTCACCGCGACTTCTTCCAACCTCATCTCCATCGTGTCTTTCTCCAGAACTCTCTTGTCTGGGTTTCAATCCTCTC
CTCATCTCCGTCATTCCAACCTCTTATTTACCGGACCTGTACCTTCTGCCACCATGCGTGAATCGTACGTTGTTGACTAGTTCTAGAGCGGC
CGCATCCACTCGTTCACTTGTGTTGTTCTTCTATTCTCACACTCGTTTTCTCTAATGGGAATCAAACATGGGTGAGCTTTGGCGGTAGCTGCCATCGCA
GCGTCCGCCAATGCAATGGTGAGCAAGGGCGAGGAGCTGTTACCGGGGTGGTGCCATCCTGGTCGAGCTGGACGGCGAAGTAAACGGCCACAAGTTCA
GCGTGTCCGGCGAGGGCGAGGGCGATGCCACCTACGGCAAGCTGACCTGAAGTTCATCTGCACACCGGCAAGCTGCCCGTGCCCTGGCCCAACCCCTCGT
GACCACCCGTGACCTACGGCGTGCAGTGGTTTCAGCCGCTACCCCGACCCACATGAAGCAGCAGGACTTCTTCAAGTCCGCCATGCCCGAAGGCTACGTCCAG
GAGCGCACCATTCTTCTTCAAGGACGACGGCAACTACAAGACCCGCGCGAGGTGAAGTTCGAGGGCGACACCCTGGTGAACCGCATCGAGCTGAAGGGCA
TCGACTTCAAGGAGGACGGCAACATCCTGGGGCACAAGCTGGAGTACAACACTACAACAGCCACAACGTCTATATCATGGCCGACAGCAGAGAAGAACGGCAT
CAAGGTGAAGTTCAAGATCCGCCACAACATCGAGGACGGCAGCGTGCAGCTCGCCGACCACTACCAGCAGAACACCCCCATCGGGCAGCGGCCCGTGGTGG
CTGCCCGACAACCACTACCTGAGCACCAGTCCGCCCTGAGCAAAAGACCCCAACGAGAAGGGCGATCAGATGGTCTCTGGAGTTCGTGACCGCCCGCG
GGATCACTCTCGCATGGACGAGCTGTACAAGTAATCATTCCACTCAACATTGAGGCTCCTCTGCGCACGTAAAGTGCCAAAGGCAATACCTGCGGCC
GCCACCGCGGTGGAGCTCGAATATTCTATGATCTGTCTTTTTATATTGTAGCAGAGTCGTGGCTATATGACCCTTTTGTACCCAGATACAGTATACAT
ACCAC

>P_{tef1}-1, 73 bp insertion

CTGCCCTCCAAATTTACCCCTCTATCTGCATTGAACGACCATGTCTTCAGATCGCAATTGAGATACTCTGAACGAGCAGCAAAACCATCCTAATGTGCT
CGCGAAGAAGCTGTTGAAATAGCGGAGGCAAAGAAGACTAATGTCACTGTATCTGCCGATGTCAGGACTACGAAGGAAGTCTGGATCTAGCTAACCGT
AAGTTGGAACCTATTACTCTCAATTACACGCATCCGCGCATTGCAAGGTGAGGTTTTTTTTTAAGCTAACAATCTATCTGCCCTATACAGGTCTCGGCC
CCATATCGCGTGATCAAAACCCACATTGACATCCTATCCGACTTCAGCGAAGAGACCATCTCCGGCTGACGGCGCTCGCGAAGAAGCACAACCTCCTC
ATCTTTGAGGACCGCAAGTTCATCGATATCGGTAACACCGTCCAGAAGCAGTACCATGGTGGAGCTCTCCGATATCTGAGTGGTCCACATTATCAATT
GCGCCATCCTCCCGGTGAGGGTATCGTCGAGGCTCTCGCCAAACTGCTTCGTGCGCAGATTTCCCATACGGAAGGAGAGGGGACTGCTGATTCTAGC
AGAGATGACCTCCAAGGGATCCCTTGCCACGGGAGAGTACAATCTGGTTCGAGCTGGACGGCGACGTAAACGGCCACAAGTTGAGCGTGTCCGGCGAGGG
CGAGGGCGATGCCACGAAGGTTCTCAGTCGACTATGCCAGGAAGTACAAGGATTTCTGTCATGGGCTTTGTTTCGACGAGGGCATTGTGAGAGTCAAATCG
GACGTGACCACGGCTTCGATGATGAGGACTTTGTGGTTTTACCACCGGTGTCAATCTGTCGTGCGAAGGGTGATAAGCTTGGACAGCAGTACCAGACAC

CTCAGTCAGCGATCGGCCGCGGTGCGGACTTTATTATTGCTGGTCTGGGATCTACGCTGCGCCGGATCCTGTTGAGGCTGTTACGCGCTACCAGCAGGA
GGGTTGGGAGGCATATGAGGCTAGGGTTGGCAAGCAGTGAGAAATATTCTATGATCTGTCTTTTATATTTGTAGCAGAGTCGTGGCTATATGACCCTTTT
GTTACCCAGATACAGTATACATACCACGTGATGATT

>P_{tef1}-2, 106 bp insertion

GCCCCCTCCAAATTTACCCCTCTATCTGCATTGAACGACCATGTCTCCAGATCGCAATTGAGATACTCTGAACGAGCAGCAAACCATCCTAATGTGCTCG
CGAAGAAGCTGTTTCGAAATAGCGGAGGCAAAGAAGACTAATGTCACTGTATCTGCCGATGTCACGACTACGAAGGAACTGCTGGATCTAGCTAACCGTAA
GTTGGAACTTATTACTCTCAATTACACGCATCCGCGCATTCTGAAGGTCAGGTTTTTTTTTAAAGCTAACAACTATCTGCCCTATACAGGTCCTGGCCCCC
ATATCGCGGTGATCAAAACCCACATTGACATCCTATCCGACTTCAGCGAAGAGACCATCTCCGGCTGACGGCGCTCGCGAAGAAGCACAACCTTCCTCAT
CTTTGAGGACCGCAAGTTCATCGATATCGGTAACACCGCTCCAGAAGCAGTACCATGGTGGAGCTCTCCGGATATCTGAGTGGTCCACATTATCAATTGC
GCCATCCTCCCGGTGAGGGTATCGTCGAGGCTCTCGCCCAAACCTGCTTCGTCCGAGATTTCCTATCGGAAAGGAGAGGGGACTGCTGATTCTAGCAG
AGATGACCTCCAAGGGATCCCTTGCACGGGAGAGTACAAGCACCGACTCGGTGCCACTTTTCAAGTTGATAACGGGAGCCTTATTTAACTTGCTA
TTCTAGCTCTAAACTCGTGACTCTCCGTTGGCACCTATAGTACGAAGTCTCAGTCGACTATGCCAGGAAGTACAAGGATTTCTGTCATGGGCTTTGT
TTCGACGAGGGCATTGTGCGAGATCAAATCGGACGTGACCACGGCTTCGGATGATGAGGACTTTGTGGTTTTACCACCGGTGTCAATCTGTCGTCGAAG
GGTGATAAGCTTGGACAGCAGTACCAGACCTCAGTCAGCGATCGGCCGCGGTGCGGACTTTATTATTGCTGGTCGTGGGATCTACGCTGCGCCGGATC
CTGTTGAGGCTGTTACGCGCTACCAGCAGGAGGGTTGGGAGGCATATGAGGCTAGGGTTGGCAAGCAGTGAGATATTCTATGATCTG

>P_{tef1}-3, 1941 bp HR

TTACCCCTCTATCTGCATTGAACGACCCTCGAGGTCGACCACAGCTACGTATCGTATTGACATCAAAGGAAAATTGTACAATTATTATCCCAATATA
CCTGCAGCCACCCGGTATCTGGATCTAGATCTTGAACGTAACTTGTCTTTCCGAAGACGGGATGTGGCAACAAAGAAAGAAAATTCTTCGTCGAG
GCTCCACGGCGCCAAATCCAAATAAAAGGAAGCTTGATGGATATGTCAATCACAGCCCCGCATCAAGCTCTTTTGGCGACCGCGCCACTTGTTGCT
GGCGACGGATGGCAATGGGAGGAGGGGCATCTGGTAAAGCATGCAACATGAGGGATAGCGCTTGATCCAGGCCAGCGCAGCGGTGTGGGCTGCTGG
CGTTGATGCCAGTACACTGCATCGGGACCCGTTATTGAGGGGAGGTTGATGGGCAGGAGTCAAGGAGAGTCCAAGGAGAGTCAGAAGAGTGGGGTC
CGCAGCGAAAACCTTACCAGGGTTCGCCGCTGGCTGGGCAGGCACTTTCTTCCGCCAAAACAGCTGAGCTCTTTGGTCGAGTCCGCCAGCCGACA
GTTACTACTAAGTGAAGATTCTGCGCTGGTGCCGCAACACAGGGTGGGGCATCGTCCCTCCACGGCCAATGGCACGCACGGCTGCGGGAGGGCTTGAG
CCGCGCTGCTTAGTCGCCCTCTCGCTTCCCTCCATATAAGGATTTCCCTCCTCCCTCCCAAGATTTTTCTTCTTTCTCCCTCGTCTGCTT
CAGTACGTATAACTCCCTCCCGTCCAGCTTCGCGCTTCTCTTCTTCTTCTCTACTAACCATCTGTCTCAGCACCTCTACGCATTGCGCGTAGTATC
TGAGGCGCTCCGGAATCCTTCTAGTATCTTACAAAGACACTACAAGAATTCACATCTCACAACACCGCCGCATGGGTAAAGCAGGACCTCGATTCCAT
CAAAAAATCCATCGAGGATGGGCTTCATTGCGACTAGTCTAGAGCGGCCGCATCCTCGTTCACTTGTTTGGTCTTCTATTCTCACACTCGTTTTCT
CTCTAATGGGAATCAACATGCGTCGAGCTTTGGCCGTAGCTGCCATCGCAGGCTCGCCCAATGCAATGGTGAGCAAGGGCGAGGAGCTGTTACCGGGGT
GGTGCCCATCTGGTCGAGCTGGACGGCGACGTAAACGGCCACAAGTTGAGGCTGTCGGCGGAGGGCGAGGGCGATGCCACCTACGGCAAGCTGACCTG
AAGTTCATCTGCAACACCGGCAAGCTGCCGTGCCGTGGGCCACCCCTCGTGACCACCTGACCTACGGCGTGCAGTGCTTCAGCGCTACCCGCAACACA
TGAAGCAGCAGACTTCTTCAAGTCGGCATGCCGCAAGGCTACGTCCAGGAGCGCACCATCTTCTTCAAGGACGAGGGCAACTACAAGACCGCGCCGA
GGTGAAGTTCGAGGGCGACACCCCTGGTGAACGGCATCGAGCTGAAGGGCATCGACTTCAAGGAGGACGGCAACATCCTGGGGCACAAGCTGGAGTACAAC
TACAACAGCCACAACGTCTATATCATGGCCGACAAGCAGAAGAACGGCATCAAGGTGAACCTCAAGATCCGCCACAACATCGAGGACGGCAGCGTGCAGC
TCGCGGACCACTACCAGCAGAACACCCCATCGCGACGCGCCCGTGTGCTGCGCCGACAACCACTACCTGAGCACCCAGTCCGCGCTGAGCAAGACCC
CAACGAGAAGCGCATACATGCTCCTGCTGAGTTCTGTACCGCGCGCGGATCACTCTCGGCATGGACGAGCTGTACAAGTAAATCATTCACACTCAAC
ATTCAGGCTCCTCTGCGCAGTAAAGTGCCAAAGGCAATACCTGCGGCCGCCACCGCGGTGGAGCTCGAATATTCTATGATCTGTCTTTTATATTTGT
AGCAGAGTCGTGGCTATATGACCCTTTTGTACCAGATACAGTATACATACCA

>P_{gpdA}-1, 1960 HR

ATCCTGCCCCCTCCAAATTTACCCCTCTATCTGCATTGAACGACCCTCGAGGTCGACCTAGAAATTCGGCTAAAGGTGCTTTGGCTAAACATAAGTTGG
TAAGTGCTGGGTGAAGGAGATCCAATGAGAAACATCGTTTCTATTTTACAGACGGTAAATATAGCAGACCGATTGATTACCTATCGCTTGAACATG
CAGCGTCAGTTGTCTCATGGGCTAAAAGACCCGCTCTAATACTCTTCTAATCCATCGTAGATAATGCATGTACCTGGTAGATCATAAAAA
ATGCTACCATACCTCACAAGGTGCTCGAGCTGTAGGCAAGTCCGAAGCGCTATTTCCATAGATCCTTTATGCATGGCAAAACGCCGCAACTAGACT
GGACCTTGCAATGTCAAGGTCTAGACAAAATAAGCGCTGAGACCTTGGGTTGTCATCTCCGCACATGCAGCGCCGGGACCGAACTGTGAGATTC
GATTTATTTACAGGATGCGATCGATAAGTCTATTGCGTCCACACGCTGTCACTCCAATAGGACCGGTTAGAACGATCAAACAAGACCGTAGAATAACA
CGAAAGCACACAGCGTGTCTCGGGCTAAATCTGTTGGGATTGTGACAGCCACAAGGATGGGATCCATGGCCCCCAGAAAGTTGCAATGGCTGCTGT
CTTTTTAGCCACCACACGACCTTGCCATCGATGTTGGGTGATCATATACCCTCCTGAATAATGGGACGACGGATGCAGCAACCAAGTGAATGTATCGT
ATCACGTTGGGTAGTTTATCGACGAGGACTTATATAGATAATGCCAGTACCTGTCTTCTGATAGTCTGCTCATGCACCTTGGCTCTCATATAGTTTGC
AGACACAGATCTCTATCCACTGTTTCAAGTGGTCTTGGCTTCTTGAATACTTTCCCGACTCCTTACCGTGACAATACGTGACGAAACCCCTCGCGTC
TTTAGCCGGTGTCAATTCAAACAAAATGGTTGCAAGGTAAGCGACCGACGAGTTGTTGATGCGAATCCACTAGTTCTAGAGCGCGCGCATCCACTCGT
CACTGTTTGGTTCTTCTATTCTCACACTCGTTTTCTCTAATCGGAATCAACATCGCTCGAGCTTGGCCGTAGCTGCCATCGCAGGTCGCCCAATGC

AATGGTGAGCAAGGGGAGGAGCTGTTCAACGGGGTGGTGCOCATCCTGGTCGAGCTGGACGGCGAOGTAAACGGGCAACAAGTTCAGCGTGTCCGGCGAG
GGCGAGGGCGATGOCACOTACGGCAAGCTGACCCCTGAAGTTCTCTGCACCCACGGCAAGCTGCCCGTGCCCTGGCCACCCCTCGTGACCAACCCCTGACCT
ACGGCGTGCAGTGCTTCAGCCGCTACCCCGACCATGAAGCAGCAGCACTTCTTCAAGTCCGCCATGCCGAAGGCTACGTCCAGGAGCGCACCATCTT
CTTCAAGGACGACGGCAACTACAAGACCCGCGCCGAGGTGAAGTTCGAGGGCGACACCCGTGGTGAACCGCATCGAGCTGAAGGGCATCGACTTCAAGGAG
GACGGCAACATCCTGGGGCACAAGCTGGAGTACAACACAACGCCACAACCTCTATATCATGGCCGACAAGCAGAAGAACGGCATCAAGGTGAAGTCA
AGATCCGCCACAACATCGAGGACGGCAGCGTCGAGCTCGCCGACCACTACCAGCAGAACACCCCATCGGGCAGCGGCCCGTGGTGGTCCCGCACAACCA
GTACCTGAGCACCAGTCCGCCCTGAGCAAGACCCCAACGAGAAGCGCGATGACATGGTCCTGCTGGAGTTCGTGACCGCGCGCGGGATCACTCTCGGC
ATGGACGAGCTGTACAAGTAAATCATTCCACTCAACATTAGGCTCCTCTGCGCACGTAAAGTGCCAAAGGCAATACCCTGCGGCCGCCACCGCGGTGGA
GCTCGAATATTCTATGATCTGTCTTTTATATTGTAGCAGAGTCGTGGCTATATGACCCCTTTGTTACCCAGATACAGTATACATACCACGTGA

>P_{gpdA}-2', >327 bp insertion

TGCCCCCCAAATTTACCCCTCTATCTGCATTGAACGACCATGTCTTCCAGATCGCAATTGAGATACTCTGAACGAGCACGAAACCATCCTAATGTGCTC
GCGAAGAAGCTGTTGAAATAGCGGAGGCAAAGAAGACTAATGTCACTGTATCTGCCGATGTCACGACTACGAAGGAACTGCTGGATCTAGCTAACCGTA
AGTTGGAACCTATTACTCTCAATTACACGCATCCGCGCATTCGAAGGTCAGGTTTTTTTTTAAGCTAACAATCTATCTGCCCTATACAGGTCTCGGCCCC
CATATCGCCGTGATCAAAACCCACATTGACATCCTATCCGACTTCAGCGAAGAGACCATCTCCGGCTGACGGCGCTCGCGAAGAAGCACAACCTCCTCA
TCTTTGAGGACCGCAAGTTCATCGATATCGGTAACACCGTCCAGAAGCAGTACCATGGTGGAGCTCTCCGGATATCTGAGTGGTCCCACATTATCAATTG
CGCCATCCTCCCGGTGAGGGTATCGTCGAGGCTCTCGCCAAACTGCTTCGTCCGAGATTTCCCATACGGAAGGAGAGGGGACTGCTGATTCTAGCA
GAGATGACCTCCAAGGGATCCCTTGCCACGGAACCGCATCAAGGTGAAGTTCGACGACCAACATCGAGGACGGCAGCGTGCAGCTCGCCGACCA
TACCAGCAGAACACCCCATCGGGCAGCGCCCGTGGTGGTGGCCGACAACCACTACCTGAGCACCAGTCCGCCCTGAGCAAGACCCCAACGAGAAGC
GCGATCAGATGGTCTGCTGGAGTTCGTGACCGCGCCCGGATCACTCTCGGCATGGACGAGGTGTACAAGTAAATCATTCCACTCAACATTAGGCTCC
TCTGCGCACGTAAAGTGCCAAAGGCAATACCCTGCGGCCGCCACCGCGGTGGAGCTCGAATATTCTATGATCTGTCTTTTATATTGTAGCAGAGTCGT
GGCTATATGACCCCTTTGTTACCCAGATACAGTATACATAC

>P_{gpdA}-3, 8 bp deletion

GCCCCCCTCAAAATTTACCCCTCTATCTGCATTGAACGACCATGTCTTCCAGATCGCAATTGAGATACTCTGAACGAGCACGAAACCATCCTAATGTGCTCG
CGAAGAAGCTGTTGAAATAGCGGAGGCAAAGAAGACTAATGTCACTGTATCTGCCGATGTCACGACTACGAAGGAACTGCTGGATCTAGCTAACCGTAA
GTTGGAACCTATTACTCTCAATTACACGCATCCGCGCATTCGAAGGTCAGGTTTTTTTTTAAGCTAACAATCTATCTGCCCTATACAGGTCTCGGCCCCC
ATATCGCCGTGATCAAAACCCACATTGACATCCTATCCGACTTCAGCGAAGAGACCATCTCCGGCTGACGGCGCTCGCGAAGAAGCACAACCTCCTCAT
CTTTGAGGACCGCAAGTTCATCGATATCGGTAACACCGTCCAGAAGCAGTACCATGGTGGAGCTCTCCGGATATCTGAGTGGTCCCACATTATCAATTGC
GCCATCCTCCCGGTGAGGGTATCGTCGAGGCTCTCGCCAAACTGCTTCGTCCGAGATTTCCCATACGGAAGGAGAGGGGACTGCTGATTCTAGCAG
AGATGACCTCCAAGGGATCCCTTGCCACGGGAGAGTACA_____TCAGTCGACTATGCCAGGAAGTACAAGGATTCGTATGGGCTTTGTTTCG
ACGAGGGCATTGTGCGAGATCAAAATCGGACGTGACCACGGCTTCGGATGATGAGGACTTTTGGTTCACCAACGGGTGCAATCTGTGTCGAAGGGTG
ATAAGCTTGGACAGCAGTACCAGACACCTCAGTCAGCGATCGGCCGCGGTGCGGACTTTATTATTGCTGGTGGTGGGATCTACGTCGCCCGGATCCTGT
TGAGGCTGTTGAGCGCTACCAGCAGGAGGGTTGGGAGGCATATGAGGCTAGGGTTGCCAAGCAGTGAGAAATATTCTATGATCTGTCTTTTATATTGTGA
GCAGAGTCGTGGCTATATGACCCCTTTGTTACCCAGATACAGTATACATAC

>P_{gpdA}-4, 1960 bp HR

TTTACCCCTCTATCTGCATTGAACGACCCTCGAGGTCGACCTAGAAATCCGGCTAAAGGTGCTTTGGCTAAACATAAGTTGGTAAAGTGTCTGGGTGAA
GGGAGATCCAATGAGAAACATCGTTTCTATTTTACAGACGGTAAATATAGCAGACCGATTGATTACCTATCGCTTGAACATGCAGCCGTCAGTTGTCC
TCATGGGCCTAAAAGACCCCGCTCTAATACTCTTCTAATCCATCGTAGAGTAATGCATGTACCTGGTAGATCATAATAAAAATGCCTACCATACCTC
ACAAGGTGCTCGAGCTGTAGGCAAGTCCGAAGCGCTATTTCCCATAGATCCTTTATGCATGGCAAAACGCCGCAAACTAGACTGGACCCCTGCAATGTC
AAGGTCTAGACAAAATAAGCGCTGAGACCCCTGCGGTGTCCATCTCCGCACATGCAGCGCCCGGGACCGAACTGTCAGATTGCAATTTATTTACAGGAT
GCGATCGATAAGTCTATTGCTCCACACGCTGTCACTCCAAATAGGACCGTTAGAACGATCAAACAAGACCGTAGAATAAACACGAAAGCACACACGAC
GTGTCTCGGCCTAAATCTGTTGGGATTGTAGACCACAAGGATGGGATCCATGGCCCCCAGAAAGTTGCAATGGCTGCTGTCTTTTAGCCACCACC
ACGACCCTTGCCATCGATGTTGGGTGATCATACCCCTCCTGAATAATGGGACGACGGATGCAGCAACCAAGTGAATGTATCGTATCAGCTGGGTAGTT
TCATCGACGAGGACTTATATAGATAATGCCAGTACCTGTCTTCGTAGGTCTGCTCATGCACCTTGCGTCTCTCATATAGTTTGCAGACACAGATCTCTAT
CCACTGTTTCAGTGGTCCTTGGCTCTTGAATCTTTCCCGACTCCTACCGTGACAATACGTGACGAAACCCCTGCGCGTCTTTAGCCGGTGTCAAT
TCAAACAAAATGGTTGCAAGGTAAGCGACCGACGAGTTGTTGATGCGAATCCACTAGTTCTAGAGCGCCGATCCACTCGTTCACTTGTGTTGTTCTT
CTATTCTCACACTCGTTTTCTCTAATGGGAATCAACATCGCTCGAGCTTTGGCCGTAGCTGCCATCGCAGCGTCCGCCAATGCAATGGTGAGCAAGGGC
GAGGAGCTGTTACCCGGGGTGGTGCCCATCCTGGTCGAGCTGGACGGCGACGTAAACGGGCAACAAGTTCAGCGTGTCCGGCAGGGGCGAGGGCGATGCCA
CGTACGGCAAGGTGACCCCTGAAGTTCATCTGCACCCACGGCAAGCTGCCCGTGCCCTGGCCACCCCTCGTGACCAACCCCTGACCTACGGCGTGCAGTCTT
GAGCGCGTACCCCGACCATGAAGCAGCAGCACTTCTTCAAGTCCGCCATGCCGAAGGCTACGTCCAGGAGCGCACCATCTTCTTCAAGGACGACGGC
AACTACAAGACCGCGCGGAGGTGAAGTTCGAGGGCGACACCCGTGGTGAACCGCATCGAGCTGAAGGGCATCGACTTCAAGGAGGACGGCAACATCCTGG

GGCACAAGCTGGAGTACAACACAAAGCCACAACGTCTATATCATGGCCGACAAGCAGAAGAAGGGCATOAAGGTGAACCTCAAGATCCGCCACAACA
CGAGGACGGCAGCGTGCAGCTCGCCGACCACTACCAGCAGAACACCCCCATCGGCGACGGCCCGGTGCTGCTGCCCGACAACCACTACCTGAGCAACCCAG
TCCGCCCTGAGCAAAAGACCCCAACGAGAAGCCCGATCAGATGGTCCTGCTGGAGTTTCGTGACCGCCCGGGGATCACTCTCGGCATGGACGAGCTGTACA
AGTAAATCATTCCACTCAACATTCAGGCTCCTCTGCGCACGTAAAGTGCCAAAGGCAATACCCCTGCGGCCGCCACCGCGGTGGAGCTCGAATATTCTATG
ATCTGTCTTTTATATTTGTAGCAGAGTCGTGGCTATATGACCCTTTTGTACCCAGATACAGTATACATACCACGTGA

>P_{gpdA}-5, 1960 bp HR

ATCCTGCCCTCCAAATTTACCCCTCTATCTGCATTGAACGACCCCTCGAGGTGACCTAGAAATTCGGCTAAAGTGTGCTTTGGCTAAACATAAGTTG
GTAAGTGTCTGGGTGAAGGGAGATCCAATGAGAAACATCGTTTCTCTATTTTACAGACGGTAAATATAGCAGACCGATTGATTACCTATCGCTTGAACAT
GCAGCCGTGAGTTGTCTCATGGCCCTAAAAGACCCCGCTCTAATACACTCTTCTAATCCATCGTAGAGTAATGCATGTACCTGGTAGATCATAATAAA
AATGCCTACCATACCTCACAAGGTGCTCGAGCTGTAGGCAAAGTCCGAAGCGCTATTTCCCATAGATCCTTTATGCATGGCAAAACGCCGCAAACTAGAC
TGGACCCTTGCAATGTCAAGGTCTAGACAAAATAAGCGCCTGAGACCCCTTGGGTTGTCCATCTCCGCACATGCAGCGGCCGGGACCGAACTGTCAGATT
CGATTTATTTACAGGATGCGATCGATAAGTCTATTGCGTCCACACGCTGTCACTCCAAATAGGACCGGTTAGAACGATCAAAACAGACCGTAGAATAAAC
ACGAAAGCACACACGACGTGTCTCGGCCCTAAATCTGTTGGGATTGTGAGACCACAAGGATGGGATCCATGGCCCCCAGAAAGTTGCAATGGCTGCTG
TCTTTTAGCCACCACCACGACCCTTGCCATCGATGTTGGGTGATCATATCACCCTCTGAATAATGGGACGACGGATGCAGCAACCAGTGAATGTATCG
TATCACGTTGGGTAGTTTCATCGACGAGGACTTATATAGATAATGCCAGTACCTGTCTTCGTAAGTCTGCTCATGCACCTTGGCTCTCATATAGTTTG
CAGACACAGATCTCTATCCACTGTTTCAGTGGTCCTTGGCTTCTTGAATACTTTCCCGGACTCCTTACCGTGACAATACGTGACGAAACCCCTCGCCGT
CTTTAGCCGGTGTCAATTCAAACAAAATGTTGCAAAGGTAAAGCGACGACGAGTTGTTGATGCGAATCCACTAGTTCTAGAGCGGCCGATCCACTCGT
TCACCTGTTTGGTTCTTCTATTCTCACACTCGTTTTCTCTAATGGGAATCAACATGCGTTCGAGCTTTGGCCGTAGCTGCCATCGCAGCGTCCGCCAATG
CAATGGTGAGCAAGGCGAGGAGCTGTTTACCGGGGTGGTGCCCATCCTGGTTCGAGCTGGACGGCGACGTAAACGGCCACAAGTTCAGCGTGTCCGGCGA
GGGCGAGGGCGATGCCACCTACGGCAAGCTGACCCTGAAGTTTCATCTGCACCAACCGCAAGCTGCCCGTGCCCTGGCCCAACCTCGTGACCACCTGACC
TACGGCGTGCAGTGCTTCAGCCGCTACCCCGACCATGAAGCAGCAGACTTCTTCAAGTCCGCCATGCCGGAAGGCTACGTCCAGGAGCGCACCATCT
TCTTCAAGGACGACGGCAACTACAAGACCGCGCGGAGGTGAAGTTCGAGGGCGACACCTGGTGAACCGCATCGAGCTGAAGGGCATCGACTTCAAGGA
GGACGGCAACATCCTGGGGACAAGCTGGAGTACAACACAGCCACAACGTCTATATCATGGCCGACAAGCAGAAGAAGCGGATCAAGGTGAACCTC
AAGATCCGCCACAACATCGAGGACGGCAGCGTGCAGCTCGCCGACCACTACCAGCAGAACACCCCATCGGGGACGGCCCGGTGCTGCTGCCGACAAC
ACTACCTGAGCACCAGTCCGCCCTGAGCAAGACCCCAACGAGAAGCGCGATCAGATGGTCCTGCTGGAGTTTCGTGACCGCCGGCGGGATCACTCTCGG
CATGGACGAGCTGTACAAGTAATCATTCCACTCAACATTCAGGCTCCTCTGCGCACGTAAAGTGCCAAAGGCAATACCCCTGCGGCCGCCACCGCGGTGG
AGCTCGAATATTCTATGATCTGCTTTTTATATTTGTAGCAGAGTCGTGGCTATATGACCCTTTTGTACCCAGATACAGTATACATACCACGTG