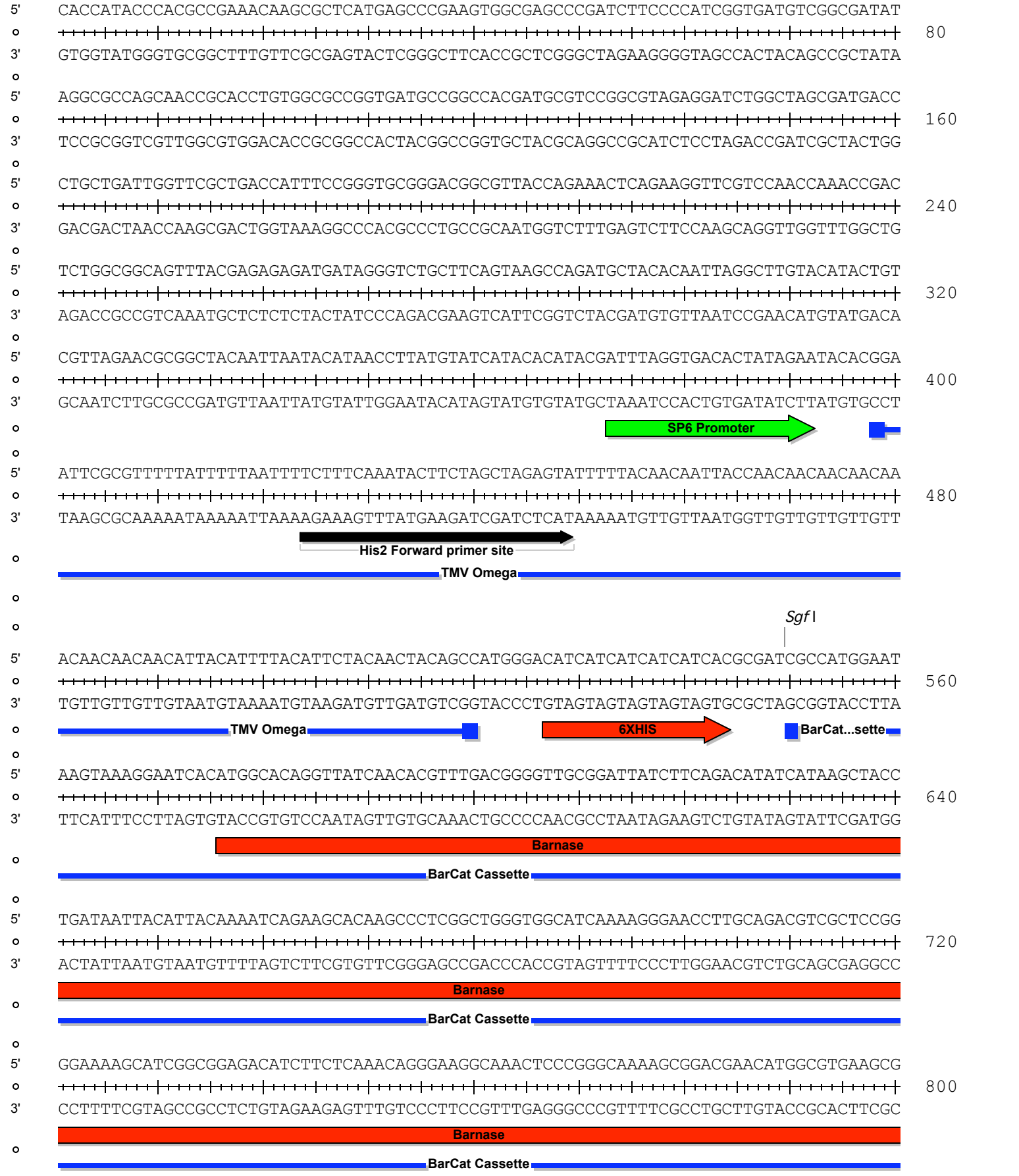
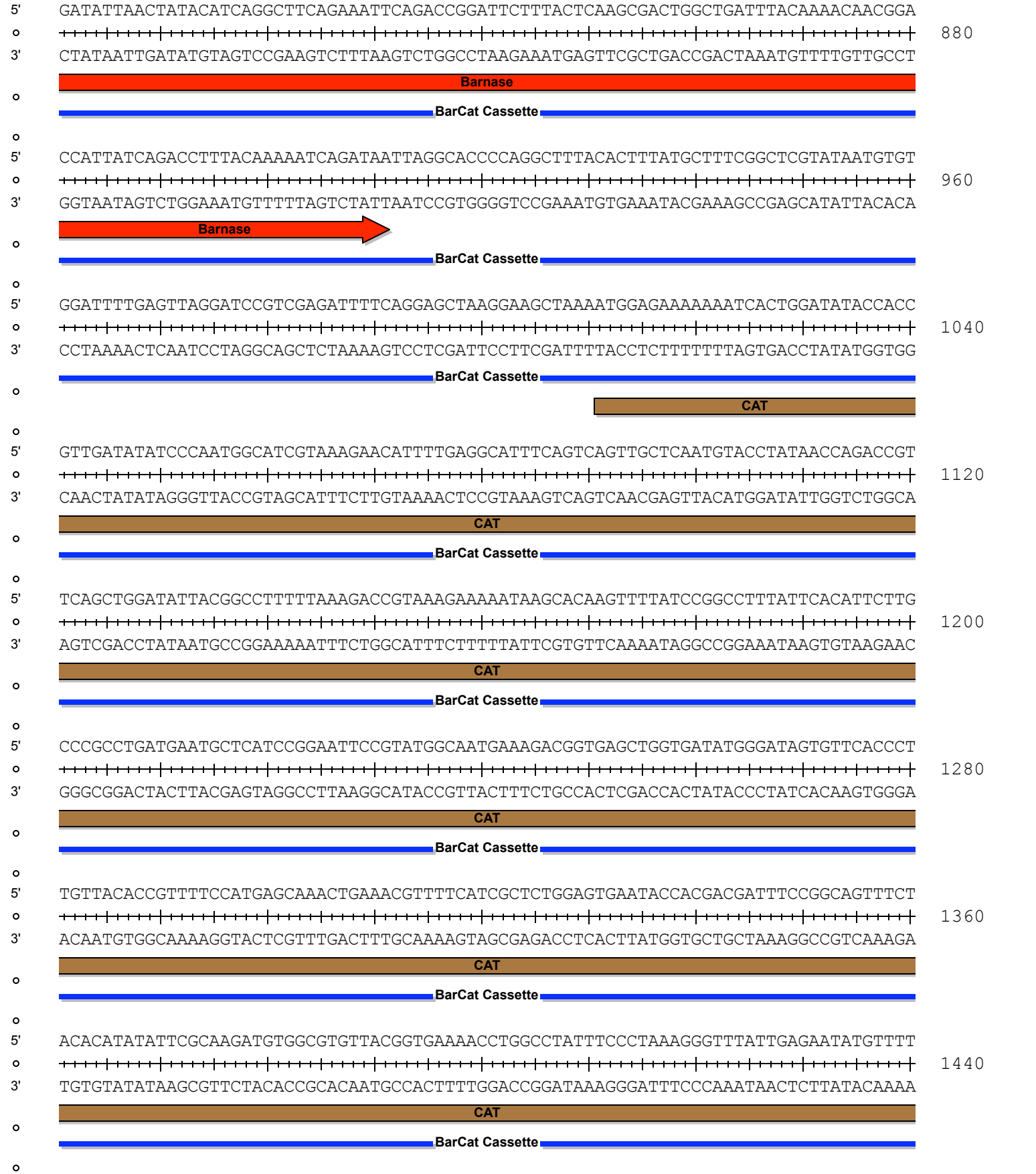
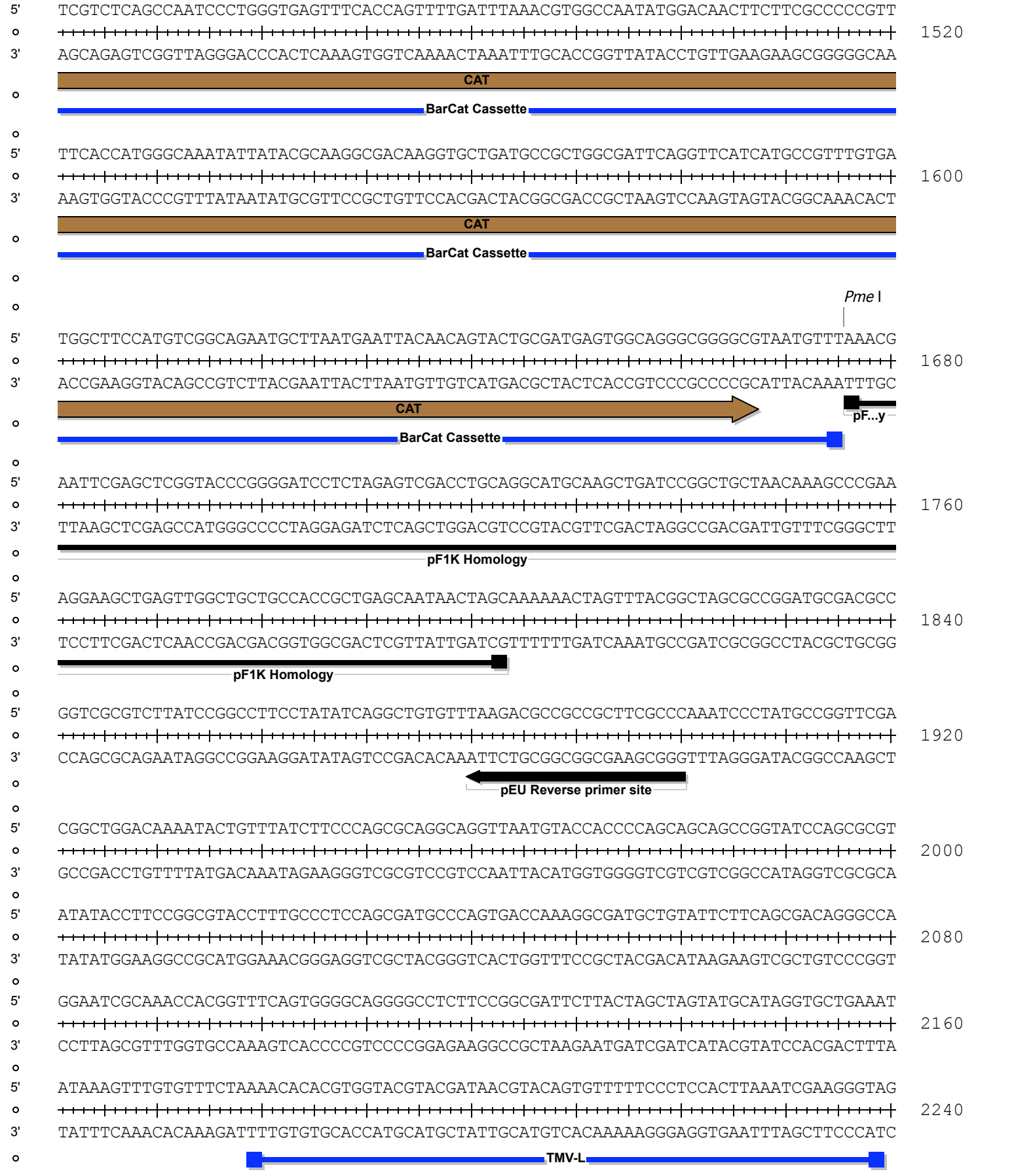
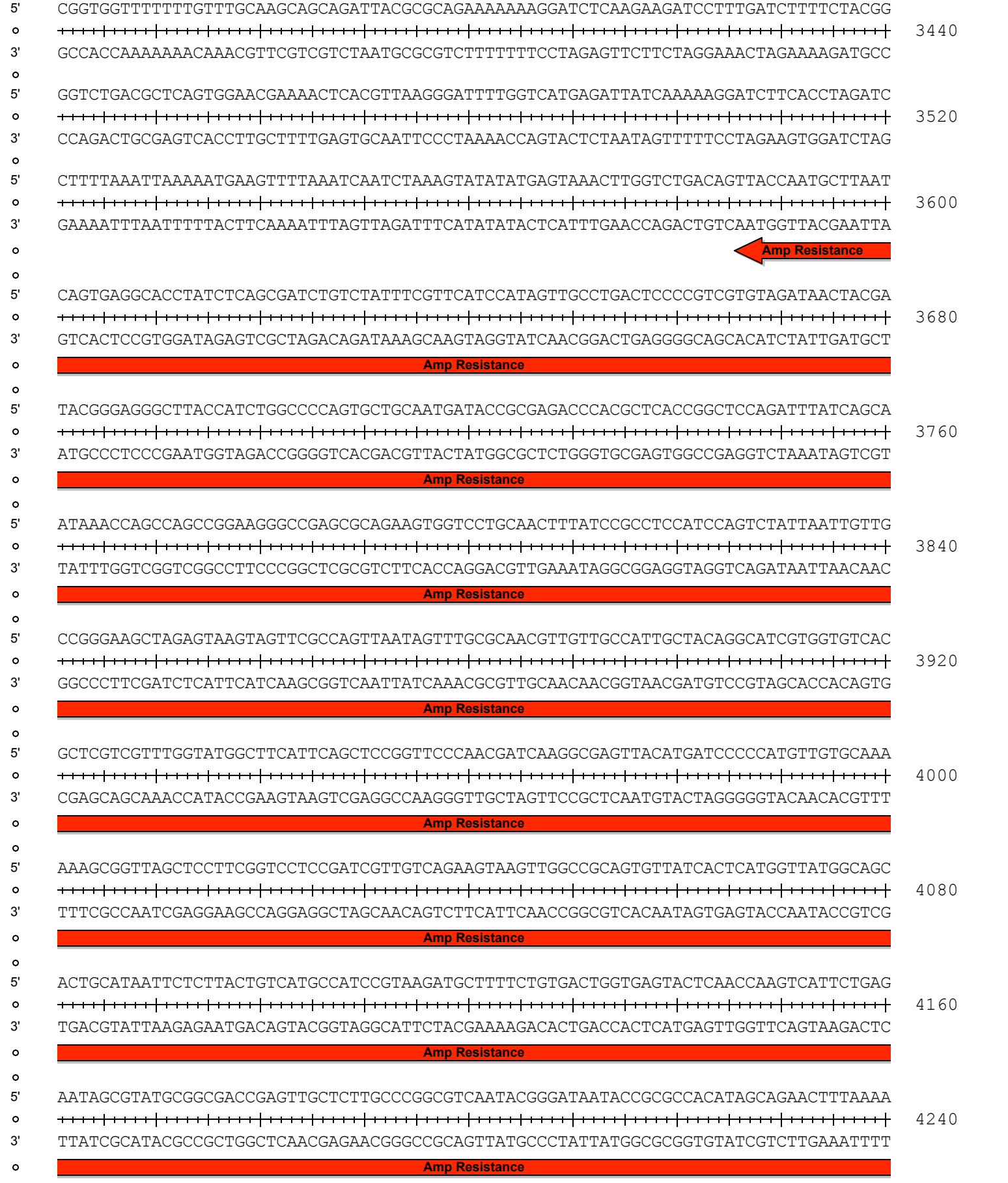

5' CACCATACCCACGCCGAAACAAGCGCTCATGAGCCCGAAGTGGCGAGCCCGATCTTCCCCATCGGTGATGTCGGCGATAT
80
3' GTGGTATGGGTGCGGCTTTGTTCGCGAGTACTCGGGCTTCACCGCTCGGGCTAGAAGGGGTAGCCACTACAGCCGCTATA
5' AGGCGCCAGCAACCGCACCTGTGGCGCCGGTGATGCCGGCCACGATGCGTCCGGCGTAGAGGATCTGGCTAGCGATGACC
160
3' TCCGCGGTCGTTGGCGTGGACACCGCGGCCACTACGGCCGGTGCTACGCAGGCCGCATCTCCTAGACCGATCGCTACTGG
5' CTGCTGATTGGTTCGCTGACCATTTCCGGGTGCGGGACGGCGTTACCAGAAACTCAGAAGGTTCGTCCAACCAAACCGAC
240
3' GACGACTAACCAAGCGACTGGTAAAGGCCCACGCCCTGCCGCAATGGTCTTTGAGTCTTCCAAGCAGGTTGGTTTGGCTG
5' TCTGGCGGCAGTTTACGAGAGAGATGATAGGGTCTGCTTCAGTAAGCCAGATGCTACACAATTAGGCTTGTACATACTGT
320
3' AGACCGCCGTCAAATGCTCTCTCTACTATCCCAGACGAAGTCATTCGGTCTACGATGTGTTAATCCGAACATGTATGACA
5' CGTTAGAACGCGGCTACAATTAATACATAACCTTATGTATCATACACATACGATTTAGGTGACACTATAGAATACACGGA
400
3' GCAATCTTGCGCCGATGTTAATTATGTATTGGAATACATAGTATGTGTATGCTAAATCCACTGTGATATCTTATGTGCCT
SP6 Promoter
5' ATTCGCGTTTTTATTTTTAATTTTCTTTCAAATACTTCTAGCTAGAGTATTTTTACAACAATTACCAACAACAACAACAA
480
3' TAAGCGCAAAAATAAAAATTAAAAGAAAGTTTATGAAGATCGATCTCATAAAAATGTTGTTAATGGTTGTTGTTGTTGTT
His2 Forward primer site
TMV Omega
Sgf I
5' ACAACAACAACATTACATTTTACATTCTACAACTACAGCCATGGGACATCATCATCATCATCACGCGATCGCCATGGAAT
560
3' TGTTGTTGTTGTAATGTAAAATGTAAGATGTTGATGTCGGTACCCTGTAGTAGTAGTAGTAGTGCGCTAGCGGTACCTTA
TMV Omega
6XHIS
BarCat...sette
5' AAGTAAAGGAATCACATGGCACAGGTTATCAACACGTTTGACGGGGTTGCGGATTATCTTCAGACATATCATAAGCTACC
640
3' TTCATTTCCTTAGTGTACCGTGTCCAATAGTTGTGCAAACTGCCCCAACGCCTAATAGAAGTCTGTATAGTATTCGATGG
Barnase
BarCat Cassette
5' TGATAATTACATTACAAAATCAGAAGCACAAGCCCTCGGCTGGGTGGCATCAAAAGGGAACCTTGCAGACGTCGCTCCGG
720
3' ACTATTAATGTAATGTTTTAGTCTTCGTGTTCGGGAGCCGACCCACCGTAGTTTTCCCTTGGAACGTCTGCAGCGAGGCC
Barnase
BarCat Cassette
5' GGAAAAGCATCGGCGGAGACATCTTCTCAAACAGGGAAGGCAAACTCCCGGGCAAAAGCGGACGAACATGGCGTGAAGCG
800
3' CCTTTTCGTAGCCGCCTCTGTAGAAGAGTTTGTCCCTTCCGTTTGAGGGCCCGTTTTCGCCTGCTTGTACCGCACTTCGC
Barnase
BarCat Cassette


5' GATATTAACTATACATCAGGCTTCAGAAATTCAGACCGGATTCTTTACTCAAGCGACTGGCTGATTTACAAAACAACGGA
880
3' CTATAATTGATATGTAGTCCGAAGTCTTTAAGTCTGGCCTAAGAAATGAGTTCGCTGACCGACTAAATGTTTTGTTGCCT
Barnase
BarCat Cassette
5' CCATTATCAGACCTTTACAAAAATCAGATAATTAGGCACCCCAGGCTTTACACTTTATGCTTTCGGCTCGTATAATGTGT
960
3' GGTAATAGTCTGGAAATGTTTTTAGTCTATTAATCCGTGGGGTCCGAAATGTGAAATACGAAAGCCGAGCATATTACACA
Barnase
BarCat Cassette
5' GGATTTTGAGTTAGGATCCGTCGAGATTTTCAGGAGCTAAGGAAGCTAAAATGGAGAAAAAAATCACTGGATATACCACC
1040
3' CCTAAAACTCAATCCTAGGCAGCTCTAAAAGTCCTCGATTCCTTCGATTTTACCTCTTTTTTTAGTGACCTATATGGTGG
BarCat Cassette
CAT
5' GTTGATATATCCCAATGGCATCGTAAAGAACATTTTGAGGCATTTCAGTCAGTTGCTCAATGTACCTATAACCAGACCGT
1120
3' CAACTATATAGGGTTACCGTAGCATTTCTTGTAAAACTCCGTAAAGTCAGTCAACGAGTTACATGGATATTGGTCTGGCA
CAT
BarCat Cassette
5' TCAGCTGGATATTACGGCCTTTTTAAAGACCGTAAAGAAAAATAAGCACAAGTTTTATCCGGCCTTTATTCACATTCTTG
1200
3' AGTCGACCTATAATGCCGGAAAAATTTCTGGCATTTCTTTTTATTCGTGTTCAAAATAGGCCGGAAATAAGTGTAAGAAC
CAT
BarCat Cassette
5' CCCGCCTGATGAATGCTCATCCGGAATTCCGTATGGCAATGAAAGACGGTGAGCTGGTGATATGGGATAGTGTTCACCCT
1280
3' GGGCGGACTACTTACGAGTAGGCCTTAAGGCATACCGTTACTTTCTGCCACTCGACCACTATACCCTATCACAAGTGGGA
CAT
BarCat Cassette
5' TGTTACACCGTTTTCCATGAGCAAACTGAAACGTTTTCATCGCTCTGGAGTGAATACCACGACGATTTCCGGCAGTTTCT
1360
3' ACAATGTGGCAAAAGGTACTCGTTTGACTTTGCAAAAGTAGCGAGACCTCACTTATGGTGCTGCTAAAGGCCGTCAAAGA
CAT
BarCat Cassette
5' ACACATATATTCGCAAGATGTGGCGTGTTACGGTGAAAACCTGGCCTATTTCCCTAAAGGGTTTATTGAGAATATGTTTT
1440
3' TGTGTATATAAGCGTTCTACACCGCACAATGCCACTTTTGGACCGGATAAAGGGATTTCCCAAATAACTCTTATACAAAA
CAT
BarCat Cassette


5' TCGTCTCAGCCAATCCCTGGGTGAGTTTCACCAGTTTTGATTTAAACGTGGCCAATATGGACAACTTCTTCGCCCCCGTT
1520
3' AGCAGAGTCGGTTAGGGACCCACTCAAAGTGGTCAAAACTAAATTTGCACCGGTTATACCTGTTGAAGAAGCGGGGGCAA
CAT
BarCat Cassette
5' TTCACCATGGGCAAATATTATACGCAAGGCGACAAGGTGCTGATGCCGCTGGCGATTCAGGTTCATCATGCCGTTTGTGA
1600
3' AAGTGGTACCCGTTTATAATATGCGTTCCGCTGTTCCACGACTACGGCGACCGCTAAGTCCAAGTAGTACGGCAAACACT
CAT
BarCat Cassette
Pme I
5' TGGCTTCCATGTCGGCAGAATGCTTAATGAATTACAACAGTACTGCGATGAGTGGCAGGGCGGGGCGTAATGTTTAAACG
1680
3' ACCGAAGGTACAGCCGTCTTACGAATTACTTAATGTTGTCATGACGCTACTCACCGTCCCGCCCCGCATTACAAATTTGC
CAT
pF...y
BarCat Cassette
5' AATTCGAGCTCGGTACCCGGGGATCCTCTAGAGTCGACCTGCAGGCATGCAAGCTGATCCGGCTGCTAACAAAGCCCGAA
1760
3' TTAAGCTCGAGCCATGGGCCCCTAGGAGATCTCAGCTGGACGTCCGTACGTTCGACTAGGCCGACGATTGTTTCGGGCTT
pF1K Homology
5' AGGAAGCTGAGTTGGCTGCTGCCACCGCTGAGCAATAACTAGCAAAAAACTAGTTTACGGCTAGCGCCGGATGCGACGCC
1840
3' TCCTTCGACTCAACCGACGACGGTGGCGACTCGTTATTGATCGTTTTTTGATCAAATGCCGATCGCGGCCTACGCTGCGG
pF1K Homology
5' GGTCGCGTCTTATCCGGCCTTCCTATATCAGGCTGTGTTTAAGACGCCGCCGCTTCGCCCAAATCCCTATGCCGGTTCGA
1920
3' CCAGCGCAGAATAGGCCGGAAGGATATAGTCCGACACAAATTCTGCGGCGGCGAAGCGGGTTTAGGGATACGGCCAAGCT
pEU Reverse primer site
5' CGGCTGGACAAAATACTGTTTATCTTCCCAGCGCAGGCAGGTTAATGTACCACCCCAGCAGCAGCCGGTATCCAGCGCGT
2000
3' GCCGACCTGTTTTATGACAAATAGAAGGGTCGCGTCCGTCCAATTACATGGTGGGGTCGTCGTCGGCCATAGGTCGCGCA
5' ATATACCTTCCGGCGTACCTTTGCCCTCCAGCGATGCCCAGTGACCAAAGGCGATGCTGTATTCTTCAGCGACAGGGCCA
2080
3' TATATGGAAGGCCGCATGGAAACGGGAGGTCGCTACGGGTCACTGGTTTCCGCTACGACATAAGAAGTCGCTGTCCCGGT
5' GGAATCGCAAACCACGGTTTCAGTGGGGCAGGGGCCTCTTCCGGCGATTCTTACTAGCTAGTATGCATAGGTGCTGAAAT
2160
3' CCTTAGCGTTTGGTGCCAAAGTCACCCCGTCCCCGGAGAAGGCCGCTAAGAATGATCGATCATACGTATCCACGACTTTA
5' ATAAAGTTTGTGTTTCTAAAACACACGTGGTACGTACGATAACGTACAGTGTTTTTCCCTCCACTTAAATCGAAGGGTAG
2240
3' TATTTCAAACACAAAGATTTTGTGTGCACCATGCATGCTATTGCATGTCACAAAAAGGGAGGTGAATTTAGCTTCCCATC
TMV-L


5' TGTCTTGGAGCGCGCGGAGTAAACATATATGGTTCATATATGTCCGTAGGCACGTAAAAAAAGCGAGGGATTCGAATTCC
2320
3' ACAGAACCTCGCGCGCCTCATTTGTATATACCAAGTATATACAGGCATCCGTGCATTTTTTTCGCTCCCTAAGCTTAAGG
5' CCCGGAACCCCCGGTTGGGGCCCACGCCTCGATCGAGCAAAAAAAAAAAAAAAGAAAAAAAAAAAAAAAAAAAGCTTTCC
2400
3' GGGCCTTGGGGGCCAACCCCGGGTGCGGAGCTAGCTCGTTTTTTTTTTTTTTTCTTTTTTTTTTTTTTTTTTTCGAAAGG
5' CGCGGCCAGCTTGGCGTAATCATGGTCATAGCTGTTTCCTGTGTGAAATTGTTATCCGCTCACAATTCCACACAACATAC
2480
3' GCGCCGGTCGAACCGCATTAGTACCAGTATCGACAAAGGACACACTTTAACAATAGGCGAGTGTTAAGGTGTGTTGTATG
5' GAGCCGGAAGCATAAAGTGTAAAGCCTGGGGTGCCTAATGAGTGAGCTAACTCACATTAATTGCGTTGCGCTCACTGCCC
2560
3' CTCGGCCTTCGTATTTCACATTTCGGACCCCACGGATTACTCACTCGATTGAGTGTAATTAACGCAACGCGAGTGACGGG
5' GCTTTCCAGTCGGGAAACCTGTCGTGCCAGCTGCATTAATGAATCGGCCAACGCGCGGGGAGAGGCGGTTTGCGTATTGG
2640
3' CGAAAGGTCAGCCCTTTGGACAGCACGGTCGACGTAATTACTTAGCCGGTTGCGCGCCCCTCTCCGCCAAACGCATAACC
5' GCGCTCTTCCGCTTCCTCACTCACTGACTCGCTGCGCTCGGTCGCTCGGCTGCGGCGAGCGGTATCAGCTCACTCAAAGG
2720
3' CGCGAGAAGGCGAAGGAGTGAGTGACTGAGCGACGCGAGCCAGCGAGCCGACGCCGCTCGCCATAGTCGAGTGAGTTTCC
5' CGGTAATACGGTTATCCACAGAATCAGGGGATAACGCAGGAAAGAACATGTGAGCAAAAGGCCAGCAAAAGGCCAGGAAC
2800
3' GCCATTATGCCAATAGGTGTCTTAGTCCCCTATTGCGTCCTTTCTTGTACACTCGTTTTCCGGTCGTTTTCCGGTCCTTG
5' CGTAAAAAGGCCGCGTTGCTGGCGTTTTTCCATAGGCTCCGCCCCCCTGACGAGCATCACAAAAATCGACGCTCAAGTCA
2880
3' GCATTTTTCCGGCGCAACGACCGCAAAAAGGTATCCGAGGCGGGGGGACTGCTCGTAGTGTTTTTAGCTGCGAGTTCAGT
5' GAGGTGGCGAAACCCGACAGGACTATAAAGATACCAGGCGTTTCCCCCTGGAAGCTCCCTCGTGCGCTCTCCTGTTCCGA
2960
3' CTCCACCGCTTTGGGCTGTCCTGATATTTCTATGGTCCGCAAAGGGGGACCTTCGAGGGAGCACGCGAGAGGACAAGGCT
5' CCCTGCCGCTTACCGGATACCTGTCCGCCTTTCTCCCTTCGGGAAGCGTGGCGCTTTCTCATAGCTCACGCTGTAGGTAT
3040
3' GGGACGGCGAATGGCCTATGGACAGGCGGAAAGAGGGAAGCCCTTCGCACCGCGAAAGAGTATCGAGTGCGACATCCATA
5' CTCAGTTCGGTGTAGGTCGTTCGCTCCAAGCTGGGCTGTGTGCACGAACCCCCCGTTCAGCCCGACCGCTGCGCCTTATC
3120
3' GAGTCAAGCCACATCCAGCAAGCGAGGTTCGACCCGACACACGTGCTTGGGGGGCAAGTCGGGCTGGCGACGCGGAATAG
5' CGGTAACTATCGTCTTGAGTCCAACCCGGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCA
3200
3' GCCATTGATAGCAGAACTCAGGTTGGGCCATTCTGTGCTGAATAGCGGTGACCGTCGTCGGTGACCATTGTCCTAATCGT
5' GAGCGAGGTATGTAGGCGGTGCTACAGAGTTCTTGAAGTGGTGGCCTAACTACGGCTACACTAGAAGAACAGTATTTGGT
3280
3' CTCGCTCCATACATCCGCCACGATGTCTCAAGAACTTCACCACCGGATTGATGCCGATGTGATCTTCTTGTCATAAACCA
5' ATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAGAGTTGGTAGCTCTTGATCCGGCAAACAAACCACCGCTGGTAG
3360
3' TAGACGCGAGACGACTTCGGTCAATGGAAGCCTTTTTCTCAACCATCGAGAACTAGGCCGTTTGTTTGGTGGCGACCATC


5' CGGTGGTTTTTTTGTTTGCAAGCAGCAGATTACGCGCAGAAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTCTACGG
3440
3' GCCACCAAAAAAACAAACGTTCGTCGTCTAATGCGCGTCTTTTTTTCCTAGAGTTCTTCTAGGAAACTAGAAAAGATGCC
5' GGTCTGACGCTCAGTGGAACGAAAACTCACGTTAAGGGATTTTGGTCATGAGATTATCAAAAAGGATCTTCACCTAGATC
3520
3' CCAGACTGCGAGTCACCTTGCTTTTGAGTGCAATTCCCTAAAACCAGTACTCTAATAGTTTTTCCTAGAAGTGGATCTAG
5' CTTTTAAATTAAAAATGAAGTTTTAAATCAATCTAAAGTATATATGAGTAAACTTGGTCTGACAGTTACCAATGCTTAAT
3600
3' GAAAATTTAATTTTTACTTCAAAATTTAGTTAGATTTCATATATACTCATTTGAACCAGACTGTCAATGGTTACGAATTA
Amp Resistance
5' CAGTGAGGCACCTATCTCAGCGATCTGTCTATTTCGTTCATCCATAGTTGCCTGACTCCCCGTCGTGTAGATAACTACGA
3680
3' GTCACTCCGTGGATAGAGTCGCTAGACAGATAAAGCAAGTAGGTATCAACGGACTGAGGGGCAGCACATCTATTGATGCT
Amp Resistance
5' TACGGGAGGGCTTACCATCTGGCCCCAGTGCTGCAATGATACCGCGAGACCCACGCTCACCGGCTCCAGATTTATCAGCA
3760
3' ATGCCCTCCCGAATGGTAGACCGGGGTCACGACGTTACTATGGCGCTCTGGGTGCGAGTGGCCGAGGTCTAAATAGTCGT
Amp Resistance
5' ATAAACCAGCCAGCCGGAAGGGCCGAGCGCAGAAGTGGTCCTGCAACTTTATCCGCCTCCATCCAGTCTATTAATTGTTG
3840
3' TATTTGGTCGGTCGGCCTTCCCGGCTCGCGTCTTCACCAGGACGTTGAAATAGGCGGAGGTAGGTCAGATAATTAACAAC
Amp Resistance
5' CCGGGAAGCTAGAGTAAGTAGTTCGCCAGTTAATAGTTTGCGCAACGTTGTTGCCATTGCTACAGGCATCGTGGTGTCAC
3920
3' GGCCCTTCGATCTCATTCATCAAGCGGTCAATTATCAAACGCGTTGCAACAACGGTAACGATGTCCGTAGCACCACAGTG
Amp Resistance
5' GCTCGTCGTTTGGTATGGCTTCATTCAGCTCCGGTTCCCAACGATCAAGGCGAGTTACATGATCCCCCATGTTGTGCAAA
4000
3' CGAGCAGCAAACCATACCGAAGTAAGTCGAGGCCAAGGGTTGCTAGTTCCGCTCAATGTACTAGGGGGTACAACACGTTT
Amp Resistance
5' AAAGCGGTTAGCTCCTTCGGTCCTCCGATCGTTGTCAGAAGTAAGTTGGCCGCAGTGTTATCACTCATGGTTATGGCAGC
4080
3' TTTCGCCAATCGAGGAAGCCAGGAGGCTAGCAACAGTCTTCATTCAACCGGCGTCACAATAGTGAGTACCAATACCGTCG
Amp Resistance
5' ACTGCATAATTCTCTTACTGTCATGCCATCCGTAAGATGCTTTTCTGTGACTGGTGAGTACTCAACCAAGTCATTCTGAG
4160
3' TGACGTATTAAGAGAATGACAGTACGGTAGGCATTCTACGAAAAGACACTGACCACTCATGAGTTGGTTCAGTAAGACTC
Amp Resistance
5' AATAGCGTATGCGGCGACCGAGTTGCTCTTGCCCGGCGTCAATACGGGATAATACCGCGCCACATAGCAGAACTTTAAAA
4240
3' TTATCGCATACGCCGCTGGCTCAACGAGAACGGGCCGCAGTTATGCCCTATTATGGCGCGGTGTATCGTCTTGAAATTTT
Amp Resistance

```
5'  GTGCTCATCATTGGAAAACGTTCTTCGGGGCGAAAACTCTCAAGGATCTTACCGCTGTTGAGATCCAGTTCGATGTAACC
o   ++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|  4320
3'  CACGAGTAGTAACCTTTTGCAAGAAGCCCCGCTTTTGAGAGTTCCTAGAATGGCGACAACTCTAGGTCAAGCTACATTGG
o   Amp Resistance
o
5'  CACTCGTGCACCCAACTGATCTTCAGCATCTTTTACTTTCACCAGCGTTTCTGGGTGAGCAAAAACAGGAAGGCAAAATG
o   ++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|  4400
3'  GTGAGCACGTGGGTTGACTAGAAGTCGTAGAAAATGAAAGTGGTCGCAAAGACCCACTCGTTTTTGTCCTTCCGTTTTAC
o   Amp Resistance
o
5'  CCGCAAAAAAGGGAATAAGGGCGACACGGAAATGTTGAATACTCATACTCTTCCTTTTTCAATATTATTGAAGCATTTAT
o   ++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|  4480
3'  GGCGTTTTTTCCCTTATTCCCGCTGTGCCTTTACAACTTATGAGTATGAGAAGGAAAAAGTTATAATAACTTCGTAAATA
o   Amp Resistance
o
5'  CAGGGTTATTGTCTCATGAGCGGATACATATTTGAATGTATTTAGAAAAATAAACAAATAGGGGTTCCGCGCACATTTCC
o   ++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|  4560
3'  GTCCCAATAACAGAGTACTCGCCTATGTATAAACTTACATAAATCTTTTTATTTGTTTATCCCCAAGGCGCGTGTAAAGG
o
5'  CCGAAAAGTGCCACCTGACGTCTAAGAAACCATTATTATCATGACATTAACCTATAAAAATAGGCGTATCACGAGGCCCT
o   ++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|  4640
3'  GGCTTTTCACGGTGGACTGCAGATTCTTTGGTAATAATAGTACTGTAATTGGATATTTTTATCCGCATAGTGCTCCGGGA
o
5'  TTCGTCTCGCGCGTTTCGGTGATGACGGTGAAAACCTCTGACACATGCAGCTCCCGGAGACGGTCACAGCTTGTCTGTAA
o   ++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|  4720
3'  AAGCAGAGCGCGCAAAGCCACTACTGCCACTTTTGGAGACTGTGTACGTCGAGGGCCTCTGCCAGTGTCGAACAGACATT
o
5'  GCGGATGCCGGGAGCAGACAAGCCCGTCAGGGCGCGTCAGCGGGTGTTGGCGGGTGTCGGGGCTGGCTTAACTATGCGGC
o   ++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|  4800
3'  CGCCTACGGCCCTCGTCTGTTCGGGCAGTCCCGCGCAGTCGCCCACAACCGCCCACAGCCCCGACCGAATTGATACGCCG
o
5'  ATCAGAGCAGATTGTACTGAGAGTGCACCATTCGACGCTCTCCCTTATGCGACTCCTGCATTAGGAAGCAGCCCAGTAGT
o   ++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|  4880
3'  TAGTCTCGTCTAACATGACTCTCACGTGGTAAGCTGCGAGAGGGAATACGCTGAGGACGTAATCCTTCGTCGGGTCATCA
o
5'  AGGTTGAGGCCGTTGAGCACCGCCGCCGCAAGGAATGGTGCATGCAAGGAGATGGCGCCCAACAGTCCCCCGGCCACGGG
o   ++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|++++|  4960
3'  TCCAACTCCGGCAACTCGTGGCGGCGGCGTTCCTTACCACGTACGTTCCTCTACCGCGGGTTGTCAGGGGGCCGGTGCCC
o
5'  GCCTGC
o   ++++++                                                                            4966
3'  CGGACG
o
```