5' tggcgaatgggacgcgccctgtagcggcgcattaagcgcggcgggtgtggtggttacgcgcagcgtgacc 70
3' accgcttaccctgcgcgggacatcgccgcgtaattcgcgccgcccacaccaccaatgcgcgtcgcactgg

5' gctacacttgccagcgccctagcgcccgctcctttcgctttcttcccttcctttctcgccacgttcgccg 140
3' cgatgtgaacggtcgcgggatcgcgggcgaggaaagcgaaagaagggaaggaaagagcggtgcaagcggc

5' gctttccccgtcaagctctaaatcgggggctccctttagggttccgatttagtgctttacggcacctcga 210
3' cgaaaggggcagttcgagatttagcccccgagggaaatcccaaggctaaatcacgaaatgccgtggagct

DraIII

5' ccccaaaaaacttgattagggtgatggttcacgtagtgggccatcgccctgatagacggtttttcgccct 280
3' ggggttttttgaactaatcccactaccaagtgcatcacccggtagcgggactatctgccaaaaagcggga

AloI' AloI

5' ttgacgttggagtccacgttctttaatagtggactcttgttccaaactggaacaacactcaaccctatct 350
3' aactgcaacctcaggtgcaagaaattatcacctgagaacaaggtttgaccttgttgtgagttgggataga

5' cggtctattcttttgatttataagggattttgccgatttcggcctattggttaaaaaatgagctgattta 420
3' gccagataagaaaactaaatattccctaaaacggctaaagccggataaccaattttttactcgactaaat

5' acaaaaatttaacgcgaattttaacaaaatattaacgcttacaatttaggtggcacttttcggggaaatg 490
3' tgtttttaaattgcgcttaaaattgttttataattgcgaatgttaaatccaccgtgaaaagcccctttac

5' tgcgcggaacccctatttgtttatttttctaaatacattcaaatatgtatccgctcatgagacaataacc 560
3' acgcgccttggggataaacaaataaaaagatttatgtaagtttatacataggcgagtactctgttattgg

5' ctgataaatgcttcaataatattgaaaaaggaagagtatgagtattcaacatttccgtgtcgcccttatt 630
3' gactatttacgaagttattataactttttccttctcatactcataagttgtaaaggcacagcgggaataa

Ap

5' cccttttttgcggcattttgccttcctgtttttgctcacccagaaacgctggtgaaagtaaaagatgctg 700
3' gggaaaaaacgccgtaaaacggaaggacaaaaacgagtgggtctttgcgaccactttcattttctacgac

Ap

5' aagatcagttgggtgcacgagtgggttacatcgaactggatctcaacagcggtaagatccttgagagttt 770
3' ttctagtcaacccacgtgctcacccaatgtagcttgacctagagttgtcgccattctaggaactctcaaa

Ap

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3' agcggggcttcttgcaaaaggttactactcgtgaaaatttcaagacgatacaccgcgccataatagggca
                                    Ap

                                                                      ScaI
5' attgacgccgggcaagagcaactcggtcgccgcatacactattctcagaatgacttggttgagtactcac 910
3' taactgcggcccgttctcgttgagccagcggcgtatgtgataagagtcttactgaaccaactcatgagtg
                                    Ap

5' cagtcacagaaaagcatcttacggatggcatgacagtaagagaattatgcagtgctgccataaccatgag 980
3' gtcagtgtcttttcgtagaatgcctaccgtactgtcattctcttaatacgtcacgacggtattggtactc
                                    Ap

                                    PvuI
5' tgataacactgcggccaacttacttctgacaacgatcggaggaccgaaggagctaaccgcttttttgcac 1050
3' actattgtgacgccggttgaatgaagactgttgctagcctcctggcttcctcgattggcgaaaaaacgtg
                                    Ap

5' aacatgggggatcatgtaactcgccttgatcgttgggaaccggagctgaatgaagccataccaaacgacg 1120
3' ttgtaccccctagtacattgagcggaactagcaacccttggcctcgacttacttcggtatggtttgctgc
                                    Ap

5' agcgtgacaccacgatgcctgcagcaatggcaacaacgttgcgcaaactattaactggcgaactacttac 1190
3' tcgcactgtggtgctacggacgtcgttaccgttgttgcaacgcgtttgataattgaccgcttgatgaatg
                                    Ap

5' tctagcttcccggcaacaattaatagactggatggaggcggataaagttgcaggaccacttctgcgctcg 1260
3' agatcgaagggccgttgttaattatctgacctacctccgcctatttcaacgtcctggtgaagacgcgagc
                                    Ap

                                                                 BsaI
5' gcccttccggctggctggtttattgctgataaatctggagccggtgagcgtgggtctcgcggtatcattg 1330
3' cgggaaggccgaccgaccaaataacgactatttagacctcggccactcgcacccagagcgccatagtaac
                                    Ap

                                                             AhdI
5' cagcactggggccagatggtaagccctcccgtatcgtagttatctacacgacggggagtcaggcaactat 1400
3' gtcgtgaccccggtctaccattcgggagggcatagcatcaatagatgtgctgcccctcagtccgttgata
                                    Ap
```

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5' ggatgaacgaaatagacagatcgctgagataggtgcctcactgattaagcattggtaactgtcagaccaa 1470
3' cctacttgctttatctgtctagcgactctatccacggagtgactaattcgtaaccattgacagtctggtt
   Ap

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3' caaatgagtatatatgaaatctaactaaattttgaagtaaaaattaaattttcctagatccacttctagg

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3' aaaaactattagagtactggttttagggaattgcactcaaaagcaaggtgactcgcagtctggggcatct

5' aaagatcaaaggatcttcttgagatcctttttttctgcgcgtaatctgctgcttgcaaacaaaaaaacca 1680
3' tttctagtttcctagaagaactctaggaaaaaaagacgcgcattagacgacgaacgtttgtttttttggt
   Ori

5' ccgctaccagcggtggtttgtttgccggatcaagagctaccaactctttttccgaaggtaactggcttca 1750
3' ggcgatggtcgccaccaaacaaacggcctagttctcgatggttgagaaaaaggcttccattgaccgaagt
   Ori

5' gcagagcgcagataccaaatactgtccttctagtgtagccgtagttaggccaccacttcaagaactctgt 1820
3' cgtctcgcgtctatggtttatgacaggaagatcacatcggcatcaatccggtggtgaagttcttgagaca
   Ori

5' agcaccgcctacatacctcgctctgctaatcctgttaccagtggctgctgccagtggcgataagtcgtgt 1890
3' tcgtggcggatgtatggagcgagacgattaggacaatggtcaccgacgacggtcaccgctattcagcaca
   Ori

5' cttaccgggttggactcaagacgatagttaccggataaggcgcagcggtcgggctgaacggggggttcgt 1960
3' gaatggcccaacctgagttctgctatcaatggcctattccgcgtcgccagcccgacttgccccccaagca
   Ori

5' gcacacagcccagcttggagcgaacgacctacaccgaactgagatacctacagcgtgagctatgagaaag 2030
3' cgtgtgtcgggtcgaacctcgcttgctggatgtggcttgactctatggatgtcgcactcgatactctttc
   Ori

5' cgccacgcttcccgaagggagaaaggcggacaggtatccggtaagcggcagggtcggaacaggagagcgc 2100
3' gcggtgcgaagggcttccctctttccgcctgtccataggccattcgccgtcccagccttgtcctctcgcg
   Ori
```

```
5'  acgagggagcttccagggggaaacgcctggtatctttatagtcctgtcgggtttcgccacctctgacttg
o   ----|----|----|----|----|----|----|----|----|----|----|----|----|----|  2170
3'  tgctccctcgaaggtcccccttttgcggaccatagaaatatcaggacagcccaaagcggtggagactgaac
o                                   Ori
o
5'  agcgtcgatttttgtgatgctcgtcaggggggcggagcctatggaaaaacgccagcaacgcggcctttttt
o   ----|----|----|----|----|----|----|----|----|----|----|----|----|----|  2240
3'  tcgcagctaaaaacactacgagcagtcccccgcctcggatacctttttgcggtcgttgcgccggaaaaa
o                                   Ori
o
o                                      PciI
5'  acggttcctggccttttgctggccttttgctcacatgttctttcctgcgttatcccctgattctgtggat
o   ----|----|----|----|----|----|----|----|----|----|----|----|----|----|  2310
3'  tgccaaggaccggaaaacgaccggaaaacgagtgtacaagaaaggacgcaatagggactaagacaccta
o
5'  aaccgtattaccgcctttgagtgagctgataccgctcgccgcagccgaacgaccgagcgcagcgagtcag
o   ----|----|----|----|----|----|----|----|----|----|----|----|----|----|  2380
3'  ttggcataatggcggaaactcactcgactatggcgagcggcgtcggcttgctggctcgcgtcgctcagtc
o
o                 SapI
5'  tgagcgaggaagcggaagagcgcctgatgcggtattttctccttacgcatctgtgcggtatttcacaccg
o   ----|----|----|----|----|----|----|----|----|----|----|----|----|----|  2450
3'  actcgctccttcgccttctcgcggactacgccataaaagaggaatgcgtagacacgccataaagtgtggc
o
o                                                          BstZ17I
5'  catatatggtgcactctcagtacaatctgctctgatgccgcatagttaagccagtatacactccgctatc
o   ----|----|----|----|----|----|----|----|----|----|----|----|----|----|  2520
3'  gtatataccacgtgagagtcatgttagacgagactacggcgtatcaattcggtcatatgtgaggcgatag
o
o                  Tth111I
5'  gctacgtgactgggtcatggctgcgccccgacacccgccaacacccgctgacgcgccctgacgggcttgt
o   ----|----|----|----|----|----|----|----|----|----|----|----|----|----|  2590
3'  cgatgcactgacccagtaccgacgcggggctgtgggcggttgtgggcgactgcgcgggactgcccgaaca
o
5'  ctgctcccggcatccgcttacagacaagctgtgaccgtctccgggagctgcatgtgtcagaggttttcac
o   ----|----|----|----|----|----|----|----|----|----|----|----|----|----|  2660
3'  gacgagggccgtaggcgaatgtctgttcgacactggcagaggccctcgacgtacacagtctccaaaagtg
o
5'  cgtcatcaccgaaacgcgcgaggcagctgcggtaaagctcatcagcgtggtcgtgaagcgattcacagat
o   ----|----|----|----|----|----|----|----|----|----|----|----|----|----|  2730
3'  gcagtagtggctttgcgcgctccgtcgacgccatttcgagtagtcgcaccagcacttcgctaagtgtcta
o
5'  gtctgcctgttcatccgcgtccagctcgttgagtttctccagaagcgttaatgtctggcttctgataaag
o   ----|----|----|----|----|----|----|----|----|----|----|----|----|----|  2800
3'  cagacggacaagtaggcgcaggtcgagcaactcaaagaggtcttcgcaattacagaccgaagactatttc
o
5'  cgggccatgttaagggcggtttttcctgtttggtcactgatgcctccgtgtaagggggatttctgttca
o   ----|----|----|----|----|----|----|----|----|----|----|----|----|----|  2870
3'  gcccggtacaattcccgccaaaaaaggacaaaccagtgactacggaggcacattccccctaaagacaagt
o
```

```
5' tggggtaatgataccgatgaaacgagagaggatgctcacgatacgggttactgatgatgaacatgcccg
                                                                        2940
3' accccattactatggctactttgctctctcctacgagtgctatgcccaatgactactacttgtacgggc

5' gttactggaacgttgtgagggtaaacaactggcggtatggatgcggcgggaccagagaaaaatcactcag
                                                                        3010
3' caatgaccttgcaacactcccatttgttgaccgccatacctacgccgccctggtctctttttagtgagtc

5' ggtcaatgccagcgcttcgttaatacagatgtaggtgttccacagggtagccagcagcatcctgcgatgc
                                                                        3080
3' ccagttacggtcgcgaagcaattatgtctacatccacaaggtgtcccatcggtcgtcgtaggacgctacg

5' agatccggaacataatggtgcagggcgctgacttccgcgtttccagactttacgaaacacggaaaccgaa
                                                                        3150
3' tctaggccttgtattaccacgtcccgcgactgaaggcgcaaaggtctgaaatgctttgtgcctttggctt

                                Bpu10I
5' gaccattcatgttgttgctcaggtcgcagacgttttgcagcagcagtcgcttcacgttcgctcgcgtatc
                                                                        3220
3' ctggtaagtacaacaacgagtccagcgtctgcaaaacgtcgtcgtcagcgaagtgcaagcgagcgcatag

5' ggtgattcattctgctaaccagtaaggcaaccccgccagcctagccgggtcctcaacgacaggagcacga
                                                                        3290
3' ccactaagtaagacgattggtcattccgttggggcggtcggatcggcccaggagttgctgtcctcgtgct

          FspAI
5' tcatgcgcacccgtggggccgccatgccggcgataatggcctgcttctcgccgaaacgtttggtggcggg
                                                                        3360
3' agtacgcgtgggcaccccggcggtacggccgctattaccggacgaagagcggctttgcaaaccaccgccc

5' accagtgacgaaggcttgagcgagggcgtgcaagattccgaataccgcaagcgacaggccgatcatcgtc
                                                                        3430
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                                                                        3500
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                                        PshAI
5' tgataaagaagacagtcataagtgcggcgacgatagtcatgccccgcgcccaccggaaggagctgactgg
                                                                        3570
3' actatttcttctgtcagtattcacgccgctgctatcagtacggggcgcgggtggccttcctcgactgacc

5' gttgaaggctctcaagggcatcggtcgagatcccggtgcctaatgagtgagctaacttacattaattgcg
                                                                        3640
3' caacttccgagagttcccgtagccagctctagggccacggattactcactcgattgaatgtaattaacgc

5' ttgcgctcactgcccgctttccagtcgggaaacctgtcgtgccagctgcattaatgaatcggccaacgcg
                                                                        3710
3' aacgcgagtgacgggcgaaaggtcagccctttggacagcacggtcgacgtaattacttagccggttgcgc
                                     Lac I
```

```
5' cggggagaggcggtttgcgtattgggcgccagggtggtttttcttttcaccagtgagacgggcaacagct
                                                                          3780
3' gcccctctccgccaaacgcataacccgcggtcccaccaaaaagaaaagtggtcactctgcccgttgtcga
                                   Lac I

5' gattgcccttcaccgcctggccctgagagagttgcagcaagcggtccacgctggtttgccccagcaggcg
                                                                          3850
3' ctaacgggaagtggcggaccgggactctctcaacgtcgttcgccaggtgcgaccaaacggggtcgtccgc
                                   Lac I

                   HpaI
5' aaaatcctgtttgatggtggttaacggcgggatataacatgagctgtcttcggtatcgtcgtatcccact
                                                                          3920
3' ttttaggacaaactaccaccaattgccgccctatattgtactcgacagaagccatagcagcatagggtga
                                   Lac I

                                         BssHII
5' accgagatgtccgcaccaacgcgcagcccggactcggtaatggcgcgcattgcgcccagcgccatctgat
                                                                          3990
3' tggctctacaggcgtggttgcgcgtcgggcctgagccattaccgcgcgtaacgcgggtcgcggtagacta
                                   Lac I

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                                                                          4060
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                                   Lac I

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                                                                          4130
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                                   Lac I

                                   PspOMI
                                       ApaI
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                                                                          4200
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                                   Lac I

5' atgcgaccagatgctccacgcccagtcgcgtaccgtcttcatgggagaaaataatactgttgatgggtgt
                                                                          4270
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                                   Lac I

5' ctggtcagagacatcaagaaataacgccggaacattagtgcaggcagcttccacagcaatggcatcctgg
                                                                          4340
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                                   Lac I
```

BclI

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Lac I

5' aggcttcgacgccgcttcgttctaccatcgacaccaccacgctggcacccagttgatcggcgcgagattt 4480
3' tccgaagctgcggcgaagcaagatggtagctgtggtggtgcgaccgtgggtcaactagccgcgctctaaa

Lac I

5' aatcgccgcgacaatttgcgacggcgcgtgcagggccagactggaggtggcaacgccaatcagcaacgac 4550
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Lac I

5' tgtttgcccgccagttgttgtgccacgcggttgggaatgtaattcagctccgccatcgccgcttccactt 4620
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Lac I

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BstAPI

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EcoNI

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SphI

5' gtgcatgcaaggagatggcgcccaacagtcccccggccacggggcctgccaccatacccacgccgaaaca 4970
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5' agcgctcatgagcccgaagtggcgagcccgatcttccccatcggtgatgtcggcgatataggcgccagca 5040
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SgrAI

5' accgcacctgtggcgccggtgatgccggccacgatgcgtccggcgtagaggatcgagatcgatctcgatc 5110
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XbaI

5' ccgcgaaattaatacgactcactatagggaattgtgagcggataacaattcccctctagaaataatttt 5180
3' ggcgctttaattatgctgagtgatatccccttaacactcgcctattgttaaggggagatctttattaaaa

T7 Promoter — Lac Operator

BarI — BarI'

5' gtttaactttaagaaggagatatacatatgagcgataaaattattcacctgactgacgacagttttgaca 5250
3' caaattgaaattcttcctctatatgtatactcgctattttaataagtggactgactgctgtcaaaactgt

Trx Tag

M S D K I I H L T D D S F D
1 2 3 4 5 6 7 8 9 10 11 12 13 14

RsrII

5' cggatgtactcaaagcggacggggcgatcctcgtcgatttctgggcagagtggtgcggtccgtgcaaaat 5320
3' gcctacatgagtttcgcctgccccgctaggagcagctaaagacccgtctcaccacgccaggcacgtttta

Trx Tag

T D V L K A D G A I L V D F W A E W C G P C K M
15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38

5' gatcgccccgattctggatgaaatcgctgacgaatatcagggcaaactgaccgttgcaaaactgaacatc 5390
3' ctagcggggctaagacctactttagcgactgcttatagtcccgtttgactggcaacgttttgacttgtag

Trx Tag

I A P I L D E I A D E Y Q G K L T V A K L N I
39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61

5' gatcaaaaccctggcactgcgccgaaatatggcatccgtggtatcccgactctgctgctgttcaaaaacg 5460
3' ctagttttgggaccgtgacgcggctttataccgtaggcaccatagggctgagacgacgacaagtttttgc

Trx Tag

D Q N P G T A P K Y G I R G I P T L L L F K N
62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84

5' gtgaagtggcggcaaccaaagtgggtgcactgtctaaaggtcagttgaaagagttcctcgacgctaacct 5530
3' cacttcaccgccgttggtttcacccacgtgacagatttccagtcaactttctcaaggagctgcgattgga

Trx Tag

G E V A A T K V G A L S K G Q L K E F L D A N L
85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108

MscI

5' ggccggttctggttctggccatatgcaccatcatcatcatcattcttctggtctggtgccacgcggttct 5600
3' ccggccaagaccaagaccggtatacgtggtagtagtagtagtaagaagaccagaccacggtgcgccaaga

T...g | His6-tag | Thrombin

A G S G S G H M H H H H H H S S G L V P R G S
109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131

BglII

5' ggtatgaaagaaaccgctgctgctaaattcgaacgccagcacatggacagcccagatctgggtaccgacg 5670
3' ccatactttctttggcgacgacgatttaagcttgcggtcgtgtacctgtcgggtctagacccatggctgc

En...e

G M K E T A A A K F E R Q H M D S P D L G T D
132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154

NcoI

5' acgacgacaaggccatggcgatATCAACAAGTTTGTACAAAAAAGCAGGCTctgaaaacttgtactttca 5740
3' tgctgctgttccggtaccgctaTAGTTGTTCAAACATGTTTTTTCGTCCGAgacttttgaacatgaaagt

Enterokinase | attB1 | TEV site

BGH13_B01b1-pDONR221

D D D K A M A I S T S L Y K K A G S E N L Y F Q
155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178

5' aggcCAACCGCGAACCGCGTTCGTTCATTTGTTCGAATGGCAGTGGAACGATATTGCTAGCGAGTGCGAA 5810
3' tccgGTTGGCGCTTGGCGCAAGCAAGTAAACAAGCTTACCGTCACCTTGCTATAACGATCGCTCACGCTT

T... | BGH13_B01b1

BGH13_B01b1-pDONR221

G Q P R T A F V H L F E W Q W N D I A S E C E
179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201

5' AATGTACTGGGGCCAAAAGGCTATGCGGCAGTGCAGGTATCCCCACCCCAAAAATCGGTTAGTAGCAGCC 5880
3' TTACATGACCCCGGTTTTCCGATACGCCGTCACGTCCATAGGGGTGGGGTTTTTAGCCAATCATCGTCGG

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N V L G P K G Y A A V Q V S P P Q K S V S S S
202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224

5' AATGGTGGAGTCGTTACCAACCTGTTAGCTATGCCATAGAGGGCCGTTCTGGCAATCGCAACGAATTCGC 5950
3' TTACCACCTCAGCAATGGTTGGACAATCGATACGGTATCTCCCGGCAAGACCGTTAGCGTTGCTTAAGCG

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Q W W S R Y Q P V S Y A I E G R S G N R N E F A
225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248

SnaBI

5' CAGCATGGTAAGCCGGTGTAAAAATGCTGGGGTGGATATATACGTAGATGCCGTAATTAATCATATGGCT 6020
3' GTCGTACCATTCGGCCACATTTTTACGACCCCACCTATATATGCATCTACGGCATTAATTAGTATACCGA

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S M V S R C K N A G V D I Y V D A V I N H M A
249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271

PmlI

5' GCCGGCGGGCGCTATTACCCAGAAGTGCCTTACTACGCAGAGCATTTTCACACGTGCTACGGCCAAATTG 6090
3' CGGCCGCCCGCGATAATGGGTCTTCACGGAATGATGCGTCTCGTAAAAGTGTGCACGATGCCGGTTTAAC

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A G G R Y Y P E V P Y Y A E H F H T C Y G Q I
272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294

5' ATTACGGTAACCGCTGGCAGGTACAAAACTGTGACTTGGTAGGGCTAAACGATTTAGCAACAGAACAAGA 6160
3' TAATGCCATTGGCGACCGTCCATGTTTTGACACTGAACCATCCCGATTTGCTAAATCGTTGTCTTGTTCT

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D Y G N R W Q V Q N C D L V G L N D L A T E Q D
295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318

5' CTATGTACGCACAAAAATAGCCAATTACTTAAACGACTTAACTAACCTTGGCGTAGCTGGCTTCCGCTTT 6230
3' GATACATGCGTGTTTTTATCGGTTAATGAATTTGCTGAATTGATTGGAACCGCATCGACCGAAGGCGAAA

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Y V R T K I A N Y L N D L T N L G V A G F R F
319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341

5' GATGCTGCGAAACATATCCCCGTGGGTGACATTGCTGCAATTAAAGCAAAACTTATTGGCAACCCGTATA 6300
3' CTACGACGCTTTGTATAGGGGCACCCACTGTAACGACGTTAATTTCGTTTTGAATAACCGTTGGGCATAT

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D A A K H I P V G D I A A I K A K L I G N P Y
342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364

5' TATTCCAAGAAGTGATAGGTGCGCCGGGCGAGCCCATCCAACCATCAGAATATACCTACTTAGCAGACGT 6370
3' ATAAGGTTCTTCACTATCCACGCGGCCCGCTCGGGTAGGTTGGTAGTCTTATATGGATGAATCGTCTGCA

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I F Q E V I G A P G E P I Q P S E Y T Y L A D V
365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388

5' AACAGAGTTTAACTTTACCAAATCGGTTAGCCATTTTTTTAAAGGGCGCGGACCAATTAAAGAGTTAAAA 6440
3' TTGTCTCAAATTGAAATGGTTTAGCCAATCGGTAAAAAAATTTCCCGCGCCTGGTTAATTTCTCAATTTT

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T E F N F T K S V S H F F K G R G P I K E L K
389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411

5' AATATTGGTACTTGGGGCGGTTGGGTTGCAAGTGCAGACGCCGTAACCTTTGTTGCCAACCACGATAACC 6510
3' TTATAACCATGAACCCCGCCAACCCAACGTTCACGTCTGCGGCATTGGAAACAACGGTTGGTGCTATTGG

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N I G T W G G W V A S A D A V T F V A N H D N
412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434

5' AGCGCCAGGATACAAACAACACCATTACCCATAAAGATGGTGATAACCGCAATACTATGGCGCACGTATT 6580
3' TCGCGGTCCTATGTTTGTTGTGGTAATGGGTATTTCTACCACTATTGGCGTTATGATACCGCGTGCATAA

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Q R Q D T N N T I T H K D G D N R N T M A H V F
435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458

5' TATGCTGGGCTGGCCCTATGGGTACCCTAAAGTAATGTCTAGTTATGAGTGGTACGATCACGACCAAGGC 6650
3' ATACGACCCGACCGGGATACCCATGGGATTTCATTACAGATCAATACTCACCATGCTAGTGCTGGTTCCG

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M L G W P Y G Y P K V M S S Y E W Y D H D Q G
459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481

5' CCTCCCGCCCACGGTGCTAGCAGCTGTAACAGCGGCTGGTTATGTGAACACCGCACGCCAGCTATCGCCA 6720
3' GGAGGGCGGGTGCCACGATCGTCGACATTGTCGCCGACCAATACACTTGTGGCGTGCGGTCGATAGCGGT

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P P A H G A S S C N S G W L C E H R T P A I A
482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504

5' ATATGGTTGCTTTTCGCAATTTCACTGCAGACGAATTTCGCGTAACCAACTATTGGGATAACGGCAACAA 6790
3' TATACCAACGAAAAGCGTTAAAGTGACGTCTGCTTAAAGCGCATTGGTTGATAACCCTATTGCCGTTGTT

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N M V A F R N F T A D E F R V T N Y W D N G N N
505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528

5' TCAAATAGCTTGGGGCCGAGGCGGCAAAGGGTTTGTAGTTATAAATATGGAAGGCAACAATTTAACCCGT 6860
3' AGTTTATCGAACCCCGGCTCCGCCGTTTCCCAAACATCAATATTTATACCTTCCGTTGTTAAATTGGGCA

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Q I A W G R G G K G F V V I N M E G N N L T R
529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551

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5'  ACATTTCAAACAGGGATGCCCGCTGGCCGTTATTGCGACATTATTTCGGGTAACTACAACGCGTCTAATA
                                                                      6930
3'  TGTAAAGTTTGTCCCTACGGGCGACCGGCAATAACGCTGTAATAAAGCCCATTGATGTTGCGCAGATTAT
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T   F   Q   T   G   M   P   A   G   R   Y   C   D   I   I   S   G   N   Y   N   A   S   N
552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574

5'  AAAGTTGTTCTGGCAATATTATAGATGTAGATAACAATGGCAACGCAGTAATCACCGCTTACTACCGCAA
                                                                      7000
3'  TTTCAACAAGACCGTTATAATATCTACATCTATTGTTACCGTTGCGTCATTAGTGGCGAATGATGGCGTT
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K   S   C   S   G   N   I   I   D   V   D   N   N   G   N   A   V   I   T   A   Y   Y   R   N
575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598

5'  CGGTGCCGCAATTCATGTAGGCGCTATTGTTGAAGACTAGGACCCAGCTTTCTTGTACAAAGTGGTTGAT
                                                                      7070
3'  GCCACGGCGTTAAGTACATCCGCGATAACAACTTCTGATCCTGGGTCGAAAGAACATGTTTCACCAACTA
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G   A   A   I   H   V   G   A   I   V   E   D   .
599 600 601 602 603 604 605 606 607 608 609 610 611
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BamHI EcoICRI SacI SalI HindIII NotI EagI PspXI XhoI AvaI BmeT110I

```
5'  atcggatccgaattcgagctccgtcgacaagcttgcggccgcactcgagcaccaccaccaccaccactga
                                                                      7140
3'  tagcctaggcttaagctcgaggcagctgttcgaacgccggcgtgagctcgtggtggtggtggtggtgact
```

BlpI

```
5'  gatccggctgctaacaaagcccgaaaggaagctgagttggctgctgccaccgctgagcaataactagcat
                                                                      7210
3'  ctaggccgacgattgtttcgggctttccttcgactcaaccgacgacggtggcgactcgttattgatcgta
```

T7 Terminator

```
5'  aacccttggggcctctaaacgggtcttgaggggttttttgctgaaaggaggaactatatccggat
                                                                      7276
3'  ttggggaaccccggagatttgcccagaactccccaaaaaacgactttcctccttgatataggccta
```

T7 Terminator