

BGH47_B03a-pET16-DEST

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 o ++++++
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 o
 5' tagacgtcaggtggcacttttcggggaaatgtgCGCGGAACCCCTATTTGTTATTTTTCTAAATACATT
 o ++++++
 3' atctgcagtccaccgtgaaaagcccctttacacgCGCCTGGGGATAAACAATAAAAAGATTTATGTA
 o
 5' caaatatgtatccgctcatgagacaataaccctgataaatgcttcaataatattgaaaaaggaagagtat
 o ++++++
 3' gtttatacataggcgagtactctgttattgggactatttacgaagtattataactTTTTCTTCTCATA
 o

70
140
210



5' gagtattcaacatttccgtgtCGCCCTTATCCCTTTTTGCGGCATTTGCTTCCTGTTTTGCTCAC
 o ++++++
 3' ctcataagttgtaaaggcacagCGGGAATAAGGGAAAAACGCCGTA AACCGGAAGGACAAAAACGAGTG
 o

280

Ap

5' ccagaaacgctggtgaaagtaaagatgctgaagatcagttgggtgCACGAGTGGGTACATCGAACTGG
 o ++++++
 3' ggtctttgCGACCCTTTCATTTCTACGACTTCTAGTCAACCCACGTGCTCACCCAATGTAGCTTGACC
 o

350

Ap

5' atctcaacagCGGTAAGATCCTTGAGAGTtttcgccccgaagaacgTTTTCCAATGATGAGCACTTTTAA
 o ++++++
 3' tagagtgtCGCCATTCTAGGAACTCTCAAAGCGGGGCTTCTTGCAAAGGTTACTACTCGTGAAAATT
 o

420

Ap

5' agttctgctatgtggCGCGGTATTATCCCCTGTTGACGCCGGGCAAGAGCAACTCGGTGCGCCGATACAC
 o ++++++
 3' tcaagacgatacaccgCGCCATAATAGGGCACAACCTGCGGCCGTTCTCGTTGAGCCAGCGGCGTATGTG
 o

490

Ap

5' tattctcagaatgacttgggtgagtactcaccagtcacagaaaagcatcttacggatggcatgacagtaa
 o ++++++
 3' ataagagtcttactgaaccaactcatgagtggtcagtgctTTTTCTGAGAATGCCTACCGTACTGTCAAT
 o

560

Ap

PvuI

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 o ++++++
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 o

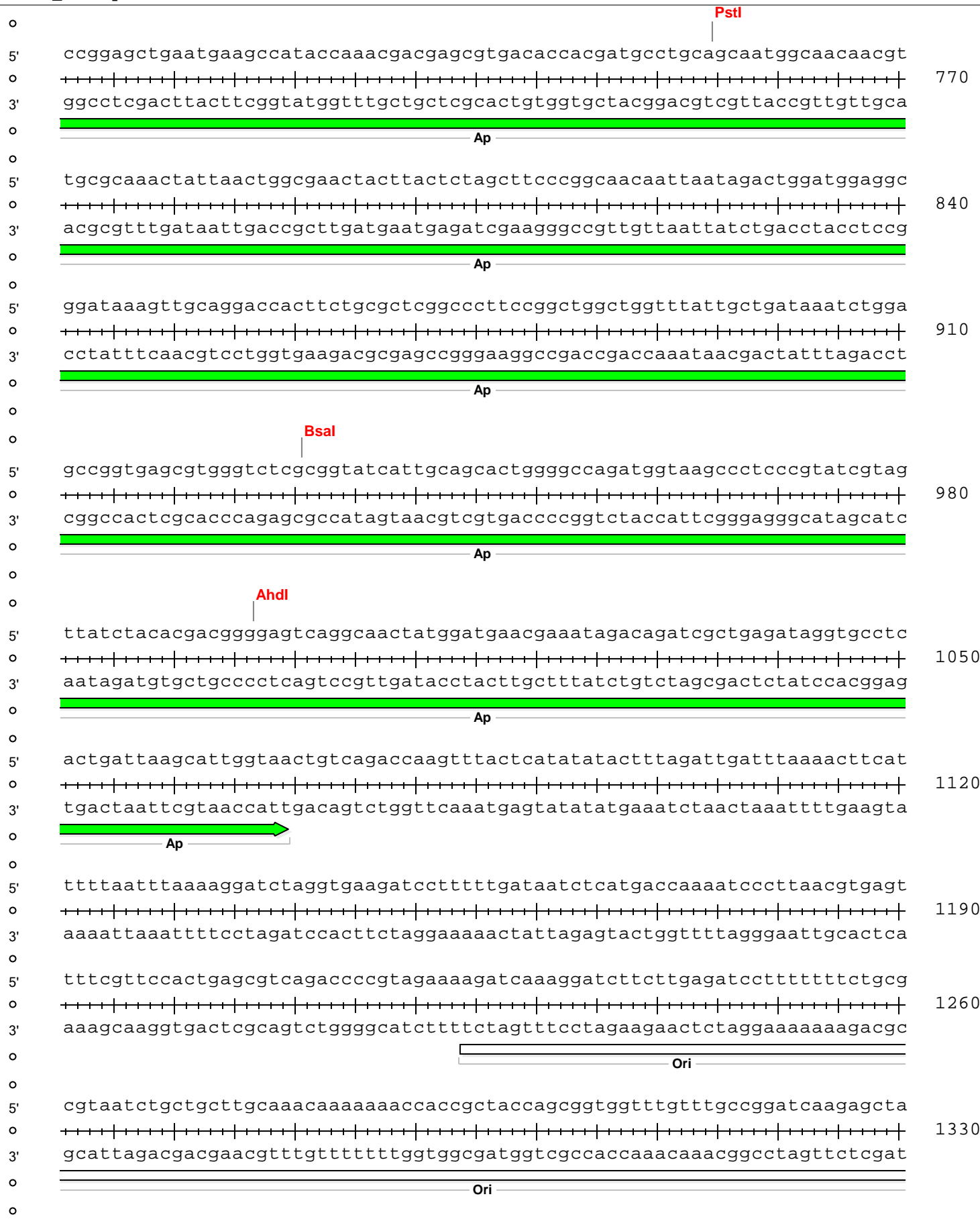
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Ap

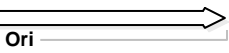
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 o ++++++
 3' tcctggcttctCGATTGGCGAAAAACGTGTTGTACCCCTAGTACATTGAGCGGAACCTAGCAACCCTT
 o

700

Ap



BGH47_B03a-pET16-DEST

5'	ccaactctttttccgaaggtaactggcttcagcagagcgcagataccaaatactgtccttctagtgtagc	
0	++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++	1400
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0	<hr/> <hr/> Ori	
0		
5'	cgtagttaggccaccacttcaagaactctgtagcaccgcctacatacctcgctctgctaactctgttacc	
0	++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++	1470
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0	<hr/> <hr/> Ori	
0		
5'	agtggtgctgcccagtgggcgataagtcgtgtcttaccgggttgactcaagacgatagttaccggataag	
0	++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++	1540
3'	tcaccgacgacggtcaccgctattcagcacagaaatggcccaacctgagttctgctatcaatggcctattc	
0	<hr/> <hr/> Ori	
0		
5'	gcgagcggtcgggctgaacggggggttcgtgacacagcccagcttggagcgaacgacctacaccgaac	
0	++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++	1610
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0	<hr/> <hr/> Ori	
0		
5'	tgagatacctacagcgtgagctatgagaaagcggccacgcttcccgaaggagaaaggcggacaggtatcc	
0	++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++	1680
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0		
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0	++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++	1750
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0	<hr/> <hr/> Ori	
0		
5'	agtcctgtcgggtttcgccacctctgacttgagcgctcgatttttgtgatgctcgctcaggggggaggagcc	
0	++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++	1820
3'	tcaggacagcccaaagcgggtggagactgaactcgcagctaaaacactacgagcagttcccccgcctcgg	
0	<hr/> <hr/> Ori	
0		
5'	tatggaaaaacgccagcaacgcggcctttttacgggttctggccttttgctggccttttgctcacatgtt	
0	++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++	1890
3'	atacctttttgcggtcgttgcgccggaaaaatgccaaggaccggaaaaacgaccggaaaaacgagtgtaaa	
0	<hr/> <hr/> Ori 	
0		
5'	ctttcctgcggttatcccctgattctgtggataaccgtattaccgcctttgagtgagctgataccgctcgc	
0	++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++	1960
3'	gaaaggacgcaataggggactaagacacctattggcataatggcggaaactcactcgactatggcgagcg	
0		
0		
	SapI	
5'	cgcagccgaacgaccgagcgcagcagtcagtgagcaggaagcggagagcgcctgatgcggtattttc	
0	++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++ ++++	2030
3'	gcgtcggcttgctggctcgcgtcgtcagtcactcgccttctcgcgactacgccataaaag	
0		

BGH47_B03a-pET16-DEST

o

5' cctagccgggtcctcaacgacaggagcacgatcatgcgccaccggtggccaggaccaacgctgcccgaga 2940

o

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FspAI

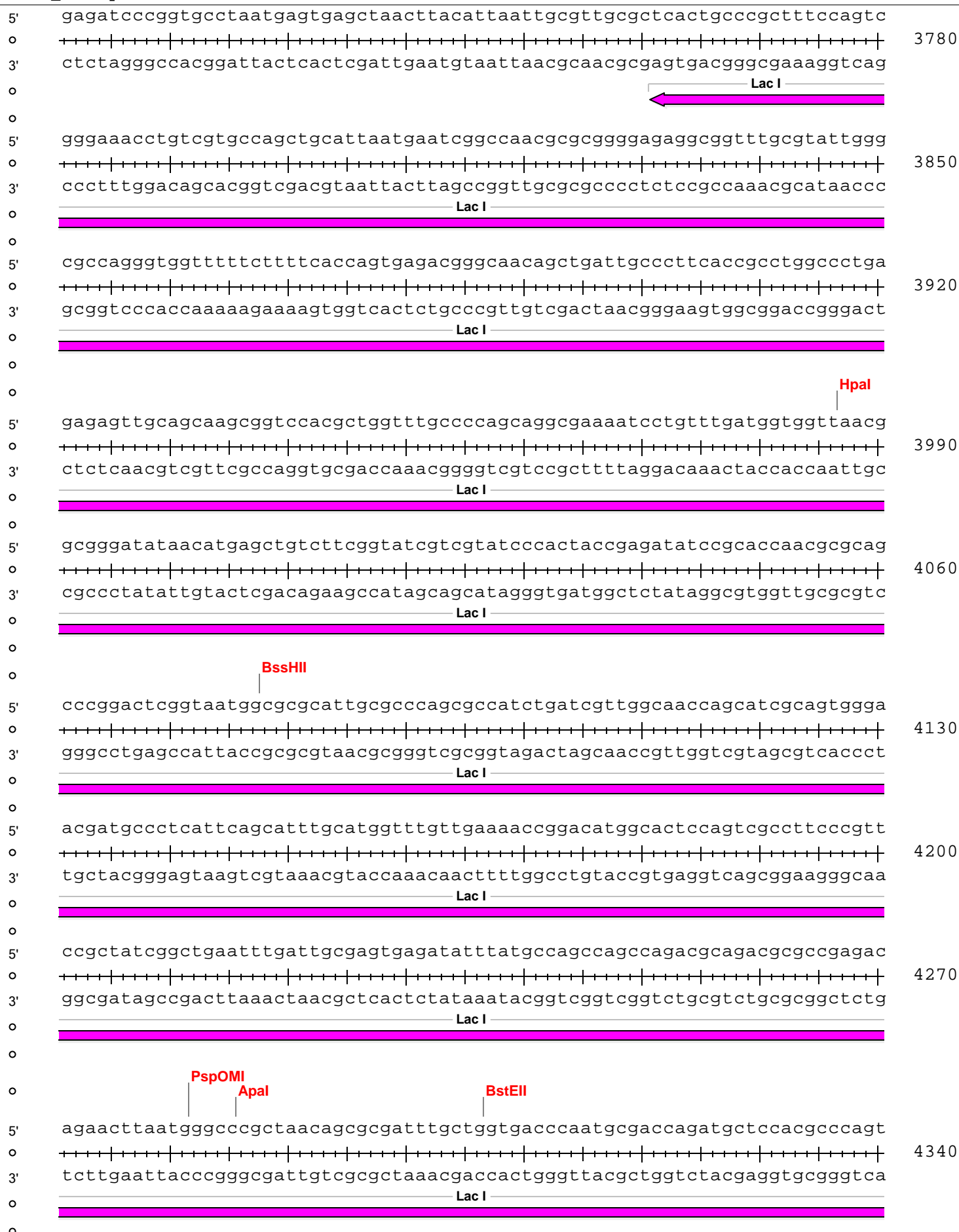
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BGH47_B03a-pET16-DEST



BGH47_B03a-pET16-DEST

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5110

SgrAI

5' cccgatcttccccatcggatggtcggcgatataggcgccagcaaccgcacctgtggcgccgggtgatgcc
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5180

BglII

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5250

T7 Promoter

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 0 ++++++
 3' ttaacactcgctattgTTAAGGGGAGATCTTTATTAAACAAATTGAAATCTCTCCTCTATATGGTACC

5320

Lac O

M
1

5' gccatcatcatcatcatcatcatcatcacagcagcggccatatcgaaggctcgtcatatgctcgaATC
 0 ++++++
 3' cggtagtagtagtagtagtagtagtagtgctcgtcgccggatatagcttccagcagatatacgagctTAG

5390

BamHI

NdeI

His10-tag

X-factor

G H H H H H H H H S S G H I E G R H M L E S
 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25

5' AACAAAGTTTGTACAAAAAAGCAGGCTctgaaaacttgtactttcaaggcCAAGCGGAGTTATCGCTAAGC
 0 ++++++
 3' TTGTTCAAACATGTTTTTTCGTCCGAgacttttgaacatgaaagtccgGTTTCGCCTCAATAGCGATTTCG

5460

attB1

TEV site

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T S L Y K K A G S E N L Y F Q G Q A E L S L S
 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48

5' GTCAAACAGGAATTTATCAGATCCTGGGATGCTTACAAACGATACGCCTGGGGCCATGATGTATTATTGC
 0 ++++++
 3' CAGTTTGTCTTAAATAGTCTAGGACCCTACGAATGTTTGCTATGCGGACCCCGTACTACATAATAACG

5530

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BGH47_B03a-pDONR221

V K Q E F I R S W D A Y K R Y A W G H D V L L
 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71

BGH47_B03a-pET16-DEST

Psrl Psrl' Nsil
 5' CGCAAACGAAAACCTACACGGACTGGTACGAACAGCCGATACGTATTTTCGCAGATTGATGCATATAGCAC
 3' GCGTTTGCTTTTGGATGTGCCTGACCATGCTTGTTCGGCTATGCATAAAGCGTCTAACTACGTATATCGTG
 BGH47_B03a
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5600

P Q T K T Y T D W Y E Q P I R I S Q I D A Y S T
 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95

5' CATGAAAGTGATGGGCCTCCAGAAACAGGCCAGAGACATTGAGAAGTTTGTAACAGATAGTTGCAACTTT
 3' GTACTTTCACACTACCCGGAGGTCTTTGTCCGGTCTCTGTAACCTCTTCAAACATTGTCTATCAACGTTGAAA
 BGH47_B03a
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5670

M K V M G L Q K Q A R D I E K F V T D S C N F
 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118

5' GACATAGACGTTTACGTAAAGACCTTTGATGTCAATAATCGCGTACTGGGAGGACTCTTATACATGTACT
 3' CTGTATCTGCAAATGCATTTCTGGAAACTACAGTTATTAGCGCATGACCCTCCTGAGAATATGTACATGA
 BGH47_B03a
 BGH47_B03a-pDONR221

5740

D I D V Y V K T F D V N N R V L G G L L Y M Y
 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141

5' CCTGCACACACCAGCCTAAAATACTGGAACGCGCAAGAGACTTTGGAGATCGCCTCTTAAAAGCTTTCAG
 3' GGACGTGTGTGGTTCGATTTTATGACCTTGC GCGTTCTCTGAAACCTCTAGCGGAGAATTTTCGAAAGTC
 BGH47_B03a
 BGH47_B03a-pDONR221

5810

S C T H Q P K I L E R A R D F G D R L L K A F R
 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165

5' ATCACCGACAGGAATCCCCTATTACTGGGTCAATCTGAAAACCGGTAAAGTGAAAGGCGAAAAGGTCAAT
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 BGH47_B03a
 BGH47_B03a-pDONR221

5880

S P T G I P Y Y W V N L K T G K V K G E K V N
 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188

BGH47_B03a-pET16-DEST

5' ACCGCAGAAGCAGCCGCTTATACACTTGAAATGGGCATCCTGAGTTATTACACAAAGGACCCGAAATATT
 3' TGGCGTCTTCGTCGGCGAATATGTGAACTTTACCCGTAGGACTCAATAATGTGTTTCCTGGGCTTTATAA

5950

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T A E A A A Y T L E M G I L S Y Y T K D P K Y
 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211

5' ATCAGGCGGCGAGGAAAGCGACAGAAGCCATATACGGCAGACGCTCAGCCCTCAACCTTACCGGCAACAT
 3' TAGTCCGCCGCTCCTTTTCGCTGTCTTCGGTATATGCCGTCTGCGAGTCGGGAGTTGGAATGGCCGTTGTA

6020

BGH47_B03a

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Y Q A A R K A T E A I Y G R R S A L N L T G N I
 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235

5' CATCAACAATGAAACCGGTGACTGGCTGGAAACCATCAGTTGTATCGGCGCAGGAGGCAGCGCTTACTAT
 3' GTAGTTGTTACTTTGGCCACTGACCGACCTTTGGTAGTCAACATAGCCGCGTCTCCGTCGCGAATGATA

6090

BGH47_B03a

BGH47_B03a-pDONR221

I N N E T G D W L E T I S C I G A G G S A Y Y
 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258

5' GAAAGTATGCTGAAAACATGGCTCCTGTTTAAAGATGAAGCACTGAAAGAAATGTGGGAGAAAACCATTA
 3' CTTTCATACGACTTTTGTACCGAGGACAAATTTCTACTTCGTGACTTTCTTTACACCCTCTTTTGGTAAT

6160

BGH47_B03a

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E S M L K T W L L F K D E A L K E M W E K T I
 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281

5' CAGCCGTACATCAGTATAACGCAGAAGAAAGTGACACCGCAATATGGTACCGCAGAACGGACATGTATTC
 3' GTCGGCATGTAGTCATATTGCGTCTTCTTCACTGTGGCGTTATACCATGGCGTCTTGCCTGTACATAAG

6230

BGH47_B03a

BGH47_B03a-pDONR221

T A V H Q Y N A E E S D T A I W Y R R T D M Y S
 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305

BGH47_B03a-pET16-DEST

5' AGGGGAAACAAAGAATAACAACACTGCGACAGGTTACGACGCATTCTGCCAGCTCTTTTATGTATCGATAAT
 0 ++++++
 3' TCCCCTTTGTTTCTTATGTTGACGCTGTCCAATGCTGCGTAAGGACGGTTCGAGAAAATACATAGCTATTA

6300

BGH47_B03a

BGH47_B03a-pDONR221

G E T K N T T A T G Y D A F L P A L L C I D N
 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328

5' GATGCAGAACAGGCAGCCAGGGTACACCGGACCTGGAATAATCTCTGGAACAGTATGGGATGATTCCGA
 0 ++++++
 3' CTACGTCTTGTCCGTCGGTCCCATGTGGCCTGGACCTTATTAGAGACCTTTGTCATACCCTACTAAGGCT

6370

BGH47_B03a

BGH47_B03a-pDONR221

D A E Q A A R V H R T W N N L W K Q Y G M I P
 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351

BsiWI

5' TGATCTACGACTTCCGCCGGCAGCATATCACGGCAGCAGCGTACGACCTGAATCCCGAGATCATCGAGTC
 0 ++++++
 3' ACTAGATGCTGAAGGCGGCCGTCGTATAGTGCCGTCGTCGCATGCTGGACTTAGGGCTCTAGTAGCTCAG

6440

BGH47_B03a

BGH47_B03a-pDONR221

M I Y D F R R Q H I T A A A Y D L N P E I I E S
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5' AGCCTGGTACCTGTATGATTACACAAAAGATAACCGCCTATCAGCAGATGGGCAGACAGTACTACAGCGAC
 0 ++++++
 3' TCGGACCATGGACATACTAATGTGTTTTCTATGGCGGATAGTCGTCTACCCGTCTGTCATGATGTGCTG

6510

BGH47_B03a

BGH47_B03a-pDONR221

A W Y L Y D Y T K D T A Y Q Q M G R Q Y Y S D
 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398

5' ATATTGCAGTATTGCAGGGCAGGCGCCGATTCACCTGGCGTAATGGATATCAGAAGTAAACAGCAGCAGA
 0 ++++++
 3' TATAACGTCATAACGTCCCGTCCGCGGCGTAAGTGACCGCATTACCTATAGTCTTCATTTGTCGTCGTCT

6580

BGH47_B03a

BGH47_B03a-pDONR221

I L Q Y C R A G A A F T G V M D I R S K Q Q Q
 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421

BGH47_B03a-pET16-DEST

5' ATAAATGCCGGTCTATTTCTTTGCAACAACAATGAAATACCTGTACCTGCTCTTTACACCAGACAGTGG
 0 ++++++
 3' TATTTTACGGCCAGATAAAGAAACGTTGTTGTTACTTTATGGACATGGACGAGAAATGTGGTCTGTACC

6650

BGH47_B03a

BGH47_B03a-pDONR221

N K M P V Y F F A T T M K Y L Y L L F T P D S G
 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445

5' ATTGAATACGCTTGATTACGTATTCACAGCAGAAGGAAACCCGTTTAAAACGGATGAATTCAAAGCGGCA
 0 ++++++
 3' TAACTTATGCGAACTAATGCATAAGTGTCTTCTTTGGGCAAATTTTGCCTACTTAAGTTTCGCCGT

6720

BGH47_B03a

BGH47_B03a-pDONR221

L N T L D Y V F T A E G N P F K T D E F K A A
 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468

5' GAAACAGCCAGACGTCTGGGCATTAATCAGTAGGACCCAGCTTTCTTGTACAAAGTGGTTGATtcgagga
 0 ++++++
 3' CTTTGTCTGGTCTGCAGACCCGTAATTAGTCATCCTGGGTCGAAAGAACATGTTTCACCAACTAagctcct

6790

BamHI

BGH47_B03a

attB2

BGH47_B03a-pDONR221

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 0 ++++++
 3' aggccgacgattgtttcgggctttccttcgactcaaccgacgacggtggcgactcgttattgatcgatt

6860

T7 Terminator

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 3' ggggaaccccggagatttgcccagaactccccaaaaaacgactttcctccttgatataggcctatagggc

6930

T7 Terminator

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7000

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7070

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7111