

AseI
 |
 TAGTTATTAATAGTAATCAATTACGGGGTCATTAGTTCATAGCCCATATATGGAGTTCGCGTTACATAA
 ATCAATAATTATCATTAGTTAATGCCCCAGTAATCAAGTATCGGGTATATACCTCAAGGCGCAATGTATT
 10 20 30 40 50 60 70

Bgl I AatII
 | |
 CTTACGGTAAATGGCCCGCCTGGCTGACCGCCCAACGACCCCCGCCATTGACGTCAATAATGACGTATG
 GAATGCCATTTACCGGGCGGACCGACTGGCGGGTTGCTGGGGGCGGGTAACTGCAGTTATTACTGCATAC
 80 90 100 110 120 130 140

AatII
 |
 TTCCCATAGTAACGCCAATAGGGACTTTCATTGACGTCAATGGGTGGAGTATTTACGGTAAACTGCCCA
 AAGGTATCATTGCGGTTATCCCTGAAAGGTAAGTGCAGTTACCCACCTCATAAATGCCATTTGACGGGT
 150 160 170 180 190 200 210

Bgl I NdeI AatII
 | | |
 CTTGGCAGTACATCAAGTGTATCATATGCCAAGTACGCCCCCTATTGACGTCAATGACGGTAAATGGCC
 GAACCGTCATGTAGTTCACATAGTATACGGTTCATGCGGGGGATAACTGCAGTTACTGCCATTTACCGGG
 220 230 240 250 260 270 280

Bgl I SnaBI
 | |
 GCCTGGCATTATGCCAGTACATGACCTTATGGGACTTTCCTACTTGGCAGTACATCTACGTATTAGTCA
 CGGACCGTAATACGGGTCACTGGAATACCCCTGAAAGGATGAACCGTCATGTAGATGCATAATCAGT
 290 300 310 320 330 340 350

NcoI
 |
 TCGCTATTACCATGGTGATGCGGTTTTGGCAGTACATCAATGGGCGTGGATAGCGGTTTTGACTCACGGGG
 AGCGATAATGGTACCACTACGCCAAAACCGTCATGTAGTTACCCGCACCTATCGCCAAACTGAGTGCCCC
 360 370 380 390 400 410 420

AatII
 |
 ATTTCCAAGTCTCCACCCCATGACGTCAATGGGAGTTTGTTTTGGCACCAAATCAACGGGACTTTCCA
 TAAAGGTTTACAGAGGTGGGGTAACTGCAGTTACCCTCAAACAAAACCGTGGTTTTAGTTGCCCTGAAAGGT
 430 440 450 460 470 480 490

AAATGTCGTAACAAC'TCCGCCCCATTGACGCAAATGGGCGGTAGGCGTGTACGGTGGGAGGTCTATATAA
 TTTACAGCATTGTTGAGGCGGGGTAAGTGCAGTTACCCTCAAACAAAACCGTGGTTTTAGTTGCCCTGAAAGGT
 500 510 520 530 540 550 560

NheI
 |
 GCAGAGCTGGTTTTAGTGAACCGTCAGATCCGCTAGCATGTCCGTCCTGACGCCGCTGCTGCTGCGGGGCT
 CGTCTCGACCAAATCACTTGGCAGTCTAGGCGATCGTACAGGCAGGACTGCGGGCGACGACGACGCCCGA
 570 580 590 600 610 620 630

BssHII
PflMI
BamHI
AgeI

TGACAGGCTCGGCCCGGCGGCTCCAGTGCCGCGCGCCAAGATCCATTCGTTGGGGGATCCACCGGTTCG
 ACTGTCCGAGCCGGGCCCGAGGGTACGGCGCGCGGTTCTAGGTAAGCAACCCCTAGGTGGCCAGCG
640
650
660
670
680
690
700

NcoI
BseRI

CACCATGGTGAGCAAGGGCGAGGAGCTGTTACCGGGGTGGTGCCCATCCTGGTTCGAGCTGGACGGCGAC
 GTGGTACCACTCGTTCCTCGACAAGTGGCCCCACCACGGGTAGGACCAGCTCGACCTGCCGCTG
710
720
730
740
750
760
770

BcgI
BcgI
BsgI

GTAAACGGCCACAAGTTCAGCGTGTCCGGCGAGGGCGAGGGCGATGCCACCTACGGCAAGCTGACCCTGA
 CATTTGCCGGTGTTCAGTTCGACAGGCCGCTCCCGCTCCCGCTACGGTGGATGCCGTTTCGACTGGGACT
780
790
800
810
820
830
840

Eco57 I
BssSI

AGTTCATCTGCACCACCGGCAAGCTGCCCGTGCCCTGGCCCACCTTCGTGACCACCTTCGGCTACGGCCT
 TCAAGTAGACGTGGTGGCCGTTTCGACGGGCACGGGACCGGGTGGGAGCACTGGTGAAGCCGATGCCGGA
850
860
870
880
890
900
910

PstI

GCAGTGCTTCGCCCCGTACCCCGACCACATGAAGCAGCAGCACTTCTTCAAGTCCGCCATGCCGAAGGC
 CGTCACGAAGCGGGCGATGGGGCTGGTGTACTTCGTGCTGCTGAAGAAGTTCAGGCGGTACGGGCTTCCG
920
930
940
950
960
970
980

TACGTCCAGGAGCGCACCATCTTCTTCAAGGACGACGGCAACTACAAGACCCGCGCCGAGGTGAAGTTCG
 ATGCAGGTCCTCGCGTGGTAGAAGAAGTTCCTGCTGCCGTTGATGTTCTGGGCGCGGCTCCACTTCAAGC
990
1000
1010
1020
1030
1040
1050

Eco57 I

AGGGCGACACCCTGGTGAACCGCATCGAGCTGAAGGGCATCGACTTCAAGGAGGACGGCAACATCCTGGG
 TCCCGCTGTGGGACCACTTGGCGTAGCTCGACTTCCCGTAGCTGAAGTTCCTCCTGCCGTTGTAGGACCC
1060
1070
1080
1090
1100
1110
1120

BpmI

GCACAAGCTGGAGTACAACAGCCACAACGTCTATATCATGGCCGACAAGCAGAAGAACGGCATC
 CGTGTTCGACCTCATGTTGATGTTGTCGGTGTTCGAGATATAGTACCGGCTGTTTCGTCTTCTTGCCGTA
1130
1140
1150
1160
1170
1180
1190

BsgI

AAGGTGAACCTCAAGATCCGCCACAACATCGAGGACGGCAGCGTGCAGCTCGCCGACCACTACCAGCAGA
 TTCCACTTGAAGTTCAGGCGGTGTTGTAGCTCCTGCCGTCGCACGTCGAGCGGCTGGTGTGATGGTTCGTC
1200
1210
1220
1230
1240
1250
1260

ACACCCCCATCGGCGACGGCCCCGTGCTGCTGCCCGACAACCACTACCTGAGCTACCAGTCCGCCCTGAG
 TGTGGGGGTAGCCGCTGCCGGGGCAGACGACGGGCTGTTGGTGATGGACTCGATGGTCAGGCGGGACTC
 1270 1280 1290 1300 1310 1320 1330

CAAAGACCCCAACGAGAAGCGCGATCACATGGTCCTGCTGGAGTTCGTGACCGCCGCCGGGATCACTCTC
 GTTTCTGGGGTTGCTCTTTCGCGCTAGTGTACCAGGACGACCTCAAGCACTGGCGGGCGGCCCTAGTGAGAG
 1340 1350 1360 1370 1380 1390 1400

GGCATGGACGAGCTGTACAAGTAAAGCGGCCGCGACTCTAGATCATAATCAGCCATAACCACATTTGTAGA
 CCGTACCTGCTCGACATGTTTCATTTTCGCCGGCGCTGAGATCTAGTATTAGTCGGTATGGTGTAAACATCT
 1410 1420 1430 1440 1450 1460 1470

GGTTTTACTTGGCTTTAAAAAACCTCCACACCTCCCCCTGAACCTGAAACATAAAATGAATGCAATTGTT
 CCAAATGAACGAAATTTTTTGGAGGGTGTGGAGGGGACTTGGACTTTGTATTTTACTTACGTTAACAA
 1480 1490 1500 1510 1520 1530 1540

GTTGTTAACTTGTATTATGCAGCTTATAATGGTTACAAATAAAGCAATAGCATCACAAATTTACAAATA
 CAACAATTGAACAAATAACGTCGAATATTACCAATGTTTATTTTCGTTATCGTAGTGTTTAAAGTGTTTAT
 1550 1560 1570 1580 1590 1600 1610

AAGCATTTTTTTCCTGACTGCAATTCAGTTGTGGTTTGTCCAAACTCATCAATGTATCTTAAGGCGTAAATTG
 TTCGTAAAAAAGTGACGTAAGATCAACACCAAACAGGTTTGGAGTAGTTACATAGAATTCGGCATTTAAC
 1620 1630 1640 1650 1660 1670 1680

TAAGCGTTAATATTTTGTAAATTCGCGTTAAATTTTTGTTAAATCAGCTCATTTTTTAAACCAATAGGC
 ATTCGCAATTATAAAACAATTTAAGCGCAATTTAAAAACAATTTAGTCGAGTAAAAAATTGGTTATCCG
 1690 1700 1710 1720 1730 1740 1750

CGAAATCGGC AAAATCCCTTATAAATCAAAGAATAGACCGAGATAGGGTTGAGTGTGTTCCAGTTTGG
 GCTTTAGCCGTTTTAGGGAATATTTAGTTTTCTTATCTGGCTCTATCCCAACTCACAACAAGGTCAAACC
 1760 1770 1780 1790 1800 1810 1820

AACAAGAGTCCACTATTAAGAACGTGGACTCCAACGTCAAAGGGCGAAAAACCGTCTATCAGGGCGATG
 TTGTTCTCAGGTGATAATTTCTTGACCTGAGGTTGCAGTTTCCCGCTTTTTGGCAGATAGTCCCGCTAC
 1830 1840 1850 1860 1870 1880 1890

DraIII
|
GCCCACTACGTGAACCATCACCCCTAATCAAGTTTTTTGGGGTCGAGGTGCCGTAAAGCACTAAATCGGAA
CGGGTGATGCACTTGGTAGTGGGATTAGTTCAAAAAACCCAGCTCCACGGCATTTCGTGATTTAGCCTT
1900 1910 1920 1930 1940 1950 1960

NaeI
NcoMI
| |
CCCTAAAGGGAGCCCCGATTTAGAGCTTGACGGGGAAAGCCGGCGAACGTGGCGAGAAAGGAAGGGAAAG
GGGATTTCCCTCGGGGGCTAAATCTCGAACTGCCCTTTCGGCCGCTTGCACCGCTCTTTCCTTCCCTTC
1970 1980 1990 2000 2010 2020 2030

BsrBI
|
AAAGCGAAAGGAGCGGGCGCTAGGGCGCTGGCAAGTGTAGCGGTACGCTGCGCGTAACCACCACACCCG
TTTCGCTTTCCTCGCCCGCATCCCGCGACCGTTCACATCGCCAGTGCACGCGCATTTGGTGGTGTGGGC
2040 2050 2060 2070 2080 2090 2100

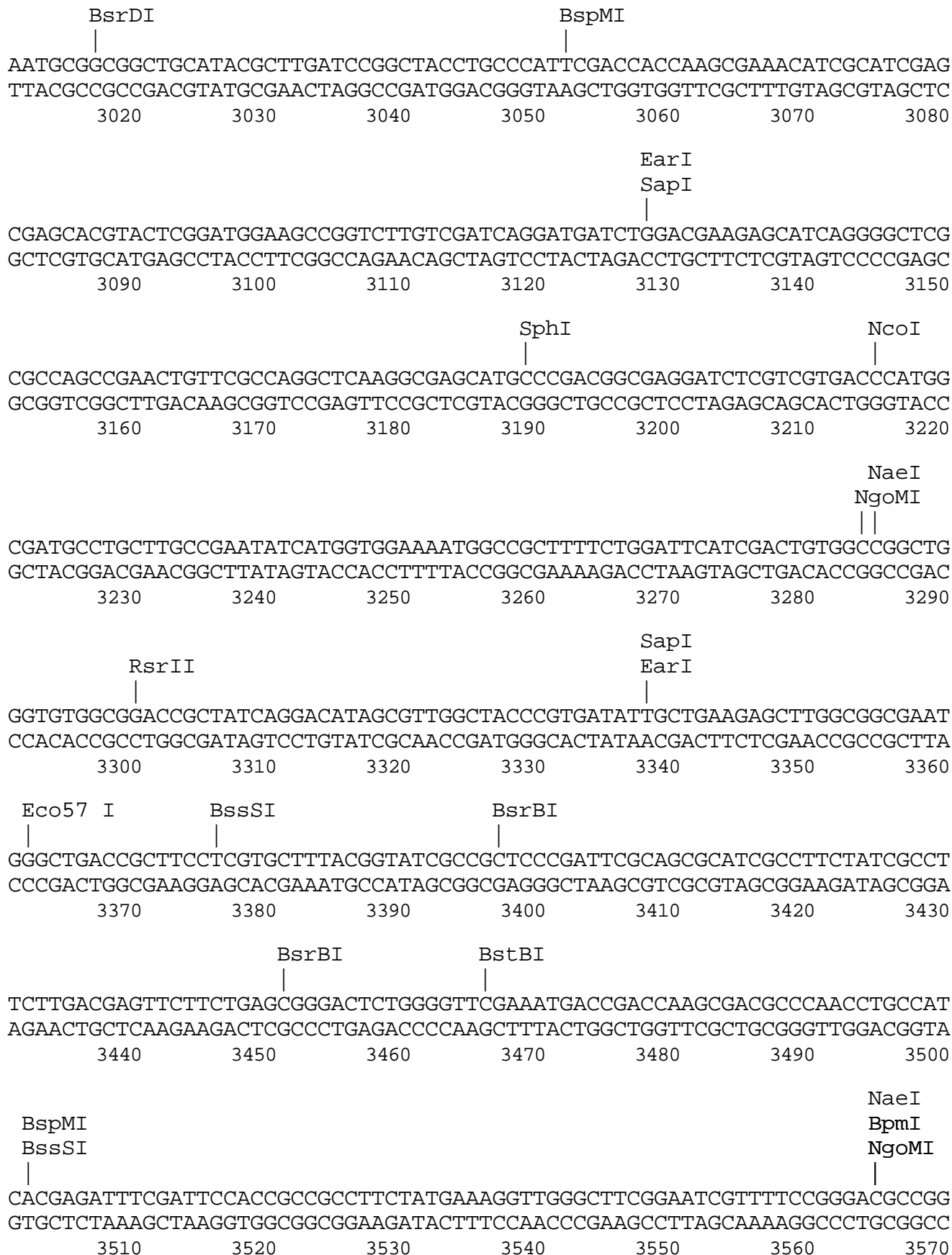
CCGCGCTTAATGCGCCGCTACAGGGCGCGTCAGGTGGCACTTTTCGGGGAAATGTGCGCGGAACCCCTAT
GGCGCGAATTACGCGCGCATGTCCCGCGCAGTCCACCGTGAAAAGCCCCTTTACACGCGCCTTGGGGATA
2110 2120 2130 2140 2150 2160 2170

BspHI
BsrBI
| |
TTGTTTATTTTTCTAAATACATTCAAATATGTATCCGCTCATGAGACAATAACCCTGATAAATGCTTCAA
AACAAATAAAAAGATTTATGTAAGTTTATACATAGGCGAGTACTCTGTTATTTGGGACTATTTACGAAGTT
2180 2190 2200 2210 2220 2230 2240

SspI EarI Bsu36 I PvuII
| | | |
TAATATTGAAAAGGAAGAGTCCTGAGGCGGAAAGAACCAGCTGTGGAATGTGTGTCAGTTAGGGTGTGG
ATTATAACTTTTTCTTCTCAGGACTCCGCCTTCTTGGTTCGACACCTTACACACAGTCAATCCCACACC
2250 2260 2270 2280 2290 2300 2310

NsiI
SphI
Ppu10 I SexAI
| | | |
AAAGTCCCAGGCTCCCAGCAGGCAGAAGTATGCAAAGCATGCATCTCAATTAGTCAGCAACCAGGTGT
TTTCAGGGGTCCGAGGGGTCGTCCGTCTTCATACGTTTCGTACGTAGAGTTAATCAGTCGTTGGTCCACA
2320 2330 2340 2350 2360 2370 2380

NsiI
SphI
Ppu10 I
| | |
GGAAAGTCCCAGGCTCCCAGCAGGCAGAAGTATGCAAAGCATGCATCTCAATTAGTCAGCAACCATAG
CCTTTCAGGGGTCCGAGGGGTCGTCCGTCTTCATACGTTTCGTACGTAGAGTTAATCAGTCGTTGGTATC
2390 2400 2410 2420 2430 2440 2450



BpmI
AvrII

| |

CTGGATGATCCTCCAGCGCGGGGATCTCATGCTGGAGTTCTTCGCCACCCCTAGGGGGAGGCTAACTGAA
 GACCTACTAGGAGGTCGCGCCCCTAGAGTACGACCTCAAGAAGCGGGTGGGATCCCCCTCCGATTGACTT

3580 3590 3600 3610 3620 3630 3640

ACACGGAAGGAGACAATACCGGAAGGAACCCGCGCTATGACGGCAATAAAAAGACAGAATAAAACGCACG
 TGTGCCTTCCTCTGTTATGGCCTTCCTTGGGCGGATACTGCCGTTATTTTTCTGTCTTATTTTTGCGTGC

3650 3660 3670 3680 3690 3700 3710

BsaI

|

GTGTTGGGTCGTTTTGTTTCATAAACGCGGGGTTTCGGTCCCAGGGCTGGCACTCTGTTCGATACCCACCGAG
 CACAACCCAGCAAACAAGTATTTGCGCCCCAAGCCAGGGTCCCAGCCGTGAGACAGCTATGGGGTGGCTC

3720 3730 3740 3750 3760 3770 3780

ACCCATTGGGGCCAATACGCCCGGTTTCTTCCTTTTCCCCACCCACCCCAAGTTCGGGTGAAGGC
 TGGGGTAACCCCGGTTATGCGGGCGCAAAGAAGGAAAGGGGTGGGGTGGGGGGTTCAAGCCACTTCCG

3790 3800 3810 3820 3830 3840 3850

AlwNI Bsu36 I

| |

CCAGGGCTCGCAGCCAACGTCGGGGCGGCAGGCCCTGCCATAGCCTCAGGTTACTCATATATACTTTAGA
 GGTCCCGAGCGTCGGTTGCAGCCCCGCCGTCCGGGACGGTATCGGAGTCCAATGAGTATATATGAAATCT

3860 3870 3880 3890 3900 3910 3920

DraI DraI BspHI

| | |

TTGATTTAAACTTCATTTTTAATTTAAAGGATCTAGGTGAAGATCCTTTTTGATAATCTCATGACCAA
 AACTAAATTTTGAAGTAAAAATTAAATTTTCTAGATCCACTTCTAGGAAAACTATTAGAGTACTGGTT

3930 3940 3950 3960 3970 3980 3990

AATCCCTTAACGTGAGTTTTTCGTTCCACTGAGCGTCAGACCCCGTAGAAAAGATCAAAGGATCTTCTTGA
 TTAGGGAATTGCACTCAAAGCAAGGTGACTCGCAGTCTGGGGCATCTTTTCTAGTTTCTTAGAAGAACT

4000 4010 4020 4030 4040 4050 4060

GATCCTTTTTTTCTGCGCGTAATCTGCTGCTTGCAAACAAAAAACCACCGCTACCAGCGGTGGTTTTGTT
 CTAGGAAAAAAGACGCGCATTAGACGACGAACGTTTGTTTTTTTGGTGGCGATGGTCGCCACCAAACAA

4070 4080 4090 4100 4110 4120 4130

Eco57 I

|

TGCCGGATCAAGAGCTACCAACTCTTTTTCCGAAGGTAAGTGGCTTCAGCAGAGCGCAGATACCAAATAC
 ACGGCCTAGTTCTCGATGGTTGAGAAAAAGGCTTCCATTGACCGAAGTCGTCTCGCGTCTATGGTTTTATG

4140 4150 4160 4170 4180 4190 4200

TGTCCTTCTAGTGTAGCCGTAGTTAGGCCACCACTTCAAGAACTCTGTAGCACCGCCTACATACCTCGCT
 ACAGGAAGATCACATCGGCATCAATCCGGTGGTGAAGTTCTTGAGACATCGTGGCGGATGTATGGAGCGA
 4210 4220 4230 4240 4250 4260 4270

AlwNI

CTGCTAATCCTGTTACCAGTGGCTGCTGCCAGTGGCGATAAGTCGTGTCTTACCGGGTTGGACTCAAGAC
 GACGATTAGGACAATGGTCACCGACGACGGTCACCGCTATTTCAGCACAGAATGGCCCAACCTGAGTTCTG
 4280 4290 4300 4310 4320 4330 4340

ApaLI

GATAGTTACCGGATAAGGCGCAGCGGTCCGGGCTGAACGGGGGGTTCGTGCACACAGCCCAGCTTGGAGCG
 CTATCAATGGCCTATTCCGCGTCGCCAGCCCGACTTGCCCCCAAGCACGTGTGTCTGGGTGGAACCTCGC
 4350 4360 4370 4380 4390 4400 4410

AACGACCTACACCGAACTGAGATACCTACAGCGTGAGCTATGAGAAAGCGCCACGCTTCCCGAAGGGAGA
 TTGCTGGATGTGGCTTGACTCTATGGATGTGCACTCGATACTCTTTCGCGGTGCGAAGGGCTTCCCTCT
 4420 4430 4440 4450 4460 4470 4480

BssSI

AAGGCGGACAGGTATCCGGTAAGCGGCAGGGTCGGAACAGGAGAGCGCACGAGGGAGCTTCCAGGGGGAA
 TTCCGCCTGTCCATAGGCCATTCGCCGTCCCAGCCTTGTCTCTCGCGTGCTCCCTCGAAGGTCCCCCTT
 4490 4500 4510 4520 4530 4540 4550

DrdI

ACGCCTGGTATCTTTATAGTCCTGTCCGGTTTCGCCACCTCTGACTTGAGCGTCGATTTTTGTGATGCTC
 TGCGGACCATAGAAATATCAGGACAGCCCAAAGCGGTGGAGACTGAACTCGCAGCTAAAAACACTACGAG
 4560 4570 4580 4590 4600 4610 4620

GTCAGGGGGCGGAGCCTATGGAAAAACGCCAGCAACGCGGCCTTTTTACGGTTCCTGGCCTTTTGCTGG
 CAGTCCCCCGCCTCGGATACCTTTTTGCGGTTCGTTGCGCCGGAAAAATGCCAAGGACCGGAAAAACGACC
 4630 4640 4650 4660 4670 4680 4690

BspLU11 I

NsiI
 Ppu10 I

CCTTTTGCTCACATGTTCTTTCCTGCGTTATCCCCTGATTTCTGTGGATAACCGTATTACCGCCATGCAT
 GGAAAACGAGTGTACAAGAAAGGACGCAATAGGGGACTAAGACACCTATTGGCATAATGGCGGTACGTA
 4700 4710 4720 4730 4740 4750 4760