

AseI
|
TAGTTATTAATAGTAATCAATTACGGGGTCATTAGTTCATAGCCCATATATGGAGTTCGCGTTACATAA
ATCAATAATTATCATTAGTTAATGCCCCAGTAATCAAGTATCGGGTATATACCTCAAGGCGCAATGTATT
10 20 30 40 50 60 70

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

AatII
|
TTCCCATAGTAACGCCAATAGGGACTTTCCATTGACGTCAATGGGTGGAGTATTTACGGTAAACTGCCCA
AAGGGTATCATTGCGGTTATCCCTGAAAGGTAAGTGCAGTTACCCACCTCATAAATGCCATTTGACGGGT
150 160 170 180 190 200 210

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

Bgl I SnaBI
| |
GCCTGGCATTATGCCCAGTACATGACCTTATGGGACTTTCCTACTTGGCAGTACATCTACGTATTAGTCA
CGGACCGTAATACGGGTTCATGTACTGGAATACCCCTGAAAGGATGAACCGTCATGTAGATGCATAATCAGT
290 300 310 320 330 340 350

NcoI
|
TCGCTATTACCATGGTGTATGCGGTTTTGGCAGTACATCAATGGGCGTGGATAGCGGTTTGACTCACGGGG
AGCGATAATGGTACCACTACGCCAAAACCGTCATGTAGTTACCCGCACCTATCGCCAAACTGAGTGCCCC
360 370 380 390 400 410 420

AatII
|
ATTTCCAAGTCTCCACCCCATTGACGTCAATGGGAGTTTGTGTTTGGCACCAAAATCAACGGGACTTTCCA
TAAAGGTTTACAGAGGTGGGGTAACTGCAGTTACCCCTCAAACAAAACCGTGGTTTTAGTTGCCCTGAAAGGT
430 440 450 460 470 480 490

AAATGTCGTAACAACCTCCGCCCCATTGACGCAAATGGGCGGTAGGCGTGTACGGTGGGAGGTCTATATAA
TTTACAGCATTGTTGAGGCGGGGTAAGTGCAGTTACCCGCGCATCCGCACATGCCACCCCTCAGATATATT
500 510 520 530 540 550 560

NheI BsrBI BsrBI
| | |
GCAGAGCTGGTTTTAGTGAACCGTCAGATCCGCTAGCATGAGGCTTCGGGAGCCGCTCCTGAGCGGCAGCG
CGTCTCGACCAAATCACTTGGCAGTCTAGGCGATCGTACTCCGAAGCCCTCGGCGAGGACTCGCCGTCGC
570 580 590 600 610 620 630

BsgI BssSI
| |
CCGCGATGCCAGGCGCGTCCCTACAGCGGGCCTGCCGCCTGCTCGTGGCCGTCTGCGCTCTGCACCTTGG
GGCGCTACGGTCCGCGCAGGGATGTGCCCCGACGGCGGACGAGCACCAGGCGAGACGCGAGACGTGGAACC
640 650 660 670 680 690 700

CGTCACCCTCGTTTACTACCTGGCTGGCCGCGACCTGAGCCGCCTGCCCAACTGGTTCGGAGTCTCCACA
GCAGTGGGAGCAAATGATGGACCGACCGGCGCTGGACTCGGCGGACGGGGTTGACCAGCCTCAGAGGTGT

710 720 730 740 750 760 770

RsrII
SacI
BspEI
Ecl136 II

PstI

CCGCTGCAGGGCGGCTCGAACAGTGCCGCCGCCATCGGGCAGTCTCCTCCGGGGAGCTCCGGACCGGAGGGG
GGCGACGTCCCGCCGAGCTTGTACGGCGGCGGTAGCCCGTCAGGAGGCCCTCGAGGCCTGGCCTCCCC

780 790 800 810 820 830 840

BamHI AgeI NcoI BseRI

CCAAGGATCCACCGGTTCGCCACCATGGTGAGCAAGGGCGAGGAGCTGTTACCGGGGTGGTGCCCATCCT
GGTTCCTAGGTGGCCAGCGGTGGTACCACTCGTTCCTCGACAAGTGGCCCCACCACGGGTAGGA

850 860 870 880 890 900 910

BcgI

GGTCGAGCTGGACGGCGACGTAAACGGCCACAAGTTCAGCGTGTCCGGCGAGGGCGAGGGCGATGCCACC
CCAGCTCGACCTGCCGCTGCATTTGCCGGTGTTCAGTTCGCACAGGCCGCTCCCGCTCCCGCTACGGTGG

920 930 940 950 960 970 980

BsgI BcgI Eco57 I BssSI

TACGGCAAGCTGACCCTGAAGTTCATCTGCACCACCGGCAAGCTGCCCGTGCCTGGCCCACCTCGTGA
ATGCCGTTTCGACTGGGACTTCAAGTAGACGTGGTGGCCGTTTCGACGGGCACGGGACCGGGTGGGAGCACT

990 1000 1010 1020 1030 1040 1050

PstI

CCACCTTCGGCTACGGCCTGCAGTGCTTCGCCCCTACCCCGACCACATGAAGCAGCAGCACTTCTTCAA
GGTGAAGCCGATGCCGGACGTCACGAAGCGGGCGATGGGGCTGGTGTACTTCGTGCTGCTGAAGAAGTT

1060 1070 1080 1090 1100 1110 1120

GTCCGCCATGCCCAGGCTACGTCCAGGAGCGCACCATCTTCTTCAAGGACGACGGCAACTACAAGACC
CAGGCGGTACGGCTTCCGATGCAGGTCCTCGCGTGGTAGAAGAAGTTCTGCTGCCGTTGATGTTCTGG

1130 1140 1150 1160 1170 1180 1190

CGCGCCGAGGTGAAGTTCGAGGGCGACACCCTGGTGAACCGCATCGAGCTGAAGGGCATCGACTTCAAGG
GCGCGGCTCCACTTCAAGCTCCCGCTGTGGGACCACTTGGCGTAGCTCGACTTCCCGTAGCTGAAGTTC

1200 1210 1220 1230 1240 1250 1260

Eco57 I BpmI

AGGACGGCAACATCCTGGGGCACAAGCTGGAGTACAACACAGCCACAACGTCTATATCATGGCCGA
TCCTGCCGTTGTAGGACCCCGTGTTCGACCTCATGTTGATGTTGTCGGTGTTCAGATATAGTACCGGCT

1270 1280 1290 1300 1310 1320 1330

CAAGCAGAAGAACGGCATCAAGGTGAACCTTCAAGATCCGCCACAACATCGAGGACGGCAGCGTGCAGCTC
GTTCTGTTCTTCCGCTAGTTCACCTTGAAGTTCAGGCGGTGTTGTAGCTCCTGCCGTCGCACGTCGAG

1340 1350 1360 1370 1380 1390 1400

BsgI
 |
 GCCGACCACTACCAGCAGAACACCCCCATCGGCGACGGCCCCGTGCTGCTGCCCGACAACCACTACCTGA
 CGGCTGGTGATGGTCGTCTTGTGGGGGTAGCCGCTGCCGGGGCACGACGACGGGCTGTTGGTGATGGACT
 1410 1420 1430 1440 1450 1460 1470

GCTACCAGTCCGCCCTGAGCAAAGACCCCAACGAGAAGCGCGATCACATGGTCCTGCTGGAGTTCGTGAC
 CGATGGTCAGGCGGGACTCGTTTCTGGGGTTGCTCTTCGCGCTAGTGTACCAGGACGACCTCAAGCACTG
 1480 1490 1500 1510 1520 1530 1540

BpmI BsrGI EagI NotI XbaI BsaBI
 | | | | |
 CGCCGCCGGGATCACTCTCGGCATGGACGAGCTGTACAAGTAAAGCGGCCGCGACTCTAGATCATAATCA
 GCGGCGGCCCTAGTGAGAGCCGTACCTGCTCGACATGTTTCATTTCCGCCGGCGCTGAGATCTAGTATTAGT
 1550 1560 1570 1580 1590 1600 1610

DraI
 |
 GCCATACCACATTTGTAGAGGTTTTACTTGTCTTAAAAAACCTCCACACCTCCCCCTGAACCTGAAACA
 CGGTATGGTGTAAACATCTCCAAAATGAACGAAATTTTTTGGAGGGTGTGGAGGGGGACTTGGACTTTGT
 1620 1630 1640 1650 1660 1670 1680

BsmI MfeI HpaI
 | | |
 TAAAATGAATGCAATTGTTGTTGTTAACTTGTATTATGCAGCTTATAATGGTTACAAATAAAGCAATAGC
 ATTTTACTTACGTTAACAACAACAATTGAACAAATAACGTCAATATTACCAATGTTTATTTTCGTTATCG
 1690 1700 1710 1720 1730 1740 1750

BsmI
 |
 ATCACAAATTTACAAATAAAGCATTTTTTTTCACTGCATTCTAGTTGTGGTTTGTCCAAACTCATCAATG
 TAGTGTTTAAAGTGTTTATTTTCGTAAAAAAGTGACGTAAGATCAACACCAAACAGGTTTGGAGTAGTTAC
 1760 1770 1780 1790 1800 1810 1820

Afl II SspI
 | |
 TATCTTAAGGCGTAAATTGTAAGCGTTAATATTTTGTAAATTCGCGTTAAATTTTTGTTAAATCAGCT
 ATAGAATTCGCATTTAACATTCGCAATTATAAAACAATTTAAGCGCAATTTAAAAACAATTTAGTCGA
 1830 1840 1850 1860 1870 1880 1890

CATTTTTTAACCAATAGGCCGAAATCGGCAAAATCCCTTATAAATCAAAGAATAGACCGAGATAGGGTT
 GTAAAAAATGGTTATCCGGCTTTAGCCGTTTTAGGGAATTTAGTTTTCTTATCTGGCTCTATCCCAA
 1900 1910 1920 1930 1940 1950 1960

DrdI
 |
 GAGTGTGTTCCAGTTTGGAAACAAGAGTCCACTATTAAGAACGTGGACTCCAACGTCAAAGGGCGAAAA
 CTCACAACAAGGTCAAACCTTGTCTCAGGTGATAATTTCTTGCACCTGAGGTTGCAGTTTCCCGCTTTT
 1970 1980 1990 2000 2010 2020 2030

DraIII
 |
 ACCGTCTATCAGGGCGATGGCCCACTACGTGAACCATCACCCATAATCAAGTTTTTTGGGGTTCGAGGTGCC
 TGGCAGATAGTCCCGCTACCGGGTGTGACTTGGTAGTGGGATTAGTTCAAAAAACCCAGCTCCACGG
 2040 2050 2060 2070 2080 2090 2100 2110

GTAAAGCACTAAATCGGAACCCCTAAAGGGAGCCCCGATTTAGAGCTTGACGGGGAAAGCCGGCGAACGT
CATTTTCGTGATTTAGCCTTGGGATTTCCCTCGGGGGCTAAATCTCGAACTGCCCTTTCGGCCGCTTGCA
2110 2120 2130 2140 2150 2160 2170

NaeI
|
NcoMI
|

GGCGAGAAAGGAAGGGAAGAAAGCGAAAGGAGCGGGCGCTAGGGCGCTGGCAAGTGTAGCGGTCACGCTG
CCGCTCTTTCCTTCCCTTCTTTCGCTTTCCTCGCCCGCGATCCCGCGACCGTTTACATCGCCAGTGCAGC
2180 2190 2200 2210 2220 2230 2240

BsrBI
|

CGCGTAACCACCACACCCGCGCGCTTAATGCGCCGCTACAGGGCGCGTCAGGTGGCACTTTTTCGGGGAA
GCGCATTGGTGGTGTGGGCGGCGCGAATTACGCGGCGATGTCCCGCGCAGTCCACCGTGAAAAGCCCCTT
2250 2260 2270 2280 2290 2300 2310

ATGTGCGCGGAACCCCTATTTGTTTATTTTTCTAAATACATTCAAATATGTATCCGCTCATGAGACAATA
TACACGCGCCTTGGGGATAAACAATAAAAAGATTTATGTAAGTTTATACATAGGCGAGTACTCTGTTAT
2320 2330 2340 2350 2360 2370 2380

BspHI
|
BsrBI
|

ACCCTGATAAATGCTTCAATAATATTGAAAAAGGAAGAGTCCTGAGGCGGAAAGAACCAGCTGTGGAATG
TGGGACTATTTACGAAGTTATTATAACTTTTTCTTCTCAGGACTCCGCTTTCCTTGGTTCGACACCTTAC
2390 2400 2410 2420 2430 2440 2450

SspI EarI Bsu36 I PvuII
| | | |

TGTGTCAGTTAGGGTGTGGAAAGTCCCCAGGCTCCCCAGCAGGCAGAAGTATGCAAAGCATGCATCTCAA
ACACAGTCAATCCCACACCTTTCAGGGGTCCGAGGGGTCTGTCCTTTCATACGTTTCGTACGTAGAGTT
2460 2470 2480 2490 2500 2510 2520

NsiI
|
SphI
|
Ppu10 I
|

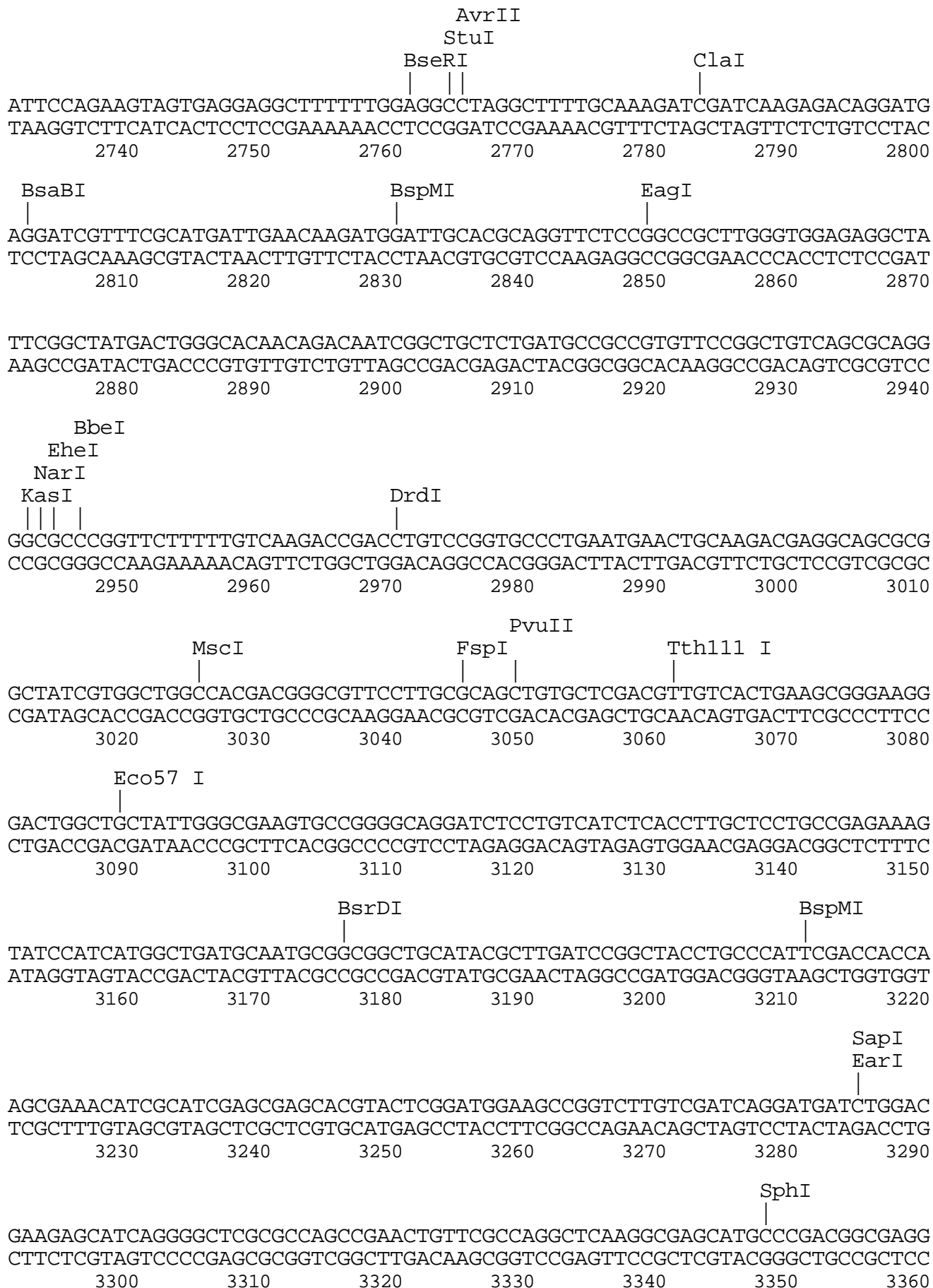
TTAGTCAGCAACCAGGTGTGGAAAGTCCCCAGGCTCCCCAGCAGGCAGAAGTATGCAAAGCATGCATCTC
AATCAGTCGTTGGTCCACACCTTTCAGGGGTCCGAGGGGTCTGTCCTTTCATACGTTTCGTACGTAGAG
2530 2540 2550 2560 2570 2580 2590

SexAI
|
NsiI
|
SphI
|
Ppu10 I
|

AATTAGTCAGCAACCATAGTCCCGCCCCTAACTCCGCCATCCCGCCCCTAACTCCGCCAGTTCCGCC
TTAATCAGTCGTTGGTATCAGGGCGGGGATTGAGGCGGGTAGGGCGGGGATTGAGGCGGGTCAAGGCGGG
2600 2610 2620 2630 2640 2650 2660

ATTCTCCGCCCATGGCTGACTAATTTTTTTTTTATTTATGCAGAGGCCGAGGCCGCTCGGCCCTGAGCT
TAAGAGGCGGGGTACCGACTGATTAATAAATAAATACTCTCCGGCTCCGGCGGAGCCGGAGACTCGA
2670 2680 2690 2700 2710 2720 2730

NcoI
|
SfiI
|
Bgl I
|



NcoI
ATCTCGTCGTGACCCATGGCGATGCCTGCTTGCCGAATATCATGGTGGAAAATGGCCGCTTTTCTGGATT
TAGAGCAGCACTGGGTACCGCTACGGACGAACGGCTTATAGTACCACCTTTTACCGGCGAAAAGACCTAA
3370 3380 3390 3400 3410 3420 3430

NaeI
NgoMI RsrII EarI
SapI
CATCGACTGTGGCCGGCTGGGTGTGGCGGACCGCTATCAGGACATAGCGTTGGCTACCCGTGATATTGCT
GTAGCTGACACCGGCCGACCCACACCGCCTGGCGATAGTCCTGTATCGCAACCGATGGGCACTATAACGA
3440 3450 3460 3470 3480 3490 3500

Eco57 I BssSI BsrBI
GAAGAGCTTGGCGGCGAATGGGCTGACCGCTTCCTCGTGCTTTACGGTATCGCCGCTCCCGATTTCGACG
CTTCTCGAACC CGCTTACCCGACTGGCGAAGGAGCACGAAATGCCATAGCGGCGAGGGCTAAGCGTGC
3510 3520 3530 3540 3550 3560 3570

BsrBI BstBI
GCATCGCCTTCTATCGCCTTCTTGACGAGTTCTTCTGAGCGGGACTCTGGGGTTCGAAATGACCGACCAA
CGTAGCGGAAGATAGCGGAAGAACTGCTCAAGAAGACTCGCCCTGAGACCCCAAGCTTTACTGGCTGGTT
3580 3590 3600 3610 3620 3630 3640

BspMI
BssSI
GCGACGCCCAACCTGCCATCACGAGATTTTCGATTCCACCGCCGCTTCTATGAAAGGTTGGGCTTCGGAA
CGCTGCGGGTTGGACGGTAGTGCTCTAAAGCTAAGGTGGCGGCGGAAGATACTTTCCAACCCGAAGCCTT
3650 3660 3670 3680 3690 3700 3710

NaeI
BpmI
NgoMI AvrII
TCGTTTTCCGGGACGCCGGCTGGATGATCCTCCAGCGCGGGGATCTCATGCTGGAGTTCTTCGCCACCC
AGCAAAGGCCCTGCGGCCGACCTACTAGGAGGTCGCGCCCTAGAGTACGACCTCAAGAAGCGGGTGGG
3720 3730 3740 3750 3760 3770 3780

BpmI
TAGGGGGAGGCTAACTGAAACACGGAAGGAGACAATACCGGAAGGAACCCGCGCTATGACGGCAATAAAA
ATCCCCCTCCGATTGACTTTGTGCCTTCTCTGTTATGGCCTTCTTGGGCGCGATACTGCCGTTATTTT
3790 3800 3810 3820 3830 3840 3850

AGACAGAATAAAACGCACGGTGTGGGTGCTTTGTTTCATAAACCGGGGTTTCGGTCCCAGGGCTGGCACT
TCTGTCTTATTTTTCGTGCCACAACCCAGCAAACAAGTATTTGCGCCCAAGCCAGGGTCCCAGCCGTTGA
3860 3870 3880 3890 3900 3910 3920

BsaI
CTGTTCGATACCCCACCGAGACCCCATTTGGGGCCAATACGCCCGGCTTTCTTCTTTTCCCCACCCACCC
GACAGCTATGGGGTGGCTCTGGGGTAACCCCGTTATGCGGGCGCAAAGAAGGAAAAGGGGTGGGGTGGG
3930 3940 3950 3960 3970 3980 3990

CCCAAGTTCGGGTGAAGGCCAGGGCTCGCAGCCAACGTCGGGGCGGCAGGCCCTGCCATAGCCTCAGGT
GGTTCAAGCCCACTTCCGGGTCCCGAGCGTGGTTGCAGCCCCGCCGTCCGGGACGGTATCGGAGTCCA
4000 4010 4020 4030 4040 4050 4060

AlwNI | Bsu36 I |

TACTCATATATACTTTAGATTGATTTAAAACCTTCATTTTAAATTTAAAAGGATCTAGGTGAAGATCCTTT
ATGAGTATATATGAAATCTAACTAAATTTTGAAGTAAAAATTAATTTTCTAGATCCACTTCTAGGAAA
4070 4080 4090 4100 4110 4120 4130

DraI | DraI |

TTGATAATCTCATGACCAAAAATCCCTTAACGTGAGTTTTTCGTTCCACTGAGCGTCAGACCCCGTAGAAAA
AACTATTAGAGTACTGGTTTTAGGGAATTGCACTCAAAAGCAAGGTGACTCGCAGTCTGGGGCATCTTTT
4140 4150 4160 4170 4180 4190 4200

BspHI |

GATCAAAGGATCTTCTTGAGATCCTTTTTTTCTGCGCGTAATCTGCTGCTTGCAAACAAAAAACCCG
CTAGTTTCTAGAAAGAACTCTAGGAAAAAAGACGCGCATTAGACGACGAACGTTTGTTTTTTGGTGGC
4210 4220 4230 4240 4250 4260 4270

Eco57 I |

CTACCAGCGGTGGTTTGTGGCCGGATCAAGAGCTACCAACTCTTTTTCCGAAGGTAACCTGGCTTCAGCA
GATGGTCCGACCAACAAACGGCCTAGTTCTCGATGGTTGAGAAAAAGGCTTCCATTGACCGAAGTCGT
4280 4290 4300 4310 4320 4330 4340

GAGCGCAGATACCAAATACTGTCCTTCTAGTGTAGCCGTAGTTAGGCCACCACTTCAAGAACTCTGTAGC
CTCGCTCTATGGTTTATGACAGGAAGATCACATCGGCATCAATCCGGTGGTGAAGTTCTTGAGACATCG
4350 4360 4370 4380 4390 4400 4410

AlwNI |

ACCGCCTACATACCTCGCTCTGCTAATCCTGTTACCAGTGGCTGCTGCCAGTGGCGATAAGTCGTGTCTT
TGGCGGATGTATGGAGCGAGACGATTAGGACAAATGGTCACCGACGACGGTCACCGCTATTCAGCACAGAA
4420 4430 4440 4450 4460 4470 4480

ApaLI |

ACCGGTTGGACTCAAGACGATAGTTACCGGATAAGGCGCAGCGGTCGGGCTGAACGGGGGGTTCGTGCA
TGGCCCAACCTGAGTTCTGCTATCAATGGCCTATTCCGCGTCGCCAGCCCGACTTGCCCCCAAGCACGT
4490 4500 4510 4520 4530 4540 4550

CACAGCCCAGCTTGGAGCGAACGACCTACACCGAACTGAGATACCTACAGCGTGAGCTATGAGAAAGCGC
GTGTCGGGTCGAACCTCGCTTGCTGGATGTGGCTTGAATCTATGGATGTGCGCACTCGATACTCTTTCGCG
4560 4570 4580 4590 4600 4610 4620

BssSI |

CACGCTTCCCGAAGGGAGAAAGGCGGACAGGTATCCGGTAAGCGGCAGGGTCGGAACAGGAGAGCGCACG
GTGCGAAGGGCTTCCCTCTTCCGCTGTCCATAGGCCATTCGCCGTCCAGCCTTGTCTCTCGCGTGC
4630 4640 4650 4660 4670 4680 4690

DrdI

AGGGAGCTTCCAGGGGGAAACGCCTGGTATCTTTATAGTCCTGTCGGGTTTCGCCACCTCTGACTTGAGC
TCCCTCGAAGGTCCCCCTTTGCGGACCATAGAAATATCAGGACAGCCCAAAGCGGTGGAGACTGAACTCG
4700 4710 4720 4730 4740 4750 4760

GTCGATTTTTGTGATGCTCGTCAGGGGGCGGAGCCTATGGAAAAACGCCAGCAACGCGGCCTTTTTTACG
CAGCTAAAAACACTACGAGCAGTCCCCCGCCTCGGATACCTTTTTGCGGTCGTTGCGCCGGAAAAATGC
4770 4780 4790 4800 4810 4820 4830

BspLU11 I

G TTCCTGGCCTTTTGCTGGCCTTTTGCTCACATGTTCTTTTCCTGCGTTATCCCCTGATTCTGTGGATAAC
CAAGGACCGGAAAACGACCCGAAAACGAGTGTACAAGAAAGGACGCAATAGGGGACTAAGACACCTATTG
4840 4850 4860 4870 4880 4890 4900

NsiI

Ppu10 I

CGTATTACCGCCATGCAT
GCATAATGGCGGTACGTA
4910 4920