

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  
| |  
GCCTGGCATTATGCCCAGTACATGACCTTATGGGACTTTCCTACTTGGCAGTACATCTACGTATTAGTCA  
CGGACCGTAATACGGGTCACTGGAATACCCCTGAAAGGATGAACCGTCATGTAGATGCATAATCAGT  
290 300 310 320 330 340 350

NcoI  
|  
TCGCTATTACCATGGTGATGCGGTTTTGGCAGTACATCAATGGGCGTGGATAGCGGTTTTGACTCACGGGG  
AGCGATAATGGTACCCTACGCCAAAACCGTCATGTAGTTACCCGCACCTATCGCCAAACTGAGTGCCCC  
360 370 380 390 400 410 420

AatII  
|  
ATTTCCAAGTCTCCACCCCATGACGTCAATGGGAGTTTGTTTTGGCACCAAATCAACGGGACTTTCCA  
TAAAGGTTTCAGAGGTGGGGTAACTGCAGTTACCCTCAAACAAAACCGTGGTTTTAGTTGCCCTGAAAGGT  
430 440 450 460 470 480 490

AAATGTCGTAACAACCTCCGCCCCATTGACGCAAATGGGCGGTAGGCGTGTACGGTGGGAGGTCTATATAA  
TTTACAGCATTGTTGAGGCGGGGTAAGTGCAGTTTACCCGCCATCCGCACATGCCACCCCTCCAGATATATT  
500 510 520 530 540 550 560

NheI SphI BseRI  
| | |  
GCAGAGCTGGTTTTAGTGAACCGTCAGATCCGCTAGCATGCTGCTATCCGTGCCGTTGCTGCTCGGCCTCC  
CGTCTCGACCAAATCACTTGGCAGTCTAGGCGATCGTACGACGATAGGCACGGCAACGACGAGCCGGAGG  
570 580 590 600 610 620 630

SfiI  
Bgl I  
|  
TCGGCCTGGCCGTCGCCGACCGGTTCGCACACCATGGCCTCCTCCGAGAACGTCATCACCGAGTTCATGCG  
AGCCGGACCGGCAGCGGCTGGCCAGCGTGTGGTACCGGAGGAGGCTCTTGCAGTAGTGGCTCAAGTACGC  
640 650 660 670 680 690 700

AgeI  
|  
CTTCAAGGTGCGCATGGAGGGCACCGTGAACGGCCACGAGTTCGAGATCGAGGGCGAGGGCGAGGGCCGC  
GAAGTTCACGCGTACCTCCCCTGGCACTTGCCGGTGTCAAGCTCTAGCTCCCCTCCCCTCCCCTCCCCTGCG  
710 720 730 740 750 760 770

NcoI  
|  
CCCTACGAGGGCCACAACACCGTGAAGCTGAAGGTGACCAAGGGCGGCCCCCTGCCCTTCGCCTGGGACA  
GGGATGCTCCCCTGTTGTGGCACTTCGACTTCCACTGGTTCCCGCCGGGGGACGGGAAGCGGACCCTGT  
780 790 800 810 820 830 840

BseRI  
|  
TCCTGTCCCCCAGTTCAGTACGGCTCCAAGGTGTACGTGAAGCACCCCGCCGACATCCCCGACTACAA  
AGGACAGGGGGTCAAGGTCATGCCGAGGTTCCACATGCACTTCGTGGGGCGGCTGTAGGGGCTGATGTT  
850 860 870 880 890 900 910

AhdI  
|  
GAAGCTGTCCTTCCCCGAGGGCTTCAAGTGGGAGCGCGTGATGAACTTCGAGGACGGCGGGCGTGGCGACC  
CTTCGACAGGAAGGGGCTCCCGAAGTTCACCCTCGCGCACTACTTGAAGCTCCTGCCGCCGACCGCTGG  
920 930 940 950 960 970 980

PstI  
|  
GTGACCCAGGACTCCTCCCTGCAGGACGGCTGCTTCATCTACAAGGTGAAGTTCATCGGCGTGAAGTTC  
CACTGGGTCTGAGGAGGGACGTCCTGCCGACGAAGTAGATGTTCCACTTCAAGTAGCCGCACTTGAAGG  
990 1000 1010 1020 1030 1040 1050

BseRI  
|  
CCTCCGACGGCCCCGTGATGCAGAAGAAGACCATGGGCTGGGAGGCCTCCACCGAGCGCCTGTACCCCCG  
GGAGGCTGCCGGGGCACTACGTCTTCTTCTGGTACCCGACCCTCCGGAGGTGGCTCGCGGACATGGGGGC  
1060 1070 1080 1090 1100 1110 1120

BbsI  
|  
CGACGGCGTGCTGAAGGGCGAGACCCACAAGGCCCTGAAGCTGAAGGACGGCGGCCACTACCTGGTGGAG  
GCTGCCGCACGACTTCCCCTCTGGGTGTTCCGGGACTTCGACTTCCTGCCGCCGGTGTGATGGACCACCTC  
1130 1140 1150 1160 1170 1180 1190

Eco57 I  
|  
Eco57 I  
|  
SexAI  
|||  
Eco57 I  
|||



AAATCGGCAAAATCCCTTATAAATCAAAGAATAGACCGAGATAGGGTTGAGTGTTGTTCCAGTTTGGAA  
TTTAGCCGTTTTAGGGAATATTTAGTTTTCTTATCTGGCTCTATCCCAACTCACAACAAGGTCAAACCTT  
1760 1770 1780 1790 1800 1810 1820

DrdI

CAAGAGTCCACTATTAAGAACGTGGACTCCAACGTCAAAGGGCGAAAAACCGTCTATCAGGGCGATGGC  
GTTCTCAGGTGATAATTTCTTGCACCTGAGGTTGCAGTTTCCCCTTTTTGGCAGATAGTCCCGCTACCG  
1830 1840 1850 1860 1870 1880 1890

DraIII

CCACTACGTGAACCATCACCTAATCAAGTTTTTTGGGGTTCGAGGTGCCGTAAAGCACTAAATCGGAAC  
GGTGATGCACTTGGTAGTGGGATTAGTTCAAAAACCCAGCTCCACGGCATTTCGTGATTTAGCCTTGG  
1900 1910 1920 1930 1940 1950 1960

NaeI

NgoMI

CTAAAGGGAGCCCCGATTTAGAGCTTGACGGGGAAAGCCGGCGAACGTGGCGAGAAAGGAAGGGAAGAA  
GATTTCCCTCGGGGGCTAAATCTCGAACTGCCCTTTTCGGCCGCTTGCACCGCTCTTTCCTTCCCTTCTT  
1970 1980 1990 2000 2010 2020 2030

BsrBI

AGCGAAAGGAGCGGGCGCTAGGGCGCTGGCAAGTGTAGCGGTCACGCTGCGCGTAACCACCACACCCGCC  
TCGTTTTCTCGCCGCGATCCCGCGACCGTTCACATCGCCAGTGCACGCGCATTGGTGGTGTGGGCGG  
2040 2050 2060 2070 2080 2090 2100

GCGCTTAATGCGCCGCTACAGGGCGCGTCAGGTGGCACTTTTCGGGGAAATGTGCGCGGAACCCCTATTT  
CGCGAATTACGCGGCGATGTCCCGCGCAGTCCACCGTGAAAAGCCCCTTTACACGCGCCTTGGGGATAAA  
2110 2120 2130 2140 2150 2160 2170

BspHI

BsrBI

GTTTATTTTTCTAAATACATTCAAATATGTATCCGCTCATGAGACAATAACCCTGATAAATGCTTCAATA  
CAAATAAAAAGATTTATGTAAGTTTATACATAGGCGAGTACTCTGTTATTGGGACTATTTACGAAGTTAT  
2180 2190 2200 2210 2220 2230 2240

SspI

EarI

Bsu36 I

PvuII

ATATTGAAAAGGAAGAGTCCCTGAGGCGGAAAGAACCAGCTGTGGAATGTGTGTCAGTTAGGGTGTGGAA  
TATAACTTTTTCTTCTCAGGACTCCGCCTTTCTTGGTCGACACCTTACACACAGTCAATCCCACACCTT  
2250 2260 2270 2280 2290 2300 2310

NsiI  
SphI  
Ppu10 I  
SexAI

AGTCCCAGGCTCCCAGCAGGCAGAAGTATGCAAAGCATGCATCTCAATTAGTCAGCAACCAGGTGTGG  
TCAGGGGTCCGAGGGGTCGTCCGTCTTCATACGTTTCGTACGTAGAGTTAATCAGTCGTTGGTCCACACC

2320            2330            2340            2350            2360            2370            2380

NsiI  
SphI  
Ppu10 I

AAAGTCCCAGGCTCCCAGCAGGCAGAAGTATGCAAAGCATGCATCTCAATTAGTCAGCAACCATAGTC  
TTTCAGGGGTCCGAGGGGTCGTCCGTCTTCATACGTTTCGTACGTAGAGTTAATCAGTCGTTGGTATCAG

2390            2400            2410            2420            2430            2440            2450

NcoI

CCGCCCCTAACTCCGCCATCCCGCCCCTAACTCCGCCAGTTCGCCCATTCTCCGCCCCATGGCTGAC  
GGCGGGGATTGAGGCGGGTAGGGCGGGGATTGAGGCGGGTCAAGGCGGGTAAGAGGCGGGGTACCGACTG

2460            2470            2480            2490            2500            2510            2520

SfiI  
Bgl I

TAATTTTTTTTATTTATGCAGAGGCCGAGGCCCTCGGCCTCTGAGCTATTCCAGAAGTAGTGAGGAGG  
ATTAATAAATAAATACGTCTCCGGCTCCGGCGGAGCCGGAGACTCGATAAGGTCTTCATCACTCCTCC

2530            2540            2550            2560            2570            2580            2590

AvrII  
StuI  
BseRI  
ClaI  
BsaBI

CTTTTTTGGAGGCCTAGGCTTTTGTCAAAGATCGATCAAGAGACAGGATGAGGATCGTTTCGCATGATTGA  
GAAAAACCTCCGGATCCGAAAACGTTTCTAGCTAGTTCTCTGTCTACTCCTAGCAAAGCGTACTAACT

2600            2610            2620            2630            2640            2650            2660

BspMI  
EagI

ACAAGATGGATTGCACGCAGGTTCTCCGGCCGCTTGGGTGGAGAGGCTATTCGGCTATGACTGGGCACAA  
TGTTCTACCTAACGTGCGTCCAAGAGGCCGCGAACCACCTCTCCGATAAGCCGATACTGACCCGTGTT

2670            2680            2690            2700            2710            2720            2730

BbeI  
EheI  
NarI  
KasI

CAGACAATCGGCTGCTCTGATGCCGCCGTGTTCCGGCTGTCAGCGCAGGGCGCCCGGTTCTTTTTGTCA  
GTCTGTTAGCCGACGAGACTACGGCGGCACAAGGCCGACAGTCGCGTCCCCGCGGGCCAAGAAAAACAGT

2740            2750            2760            2770            2780            2790            2800

DrdI | MscI |

AGACCGACCTGTCCGGTGCCTGAATGAACTGCAAGACGAGGCAGCGCGGCTATCGTGGCTGGCCACGAC  
TCTGGCTGGACAGGCCACGGGACTTACTTGACGTTCTGCTCCGTCGCGCCGATAGCACCGACCGGTGCTG  
2810 2820 2830 2840 2850 2860 2870

PvuII | FspI | Tth111 I | Eco57 I |

GGGCGTTCCTTGCGCAGCTGTGCTCGACGTTGTCACTGAAGCGGGAAGGGACTGGCTGCTATTGGGCGAA  
CCCGCAAGGAACGCGTGCACACGAGCTGCAACAGTGACTTTCGCCCTTCCCTGACCGACGATAACCCGCTT  
2880 2890 2900 2910 2920 2930 2940

GTGCCGGGGCAGGATCTCCTGTCATCTCACCTTGCTCCTGCCGAGAAAGTATCCATCATGGCTGATGCAA  
CACGGCCCCGTCCTAGAGGACAGTAGAGTGGAACGAGGACGGCTCTTTTCATAGGTAGTACCGACTACGTT  
2950 2960 2970 2980 2990 3000 3010

BsrDI | BspMI |

TGCGGCGGCTGCATACGCTTGATCCGGCTACCTGCCCATTCGACCACCAAGCGAAACATCGCATCGAGCG  
ACGCCCGGACGTATGCGAACTAGGCCGATGGACGGGTAAGCTGGTGGTTCGCTTTGTAGCGTAGCTCGC  
3020 3030 3040 3050 3060 3070 3080

EarI | SapI |

AGCACGTACTCGGATGGAAGCCGGTCTTGTGATCAGGATGATCTGGACGAAGAGCATCAGGGGCTCGCG  
TCGTGCATGAGCCTACCTTCGGCCAGAACAGCTAGTCTACTAGACCTGCTTCTCGTAGTCCCCGAGCGC  
3090 3100 3110 3120 3130 3140 3150

SphI | NcoI |

CCAGCCGAACTGTTGCGCCAGGCTCAAGGCGAGCATGCCCGACGGCGAGGATCTCGTCGTGACCCATGGCG  
GGTCGGCTTGACAAGCGGTCCGAGTTCGCTCGTACGGGCTGCCGCTCCTAGAGCAGCACTGGGTACCGC  
3160 3170 3180 3190 3200 3210 3220

NaeI | NgoMI |

ATGCCTGCTTGCCGAATATCATGGTGGAAAATGGCCGCTTTTCTGGATTCATCGACTGTGGCCGGCTGGG  
TACGGACGAACGGCTTATAGTACCACCTTTTACCGGCGAAAAGACCTAAGTAGCTGACACCGGCCGACCC  
3230 3240 3250 3260 3270 3280 3290

RsrII | EarI | SapI | Eco57 I |

TGTGGCGGACCGCTATCAGGACATAGCGTTGGCTACCCGTGATATTGCTGAAGAGCTTGGCGGCGAATGG  
ACACCGCCTGGCGATAGTCTGTATCGCAACCGATGGGCACTATAACGACTTCTCGAACCGCGCTTACC  
3300 3310 3320 3330 3340 3350 3360

BssSI | BsrBI |  
GCTGACCGCTTTCCTCGTGCTTTACGGTATCGCCGCTCCCGATTTCGACGCGCATCGCCTTCTATCGCCTTC  
CGACTGGCGAAGGAGCACGAAATGCCATAGCGGCGAGGGCTAAGCGTCGCGTAGCGGAAGATAGCGGAAG  
3370 3380 3390 3400 3410 3420 3430

BsrBI | BstBI | BspMI | BssSI |  
TTGACGAGTTCTTCTGAGCGGGACTCTGGGGTTCGAAATGACCGACCAAGCGACGCCAACCTGCCATCA  
AACTGCTCAAGAAGACTCGCCCTGAGACCCCAAGCTTTACTGGCTGGTTTCGCTGCGGGTTGGACGGTAGT  
3440 3450 3460 3470 3480 3490 3500

NaeI | NgoMI | BpmI |  
CGAGATTTTCGATTCCACCGCCGCCTTCTATGAAAGGTTGGGCTTCGGAATCGTTTTCCGGGACGCCGGCT  
GCTCTAAAGCTAAGGTGGCGGCGGAAGATACTTTCCAACCCGAAGCCTTAGCAAAGGCCCTGCGGCCGA  
3510 3520 3530 3540 3550 3560 3570

BpmI | AvrII |  
GGATGATCCTCCAGCGCGGGGATCTCATGCTGGAGTTCTTCGCCACCCTAGGGGGAGGCTAACTGAAAC  
CCTACTAGGAGGTCGCGCCCCTAGAGTACGACCTCAAGAAGCGGGTGGGATCCCCCTCCGATTGACTTTG  
3580 3590 3600 3610 3620 3630 3640

ACGGAAGGAGACAATAACCGGAAGGAACCCGCGCTATGACGGCAATAAAAAGACAGAATAAAACGCACGGT  
TGCTTTCCTCTGTTATGGCCTTCTTGGGCGCGATACTGCCGTTATTTTTCTGTCTTATTTTGCCTGCCA  
3650 3660 3670 3680 3690 3700 3710

BsaI |  
GTTGGGTTCGTTTGTTCATAAACGCGGGGTTTCGGTCCCAGGGCTGGCACTCTGTTCGATACCCACCGAGAC  
CAACCCAGCAAACAAGTATTTGCGCCCCAAGCCAGGGTCCCAGCCGTGAGACAGCTATGGGGTGGCTCTG  
3720 3730 3740 3750 3760 3770 3780

CCCATTGGGGCCAATACGCCCGGTTTTCTTCTTTTCCCACCCACCCCAAGTTCGGGTGAAGGCC  
GGGTAACCCCGGTTATGCGGGCGCAAAGAAGGAAAAGGGGTGGGGTGGGGGTTCAAGCCACTTCCGGG  
3790 3800 3810 3820 3830 3840 3850

AlwNI | Bsu36 I |  
AGGGCTCGCAGCCAACGTCGGGGCGGCAGGCCCTGCCATAGCCTCAGGTTACTCATATATACTTTAGATT  
TCCCGAGCGTCGGTTGCAGCCCCGCGTCCGGGACGGTATCGGAGTCCAATGAGTATATATGAAATCTAA  
3860 3870 3880 3890 3900 3910 3920





