

General Description

DNA pET160-GW/CAT

Entire molecule length: 6498 bp

Restriction/Methylation Map

| Enzyme | # of cuts | Positions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AatII  | 1         | 1367                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| AccI   | 1         | 3406                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| AccIII | 3         | 451 1089 3985                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Acil   | 96        | 13 51(c) 159(c)<br>165(c) 222 224(c)<br>228 433 797 891(c)<br>1009 1099 1241<br>1395(c) 1442 1541(c)<br>1650(c) 1727(c) 1771<br>1892(c) 1938 2129(c)<br>2220(c) 2582 2591(c)<br>2726 2836(c) 2957(c)<br>2976(c) 3103(c)<br>3131(c) 3222 3243<br>3250 3293(c) 3310(c)<br>3336(c) 3349 3389<br>3414 3456 3466<br>3505 3590(c) 3646<br>3701(c) 3717(c)<br>3873(c) 3884(c)<br>3887(c) 4016 4154<br>4235 4241(c) 4257(c)<br>4310 4364 4406<br>4418(c) 4442(c)<br>4487(c) 4512(c) 4545<br>4613(c) 4628 4713<br>4760(c) 4809 4849(c)<br>4928(c) 4948 5058<br>5114(c) 5124(c) 5197<br>5225(c) 5281(c) 5335<br>5491 5575 5752(c)<br>5803 5806 5826<br>5890 5962 5981(c)<br>6004 6013 6029<br>6068(c) 6180 6287<br>6290 6293 6446 |
| AcsI   | 2         | 455 5503                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Acyl   | 8         | 1364 1746 4445<br>5140 5823 6322<br>6436 6457                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| AflIII | 2         | 3174 5778                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| AluI   | 28        | 355 484 922 990<br>1251 1255 1270<br>1933 1996 2096<br>2617 2874 2920<br>3010 3236 3519<br>3538 3587 3598                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

|        |    |                                                                                                                                                                                                          |
|--------|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|        |    | 3655 4563 4966<br>5025 5089 5182<br>5297 5721 6001                                                                                                                                                       |
| Alw44l | 4  | 1614 2860 3360<br>5798                                                                                                                                                                                   |
| Alwl   | 15 | 3(c) 4 954(c) 1647<br>1651(c) 1968 2431(c)<br>2432 2528(c) 2530<br>2616 3977(c) 4547(c)<br>4997(c) 6222                                                                                                  |
| AlwNI  | 1  | 2765                                                                                                                                                                                                     |
| Aosl   | 3  | 2063 4197 4295                                                                                                                                                                                           |
| Apal   | 1  | 5575                                                                                                                                                                                                     |
| ApaLI  | 4  | 1614 2860 3360<br>5798                                                                                                                                                                                   |
| Apol   | 2  | 455 5503                                                                                                                                                                                                 |
| Ascl   | 1  | 909                                                                                                                                                                                                      |
| Asel   | 6  | 21 947 1287 2111<br>5036 5095                                                                                                                                                                            |
| Asnl   | 6  | 21 947 1287 2111<br>5036 5095                                                                                                                                                                            |
| Asp700 | 3  | 1288 1686 3620                                                                                                                                                                                           |
| AspEI  | 1  | 2286                                                                                                                                                                                                     |
| AspHI  | 8  | 1618 1703 2864<br>3364 4188 4479<br>5802 6286                                                                                                                                                            |
| Aspl   | 1  | 3432                                                                                                                                                                                                     |
| Aval   | 1  | 4224                                                                                                                                                                                                     |
| Avall  | 9  | 1922 2144 3890<br>4169 4211 4514<br>4763 4851 5227                                                                                                                                                       |
| Avill  | 3  | 2063 4197 4295                                                                                                                                                                                           |
| Banl   | 12 | 1159 1202 2333<br>4360 4444 4883<br>5009 5139 5858<br>6321 6435 6456                                                                                                                                     |
| BanII  | 3  | 5575 6388 6402                                                                                                                                                                                           |
| Bbsl   | 5  | 1303 4056 4919<br>5293(c) 5632(c)                                                                                                                                                                        |
| Bbvl   | 27 | 953(c) 986(c) 989(c)<br>1852(c) 2054 2243<br>2546(c) 2752(c)<br>2755(c) 2845 3264<br>3282 3428(c) 3525(c)<br>3574(c) 3596 3977<br>4100 4103 4207(c)<br>4231(c) 4864(c)<br>5076(c) 5230 5359<br>5730 6267 |
| Bcgl   | 4  | 1748(c) 3603 4958<br>5458(c)                                                                                                                                                                             |
| BcII   | 1  | 5764                                                                                                                                                                                                     |
| Bfal   | 7  | 69 1023 1252 2093<br>2428 2681 4162                                                                                                                                                                      |

|          |    |                                                                                                                                        |
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| BglI     | 3  | 2168 4487 4721                                                                                                                         |
| BglII    | 1  | 2                                                                                                                                      |
| BmyI     | 11 | 1618 1703 2864<br>3364 4188 4479<br>5575 5802 6286<br>6388 6402                                                                        |
| Bpml     | 7  | 577 2217 3653(c)<br>4269 4823(c) 5457(c)<br>5946                                                                                       |
| Bpu1102I | 1  | 1012                                                                                                                                   |
| BpuAI    | 5  | 1303 4056 4919<br>5293(c) 5632(c)                                                                                                      |
| BsaAI    | 1  | 3426                                                                                                                                   |
| BsaBI    | 3  | 1 7 3981                                                                                                                               |
| BsaHI    | 8  | 1364 1746 4445<br>5140 5823 6322<br>6436 6457                                                                                          |
| Bsal     | 1  | 2220                                                                                                                                   |
| BsaJI    | 16 | 127 222 240 686 687<br>756 1034 1149 1163<br>3014 4202 4280<br>4482 5143 6335<br>6341                                                  |
| BsaWI    | 8  | 451 1089 1990 2821<br>2968 3985 4956<br>5459                                                                                           |
| BseAI    | 3  | 451 1089 3985                                                                                                                          |
| BsgI     | 3  | 4020 5733 5933                                                                                                                         |
| BsiEI    | 7  | 228 1768 1917 2840<br>3264 4713 4999                                                                                                   |
| BsiHKA1  | 8  | 1618 1703 2864<br>3364 4188 4479<br>5802 6286                                                                                          |
| BsiYI    | 23 | 687 1048 1104 2696<br>2975 3141 3159<br>3532 3712 3754<br>3845 4208 4286<br>4335 4960 5113<br>5357 6203 6248<br>6266 6296 6342<br>6343 |
| BsII     | 23 | 687 1048 1104 2696<br>2975 3141 3159<br>3532 3712 3754<br>3845 4208 4286<br>4335 4960 5113<br>5357 6203 6248<br>6266 6296 6342<br>6343 |
| BsmAI    | 8  | 679 1444(c) 2220<br>3533 5163(c) 5550(c)<br>5676(c) 6081(c)                                                                            |
| BsmFI    | 4  | 3903 4551(c) 4776<br>6317(c)                                                                                                           |

|          |    |                                                                                                                                                                                                                                                                                            |
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| BsmI     | 3  | 448 855 4296(c)                                                                                                                                                                                                                                                                            |
| Bsp120I  | 1  | 5571                                                                                                                                                                                                                                                                                       |
| Bsp1286I | 11 | 1618 1703 2864<br>3364 4188 4479<br>5575 5802 6286<br>6388 6402                                                                                                                                                                                                                            |
| BspDI    | 1  | 1260                                                                                                                                                                                                                                                                                       |
| BspEI    | 3  | 451 1089 3985                                                                                                                                                                                                                                                                              |
| BspHI    | 4  | 1341 1446 2454<br>6380                                                                                                                                                                                                                                                                     |
| BspMI    | 1  | 4595                                                                                                                                                                                                                                                                                       |
| BspWI    | 49 | 165 221 796 892 919<br>975 996 1008 1119<br>2048 2168 2556<br>3128 3242 3307<br>4074 4097 4162<br>4204 4229 4238<br>4487 4496 4596<br>4605 4610 4614<br>4712 4721 4730<br>4855 4881 5053<br>5137 5231 5373<br>5375 5382 5583<br>5590 5727 5814<br>5916 6012 6102<br>6242 6433 6454<br>6465 |
| BsrBI    | 3  | 51 1444(c) 3245(c)                                                                                                                                                                                                                                                                         |
| BsrDI    | 5  | 474 2052 2226(c)<br>5371(c) 5737                                                                                                                                                                                                                                                           |
| BsrFI    | 8  | 1118 2201 4366<br>4720 4880 6092<br>6459 6468                                                                                                                                                                                                                                              |
| BsrGI    | 2  | 204 929                                                                                                                                                                                                                                                                                    |
| BsrI     | 27 | 262 702(c) 1641<br>1811(c) 2080 2123<br>2241 2647 2759(c)<br>2772(c) 3402(c) 3435<br>3850 3874 4140(c)<br>4517(c) 4766(c) 4975<br>5065(c) 5164(c)<br>5474(c) 5626(c)<br>5863(c) 5929 5965(c)<br>6128 6260(c)                                                                               |
| BssHII   | 2  | 909 5367                                                                                                                                                                                                                                                                                   |
| Bst1107I | 1  | 3407                                                                                                                                                                                                                                                                                       |
| BstEII   | 1  | 5596                                                                                                                                                                                                                                                                                       |
| BstNI    | 13 | 150 632 688 1150<br>3015 3028 3149<br>4209 4592 5144<br>5201 5741 6056                                                                                                                                                                                                                     |
| BstUI    | 41 | 15 224 911 1395<br>1727 2220 2550<br>3131 3474 3577<br>3579 3648 4018                                                                                                                                                                                                                      |

|        |    |                                                                                                                                                                                                                                                                               |
|--------|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|        |    | 4115 4237 4263<br>4408 4418 4547<br>4613 4674 4679<br>4706 4835 4950<br>5112 5114 5345<br>5369 5551 5586<br>5632 5780 5787<br>5876 5892 5910<br>5981 6031 6068<br>6182                                                                                                        |
| BstXI  | 5  | 128 134 5732 5855<br>5984                                                                                                                                                                                                                                                     |
| BstYI  | 11 | 2 959 1639 1656<br>2424 2436 2522<br>2533 3982 5002<br>6214                                                                                                                                                                                                                   |
| CellI  | 1  | 1012                                                                                                                                                                                                                                                                          |
| CfoI   | 46 | 911 913 1181 1395<br>1727 2064 2157<br>2550 2659 2833<br>2933 3000 3270<br>3303 3446 3476<br>3579 3925 4008<br>4198 4234 4296<br>4447 4706 4837<br>4877 4952 5049<br>5114 5142 5347<br>5369 5371 5378<br>5385 5553 5586<br>5787 5876 5910<br>6166 6196 6324<br>6378 6438 6459 |
| Cfr10I | 8  | 1118 2201 4366<br>4720 4880 6092<br>6459 6468                                                                                                                                                                                                                                 |
| Clal   | 1  | 1260                                                                                                                                                                                                                                                                          |
| Csp6I  | 8  | 205 333 871 930<br>1116 1804 3371<br>5634                                                                                                                                                                                                                                     |
| DdeI   | 12 | 676 991 1012 1359<br>1785 2325 2491<br>2900 3367 3907<br>4069 5207                                                                                                                                                                                                            |
| DpnI   | 30 | 4 10 956 961 1605<br>1641 1658 1916<br>1962 1980 2321<br>2426 2438 2516<br>2524 2535 2610<br>3984 4191 4508<br>4523 4554 4826<br>5004 5393 5766<br>5870 6216 6405<br>6496                                                                                                     |
| DpnII  | 30 | 2 8 954 959 1603<br>1639 1656 1914                                                                                                                                                                                                                                            |

|          |    |                                                                                                                                                                                       |
|----------|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |    | 1960 1978 2319<br>2424 2436 2514<br>2522 2533 2608<br>3982 4189 4506<br>4521 4552 4824<br>5002 5391 5764<br>5868 6214 6403<br>6494                                                    |
| DraI     | 5  | 375 714 1708 2400<br>2419                                                                                                                                                             |
| DraII    | 5  | 1039 1306 4169<br>4211 6346                                                                                                                                                           |
| DrdI     | 2  | 3072 3487                                                                                                                                                                             |
| DsaI     | 6  | 127 222 240 756<br>4202 6341                                                                                                                                                          |
| DsaV     | 27 | 148 630 686 1108<br>1148 1748 2099<br>2795 3013 3026<br>3147 3496 3531<br>3837 4165 4207<br>4391 4590 5005<br>5142 5199 5350<br>5739 6054 6159<br>6210 6335                           |
| EaeI     | 8  | 225 720 1893 4205<br>4710 5104 6338<br>6470                                                                                                                                           |
| EagI     | 2  | 225 4710                                                                                                                                                                              |
| Eam1105I | 1  | 2286                                                                                                                                                                                  |
| EarI     | 3  | 1487(c) 3291(c) 6161                                                                                                                                                                  |
| EclXI    | 2  | 225 4710                                                                                                                                                                              |
| Eco47III | 3  | 3924 4876 6377                                                                                                                                                                        |
| Eco57I   | 2  | 1620 2632(c)                                                                                                                                                                          |
| EcoNI    | 1  | 6246                                                                                                                                                                                  |
| EcoO109I | 5  | 1039 1306 4169<br>4211 6346                                                                                                                                                           |
| EcoRI    | 1  | 455                                                                                                                                                                                   |
| EcoRII   | 13 | 148 630 686 1148<br>3013 3026 3147<br>4207 4590 5142<br>5199 5739 6054                                                                                                                |
| EcoRV    | 2  | 1095 5332                                                                                                                                                                             |
| Esp3I    | 3  | 679 3533 5163(c)                                                                                                                                                                      |
| Espl     | 1  | 1012                                                                                                                                                                                  |
| Fnu4HI   | 54 | 166 225 228 797 967<br>1000 1003 1542<br>1771 1866 1893<br>2043 2232 2560<br>2766 2769 2834<br>2977 3132 3250<br>3253 3271 3389<br>3442 3539 3585<br>3588 3885 3966<br>4089 4092 4221 |

|        |    |                                                                                                                                                                                                                                                 |
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|        |    | 4235 4242 4245<br>4364 4443 4488<br>4545 4628 4713<br>4878 4929 5090<br>5219 5348 5719<br>5806 5826 5890<br>6013 6256 6290<br>6293                                                                                                              |
| FnuDII | 41 | 15 224 911 1395<br>1727 2220 2550<br>3131 3474 3577<br>3579 3648 4018<br>4115 4237 4263<br>4408 4418 4547<br>4613 4674 4679<br>4706 4835 4950<br>5112 5114 5345<br>5369 5551 5586<br>5632 5780 5787<br>5876 5892 5910<br>5981 6031 6068<br>6182 |
| FokI   | 15 | 435(c) 1132(c) 1180<br>1847 2134 2315<br>3488(c) 3629(c) 3815<br>3893 3955(c) 4604(c)<br>4649(c) 5723(c)<br>5732(c)                                                                                                                             |
| Fspl   | 3  | 2063 4197 4295                                                                                                                                                                                                                                  |
| HaeII  | 13 | 2934 3304 3926<br>4009 4448 4878<br>5143 5386 6167<br>6325 6379 6439<br>6460                                                                                                                                                                    |
| HaeIII | 32 | 227 368 413 635 722<br>1041 1108 1308<br>1895 2162 2242<br>2700 3134 3152<br>3163 3705 4207<br>4391 4604 4661<br>4712 4733 4822<br>5106 5204 5573<br>5919 6054 6276<br>6340 6348 6472                                                           |
| HgaI   | 15 | 1754 2484(c) 3062(c)<br>3480 3637(c) 4269<br>4419 4663(c) 4695(c)<br>5551 5557 5786<br>5831 6230 6469(c)                                                                                                                                        |
| HgiAI  | 8  | 1618 1703 2864<br>3364 4188 4479<br>5802 6286                                                                                                                                                                                                   |
| HhaI   | 46 | 911 913 1181 1395<br>1727 2064 2157<br>2550 2659 2833                                                                                                                                                                                           |

|        |    |                                                                                                                                                                                                                                                                               |
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|        |    | 2933 3000 3270<br>3303 3446 3476<br>3579 3925 4008<br>4198 4234 4296<br>4447 4706 4837<br>4877 4952 5049<br>5114 5142 5347<br>5369 5371 5378<br>5385 5553 5586<br>5787 5876 5910<br>6166 6196 6324<br>6378 6438 6459                                                          |
| HinP1I | 46 | 909 911 1179 1393<br>1725 2062 2155<br>2548 2657 2831<br>2931 2998 3268<br>3301 3444 3474<br>3577 3923 4006<br>4196 4232 4294<br>4445 4704 4835<br>4875 4950 5047<br>5112 5140 5345<br>5367 5369 5376<br>5383 5551 5584<br>5785 5874 5908<br>6164 6194 6322<br>6376 6436 6457 |
| HincII | 2  | 1744 5276                                                                                                                                                                                                                                                                     |
| HindII | 2  | 1744 5276                                                                                                                                                                                                                                                                     |
| Hinfl  | 15 | 28 805 2287 2804<br>3200 3275 3621<br>4125 4346 4644<br>4798 5100 5355<br>6151 6238                                                                                                                                                                                           |
| Hpal   | 1  | 5276                                                                                                                                                                                                                                                                          |
| HpaII  | 38 | 410 452 580 963<br>1090 1110 1119<br>1749 1991 2101<br>2168 2202 2606<br>2796 2822 2969<br>3498 3532 3839<br>3986 4166 4367<br>4393 4631 4721<br>4881 4957 5007<br>5352 5460 5701<br>6093 6160 6211<br>6337 6460 6469<br>6484                                                 |
| HphI   | 28 | 110(c) 116(c) 229(c)<br>491 497(c) 499 635<br>691(c) 703 745(c)<br>951 1165 1559(c)<br>1594 1800(c) 2216<br>2443 3550(c) 3559(c)<br>4134 4355 5153(c)                                                                                                                         |

|         |    |                                                                                                                                                                                                                                                                                                                             |
|---------|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|         |    | 5186(c) 5608 6053(c)<br>6128(c) 6429 6474                                                                                                                                                                                                                                                                                   |
| Ital    | 54 | 166 225 228 797 967<br>1000 1003 1542<br>1771 1866 1893<br>2043 2232 2560<br>2766 2769 2834<br>2977 3132 3250<br>3253 3271 3389<br>3442 3539 3585<br>3588 3885 3966<br>4089 4092 4221<br>4235 4242 4245<br>4364 4443 4488<br>4545 4628 4713<br>4878 4929 5090<br>5219 5348 5719<br>5806 5826 5890<br>6013 6256 6290<br>6293 |
| Kasl    | 5  | 4444 5139 6321<br>6435 6456                                                                                                                                                                                                                                                                                                 |
| Ksp632l | 3  | 1487(c) 3291(c) 6161                                                                                                                                                                                                                                                                                                        |
| Kspl    | 1  | 225                                                                                                                                                                                                                                                                                                                         |
| Mael    | 7  | 69 1023 1252 2093<br>2428 2681 4162                                                                                                                                                                                                                                                                                         |
| Maell   | 14 | 542 717 1364 1684<br>2057 2473 3425<br>3851 4081 4105<br>4694 4750 6045<br>6118                                                                                                                                                                                                                                             |
| MaeIII  | 20 | 512 617 1153 1625<br>1813 1966 2024<br>2355 2638 2754<br>2817 3426 3521<br>3734 3818 3841<br>4501 4768 5596<br>6119                                                                                                                                                                                                         |
| Maml    | 3  | 1 7 3981                                                                                                                                                                                                                                                                                                                    |
| Mbol    | 30 | 2 8 954 959 1603<br>1639 1656 1914<br>1960 1978 2319<br>2424 2436 2514<br>2522 2533 2608<br>3982 4189 4506<br>4521 4552 4824<br>5002 5391 5764<br>5868 6214 6403<br>6494                                                                                                                                                    |
| Mboll   | 16 | 730(c) 1308 1504<br>1613 1691 2446<br>2517(c) 3308 4061<br>4653 4924 5293(c)<br>5632(c) 5803 6148(c)<br>6398(c)                                                                                                                                                                                                             |

|        |    |                                                                                                                                                                                                                                                                              |
|--------|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Mcrl   | 7  | 228 1768 1917 2840<br>3264 4713 4999                                                                                                                                                                                                                                         |
| MIul   | 1  | 5778                                                                                                                                                                                                                                                                         |
| MIuNI  | 2  | 722 4207                                                                                                                                                                                                                                                                     |
| Mnll   | 34 | 76 301(c) 1051(c)<br>1052 1071(c) 1098(c)<br>1158(c) 1319 1913(c)<br>2119(c) 2266 2347<br>2747 2997(c) 3071<br>3280(c) 3544(c)<br>3574(c) 3755 3793(c)<br>3851(c) 4182 4351(c)<br>4378(c) 4416(c)<br>4477(c) 4680 4779(c)<br>4864 5114(c) 5438<br>5921(c) 6266(c)<br>6485(c) |
| Mrol   | 3  | 451 1089 3985                                                                                                                                                                                                                                                                |
| Mscl   | 2  | 722 4207                                                                                                                                                                                                                                                                     |
| Msel   | 30 | 21 85 91 374 713<br>855 947 951 1224<br>1246 1287 1335<br>1707 2072 2111<br>2346 2399 2413<br>2418 2470 3397<br>3679 3711 3931<br>5036 5095 5275<br>5566 5760 5883                                                                                                           |
| MslI   | 12 | 126 129 1515 1874<br>2033 3605 3996<br>4191 4622 5412<br>5442 5730                                                                                                                                                                                                           |
| MspA1I | 13 | 224 355 799 1011<br>1650 2591 2836<br>3468 3587 4512<br>5089 5182 5752                                                                                                                                                                                                       |
| Mspl   | 38 | 410 452 580 963<br>1090 1110 1119<br>1749 1991 2101<br>2168 2202 2606<br>2796 2822 2969<br>3498 3532 3839<br>3986 4166 4367<br>4393 4631 4721<br>4881 4957 5007<br>5352 5460 5701<br>6093 6160 6211<br>6337 6460 6469<br>6484                                                |
| Mval   | 13 | 150 632 688 1150<br>3015 3028 3149<br>4209 4592 5144<br>5201 5741 6056                                                                                                                                                                                                       |
| Mvnl   | 41 | 15 224 911 1395<br>1727 2220 2550                                                                                                                                                                                                                                            |

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|        |    | 3131 3474 3577<br>3579 3648 4018<br>4115 4237 4263<br>4408 4418 4547<br>4613 4674 4679<br>4706 4835 4950<br>5112 5114 5345<br>5369 5551 5586<br>5632 5780 5787<br>5876 5892 5910<br>5981 6031 6068<br>6182                                                                                 |
| Mwol   | 49 | 165 221 796 892 919<br>975 996 1008 1119<br>2048 2168 2556<br>3128 3242 3307<br>4074 4097 4162<br>4204 4229 4238<br>4487 4496 4596<br>4605 4610 4614<br>4712 4721 4730<br>4855 4881 5053<br>5137 5231 5373<br>5375 5382 5583<br>5590 5727 5814<br>5916 6012 6102<br>6242 6433 6454<br>6465 |
| Nael   | 4  | 4368 4722 4882<br>6470                                                                                                                                                                                                                                                                     |
| Narl   | 5  | 4445 5140 6322<br>6436 6457                                                                                                                                                                                                                                                                |
| Ncil   | 14 | 1110 1750 2101<br>2797 3498 3533<br>3839 4167 4393<br>5007 5352 6161<br>6212 6337                                                                                                                                                                                                          |
| Ncol   | 3  | 127 240 756                                                                                                                                                                                                                                                                                |
| Ndel   | 1  | 108                                                                                                                                                                                                                                                                                        |
| Ndell  | 30 | 2 8 954 959 1603<br>1639 1656 1914<br>1960 1978 2319<br>2424 2436 2514<br>2522 2533 2608<br>3982 4189 4506<br>4521 4552 4824<br>5002 5391 5764<br>5868 6214 6403<br>6494                                                                                                                   |
| NgoMI  | 4  | 4366 4720 4880<br>6468                                                                                                                                                                                                                                                                     |
| Nhel   | 1  | 1251                                                                                                                                                                                                                                                                                       |
| NlaIII | 36 | 131 244 530 760 821<br>842 1282 1345 1450<br>1843 1879 1957                                                                                                                                                                                                                                |

|          |    |                                                                                                                                                                          |
|----------|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |    | 1967 2458 3178<br>3440 3545 3710<br>3773 3837 4062<br>4196 4403 4460<br>4475 4603 4720<br>4906 4945 5295<br>5447 5468 5647<br>6174 6311 6384                             |
| NlaIV    | 28 | 220 1040 1161 1204<br>1399 1989 2200<br>2241 2335 3107<br>3146 3891 4170<br>4213 4327 4362<br>4397 4446 4764<br>4885 5011 5141<br>5573 5860 6323<br>6347 6437 6458       |
| NotI     | 1  | 225                                                                                                                                                                      |
| NruI     | 1  | 4679                                                                                                                                                                     |
| NsiI     | 1  | 114                                                                                                                                                                      |
| NspI     | 4  | 3178 3545 3837<br>6311                                                                                                                                                   |
| PacI     | 1  | 951                                                                                                                                                                      |
| PfIMI    | 4  | 687 4286 4335 6203                                                                                                                                                       |
| PleI     | 7  | 22(c) 2295 2798(c)<br>3283 5349(c) 6145(c)<br>6232(c)                                                                                                                    |
| Ppu10I   | 1  | 110                                                                                                                                                                      |
| PpuMI    | 2  | 4169 4211                                                                                                                                                                |
| Psp1406I | 6  | 542 1684 2057 3851<br>4750 6118                                                                                                                                          |
| PstI     | 1  | 2044                                                                                                                                                                     |
| PvuI     | 1  | 1917                                                                                                                                                                     |
| PvuII    | 4  | 355 3587 5089 5182                                                                                                                                                       |
| RcaI     | 4  | 1341 1446 2454<br>6380                                                                                                                                                   |
| RsaI     | 8  | 206 334 872 931<br>1117 1805 3372<br>5635                                                                                                                                |
| SacII    | 1  | 225                                                                                                                                                                      |
| SapI     | 1  | 3291(c)                                                                                                                                                                  |
| Sau3AI   | 30 | 2 8 954 959 1603<br>1639 1656 1914<br>1960 1978 2319<br>2424 2436 2514<br>2522 2533 2608<br>3982 4189 4506<br>4521 4552 4824<br>5002 5391 5764<br>5868 6214 6403<br>6494 |
| Sau96I   | 21 | 1039 1107 1306<br>1922 2144 2161<br>2240 3703 3890                                                                                                                       |

|       |    |                                                                                                                                                                                                                                                 |
|-------|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|       |    | 4169 4211 4390<br>4514 4763 4851<br>5203 5227 5571<br>5572 5917 6346                                                                                                                                                                            |
| Scal  | 2  | 872 1805                                                                                                                                                                                                                                        |
| ScrFI | 27 | 150 632 688 1110<br>1150 1750 2101<br>2797 3015 3028<br>3149 3498 3533<br>3839 4167 4209<br>4393 4592 5007<br>5144 5201 5352<br>5741 6056 6161<br>6212 6337                                                                                     |
| SfaNI | 27 | 121 298 783(c) 1154<br>1585(c) 1834 2025(c)<br>3077(c) 3297(c) 3337<br>3375(c) 3510 3731(c)<br>3793(c) 3871(c)<br>3967(c) 3977 4219(c)<br>4614(c) 4626 5001<br>5413(c) 5416 5604(c)<br>5745 6455(c) 6467(c)                                     |
| Sfcl  | 5  | 34 1140 2040 2718<br>2909                                                                                                                                                                                                                       |
| SgrAI | 1  | 6459                                                                                                                                                                                                                                            |
| Snol  | 4  | 1614 2860 3360<br>5798                                                                                                                                                                                                                          |
| SphI  | 1  | 6311                                                                                                                                                                                                                                            |
| SspBI | 2  | 204 929                                                                                                                                                                                                                                         |
| Sspl  | 2  | 767 1481                                                                                                                                                                                                                                        |
| Styl  | 5  | 127 240 756 1034<br>4280                                                                                                                                                                                                                        |
| TaqI  | 12 | 7 1260 1632 3076<br>4383 4524 4999<br>5820 5842 6201<br>6219 6497                                                                                                                                                                               |
| TfiI  | 8  | 805 3200 3621 4125<br>4346 4644 4798<br>5100                                                                                                                                                                                                    |
| Thal  | 41 | 15 224 911 1395<br>1727 2220 2550<br>3131 3474 3577<br>3579 3648 4018<br>4115 4237 4263<br>4408 4418 4547<br>4613 4674 4679<br>4706 4835 4950<br>5112 5114 5345<br>5369 5551 5586<br>5632 5780 5787<br>5876 5892 5910<br>5981 6031 6068<br>6182 |
| Tru9I | 30 | 21 85 91 374 713                                                                                                                                                                                                                                |

|         |    |                                                                                                                                                |
|---------|----|------------------------------------------------------------------------------------------------------------------------------------------------|
|         |    | 855 947 951 1224<br>1246 1287 1335<br>1707 2072 2111<br>2346 2399 2413<br>2418 2470 3397<br>3679 3711 3931<br>5036 5095 5275<br>5566 5760 5883 |
| Tsp509I | 22 | 18 42 59 76 189 455<br>860 944 948 1220<br>1284 1288 1853<br>2108 2414 4316<br>4330 5037 5503<br>5896 5994 6146                                |
| Tth111I | 1  | 3432                                                                                                                                           |
| Van91I  | 4  | 687 4286 4335 6203                                                                                                                             |
| XbaI    | 1  | 68                                                                                                                                             |
| XcmI    | 4  | 134 5393 5411 5927                                                                                                                             |
| XhoI    | 11 | 2 959 1639 1656<br>2424 2436 2522<br>2533 3982 5002<br>6214                                                                                    |
| XmaII   | 2  | 225 4710                                                                                                                                       |
| XmnI    | 3  | 1288 1686 3620                                                                                                                                 |

No cuts: AatI, Acc65I, AflII, AgeI, Asp718, AsuII, AvrII, BamHI, BbrPI, BfrI, BlnI, BsiWI, BstBI, Bsu36I, Csp45I, DraIII, Ecl136II, HindIII, KpnI, MfeI, MunI, NspV, PaeR7I, PinAI, PmaCI, PmeI, PmlI, RsrII, SacI, Sall, SexAI, SfiI, SfuI, SmaI, SnaBI, SpeI, StuI, SwaI, XhoI, XmaI