



General Description

DNA pTrcHis2-TOPO<sup>®</sup>/*lacZ*

Entire molecule length: 7450 bp

Restriction Map

| Enzyme | # of cuts | Positions   |
|--------|-----------|---|
| AatII  | 1         | 1054  |
| Acc65I | 1         | 611   |
| AccI   | 3         | 3195 3556 6026  |
| Acil   | 118       | 237(c) 267 285(c)<br>545 621(c) 750 965<br>972(c) 1028(c)<br>1036(c) 1127 1159(c)<br>1225(c) 1231 1243(c)<br>1350(c) 1369 1415<br>1424(c) 1605 1628<br>1707 1862 1882(c)<br>1885(c) 2013 2059(c)<br>2110(c) 2185(c) 2249<br>2256 2403 2413(c)<br>2475 2536 2586(c)<br>2611 2614 2631<br>2696 2754 2781<br>2816 2853(c) 2856(c)<br>2916(c) 2932 3048<br>3059(c) 3098(c) 3123<br>3143 3154 3167<br>3235(c) 3274(c) 3299<br>3351(c) 3432(c)<br>3612(c) 3663(c)<br>3690(c) 3701(c) 3891<br>3900(c) 3938(c) 3951<br>4064 4163(c) 4272(c)<br>4349(c) 4393 4514(c)<br>4560 4751(c) 4842(c)<br>5204 5213(c) 5348<br>5458(c) 5579(c)<br>5598(c) 5725(c)<br>5753(c) 5844 5865<br>5872 5915(c) 5932(c)<br>5958(c) 5971 6009<br>6034 6076 6086<br>6125 6234(c) 6280(c)<br>6392 6431(c) 6447(c)<br>6456(c) 6479 6498(c)<br>6570(c) 6634(c)<br>6654(c) 6657(c) 6708<br>6885(c) 6969(c)<br>7125(c) 7179 7235<br>7263(c) 7336 7346<br>7402(c) |
| Acsl   | 5         | 927 3435 3498 3679<br>6955  |

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|--------|----|--|
| Acyl   | 8  | 46 1051 2579 2751<br>3947 4368 6637<br>7320  |
| Afill  | 1  | 423  |
| Afilll | 6  | 1733 2513 2938<br>3190 5796 6680   |
| Alul   | 28 | 10 66 190 428 523<br>634 814 2369 2669<br>3080 3443 3507<br>3598 4555 4618<br>4718 5239 5496<br>5542 5632 5858<br>6139 6158 6461<br>6741 7165 7280<br>7373 |
| Alw44l | 7  | 29 2776 2891 4236<br>5482 5980 6660  |
| Alwl   | 16 | 432(c) 1698(c)<br>1848(c) 1848 2012(c)<br>2140 3181 3547<br>4269 4273(c) 4590<br>5053(c) 5054 5150(c)<br>5152 5238   |
| AlwNI  | 4  | 2141 2566 3317<br>5387   |
| Aosl   | 2  | 573 4685   |
| Apal   | 1  | 6891   |
| ApalI  | 7  | 29 2776 2891 4236<br>5482 5980 6660  |
| Apol   | 5  | 927 3435 3498 3679<br>6955   |
| Asel   | 5  | 201 381 4733 7365<br>7424  |
| Asnl   | 5  | 201 381 4733 7365<br>7424  |
| Asp700 | 2  | 3626 4308  |
| Asp718 | 1  | 611  |
| AspEI  | 1  | 4908   |
| AspHI  | 9  | 33 2371 2780 2895<br>4240 4325 5486<br>5984 6664   |
| Aspl   | 1  | 6052   |
| Asull  | 1  | 3502   |
| Aval   | 2  | 1769 3212  |
| Avall  | 5  | 1972 3706 4544<br>4766 7232  |
| Avill  | 2  | 573 4685   |
| Banl   | 7  | 611 623 1227 1679<br>4955 6600 7319  |
| Banll  | 3  | 2371 3420 6891   |
| Bbsl   | 4  | 1948 3200(c) 6826<br>7165  |
| Bbvl   | 31 | 65 513 586 970(c)<br>1048(c) 1429(c)   |

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|----------|----|---|
|          |    | 1432(c) 1763 2300<br>2489 2582 2743(c)<br>2889 2957 3219(c)<br>3331(c) 4474(c) 4865<br>5168(c) 5374(c)<br>5377(c) 5467 5886<br>5904 6048(c) 6145(c)<br>6216 6728(c) 7099(c)<br>7228(c) 7382 |
| Bcgl     | 4  | 1740(c) 2067(c)<br>4370(c) 7006   |
| Bcll     | 2  | 1777 6694   |
| Bfal     | 3  | 4715 5050 5303  |
| Bfrl     | 1  | 423   |
| Bgll     | 3  | 583 2704 4790   |
| Bmyl     | 13 | 33 328 2371 2557<br>2780 2895 3420<br>4240 4325 5486<br>5984 6664 6891  |
| Bpml     | 8  | 660 1158 2020 3434<br>3578(c) 4839 6518(c)<br>7007  |
| Bpu1102l | 1  | 3444  |
| BpuAl    | 4  | 1948 3200(c) 6826<br>7165   |
| BsaAl    | 2  | 3512 6046   |
| BsaBl    | 1  | 1762  |
| BsaHl    | 8  | 46 1051 2579 2751<br>3947 4368 6637<br>7320   |
| Bsal     | 3  | 3596 3774 4842  |
| BsaJl    | 11 | 412 473 763 1670<br>1808 1897 2169<br>2833 3490 5636<br>7315  |
| BsaWl    | 7  | 333 608 2986 4612<br>5443 5590 6999   |
| Bsgl     | 10 | 7(c) 101 1347(c)<br>1557 1770 1890<br>2358(c) 3330(c)<br>6531(c) 6731(c)  |
| BsiEl    | 15 | 334 554 1280 1628<br>1760 2213 2249<br>2536 2932 3143<br>3455 4390 4539<br>5462 5886  |
| BsiHKAl  | 9  | 33 2371 2780 2895<br>4240 4325 5486<br>5984 6664  |
| BsiWl    | 1  | 3202  |
| BsiYl    | 19 | 685 971 1242 1506<br>1643 1676 2042<br>2105 2174 2867<br>3934 5318 5597   |

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|----------|----|---|
|          |    | 5763 5781 6152<br>6262 7108 7352  |
| Bsll     | 19 | 685 971 1242 1506<br>1643 1676 2042<br>2105 2174 2867<br>3934 5318 5597<br>5763 5781 6152<br>6262 7108 7352   |
| BsmAl    | 11 | 1058 1998(c) 3596<br>3774 4066(c) 4842<br>6153 6377 6782<br>6908 7295   |
| BsmFl    | 5  | 660(c) 2136 2603(c)<br>3251 3692(c)   |
| Bsp120l  | 1  | 6887  |
| Bsp1286l | 13 | 33 328 2371 2557<br>2780 2895 3420<br>4240 4325 5486<br>5984 6664 6891  |
| BspDI    | 3  | 343 389 1255  |
| BspHI    | 2  | 4068 5076   |
| BspMI    | 3  | 73(c) 1205(c) 3077(c)   |
| BspWI    | 41 | 119 553 583 592 886<br>1556 1586 1748<br>2264 2501 2576<br>2622 2704 2753<br>2877 3056 3073<br>3090 3241 3454<br>3609 3696 4790<br>5178 5750 5864<br>5929 5979 6363<br>6453 6549 6651<br>6738 6875 6882<br>7083 7090 7092<br>7234 7328 7412 |
| BsrBI    | 7  | 237 1036 2934(c)<br>3098 3900 4066(c)<br>5867(c)  |
| BsrDI    | 4  | 4674 4848(c) 6727(c)<br>7093  |
| BsrFI    | 4  | 1718 3450 4823<br>6366  |
| BsrI     | 32 | 468 690 1141 2079<br>2130 2216(c) 2300(c)<br>2382 2699(c) 3111<br>3266(c) 3284(c)<br>3467(c) 3837 4263<br>4433(c) 4702 4745<br>4863 5269 5381(c)<br>5394(c) 6022(c) 6055<br>6336(c) 6499 6535(c)<br>6601 6838 6990<br>7300 7399             |
| BssHII   | 3  | 1929 6219 7091  |
| Bst1107I | 2  | 3196 6027   |

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| BstBI  | 1  | 3502   |
| BstEII | 1  | 6861   |
| BstNI  | 18 | 475 602 906 1999<br>2567 2834 2868<br>3413 3687 3797<br>3965 5637 5650<br>5771 6405 6720<br>7260 7317  |
| BstUI  | 55 | 836 952 972 1129<br>1233 1282 1417<br>1709 1735 1742<br>1756 1827 1929<br>1931 1933 2009<br>2040 2515 2532<br>2616 2761 2940<br>3059 3242 3244<br>3274 3351 3701<br>4349 4842 5172<br>5753 6094 6197<br>6199 6219 6221<br>6223 6280 6394<br>6431 6481 6552<br>6570 6586 6675<br>6682 6830 6876<br>6911 7093 7117<br>7348 7350 7439   |
| BstXI  | 5  | 2651 3268 6482<br>6611 6734  |
| BstYI  | 9  | 437 3173 3539 4261<br>4278 5046 5058<br>5144 5155  |
| Bsu36I | 1  | 655  |
| CellI  | 1  | 3444   |
| CfoI   | 64 | 122 151 266 574 595<br>710 889 942 954<br>1131 1235 1326<br>1582 1711 1756<br>1815 1829 1931<br>1933 2011 2267<br>2390 2490 2565<br>2761 3059 3086<br>3232 3244 3274<br>3450 3552 3701<br>3752 4349 4686<br>4779 5172 5281<br>5455 5555 5622<br>5892 5925 6066<br>6096 6199 6221<br>6223 6298 6554<br>6588 6677 6878<br>6911 7079 7086<br>7093 7095 7117<br>7322 7350 7415<br>7439 |
| Cfr10I | 4  | 1718 3450 4823   |

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|          |    | 6366   |
| Clal     | 3  | 343 389 1255   |
| Csp45l   | 1  | 3502   |
| Csp6l    | 9  | 612 1134 1613 1925<br>2511 3203 4426<br>5991 6826  |
| Ddel     | 15 | 270 655 936 2595<br>3444 3530 3730<br>3820 3876 4407<br>4947 5113 5522<br>5987 7252  |
| Dpnl     | 34 | 439 553 649 1015<br>1279 1705 1759<br>1779 1842 1855<br>2019 2134 2212<br>2764 3175 3541<br>4227 4263 4280<br>4538 4584 4602<br>4943 5048 5060<br>5138 5146 5157<br>5232 6211 6592<br>6696 7069 7447 |
| Dpnll    | 34 | 437 551 647 1013<br>1277 1703 1757<br>1777 1840 1853<br>2017 2132 2210<br>2762 3173 3539<br>4225 4261 4278<br>4536 4582 4600<br>4941 5046 5058<br>5136 5144 5155<br>5230 6209 6590<br>6694 7067 7445 |
| Dral     | 4  | 3585 4330 5022<br>5041   |
| Dralll   | 1  | 1621   |
| Drdl     | 3  | 2540 5694 6107   |
| Dsal     | 6  | 412 763 1670 1808<br>1897 2169   |
| DsaV     | 32 | 473 600 904 1864<br>1954 1997 2313<br>2490 2550 2565<br>2832 2866 3411<br>3685 3795 3893<br>3926 3963 4370<br>4721 5417 5635<br>5648 5769 6116<br>6151 6298 6403<br>6718 7107 7258<br>7315           |
| Eael     | 4  | 902 1900 4515 7354   |
| Eam1105l | 1  | 4908   |
| Earl     | 5  | 532(c) 3529(c)<br>4109(c) 5913(c)<br>6298(c)   |

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| Ecl136II | 1  | 2369   |
| Eco47III | 1  | 2266   |
| Eco57I   | 3  | 1165 4242 5254(c)  |
| EcoRI    | 2  | 3435 3498  |
| EcoRII   | 18 | 473 600 904 1997<br>2565 2832 2866<br>3411 3685 3795<br>3963 5635 5648<br>5769 6403 6718<br>7258 7315  |
| EcoRV    | 2  | 1544 7130  |
| Esp3I    | 4  | 1058 1998(c) 6153<br>7295  |
| Espl     | 1  | 3444   |
| Fnu4HI   | 61 | 54 267 286 502 575<br>984 1037 1062 1127<br>1160 1226 1443<br>1446 1752 1883<br>2111 2256 2289<br>2403 2478 2571<br>2614 2754 2757<br>2854 2878 2946<br>3123 3154 3233<br>3275 3299 3345<br>3691 4164 4393<br>4488 4515 4854<br>5182 5388 5391<br>5456 5599 5754<br>5872 5875 5893<br>6009 6062 6159<br>6205 6235 6448<br>6571 6635 6655<br>6742 7113 7242<br>7371 |
| FnuDII   | 55 | 836 952 972 1129<br>1233 1282 1417<br>1709 1735 1742<br>1756 1827 1929<br>1931 1933 2009<br>2040 2515 2532<br>2616 2761 2940<br>3059 3242 3244<br>3274 3351 3701<br>4349 4842 5172<br>5753 6094 6197<br>6199 6219 6221<br>6223 6280 6394<br>6431 6481 6552<br>6570 6586 6675<br>6682 6830 6876<br>6911 7093 7117<br>7348 7350 7439                                 |
| FokI     | 23 | 192(c) 493(c) 1043<br>1483(c) 1533 1588(c)<br>1662 1950 2245(c)  |

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|--------|----|--|
|        |    | 2393 2406 2442<br>2613(c) 3037(c) 3627<br>3975(c) 4011 4469<br>4756 4937 6108(c)<br>6726 6735  |
| Fspl   | 2  | 573 4685   |
| HaeII  | 17 | 267 596 890 1327<br>1816 2268 2391<br>2491 2566 3451<br>3553 3753 5556<br>5926 6299 7080<br>7323   |
| HaeIII | 29 | 417 543 660 829 904<br>1636 1807 1902<br>2860 2871 3067<br>3122 3259 3837<br>3926 3987 4003<br>4517 4784 4864<br>5322 5756 5774<br>5785 6408 6543<br>6889 7258 7356  |
| HgaI   | 19 | 35(c) 842 1271(c)<br>1833 2015 2568(c)<br>2605(c) 2612 2759<br>3248 3955 4376<br>5106(c) 5684(c) 6100<br>6626(c) 6671(c)<br>6900(c) 6906(c)  |
| HgiAI  | 9  | 33 2371 2780 2895<br>4240 4325 5486<br>5984 6664   |
| HhaI   | 64 | 122 151 266 574 595<br>710 889 942 954<br>1131 1235 1326<br>1582 1711 1756<br>1815 1829 1931<br>1933 2011 2267<br>2390 2490 2565<br>2761 3059 3086<br>3232 3244 3274<br>3450 3552 3701<br>3752 4349 4686<br>4779 5172 5281<br>5455 5555 5622<br>5892 5925 6066<br>6096 6199 6221<br>6223 6298 6554<br>6588 6677 6878<br>6911 7079 7086<br>7093 7095 7117<br>7322 7350 7415<br>7439 |
| HinP1I | 64 | 120 149 264 572 593<br>708 887 940 952<br>1129 1233 1324   |



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|---------|----|--|
|         |    | 1580 1709 1754<br>1813 1827 1929<br>1931 2009 2265<br>2388 2488 2563<br>2759 3057 3084<br>3230 3242 3272<br>3448 3550 3699<br>3750 4347 4684<br>4777 5170 5279<br>5453 5553 5620<br>5890 5923 6064<br>6094 6197 6219<br>6221 6296 6552<br>6586 6675 6876<br>6909 7077 7084<br>7091 7093 7115<br>7320 7348 7413<br>7437 |
| HincII  | 8  | 195 857 1481 3309<br>3557 4366 6251<br>7186  |
| HindII  | 8  | 195 857 1481 3309<br>3557 4366 6251<br>7186  |
| HindIII | 2  | 426 3505   |
| Hinfl   | 13 | 770 1337 1469 1688<br>1800 3408 4909<br>5426 5822 5897<br>6308 7104 7359   |
| Hpal    | 2  | 857 1481   |
| HpaII   | 34 | 209 334 609 627 955<br>1719 1866 1956<br>2314 2481 2491<br>2551 2975 2987<br>3054 3451 3894<br>3928 4371 4613<br>4723 4790 4824<br>5228 5418 5444<br>5591 6118 6152<br>6300 6367 6759<br>7000 7108   |
| HphI    | 20 | 986 1218 1257<br>1758(c) 2199 2427<br>2762(c) 3875 4181(c)<br>4216 4422(c) 4838<br>5065 6170(c) 6179(c)<br>6335 6410 6855(c)<br>7277 7310  |
| Ital    | 61 | 54 267 286 502 575<br>984 1037 1062 1127<br>1160 1226 1443<br>1446 1752 1883<br>2111 2256 2289<br>2403 2478 2571<br>2614 2754 2757   |

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|---------|----|--|
|         |    | 2854 2878 2946<br>3123 3154 3233<br>3275 3299 3345<br>3691 4164 4393<br>4488 4515 4854<br>5182 5388 5391<br>5456 5599 5754<br>5872 5875 5893<br>6009 6062 6159<br>6205 6235 6448<br>6571 6635 6655<br>6742 7113 7242<br>7371 |
| Kasl    | 1  | 7319   |
| Kpnl    | 1  | 615  |
| Ksp632l | 5  | 532(c) 3529(c)<br>4109(c) 5913(c)<br>6298(c)   |
| Mael    | 3  | 4715 5050 5303   |
| Maell   | 15 | 455 724 1051 1292<br>1300 3205 3511<br>3910 4306 4679<br>5095 6045 6247<br>6342 6415   |
| Maelll  | 28 | 459 479 699 725 783<br>897 993 1047 1170<br>1184 1283 1485<br>1736 2046 2330<br>2600 4247 4435<br>4588 4646 4977<br>5260 5376 5439<br>6046 6141 6338<br>6861   |
| Maml    | 1  | 1762   |
| Mbol    | 34 | 437 551 647 1013<br>1277 1703 1757<br>1777 1840 1853<br>2017 2132 2210<br>2762 3173 3539<br>4225 4261 4278<br>4536 4582 4600<br>4941 5046 5058<br>5136 5144 5155<br>5230 6209 6590<br>6694 7067 7445                         |
| Mboll   | 18 | 549 642(c) 1023<br>1953 3200(c) 3366<br>3546 3634 4126<br>4235 4313 5068<br>5139(c) 5930 6315<br>6660(c) 6831 7170   |
| Mcrl    | 15 | 334 554 1280 1628<br>1760 2213 2249<br>2536 2932 3143<br>3455 4390 4539  |

|        |    |   |
|--------|----|---|
|        |    | 5462 5886   |
| Mlul   | 4  | 1733 2513 2938<br>6680  |
| Mnll   | 27 | 364(c) 395(c) 533(c)<br>650(c) 689 978<br>1133(c) 1412(c)<br>1467(c) 1510 2434<br>2604 3530(c) 3924(c)<br>4535(c) 4741(c) 4888<br>4969 5369 5619(c)<br>5693 5902(c) 6164(c)<br>6194(c) 6542 7025(c)<br>7349 |
| Msel   | 33 | 201 298 347 359 366<br>381 393 424 490 799<br>856 1111 1480 1570<br>2146 2692 3584<br>3645 3976 4329<br>4694 4733 4968<br>5021 5035 5040<br>5092 6017 6577<br>6700 6894 7365<br>7424                        |
| MslI   | 10 | 1771 2328 2720<br>3266 4137 4496<br>4655 6732 7020<br>7050  |
| MspA1I | 18 | 269 523 1225 1607<br>2015 2405 2756<br>2783 3080 3169<br>3443 4272 5213<br>5458 6088 6710<br>7280 7373  |
| Mspl   | 34 | 209 334 609 627 955<br>1719 1866 1956<br>2314 2481 2491<br>2551 2975 2987<br>3054 3451 3894<br>3928 4371 4613<br>4723 4790 4824<br>5228 5418 5444<br>5591 6118 6152<br>6300 6367 6759<br>7000 7108          |
| Mval   | 18 | 475 602 906 1999<br>2567 2834 2868<br>3413 3687 3797<br>3965 5637 5650<br>5771 6405 6720<br>7260 7317   |
| Mvnl   | 55 | 836 952 972 1129<br>1233 1282 1417<br>1709 1735 1742<br>1756 1827 1929<br>1931 1933 2009  |

|        |    |   |
|--------|----|---|
|        |    | 2040 2515 2532<br>2616 2761 2940<br>3059 3242 3244<br>3274 3351 3701<br>4349 4842 5172<br>5753 6094 6197<br>6199 6219 6221<br>6223 6280 6394<br>6431 6481 6552<br>6570 6586 6675<br>6682 6830 6876<br>6911 7093 7117<br>7348 7350 7439      |
| Mwol   | 41 | 119 553 583 592 886<br>1556 1586 1748<br>2264 2501 2576<br>2622 2704 2753<br>2877 3056 3073<br>3090 3241 3454<br>3609 3696 4790<br>5178 5750 5864<br>5929 5979 6363<br>6453 6549 6651<br>6738 6875 6882<br>7083 7090 7092<br>7234 7328 7412 |
| Narl   | 1  | 7320  |
| Ncil   | 14 | 1866 1956 2315<br>2492 2552 3895<br>3928 4372 4723<br>5419 6118 6153<br>6300 7109   |
| Ncol   | 1  | 412   |
| Ndel   | 2  | 3388 5975   |
| Ndell  | 34 | 437 551 647 1013<br>1277 1703 1757<br>1777 1840 1853<br>2017 2132 2210<br>2762 3173 3539<br>4225 4261 4278<br>4536 4582 4600<br>4941 5046 5058<br>5136 5144 5155<br>5230 6209 6590<br>6694 7067 7445  |
| NlalII | 25 | 416 1098 1509 1520<br>1679 2542 3194<br>3367 3724 3779<br>4072 4465 4501<br>4579 4589 5080<br>5800 6060 6165<br>6241 6292 6819<br>6998 7019 7171  |
| NlalV  | 16 | 613 625 1229 1681<br>1889 3417 3708   |

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|----------|----|--|
|          |    | 4611 4822 4863<br>4957 5729 5768<br>6602 6889 7321   |
| Nsil     | 1  | 6243   |
| Nspl     | 4  | 3194 5800 6165<br>6241   |
| NspV     | 1  | 3502   |
| PfIMI    | 3  | 1676 2042 6262   |
| PleI     | 6  | 3402(c) 4917 5420(c)<br>5905 6316 7112   |
| PmeI     | 1  | 3585   |
| Ppu10I   | 1  | 6239   |
| Psp1406I | 4  | 3910 4306 4679<br>6342   |
| Pvul     | 5  | 554 1280 1760 2213<br>4539   |
| Pvull    | 5  | 523 3080 3443 7280<br>7373   |
| Rcal     | 2  | 4068 5076  |
| Rsal     | 9  | 613 1135 1614 1926<br>2512 3204 4427<br>5992 6827  |
| Sacl     | 1  | 2371   |
| Sall     | 1  | 3555   |
| Sapl     | 1  | 5913(c)  |
| Sau3AI   | 34 | 437 551 647 1013<br>1277 1703 1757<br>1777 1840 1853<br>2017 2132 2210<br>2762 3173 3539<br>4225 4261 4278<br>4536 4582 4600<br>4941 5046 5058<br>5136 5144 5155<br>5230 6209 6590<br>6694 7067 7445 |
| Sau96I   | 18 | 416 542 1972 2858<br>3120 3258 3706<br>3835 3925 4544<br>4766 4783 4862<br>6542 6887 6888<br>7232 7256   |
| Scal     | 1  | 4427   |
| ScrFI    | 32 | 475 602 906 1866<br>1956 1999 2315<br>2492 2552 2567<br>2834 2868 3413<br>3687 3797 3895<br>3928 3965 4372<br>4723 5419 5637<br>5650 5771 6118<br>6153 6300 6405<br>6720 7109 7260<br>7317           |

|         |    |  |
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| SfaNI   | 23 | 682(c) 695(c) 1502<br>2267 2642 2671<br>2903(c) 2957 3059<br>3809 3977 4207(c)<br>4456 4647(c) 5699(c)<br>5919(c) 5959 5995(c)<br>6130 6713(c) 6854<br>7042(c) 7045  |
| Sfcl    | 5  | 819 3302 4662 5340<br>5531   |
| Sful    | 1  | 3502   |
| SnaBI   | 1  | 3512   |
| Snol    | 7  | 29 2776 2891 4236<br>5482 5980 6660  |
| SphI    | 1  | 6241   |
| Sspl    | 3  | 177 1661 4103  |
| Styl    | 2  | 412 3490   |
| TaqI    | 20 | 18 330 343 389 1255<br>1303 1472 1852<br>2326 2665 2839<br>3376 3502 3556<br>3825 4254 5698<br>6259 6618 6640  |
| Tfil    | 7  | 770 1337 1469 1688<br>1800 5822 7359   |
| Thal    | 55 | 836 952 972 1129<br>1233 1282 1417<br>1709 1735 1742<br>1756 1827 1929<br>1931 1933 2009<br>2040 2515 2532<br>2616 2761 2940<br>3059 3242 3244<br>3274 3351 3701<br>4349 4842 5172<br>5753 6094 6197<br>6199 6219 6221<br>6223 6280 6394<br>6431 6481 6552<br>6570 6586 6675<br>6682 6830 6876<br>6911 7093 7117<br>7348 7350 7439 |
| Tru9I   | 33 | 201 298 347 359 366<br>381 393 424 490 799<br>856 1111 1480 1570<br>2146 2692 3584<br>3645 3976 4329<br>4694 4733 4968<br>5021 5035 5040<br>5092 6017 6577<br>6700 6894 7365<br>7424   |
| Tsp509I | 27 | 102 198 228 245 302<br>337 363 838 927   |

|         |   |  |
|---------|---|--|
|         |   | 1249 2688 3246<br>3251 3435 3498<br>3679 3973 4475<br>4730 5036 6213<br>6312 6464 6562<br>6955 7421 7441 |
| Tth111I | 1 | 6052   |
| Van91I  | 3 | 1676 2042 6262   |
| XcmI    | 5 | 2648 3393 6536<br>7052 7070  |
| XhoII   | 9 | 437 3173 3539 4261<br>4278 5046 5058<br>5144 5155  |
| XmnI    | 2 | 3626 4308  |

No cuts: AatI, AccIII, AgeI, AscI, AvrII, BamHI, BbrPI, BglII, BlnI, BseAI, BsmI, BspEI, BsrGI, DraII, EagI, EclXI, EcoNI, EcoO109I, KspI, MfeI, MluNI, MroI, MscI, MunI, NaeI, NgoMI, NheI, NotI, NruI, PacI, PaeR7I, PinAI, PmaCI, PmlI, PpuMI, PstI, RsrII, SacII, SexAI, SfiI, SgrAI, SmaI, SpeI, SspBI, StuI, SwaI, XbaI, XhoI, XmaI, XmaIII