

**Additional file 6- Table S2: List of the 321 resistance a**

| Locus Name | Linkage Group | Absolute Position(cM) | AK block  |
|------------|---------------|-----------------------|-----------|
| BS010373   | A01           | 59,3                  | U         |
| BS010374   | A01           | 59,3                  | U         |
| BS011600   | A01           | 59,3                  | U         |
| BS010796   | A01           | 60,3                  | U         |
| BS010797   | A01           | 60,3                  | U         |
| BS013696   | A01           | 64,6                  | F         |
| BS006114   | A02           | 22,2                  | R         |
| BS012525   | A02           | 27,1                  | R         |
| BS011149   | A02           | 32,7                  | R-Q       |
| BS006956   | A02           | 34,6                  | W         |
| BS011786   | A02           | 34,6                  | W         |
| BS009950   | A02           | 36,0                  | W         |
| BS008857   | A02           | 36,1                  | W         |
| BS011487   | A02           | 36,1                  | W         |
| BS011488   | A02           | 36,1                  | W         |
| BS011972   | A02           | 36,1                  | W         |
| BS012558   | A02           | 36,1                  | W         |
| BS011500   | A02           | 36,1                  | W         |
| BS008856   | A02           | 36,1                  | W         |
| BS013356   | A02           | 36,2                  | S         |
| BS010693   | A02           | 36,2                  | W         |
| BS011514   | A02           | 36,2                  | W         |
| BS012073   | A02           | 36,3                  | W         |
| BS012074   | A02           | 36,3                  | W         |
| BS012020   | A02           | 36,3                  | W         |
| BS012019   | A02           | 36,3                  | W         |
| BS010302   | A02           | 36,4                  | W         |
| BS010409   | A02           | 36,4                  | W         |
| BS012113   | A02           | 36,4                  | W         |
| BS012392   | A02           | 36,4                  | W         |
| BS012393   | A02           | 36,4                  | W         |
| BS012532   | A02           | 36,4                  | W         |
| BS012533   | A02           | 36,4                  | W         |
| BS013273   | A02           | 36,4                  | W         |
| BS009343   | A02           | 36,4                  | W         |
| BS010301   | A02           | 36,4                  | W         |
| BS008936   | A02           | 36,8                  | W         |
| BS013737   | A02           | 40,8                  | W         |
| BS010580   | A02           | 41,9                  | W         |
| BS012242   | A02           | 41,9                  | W         |
| BS007863   | A02           | 41,9                  | W         |
| BS011415   | A02           | 42,3                  | W         |
| BS012797   | A02           | 43,3                  | W         |
| BS008863   | A02           | 43,4                  | not found |
| BS012821   | A02           | 44,8                  | W         |
| BS012822   | A02           | 44,8                  | W         |
| BS012654   | A02           | 45,0                  | W         |
| BS009712   | A02           | 45,0                  | W         |
| BS013412   | A02           | 47,9                  | W         |
| BS013413   | A02           | 47,9                  | W         |
| BS013069   | A02           | 47,9                  | U         |

|          |     |       |           |
|----------|-----|-------|-----------|
| BS006921 | A02 | 52,6  | E         |
| BS010454 | A02 | 54,9  | E         |
| BS011946 | A02 | 55,9  | E         |
| BS007895 | A02 | 81,4  | V-W       |
| BS007957 | A02 | 85,2  | X         |
| BS009478 | A03 | 0,0   | R         |
| BS009479 | A03 | 0,0   | R         |
| BS010991 | A03 | 14,3  | R         |
| BS010992 | A03 | 14,3  | R         |
| BS007648 | A03 | 23,0  | R         |
| BS012520 | A03 | 25,5  | W         |
| BS008418 | A03 | 33,9  | W         |
| BS008250 | A03 | 42,4  | J         |
| BS008332 | A03 | 42,8  | J         |
| BS008044 | A03 | 97,6  | H         |
| BS008615 | A03 | 97,9  | not found |
| BS007795 | A03 | 98,2  | U         |
| BS007796 | A03 | 98,3  | U         |
| BS012282 | A03 | 112,3 | U         |
| BS013170 | A03 | 112,7 | U         |
| BS013090 | A04 | 1,1   | N         |
| BS008098 | A04 | 1,1   | N         |
| BS011090 | A04 | 2,5   | N         |
| BS011091 | A04 | 2,5   | N         |
| BS007253 | A04 | 3,6   | N         |
| BS007342 | A04 | 3,9   | N         |
| BS013595 | A04 | 4,0   | N         |
| BS012371 | A04 | 5,4   | N         |
| BS010053 | A04 | 5,4   | N         |
| BS010285 | A04 | 5,4   | S         |
| BS010286 | A04 | 5,4   | S         |
| BS009705 | A04 | 9,3   | S         |
| BS008288 | A04 | 9,6   | S         |
| BS009787 | A04 | 36,0  | J         |
| BS011538 | A04 | 51,5  | J         |
| BS011792 | A04 | 51,5  | J         |
| BS008434 | A04 | 54,4  | J         |
| BS010345 | A04 | 56,6  | J         |
| BS008983 | A04 | 63,1  | N         |
| BS009351 | A05 | 4,1   | J         |
| BS009777 | A05 | 4,1   | J         |
| BS011686 | A05 | 5,4   | J         |
| BS013037 | A05 | 5,4   | J         |
| BS012060 | A05 | 5,4   | J         |
| BS011842 | A05 | 7,7   | J         |
| BS011843 | A05 | 7,7   | J         |
| BS005820 | A05 | 26,3  | J         |
| BS010150 | A05 | 42,1  | J         |
| BS010151 | A05 | 42,1  | J         |
| BS007470 | A05 | 42,1  | J         |
| BS013203 | A05 | 47,4  | I-J       |
| BS013202 | A05 | 47,4  | I-J       |
| BS006729 | A05 | 48,0  | B         |
| BS006349 | A05 | 48,0  | C         |
| BS008392 | A05 | 49,2  | B-C       |

|          |     |      |           |
|----------|-----|------|-----------|
| BS006412 | A05 | 49,3 | B         |
| BS012837 | A05 | 49,3 | F         |
| BS008068 | A05 | 49,3 | B         |
| BS013752 | A05 | 50,3 | F         |
| BS005791 | A05 | 54,5 | F         |
| BS012908 | A05 | 54,5 | F         |
| BS007016 | A05 | 54,5 | H         |
| BS012736 | A05 | 54,5 | F         |
| BS013452 | A05 | 56,4 | F         |
| BS011380 | A05 | 57,2 | F         |
| BS009597 | A05 | 57,2 | not found |
| BS009596 | A05 | 57,2 | F         |
| BS007928 | A05 | 60,5 | F         |
| BS010863 | A05 | 83,8 | F         |
| BS010864 | A05 | 83,8 | F         |
| BS005646 | A06 | 0,5  | C         |
| BS005645 | A06 | 0,5  | C         |
| BS006214 | A06 | 4,5  | C         |
| BS009410 | A06 | 21,0 | not found |
| BS009411 | A06 | 21,6 | A         |
| BS009409 | A06 | 21,6 | A         |
| BS009698 | A06 | 25,6 | A         |
| BS008663 | A06 | 26,4 | A         |
| BS008662 | A06 | 27,2 | not found |
| BS012831 | A06 | 36,4 | A         |
| BS007437 | A07 | 0,0  | H         |
| BS007438 | A07 | 0,0  | H         |
| BS009489 | A07 | 1,2  | H         |
| BS007750 | A07 | 50,1 | >E        |
| BS009897 | A07 | 50,7 | E         |
| BS009898 | A07 | 50,7 | E         |
| BS009853 | A07 | 51,2 | E         |
| BS009854 | A07 | 51,2 | E         |
| BS013495 | A07 | 51,6 | E         |
| BS009118 | A07 | 51,6 | not found |
| BS009119 | A07 | 51,6 | not found |
| BS013494 | A07 | 51,6 | E         |
| BS009056 | A07 | 53,7 | E         |
| BS009846 | A07 | 53,7 | E         |
| BS009847 | A07 | 53,7 | E         |
| BS013793 | A07 | 53,8 | E         |
| BS008134 | A07 | 54,3 | E         |
| BS008135 | A07 | 54,3 | E         |
| BS013680 | A07 | 54,4 | E         |
| BS011617 | A07 | 54,5 | E         |
| BS011618 | A07 | 54,5 | E         |
| BS012925 | A07 | 58,4 | E         |
| BS012926 | A07 | 58,4 | E         |
| BS011521 | A07 | 59,5 | E         |
| BS011317 | A07 | 59,5 | E         |
| BS009869 | A07 | 61,3 | D         |
| BS010593 | A07 | 61,3 | E         |
| BS009870 | A07 | 61,3 | S         |
| BS011417 | A07 | 61,5 | E         |
| BS006019 | A07 | 61,5 | E         |

|          |     |       |           |
|----------|-----|-------|-----------|
| BS010813 | A07 | 66,0  | E         |
| BS010450 | A07 | 66,4  | E         |
| BS010427 | A07 | 67,3  | E         |
| BS006192 | A07 | 67,4  | E         |
| BS007976 | A07 | 67,4  | S-V       |
| BS005653 | A07 | 67,4  | E         |
| BS005978 | A08 | 0,0   | C         |
| BS011221 | A08 | 9,1   | U         |
| BS007968 | A08 | 9,8   | U         |
| BS010948 | A08 | 10,4  | U         |
| BS010008 | A08 | 12,4  | U         |
| BS010009 | A08 | 12,4  | U         |
| BS009949 | A08 | 12,4  | U         |
| BS009948 | A08 | 12,4  | U         |
| BS009770 | A08 | 12,4  | U         |
| BS009092 | A08 | 12,8  | I         |
| BS009091 | A08 | 12,8  | U         |
| BS013600 | A08 | 12,8  | I         |
| BS009093 | A08 | 12,8  | I         |
| BS013390 | A08 | 12,8  | U         |
| BS009159 | A08 | 14,8  | U         |
| BS009160 | A08 | 14,8  | U         |
| BS008102 | A08 | 16,7  | U         |
| BS008103 | A08 | 16,7  | U         |
| BS013188 | A08 | 17,1  | U         |
| BS013189 | A08 | 17,1  | U         |
| BS010855 | A08 | 18,1  | not found |
| BS010296 | A08 | 19,6  | not found |
| BS010295 | A08 | 19,6  | not found |
| BS008493 | A08 | 25,3  | T         |
| BS009136 | A08 | 27,5  | T         |
| BS006144 | A09 | 19,1  | X         |
| BS011388 | A09 | 19,1  | X         |
| BS006143 | A09 | 19,1  | X         |
| BS008578 | A09 | 46,3  | D-E       |
| BS007692 | A09 | 50,7  | D         |
| BS009519 | A09 | 57,6  | C         |
| BS011537 | A09 | 60,2  | L         |
| BS009542 | A09 | 60,2  | not found |
| BS012839 | A09 | 61,2  | B         |
| BS011285 | A09 | 72,0  | M-N       |
| BS005809 | A09 | 86,4  | N         |
| BS005810 | A09 | 94,7  | N         |
| BS012840 | A09 | 104,8 | F         |
| BS012841 | A09 | 104,8 | F         |
| BS006388 | A09 | 109,9 | A         |
| BS013289 | A10 | 5,1   | W         |
| BS009933 | A10 | 14,1  | R         |
| BS010123 | A10 | 14,1  | R         |
| BS009858 | A10 | 14,5  | R         |
| BS013675 | A10 | 14,8  | R         |
| BS013676 | A10 | 14,8  | R         |
| BS008347 | A10 | 14,8  | R         |
| BS008348 | A10 | 14,9  | R         |
| BS013092 | A10 | 25,4  | R         |

|          |     |       |           |
|----------|-----|-------|-----------|
| BS012098 | A10 | 26,9  | R         |
| BS011058 | C01 | 22,1  | U         |
| BS011248 | C01 | 59,1  | N         |
| BS008216 | C01 | 59,1  | P-T       |
| BS010134 | C01 | 59,1  | N         |
| BS011247 | C01 | 59,1  | N         |
| BS008815 | C01 | 59,7  | M         |
| BS008814 | C01 | 59,7  | M         |
| BS010247 | C01 | 101,0 | F         |
| BS010248 | C01 | 101,0 | F         |
| BS007662 | C02 | 39,6  | W         |
| BS013669 | C02 | 45,9  | W         |
| BS013670 | C02 | 45,9  | W         |
| BS011414 | C02 | 48,2  | W         |
| BS012069 | C02 | 58,3  | E         |
| BS011459 | C02 | 58,3  | E         |
| BS012572 | C02 | 109,6 | Q         |
| BS009248 | C02 | 112,2 | Q         |
| BS009249 | C02 | 112,2 | Q         |
| BS013590 | C03 | 16,0  | R         |
| BS012468 | C03 | 16,1  | R         |
| BS012467 | C03 | 16,1  | R         |
| BS013718 | C03 | 23,4  | R         |
| BS006918 | C03 | 38,1  | W         |
| BS006917 | C03 | 38,1  | W         |
| BS010334 | C03 | 46,1  | J         |
| BS010335 | C03 | 46,1  | J         |
| BS007190 | C03 | 57,4  | O         |
| BS012913 | C03 | 57,8  | T         |
| BS012912 | C03 | 57,8  | T         |
| BS008950 | C03 | 57,8  | U         |
| BS008951 | C03 | 58,6  | P         |
| BS008449 | C03 | 58,6  | P-T       |
| BS009768 | C03 | 133,6 | U         |
| BS009666 | C03 | 133,6 | U         |
| BS013374 | C03 | 133,6 | U         |
| BS007389 | C03 | 137,7 | U         |
| BS008104 | C03 | 138,1 | U         |
| BS008530 | C03 | 138,1 | U         |
| BS005673 | C03 | 151,6 | C         |
| BS009573 | C03 | 154,6 | not found |
| BS009572 | C03 | 154,6 | C         |
| BS013698 | C03 | 161,4 | F         |
| BS009368 | C04 | 0,0   | J         |
| BS009369 | C04 | 0,0   | not found |
| BS011469 | C04 | 0,0   | J         |
| BS011543 | C04 | 19,8  | J         |
| BS007154 | C04 | 23,1  | J         |
| BS011584 | C04 | 23,1  | J         |
| BS008851 | C04 | 25,8  | not found |
| BS008630 | C04 | 25,8  | J         |
| BS009040 | C04 | 27,2  | J         |
| BS010687 | C04 | 28,3  | J         |
| BS012415 | C04 | 30,2  | J         |
| BS012414 | C04 | 30,2  | J         |

|          |     |       |           |
|----------|-----|-------|-----------|
| BS013594 | C04 | 53,0  | N         |
| BS011485 | C04 | 60,7  | T         |
| BS011486 | C04 | 60,7  | T         |
| BS007668 | C04 | 61,5  | T         |
| BS007669 | C04 | 61,5  | T         |
| BS010829 | C04 | 64,8  | S         |
| BS009753 | C04 | 64,8  | S         |
| BS009752 | C04 | 64,8  | S         |
| BS006178 | C04 | 95,2  | J         |
| BS011623 | C04 | 107,2 | J         |
| BS011622 | C04 | 107,2 | J         |
| BS012158 | C06 | 53,3  | E         |
| BS008808 | C06 | 57,5  | E         |
| BS008807 | C06 | 57,5  | E         |
| BS008043 | C06 | 60,2  | E         |
| BS010586 | C06 | 60,2  | E         |
| BS011840 | C06 | 60,2  | E         |
| BS011684 | C06 | 60,2  | E         |
| BS011690 | C06 | 60,2  | E         |
| BS007566 | C06 | 60,2  | E         |
| BS011548 | C06 | 60,6  | E         |
| BS011502 | C06 | 60,9  | E         |
| BS009374 | C06 | 62,4  | E         |
| BS009375 | C06 | 62,7  | E         |
| BS011660 | C06 | 62,7  | E         |
| BS009909 | C06 | 63,4  | E         |
| BS012786 | C06 | 65,0  | E         |
| BS010662 | C07 | 0,0   | B         |
| BS008066 | C07 | 28,8  | L         |
| BS010779 | C07 | 41,9  | Q         |
| BS012779 | C07 | 45,6  | Q         |
| BS008723 | C07 | 45,6  | Q         |
| BS012777 | C07 | 59,2  | U         |
| BS013117 | C08 | 20,5  | A         |
| BS013118 | C08 | 20,5  | A         |
| BS010710 | C08 | 20,5  | A         |
| BS008642 | C08 | 30,1  | M         |
| BS012259 | C08 | 57,3  | N         |
| BS011327 | C08 | 76,9  | I         |
| BS010837 | C08 | 76,9  | I         |
| BS012252 | C08 | 83,8  | A         |
| BS006294 | C08 | 85,9  | A         |
| BS007763 | C08 | 92,7  | A         |
| BS009123 | C09 | 24,2  | not found |
| BS008715 | C09 | 43,8  | not found |
| BS008716 | C09 | 43,8  | not found |
| BS010897 | C09 | 44,2  | K         |
| BS006599 | C09 | 78,4  | R         |
| BS011237 | C09 | 78,4  | R         |
| BS011238 | C09 | 78,4  | R         |

ssociated markers

| Context sequence                                                               |
|--------------------------------------------------------------------------------|
| private                                                                        |
| private                                                                        |
| GAAGCTCTTCTAAAGTATCTGCAAAGTGAGCTATGGTCGGAGGCAGACAACCGCTGAAATCATTGTTGGCAAAT     |
| private                                                                        |
| AGATTCCTGTTTCGGTTTTCTCTTCGCTCAAATCCTCRGTCTCGTTCTCCACCGATGATCCGATTGCTGCGGT      |
| private                                                                        |
| private                                                                        |
| private                                                                        |
| CCTTGGCTCAGACCGAAGGATCGCTCAACAACTCACTCCCAAAGCCGCGATCGAGGCGTTTCACGACACAG        |
| private                                                                        |
| AGATAAACCGTTTCGGTTTCGGGAGGAGATGGGTTTAATGTCAGATATACCTCTGAAGATATAGGAAATTACTTG    |
| CACTGAATTATATATGAAAAAAATCATYGGTTCTTCTAGATTGTGTTTGTGTGTATCTAGAGACATGAACTCACA    |
| private                                                                        |
| private                                                                        |
| private                                                                        |
| private                                                                        |
| private                                                                        |
| ATAATGGGCCGGTTTTATTAAGGCCAGTAAAAAGACATTCATGCACGTACGTGTCTCCCGGTCATGTTTCA        |
| CGTGTTATCTGTGATCTTAGTCTACTTTCTTGATTGCTTTAGAAGATCGTCTGAGAATCWTAGGAGGGCATTGA     |
| private                                                                        |
| private                                                                        |
| private                                                                        |
| private                                                                        |
| private                                                                        |
| CAGCTTGTAGACCTGCTTGTTTATAATTATAGGTAGAAGTGTGCTCATTACAAATACTGCATGGCTTAACAGCTG    |
| TTGAGCAGCTTGTAGACCTGCTTGTTTATAATTATAGGTAGAAGTGTGCTCATTACAAATACTGCATGGCTTAAC    |
| private                                                                        |
| private                                                                        |
| private                                                                        |
| private                                                                        |
| private                                                                        |
| private                                                                        |
| private                                                                        |
| CMAATACACACCAACATTACATACATAATTTTAACGAACCTATATACTTACTGGCTTTGGAGTTTCGGACCAAAG    |
| TTAAATATAATGCCCCCTTAACCCCAAACCTCTTCAAACACACTTCTTTCTTCTCATTTTCTCTAACCTCTCCCTTCT |
| private                                                                        |
| CCACAACWTCAGTCAGCTTCACTTTCATCTTCATGATGCCTACTTGAACCTAAGATCTCTTTCTTCGACTGTTCTA   |
| private                                                                        |
| private                                                                        |
| GGTAGCTTGCCAGCTATAACCGCCGTGGTTGTTGTTTTAGCGACTGTCTT[C/T]CCCTCCCAGTTTGGTCGTCTT   |
| private                                                                        |
| private                                                                        |
| private                                                                        |
| private                                                                        |
| private                                                                        |
| ACTGTGAAGCCATGAGCTCTCTGTCTCTAAAGATCATGGAGCTTCTGGGGCTAAGTTTAGGCGTAAACCGCGA      |
| private                                                                        |
| private                                                                        |
| CGAGAAGTACGTCCAGACTTACCATCTCGATGGATACAACTTCTGGGTTGTCTGGGTGAGAACAAATAACTTAATC   |

private

private

private

private

GTAAAGAGTTCAAGGCAGTGGTSGAGGAAAGAGATACATCAGGAGGGCAAA[A/G]TGAAAGGCCAAGGAACTGG  
AACGCCTTCTGCAGATTCTCATCCAAGTCACTGCATAAAACCAAAAACTCAAATCACATGACAATATCCAATCGT  
CRATCTCATCRGCGTAAGCGCTGACTCCAACTCAAGACACACACCGTCACCTTTYGCCACACTCACAACCATC

private

CTTCATGAAGACAATGCTCATCACTTGCCTTCCCCTACCTCTCTCCCTTCTTGCCCTCCTCATCTCTTCTACGGT  
TTCGAAGGAATAGAGCGTCTTGGTTTGGTTACAGGCGGTGAAATMGCTTC[C/G]ACCTTTGATAACCCAGAGTC  
TGACCCTATCCTTTAACCAACCCGAATAATCACCAAGATAATAATCAAGATACCTCCGGTTCATCACAAACCGG

private

TTGAGCCGAGATCGAGAGGAAGGAGTGACATGCCGGTGATGTAGTATATC[A/G]TGTTTCCATTAGCCACGTGT

private

CAGCAGCCTAAGCTTTTCGTCGGGATGATTCTTATCCTCATCTTTGCGGA[A/G]GCRCTTGCTCTCTATGGTCTC  
CGCATCTGCATAGAGGTAACCTTTATTATATAAAGAGACCTCAAAGTCATTCCATTTTAACGGAAAAGCTCTCCAC  
AACTGCGCTCCGATCATGCTCCGTTTGGCGTGGCATGATGCTGGAACCTA[C/T]GATGCTGAATCCAAGACCGC

private

GCCTSTGGCTTCCTGATCTCTCAAGGCCCKGAGCTCGTCTCAGGWACMTCTGATTCGGTAGCTTTGTCCTTTGA

private

private

ATAGTAGGATTCTACTCAGATGTCACTTGCAGTTAACTTATTGAGTAATG[C/T]AGCTTCATTGAATCTCTGTACT

private

GCCTCAGAGAGTGATACGCCGGAGACAGTGGGGACAAAGTCGATGAGCATCTCRCCGAAGCTCACGATCAAG  
GCTGAGGTTGTGGCGAGGCTTAAGTCTCTGGAGGAGGCGGCTGCACCGCT[C/T]GTGACTTTCTTTTGAACCG

private

private

private

CCTCCCTTGAAAGATAAACAAMGAGATGATGGCAAATTCGTAAATAAGAACGATGGCAGRATTGTAAWTART  
CTCCGCTCACATCAATGTCCACCACCTCCGGAAAATCTCGCATCCCTTCCTTCTGAATCCCCTTCAAAACCTCG  
TTGCGGATCTGACTCTCGGATTCGCGAGGGATTCTGCGGTGAAGAGGATGATGATGTCGGTTGCTGAGCTGGC

private

GAAGAGGCGGGGAAGAAATGGACTTTCTGCAACAACAAGGGATTTCGAGTT[A/C]AAGTTATCCCAGGGATTACA

private

GTTTCGCCGAGGATATYTAYAGCGTGTGGGTAAACAAAGCWAARGAAGTGCTACAAAAAGCTTAAGCTTCCCTC  
TTCTCTTTTATTGACARCGATCAACTTTCTCCTTATTGACTCATATTGCCCTTACGAAGGAATGAATTCTAGG  
TGTTGTTTCATAACGTTCTTCCCTGACCAAGCAGAGAAGCTGTTTCCTYCA[A/G]GCTAAAGACAAGAGAACGACA

private

AGAATTACTTTTGTATTGTGCTAGTGTACATCAATTGCAAGATGTTAGTATTATCTGAGTAAAATGATAGTGTTT

private

TTCAAGCTTGTATATGATCATATCMGAYGGTATCTTMAGYTCATGGGAGCCAACTAGCCACGGATGACCTGA

private

private

AAGTCGGCGACACCACTCATCAGGGGTCAAGAGGTTCTACCGAGAGGCTAGGCTCATTAGAAGGAGAAAAAG

private

private

private

private

private

WTGCAAGAAAACAAMAAACCTCTCCCTTCAGAGAGCCTTTAAGGTAACAT[A/G]TATGCAGACACCGTTGGAGC

private

TCTCCTCAGGTGGAAATATTGAACCATGAGGCAGTGGGAGGTTTTGTTTCTCATTGCGGATGGAACTCTATAGT

private

TGTAGAGAGTCATGTAGATTCAAGGTATCACTTCGTACTCAACTGAAATT[A/G]ACTCTGTTTGGTGATACTGTAC

private

private

private

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