

6a)

CG32582 focal and paralogous regions
Martinez/Needleman-Wunsch DNA Alignment

Minimum Match: 9; Gap Penalty: 1.10; Gap Length Penalty: 0.33

D. mel region including coding sequence (above, X:15668213-15672184)

D. mel region including noncoding sequence (below, X:15778012-15782410)

v10 v20 v30 v40 v50 v60 v70 v80
-----TTGATTTGATTGTTGGTTCGAGGATTTATT-GTTGTTAAATTCGCTTCGAGTTT--AGTCGGTTTCTGGTTTAAAGATTCGGTTTCC
TT T A T G GAG A TT G AATTG CGAG T A T GG CTGG AA AT G
ACTAGTTAACCTAAAATGGACGGAGTAAAAGTTAGCAACAATAAAG-CCAGATGGAATGGGAATCGG---AAAATGGGAA---

v90 v100 v110 v120 v130
ATTGGAACGTTTGTAGTCGACGAAGACAAAAGATTTTGGAAAAACA-----TGTAG--TTAT-----GG
A TGGAA T A AAA AAA GA T TGGAAAACA TGTA TTAT G
AATGAAAATGGAAAATGGGAAAATGGAATGAAATGGAAAACAACCTTAAACAGCAACAATAATGTGTTATCTATGTGTGAGTGTG
^520 ^530 ^540 ^550 ^560 ^570 ^580 ^590 ^600

v140 v150 v160 v170 v180 v190 v200 v210
ACAGCACTG--ATGCGG---CAAGAATGAGGAAAAATCA--AATTGTGGG---CGTTATTT-TATTGTGATAG-AAAGTGACAGCGT
A A A T AT C CA AT A AA AAT A AA TG G G C ATTT TATT T AT G A A TGA A CGT
AAATAAATAGCCATCTTTTATTCATAGATTAATAACAATTTAATGAGTGCATCCCAATTTATATCATAATCGTATAATGATA-CGT
^610 ^620 ^630 ^640 ^650 ^660 ^670 ^680 ^690

v220 v230
CACCGGATGA-----AAAAATGAAAG-----AT
GATGA AAAAAATGAAAG AT
ATATATGATGAGAGACAACAAAACCGAAAAATGAAAGCAAAAGCTTAACAAAACAAAACCGAAAACAACAGCAACCGCATTAACGAAAT
^700 ^710 ^720 ^730 ^740 ^750 ^760 ^770 ^780

v240 v250 v260 v270
AAA-----GGCCTATATGTA-----TGTACAT-----ATGG-ATGTAACGGCCCT
AAA GG ATAT TA T T CAT ATGG ATG AA G C
AAATAATTA AAAATGGGAAATTTTACATATTTTTTGGCATACCTCGGACCAACAAATGGAATGCCAAATGTTGAGATAGAAAATCTTTTC
^790 ^800 ^810 ^820 ^830 ^840 ^850 ^860 ^870

v280 v290 v300 v310 v320 v330 v340 v350
-----TAAAAATAAACACCGAGTCTCTTATTGTATCCCCAATCGCTTTTGTGCAAGAAAATATATAGACGAAATTTATTCCTACGAT
TAAAAATAAAA T CAA A AA A A A AAA A
AAAAAAAATAAAAATA-----TACAAAACAAAACAAAACAAAACAAAAC-----
^880 ^890 ^900 ^910

v360 v370 v380 v390 v400 v410 v420 v430 v440
TAATCCTTTGATCGGATTTTATTTCGTTTTCTGCGTTTTTTCGCACTTCCCGTTACGACGGGAAAATACAGCACTTTATTTTATTGG
CA T CCGT A AC G AAA
-----CAATGACCGTAA--ACAGAAAA-----
^920 ^930

v450 v460 v470 v480 v490 v500 v510 v520 v530
AGGTGAGCGAGGAGAGAGAGAGAGAGTGAAGCGAATCAAGAGAGAGAAATTTGAAAAGAAAAGAGCGACATTTATCATCAAAAATCGCT
C A AA AGA AAT AAAA AAA AG CA A TA
-----CCACAAAAGAAATAAATAACAAAACCAAAAAGCAAAAATAA-----
^940 ^950 ^960 ^970 ^980

v540 v550 v560 v570 v580 v590 v600 v610 v620
GCTCACACAGAAAAGTAGCAGCATGTGAGTTCGCTTTGAACAATAGTCACTGACTAATACATGTACAGCAATTTTGTCTTGTGTTT
-----AAATTT
AAAT T
TTCCAGCTTTTAAACATCCATTTGCTTTCATTAGGGTGACCAAGGGCTTCTCTATGCTGAGTTTAAAAATTTTTCGACCAATGATTC
^1530 ^1540 ^1550 ^1560 ^1570 ^1580 ^1590 ^1600 ^1610

v630 v640 v650 v660 v670 v680 v690 v700 v710
CCCTCCCCCTGRTGTCATGAAAATCGAAAATCGCATTTAAAATATCACTGTTTTGCGCCTGATAACAATGGGCAATGCCATGAAAATGG

v720 v730 v740 v750 v760 v770 v780 v790 v800

ACGAAAATTCGGTGTATATACATCAAATAGTGTAGCGGTAATTCCEAATTCACACGACACAGCAGCACTCGCGCACACACATCCAGAT

v810 v820 v830 v840 v850 v860 v870 v880 v890
GAGCGCCACACTTCGAGTGCAGCAATATGCCACATAAACCAAGACATAATTTAGATAAACCGTAAATTAATTCGATGCTTTTTCATCAAAA

-----AAA

v900 v910 v920 v930 v940 v950 v960 v970 v980
TAAACAAAATTTGTA--TGTATATATTCGATTTGCAAGGAAACACACACAGCACTT-TAGCA--CTTTACATTTTTTCCCAATGATCG
TAAACA AA G A TGTA ATAT A TT A A A A A T T TA A CTTT C T A A T G
TAAACACAAAACGAGCTGTAATAATGAAAATTAATTTATGCTAGTAGTAATATATACGATCCTTTGCTGGAGGTTGAGAGAACTTG

v990 v1000 v1010 v1020 v1030 v1040 v1050 v1060 v1070
AA-AGATATTTGGAGCCCG-TATGCTTACTGCAATTTAACAAAAATGTACGCTAAGTACTAT-CATACTCGAAATATCACGCTGGTGT
AA A T TGG C G TA CG G AA AA A AA TGT C CT G C C CT AAA AA C C C T TG
AACATTTTCGATGCTCAGCGGACGGCAGGAAA--AATACAATTTGCACTGGCGCCAGCCGGGCTTTAAAAAACCC--CTTATTG
^1080 ^1090 ^1100 ^1110 ^1120 ^1130 ^1140 ^1150

v1080 v1090 v1100 v1110 v1120 v1130 v1140 v1150
TTCGTAGATGACGGGACACACACTGA-AGACAAAC-TGAGCTCT-TATCAAGCTCTAACA-AATGAGTTTATTTTTCTTTTGTGGAC
GC A T ACAC ACTGA AGA AA TG CCT T C AG TCT AAT TT A T
GGGCACTT-----ACACGCACTGATGAAAATTTGGGCTATATTCGCACTTCTCTCAATAATCTTAAAAATGGGAAAACCA--
^1160 ^1170 ^1180 ^1190 ^1200 ^1210 ^1220 ^1230 ^1240

v1160 v1170 v1180 v1190 v1200 v1210 v1220 v1230 v1240
TAAAT--ACTGCTGCAAGCAAGGTAGAGGTGTGAAAGTTAT-ACAATTAATGCCGATATATACGGCAATATGCAATTCGCTGGAGT
AAA A AC AA AC A A A AA G AT A A AA CG TATATAC AAA AT AATT A T
AAAAACAAAACAAAACAAAACAAAACAAAACAAAATGGAATGAAATGAAACAAAACGGCTATATACATAAAAAT--AATTAAGTAAT
^1250 ^1260 ^1270 ^1280 ^1290 ^1300 ^1310 ^1320 ^1330

v1250 v1260 v1270 v1280 v1290 v1300 v1310 v1320
GAA-AAAACATCGATACCACTTCAACATTCGAATCGATATTGT--ATCGCACATCC-TACTGTACACGATTTAT-TCAT-AATA
AA AAAAC T GA A ACAT AA GAA ATA T AT A ATC TA GTTA A GTAT AT T AT AA A
CAAGAAAACGT-GAAA--ACATGAAAGCGGAGAAAATAAATCGGAATTAATATATCTGTATGTTA-AAGTATGAATATGATCAACA
^1340 ^1350 ^1360 ^1370 ^1380 ^1390 ^1400 ^1410

v1330 v1340 v1350 v1360 v1370 v1380 v1390 v1400 v1410
TTCGATGTAATTTATTTTATGATTAATGATTAATCTTTGTAAGGAAACAACA--AATTTATTTTATTTATCGCTTCAATTA-TATT
T AA FAA A AT G TAA FA T TA C T T G AACA CA AAT FAT TATT TA C T ATT A
TA--AAGTTAAGCAAT--GCTAATGTAATTTTTCGCTT-TTGAACATCACTAATATATCTGATTTGACCG--TAAATTAAG--
^1420 ^1430 ^1440 ^1450 ^1460 ^1470 ^1480 ^1490

v1420 v1430 v1440 v1450 v1460 v1470 v1480 v1490 v1500
TTCCGATATAACAGTTTTTATGATCAATAATACATAGTAAAGTTTAAACAGGTGTATTCGAGTATCCAATTTGATATATCTCTAATTTGGAA
CC TTTAGA AT A C TACG AATT
---CCA-----TTTGA--ATGAAACGTACG-----AATT-----
^1500 ^1510

v1510 v1520 v1530 v1540 v1550 v1560 v1570 v1580 v1590
ATCTATTTTTATAGCAATTTAATTTGGAATGTGAAGTTATTTATCCGGTACTCGTAGATTAACAGAACACACCCGAAAAAATTT

^1520

v1600 v1610
-----CACT--TTGCA-----CTCA
CAGCT TT CA CTCA
CAGAAATCGCAGTGCATTTCCAAACATTTTGGACCCTGCACTCGTCTTCTCATCTCTCGCTACTTGTCAAAATGCTCTGAAAACCGG
^1620 ^1630 ^1640 ^1650 ^1660 ^1670 ^1680 ^1690 ^1700

v1620 v1630 v1640 v1650 v1660 v1670 v1680 v1690 v1700

v1620 v1630 v1640
-----CACTATTCGCTAACGGGTATCTGATGCTGGAG


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^3120 ^3130 ^3140 ^3150 ^3160 ^3170 ^3180 ^3190 ^3200
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AGTACACAAGGTAGTATCCAAATTTTATTTGTTCAATTTGTTCAATGTGCGTTCTGCCTGTAGCGCCAGTGCCTTCTCCGTTGTCGGCTT
^3210 ^3220 ^3230 ^3240 ^3250 ^3260 ^3270 ^3280 ^3290
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CCAGGAGTTCGATGCTGTGTA AAAAGTTTTTCAGGATGTGTGCATGTTTTTCGTCCTCTCGCAGCCTTGTGTCCAGGTAAGCGTTGCAGG
^3300 ^3310 ^3320 ^3330 ^3340 ^3350 ^3360 ^3370 ^3380
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GCAGTCCATTGTCGACAGCTTGATTTCTTGGAGCCATGTTCTTAAATGGAATTAAATCGCGTCCGAATGTTTATATCTGGGTTAGGCT
^3390 ^3400 ^3410 ^3420 ^3430 ^3440 ^3450 ^3460 ^3470
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v3380 v3390 v3400 v3410 v3420 v3430 v3440 v3450
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TACAGTGTGACCGTTGATTGACAT-----GAAAAG-----AAATAGA-TTCTATGAGAAGTATTCAAA-----AAGCGCC-----
^3480 ^3490 ^3500 ^3510 ^3520 ^3530
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CTATCTGTGAGTTTCTAAATTTCTGATCAAGTGGGCATGAAAATAACATTTTGTTGTTGTGACTTTCGTATCAGTAAACGACCAGT
GTTT C A T AACATT TG
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v3460 v3470 v3480 v3490 v3500 v3510 v3520 v3530 v3540
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TAACATTTGGCCACACCCTGAAAACAGCTCCGAAAAAATTCACAAAATAAGCCGTTGAAAAATTTTTCAAAAGTAAAAGGGCAGGAA
GCC GCAC TG CT A C A AT AC TG TACAAA
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v3640 v3650 v3660 v3670 v3680 v3690 v3700 v3710 v3720
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AATTAGCCTTTTCTACGTTTATACATATTTGGTAAAAATTCCAAACCCAGTATTTGTATCCAGGAACAGAAGGTAAGTTTCAAATTTA
-----
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v3730 v3740 v3750 v3760 v3770 v3780 v3790
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AACCATTTTGTGACACCAATCGCGTGTCTCACACACCCTCAATCACAAATCAAATTTTCGGTCCAAATAAAAAA-----
ATAAAAAA
-----
-----
v3800 v3810 v3820 v3830 v3840
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AACAGTACAAATTTCAAAATATAATTTAGCAAAAAAATAATTTGTTTACTTTGAAATGCAATTTAACTTTTATTCGCCAATCACTCTGT
^3620 ^3630 ^3640 ^3650 ^3660 ^3670 ^3680 ^3690 ^3700
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A-----AGCTTTCGATAGATA-----TCGGACAACATT-----TTTTTCGTTA-GCCCCAT-----CCATTC
A A T TG T A TA T ACAAC T TT T T C TT A G C C AT CCA
ACACAGTACTTATGATTTAATACTTTCACAACGTAATTTATATTGGGATTTGCACTTTATGGCCAAATTTGTTATAATGACCAAAA
^3710 ^3720 ^3730 ^3740 ^3750 ^3760 ^3770 ^3780 ^3790
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v3900 v3910 v3920 v3930 v3940 v3950
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ATTTT-----AGTTCATCGAAGCAGTTGT-----ATTTTCCAAATTCGTTGT-----TACTTTCGACATT-
A T AGT T AAG AGT T ATTT C ATTC TTGT T GTTT A AT
AAATAAGCAACAACAACCAAGTAAATTTGAAAGCAATTTGAAGATTTGCGTATTC-TTGTAGAAAAGTACATGTTTAAATAATG
^3800 ^3810 ^3820 ^3830 ^3840 ^3850 ^3860 ^3870 ^3880
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v3960
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-TC-ATACATTTGGT---TGAT
TC AT ATTTG T AT
ATCGGATGATTTGACCAATAAT
^3890 ^3900

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6b)

CG32690 focal and paralogous regions
Martinez/Needleman/Wunsch DNA Alignment
Minimum Match: 9; Gap Penalty: 1.10; Gap Length Penalty: 0.33
D. mel region including coding sequence (above, X:10048490-10052044)
D. mel region including noncoding sequence (below, X:9401077- 9404826)

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v610 v620 v630 v640 v650 v660 v670 v680 v690
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v700 v710 v720 v730 v740 v750 v760
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v770 v780 v790 v800 v810 v820 v830 v840 v850
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v860 v870 v880 v890 v900 v910 v920 v930 v940
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v950 v960 v970 v980 v990 v1000 v1010 v1020 v1030
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v1040 v1050 v1060 v1070 v1080 v1090 v1100 v1110 v1120
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v1130 v1140 v1150 v1160 v1170 v1180 v1190 v1200 v1210
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v1220 v1230 v1240 v1250 v1260 v1270 v1280 v1290 v1300
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v1310 v1320 v1330 v1340 v1350 v1360 v1370 v1380 v1390
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v1400 v1410 v1420 v1430 v1440 v1450 v1460 v1470 v1480
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v1490 v1500 v1510 v1520 v1530 v1540 v1550

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AAATTCGAGCTCAACGAGGTATGACATTCATATTCAGACAATTAATTTTAAAGTTATGGCCAAAAAAGTATTGATGACCGAAAT
^2720 ^2730 ^2740 ^2750 ^2760 ^2770 ^2780 ^2790 ^2800

v3530 v3540 v3550
--GAAAGTGGCG-----AAATCCTAGATGGCGCCAGCG
GAAA CGG AAA T GAT C A CG
TCGAAAAACGGATTTGCCAAAAAGTTGATATTTCAAACG
^2810 ^2820 ^2830 ^2840

6c)

CG15323 focal and paralogous regions

Martinez/Needleman-Wunsch DNA Alignment

Minimum Match: 9; Gap Penalty: 1.10; Gap Length Penalty: 0.33

D. mel region including coding sequence (above, X:19942791-19945740)

D. mel region including noncoding sequence (below, X:19928993-19931847)

v10 v20 v30 v40 v50 v60 v70
CGTAAGATT--AGCAATGAAAAGAAGATTTTCAACAGAATCTTAAAGGGCCGACGCTCACTCGGCCCTCGTGAATTCG
T A TT AGCAATGAAAAGA GATTTTCA AGAATCTTAA GGGCCGACGCTCA TCTCGCTCGTCAATTCG
--TCATTTTCGAGCAATGAAAAGACGATTTTCAATAAGAATCTTAAAGGGCCGACGCTCACTCGGCCCTCGTGAATTCG
^870 ^880 ^890 ^900 ^910 ^920 ^930
v80 v90 v100 v110 v120 v130 v140 v150
CTTTATGATTCCTGCTTTATGATTCCTCGGTGATAAATGGGTTTCGGTCACTGAATCCAATGAAGACATCTCCAGTTTAC
CT G TTTATGAT CTT G CGAATATGGGTTTCGGTCACTGAATCCAATGAAGACATCTCCAGTT AC
CT-----GTTTTATGATCCTTAAGACGATAAATGGGTTTCGGTCACTGAATCCAATGAAGACATCTCCAGTTGAC
^940 ^950 ^960 ^970 ^980 ^990 ^1000
v160 v170 v180 v190 v200 v210 v220 v230
CATATACTCGACGAAGGCCATCTGGATGCAAGCGAGGCACGTGAG--CTAGGCTGCTAGACTGTCCCTGATCCCTGAGTGT
CATATACTCGACGAAGGCCATCTGGATGCAAGCGAGGCACGTGAG CTAG TGCTAGACTGTCCCTGATCCCT AGTGT
CATATACTCGACGAAGGCCATCTGGATGCAAGCGAGGCACGTGAGTCTAGGGTGTAGACTGTCCCTGATCCCTGATGTTG
^1010 ^1020 ^1030 ^1040 ^1050 ^1060 ^1070 ^1080
v240 v250 v260 v270 v280 v290 v300 v310
CTTCTAAGTTTATGTTGATGAGTACCCAGTATGAGTCCGTGACATCTGGCGACTGCAAGATCCGAGAACAAATCC
CTTCTA GTT ATGTTGATGAGTACCCAG AGCTATGAGTCCGTGACATCTG GCGACTGCAAGATCCGAGAACAAATCC
CTTCTAATGTTATGTTGATGAGTACCCAGTATGAGTCCGTGACATCTGAGCGACTGCAAGATCCGAGAACAAATCC
^1090 ^1100 ^1110 ^1120 ^1130 ^1140 ^1150 ^1160
v320 v330 v340 v350 v360 v370 v380 v390
AGCTTAAGTGGTCCGTTGCATTTAGCGGCAAAACCCGACAGAAGCTTGAAGTGGACGACGACAGCAGTCCGTGAGAGAGA
AGCTTAAGTGGTCCGTTGCATTTAGCGGCAAA CCGACGAGAAGCTTGAAGTGGACGACGACGACGAGTCCGTGAGAGAGA
AGCTTAAGTGGTCCGTTGCATTTAGCGGCAATCCCGACAGAAGCTTGAAGTGGACGACGACGAGTCCGTGAGAGAGA
^1170 ^1180 ^1190 ^1200 ^1210 ^1220 ^1230 ^1240
v400 v410 v420 v430 v440 v450 v460 v470
CTGGCACTGGCGCCCATCAGTAAATCAATGCGTTGAGAACTACGAAACTCTGGGTCCGCGAGCATAAAGTTTTGGGTTAT
CTGGCACTGGCGCCCATCAGTAAATC ATGCGTTGAGAACTACGAAACTCTGGGTCCGCGAGCATAAAGTTTTGGGTTAT
CTGGCACTGGCGCCCATCAGTAAATCTATGCGTTGAGAACTACGAAACTCTGGGTCCGCGAGCATAAAGTTTTGGGTTAT
^1250 ^1260 ^1270 ^1280 ^1290 ^1300 ^1310 ^1320
v480 v490 v500 v510 v520 v530 v540 v550
GTTCCAGGTGCAAGGGTGTCAATGCAAGAAGCAGCGTGGCTTTCATATATTTGGAGGCTATTGAGTATGTTAGCGTTC
GTTCCAGGTGCAAGGGTGTCAATGCA AAG ACGGCTGGCTTTCATATATTTGGAGGCTATTG AGTAGTATG GTTC
GTTCCAGGTGCAAGGGTGTCAATGCAATAAGAAGCAGCGTGGCTTTCATATATTTGGAGGCTATTGAGTATGTTAGCGTTC
^1330 ^1340 ^1350 ^1360 ^1370 ^1380 ^1390 ^1400
v560 v570 v580 v590 v600 v610 v620 v630
CAGATCGCATGAAATGTATTTACTGACGAACCATCTGTCTCAAAGCTTCTGACATCTTGAAGTTGAAGCTGCAATGGA
AGATCGCATGAAATGTATTTA
GAGATCGCATGAAATGTATTTA-----
^1410 ^1420 ^1430
v640 v650 v660 v670 v680 v690 v700 v710
GATCCACCATCAACAGAGCAGCGCATGAAATGAAGATCTTCTGAACGGTTTCTCAGTAATACGGTGGCAGTATTAAGCC
AATG
-----AATGT-----
v720 v730 v740 v750 v760 v770 v780 v790
GCACAACATATTTACCAAGATCTGGCCAGAAGAGCAGAAGACGTTCTTAGCGTCTATGGTATGATGAGTCAGAAATTA

v800 v810 v820 v830 v840 v850 v860 v870

ACGTTTCTCCAGGCTGTGATCTTTTCATGTGGTGAAGCGGAGGCCAATTTGGTGTCTAAATTCGAAAAGAGTTGCACACCT
A
-----AT-----
v880 v890 v900 v910 v920 v930 v940 v950
CGGTTGATAACCACTCCTGATACAATATACCAAAATACCAATGCAATTTATGGTCACACTATGTTACTGAATGGACTTAGTG

v960 v970 v980 v990 v1000 v1010 v1020 v1030
TTAACGCATAAATTAATATTATGGGCATTACTTAAATGGTTCGTTAATTAGCACACTTATATACTATAAAAACAACAAA

v1040 v1050 v1060 v1070 v1080 v1090 v1100 v1110
ATAATCATCTTTGTCTAATATAGAAATAAATAATCCGCTCTTTAAAGTGAGAGACAAGTTTCGAGATTGGATATATTTGCTCA

v1120 v1130 v1140 v1150 v1160 v1170 v1180 v1190
AATGATATATATATGGCAAAATTTTCAAACCTTTGTATATTCGAGCATTCCCTAATTTCAAAGGAACCTTAAAAATCCAC

v1200 v1210 v1220 v1230 v1240 v1250 v1260 v1270
ATTGAATTCGATCAAGTTGGCATGTCTGCTGACACCTGAACATGAAGTTTCGTCGCACTGAAAATAAAGTTCACTTTCC

v1280 v1290 v1300 v1310 v1320 v1330 v1340 v1350
TCTCACCAAATGCCTAGGAACAATATCCAGAGCTCAACTGAATTTAGAAATGGCGAGAGAAGTCCGACCGGATCCCAAG
GAAGTCAACGCG ATGC A
GAAGTCAACCGAATGCATAT
^1440 ^1450 ^1460

v1360 v1370 v1380 v1390 v1400 v1410 v1420
GCATCTAAAAACAAGTACATGACGCGAGGATCCTGAGCAGCCAACTGAATC-----GTCCACCCAGA-A
CA CTA AATCAAC AGTA TGACGAG AGGATCCTGAGCAGCC ACTG ATC GT C CC A A
TCAACTAGAAACACAGGATTTGACGAGGAAGGATCCTGAGCAGCCGAGTGTATCGAATATGATAGTTCCGCTACTTTA
^1470 ^1480 ^1490 ^1500 ^1510 ^1520 ^1530 ^1540

v1430 v1440 v1450 v1460 v1470 v1480 v1490
GGAAGAGGGTTCGCAGTCTTCAGAG-----TCCGAGGAA-----GAA-----TACTTTAAGAAATGTCTCCGAGCGCTTCGA
G AGGGT GCAGTC T A AG T C GA GAA T CTTT GAA G C AGCGC TCGA
CACGAGGGTAAAGCAGTCCCTTACAGGCTTCTTCTGACAATTAAGCTTTTTCTTTTGAA-GAGATCCAGCGCATCGA
^1550 ^1560 ^1570 ^1580 ^1590 ^1600 ^1610

v1500 v1510 v1520 v1530 v1540 v1550 v1560 v1570
TAAGGCATAAAGGACCTGAAAGATCTGATTGCCCTGAATGAGAAGAAATGTAATAGGCTGTTATTTCGATGCCCTCTGG
T AGGA ATA AGGAC TG A CTGATTG CC AA GAGAAGGAATGT A A CTGT T TC CTC TG
TGAGGAATACAGGACATGGAGAGGCTGATTTCCAAAGGAGGAAGGAATGTGAATACTGTACTTATTTTCAGTCAATCG
^1620 ^1630 ^1640 ^1650 ^1660 ^1670 ^1680 ^1690

v1580 v1590 v1600 v1610 v1620 v1630 v1640 v1650
ATGTAATCAGAGTGGAAATAGAGAAAAGTCACTATTGCCGAAGAAATAGTATATTAACCTATTTCCCAAAATACCAATGT
ATGTAATC GAG G A TA AAAA C A ATTTGC G A A TAGTATAT C AT TAC TG
ATGTAATCCGAGACTAAGCCAAAATCAATATTGCGAGGACACTAGTATATG-----CGAT-----TAC--TG-
^1700 ^1710 ^1720 ^1730 ^1740 ^1750 ^1760 ^1770

v1660 v1670 v1680 v1690 v1700 v1710 v1720
ATTATCATGTATGGCTTCAGGCATAAAATAAATAAACAATAAATAGCTCTT-----CTATTATCCA--TTTCGAGC
TTA A TAT G C AAATAATAA AA AA AA TT CT T T C TTTCGAGC
-TTA--ACTTATTCGC-----AAATAAATAAATAAATAAATAAATTAATTAATGCTTATTGCTTTTTTCGAGC
^1770 ^1780 ^1790 ^1800 ^1810 ^1820

v1730 v1740 v1750 v1760 v1770 v1780
AATGAA-----TCAAATCAAACGATTAATGTTTATTTATTTAGCGAACGAGTTATGTTACGA

AATGAA T A TCAAACGATTAATGTTTATTTA TTTAGCGAACGA
AATGAAAAGGCGATTGATTTTTATGTAGTGATTCAAACGATTAATGTTTATTTACTTTAGCGAACGA-----
^1830 ^1840 ^1850 ^1860 ^1870 ^1880 ^1890

v1790 v1800 v1810 v1820 v1830 v1840 v1850 v1860
TAGCGAGTGTAAAGGACCCATAAATGCAGAGCAGAACGCTAAGCCAAAAGTGCAGCACTAGAGAACTATTAGGATAG
T ATT TATT
-----TTATT-----TATT-----
^1900

v1870 v1880 v1890 v1900 v1910 v1920 v1930 v1940
TATGTTGAAAAAAGGGGGGGGGGTAGCTTAGTTAATGAATACAACTGCTCACAGCTGATTGGCCGACAGTTGA
CTT T ATG T C ATGC TGA
-----CTTCATCGATGCGT-CTATGC-----
^1910 ^1920

v1950 v1960 v1970 v1980 v1990 v2000 v2010 v2020
ACTGCGTCTTCAAAGTTGACATGTTGCAAAATGTATGTGTCCTCAGTGAATTCCTCTACAGATAAGCATGACCATAT
ACTGCGCTTCAAAGTTG CATGTTG
ACTGCGTCTTCAAAGTTGCTATGTTG-----
^1930 ^1940 ^1950

v2030 v2040 v2050 v2060 v2070 v2080 v2090 v2100
GATCGCATTAATGGAATGTTATGTGTGATCTTTAATGAAAAATGACTGTACTGGAATTTAGCTCCGATCACTTTATATG
AAAA AC AATTTAG A AT
AAAAAACA-----AATTTAGG-----AAATT
^1960 ^1970

v2110 v2120 v2130 v2140 v2150 v2160 v2170 v2180
CTTTATAACAGTTATGATCGCTTGTCTTTACGGCTTTGCGAATTCGGTTCGCGATTTAATAAATTTGCGCAAAGAA
CT AC GC G T AC C G GAAT CC TTGCGCA TT
CTGGCAGCTGC-----GGTAGAC--CAAAGAGAAATGCCATTGCCGAGTTC-----
^1980 ^1990 ^2000 ^2010 ^2020

v2190 v2200 v2210 v2220 v2230 v2240 v2250 v2260
GCTCTCAAACAATGCAAGTA--CGATAAAGAGCTTCGATTCGCTTTTATTTATGCGCCCTGACAGCATCGAGCCGAGTCA
TGC A TA CG GA
-TGCATATCG-----GAT-----
^2030

v2270 v2280 v2290 v2300 v2310 v2320 v2330 v2340
ATATCATTTGCTAGCGGGATCGGTTGAAAAGCCAAAGGCAAAATCAAAGTGCAAAAGTGTGCAAAATTCGAAGTCCGCCGCA

v2350 v2360 v2370 v2380 v2390 v2400 v2410 v2420
AGGAGACGGCTAGAGTGGCAGAGAGAGAGAGAAATGGGGGCGATACGAATGGCTGGCGTGCAGTGGGGGAGCTTCG

v2430 v2440 v2450 v2460 v2470 v2480 v2490 v2500
GTTGGAAGTGAATCTCAAAGCCCGCTTGTAATCCGACGGGTGACATCATTTTATATGCTGGCCGACCGCTTCAAAG

v2510 v2520 v2530 v2540 v2550 v2560 v2570 v2580
CGTCCCGCTTCAAAGCTCCCTGCTCCCCCTTCAACCCTGTTTCGCGAGGATCAACGAACAAATGGTGGTGGGGTGGGG

v2590 v2600 v2610 v2620 v2630 v2640 v2650 v2660
AGGAGGAGGGGGGGTGGGGTTCAGGAACGTGGCGGAGCCGGGAGACGCACACATAAAGTATTGTTGAATTTGAGA

v2670 v2680 v2690 v2700 v2710 v2720 v2730 v2740
GCTCCGCGAGATTTTGTGCTATGCTCTGTAGTTGACATAATATATATGTAATAATCGTTGCACATCCCATATCTCAC

v2750 v2760 v2770 v2780 v2790 v2800 v2810 v2820
AGCGGGCAAGTGCCCCACTCCGGCTCCTTCTCCCAACAAGCTGGTAATATATGATGCGGGGTGTCGCACTTTGTGT

v2830 v2840 v2850 v2860 v2870 v2880 v2890
GTGTGTGTGTGTGGGTGTGCATGAAATGGTCACTCTGTCTCGCCTCCAGGACCTTTACT-----GCCA--
ACCCTTACT G CA
ACCCTTACTCAGATAAAGTCAGT
^2040 ^2050

v2900
-----CGGCTTTCC-----TTGCCA-----
C CT TTCC TTGCC
GCGAAGCAATAGGAAAGCGACTGTTCCCAAGTGTGTGTTGAACATATGAATTATATATACTATATGCGCTACGATTT
^2060 ^2070 ^2080 ^2090 ^2100 ^2110 ^2120 ^2130

v2910 v2920
-----GGACTTT-----TTTAATACCG-----
GGAC TT TTT AT C G
CAGTCTTATCAAGGCGTTTTACGAATTCATTCAGCAGAGTAAGCATGGTGTACGCTCCCTTAATCATCTCGCAAAA
^2140 ^2150 ^2160 ^2170 ^2180 ^2190 ^2200 ^2210

v2930 v2940
-----AGAT-----TTA-----TGAAGCGT-----TGCTCGTGT-----T
AG T TTA TGAAG GT TGCT TG T
ATCGCTGATAAGGTGGTAAATGTAGCTTTGTACAGCACTACCACCGTGAAG-GTCTTCATGCTGATGGGCAAA
^2220 ^2230 ^2240 ^2250 ^2260 ^2270 ^2280 ^2290

6d)

CG31909 focal and paralogous regions
Martinez/Needleman-Wunsch DNA Alignment

Minimum Match: 9; Gap Penalty: 1.10; Gap Length Penalty: 0.33

D. mel region including coding sequence (above, **2L: 7256479-7259204**),
D. mel region including noncoding sequence (below, **2L: 7230999-7233820**)

v20 v30 v40 v50 v60 v70 v80 v90
GATGAC--ACCTGTGCGCATTGATCGCTG--GTTTGGCGC-----CTTGGCAATGGCCCTCGTTGACTTTTGCCTCAAGAGCGTGGCT
TG C ACCT TC A G CGCTG GTT CG CTTC AT G CTC TTGA TTT CTC A C CT
--TGCCGTACCTATCA-AGAGCAGCGTGTGTTTTCGATGATTATCTTTGCC-ATAGACTC-TTGATTTTT---CTCTACTCTCATTTCT
^180 ^190 ^200 ^210 ^220 ^230 ^240 ^250
v100 v110 v120 v130 v140 v150 v160 v170 v180
GTGGCATTGAAGTCGGCCATCTCTCCAGCAAGTTTTCATCGAACAGGAGCCGGAGACGCCGTGGCAGTTCGACT--TGTCATCATCT
CA T A G CA CTT CC CAA TTC T C A GA T A TTG T TGTC A C
ACT--CACTATATATG--CAACTTAAACCTTCAAAAGTTCGTTAGTCTTACTATGATAAATATCCAAITGTTGTGCTGTCTA-CCCAA
^260 ^270 ^280 ^290 ^300 ^310 ^320 ^330 ^340

v190 v200 v210 v220 v230 v240 v250 v260 v270
GCGAGGACAGCTTCGAGCCGACCTGAAGAAGTTTAAATAGCACAGGATTTCTATAAATATCTCCCTTCTGCTCTTAAATATA
C A CA TT C A T A A A AGT TAA A A G A C T A T T CT TC T TATA
ACAATTTAGCAATTTATCTTTATATTTAAGCAACAGCTTAACCAAAATATGAAAACCCCTATTTTACTCTCAAATC--TTGCTATA
^350 ^360 ^370 ^380 ^390 ^400 ^410 ^420

v280 v290 v300 v310 v320 v330 v340 v350 v360
TCTCTTACCTCTGAGTCATGTCGCAATATCTCGCTGACCTCGTACCATCACCACCGCGAAGTCCAGGAAGCTGCGTCCACCGGCT
TCTCT A TCT TCAT TGA T T CCAT TC GAA T CGT TT
TCTCT--AATTT--TCAT-----TGATTTGTTTCCAT-----TCTTTGAAA-TACGT-----TT
^430 ^440 ^450 ^460 ^470

v370 v380 v390 v400 v410 v420 v430 v440 v450
GCCGTGCTCAGATTGTCATTCAGCCGCCCCACTGGAAGTCCGCGCCTCCCTGTGTGCTTTTGGCCCGCAGCTGCAGTCAAGTCA
C T C TCA TT C TT CC C T AA T T CC T CTTTT T CACT GT A
TCATTTT--TCATTTTAACTTT---CC-CATTTTATAAAGTAAATACCAA--TACTTTTA-----TACACTGATAAA
^480 ^490 ^500 ^510 ^520 ^530 ^540

v460 v470 v480 v490 v500 v510 v520 v530 v540
TACGTCTCGGCACAGCCCTGGCTATCGAGTGGGTCAAGGCGCCCTGTGAGCCGCTGGACGA-AGGCAGTCTCTCTTGTAGAGCTTC
A GT C T AC G TG TAT A AT GCG C T T A C G AC A AGG A T
AATGTACTT---ACTTGA- TGTTATAAAT---ATTGCGATCAATTTTA-CTATGACACAGAGGAATG-----
^550 ^560 ^570 ^580 ^590 ^600

v550 v560 v570 v580 v590 v600 v610 v620 v630
TGAAGATGTTCCGCTTTCCGCCGCTCTCGATCGAGCAGTCCAGCGGCTGAGCGGAAGTGTCTTCCGCGAGTGGTGGTCCAGACGG

v640 v650 v660 v670 v680 v690 v700 v710 v720
CGGGCCTCGCTAAGGTTCCCGCAATCCGCTCTCCTTTCGACACTGGTGGTTCCTGACCGCGGCGAGGCAATGATCTCGAGGGTCCA

v730 v740 v750 v760 v770 v780 v790 v800 v810
CCAATTTGGCCCTGCGAAGTGAACACCGCCATCACCGTGTGCTCCGAATGAAGTGTGCTGCGAGCAGATAAAGATTTTCAAAATTTTTC

v820 v830 v840 v850 v860 v870 v880 v890 v900
ATAAGAAAAGGTAAGGATTTCTTAAAGTCTTTTATAGACTATACCAAAATTAATACGTTTTTATATAAAAAGAGAGAAATCTA
CTA
-----CTA-----
^610

v910 v920 v930 v940 v950
TAGTCGAATCCCGACTATTAGAAAGCCCTTACTCAGCT-----AGTGGGAACGCAAAA-----

TAGTCGAA TCCCAGCTA AGA A CC TTAC CAGCT AGTG GAACGC AAA
TAGTCGAATCCCAGCTAACAGATACCCGTTACCGAGCTGGTGAAGTGAGAACCAGAAATTCATTTTTTGGCATTACCCAGATAGATATT
^620 ^630 ^640 ^650 ^660 ^670 ^680 ^690 ^700

GGAGAATATAATGAGAAAAAGCGGTTTTGTGGCGTTAGAGTGGCGGAGGGACATGGGTCTACAAACTTGGAGCTGGCTTAAGTCTCT
^710 ^720 ^730 ^740 ^750 ^760 ^770 ^780 ^790

GGAACTATATGCTTAATCTTAACCTTCTAGCTTTTTATAGTCTTGGACGTTTCATACCGGCTGACAGACAGGGCAGGGCCAGCATGCAC
^800 ^810 ^820 ^830 ^840 ^850 ^860 ^870 ^880

-----TCTTTCTAATCTAGTATGCACCTTTTACTCTACGAGTA
TCTTTCTAATCTAGTATGC CTTTACTCTACG TA
TCGGCTATTGATCCTGATCAAATATATATATACTTTATATGCTCGGAAACGCTTCTTCTAATCTAGTATGC-CTTTACTCTACGAAATA
^890 ^900 ^910 ^920 ^930 ^940 ^950 ^960

v1000 v1010 v1020 v1030 v1040 v1050 v1060 v1070 v1080
AGGGAAAATTTCCGACCGGAGGAGCGAGTTGTGTTAAGTGTCAAGTCCAAATAGACCCCTACAGTCAGAAAACCTTATATAGTGGCGTGAGTGA
AG GAAAATTT GAACGGAGAGCGAGTTGTGTTAAGTGTCAAGTCCAAATAGACCCCTACAGTCAGAAAACCTTATATAGTGGCG
AGGAAAATTTGAACGGAGAGCGAGTTGTGTTAAGTGTCAAGTCCAAATAGACCCCTACAGTCAGAAAACCTTATATAGTGGCGG
^970 ^980 ^990 ^1000 ^1010 ^1020 ^1030 ^1040 ^1050

v1090 v1100 v1110 v1120 v1130 v1140 v1150 v1160 v1170
GGTGAAGTGAAGAAAGTGGTTCGATCTTAACATAAAAAAATTTTTCTGATTTTAAACAAAATAAGATTTCTTGGTACGTATGAACACAG
AAGTGA GTTCGATCTTAACATAAAAAA ATTTTTCTGATTTTAAACAAAATAAGATTTCTTGGTACGTATGAACACAG
-----AAGTGAAGTTCGATCTTAACATAAAAAAAGATTTTTCTGATTTTAAACAAAATAAGATTTCTTGGTACGTATGAACACAG
^1060 ^1070 ^1080 ^1090 ^1100 ^1110 ^1120 ^1130

v1180 v1190 v1200 v1210 v1220 v1230 v1240 v1250 v1260
AATGAACGACCAATGTTTATATCTAAGCTCATATAATGCGAGACACAAAGGTGCTGTCCACCTACCCACAAAATAAATGGAAACCTCG
AATGAACGACCAATGTTTATATCTAAGCTCATATAATGCGAGACACAAAGGTGCTGTCCACCTACCCACAAAATAAATGGAAACCTCG
AATGAACGACCAATGTTTATATCTAAGCTCATATAATGCGAGACACAAAGGTGCTGTCCACCTACCCACAAAATAAATGGAAACCTCG
^1140 ^1150 ^1160 ^1170 ^1180 ^1190 ^1200 ^1210 ^1220

v1270 v1280 v1290 v1300 v1310 v1320 v1330 v1340 v1350
TTTTCCAATCTAACAAATCGGAACCTCAGAACCAACTACGAGTAGAGAGCTCTGCAAGATAAATATTTAAAGAAATTTCTTCAATG
TTTTCCAATCTAACAAATCGGAACCTCAGAACCAACTACGAGTAGAGAGCTCTGCAAGATAAATATTTAAAGAAATTTCTTCAATG
TTTTCCAATCTAACAAATCGGAACCTCAGAACCAACTACGAGTAGAGAGCTCTGCAAGATAAATATTTAAAGAAATTTCTTCAATG
^1230 ^1240 ^1250 ^1260 ^1270 ^1280 ^1290 ^1300 ^1310

v1360 v1370 v1380 v1390 v1400 v1410 v1420 v1430 v1440
CGGGATGAGCTAAATCACTTAATGATGGCACTACTCCGAGCATATGAGACTTATGAATATTTGACACTGTGCACACTGAAAGCGGT
GCGGATGAGCTAAATCACTTAATGATGGCACTACTCCGAGCATATGAGACTTATGAATATTTGACACTGTGCACACTGAAAGCGGT
GCGGATGAGCTAAATCACTTAATGATGGCACTACTCCGAGCATATGAGACTTATGAATATTTGACACTGTGCACACTGAAAGCGGT
^1320 ^1330 ^1340 ^1350 ^1360 ^1370 ^1380 ^1390 ^1400

v1450 v1460 v1470 v1480 v1490 v1500 v1510 v1520 v1530
CCTTCTCCGAGAAAGAAAAGTTAACTAACTTTTCTATAAATGAAGGCGATCTACAGAAATATATAGGAAATCTCGAGAAAC
CCTTCTCCGAGAAAGAAAAGTTAACTAACTTTTCTATAAATGAAGGCGATCTACAGAAATATATAGGAAATCTCGAGAAAC
CCTTCTCCGAGAAAGAAAAGTTAACTAACTTTTCTATAAATGAAGGCGATCTACAGAAATATATAGGAAATCTCGAGAAAC
^1410 ^1420 ^1430 ^1440 ^1450 ^1460 ^1470 ^1480 ^1490

v1540 v1550 v1560 v1570 v1580 v1590 v1600 v1610 v1620
CCAAAATATTTAAACGAAATCAGGAGTTC AACTATATAAAGGACAAATATAGATTTACTGGATGAAGTAGACGCTTTGAAGGTTGCGATG
CCAAAATATTTAAACGAAATCAGGAGTTC AACTATATAAAGGACAAATATAGATTTACTGGATGAAGTAGACGCTTTGAAGGTTGCGATG
CCAAAATATTTAAACGAAATCAGGAGTTC AACTATATAAAGGACAAATATAGATTTACTGGATGAAGTAGACGCTTTGAAGGTTGCGATG
^1500 ^1510 ^1520 ^1530 ^1540 ^1550 ^1560 ^1570 ^1580

v1630 v1640 v1650 v1660 v1670 v1680 v1690 v1700 v1710
AATATGCTTTGACGGACAGGTGGGATTTGAAAAATGAAAAAATTCGGGTGTTACTTT-ATTTTTTATGGTAAAAAATAAATAAGAA
AATATGCTTTGACGGACAGGTGGGATTTGAAAAATGAAAAAAT TGTACTT AT ATGGTTAAA TAAA AA
AATATGCTTTGACGGACAGGTGGGATTTGAAAAATGAAAAAATAT -TGTACTTCAATAAAAAATGGTTAAA-----TAAA--AA
^1590 ^1600 ^1610 ^1620 ^1630 ^1640 ^1650 ^1660

v1720 v1730 v1740 v1750 v1760 v1770 v1780 v1790 v1800
ACAGGTACCCGTTATCTTTTACTCTACAGATATAACAGGTATATATGG---ATPCGGATTTCTATTAAGCGCACCTATCTTGGCTTG
ACAGGTACCCGTTA TC T T AA TAA T A GG ATT G C TT A ACA CTAT TTT CTT

ACAGGTACCCGTTACTCAGCTTTGGGGAAAGCTAAATTTTCAAAGGAAATTTTGGCAACATTTGAAAAACAACATATATTA-CTTC
^1670 ^1680 ^1690 ^1700 ^1710 ^1720 ^1730 ^1740 ^1750

v1810 v1820 v1830 v1840 v1850 v1860 v1870 v1880 v1890
CAGATGATTTTACACAGATTCAGCGCCAGTGGCCATCTAG-CAGAACTTGTATGAAGCTTTGTGGCGAGCAATCGTAAAAATAC
CAG TGA TTTA A AGA T G C AGT CG A TA CAGA G AT A CT CGA CA TAA ATA
CAG-TGAAGTTA-ATAGAACTT---GACAAAGTTCG---AGTACTCAGA---GAAT-ACCTT-----CGA-CA-----TAATGATAA
^1760 ^1770 ^1780 ^1790 ^1800 ^1810

v1900 v1910 v1920 v1930 v1940 v1950 v1960 v1970 v1980
CGTTTCAAAGAGATTTAAATTTGTGGCCCTACTTAGTTAAACCAATATGTCATTTGAACACTTAATAATTAATAATAATAATA
C TT AAA A AA ATT TAC AGTT AA A A TC T GA CA TT T A A
C---TTGAAAACAACCCGGATTT---TAC---AGTTGAAG-AGCAC-TC-TGGCAGCATTT-----TGGGCCCAACAACGCC
^1820 ^1830 ^1840 ^1850 ^1860 ^1870 ^1880

v1990 v2000 v2010 v2020 v2030 v2040 v2050 v2060 v2070
AATTAATTTATAAATTAATTAATAGCAACCCACCTTAGGATTCGACAACTCGAAATTCGAACTACAAAGTTTTTATCTGCTAATA

v2080 v2090 v2100 v2110 v2120 v2130 v2140 v2150 v2160
ATAAACCGGCACATGAGAACTTTTATTTGATTTATCAAAAGTTACAACACACATGCTAGTATGCCCTTCTTATCAGTTTTCTAGAAA

v2170 v2180 v2190 v2200 v2210 v2220 v2230 v2240
TAGCAGAGAAATTTCCCTTGAATG---GTTCCATGCCATATCTGTTCCA-GTTATTTGAGACTTATTTGGAATGCAAGTATC
AATTTCCCT AA G G CC G C C G T C A G A TTC AA CT A GT TGC G C
-----AATTTCCCT--AACGGCCAGCAGCCGGACCGCCGGATCCAATGAAAATCAAACCTGA---GTACCGCTGCCGGCCG
^1890 ^1900 ^1910 ^1920 ^1930 ^1940 ^1950

v2250 v2260 v2270 v2280 v2290 v2300 v2310 v2320
TTTGAATATATCAAAAGGAAAGCCG---CGCTGCACTTACCCGCTTCTGGCCAGCTCGGTT-ATCATTTTGGGC---ACCCA
T G T TC AA GG C G C C G C A G A CCGT T A C TC T A A T T C C A G A
ATGGGGCTTTTCTAAGCGTCCAGTGGAAAACCCAGCAACAGAA--CGCTCGTAAAGCACTACTCAAGAATCCATCAAGCA
^1960 ^1970 ^1980 ^1990 ^2000 ^2010 ^2020 ^2030 ^2040

v2330 v2340 v2350 v2360 v2370 v2380 v2390 v2400 v2410
CTCCGCGCGGACTGTGGGAGTATG---CTGATTTGAGAAATCTTAAATTTCTATAAATCTAAGCTGATGTAATGGCGCTAGC
CG G A TG T G T TG CT TTTG G TT A T TC T T TAA TG AATT G A GA
GCCCAAAGAAAGATGATTTTTTTTCTAGTTTCCGCT---TTGATTTTCTGTCTGTAAATGTTAAATAAATCTGGAAGAA
^2050 ^2060 ^2070 ^2080 ^2090 ^2100 ^2110 ^2120 ^2130

v2420
TAACGAGCTCAGCA
T A TC G A
T---ACATC-GAA