
¶11510 ¶11520 ¶11530 ¶11540 ¶11550 ¶11560 ¶11570
GGATTTGCTCCAACATTTTTTATGTTTTTATCATTTGGAAAACCGAGTCCCACAATAAAATCTTA

¶11580 ¶11590 ¶11600 ¶11610 ¶11620 ¶11630 ¶11640
ATCTATGAGGTAAGCAGCATCCGATTTGAAGCACCTTTGGCGATAGAATCTATACCGCTTGACT

¶11650 ¶11660 ¶11670 ¶11680 ¶11690 ¶11700 ¶11710
TGACTGATCAAGGCATGACAAGGATGGGGCAAGGAGTAGACGAATATTGCGGGCTCCCGCTCGCAG

¶11720 ¶11730 ¶11740 ¶11750 ¶11760 ¶11770 ¶11780
ATTTGCGGTAGTCTCGAACGGGCGAAGGGTCCAGCACCTCAGCAAGTTGTGGAAGGTACACATRAATC

¶11790 ¶11800 ¶11810 ¶11820 ¶11830 ¶11840 ¶11850
ATTTTGTCTCGAGGCACAAAAATTTGGAATTCCTTTTATAAAAGCAAAAGCGATGTCACTCTCTAC

¶11860 ¶11870 ¶11880 ¶11890 ¶11900 ¶11910 ¶11920
ATGAGCAATCCCTTGAGGACTTCTGAAAGTTTTTCATTTATTCAGTGGTAAAAAACCCAGCTGGATTTGT

¶11930 ¶11940 ¶11950 ¶11960 ¶11970 ¶11980 ¶11990
CGAATTTGACCAGTCTCGATGCTTTGGCCGTTGCGAGTCTGCCGATTCCTGCTAGGCGTCCCACCCGC

¶12000 ¶12010 ¶12020 ¶12030 ¶12040 ¶12050 ¶12060
CCAGGATTCCTCAACCCAGGGCAATGGGAGAGGATCCGTCGTAACAGAAATAGGTAACCTGATAAACT

¶12070 ¶12080 ¶12090 ¶12100 ¶12110 ¶12120 ¶12130
CCTCGTTTCCCAGGAAATCTTTTATTAATAAAGTTTCTTCTACAGTATATACAGACGTTCTTACGAC

¶12140 ¶12150 ¶12160 ¶12170 ¶12180 ¶12190 ¶12200
TCGGTTTTGGGATCTAGGAAGCCAGGATAAATGGCAGAAATGCTGCGGACTCTGAGCTTTGTCAATCATA

¶12210 ¶12220 ¶12230 ¶12240 ¶12250 ¶12260 ¶12270
TTCATTTTGATAACATAAAGATACCCTAAATTCGTTTTATTTTTCTCGTTTTTCATGTTTACCTAGTA

¶12280 ¶12290 ¶12300 ¶12310 ¶12320 ¶12330 ¶12340
TTAATTTAATATATATTTACATTTGAAACGTTGTTGTCAATCAAAATAATACCCCTCTCTGTGGGAGCCA

¶12350 ¶12360 ¶12370 ¶12380 ¶12390 ¶12400 ¶12410
ATAATAATGCAAGTCCAATTTTTTATACCGTTACTCGTAAGGGTAAGATTTCGTTGAAACTGGCAGAAG

¶12420 ¶12430 ¶12440 ¶12450 ¶12460 ¶12470 ¶12480
GAAGCGTTTCCGACCATATAATCTATATATATATAATATTTCTTGATCAGGAGAAATAGCCGAGTCAATC

¶12490 ¶12500 ¶12510 ¶12520 ¶12530 ¶12540 ¶12550
TGGTCATGTCGGTCTGTCGGTATGAACGTCGAGAACTATAAAAGCTAGAAGTTGAGAGTCCAAGTTGA

¶12560 ¶12570 ¶12580 ¶12590 ¶12600 ¶12610 ¶12620
GATCCATGTTGCCACGCCACTCTAACGCCATAATACAGCCCCCAAGATTATCGCCGTGAGGTAAACGA

¶12630 ¶12640 ¶12650 ¶12660 ¶12670 ¶12680 ¶12690
TGTAATCGAAGGATTACAGCGCCCGACATGGGCGCAACTTTGTGGTCCCGCGATGGCAGGCGACA

¶12700 ¶12710 ¶12720 ¶12730 ¶12740 ¶12750 ¶12760
GGATCACAGATTCGCGCGGACAGCTGCGGGGATACCTTGGTCGGAATGCGTGGATTCTGTACGATTTCC

¶12770 ¶12780 ¶12790 ¶12800 ¶12810 ¶12820 ¶12830
AGGACATTTGGTAGCATCCACAATGGGTTTTGTCCATAAAAAGTAACTGCGCAGGATGCGGTTTGT

¶12840 ¶12850 ¶12860 ¶12870 ¶12880 ¶12890 ¶12900
GTAACGATCACCGATCAGAGGACATTTATGCAGCATCATTCGTGCGGATATCCTGTACATCCGCTG

¶12910 ¶12920 ¶12930 ¶12940 ¶12950 ¶12960 ¶12970
CATGGCGTATAAATGATCCAGCCGATCAGATTCCCACAACGATTCAATGCGCATAAATGAAATCATC

¶12980 ¶12990 ¶13000 ¶13010 ¶13020 ¶13030 ¶13040
ACAAAATATTATAAAGTATTTAAGAAAGAAATCTTTAGAAATCTCAATCTGATGAACTGCTGTGTGT

¶13050 ¶13060 ¶13070 ¶13080 ¶13090 ¶13100 ¶13110
ATGTAGAGCTATAATATAAATTTAAATTTATATTTTAAATGCTAAGAAACTTTGCTATCTGTGAGTTT

¶13120 ¶13130 ¶13140 ¶13150 ¶13160 ¶13170 ¶13180
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¶13190 ¶13200 ¶13210 ¶13220 ¶13230 ¶13240 ¶13250
ACCGATTACATTGGCCAGCACCATGAAACAGCTCCGAAAACTTACCAAATAGACCGTTGAAAAAT

¶13260 ¶13270 ¶13280 ¶13290 ¶13300 ¶13310 ¶13320
ATTTTACAAAAGTAAAGGGCAGGAAAATAGCCTTTTTCACGTTTATACATATTTGGTAAAAATTTCCA

¶13330 ¶13340 ¶13350 ¶13360 ¶13370 ¶13380 ¶13390
AACCCAAAGTATTTGTATCCAGGAACAGAAAGTAAAGTTTCAAATTTAAACCACTTTTGTAGACACCAATCGC

¶13400 ¶13410 ¶13420 ¶13430 ¶13440 ¶13450 ¶13460
GTGCTCACACAACCTCAATCACAATCAAATTTTCGGTTCCAAATAAAAAAAAAAAAAAAAAAAAAA

¶13470 ¶13480 ¶13490 ¶13500 ¶13510 ¶13520 ¶13530
AAAATTTCCAACCTTCCCTGGGGAAAAGTAAAGCTTTGGGTAGATTATCGGACAACATTTTTTTCGTTTAG

¶13540 ¶13550 ¶13560 ¶13570 ¶13580 ¶13590 ¶13600
CCCCATCCATTCATTTAGTTCATCGAAGGCAGTTGTATTTTCCAATTCGTTGTTTAGTTTCGACATTTTC

¶13610 ¶13620 ¶13630 ¶13640 ¶13650 ¶13660 ¶13670
ATACATTTGGTTGATAAAAAATAAATAACTACACACAGTACAGTACTCGTACTCGTATTTTTCGAAATT
ATAAATAACTA A A T GT GTAT AAT
-----ATAAATAACTAAA-----AATAGT-----GTATA--ATA
¶11510 ¶11520 ¶11530

¶13680 ¶13690 ¶13700 ¶13710 ¶13720 ¶13730 ¶13740
GAAATTTGCCAACAAGAAAACTAATAAGAACATCTAAACATTCCTCGGCAGCTAGCAATCCAAG
AA ATTTT AA AA TAAT AGAA AT ATT TCG AG
AAATATTTT-----ATAAATTTCTTTTAATAGAA-AT-----ATT--TCGATAG-----
¶11540 ¶11550 ¶11560 ¶11570

¶13750 ¶13760 ¶13770 ¶13780 ¶13790 ¶13800 ¶13810
TGAAGTAATCATGTTTAAATGAAACGAGAGAGTAATCAGACGCAAGGCAGCCATATCAGGGCTTCA
ATG T A AAT AAAC A T AGC TT T AG TTC
-----ATGATAACAATAAAAC-----ATTTT-----AGCGCTTTTATAGCTTTTCG
¶11580 ¶11590 ¶11600 ¶11610

¶13820 ¶13830 ¶13840 ¶13850 ¶13860 ¶13870 ¶13880
AAGAGGGCCTTCCAGGAAAAGATTTCGCAACAGATGGAATCGTGTGGCGTGACTCAATGGGAAACGCGAT
A A TTC AAA ATT G A AAT T
TATA-----TTC-----AAATTAAT--GTA-----AATTTT-----
¶11620 ¶11630

¶13890 ¶13900 ¶13910 ¶13920 ¶13930 ¶13940 ¶13950
CAACGCAACAGTCGAATGTGCGGATGTGGATGCGGATATGGGACGCAAAATGTCGGAAGATGGAAAT

¶13960 ¶13970 ¶13980 ¶13990 ¶14000 ¶14010 ¶14020
GACTGATACATCGAATACGTTCAAACAGCCATCTGTTTCCAAGGATCAAAGCAATTTGTCGCGAAAACAA

¶14030 ¶14040 ¶14050 ¶14060 ¶14070 ¶14080 ¶14090
AAGCCATCCCATCCCTACAACCACAGGAGCAGATCGAACAAAGAGCAAAGCGAACCAAGATATGTA

¶14100 ¶14110 ¶14120 ¶14130 ¶14140 ¶14150 ¶14160
AAAGGTGCAACAGAAAAGACGAATGCCATCATCGCTCTCCGATGATGGAATTCGGCGAGAAAGCCGCG

¶14170 ¶14180 ¶14190 ¶14200 ¶14210 ¶14220 ¶14230
CAAAATTAATAAGTATAGCGAACTTAGCTACGGCAGCAATCCAGCATGCGCTTCAAAATGAAACAGCAG

¶14240 ¶14250 ¶14260 ¶14270 ¶14280 ¶14290 ¶14300
AGCAATGACAAATCAGAATAACAATGACAATGCTGAGGGTAGTGGATTGATCGACAGGAGCGCCAACG

¶14310 ¶14320 ¶14330 ¶14340 ¶14350 ¶14360 ¶14370
AGTATGTTATCGGTGGCTATCATCCGGTGGCCATTGGCGATGATATCGTAACCCGCTATCATGCTTCAA

¶14380 ¶14390 ¶14400 ¶14410 ¶14420 ¶14430 ¶14440
AAAGTGGGCTGGGGTCACTTCTCCACCCTGGGCTATGCTATGATACCCAGATGGATCGCTACTGTGCC

¶14450 ¶14460 ¶14470 ¶14480 ¶14490 ¶14500 ¶14510
GTCAAGGTGTCCAAGTCGGCGCAGCTCTACAGGAAACTGATGATGATGAGATTATGCTCTTTTCCCAAA

¶14520 ¶14530 ¶14540 ¶14550 ¶14560 ¶14570 ¶14580
TGAGCCTACAGATCAGCATAAGTACAGAGCCACGTGGTGGTTTCTACGATTTCTTTGAAATACC

¶14590 ¶14600 ¶14610 ¶14620 ¶14630 ¶14640 ¶14650
ACCGCACGGAAGGCACATTTGCCTGGTCTAGAGTTCTCGGTGACAATTTGCTAAAAGTCAATCGA

¶14660 ¶14670 ¶14680 ¶14690 ¶14700 ¶14710 ¶14720
TGCCTTTTACAAAGGTATGCCCATTTCCAATATCAAGCAATTTGCCAGCAGGTGCTCACGGCCATAAGT

¶14730 ¶14740 ¶14750 ¶14760 ¶14770 ¶14780 ¶14790
TTCTGACGAAGAGTGGGGATCATACACCCGATCTAAAGCCGGAGAATGTGCTCTCGCGTCCAACGA

¶14800 ¶14810 ¶14820 ¶14830 ¶14840 ¶14850 ¶14860
GGTCTCCGTTTCGGACCGAGATCAAGACGGCAATTTGAAGTATATTTGAAGGCCAACGAGGGAACTAAGT

¶14870 ¶14880 ¶14890 ¶14900 ¶14910 ¶14920 ¶14930

CCTAGGTATGTTAGATATACTCGTATAATAGCACACATCTGAACACGTATAAACGTTATAGTCCAAAGT

¶14940 ¶14950 ¶14960 ¶14970 ¶14980 ¶14990 ¶15000
GACCAAAACGGCCAAGAGACGGATGCAGGCAAGTCCAAGAAGGTGATATCGTTTTTCAAGAATCATGCG

¶15010 ¶15020 ¶15030 ¶15040 ¶15050 ¶15060 ¶15070
CGCATGCTCCCGCAGGCAGGGCATCGAGGATCTGCTCTATCTGGCCGAACCTGGCCATCGAACCGATTAA

¶15080 ¶15090 ¶15100 ¶15110 ¶15120 ¶15130 ¶15140
CCGCCGCCATGGCCGCTCCGATAACTTACCAATTCATTCCTTCGGCTTCGACGGGTTTATGATGATGAG

¶15150 ¶15160 ¶15170 ¶15180 ¶15190 ¶15200 ¶15210
CGATGCCGATTGCGGTACGGTGCAGAATTCGAAGTTGCCCGAAATGGAAGGCATGGAATACAAATGCGAC

¶15220 ¶15230 ¶15240 ¶15250 ¶15260 ¶15270 ¶15280
AGGATAAACCTGTGTTAAAGAGTCCAGAGCTCTCTTGCAGATATGTCCTGATATTAACAAGAAATTTGG

¶15290 ¶15300 ¶15310 ¶15320 ¶15330 ¶15340 ¶15350
ATGAGAAGGAGCTTAGCACCTCAGGACAAGCGAGCGCCTTACGCGAGCCAGTGGACGTGGCCAGACCAA

¶15360 ¶15370 ¶15380 ¶15390 ¶15400 ¶15410 ¶15420
AAAGAATGCCAGTCCCGATTGAGATTGGCATCGAATGCTGCATATACGGTATTTATTCACATTTCCAT

¶15430 ¶15440 ¶15450 ¶15460 ¶15470 ¶15480 ¶15490
TCAAAATTTGAAAAGCTTAGTTTAAAGTATAGGATTAATGAATTCCTCTTGCATTTGAATATTTTGTAG

¶15500 ¶15510 ¶15520 ¶15530 ¶15540 ¶15550 ¶15560
TCTACTTCTAGTCTGCTTTATGAACGATTTCAATTCCTGCTAATCAGAAATGTTAAATTCAAAAGCTGTGTC

¶15570 ¶15580 ¶15590 ¶15600 ¶15610 ¶15620 ¶15630
GCATTTCTTATAGAAATAGCATTAGATGTTTTGTGCGTACTCATCAAAAATTCCTCAATTTGAATTAACCA

¶15640 ¶15650 ¶15660 ¶15670 ¶15680 ¶15690 ¶15700
TTCTTTTTTCACTTCCAAAGACTGGAACCGGTTGGCGATCGAACAGAAAATCAATTTGAACGATATTT

¶15710 ¶15720 ¶15730 ¶15740 ¶15750 ¶15760 ¶15770
ACCCCATCGATCCGGCCAAACGAATGCGATGTACGGGTGAAGATAGCCGACTTGGCCAAATGCGTGTTA

¶15780 ¶15790 ¶15800 ¶15810 ¶15820 ¶15830 ¶15840
TTTCCATCATCACTTCACCGACGACATCCAGACCAAGGAGTACCGGGCCCTTGGAGGTGATATCGGTGGG

¶15850 ¶15860 ¶15870 ¶15880 ¶15890 ¶15900 ¶15910
GGATATTGCGAGACCGCCGATATCTGGAGCTGGCCTGTCTGTTGTGGAGCTGGCCACCGGACCTATFC

¶15920 ¶15930 ¶15940 ¶15950 ¶15960 ¶15970 ¶15980
TATTCGATACCCATTCGAAAAGGGGCAAAATACAATCTGGATGAGGTCATATAGCGAAAATTCATCGAAAC

¶15990 ¶16000 ¶16010 ¶16020 ¶16030 ¶16040 ¶16050
CTGTGTCGATACCGTGGTATCTCATCCGCAAGGCAAAACACTCGAGGAAATTTCAATAGCGCCGCGC

¶16060 ¶16070 ¶16080 ¶16090 ¶16100 ¶16110 ¶16120
AAACTATGCAACATAGAAACCTGAAGCCCTTAAACTGGCCAAATCTTAATCAGATGGTACGGATGGA

¶16130 ¶16140 ¶16150 ¶16160 ¶16170 ¶16180 ¶16190
GGACTGCCAATCCACGGAATTCGTTAATTTCTCTGATGCCATGCTGCAGACCAATCTTTGTCTCCGAT

¶16200 ¶16210 ¶16220 ¶16230 ¶16240 ¶16250 ¶16260
ATCCGCAAGCAAGCCTTGGAAAGCCACTACTTATGCAACATTTGCTCTTCTTCCGATTTGACATTTGACAGT

¶16270 ¶16280 ¶16290 ¶16300 ¶16310 ¶16320 ¶16330
TACTACTATTATAGTGTACGTGAAATCAAGGACTGCACACATACCAAGAGTGAAGAAATAGCGATGAGG

¶16340 ¶16350 ¶16360 ¶16370 ¶16380 ¶16390 ¶16400
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¶16410 ¶16420 ¶16430 ¶16440 ¶16450 ¶16460 ¶16470
CAACGAAGAAGACATCAAGAAGTTATATTAACAGTGTATTTATTTAGCGAAAAGCAGCAGTAAACCAT

¶16480 ¶16490 ¶16500 ¶16510 ¶16520 ¶16530 ¶16540
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¶16550 ¶16560 ¶16570 ¶16580 ¶16590 ¶16600 ¶16610
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*16620 *16630 *16640 *16650 *16660 *16670 *16680
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*16690 *16700 *16710 *16720 *16730 *16740 *16750
ATTAAGCATAGAGATTCTAGAGACATAGACGCGATTTCTTGACACATGTTGCCACGCCCGCTCTAACGCC

*16760 *16770 *16780 *16790 *16800 *16810 *16820
CTCAATGTGTTGATATTTTTTCACAGTTTTATTAGTCTGTGFAAATTTCTATCAATTTGCCAAAAA

*16830 *16840 *16850 *16860 *16870 *16880 *16890
AAAAAAGCTGAAAGTCCATCTGTCCGATGAACGTGAAATCTCAGGAAGCTATAAAGCTAGAAGGTGGAG

*16900 *16910 *16920 *16930 *16940 *16950 *16960
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*16970 *16980 *16990 *17000 *17010 *17020 *17030
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*17040 *17050 *17060 *17070 *17080 *17090 *17100
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A
-----A

*17110 *17120 *17130 *17140 *17150 *17160
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*17170 *17180 *17190 *17200 *17210 *17220 *17230
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AT AAAT TTTCAATTTTATTT G GTA A ATGATCTCACTAGTGAACCTTTTACATTTTCGAAACCTGGT
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*17240 *17250 *17260 *17270 *17280 *17290
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*17300
-----ATAGAATTCGGCTAT
ATAGAATTCGG

*17310 *17320 *17330 *17340 *17350 *17360 *17370
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*11850 *11860 *11870 *11880 *11890 *11900 *11910

*17380 *17390 *17400 *17410 *17420 *17430 *17440
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CAC GTCA ACCTCGAAGCA AACTCGCACA GAAGTCAGGAA AGTTCC TTGAGCACTTGATGAT
CACGGTGCATACCTCGAAGCAAACTCGCACAGGAAGTGCAGGAAAAGTTCCCTTGAGCATTGATGAT
*11920 *11930 *11940 *11950 *11960 *11970 *11980

*17450 *17460 *17470 *17480 *17490 *17500 *17510
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ATGCTGGAGTTCAGTAGAGTCTTAGCCAGCTTCCATTCCTTTTCGTGGTCCCAACAATGTTGGTCT
*11990 *12000 *12010 *12020 *12030 *12040 *12050

*17520 *17530 *17540 *17550 *17560 *17570 *17580
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*12060 *12070 *12080 *12090 *12100 *12110 *12120

*17590 *17600 *17610 *17620 *17630 *17640 *17650
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GGTGA AGTAAGTACACCGCAGTGTTCGCCGATCCTC AGCATCTTATC AACGAAAATATATAGTCTG
GGTGTAAAGTAAGTACACCGCAGTGTTCGCCGATCCTCAAGCATCTTATCGAAGCAAAATATATAGTCTG
*12130 *12140 *12150 *12160 *12170 *12180 *12190

*17660 *17670 *17680 *17690 *17700 *17710 *17720
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CTGAT CCGGTTGTGACATAAATCCGAATACTTAATGCATCCATATGCCAGCGACTTTGGGCGTCCCTTCA
CTGATCCGGTTGTGACATAAATCCGAATACTTAATGCATCCATATGCCAGCGACTTTGGGCGTCCCTTCA
*12200 *12210 *12220 *12230 *12240 *12250 *12260

*17730 *17740 *17750 *17760 *17770 *17780 *17790
GTTCCGTGGGCGTGGAGACCTTATCGCGCCAGACTTCCAAATTCGTCGAGGATCGCTTCAATCCCTC
GTTCCGTGGGCGTGGAGACCTTATCGCGCCAGACTTCCAAATTCGTCGAGGATCGCTTCAATCCCTC
GTTCCGTGGGCGTGGAGACCTTATCGCGCCAGACTTCCAAATTCGTCGAGGATCGCTTCAATCCCTC
*12270 *12280 *12290 *12300 *12310 *12320 *12330

*17800 *17810 *17820 *17830 *17840 *17850 *17860
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GTTCCAGCAAAATCGGACAGCTTAACCGTATCACCCGATCGAGTCTTAACTTCTGCCATCCTCGCCGAGA
*12340 *12350 *12360 *12370 *12380 *12390 *12400

*17870 *17880 *17890 *17900 *17910 *17920 *17930
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ACGAGCCAAACTGTACGTGGTCAACACAGTGGCTGAGTGGATTTAGGATAGCAGATGCTTCGGCACTT
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*12410 *12420 *12430 *12440 *12450 *12460 *12470

*17940 *17950 *17960 *17970 *17980 *17990 *18000
GATTTACCGGATAAATATCGCCTTGTGTTGCTTTTCAATACAAATAGCAAGAGTCATAGAATTCGG---
*11850 *11860 *11870 *11880 *11890 *11900 *11910

*17310 *17320 *17330 *17340 *17350 *17360 *17370
GATTTACCGGATAAATATCGCCTTGTGTTGCTTTTCAATACAAATAGCAAGAGTCATAGAATTCGGTGA
T AA
-----TAAA

5b)

CG32582: melanogaster (above), erecta (below)
Martinez/Needleman-Wunsch DNA Alignment
Minimum Match: 9; Gap Penalty: 1.10; Gap Length Penalty: 0.33

110 120 130 140 150 160 170
 CAAGAGTCCGCAATCATCAGCAGTATCAACAGTATCAACAGCATCAGCAACACCCAGCAACATCGGCAAC
 CAAGAGTCCGCAAG

 980 990
 180 190 200 210 220
 ATCAGCAACATCA-----GCAACATCGGCAGCAGCAATAGCAACACTATCGCACTAAAAATGTG
 GCAACATCA GCA CATCG CAGCAGCAA AGCAA AC ATCGCACTAAAAATGTG
 ---GCAACATCATCAGCAATATCAGCAGCATCGACAGCAGCAACAGCAATACCATCGCACTAAAAATGTG
 100 110 120 130 140 150
 1130 1140 1150 1160 1170 1180 1190
 GCGAGCGCAATATGAAAACCGAGAACTATCCGTTGCTGGCGCCACAAATTAACAAGCAATCACTACCTC
 CGAC GCA TAT AA A CAGGAAC ATCCGTTGCTGG GC ACAATATCAAGCAATCACTACCTC
 ACAGCAGCATTATTAAGAACAGGAACCCATCCGTTGCTGGTGTACAAATTAACAAGCAATCACTACCTC
 1160 1170 1180 1190 1200 1210 1220
 1200 1210 1220 1230 1240 1250 1260
 ACCGCAACATCAACGGATATCGATGCTTACAGCAGCACTCAAGTGGAGGAGGTTATTTATACACAGTCA
 ACCGCA CATCATACGGA ATCGATGCTTAC GCACTCAAGTGGAGGAGGTTATTTATACACAGTCA
 ACCGCAACATCAACGGAAATCGATGCTTACCGCACTCAAGTGGAGGAGGTTATTTATACACAGTCA
 1230 1240 1250 1260 1270 1280 1290
 1270 1280 1290 1300 1310 1320 1330
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 CAAGGCAATACCAAGTATCAATTAAGACCGGAATCAAGCATTGGCTCCCAAGTCAAGAGCCAACTCC
 1300 1310 1320 1330 1340 1350 1360
 1340 1350 1360 1370 1380 1390 1400
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 AGCAGCAACATACCGCCTATGAGGATCGTACAGTGCAGCTCCTGCCACCGTATAATCTATGTATCGGCAA
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 1370 1380 1390 1400 1410 1420 1430
 1410 1420 1430 1440 1450 1460 1470
 CAAGCAACCAACCAATTCGAGGCTGAGCAACACGAAACAGCAACAGCAACAGCAACAGCAACAGCAAC
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 1440 1450 1460 1470 1480 1490 1500
 1480 1490 1500 1510 1520 1530 1540
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 GAA CAGGAACAGCAGAGCAACTGGGGAACAC GCTATGAGCAGTTCCTGAAATGTGCGGCTC
 GAA-----CAGGAACAGCAGAGCAACTGGGGAACACGAGCTATGAGCAGTTCCTGAAATGTGCGGCTC
 1510 1520 1530 1540 1550 1560 1570
 1550 1560 1570 1580 1590 1600 1610
 ATGAATTCAGAAAATCAGCAGCGCTCCGGCTGCTCTAAATCTCAGCAGTATGGCGAAAAGAAC
 ATGAATTC GAA CTCAGACA GCTCCGGCTGCTCTAAATCTCAGCAGTATGGCGAAAAGAAC
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 1580 1590 1600 1610 1620 1630 1640
 1620 1630 1640 1650 1660 1670 1680
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 GGCATGCTGGCTCAATCCAGACGGATCTGAAGATCC CAGAGTTCGCAATCTCCGAGGCTCAAT
 GGCATGCTGGCTCAATCCAGACGGATCTGAAGATCC CAGAGTTCGCAATCTCCGAGGCTCAAT
 1650 1660 1670 1680 1690 1700 1710
 1690 1700 1710 1720 1730 1740 1750
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 GCGACAGCGCGGAGGATCC-----CAGGACCCACTCGCATGGAATCAGTAACAAGGCCCTGAGCCCT

9720 9730 9740 9750 9760 9770
 1760 1770 1780 1790 1800 1810 1820
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 GAGCGCCATATAATACCACAGCCTTTAAGCAAGGTTGAGGCT ATTTTAAAGGTTAGAAATACGATTGC
 GAGCGCCATATAATACCACAGCCTTTAAGCAAGGTTGAGGCTAATTTTTAAGGTTAGAAATACGATTAT
 1780 1790 1800 1810 1820 1830 1840
 1830 1840 1850 1860 1870 1880 1890
 AAGGAACGACACAATCAGAGCTTTTGTGTTCCACCCAAAACAGAAAGAAAAAATGAAAAA
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 AAGGAACGACACCATCAGAGCTTTTGTGTTCCACCCAAA-GAGAAATGAAAA-----
 1850 1860 1870 1880 1890 1900
 1900 1910 1920 1930 1940 1950 1960
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 ---CATGGCAGGTCACAACGGAAGCCTCAAACAAGAGATGATGATTGGTGTTCAGTATCGAAATCAG
 1910 1920 1930 1940 1950 1960
 1970 1980 1990 1000 1010 1020 1030
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*16750 *16760 *16770 *16780 *16790 *16800 *16810
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*16820 *16830 *16840 *16850 *16860 *16870 *16880
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*16890 *16900 *16910 *16920 *16930 *16940 *16950
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G GAGTCTCCACCGACAG GTCGC AAGAACTGACCAGCCATTCGCG TTAGCAT TGCGTGTGCGAC
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*16890 *16900 *16910 *16920 *16930 *16940 *16950

*16960 *16970 *16980 *16990 *17000 *17010 *17020
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*16960 *16970 *16980 *16990 *17000 *17010 *17020

*17030 *17040 *17050 *17060 *17070 *17080 *17090
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*17030 *17040 *17050 *17060 *17070 *17080 *17090

*17100 *17110 *17120 *17130 *17140 *17150 *17160
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*17100 *17110 *17120 *17130 *17140 *17150 *17160

*17170 *17180 *17190 *17200 *17210 *17220 *17230
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*17240 *17250 *17260 *17270 *17280 *17290 *17300
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*17310 *17320 *17330 *17340 *17350 *17360 *17370
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*17380 *17390 *17400 *17410 *17420 *17430 *17440
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*17450 *17460 *17470 *17480 *17490 *17500 *17510
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*17450 *17460 *17470 *17480 *17490 *17500 *17510

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*17590 *17600 *17610 *17620 *17630 *17640 *17650
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*17590 *17600 *17610 *17620 *17630 *17640 *17650

*17660 *17670 *17680 *17690 *17700 *17710 *17720
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*17800 *17810 *17820 *17830 *17840 *17850 *17860
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*17870 *17880 *17890 *17900 *17910 *17920 *17930
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*18010 *18020 *18030 *18040 *18050 *18060 *18070
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*18010 *18020 *18030 *18040 *18050 *18060 *18070

*18080 *18090 *18100 *18110 *18120 *18130 *18140
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*18150 *18160 *18170 *18180 *18190 *18200 *18210
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CGTT GTA T ACAAGC GACCTGTTTAC TA CC TAC
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910720 910730 910740 910750 910760 910770 910780

910660 910670 910680 910690 910700 910710 910720
GTATGCTTACTGCAATTTAACAAAAATGACGCTAAGTACTATCATATCGAAAT-AATCACGTCGGTGT
GTATGCTTACTGCAATTTAA AA AT TA GCTA GTA ATCATACTGAAA AA CACGTCG TTT
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910730 910740 910750 910760 910770 910780 910790
GTTGCTAGATGACGGGCACACACTGAAGACAACTGAGCTCTTATCAAGCTTACAAAATGTAGTTTA
GTTGCT TGACGGGCACACACTGAAGACAA CTGAGCTCTTATCAAGCTTACAAAATGTAGTTTA
GTTGCT--TGACGGGCACACACTGAAGACAACTGAGCTCTTATCAAGCTTACAAAATGTAGTTTA
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TTTT TTTTGTGACTAAATGACTGACGACAGCAAGGTAGAGGCTGGAAGTTATACAAATTAATGCC
TTTT--TTTTGTGACTAAATGACTGACGACAGCAAGGTAGAGGCTGGAAGTTATACAAATTAATGCC
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910870 910880 910890 910900 910910 910920 910930
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GATATATACGGCAAAATGCAATTCGCTGGAGTGAAGAAAACATCGATACCAATTCGAATTCGAATCGA
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910990 911000 911010 911020 911030 911040 911050

910940 910950 910960 910970 910980 910990 110000
TATTTGTATCGCACGCTTACTGTTACAGC-TATTTATCATAATATCGAATGAAATTAATTTAGG
TATTT TATCGCACGATC ACT TTACAGC TATTT TTC TAAAT AAT TA TT T TT G
TATTTACTCGCACGATCTACTTTTACAGCTTATTTGTTCTTAAATGTAATATGTAATTTGGGCTGAG
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911010 911020 911030 911040 911050 911060
TAAATGATGATAACTTTGTAGGAAACACAAATTT-ATTTTATTTTACGCTTCAATTTATTTTGGCC
T A TGTG TA ACTTTGT A GACACAAATTT AT T T TATC CT TTTA ATTT C
TACTGTAATAAGACTTTGTAAGAACACAAATACATATCTATATCT--CATCTTTA-ATTTTAC
911130 911140 911150 911160 911170 911180 911190

911070 911080 911090 911100 911110 911120 911130
GATAACA-AGTTTTAGATCATAATACATAGCTAAGGTTAACAGGTTTATCGAGTATCCCAATTTGGATA
GATAA A TT AGATCATAATACATAGCT GG TAACAGGTT TATCGAGTATCCCAATTTGGATA
GATAAGTAAATATGAGATCATAATACATAGCTGTTGGTTAACAGGTTTATCGAGTATCCCAATTTGGATA
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911140 911150 911160 911170 911180 911190 911200
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T T TCT ATTTGA A AGC
TGTGTTCTTATTTGA-----AAAGC-----
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911210 911220 911230 911240 911250 911260 911270
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911280 911290 911300 911310 911320 911330 911340
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G TAT GAT TTTTAA AA
-GTTATTCGAT-----TTTTAGAAC-----
911290 911300

911350 911360 911370 911380 911390 911400 911410
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911420 911430 911440 911450 911460 911470 911480
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¶11490 ¶11500 ¶11510 ¶11520 ¶11530 ¶11540 ¶11550
CAGAACAACAACCTTAGGATTTGCTCCAACATTTTTTTATTGTTTTATCATTTGGAAAACCGAATC

¶11560 ¶11570 ¶11580 ¶11590 ¶11600 ¶11610 ¶11620
CCAACAATAAACTTTAATCTATGAGGTAAGCAGCAGTATCCGATTTGAAGCACCTTTTGGCGATAGAA

¶11630 ¶11640 ¶11650 ¶11660 ¶11670 ¶11680 ¶11690
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¶11700 ¶11710 ¶11720 ¶11730 ¶11740 ¶11750 ¶11760
GGGCGTCCCGCTCGCAGATTTGCGGTAGTCTTCGAACGGGCGAAGGCTCCAGCACCTCAGCAAGTTGTCG

¶11770 ¶11780 ¶11790 ¶11800 ¶11810 ¶11820 ¶11830
AAAGGTACACATAATCAATTTTTGTCTCGAGGCACAAAATTTGGAATCTTTTTATFAAAGCAAAAAG

¶11840 ¶11850 ¶11860 ¶11870 ¶11880 ¶11890 ¶11900
CGATGTCACCTCTTACCATGAGCAATCCCTTGAGGACTCTGAAAGTTTTTCATTATTGCAAGTGGFAAAA

¶11910 ¶11920 ¶11930 ¶11940 ¶11950 ¶11960 ¶11970
AACCCAGCTGGATTGTCGGAATTTGACAGTGCTCGATGCTTTGGCCGTTTCGAGCTGCGCGAATCTCCTG

¶11980 ¶11990 ¶12000 ¶12010 ¶12020 ¶12030 ¶12040
CTAGCGCTCCACCCGCCAGGATTCCTCAACCCAGGGCCATTTGGGAGAGGATCCGTCGCTAACAGAATA

¶12050 ¶12060 ¶12070 ¶12080 ¶12090 ¶12100 ¶12110
AGGTAAACTGATAAATCTCTCGTTTTCCAGGGAATCTTTTTATTAAATAAAGTTCTTCTACAGTATAT

¶12120 ¶12130 ¶12140 ¶12150 ¶12160 ¶12170 ¶12180
ACAGACGTTCTTACGACTCGGTTTTGGGATCTAGGAAGCCAGGATAAATGGCAGAATGCTGCGGACTCT

¶12190 ¶12200 ¶12210 ¶12220 ¶12230 ¶12240 ¶12250
GAGCTTTGTCAATCATATTCAATTTGATAACATAAAGATACCACTAAATCTGTTTTTATTTTTCTTCGCT
AATTCGTTTT A T CT T
-----AATTCGTTTTGGA---TACTGAAT
 ¶11310 ¶11320

¶12260 ¶12270 ¶12280 ¶12290 ¶12300 ¶12310 ¶12320
TTTCATGTTTACCTAGATTATTTAATATATATTTACAT-TGAAACGTTGTTGTCATTCAAATAAATATAC
TT AT TTT TTA TTTA AT T ACA TGA TT TT T ATTCAAA AA A AC
TGTGATTTTT-----TTAATTTA--ATGCGATGACAGGTGA-----TTTTTATAATTCAAA-AACACAC
¶11330 ¶11340 ¶11350 ¶11360 ¶11370 ¶11380

¶12330 ¶12340 ¶12350 ¶12360 ¶12370 ¶12380 ¶12390
C-CCTTCTGTGGGACCAATAATAATGCAAGTTCCAATTTTTATACCCGTTACTCGTAAGGGTAAGAT
CTT TC T A T ATA AG T A TTTT TACC
TACTTTTCACTTAAATTTGCTGATAT---AGATAGACATTTTTTACCT-----
 ¶11390 ¶11400 ¶11410 ¶11420 ¶11430

¶12400 ¶12410 ¶12420 ¶12430 ¶12440 ¶12450 ¶12460
TCGTTGAACTGGCAGAGGAAGCGTTCCGACATATAATCTATATATATATATATTTCTGTATCAGG
GTT A AC CAG G G GTT ATC ATA AT T PA A AT CT
--GTCATAC---CAGTTG--GTGT-----ATCGATA-ATTTGTA-AGATCCT-----
 ¶11440 ¶11450 ¶11460 ¶11470

¶12470 ¶12480 ¶12490 ¶12500 ¶12510 ¶12520 ¶12530
AGAAATAGCCGAGTCGATCTGTCATGTCCTGTCGCGTATGAACGTCGAGAATATAAAAGCTAGAAG
AAT G
--AATGG-----

¶12540 ¶12550 ¶12560 ¶12570 ¶12580 ¶12590 ¶12600
GTTGAGAGTCCCAAGTTGAGATCCATGTTGCCACGCCACTCTAACCGATAATACAGCCCGCAAGAT

¶12610 ¶12620 ¶12630 ¶12640 ¶12650 ¶12660 ¶12670
TATCGCGTGAGGTAACGATGTAATCGAAGGATTACAGCGCCCGACATGGGCGGAACTTTGTTGTCG

¶12680 ¶12690 ¶12700 ¶12710 ¶12720 ¶12730 ¶12740
CGCGGATGGCAGGGCGACAGGATCACACGATTCGCGGACAGCTGCGGGGATACCTTGGTCGGAATGG

¶12750 ¶12760 ¶12770 ¶12780 ¶12790 ¶12800 ¶12810
TGGATTGCTTACGATTCCAGGACATTTGGTAGCATCCACAATGGGTTTTTGTCCCAATAAAGTAAC

¶12820 ¶12830 ¶12840 ¶12850 ¶12860 ¶12870 ¶12880
TGCGGAGGATGCGGTTTTGTGTAACGATCACCGATCAGAGGACATTTATGCAAGCATCATATCGTCCGCA

¶12890 ¶12900 ¶12910 ¶12920 ¶12930 ¶12940 ¶12950
TATCTGCTACATCCGCTGCATGGCGTGATAAATGATCCCAGCCGATCAGATTCCCACAACGATTAATG

¶12960 ¶12970 ¶12980 ¶12990 ¶13000 ¶13010 ¶13020
CGCATAAATGAAAATCATCAAAAATTTATAAAGTATTTAAGAAGAAAATTTCTTTAGAATGTCATCT

¶13030 ¶13040 ¶13050 ¶13060 ¶13070 ¶13080 ¶13090
GATTGAACTCTGGTGTGTATGATGAGCTATAAATAAAATTTAAATATATTTATTTAAAATGCTAAGAAA

¶13100 ¶13110 ¶13120 ¶13130 ¶13140 ¶13150 ¶13160
CTTTGCTATCTGTGAGTTTCTAAAATTTCTGATCAAGTGGGCAATGAAAATAACATTTTGTGTTTTGTA

¶13170 ¶13180 ¶13190 ¶13200 ¶13210 ¶13220 ¶13230

CTTTCTGATCAGTAAACGACCCAGTTAACATTTGGCCAGCACCATGAAACAGCTCCGAAAAACTTACCA

¶13240 ¶13250 ¶13260 ¶13270 ¶13280 ¶13290 ¶13300
AAATAAGACCGTTGAAAATATTTTACAAAAGTAAAGGGCAGGAAAAATTAGCCTTTTCTACGTTTATAC

¶13310 ¶13320 ¶13330 ¶13340 ¶13350 ¶13360 ¶13370
ATATTTGGTAAAATTTCCAACCCCAAGTATTTGTATCCAGGAACAGAGGTAAGTTCAAATTTAAACCA

¶13380 ¶13390 ¶13400 ¶13410 ¶13420 ¶13430 ¶13440
TTTTGTAGACACCAATCGCGTCTCACACAACCTCAATCACAATCAAATTTTCGGTTCCAAAATAAAAA
CAAATAAAAA
-----CAAATAAAAA
¶11480

¶13450 ¶13460
AA-----AAAAAAAAAAAAAAAA-----
AA RRRR AA A R RR
AATCATATTTTGAGAGCGAAAATATATATAAATTTTATAATATTTTATAATATAAATATTTATA

¶11490 ¶11500 ¶11510 ¶11520 ¶11530 ¶11540 ¶11550

TAATAATAATATTTTATATAATAATAATAATAATAATTTTATAATTTTATAATAATAATAATAATA
¶11560 ¶11570 ¶11580 ¶11590 ¶11600 ¶11610 ¶11620

TATTTGATGAGGTAACAATAGTGTATAAATTTTAAATTTGTGTTAACTAATAATATATTTTAAATCG
¶11630 ¶11640 ¶11650 ¶11660 ¶11670 ¶11680 ¶11690

A
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¶11700 ¶11710 ¶11720 ¶11730 ¶11740 ¶11750 ¶11760

AGACCAATTCAAAAAGCCAAAATAAACTTCCAATCATTTGAAGTTATAAAATGTATATTTTATAAAT
¶11770 ¶11780 ¶11790 ¶11800 ¶11810 ¶11820 ¶11830

TTTTCATTTTATTGGTATATATGATGTCAGTAGAAAACCTTTTACATTTTGGACACTGGTTAAGGCC
¶11840 ¶11850 ¶11860 ¶11870 ¶11880 ¶11890 ¶11900

TAGTATAAAAAGCATTTGGCGCAACAGCCGCGAGTTGCCTCGCACAGTAGAATGCGACTATGATTAC
¶11910 ¶11920 ¶11930 ¶11940 ¶11950 ¶11960 ¶11970

CGGATAATGTCGCCTTGTGTTCTTTCAATACAATAACAAGATCATAAAATTCGGTGAACACTGTGC
¶11980 ¶11990 ¶12000 ¶12010 ¶12020 ¶12030 ¶12040

ACACCTCGAAGCAGAATTCGCACAGGAAGTGCAGGAAGAGTTCCCTTTGAGCACTTGATGAGTATGTCG
¶12050 ¶12060 ¶12070 ¶12080 ¶12090 ¶12100 ¶12110

GAGTTTTCAAAGAGTCTTTGCTAGTTTCCATTCTTTTCGTGGGCAACACAATTTGGTCTTCTTCAGT
¶12120 ¶12130 ¶12140 ¶12150 ¶12160 ¶12170 ¶12180

ATTTGAGCAGATGGAGAAGTCTTCTCCACAGTTTCGTGCAATGGAGCAAAATACGTGTATAGGTGTA
¶12190 ¶12200 ¶12210 ¶12220 ¶12230 ¶12240 ¶12250

GCAAGTACTGCAATTTGCCGCGATCTCCAGCATCTTATCGAAGCAAAATATATAGTCGCTGATAGC
¶12260 ¶12270 ¶12280 ¶12290 ¶12300 ¶12310 ¶12320

GTGTGACATAAATCCGAATCTTAATGATCCGTATGCCAGGCACTTTGGGCGTCCCTCAGTCTTGT
¶12330 ¶12340 ¶12350 ¶12360 ¶12370 ¶12380 ¶12390

GGTGTGAGGACCTTATCGCGCCACGACTTTCCAATTGCAGCAGTGTGCTTCAATCCCTCGTCCAGCA
¶12400 ¶12410 ¶12420 ¶12430 ¶12440 ¶12450 ¶12460

AATCGGCCAGCTTAACCGTATCACCCGATCGAGTCTTAACTTCTTGCCATCTCACCGAAGCAGCGCC
¶12470 ¶12480 ¶12490 ¶12500 ¶12510 ¶12520 ¶12530

A
AACTCTACGTGCTCAACAGATGAGTGAAGTGGATTGAGGATGATGCTTGGCAGCTTTGAAAAAG
¶12540 ¶12550 ¶12560 ¶12570 ¶12580 ¶12590 ¶12600

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¶12610 ¶12620 ¶12630 ¶12640 ¶12650 ¶12660 ¶12670

GATAACGAAATGGCTGCCATATCAGAGGTGTCTAGGTAAGCCGCAATCCGATTTCAACAATTTGTCAAGG
¶12680 ¶12690 ¶12700 ¶12710 ¶12720 ¶12730 ¶12740

TATGCCAGTTTTCGTATCGTCTGGCCACATGATTTTGGGACCTTCATCTCTTCCAGCAGCCCTTTTCCT
¶12750 ¶12760 ¶12770 ¶12780 ¶12790 ¶12800 ¶12810

CGCAAGTATTCACAACAGACAGCATACTGATTTGATAGAAGATTCAACAGCTTCTTGTGCTAATAT
¶12820 ¶12830 ¶12840 ¶12850 ¶12860 ¶12870 ¶12880

CTAATCGTTCGTAGATCGTTTGGAACTCCTTTTCGCGACACATTGCAAAATAACTCCAGCGCTTTATGGA
12890 12900 12910 12920 12930 12940 12950

GTTCCGGACACCTTTCTGCAATGAACCACTCGACTGTAGGCACGTTTTTGAACCTCATCTTCATCG
12960 12970 12980 12990 13000 13010 13020

AATTCGACGGGAAGTATTATTACCTCGAGCACATCGTAATTAGTTCGTTTGTAAAAAGTCTTACCGTT
13030 13040 13050 13060 13070 13080 13090

TCTTGACTCCTTTGTAGAACAATTGCAGATCACTTATTGGGGGGCTTTCATTAAAGTAGTGGGGAAGC
13100 13110 13120 13130 13140 13150 13160

ATCTTCCAAATGGCAATCAGCATGCCAACTGTGTTCCCAATCACCAGGTGTTGGTGGCGGATCACA
13170 13180 13190 13200 13210 13220 13230

TGCTGCTGCAGGAATCCAGTAGAGGCATAACGATTCCGCCAATGATGGTGGATCGCAAGTGACCGACAT
13240 13250 13260 13270 13280 13290 13300

GCATCTGTTTGGCAATGTTGGGCGATGAAAAGTCAACAGGACTCGCCTTTTCTTCACTCTCGGGGGCTC
13310 13320 13330 13340 13350 13360 13370

GACACCATAGCGCAAAAGATTGCTCAAGCTGAAGCTGCATAATCTCTGCAAAAAAAGATTTTAAAG
13380 13390 13400 13410 13420 13430 13440

TTTGTAAATGGAATTCATGATCTAGTGTACCCACTTGCTAAGGAAAAGTTACGAAACAGCTCCAGCA
13450 13460 13470 13480 13490 13500 13510

13470 13480 13490 13500 13510 13520 13530
ATTTCCAACTT---CCTTG---GGGAAAAGTAAGCTTTG---CCTAGATTATCGGCACACATTTTTTTCGTT
ATTTCCAACTT C TG GS A GT GC TG C T TCGG C A T T CGT
ATTTCCAACTTTTCTATGAGTGGCGATGGTGGCAGTGCCTTTCACACTCGGTCCGAA---TATCACGTG
13520 13530 13540 13550 13560 13570 13580

13540 13550 13560 13570 13580 13590 13600
TAGCCCATCCATTCATTTTGAAGTTCATCGAAGCGAGTTGTATTTTCCAAAT---CGTGTATTAGTTTCGACA
GC A AT C TTT TT AAG TTG A TCC AT C TTGT G GA A
GTGCTTTACTAATGCCCTTTTCTTT---AAGTTTCTTGGACAATCCCATGGCATGTT---GCACATGATA
13590 13600 13610 13620 13630 13640

13610 13620 13630 13640 13650 13660
TTTCATACATTTGGTTGATAAAAAATAAATACTACACACACAGTACACTCGTATCGTA---CTC---GTATTT
T ATTT G GA A AT A A T T CA A ACA G CGTA CTC G ATT
GTCCCGCAATTTTCGACAGCTACTATTA---ACTGGTGCA---ATTATAACAGG---CGTATCTCTGAAATTC
13650 13660 13670 13680 13690 13700 13710

13670 13680 13690 13700 13710 13720
CG---AATTGAAAATTTTCGCCAAAACAGAAAACCTAATAAGAAC-----ATCTAA---ACCATTCTCGTC
CG A TGA TCGG C A GA A A T A G C A ATC AA A ATTC T
CGGAAAAGCTGATGCAATCGCTGACCAAGACACTTTCAGGTGCTCGGTGATCGAAGAGGATTCCTT-

13720 13730 13740 13750 13760 13770

13730 13740 13750 13760 13770 13780 13790
GCAGCTAGCAATCCAAGTGAAGTAAATCATGTTTAAAATGAACGAAACGAGAGTAAATCAGACGCAAGCGAG
G AGC TC G G G C TT A T G A GA T C GA AA A
---G---AGCT---TCGGGGCGCCCGGGCGGCAATTTGATTTCCTCAGCAATAGACTCGCGAAAATAAATAA
13780 13790 13800 13810 13820 13830 13840

13800 13810 13820 13830 13840 13850
CC-ATTATCAGGG-CTTCAA-AGAGGGCCTTCCAGGAAA---AGATTC---GCAACACAGATG-GAACTCGT
C A T TC CTT AA A A G T CA AA A TTC G A A A A G G TC T
CTAAATTTCTTATACTTAAACACATTTGGGGT-CATAAATTACCTTCTTCAGGATAAAAAGCGGTCTT
13850 13860 13870 13880 13890 13900 13910

13860 13870 13880 13890 13900 13910 13920
---GTGGCGTGACTCAAAATGGGAAACGATCAACG-CAACAGTCGAA-TG-TGCCGATGGATGGATGGG
G C T T ART GAA C A GAA C AC GTC AA TG T C ATG G T G
AAGCTTCTTATTTCAATTTGAAGCTGAACAGATCGAC-GTCCAACGTGCTCACAATGTTGCGGAGTTTG
13920 13930 13940 13950 13960 13970 13980

13930 13940 13950 13960 13970 13980 13990
GATATGGGACGCAAAATGTCGGAAGATGGAATGACTGATACATCGAATACCGTCAACAGCCATCCGTT
AT GG GCAA G TGG C G T C T AA CGG A G CAT T
TATTTCCGGCGCAA-----GGCCTTGGGTCTTCAGTTCCTTTAAAGCCGGC---AATTGTCATG-----T
13990 14000 14010 14020 14030

14000 14010 14020 14030 14040 14050 14060
CCAAGGATCAAAGCAATGTC-GCGAAAACAAAGCCATCCCATCCCTACAACACCAGGACAGATCG
C AA T A AA T TC GC A A C T CC C A C GAG CA AT
CAAAATGTTGGAGTAAAGTATCAGCTATTTGCTTACCAGTTC---CTGATTTCTCAGTCCATATTT
14040 14050 14060 14070 14080 14090 14100

14070 14080 14090 14100 14110 14120 14130
AACAAGAGACAAAGCACAAGATATGTA AAAAAGTGCAAA-CAGAA-AGACGAATGCCATCATCG
A C GA A G CCAA AT T T A G TGC C GA AA A AA CA CA GG
AGCTCGGAC---ATGTTCCAA---AT-TTTGACTTTTGTGCTTCGCTGATTAAATACACAAACA---CAAGC
14110 14120 14130 14140 14150 14160

14140 14150 14160 14170 14180 14190
CTCTCCGAT-GATGG--AATGCGCGGCAAAA--GCCGGCCAAAATTAATAGTATA-GCGAACTTAGCT
T C AT GATGG A T G GCA AAA GCC C A ATAA T A G GA T A
ATGCCACATGGATGGCAAGTAGTGTGCACAATCGCCTATCGATGACGATAACTGCAAGTGTATGTCACGC
14170 14180 14190 14200 14210 14220 14230

14200 14210 14220 14230 14240 14250
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A CAG C TC G ATGCCG TTC A TG G T A TCA A T AAC
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14240 14250 14260 14270 14280 14290 14300

14260 14270 14280 14290 14300 14310 14320
ATGACATGCTGAGGGTGTAGTGGATTGATCGACAGG---AGAGCGCAACAGGATGTTATCGGTGGCTA
CAA C A TA T ATTT TC CAG A A C C A A TA GGT G TA
TGCAGACACA---TA-TTTATTTTTCGAGCTTAAATCATCTTTAAAARAAGTAAAGTCCGTA
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14330 14340 14350 14360 14370 14380
TC-ATCCGGTGGCCATTTGGCGATGTAAT---CGTAAACCGTATCATGTCCTC-AAAAAGCTGGGCTGG
T A T AT G G T T TT CG AA C A CAT CT AAA A T GGCTGG
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14380 14390 14400 14410 14420 14430 14440

14390 14400 14410 14420 14430 14440 14450
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G CA T A CG T G TGC A AC C AT GAT TA G TC A T TC
GACCCATGGGAAAAGCGCATCGGG-TGC-ACCTAACACTTAT-GATTTTTATCGATGGATCGATTTTC-
14450 14460 14470 14480 14490 14500

14460 14470 14480 14490 14500 14510 14520
AAGTCGGCGAGGTCTACAAGGA---AACTGGTATCGA---TGAGATTATGCTCTTTTCCAAATGAGCCT
G CA CTA A GA AA TG AT G T G T A G T T TC AAA T
-----GACCACCATATATGATTAATGATGTTGCTTTTCGCTTAAGGTG-TCTCTAAAACCTTTT
14510 14520 14530 14540 14550 14560 14570

¶14530 ¶14540 ¶14550 ¶14560 ¶14570 ¶14580
ACACGA---TCAGCATAAGTACAGANGCCACGTGGTCGG-TTCTACAGATTCTTTGAAAT-TACCGGAC
A G T G TAA TA A A T GTC TTCT AT C TTGA T TA GG
ATGTGTATGTGTGTTAATTAATTTATAGATTTTGTCACTTTCTGTAAATAC-TTGATGTCTAGTGG-
¶14580 ¶14590 ¶14600 ¶14610 ¶14620 ¶14630 ¶14640

¶14590 ¶14600 ¶14610 ¶14620 ¶14630 ¶14640
CGCACGGAAGGCACA---TTGGCTGGT---CCTAGAGTTCCTCGTGACA---ATTTGCTAAAAGTCATC
G CG AA A A TTTG C GT C A A TC C G A A AT TG AAA T
-GGGCGCAACTAAAGTGTGACGTGTGGCCGATATATCCCCGCAAGATACATATGTAAAACATGAGA
¶14650 ¶14660 ¶14670 ¶14680 ¶14690 ¶14700

¶14650 ¶14660 ¶14670 ¶14680 ¶14690 ¶14700 ¶14710
GAAAGATGCTTTTACAAGGATGCCCCATTTCCAATATCAAGCAAATGCCAGCAGGTGCTCACGGGGC
AAA A T T AA G CCGATT AA AT A AAA TGC GCAG ACGG
AAACAGATGTCTTAACCGCCCTCCCATTT---AAATTA---AACTGCAATGCG---ACGGTTT
¶14710 ¶14720 ¶14730 ¶14740 ¶14750 ¶14760

¶14720 ¶14730 ¶14740 ¶14750 ¶14760 ¶14770 ¶14780
TAAATTTCTGCAAGAGAGTGGGATCATAACACCCGATCAAAGCCGAGAAATGCTCCTCGCTC
T GTTT A A A T GG ATA A AC AT TA CCGG G
TTTTGTTTTACAAATATAAATAGTGG---ATAAAAACATATTTA---CCGGGG
¶14770 ¶14780 ¶14790 ¶14800 ¶14810

¶14790 ¶14800 ¶14810 ¶14820 ¶14830 ¶14840 ¶14850
CAACGAGGTGTCGCTTCGGACCGAGATCAAGACCGCAATGAAGTATATTTGAAGGCCAACGAGGGGAAA
GAAA
-----TTGATGGACA-----GAAA
¶14820

¶14860 ¶14870 ¶14880 ¶14890 ¶14900 ¶14910 ¶14920
CTAAGTCCCTAGGTATGTTAGATATACTCGTATAATAGCACACATCTGAACAGTATAAACGTTATAGTCT
CT TCCTA TAT AA AG A A T AAC GT T C TT A CT
CT---TCCTATTTAT-----AACAGGAGA---TAACTAGTT---CCTTCGACT-
¶14830 ¶14840 ¶14850 ¶14860 ¶14870

¶14930 ¶14940 ¶14950 ¶14960 ¶14970 ¶14980 ¶14990
CAAGATGACCAAAACGGCCAAGAGACGGATGCAGGCAAAAGTCCAAGAGGTGATATCGTTTTTCAAGAA
G CC AAA GCCAAG G C GATG GAA TG A GTT
---GTGTCCCAAAATGCCAAGTGTG-GATGGG-----GAATTTGTAAGTTAC-----
¶14880 ¶14890 ¶14900 ¶14910

¶15000 ¶15010 ¶15020 ¶15030 ¶15040 ¶15050 ¶15060
CATCGCCGATGCTCCGACGGCAGGGCATCGAGGATCTGCTCTATCTGGCCGAACTGGCCCTCATCGAAC

¶15070 ¶15080 ¶15090 ¶15100 ¶15110 ¶15120 ¶15130
CGATTACCAGCCGATGCGCGTCTCCGATAACTTACCATTCCTCCCTCGGCTTCGACGGGTTATGAT

¶15140 ¶15150 ¶15160 ¶15170 ¶15180 ¶15190 ¶15200
GATGACGATGCCGATTGCCGTACGGTCAAGATTCGAATTCGCCGAAATGGAGGCAATGGAATACAAA

¶15210 ¶15220 ¶15230 ¶15240 ¶15250 ¶15260 ¶15270
TSCGACAGGATAAACCTGTGTTTAAAGAGTCCAGAGCTCTTCTTGGGATATGTGCTCGCATATTTACAGA

¶15280 ¶15290 ¶15300 ¶15310 ¶15320 ¶15330 ¶15340
ATTTGGATGAGAAGGAGCTTAGCACTCAGGACAAGCGAGGCGCTTCAACGAGGCGAGTGGACTGGCCCA

¶15350 ¶15360 ¶15370 ¶15380 ¶15390 ¶15400 ¶15410
GACCAAAAAGAATGCCAGGTCCCGATTGAGATTGGCATCGAATGCTGCATATACGGTATTTATCCACAT

¶15420 ¶15430 ¶15440 ¶15450 ¶15460 ¶15470 ¶15480
TTCATTCAAATTTGAAAGCTTAGTTTAAAGTTATAGGATTTTGAATTCCTCTTGCAATTTGAATTT

¶15490 ¶15500 ¶15510 ¶15520 ¶15530 ¶15540 ¶15550
TGTGTACTACTTCTAGTCTCTTTATGAAAGATTCAATTCCTGCTAATCAGAATGTTAATTTCAAAG

¶15560 ¶15570 ¶15580 ¶15590 ¶15600 ¶15610 ¶15620
CTTGTGCGATTTCTATTAGAATAGCATTAGATGTTTGTGCGTACTCATCAAAAATTTCCCAAATGAA

¶15630 ¶15640 ¶15650 ¶15660 ¶15670 ¶15680 ¶15690
TAACATTTCTTTTACCTTCCAAGACTGGAACCGGTGGCGATCGAACAGAAAAATCAATTTGAACG

¶15700 ¶15710 ¶15720 ¶15730 ¶15740 ¶15750 ¶15760
ATATTTACCCCATCGATCCGGCCAACAAGCATGCGATGACGGGTGAAGATAGCCGACTTGGCAATGC

¶15770 ¶15780 ¶15790 ¶15800 ¶15810 ¶15820 ¶15830
GGTATTTTCCATCATCACTTCCACGACGACATCCAGCAAGGAGTACCGGCCCTTGGAGGTGATAC

¶15840 ¶15850 ¶15860 ¶15870 ¶15880 ¶15890 ¶15900
GGTGGGGATTTGGGAGACCGCCGATATCTGGAGCGTGGCTGTCTGTGTGGGAGCTGGCCACCGGGA

¶15910 ¶15920 ¶15930 ¶15940 ¶15950 ¶15960 ¶15970
CCTATCTATTGATACCCATTCGAAAAGGGCCAATAACAATCTGGATGAGGTCCATATAGCAAAAATC

¶15980 ¶15990 ¶16000 ¶16010 ¶16020 ¶16030 ¶16040
CGAAACCTGTGGTCCGATACCGGTGATCTCATCCGCAAGGCAACACTCGAGAGATTTTCATCAATGAC

¶16050 ¶16060 ¶16070 ¶16080 ¶16090 ¶16100 ¶16110
GCCGGCAACTATGCAACATAGAAACCTGAAGCCCTTAACTGGCCAATATCTTTAATCAGATGGTACG

¶16120 ¶16130 ¶16140 ¶16150 ¶16160 ¶16170 ¶16180
GATGGAGGACTGCCAATCCACGGAAATTCGTTAATTTCTGATGCCATGCTGCAGACCAATCCTTGGC

¶16190 ¶16200 ¶16210 ¶16220 ¶16230 ¶16240 ¶16250

TCGCATATCCGCAAGCAAAGCCTTGGAAAGCCACTACTTATGCAACATTTGCTCTTCTGGCATTGACATT

¶16260 ¶16270 ¶16280 ¶16290 ¶16300 ¶16310 ¶16320
GACGATTTACTACTATTATAGTGTACGTGAAATCAAGGACTGCACACATACCAGAGTGAAGAATAATGAGC

¶16330 ¶16340 ¶16350 ¶16360 ¶16370 ¶16380 ¶16390
ATGAGGACAGCAGCAGCTGCAGTTCCATAGACAGCAGCGAATTTCCAGCGACGAGGCTCGCTATGAGGA

¶16400 ¶16410 ¶16420 ¶16430 ¶16440 ¶16450 ¶16460
CGATGTCAACGAAGAAGACATCAAGAAGTTATATTAACAAGTGTATTTAGCCAAAGCAACGCGCAGTA

¶16470 ¶16480 ¶16490 ¶16500 ¶16510 ¶16520 ¶16530
ACCCATATAAGTAACATCATATAACCCATATAGATATTTCAAGTTATAATAAAGTGTCCGGAGGCCATA

¶16540 ¶16550 ¶16560 ¶16570 ¶16580 ¶16590 ¶16600
TATATACAAATTTATTTTCATGTATGTTTATTTAAAACAAAGGTGAAAACAAATATGATGAGGTTATATTT

¶16610 ¶16620 ¶16630 ¶16640 ¶16650 ¶16660 ¶16670
GTATCACTTTAACTGAAAGTCCATCTGTGCGTATGAACGTCGAAATCTCAGGAACATATAAAGCTAGAAG

¶16680 ¶16690 ¶16700 ¶16710 ¶16720 ¶16730 ¶16740
GTTGAGATTAAGCATAGAGATTCAGAGACATAGACGCAGTTTCTTGACACATGTTGCCACGCCCGCTCT

¶16750 ¶16760 ¶16770 ¶16780 ¶16790 ¶16800 ¶16810
AACGCCCTCAATGTGTTGATATTTTTCACAGTTTATAGTCTTGTAAATTTCTATCAATTTGCAAAAA

¶16820 ¶16830 ¶16840 ¶16850 ¶16860 ¶16870 ¶16880
AAAAAAAAAAAAAAAAAACTGCCACGGCAGGTTTGGCGCCACGCTTTTGAACAATTTTAAATTT
AAAAAAAAAAAAAAAAAC

¶14920 ¶14930

¶16890 ¶16900 ¶16910 ¶16920 ¶16930 ¶16940 ¶16950
TTTCTCATCTTATTCCCAATATCTATCGATATCCAGAAAAATGATAACATTTGCGGTTGCGATTACAC

¶16960 ¶16970 ¶16980 ¶16990 ¶17000 ¶17010 ¶17020
TAGCTGAGTAATGGGTATCTGATAGTCGGGAACCTCAATATGTTTATTTGATCAATTTTAAATATATA

¶17030 ¶17040 ¶17050 ¶17060 ¶17070 ¶17080 ¶17090
AATAGTTAGATGGRTAACTTTAAAATAGTTTGGCACTGTTAAGCTTTTGGTATAAATAAATATGGTGA

¶17100 ¶17110 ¶17120 ¶17130 ¶17140 ¶17150 ¶17160
TTTTAAAGATAAAAACCAATATGAAAATAAAACTACCAATTTCTTCAAGGTATATAATTTTACTTTTATA

¶17170 ¶17180 ¶17190 ¶17200 ¶17210 ¶17220 ¶17230
AAATGTTTCATTTTATTCGCGTACACATGATGTCAGTAGAGAATTTTACATTTTCGAACTGGTTTA

¶17240 ¶17250 ¶17260 ¶17270 ¶17280 ¶17290 ¶17300
AGGCCTAGTATATAAAGCATTTGGCGCAACACAGCCGAGTTGCCTCGCACAATAGAAATTCGGCTATGAT

¶17310 ¶17320 ¶17330 ¶17340 ¶17350 ¶17360 ¶17370
TGACCCCAATAATATCGCCTTGTTTGTCTTTTCGATGCAATAACAAGAGTCATAGAATTCGGTGAACAC

¶17380 ¶17390 ¶17400 ¶17410 ¶17420 ¶17430 ¶17440
TGTGCACACTCGAAGCAAACTCGCACAGGAAGTGCAGGAAAAGTTCTTTGAGCACTTGATGAGTATG

¶17450 ¶17460 ¶17470 ¶17480 ¶17490 ¶17500 ¶17510
TCGTGGAGTTTCAGTAGAGTCTTAGCCAGCTTCCATCTCTTTCGTGGTCCAACAATGTTGGCTCTCT

¶17520 ¶17530 ¶17540 ¶17550 ¶17560 ¶17570 ¶17580
TCAGTATTTTCGGGTAATTTGGTAAATCTTCCAGAGTTTCGTGCAATGGAGCAAAATACGTGTAGGT

¶17590 ¶17600 ¶17610 ¶17620 ¶17630 ¶17640 ¶17650
GTAAGTAGTACACCGCAGTGTGCCGCGATCCTCAAGCATCTTATCGAACGAAAATATATAGTCGCTG

¶17660 ¶17670 ¶17680 ¶17690 ¶17700 ¶17710 ¶17720
ATCCGGTGTGACATAAAATCCGAATCTTAAATGCATCCATATGCCAGCGACTCTTGGGCGTCCCTCAGTT

¶17730 ¶17740 ¶17750 ¶17760 ¶17770 ¶17780 ¶17790
CCTGTGGCGTGAGGACCTTATCGCGGCCACGACTCTCCAATGTGTGAGGATCGCTTCAATCCCTCATC

¶17800 ¶17810 ¶17820 ¶17830 ¶17840 ¶17850 ¶17860
CAGCAATCGGACAGCTTAAACCCTACCCGATCGAGTCTTAACTTCTTGCATCTTCGCCAGACTC

¶17870 ¶17880 ¶17890 ¶17900 ¶17910 ¶17920 ¶17930
ACGCCAAACTGTACGTGGTCAACACGATGGCTGAGTGGATTTAGGATAGCAGATCGTTCCGACGCTTTGA

¶17940 ¶17950 ¶17960 ¶17970 ¶17980 ¶17990 ¶18000
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¶18010 ¶18020 ¶18030 ¶18040 ¶18050 ¶18060 ¶18070
CAAGCGATGGCGAATGGTGCATGTCAGAGGTATCATAGTAAAGCCGCCATCCGATTTCCAGATTGTCT

¶18080 ¶18090 ¶18100 ¶18110 ¶18120 ¶18130 ¶18140
AGAGGTATGCCAGTTTTCGTATCGTCTGGCCACATGATCTCGCGTCCCTTCCACTTCCAGCAGACCTT

¶18150 ¶18160 ¶18170 ¶18180 ¶18190 ¶18200 ¶18210
TGCCTCGCAAGTATCCACAACGGACAGCATACGTGATGGTAGAACGATTCCCCCGTTCCTTGACGCTG

¶18220 ¶18230 ¶18240 ¶18250 ¶18260 ¶18270 ¶18280
AATATCTAATCGTTCGTAGATCGTTGGAACCTCTTCGCGACACATTTGCAAATAGCTCCACGCGCTTA

¶18290 ¶18300 ¶18310 ¶18320 ¶18330 ¶18340 ¶18350
ATGGAGTTCGGCACACCTTTCTGCAATGAAACCACCTCGACTGTAGGACACGTTTTTTGAACTCCTCATCTT

¶18360 ¶18370 ¶18380 ¶18390 ¶18400 ¶18410 ¶18420
CATCGAATCGCAAGGAAGTATTATTTACCTCGAGCACATCGTAATTACTTCGTAATGTTACAAGCTTTA

¶18430 ¶18440 ¶18450 ¶18460 ¶18470 ¶18480 ¶18490
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¶18500 ¶18510 ¶18520 ¶18530 ¶18540 ¶18550 ¶18560
AAACGATCTTCCAAATGGGCAATCAGCATGCCAAACTGTGTTCCTCCAGTCAACCCAGGTGGTTGATCGCGA

¶18570 ¶18580 ¶18590 ¶18600 ¶18610 ¶18620 ¶18630
TCACATCGTGTGCGAGGAACCTCAGCAAGCGGCATAACGACTCGCCAAATGATCGTGGACCGCAAGTGACC

¶18640 ¶18650 ¶18660 ¶18670 ¶18680 ¶18690 ¶18700
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¶18710 ¶18720 ¶18730 ¶18740 ¶18750 ¶18760 ¶18770
GGCTTGACACCGTTACGCAATAGATTGCTTAAGGCTAAAGATGCATAATCTCTGCAAAAATTAACATTTT

¶18780 ¶18790 ¶18800 ¶18810 ¶18820 ¶18830 ¶18840
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¶18850 ¶18860 ¶18870 ¶18880 ¶18890 ¶18900 ¶18910
CGGCAATTTCCAGCTTTTCAATGATGGTGTGATGCTGGGACGTGCTTCAACTCGGTTGCAATATCAGC

¶18920 ¶18930 ¶18940 ¶18950 ¶18960 ¶18970 ¶18980
TGGTGTCTTATAATGCCCTTCTCTTTTCAGCTTCTGGACAATCCCATGGCAATGTTGCACTGATAGTGG

¶18990 ¶19000 ¶19010 ¶19020 ¶19030 ¶19040 ¶19050
CCGAATTTCCGACAGCTACTATAACTGGTGAATATAACAGGCGTATCTCTGAATTCGGGAAAGCTG

¶19060 ¶19070 ¶19080 ¶19090 ¶19100 ¶19110 ¶19120
ATGCAATCGCTGGCGAAGACCGCTTCCAGGTGTTCCGTTGATCGAAGAGGATTCCTTGGCCTTCGAAAC

¶19130 ¶19140 ¶19150 ¶19160 ¶19170 ¶19180 ¶19190
GTCGCGCGCGCGGAGTTGATTCCTCAGCAATGGACTAACAGGAAATAAAGACATGAAATTCCTTAAG

¶19200 ¶19210 ¶19220 ¶19230 ¶19240 ¶19250 ¶19260
CTTAAACACATTTGGGGTCATAAACTCACCTTCTTTAGGATAAACAGGCGGTTCTCAGCTTCTATTTT

¶19270 ¶19280 ¶19290 ¶19300 ¶19310 ¶19320 ¶19330
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¶19340 ¶19350 ¶19360 ¶19370 ¶19380 ¶19390 ¶19400
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¶19410 ¶19420 ¶19430 ¶19440 ¶19450 ¶19460 ¶19470
GCTTACCAGCTCCCTGAGTTTTTTCAGCTCCATATTTAGCTCGGACATGTTTCCAAATTTGACTTCTGT

¶19480 ¶19490 ¶19500 ¶19510 ¶19520 ¶19530 ¶19540
TGCCTCGCTGATTAATAACAACAACAACAGTCCACATGGATGGCAAGTAGTGTGCACCTCGCCTA

¶19550 ¶19560 ¶19570 ¶19580 ¶19590 ¶19600 ¶19610
TCGATAACGATAACAGCTGGTGTGATGTCACGCTCACAGTCACTTCTAGGATGTCGTTTTTCCCACTGGCA

¶19620 ¶19630 ¶19640 ¶19650 ¶19660 ¶19670 ¶19680
TTTAAAGATTTTCTCATTGACAGTTAAACTATGCAACAGACAAATTTGATTTGTGTGCATTTAAAA

GGACATTCCAAATGTTTACTAAGAAAGAGAGTATCATCGAGTTGGATACCTGAAAAGCAGCAGCTAGAAA
¶15130 ¶15140 ¶15150 ¶15160 ¶15170 ¶15180 ¶15190

¶19690 ¶19700 ¶19710 ¶19720 ¶19730 ¶19740 ¶19750
TCACCTCTAAAATGTAGATGTCGGTATGTATGGCAGGCTTTTATGGCACATTTGAGAGCATGTCTTAG

TGCTTTCACFAGAATCTGTAACATATATTTGTTTATAAGTACGGCTGGCTGCACAGGACTTTCTCTTGC
¶15200 ¶15210 ¶15220 ¶15230 ¶15240 ¶15250 ¶15260

¶19760 ¶19770 ¶19780 ¶19790 ¶19800 ¶19810 ¶19820
ATAAATGTCAGCTGTGTGCGGTGAAAAATCGCATCGGGTTACATAGCAGCTTATGATTTTATCGATAG

AATTGATGTTTGTAGATTTAATCGCTAAAATATCCTTGATATTACTTTGATTGGGTGCAACATATAGG
¶15270 ¶15280 ¶15290 ¶15300 ¶15310 ¶15320 ¶15330

¶19830 ¶19840 ¶19850 ¶19860 ¶19870 ¶19880 ¶19890
ATCGACTTATCGACCACCTCTATTATGATTAATTGTGATTGTCTTTTCGCTTAAGGTCTCTTAAAACT

ATTAATTTTAAAAATTTGAACATATATTTTATGAATTTTTTGTAGACTTTAAATTAACAAGTTGCTCTTIT
¶15340 ¶15350 ¶15360 ¶15370 ¶15380 ¶15390 ¶15400

¶19900 ¶19910 ¶19920 ¶19930 ¶19940 ¶19950 ¶19960
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TTAGCGTGCATCGCTGCGATTAAATATATAAAATATAGTTAAATTAAGCACAGATTCAAATGGAAGATAT
¶15410 ¶15420 ¶15430 ¶15440 ¶15450 ¶15460 ¶15470

¶19970 ¶19980 ¶19990 ¶20000 ¶20010 ¶20020 ¶20030
GGCCCGCAACCTAAACTCTTTGATGTGTGCTACACACAGTCCCGAAAGATACGTGCGTGAAAACCTGGG

CAGCACCACCGGTGCGGACGGAAACAACATGCGAATCAATGCCGAAGACAATGCGCTGGATCAAATTACA
¶15480 ¶15490 ¶15500 ¶15510 ¶15520 ¶15530 ¶15540

¶20040 ¶20050 ¶20060 ¶20070 ¶20080 ¶20090 ¶20100
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AAAGAGGTATGTATTTTACATCCTGAAACATATCATTGCCTTTATGGTGTGTTTATAAAACCTGGGAT
¶15550 ¶15560 ¶15570 ¶15580 ¶15590 ¶15600 ¶15610

¶20110 ¶20120 ¶20130 ¶20140 ¶20150 ¶20160 ¶20170
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-----CTTGCTGGTGAC
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¶15620 ¶15630 ¶15640 ¶15650 ¶15660 ¶15670 ¶15680

¶20180 ¶20190 ¶20200 ¶20210 ¶20220 ¶20230 ¶20240
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¶20350 ¶20360 ¶20370 ¶20380 ¶20390 ¶20400 ¶20410
AATGGGACTATATATTCACCGTTTTTATATAAGTGAATGAGTCACTCTGCTAGATAACAAGTGGTCCGA
AT
-AT-

¶15690

¶20250 ¶20260 ¶20270 ¶20280 ¶20290 ¶20300 ¶20310
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-----CATTATGCAGGCAATGC-AAAAAAGTTTACTTTATTTTCATCCTCTGATACGGAT
¶14940 ¶14950 ¶14960 ¶14970 ¶14980

¶20420 ¶20430 ¶20440 ¶20450 ¶20460 ¶20470 ¶20480
TGATAAGGTATCCATTTATACACACACAGATCATCAATTAGGACATCCAAAATGTTTACCAATATAG
ACACAC
-----ACACAC-----

¶20320 ¶20330
TTTACTGCAATTTCC
TTT TCTGCAATTTCC
TTTGTCTGATGTTCTGTGCTGGTGGTGAACAATGGTACTATATATATACACCGGCTTTATATAAGTGAAT
¶14990 ¶15000 ¶15010 ¶15020 ¶15030 ¶15040 ¶15050

¶20490 ¶20500 ¶20510 ¶20520 ¶20530 ¶20540 ¶20550
GAGGTTTCAACGAGCTGGACACCGAAAGAGCAGCACCAGAAATGCTGTCTCTGCAATTTATATTTTATT
ARG ARG A C G AATG
-----AAGTATAGGAGCCGGAATC-----
¶15700 ¶15710

CGGCTCTGCTAGATAACAGTGTATCCGATGATAAGTTATCCATATCATACCACACAGCATTAATTA
¶15060 ¶15070 ¶15080 ¶15090 ¶15100 ¶15110 ¶15120

¶20560 ¶20570 ¶20580 ¶20590 ¶20600 ¶20610 ¶20620
TATAAGTTAGTGGCTGAATTCATGGACTTTTCTTTGGAATTATCGCAATATGATCCTTGTATCACTTT
GG C
-----GGTCC-----
¶15720

¶20630 ¶20640 ¶20650 ¶20660 ¶20670 ¶20680 ¶20690

CAATGGGTTCAAATCGAAACTGAATTCCTAGTGCATCTTATAGACTTGAACAATAACAAGTTGCTCTCTTT

¶20700 ¶20710 ¶20720 ¶20730 ¶20740 ¶20750 ¶20760
TTAGCGTGCAGTCCGCTTCGGATTAAATATATAAAAATAGTTAAATTTAGGACACAGATTCAATGGAAAGTAT

¶20770 ¶20780 ¶20790 ¶20800 ¶20810 ¶20820 ¶20830
CAGCACCCAGGTCGGCGACGGAAACAACATGCGAATCAATGCCGAAGCAATGCGCTGGATCAAATTACG

¶20840 ¶20850 ¶20860 ¶20870 ¶20880 ¶20890 ¶20900
AAGAGGTTGTATTTTACATCCCAAAACATAGCATTCAATGTAATAATTTAAATTTGTTACTATCAACTG

¶20910 ¶20920 ¶20930 ¶20940 ¶20950 ¶20960 ¶20970
CGATTTGTACGTGCTCGTTAAACAAGAGAATTACAGCCGCAAAAGGTCGCATAATTGAAACTCTATCA

CATAATTGAAACTTATATCA
¶15730

¶20980 ¶20990 ¶21000 ¶21010 ¶21020 ¶21030 ¶21040
ATTAGTTGATTTAAATGAAACTGAT---TCCCTCTTTTCAGGCGGAAGCGCGACTTGTGCGCGTGCAC
A TA TTGA TT ATGAAA TGA T CCTTCTTTT AGCGGAAAGCGCGACTTGTGCGCGTGCAC
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¶15740 ¶15750 ¶15760 ¶15770 ¶15780 ¶15790 ¶15800

¶21050 ¶21060 ¶21070 ¶21080 ¶21090 ¶21100 ¶21110
AGGCGCGCCCGAAGCCCGGAGATTTCGCATGAGGGAGCTGGAGCGCGCAGAAAGCAGGAGATCAC
AGGCGCG CCAGGAGCCCGGAGATTTCGCATGAGGGAGCTGGAGCGCGCAGAA GAGCAGGAGATCAC
AGGCGCGTCCGGAAGCCCGGAGATTTCGCATGAGGGAGCTGGAGCGCGCAGAAAGCAGGAGATCAC
¶15810 ¶15820 ¶15830 ¶15840 ¶15850 ¶15860 ¶15870

¶21120 ¶21130 ¶21140 ¶21150 ¶21160 ¶21170 ¶21180
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GCGCAGCGGT TTCGACATGCA AACTCCAGCG GTGGCGCAGAAAC CTGTGCG GCATCCCGTGC
AGCCGACCGGGTTCGACATGCAAGAACTCCAGCGCTGTGGCGCAGCGAAACTCTGTGCGTCAATCCCGTGC
¶15880 ¶15890 ¶15900 ¶15910 ¶15920 ¶15930 ¶15940

¶21190 ¶21200 ¶21210 ¶21220 ¶21230 ¶21240 ¶21250
CGCCTGCGCTACGGCGGACTGTTAAACGTGACCCGTGCATCAGCATCCCGCGCAGCAGTGAAGGACTCCG
CGCCTGCGCTACGGCGGACTGTTAAACGTGACCCGTGCATCAGCATCCCGCGCAGCAGTGAAGGACTCCG
CGCCTGCGCTACGGCGGACTGTTAAACGTGACCCGTGCATCAGCATCCCGCGCAGCAGTGAAGGACTCCG
¶15950 ¶15960 ¶15970 ¶15980 ¶15990 ¶16000 ¶16010

¶21260 ¶21270 ¶21280 ¶21290 ¶21300 ¶21310 ¶21320
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TGGAGGAGGAGGGCAGAAGTTTTCGCGACTTCAAGCACGAGCTTAAGTGGGCGTGTATCCAACTTAT
¶16020 ¶16030 ¶16040 ¶16050 ¶16060 ¶16070 ¶16080

¶21330 ¶21340 ¶21350 ¶21360 ¶21370 ¶21380 ¶21390
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CACCTC ATGTGATT A G GTT TGCCTTCAGGATGTTGAGGAGCGGTTTCG AAAGCCATGATAACG
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¶16090 ¶16100 ¶16110 ¶16120 ¶16130 ¶16140 ¶16150

¶21400 ¶21410 ¶21420 ¶21430 ¶21440 ¶21450 ¶21460
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AACGCCAGTTGGACAACGATCGCGCTCGCAGGCTACGAAGTCAAGCT CTGAAGGACAAATG GAAA
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¶16160 ¶16170 ¶16180 ¶16190 ¶16200 ¶16210 ¶16220

¶21470 ¶21480 ¶21490 ¶21500 ¶21510 ¶21520 ¶21530
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TAATGGAAGAGTCGATGCACAACATACAGCGGAGTTCAAGGAGAAGTGCCTGACTGCAATGC CTCAA
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¶16230 ¶16240 ¶16250 ¶16260 ¶16270 ¶16280 ¶16290

¶21540 ¶21550 ¶21560 ¶21570 ¶21580 ¶21590 ¶21600
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¶16300 ¶16310 ¶16320 ¶16330 ¶16340 ¶16350 ¶16360

¶21610 ¶21620 ¶21630 ¶21640 ¶21650 ¶21660 ¶21670
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¶16370 ¶16380 ¶16390 ¶16400 ¶16410 ¶16420

¶21680 ¶21690 ¶21700 ¶21710 ¶21720 ¶21730 ¶21740
TGAGTGTGAGAATGCCAAGGTGCTGGCCCTCCGTCAGGGTTCCTTTAGTGTATATCCCCATTGACCC

¶21750 ¶21760 ¶21770 ¶21780 ¶21790 ¶21800 ¶21810
TGGATGAGATCATTAAACAAGTTCGAGTCTTTTCGACAGCTTAGACTTAAAAAGTTCAAGTGCAGGAAA

¶21820 ¶21830 ¶21840 ¶21850 ¶21860 ¶21870 ¶21880
GCAGCGGCTCGCGGAGTGCAGAAGCTTACGAACAACCTGACGAGTAAAAAGTGAAGGATTTCC

¶21890 ¶21900 ¶21910 ¶21920 ¶21930 ¶21940 ¶21950
GGACCGCCAGTCTTTCGCAAGTTCCTTCGCGGATGAGATGATACGAGGCGCCACGCTACGTGTACCA

¶21960 ¶21970 ¶21980 ¶21990 ¶22000 ¶22010 ¶22020
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¶22030 ¶22040 ¶22050 ¶22060 ¶22070 ¶22080 ¶22090
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¶22100 ¶22110 ¶22120 ¶22130 ¶22140 ¶22150 ¶22160
ATTTGTAGTTTTTATATTTGATAACATGGCTTCAAGCAATATATATATATATATATATATATATATAT

¶22170 ¶22180 ¶22190 ¶22200 ¶22210 ¶22220 ¶22230
CCGATCGATGATCGGCCACATCTCTCGCACTTTTGTGTATCTCCATATATATCTTCAAGTTTAAAAAC

¶22240 ¶22250 ¶22260 ¶22270 ¶22280 ¶22290 ¶22300
AATAAATTTGATATAACTATTGCAGTTTGGCAGTATAGGACTGCAACATATTTGTACTATATTACGAGCC

¶22310 ¶22320 ¶22330 ¶22340 ¶22350 ¶22360 ¶22370
CTTCTTTTTTCTTATACTATCCGACAGGGGAAACAAACAAATCATTTTCAGACCAATAAATAAGCTGCA

¶23210 ¶23220 ¶23230 ¶23240 ¶23250 ¶23260 ¶23270
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TAAAGCCACATTTAAAAACATTTAAAGCCACCTGTAAATAAAATACATTTATTTAATTTTATT-AT
¶17930 ¶17940 ¶17950 ¶17960 ¶17970 ¶17980 ¶17990

¶23280 ¶23290 ¶23300 ¶23310 ¶23320 ¶23330 ¶23340
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TTTGTATGATTTTACAACATTCGACGATTCGGCGGATCTAGTGTGTGCTAATCATCTCGAGGGGGCACT
¶18000 ¶18010 ¶18020 ¶18030 ¶18040 ¶18050 ¶18060

¶23350 ¶23360 ¶23370
GAAAAGCATCTAGGATTCGGATTGGGTTT
GAAAAGCATCTAGGATTCGGATTGGGTTT
GAAAAGCATCTAGGATTCGGATTGGGTTT
¶18070 ¶18080 ¶18090

5c)

CG32582: melanogaster (above), ananassae (below)
Martinez/Needleman-Wunsch DNA Alignment
Minimum Match: 9; Gap Penalty: 1.10; Gap Length Penalty: 0.33

¶4570 ¶4580 ¶4590 ¶4600 ¶4610 ¶4620 ¶4630 ¶4640
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¶15520 ¶15530 ¶15540 ¶15550 ¶15560 ¶15570 ¶15580 ¶15590

¶4650 ¶4660 ¶4670 ¶4680 ¶4690 ¶4700 ¶4710 ¶4720
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ATA AATTC AT GC TTGTAGTACA CTCAT TT GC AC TT GFGATATGTCCCTTAAA TG CC TC CGCCA G
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¶15600 ¶15610 ¶15620 ¶15630 ¶15640 ¶15650 ¶15660 ¶15670

¶4730 ¶4740 ¶4750 ¶4760 ¶4770 ¶4780 ¶4790 ¶4800
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¶15680 ¶15690 ¶15700 ¶15710 ¶15720 ¶15730 ¶15740 ¶15750

¶4810 ¶4820 ¶4830 ¶4840 ¶4850 ¶4860 ¶4870 ¶4880
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¶15760 ¶15770 ¶15780 ¶15790 ¶15800 ¶15810 ¶15820 ¶15830

¶4890 ¶4900 ¶4910 ¶4920 ¶4930 ¶4940 ¶4950 ¶4960
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¶4970 ¶4980 ¶4990 ¶5000 ¶5010 ¶5020 ¶5030 ¶5040
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CG GT GAGTT GCTTT CG GC GA TC ACGGCCCTTG AACTCCTT AG TA AC A GT AT GC A CG G
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¶13130 ¶13140 ¶13150 ¶13160 ¶13170 ¶13180 ¶13190 ¶13200
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¶15850 ¶15860 ¶15870 ¶15880 ¶15890 ¶15900 ¶15910 ¶15920
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¶15930 ¶15940 ¶15950 ¶15960 ¶15970 ¶15980 ¶15990 ¶16000
ACCCATTCGAAAAGGGCAAAATCAATCTGGATGAGGTCCATATAGCGAAAATCTCGAAAACCTGTGGTTCGATACCGGTG

¶16010 ¶16020 ¶16030 ¶16040 ¶16050 ¶16060 ¶16070 ¶16080
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¶16090 ¶16100 ¶16110 ¶16120 ¶16130 ¶16140 ¶16150 ¶16160
CCCTTAAACTGCGCAATATCTAATCAGATGGTACGGATGGAGGACTCGCCAATCCACGGAATTCGTTAATTTCTCGATG

¶16170 ¶16180 ¶16190 ¶16200 ¶16210 ¶16220 ¶16230 ¶16240
CCCATGCTCGACAGCAATCCTTTGTCTCGCATATCCGCAAGCAAGCCCTTGGAAAAGCCACTACTTATGCAACATTTGCTCT

¶16250 ¶16260 ¶16270 ¶16280 ¶16290 ¶16300 ¶16310 ¶16320
TCTTGGCATTGACATTGACAGTTACTACTATTATAGTGTACGTGAAATCAAGGACTGCACACATACCAAGATGAAAGAA

¶16330 ¶16340 ¶16350 ¶16360 ¶16370 ¶16380 ¶16390 ¶16400
ATAGCGATGAGGACAGCAGCTGCAGTTCCATAGACAGCAGCAATTTCCAGCGACGAGTCTGCTATGAGGACGAT

¶16410 ¶16420 ¶16430 ¶16440 ¶16450 ¶16460 ¶16470 ¶16480
GTCAACGAAGAAGACATCAAGAAGTTATATTAACAGTGATTTTATAGCCAAAAGCACAGCCAGTAACCATATAAGTAA

¶16490 ¶16500 ¶16510 ¶16520 ¶16530 ¶16540 ¶16550 ¶16560
CFCATATAACCCATATTAGATATTTCAAGTTATAATAA--AGTGTCCGGAGCCATATATATACAAAATTTATTTTCATG-

AGATATTTCA G AT TAA AGT T C A A A T TA AAA TT CAT
-----AGATATTTTCATGC-ATGGTAACTAGTCACTAATGTA-ACCTGTAAAAAGTTTCAACATAC
 ¶20120 ¶20130 ¶20140 ¶20150 ¶20160 ¶20170

¶16570 ¶16580 ¶16590 ¶16600 ¶16610 ¶16620 ¶16630
TATGTTTATTTAAAACAAGGTTGAAAACAATTTATGATGAGG-TTATATTGTATC---ACTTTAACGAAAGTCCATCTG
T T TTTA A A CAAAG T A G T GG TTA A TG T A TTTAA AA G AT TG
TTTCTTAAAACACCAAGTTTCCGATCTCCCGGTTATGGATTAACGTAGTGCAAAAGTTTAAAAAAGGAGGATATG
 ¶20180 ¶20190 ¶20200 ¶20210 ¶20220 ¶20230 ¶20240 ¶20250

¶16640 ¶16650 ¶16660 ¶16670 ¶16680 ¶16690 ¶16700 ¶16710
TCCGTA-TGAACGTCGAAATCTCAGGAACATAAAAAGCTAGAAGTTGAGATTAAGCATAGAGAT--CTAGAGACATAG
T C T T AA GTC A A CT AA TA A A T G TTG G AAGCA A AGA CTA A TAG
TGCATGTTTAAAGTCAATAGCTTAAAAATAGGAGCTT----GTTGGCTGAAGCAGACAGCGGACTAATCAACTAG
 ¶20260 ¶20270 ¶20280 ¶20290 ¶20300 ¶20310 ¶20320 ¶20330

¶16720 ¶16730 ¶16740 ¶16750 ¶16760
ACGCGATTTCTTGACACATGTTGCCAGCCCGCTTAAACGCCCTCAATG
G TC C C TG A C C C C AA T A G
TACAGGAATCC---CTCGTGGATGGATTCTCTCACCAAAATT-TAAGCG
 ¶20340 ¶20350 ¶20360 ¶20370

5d)

CG32582: melanogaster (above), ananassae (below)
Martinez/Needleman-Wunsch DNA Alignment
Minimum Match: 9; Gap Penalty: 1.10; Gap Length Penalty: 0.33

¶10290 ¶10300 ¶10310 ¶10320 ¶10330 ¶10340 ¶10350 ¶10360
CCCTCCCCCTGGTGTGATGAAAATCGAAAATCGCATTTAAATATCACTGTTTTGCCCTCGATAACAATGGGACAATCG
CCTCCCCCTG
GCCTCCCCCTG

¶10

¶10370 ¶10380 ¶10390 ¶10400 ¶10410 ¶10420 ¶10430 ¶10440
CATGAAATTTGACGAAATTCGGTGTATATACATCAAATGAGTAGCGGTAATTTCCCAATTCACACGCACACAGCAGCACTC
CCC

-CCC-

¶10450 ¶10460 ¶10470 ¶10480 ¶10490 ¶10500 ¶10510 ¶10520
GCGCACACACTCACAGATGAGCGCGCACACTTGCAGTGCAGCAATATGCCACATAACAAGAACAATAATAGATAAAC
A C GCAC CT AGT T C C T A AAG A T
-----ACCTAGCACCT---AGT-----TTCGTCTTAGAAAGAGTT-----
¶20 ¶30 ¶40

¶10530 ¶10540 ¶10550 ¶10560 ¶10570 ¶10580 ¶10590 ¶10600
GGTAAATTAATCGGATGCTTTTACATCAAATAACAAAATTTGTATGTATATTTGCATTTGCAAGCCACACACACACG
GGT A TT
GGTCA---TTT-----
¶50

¶10610 ¶10620 ¶10630 ¶10640 ¶10650 ¶10660 ¶10670 ¶10680
CACTTTAGCACTTTACATTTTTTCCCAATGAATCGAAAGATATTTGGAGCCCGTATGCTTACTGCAATTTAACAATAATG

¶10690 ¶10700 ¶10710 ¶10720 ¶10730 ¶10740 ¶10750 ¶10760
TACGCTAAGTACTATCATACTCGAAATAATCACTGCGGTTTGTGCTAGATGACGGGCACACACTGAAGACAACATGA

¶10770 ¶10780 ¶10790 ¶10800 ¶10810 ¶10820 ¶10830 ¶10840
GCTCTTATCAAGCTCTACAAAATGTAGTTTTATTTTTCTTTGTTGACTAAATACTGACTGCAAGACAAGGTAGAGGTGT

¶10850 ¶10860 ¶10870 ¶10880 ¶10890 ¶10900 ¶10910 ¶10920
GAAAGTTATACAATTAATGCGGATATATACGGCAAAATGCAATTCGCTGGAGTGAAAAACATCGATACCACATTTCAAC

¶10930 ¶10940 ¶10950 ¶10960 ¶10970 ¶10980 ¶10990 ¶11000
ATTGCAATCGAATTTGTATCGCACGATCCTACTGTTACACGTAATTTATTCATAATATTCGAATGTAATATATTTAGG

¶11010 ¶11020 ¶11030 ¶11040 ¶11050 ¶11060 ¶11070 ¶11080
TAAATGATGATAACTTTGTAAAGGAACAACAATTTATTTATTTATCAGCTTCATTTATATTTTGGCGATAACAAGTT

¶11090 ¶11100 ¶11110 ¶11120 ¶11130 ¶11140 ¶11150 ¶11160
TTTAGATCATAATACATACGTAAGGTTAACAGGTGTTATCGAGTATCCAATTTGGATATATTTCTTAATTTGAAATCTAT

¶11170 ¶11180 ¶11190 ¶11200 ¶11210 ¶11220 ¶11230 ¶11240
TTTTTATAGCAATTTAATTTGGAATGGAAGTTATATACCCGTTACTCGTAGAGTAAACAACAACACACCCAGAAAAAAT

¶11250 ¶11260 ¶11270 ¶11280 ¶11290 ¶11300 ¶11310 ¶11320
TATTAATTTACAGTTTGCACCTCACACTATCTGCGTAACGGGTACTGTAGTCCGAGAACGGGACTAAAGCATTTCTCTT

¶11330 ¶11340 ¶11350 ¶11360 ¶11370 ¶11380 ¶11390 ¶11400
TCGTTAATTTTTAAAAATATATATACATTAATTTATCTTGCTTAAGTGTGGATAAAGTAGGGATAATTTTAACATTG

¶11410 ¶11420 ¶11430 ¶11440 ¶11450 ¶11460 ¶11470 ¶11480
TTCTATGCAACTACTATTTTTAAGTAGGCGATGATTTTAACTTGCTTTTTCAACTACTATTTTGACATTTACACTCA

¶11490 ¶11500 ¶11510 ¶11520 ¶11530 ¶11540 ¶11550 ¶11560
ATGTGCTACAGAAACAACAACCTTTAGGATTTGCTCCAACAATTTTTTATTGTTTTTATCATTGTGAAAACCGAGTCCC

¶11570 ¶11580 ¶11590 ¶11600 ¶11610 ¶11620 ¶11630 ¶11640
AACAATAAAATCTTAATCTATGAGGTAAGCAGCAGTATCCGATTTTGAAGCACCTTTTGGCGATAGAATCTATACCGTCT

¶11650 ¶11660 ¶11670 ¶11680 ¶11690 ¶11700 ¶11710 ¶11720
TGACTTGACTGATCAAGGCGATGACAAAGATGGGGCAAGGAGCTAGACGAATATTGCGGGCCTCCCGCTCGCAGATTTG

¶11730 ¶11740 ¶11750 ¶11760 ¶11770 ¶11780 ¶11790 ¶11800
CGGTAGTCTTCGAAGCGGGCAAGGCTCCAGCACCTCAGCAAGTTGTGGAAGAAGGTACACATAATCATTTTGCTCTGCAG

¶11810 ¶11820 ¶11830 ¶11840 ¶11850 ¶11860 ¶11870 ¶11880
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¶11890 ¶11900 ¶11910 ¶11920 ¶11930 ¶11940 ¶11950 ¶11960
AAAGTTTTCTATTTGCGATGGTAAAAACCCAGCTGGATGTCGCAATTTGACCGATGCTCGATGCTTTGGCGGTTCG

¶11970 ¶11980 ¶11990 ¶12000 ¶12010 ¶12020 ¶12030 ¶12040
CAGCTGCGGCATTTCTGCTAGGCGTCCACCCCGCCAGGATTTCTCAACCCAGGGCCATTTGGAGAGAGATCCGTCGCTA

¶12050 ¶12060 ¶12070 ¶12080 ¶12090 ¶12100 ¶12110 ¶12120
ACAGAATAAGTAAACTGATAAACTCTCGTTTCCCAGGAAATCTTTTTATTAATATAAGTTTCTTCTACAGTATATAC

¶12130 ¶12140 ¶12150 ¶12160 ¶12170 ¶12180 ¶12190 ¶12200
AGACGTTCTTACGACTCGGTTTGGGATCTAGGAAGCCAGGATAAATGGCAGAATGCTGCGGACTCTGAGCTTTGTCAA

¶12210 ¶12220 ¶12230 ¶12240 ¶12250 ¶12260 ¶12270 ¶12280
TCATATTCATTTGATAACATAAAGATACCCTAAATCTGTTTTATTTTTCTCGTTTTCATGTTTACCCTAGATTTATT

¶12290 ¶12300 ¶12310 ¶12320 ¶12330 ¶12340 ¶12350 ¶12360
TTAATATATATTTACATGAAACGTTGTGTCATTCAAATAATATACCCTTCTCTGTGGAGCCAAATAAATGCAAGTT

¶12370 ¶12380 ¶12390 ¶12400 ¶12410 ¶12420 ¶12430 ¶12440
CCAATTTTTATACCCTTACTCGTAAGGTAAGATTCGTTGAAACTGGCAGAAGGAGCGTTCCGACCATATAACTTA

¶12450 ¶12460 ¶12470 ¶12480 ¶12490 ¶12500 ¶12510 ¶12520
TATATATATATATTTGATCAGGAGAATAGCCGATCGATCTGGTCAATGTCCTCTGTCGCTATGAACGCTCGAGAA

¶12530 ¶12540 ¶12550 ¶12560 ¶12570 ¶12580 ¶12590 ¶12600
CTATAAAGCTAGAAGTTGAGAGTCCCAAGTTGAGATCCATGTTGCCACGCCACTCTAACGCATAATACAGCCCCC

¶12610 ¶12620 ¶12630 ¶12640 ¶12650 ¶12660 ¶12670 ¶12680
CAAGATTATCGCGTGAAGTAAATCGAAGGATTACAGCGCCCGACATGGCGCGAACTTTGTGGTCCGCCG
GATGTAATC AA TTT
-GATGTAATC -AATTTTC-----
960 970

¶12690 ¶12700 ¶12710 ¶12720 ¶12730 ¶12740 ¶12750 ¶12760
GATGGCAGGCGACAGGATCACAGATTCGCGGACAGCTGCGGGGATACCTTGGTCGGAATGCGTGGATTGTTACGA

¶12770 ¶12780 ¶12790 ¶12800 ¶12810 ¶12820 ¶12830 ¶12840
TTTCCAGGACATTTGGTAGCATCCACACAATGGGGTTTTGTCCATAAAAAGTAACCTGCCAGGATGCGGTTTTGTGTAAC

¶12850 ¶12860 ¶12870 ¶12880 ¶12890 ¶12900 ¶12910 ¶12920
GATCACCGATCAGAGGACATTTATGCAGCATCATATCGTGGCGCATATCTGCTACATCCGCTGATGGCGTATAAAT

¶12930 ¶12940 ¶12950 ¶12960 ¶12970 ¶12980 ¶12990 ¶13000
GATCCCGCATGATCAGATTCCCAACAGATTCAATGCGCATAAATGAAAATCATCAAAAGTATTATAAAGTATTTAAGA

¶13010 ¶13020 ¶13030 ¶13040 ¶13050 ¶13060 ¶13070 ¶13080
AAGAAATCTTTAGAAATGCAATCTGATTGAACATCTGGTGTGTATCTAGAGCTATAATATAAAATTTAAATATATTTA

¶13090 ¶13100 ¶13110 ¶13120 ¶13130 ¶13140 ¶13150
TTAAATGCTAAGAAGCTTTGCTAT--CTGTGAGTTTCTAAATTTCTGATCAAGTGGGCATTGAAAATAACATTTTGT
AGAACTTTG T C TG TTT T A T T T AT GT G G A C T G
-----AGAACTTTGCTGTGGCCAAATGGTTTTATGAGCTCTATAATGG-GTCAGACGAGTTACGGCCCTCTGCG
980 990 1000 1010 1020 1030 1040

¶13160 ¶13170 ¶13180 ¶13190 ¶13200 ¶13210 ¶13220
GTTTTG----TGACTTTCGTATCAGFAAAGCAGCAGTTAATTTGGCCAGCA--CCATGAAAACAG--CTCCGAAA
TG CT CG A GT A G C T TT GG A A C A G A C A G C C G A
CACACGACCATGCTCCCGGAGCGTTGCA-GTCGCGTCCGCTTGGGTACTATGCGACCCAGCAGTGGACGCGCAGC
9150 9160 9170 9180 9190 9200 9210 9220

¶13230 ¶13240 ¶13250 ¶13260 ¶13270 ¶13280 ¶13290 ¶13300
AATTTACCAA--ATAAGACCGTTGAAAATATTTTACAAAAGTAAAAGGCGAGAAAATAGCCTTTTTCTACGTTTATA
T CC AA ATA AC GA AA A A TA AA GCA AA AGCC C AC A A
TCGTCGCCGAGGATAGCACCGAGGATAACAGCG---ACCACTACAA--GCAACAA---AGCCAACAACAACAACA
9230 9240 9250 9260 9270 9280 9290

¶13310 ¶13320 ¶13330 ¶13340 ¶13350 ¶13360 ¶13370 ¶13380
CATATTTGGTA--AAATTTCCAAAC--CCAAGTATTTGTATCCAGGAACAGAAGGTA--AGTTTCAAATTTAAACATTTT
A A G A AA AAAC CCAA TT TA C ACA G TA A T T AAA AAC ATT T
-ACAACGCAACGAGCAGGAAACGCCAACGCTTATTAAAC---ACAT--GCTAGCATTTATAAAGATAAATATTAT
9300 9310 9320 9330 9340 9350 9360

¶13390 ¶13400 ¶13410 ¶13420 ¶13430 ¶13440 ¶13450 ¶13460
GTAGACCAATCGGTCTCACCAACCTCAATCAATTTTGGTCCAAATTAATAAATAAATAAATAAATAAATAAATA
TA GT T A A C T AA AC T A A TTT GT CA T A AA AAA A AA A
-TA-----GTTTTAATGAGCTTTAA--ACCGTTTAGA-TTTATGTAGCACCTTACTGAATAAACAATACGTA
9370 9380 9390 9400 9410 9420

¶13470 ¶13480 ¶13490 ¶13500 ¶13510 ¶13520 ¶13530 ¶13540
AAAAAAAATTTCCAACCTCCTTGGGAAAAGTAAGCTTTGCGTAGATTATCGGACAAACATTTTTTTTTCGTTTACGCCCA
AA ATCGGA A T CGT A
TGAA-----ATCGGAGA-----TGCGTAAA-----
9430 9440

¶13550 ¶13560 ¶13570 ¶13580 ¶13590 ¶13600 ¶13610 ¶13620
TCCATTCAATTTAGTTTCACTGAAGGCAAGTGTATTTTCCAATTCGTTGTTAGTTTGCAGATTTTCAATCATTTGGTTGAT
TA TC TCG A CCAA T TT TC
-----TATCTCTCGGAAAA-----CCAATTTATAC-----TC-----
9450 9460 9470

¶13630 ¶13640 ¶13650 ¶13660 ¶13670 ¶13680 ¶13690 ¶13700
AAAAAATAAATACTACACACAGCTACAGTACTCGTATTTTCAATTTGAAAATTTCCGCAAAAACAGAAAAA

¶13710 ¶13720 ¶13730 ¶13740 ¶13750 ¶13760 ¶13770 ¶13780
CTAATAAGAACATTAACCATTCTCGCGAGCTAGCAATCCAAGTGAAGTAATCATGTTTAAATGAAACGAACGAGAG

¶13790 ¶13800 ¶13810 ¶13820 ¶13830 ¶13840 ¶13850 ¶13860
TAATCAGACGCAAGCAGCATTATCAGGCTTCAAGAGGCGCTCCAGGAAAAGATTCCGAAACAGATGGAATCGTGT

¶13870 ¶13880 ¶13890 ¶13900 ¶13910 ¶13920 ¶13930 ¶13940
GGCGTACTCAATGGGAAACGCATCAACGCAACAGTGAATGTGCCGATGGATGTGGATGCGGATATGGGAGCGAAAAT

¶13950 ¶13960 ¶13970 ¶13980 ¶13990 ¶14000 ¶14010 ¶14020
GTCGGAAGATGGAATGACTGATACATCGAATACGGTCAACAGCCATCTTGTCCAAAGGATCAAAAGCAATTTGTCGCGAA

¶14030 ¶14040 ¶14050 ¶14060 ¶14070 ¶14080 ¶14090 ¶14100

ACA AAAAGCCATCCCATCCTACAACCACCAGGAGCAGATCGAAACAAAGAGCAAAGCGACCAAGATATGTAAAAAAGG

¶14110 ¶14120 ¶14130 ¶14140 ¶14150 ¶14160 ¶14170 ¶14180
TCGCAACAGAAAAGCAATGCCTATCGCTCTCCGATGATGGAATTGCCGGCAGAAAACCGCCAAAATTTAATAAGTA

¶14190 ¶14200 ¶14210 ¶14220 ¶14230 ¶14240 ¶14250 ¶14260
TAGCGAATCTAGCTACGGCAGCGAATCCAGCATGCCGTTGCAAAATGAACAGCAGAGCAATGACAACTCAGAATAACAATG

¶14270 ¶14280 ¶14290 ¶14300 ¶14310 ¶14320 ¶14330
ACAATGCTGAGGGTATGGATTTGATCGACAGGAGAGCGCCCAACGAGTATGTTA--TCGGTG-GCTATCATCCGGTGGCC
ACGAGTATGT T TG GC T T CG T
-----ACGAGTATGTGTTAAATGAGCATTTCACGCTT-----
 ¶480 ¶490 ¶500 ¶510

¶14340 ¶14350 ¶14360 ¶14370 ¶14380 ¶14390 ¶14400 ¶14410
ATTGCGGAT-GTATTCGTAAACCGCTATCATGTCPTCAAAAAGCTGGGCTGGGTCACCTCTCCACCGTGGCTATGCT
A TGG GAT G A T GT TAT AT A A C T GGT A CT A T TA C
AGTGG-GATAGCACTAGTTGTTTATATAATAAAGAAAGCAACAACCT--GGTTAAACTAAA AAAACTAA-TAAACA
 ¶520 ¶530 ¶540 ¶550 ¶560 ¶570 ¶580

¶14420 ¶14430 ¶14440 ¶14450 ¶14460 ¶14470 ¶14480 ¶14490
ATGATACCAGATGGATCGCTACTG--TGCCGTCAAGGTGTCCAAGTCGGCGCAGGCTACAAGGAAACTGGTATCGATGA
ATGA C AGA G T G T CTG T C CAAG T CA T C TC A AAG A CT T A
ATGAAGCAGAGACAGCT--GTTGCTGCTATCTACAAGATTAACA--TAAACTA---TCGATAAAGAATGCTACTTAACAGCG
 ¶590 ¶600 ¶610 ¶620 ¶630 ¶640 ¶650 ¶660

¶14500 ¶14510 ¶14520 ¶14530 ¶14540 ¶14550 ¶14560 ¶14570
GATATGCTCTTTTCCAAATGAGCCTACAGCATCAGCATAAGTACAGAGCCACCTGGTGGTCTTCTACGATTTCTTTG
GAT A CT TT CAA GAG TA A A ATA A AG AG A T G CT
GATAACAGACTGTTAACAACAGAGGTTAGA--AGGATTATAGCAATAGCAGTTA--TTTATAGCACT-----
 ¶670 ¶680 ¶690 ¶700 ¶710 ¶720

¶14580 ¶14590 ¶14600 ¶14610 ¶14620 ¶14630 ¶14640 ¶14650
AAAATTACCGGACCGCACGGAAGGCACATTTGCCTGGTCTTAGAGGTTCTCGGTGACAATTTGCTAAAAGTCATCGAAAGA

¶14660 ¶14670 ¶14680 ¶14690 ¶14700 ¶14710 ¶14720 ¶14730
TGCTTTTCAAAAGGATGCCCATTTCCAATATCAAGCAAAATGCCAGCAGGTGCTCACGGGCTAAAAGTTTCTGCACGA

¶14740 ¶14750 ¶14760 ¶14770 ¶14780 ¶14790 ¶14800 ¶14810
AGAGTCCGGGATCATACACACCGATCTAAAGCCGGAGAAATGTGCTCTCCGCTCCAAGAGTGTCCGTTCCGGACCGAGA

¶14820 ¶14830 ¶14840 ¶14850 ¶14860 ¶14870 ¶14880 ¶14890
TCAGACGGCAATGAAGTATATTTGAAGGCCAACAGGGGAAACTAAGTCTTAGGTATGTTAGATATACTCGTATAATA

¶14900 ¶14910 ¶14920 ¶14930 ¶14940 ¶14950 ¶14960 ¶14970
GCACACATCTGAACAGGTATAAACGTTATAGCTCCAAGATGACCAAAAACGGCCAAGAGACGGATGTCAGGCAAAAGTCCAAG

¶14980 ¶14990 ¶15000 ¶15010 ¶15020 ¶15030 ¶15040 ¶15050
AAGGTGATATCGTTTTTCAAGAAATCATCCGCCATGCTCCGACGGCAGGGCATCGAGGATCTGCTATCTGCGCCGAAG

¶15060 ¶15070 ¶15080 ¶15090 ¶15100 ¶15110 ¶15120 ¶15130
TGGCCTCATCGAACCGATTACCGCCGGCCATGGCCGCTCCGATAAATTACCAATTCATCCCTTCGGCTTCGACGGGTTTA

¶15140 ¶15150 ¶15160 ¶15170 ¶15180 ¶15190 ¶15200 ¶15210
TGATGATGAGCGGATGCCGATGCCGTACGGTGCAGAAATCCAAGTTGCCGAAATGGAGGGCATGGAATAACAATGCGAC

¶15220 ¶15230 ¶15240 ¶15250 ¶15260 ¶15270 ¶15280 ¶15290
AGATAAACTGTGTTTAAAGAGTCCAGAGCTCTTCTTGGATATGTGCTCGATATTATCAAGAAATTTGGATGAGAAGGA

¶15300 ¶15310 ¶15320 ¶15330 ¶15340 ¶15350 ¶15360 ¶15370
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¶15380 ¶15390 ¶15400 ¶15410 ¶15420 ¶15430 ¶15440 ¶15450
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¶15460 ¶15470 ¶15480 ¶15490 ¶15500 ¶15510 ¶15520 ¶15530
TAGGATTTGAATTCCTTCGATTTGAATTTTTGTAGTCTACTTCTAGTCTCTTTATGAACGATTTCAATCTCTG

¶15540 ¶15550 ¶15560 ¶15570 ¶15580 ¶15590 ¶15600 ¶15610
CTAATCAGAATGTTAATTTCAAAGCTTGTGCGATTTCTTATTAGAATAGCATTAGATGTTTTGTGCGTACTCATCAAAA

¶15620 ¶15630 ¶15640 ¶15650 ¶15660 ¶15670 ¶15680 ¶15690
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¶15700 ¶15710 ¶15720 ¶15730 ¶15740 ¶15750 ¶15760 ¶15770
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¶15780 ¶15790 ¶15800 ¶15810 ¶15820 ¶15830 ¶15840 ¶15850
TTTCCATCATCACTCACCGACGACATCCAGCAAGGATACCGGGCTTGGAGGTGATACCTGGTGGGGATATTGGG

¶15860 ¶15870 ¶15880 ¶15890 ¶15900 ¶15910 ¶15920 ¶15930
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¶15940 ¶15950 ¶15960 ¶15970 ¶15980 ¶15990 ¶16000 ¶16010
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*16020 *16030 *16040 *16050 *16060 *16070 *16080 *16090
CAAAGGCACAACTCGAGGAATTCATCAATAGCGCCGGCAAACTATGCAACATAGAAACCCCTGAAGCCCTTAAACTGG

*16100 *16110 *16120 *16130 *16140 *16150 *16160 *16170
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*16180 *16190 *16200 *16210 *16220 *16230 *16240 *16250
ACCAATCTCTTGTCTCGCATATCCGCAAGCCCTTGGAAAGCCACTACTTATGCACACATGCTCTTCTCGCATGGA

*16260 *16270 *16280 *16290 *16300 *16310 *16320 *16330
CATTGACAGTTACTACTATTATAGTGTACGTGAAATCAAGGACTGCACACATACCAGAGTGAAGAANTAGCAGTGGG

*16340 *16350 *16360 *16370 *16380 *16390 *16400 *16410
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*16420 *16430 *16440 *16450 *16460 *16470 *16480 *16490
GACATCAAGAAGTTATATTAACAGTGAATTTATTAGCCAAAGCACACAGCCAGTAACCCATATTAAGTAACTCATATAACCC

*16500 *16510 *16520 *16530 *16540 *16550 *16560 *16570
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*16580 *16590 *16600 *16610 *16620 *16630 *16640 *16650
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*16660 *16670 *16680 *16690 *16700 *16710 *16720 *16730
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*16740 *16750 *16760 *16770 *16780 *16790 *16800 *16810
GCCACGCCCGCTCAACGCCCTCAATGTGTGATATTTTTCACAGTTTATTAGTCTTGTAAATTTCTATCAATTTGCA

*16820 *16830 *16840 *16850 *16860 *16870 *16880 *16890
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*16900 *16910 *16920 *16930 *16940 *16950 *16960 *16970
ATCTTATTTCCCAATATCTATCGATATCCCGAAAAATGATAAATTTTCGCGTTGCGATCTCACACTAGCTAGGATATGGT

*16980 *16990 *17000 *17010 *17020 *17030 *17040 *17050
ATCTGATAGTCGGGAACTCAATATGTTTATTGATCAATATTTTAAATATAAATAGTTAGATGGATAAATTTAAAT

*17060 *17070 *17080 *17090 *17100 *17110 *17120 *17130
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*17140 *17150 *17160 *17170 *17180 *17190 *17200 *17210
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*17220 *17230 *17240 *17250 *17260 *17270 *17280 *17290
TTTTACATTTTCGAACTGGTTAAGCCCTAGTATATAAAAGCATTGGCGCAACACAGCCGAGTTCCTCGCAATAG

*17300 *17310 *17320 *17330 *17340 *17350 *17360 *17370
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*17380 *17390 *17400 *17410 *17420 *17430 *17440 *17450
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*17460 *17470 *17480 *17490 *17500 *17510 *17520 *17530
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*17540 *17550 *17560 *17570 *17580 *17590 *17600 *17610
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*17620 *17630 *17640 *17650 *17660 *17670 *17680 *17690
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*17700 *17710 *17720 *17730 *17740 *17750 *17760 *17770
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*17780 *17790 *17800 *17810 *17820 *17830 *17840 *17850
CAGGATCCCTCATTTCCCTCATCCAGCAAACTCGACAGCTTAACCGTATACCCGATCGAGTCTTAACCTTTCCACT

*17860 *17870 *17880 *17890 *17900 *17910 *17920 *17930
CCTCGCCAGAACGACCCAACTGTACGTGTCACACGATGGCTGAGTGGATTTAGATAGCAGATCGTTCGGCAGCT

*17940 *17950 *17960 *17970 *17980 *17990 *18000 *18010
CCTCGCCAGAACCCCAAACTGAACGTGATCTACAGCATGAACGCCGATCTAGGATGCCGACAGCTTCGCCCC

¶17940 ¶17950 ¶17960 ¶17970 ¶17980 ¶17990 ¶18000 ¶18010
TTGAAATGGTATTAAAATCGGTGCTTTGGCCGGAGTCGACCACATAGATGCCAATCGCAAAGCTCTCCCTCAAGCG
TGAA ATGGTATT AAATG GTGCT TG CC G GTC ACCACATA AT ATCCA GCA TCCTCCGCCAA CG
TTGAAAATGGTATTAAAATGTGTGCTTCTGTCAGCGTCCACCACATAAATAATCCAGGACGACTTTTCTCCCAATCG
¶1610 ¶1620 ¶1630 ¶1640 ¶1650 ¶1660 ¶1670 ¶1680

¶18020 ¶18030 ¶18040 ¶18050 ¶18060 ¶18070 ¶18080 ¶18090
ATGGCGAATGGTCCCAATGTCAGAGGTATCATAGTAAAGCCGCCATCCGATTCCAGCATGTCAGAGGTATGCCAATT
TG CGAATGG CCAAT TCAGAGGTATC TA GT AA CC CCAATC GA TTCAGAT GT AG GG ATCC GTTT
GTGCAATGGCAGCCATATCAGAGGTATCGTACGTGAACCACCATCGGACTTCACGATCGTTAGGGGGATGCCTGTT
¶1690 ¶1700 ¶1710 ¶1720 ¶1730 ¶1740 ¶1750 ¶1760

¶18100 ¶18110 ¶18120 ¶18130 ¶18140 ¶18150 ¶18160 ¶18170
TCGTATCGTTCGGCCACATGATCGCGTCTTCATCCACTCCAGCAGACCTTTGCCTCGCAAGTATCCACACACGGAC
T T TCGTCTGGCCACAT ATCTC GTCCT TCATCC TCACGA CTT TCGCAAG A TC AC AC GAC
TGCCTCTGCTGGCCACATATCTCAGTCTCATCCGCTCCAGCAAGTCTTCTTCCCAAGAACTCAACCCAGAC
¶1770 ¶1780 ¶1790 ¶1800 ¶1810 ¶1820 ¶1830 ¶1840

¶18180 ¶18190 ¶18200 ¶18210 ¶18220 ¶18230 ¶18240 ¶18250
AGCATACTGATTGGTGAAGCATTCGCCCGTTCCTTGACGCTAATATCTAATCGTTCGTAGATCGTTTGAACCTCCTT
AGCATAC GA TGGTAGAA GATTCC CC CG TC T GA A ATC A CG T GTAGAT GTTTTGAACCTCCTT
AGCATAAGACTGGTGAAGGATTGCCACGCTCTGGATCGACACATCGAGGCGATTGTAGATGGTTTGAACCTCCTT
¶1850 ¶1860 ¶1870 ¶1880 ¶1890 ¶1900 ¶1910 ¶1920

¶18260 ¶18270 ¶18280 ¶18290 ¶18300 ¶18310 ¶18320 ¶18330
TCGGCACACATGGCAATAGTCCCAAGCTTAAATGGATTCGGCACACCTTCTGCAATGAAACCACTGCAGCTGAGG
CGGCACACAT GCAAA T CT CCA GCCTTAATGGAGT GGC C CC TGTGA CAAACACTGCAGTGA
CCGGCACACATGGCAATCAACTCCAGCCCTTAAATGGATTCGGCTCGCCCTCTGCAAGGAAACCACTGCAGCTGAGG
¶1930 ¶1940 ¶1950 ¶1960 ¶1970 ¶1980 ¶1990 ¶2000

¶18340 ¶18350 ¶18360 ¶18370 ¶18380 ¶18390 ¶18400 ¶18410
CAGCTTTTGAACCTCCTCATCTCATCGAATCGCAAGGAAGTATTATTACCTCGAGCACATCGTAATACTTCGTAA
C C T T TGAATCCCTC TC TC TCGA
CCCTCTTCTGAACTCTCGCTCGTCTCGA
¶2010 ¶2020 ¶2030

¶18420 ¶18430 ¶18440 ¶18450 ¶18460 ¶18470 ¶18480 ¶18490
TGTACAAAGCTTACCGCTCTTGGATTCTTGTAGAACAAATGACGATCACTGACGGAGGCTTTCATTTAGTAGATT
ACCGCTCTTGGAA TCCTTTAGAAA A TG AGATC C GAT GGAG CTTC TT AGG A TT
-----ACCGCTCTTGGACTCTTGTAGAACACCTGTAGATCGCCGATGGGAGGACTTCTGCTCAGCAAAAT
¶2040 ¶2050 ¶2060 ¶2070 ¶2080 ¶2090 ¶2100

¶18500 ¶18510 ¶18520 ¶18530 ¶18540 ¶18550 ¶18560 ¶18570
GGGAAACGATCTTCCAAATGGGCAATCAGCATGCCAAACTGTGTCCCACTCACCAGTGGTGTAGCGGCATCAGAT
GGGAA CGATCTTCCA TGGGC ATCAGCATGCCAAACTGTGT CCGCA TC CC AGTGTGT AGG CCGGATC A C T
GGGAAACGATCTTCCAGTGGGCGATCAGCATGCCAAACTGTGTGCCCAATCGCCGAGTGGTAAATGGCAAGCAGCT
¶2110 ¶2120 ¶2130 ¶2140 ¶2150 ¶2160 ¶2170 ¶2180

¶18580 ¶18590 ¶18600 ¶18610 ¶18620 ¶18630 ¶18640 ¶18650
CGTCTCAGGAACTCCAGCAAGCGGCATAACGACTCGCCAAATGATCGTGGACCGCAAGTGCAGCAGATGATCTGTTT
CGTCTG AG AACTCCAG A CGGCA A GA TC CAAATGAT GTGGACCGCA GTGACC AC TGCATCTG TTG
CGTCTGAAAGAACTCCAGTAGCCGGCAAAATGATCTCCTCAATGATGTGGACCGCAGTGCAGCAGCTGATCTGCTG
¶2190 ¶2200 ¶2210 ¶2220 ¶2230 ¶2240 ¶2250 ¶2260

¶18660 ¶18670 ¶18680 ¶18690 ¶18700 ¶18710 ¶18720 ¶18730
GCAATGTGGGCGATGAAAAGTGCAGCAGGACTCGCTTTTGTACACTCTGGCGGCTTGACACCGTTACGCAAGATG
GCAATGTGGGCGATGAAAAGTGCAGCAGGACTCGCTTTTGTACACTCTGGCGGCTTGACACCGTTACGCAAGATG
GCAATGTGGGCGATGAAAAGTGCAGCAGGACTCGCTTTTGTGGAAACCGGGGTTGTTTACCGCGCTTTTAGAAGGCC
¶2270 ¶2280 ¶2290 ¶2300 ¶2310 ¶2320 ¶2330 ¶2340

¶18740 ¶18750 ¶18760 ¶18770 ¶18780 ¶18790 ¶18800
GCTTAGCTTAAAGCAATGATCTCCAAAATTA-ACATTTTAAAT---GTTT---AAATGGACTTTGATCTTAT
GC ACT ACTTGT AG AA AC TT AC AA CC GCTCCGCG A TTC AGCTTTTCAAT A TGG GA CTGGG
GCTTAA GCT GATGCATA T TCTG AAT A A TT T AT G TT ATAT AC T T TA T A
GCTTAAAGCTTGTGATGATGTTCTGCGGGAATGAGATTCTGTGATCAGATCAATAA-ACCGTTTCTAATFAG
¶2350 ¶2360 ¶2370 ¶2380 ¶2390 ¶2400 ¶2410

¶18810 ¶18820 ¶18830 ¶18840 ¶18850 ¶18860 ¶18870 ¶18880
---GCCACTCACTTGCATGAAGCAACGTTTACGAAGCCAGCTCCGGCAATTTCCAGCTTTTCAATGATTTGGATGCTGGG
GC ACT ACTTGT AG AA AC TT AC AA CC GCTCCGCG A TTC AGCTTTTCAAT A TGG GA CTGGG
CGCAACTTACTTGTCTGAAAAGACATTAACAACCCGGCTCCGGCCACTTACTGCTTTTCAATAAGTGGCGAAACTGGG
¶2420 ¶2430 ¶2440 ¶2450 ¶2460 ¶2470 ¶2480 ¶2490

¶18890 ¶18900 ¶18910 ¶18920 ¶18930 ¶18940 ¶18950 ¶18960
CAGTGTCTTCACTCGGTGCAATACACGTTGGTCTTTAATAGCCCTTCTCTTCAGCTTCTTGGACATCCCAT
T GAA TT C TC T T T T T C A G T
CAGT---TT---CTC-----TGATTTTCAG-----T
¶2500 ¶2510

¶18970 ¶18980 ¶18990 ¶19000 ¶19010 ¶19020 ¶19030 ¶19040
GGCATTCTGTCATGATGTCGCGGAATTCGAGAGCTACTATTAACTGGTGAATATAACAGCGCTATCTCTGAAT
GCAT TG
GGCAATG-----CTT-----
¶2520

¶19050 ¶19060 ¶19070 ¶19080 ¶19090 ¶19100 ¶19110 ¶19120
CCGGAAAGCTGATGCAATCGCCTGGCGAAAGACGCTTTCAGGTGTTTCGGTGTATCGAAGAGGATCTCTGGGCTTCGAA
TCGCCTGGCGA CTT
-----CTT-----
TCGCCTGGCGA ¶2530 ¶2540

¶19130 ¶19140 ¶19150 ¶19160 ¶19170 ¶19180 ¶19190 ¶19200
ACGTCGCCCGCGGCGAGTTGATTCCTCAGCAATGACTAACAGGGAATAAAGACATGAAATCTTAAGCT---TAAA
GTTGATTC T GA T C GG AA CAT ATT TT CT TA
---GTTGATTTCTTCTGATGTTGCTGGCC---AATTTCAATCGCATTTGACAGCTGATG
¶2550 ¶2560 ¶2570 ¶2580 ¶2590

¶19210 ¶19220 ¶19230 ¶19240 ¶19250 ¶19260 ¶19270
CAGATTTGGGGCTAATAACTCACCTT-CTTAGGAT---AAACAGGGG-GTCTTCAGCTTCTTATTTTCAATTTGAG-
C C C A A C C T C A G A A A A C G G T C T T C A C A T A A
CCCAACTTTGCCAAGCGCTGTGACAGGAGCAATTGAAACGGGAGTGTCTTGTATTCCGAAAAGCTAAATGCAAT
¶2600 ¶2610 ¶2620 ¶2630 ¶2640 ¶2650 ¶2660 ¶2670

¶19360 ¶19290 ¶19300 ¶19310 ¶19320 ¶19330 ¶19340 ¶19350
---CTGAACAAGATCGACCTCAACTGTTACCGCTTTTGGCAGTTTGTATTCGCG-CGGCAAG---GCCTTGGGCTTCA
CTG C A C GA T C A TG C CCG T G AG T T T CTG C C AA GCC GG TTC
GCCTGGGCAACACGAAATGCAAGT---CTCGGTAGAT---AGCTGTTCTCTCGGACCTCAATGCTCCAGCCGGCTTTG
¶2680 ¶2690 ¶2700 ¶2710 ¶2720 ¶2730 ¶2740 ¶2750

¶19360 ¶19370 ¶19380 ¶19390 ¶19400
GTTCCCTTAAAGCCGGCATGATCTCAAATGTTGGCCTAAGTAACAGCTA-----
T C C T G C T A T A A A C G T A A A T A A
ACTCCTCGCATGGACTTTGAAT---AGAAGAGAACTGTAATAAACA---AATTTATACAGGGCTGGCATTAAACATA
¶2760 ¶2770 ¶2780 ¶2790 ¶2800 ¶2810 ¶2820

-----TTC-----
TTC
CTTGTCTGAGGATGACCGCGTGTCTGAGCTTTGTGTTTTCCACTGCAAGTTTAAAGCAGTCTCATCAGTTTGGTCC
¶2830 ¶2840 ¶2850 ¶2860 ¶2870 ¶2880 ¶2890 ¶2900

GCAGAGCCATGTTGCGCTTGTCTTGTAAATGGGCTGCAAGTCTCTGCGTTCAAGTTCTCGAAAGGCGATTTATG
¶2910 ¶2920 ¶2930 ¶2940 ¶2950 ¶2960 ¶2970 ¶2980

-----GCTTACCAGCTCCCTGAGTTTTCAGCTCCATATTTAGCTGGACAT
GCTTACCAGCTC GAGTTT TT AGCTC A ATT AG C CAT
AAGATATTGGCGGAGCAAAATTCATCAAGGCTTACCAGCTCTCGAGTTTCTTACCTCAACATTCAGACC---CAT
¶2990 ¶3000 ¶3010 ¶3020 ¶3030 ¶3040 ¶3050 ¶3060

¶19460 ¶19470 ¶19480 ¶19490 ¶19500 ¶19510 ¶19520 ¶19530
GTTTCCAAATTTGATCTCTGTTGCTCGCTGATTAATAACAACAACACAGATGCCACATGGATGGCAAGTAGTGTGC
TT CCA
CTTCCCAA-----
¶3070

¶19540 ¶19550 ¶19560 ¶19570 ¶19580 ¶19590 ¶19600 ¶19610
ACACGCTCCATCAGATAACGATAACAGCTGTGATGTCACGCTCACAGTCTTACGATGTCGTTTTTCCAGCTGG
TTC
-----TTC-----
¶19620 ¶19630 ¶19640 ¶19650 ¶19660

CAITTTAAAGATTTTCTCATTGACAGTTAAACTATGCAACAG
TTT A GAT CAACA
--TTTACCAGT-----CAACAA
93080 93090

5e)

CG32712:melanogaster (above), yakuba (below)
Martinez/Needleman-Wunsch DNA Alignment
Minimum Match: 9; Gap Penalty: 1.10; Gap Length Penalty: 0.33

110 120 130 140 150 160 170
AAACCAATTTGGTTCGGTAGTTCCCTTAAGAAATGCTCCACAAGTTGACTAATTTTAAAGCCACATACATC
A CC TTTGGT GGTAGTT CCTAAGA ATGCTCCACAAGTTGACTAATTTTAAAGCCACAT CAT
AGCCGTTTGGTTCGGTAGTTTCCCTAAGAGATGCTCCACAAGTTGACTAATTTTAAAGCCACATCATT
91830 91840 91850 91860 91870 91880 91890
180 190 200 210 220 230 240 250 260 270
CAGCCACAGT---ACACCAAATCCAGCATCGTCATTGTATGAATAAGCTGCATTTAAGTCACCAAAA
CAGCCACAC ACACCAAATCCAGCATCGTCATTGTATGAATAAGCTGCATTTAAGTC CAAAAC
CAGCCACACACGACACCAAAATCCAGCATCGTCATTGTATGAATAAGCTGCATTTAAGTCGCCAAAAC
91900 91910 91920 91930 91940 91950 91960
1140 1150 1160 1170 1180 1190 1200
ATTGTAAATAAAACTGTTTACCGCCCGCTCCGAGCGAGAATCCAGCTGAAATACCTCCGATGG-ATG
ATTGTAAATAAAACTGTTTACCGCCCGCTCCGAGCGA AATCCAGCTG AAT CCTC ATG A G
ATTGTAAATAAAACTGTTTACCGCCCGCTCCGAGCGAAAATCCAGCTGCAATGCCTCCAATTGTATAG
91970 91980 91990 92000 92010 92020 92030
210 220 230 240 250 260 270
-GTTAAAGTGGATCCAGGTGACAGACGCGCTGCATACCCCTGTTATACATATGTTATTTCAGTGATACATTTA
GGT A GTGGATCCAGGTGACAGAC CGCTGCATACCCCT TTATACATATGTT T CAGTGATA AT T
TGGGACGTGGATCCAGGTGACAGACACGCTGCATACCCCTTTATACATATGTTTCCAGTGATAAATATAG
92040 92050 92060 92070 92080 92090 92100
280 290 300 310 320 330 340
GTACACACTCAAATAACACGCGCAAACTA---TACTAAATTTGAGAGTCAGACATGAACCTAGTATTAT
GTACACACT A A CCACGCAAAA TA TACT AA T GAGA TCAGACATGAACCTAGTATTAT
GTACACACTG---ACAGCCACGCAAAAATATGCTACTTAAGTCGAGAATCAGACATGAACCTAGTATTAT
92110 92120 92130 92140 92150 92160 92170
350 360 370 380 390 400 410
TTATGACATTAAGACCTTGAAGGAGTTGGCTGTTTTCGTTTAAATCCACTAACTGTAATAACTAT
T AT ACATTAAGACCATT TGT AAATC TACT AACT TA AACT T
TCATACATTAAGACCATT-----TGTAAATCTTACTGAACATATACTACT-T
92180 92190 92200 92210 92220
420 430 440 450 460 470
ATATTAGTTAATAATCTGAGATTA-TGATATAGACATGTACTCTTAATGTTTCGA-----TATTTT
AT A T ATCTGAGATTA T GATATA CAT TACT TA TGTT A TA TT
GAATGATAT-----ATCTGAGATTAATGGATATACCCATTACTCATACTGTTTAAAGAAGCAATTAATTA
92230 92240 92250 92260 92270 92280
480 490 500 510 520
TCAAAACGAT-----AACAAAATATGCGAGA---TAGGGAATCAGTTAAATACT
T AA AT AA A AT T CA A T GAATC GTTAAA TACT
TTTAAATTAATTTTGGATTTTATATCTCAAGCAATCTTCAAAACCTTTTGAATCGGTAAATTTACT
92290 92300 92310 92320 92330 92340 92350
530 540 550 560 570 580 590
TCAGTTTCCGACATACGACCAATGTTTTCCTCAGTAGTC-AACTTAAATAATGAAGTAGTATCCCCCA
T A TT T C ACTA CGACCAAT GTT TTC GTGATG AA TAAAATTA AA TAGTATCC
TTATTTATACCACATGCGCAACATCGTCTCCTCGCTGATGAAAGTTTAAAATTTAATTAGTATCTC---
92360 92370 92380 92390 92400 92410 92420
600 610 620 630 640 650 660
TAGAAATGATTTTGTAAAATATGAACCTGAAATATGTGAAATATAGTGGTCAGATGCTGAGTAAAAA
TGATTTTTGTAAA TT ACTCTGAATATGTGAAATATAGTGGTCAGATGCT AGTAAA A
-----TGATTTTTGTAAACTT-----ACTCTGAATATGTGAAATATAGTGGTCAGATGCTAAGTAAAAA

92430 92440 92450 92460 92470 92480
1670 1680 1690 1700 1710 1720
ACGTGCGCGTAG----TCCATTATTAGCTATATAGGGTAGTATGGTAGAGCAAGAGTGGGCTGCC
A GTGCG TAG TCC TT T AGCTATA AGG GTAT G GTA CAA AAGTGGG TGCC
AAGTGCCATAGCCTGTTCCCTTCTCAAGCTATACAGG---GTATCG--GTAATCCAAAAGTGGGTTGCC
92490 92500 92510 92520 92530 92540 92550
1730 1740 1750 1760 1770 1780 1790
CACTGCAAGTTAATCTTCAGCAGACGGGAGCTTTGGCTTCGACTCGGTGGAGCACAATGTGGAAAGC
CACTG AAG TAATCT CAGCAGA CG CAGTCT TG CTT GACTC TGGA CA ATG GAA A
CACTGAAAGGTAATCTCCAGCAGA-CGACAGTCTATGCCTTAGACTTTTGGAAACAGGATCGCGAAAA--
92560 92570 92580 92590 92600 92610
1800 1810 1820 1830 1840 1850 1860
CTGGGACTCGGTTGGGCTACTTTTCTTTGGCGCCTTCGTGAGTTCCTAGCTTCTAGTTTCTATCTCG
-----AGTT T
-----AGTTGATG-----
92620
1870 1880 1890 1900 1910 1920 1930
CCAAGCTTAGTTTGTCCGCCATTCGAACCCAAACACAGATCTCCCTGCTTTGTGGCGCTGCACTGCTCA
TGCT T
-----TGCTCT-----CTTT
92630
1940 1950 1960 1970 1980 1990 1000
ACAGATTTTACATCGAACTGGACGCTCCGTTGACGTGACCAATGGAGGCCGCAAGATTT
AC AGAT A
ACTAGATAA-----
92640
1010 1020 1030 1040 1050 1060 1070
GGACGTGCGTCCATGGCACCCCTGATCGTTGGCAATCCGGATGCAGCGCATCTTAGCCGGCAGGATTA

1080 1090 1100 1110 1120 1130 1140
TCGTATTTCGCTGGACGGTGGTGTTCACGTGCTCTACTCTTCGCGACACGCTCCTCATCCGGGCCA

1150 1160 1170 1180 1190 1200 1210
AGTACTTGGCAATTTGAGATTAGCTGGCCACCTCCAGTGGTATGATGTTATGGATTAAGAACTAT

1220 1230 1240 1250 1260 1270 1280
TACATACTAAAATCTCCCTTTGCCAGATGATGCTGATGGGATCCCTGCTATCGGTTCTTGGTTATAGG
TGCTCTGG
-----TGCTCTGG-----
92650
1290 1300 1310 1320 1330 1340 1350
TCACCGTGTCTCCATCAGCATGAACCACTCCGGGATCGCGGTGCAACCACTGGTGTCTACCACCT
GA
-----GA-----
1360 1370 1380 1390 1400 1410 1420
GTACTACTGCCCCGAAACCCGCCATCTCAGTGGTCTTCTCCGTGTCATTTCAGGAGCTCGG
TTCCCTGGT CA TCC CAGGA CTG
-----TTCCCTGGTACTCCTGCGAGAA---CTG
92660 92670 92680
1430 1440 1450 1460 1470 1480 1490
CTGCATCGTTTACGCGCAGATTGAAGTACTAAGTACCGAACCTCCATAATCAAGTTTTTAAAGCAAAA
CTGCATCGTTTACAG ATTGAA ATA TCAA AA A AA
CTGCATCGTTTACAG-----ATTGAAA-----ATATTCAAA-----AATAGTAAA
92690 92700 92710 92720

5E)

CG32712:melanogaster (above), erecta (below)
Martinez/Needleman-Wunsch DNA Alignment
Minimum Match: 9; Gap Penalty: 1.10; Gap Length Penalty: 0.33

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      *20  *30  *40  *50  *60  *70
GTTGCGGTAGTTCCCTAAGAATGC---TCCACAAGTTGACTAATTTAAAGCCACATACATCCAGCCAC
GTTGCGGTAGTTCCCTAAGAATGC  TCCA  TTGACTAATTTTAA  GCCACAT  CATCCAGCCAC
GTTGCGGTAGTTCCCTAAGAATGC90AAATCCAAATTGACTAATTTTAAAGCCACATGCATCCAGCCAC970

      *80  *90  *100  *110  *120  *130  *140
ACGTACACCAAAATCCACGCATCGTCATTGTATGAATAAGCTGCATTTAAGTCAACCAAAACATTTGTAAAA
AC  TACAC  AAATCCACGCATCGTCATTGTATGAATAAGCTGCATTTAAGTCAACCAAAACATTTGTAAAA
AC-TACACAAAATCCACGCATCGTCATTGTATGAATAAGCTGCATTTAAGTCAACCAAAACATTTGTAAAA
      *80  *90  *100  *110  *120  *130
      *150  *160  *170  *180  *190  *200  *210
TAAAATGTTTACCGCCGCTCCGAGCGAGAATCCAGCTGAAATACCTCCGATTGCATGGTAAAGTGGGA
TAAAATGTTTACCGC  TCCGAGCGA  AATCCAGCTG  AAT  CCTCC  ATTGCATGGGT  AAGTGGGA
TAAAATGTTTACCGC---TCCGAGCGAAAATCCAGCTGCAATGCCTCAATTGCATGGGTAAAGTGGGA
*140  *150  *160  *170  *180  *190  *200

      *220  *230  *240  *250  *260  *270  *280
TCCAGGTGACAGACGCGCTGCATACCTGTTAATACTATGTTATTTCAGTGATACATTTAGTACACACACT
TC  AGGTGACAGAC  CGCTGCATACCTGTTAATACTATGTT  TTCAGT  A  A  ACA  AC
TCTAGGTGACAGACAGCTGCATACCTGTTAATACTATGTTTTCAGTCA---AAACAGAC--
      *210  *220  *230  *240  *250  *260

      *290  *300  *310  *320  *330  *340  *350
AAATAACACGCACAACACT---ATACTAAATTTGAGAGTCAGACATGAACAGTATTTT-ATGACATTA
  A  CCAAGCACAAA  T  ATACT  AA  T  GAGA  TCAGACATGAACAGTATTTT  AT  ACATTA
---AGCCACGCACAATAAGTACTTAAGTCGAGAATCAGACATGAACAGTATTTTATATACATTA
      *270  *280  *290  *300  *310  *320

      *360  *370  *380  *390  *400  *410  *420
AGACCAATGAAAGGAGTTGGCTGTTTTGTTTAAATCCTACTAAACTGTAACATATATATAGTATTA
AGA  CATTG  AAGGAGTGG  CTGTTTTGTT  AAATC  T  CT  AA  TGTAAACT  T  AT  A  T
AGAGCAATGGAAGGAGTTGACTGTTTTGTTA---AAATCTTCTGAATGTAAACT-TGAATGATAT--
*330  *340  *350  *360  *370  *380  *390

      *430  *440  *450  *460  *470  *480
ATAATCTGAGATTATGATATAGACATGACTCTTAATCTTTCGATATTTTCAAAACGATACAA----
  ATCTGAGATTAT  GATAT  ATGACTC  TA  TGTTT  AT  TT  TT  AAAA  A  A  CAA
---ATCTGAGATTATGATAT---ATGTACTCATACTGTTTAAATGTTGTTTAAAACAAAGCACCTT
      *400  *410  *420  *430  *440  *450

      *490  *500  *510  *520  *530  *540  *550
--AAT----ATTGCAGATAGG--GAATCAGTTAAATACTTCAGTTTTCCGACTAACGACCAATGTTTTT
  A  T  A  A  AT  G  GAATCAGTTAAATACTT  TT  TCCGACTAACGACCAAT  GTT  T
TCAATGTCACCAAAACATTTGTCGAAATCAGTTAAATACTT---TTATCCGACTAACGACCAATCGTCTC
*460  *470  *480  *490  *500  *510  *520

      *560  *570  *580  *590  *600  *610  *620
TCCAGTGAATCTAAAAAATGAAGTAGTATCCCCCATAGAAATGATTTTTGTAAAAATATGAACCTCG
TC  AGTATGAATCT  AAAT  A  TAG  ATC  TGATTTTTGTAAA  CT  TG
TCGAGTGAATCTGAAATTTTATAGCATCTT-----TGATTTTTGTAAA-----CTTGG
      *530  *540  *550  *560  *570

      *630  *640  *650  *660  *670  *680  *690
AATATGTCGAATATAGTCTCAGATGCTGAGTAAAAAACCTGCCGTAGTCCATTA-TTTCGCTATATAG
AATATGTCGAATATAGTGGTCCAGATGC  AGTAAA  AA  GTCCGCTAG  CATTAT  AGCTATA  AG
AATATGTCGAATATAGTGGTCCAGATGCAAAAGTAAAGAAATGCCGTAGCCCACTTACCTCAGCTATAAAG
      *580  *590  *600  *610  *620  *630  *640

      *700  *710  *720  *730  *740  *750  *760

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GGTAGTATGTTAGTAGAGCAAGAAGTGGGCTGCCACTGCAAGTTAATCTTTCAGCAGACCGGCAGCTTT
GGTA      AGTAGAGC  AGAAGTGGG
GGTATC-----AGTAGAGCGAGAAGTGGG-----
      *650      *660      *670

      *770  *780  *790  *800  *810  *820  *830
GGCTTGCAGCTCGGTGGAGCAAAATGTTGGAAGAGCTGGGACTCGGTTGGGGTCTACTTCTCTGGGGCC
      G  GCC
-----GTGCC
-----

      *840  *850  *860  *870  *880  *890  *900
TTCGTGAGTTCCTAGTCTTCTAGTTTCTATTCCTGCCAAGCTAGTTTGTCTCCGCCATTCGAACCAAAAC
TTCGTGA  TTC      CT  TTCTGCC  A      GCTC  GCC
TTCGTGAATTC-----CTGTCTCTGCCCA-----GCTCTGCCG-----
      *680      *690      *700

      *910  *920  *930  *940  *950  *960  *970
CAGATCTCTGCTTTGTGGCGCTGCACATGCTCAACAGATTATTCACATCGAATCGGACCTCCGTTG
AGAT      TCAA
-AGAT-----TCAA-----
      *970

      *980  *990  *1000  *1010  *1020  *1030  *1040
ACGTGACCATGCAATTTGAGGCCGACAAAAGTTTGGACGTACGCTGCCATGGCACCTGATCGTTGGCAA
      AAA  A  TTG
-----AATAGTTG-----AA
      *970

      *1050  *1060  *1070  *1080  *1090  *1100  *1110
TCCGGATCGACGCATCTTAGCCGGCAGGAGTTATCGTATTTGGCGTGGAGGGTGTTCAGCTGCTC
T
TA-----
      *730

      *1120  *1130  *1140  *1150  *1160  *1170  *1180
TACTCTCTCGCGACACGCTCCTCATCCGGCCAAAGTACTTGGCAATTTTGAGATTAGCTGGCCACT

      *1190  *1200  *1210  *1220  *1230  *1240  *1250
CCAATCGGTAGATGTTATGGATATGAAAAGCATTTTACATATAAAATCTCCCTTTGCCAGATGATCGG

-----

      *1260  *1270  *1280  *1290  *1300  *1310  *1320
ATGGGATCCCTGCTATCGGTCTCTGGTATGGTCAACCGTTGCTCTCCATCAGCATGAACCATCCCGG

-----

      *1330  *1340  *1350  *1360  *1370  *1380  *1390
ATCTGCGGTGCAACCAGTTGGTGTCTACCACTGTACTACATCGCCCTGAACCCGCCATCTCAGTGGT

-----

      *1400  *1410  *1420  *1430  *1440  *1450  *1460
GTTCTCTCGGTCCATTCCATTGAGGAGCTGCTGCTGATCGTTTACAGCCGACATTGAAGTACTAAATA

-----

      *1470  *1480  *1490  *1500  *1510  *1520  *1530
CGAACCTCCATAATCAAGTTTTAAGAACAACAAAAAACCACCAATCGATATATGACGCTCTCCCTC
CGAACCTCCA  AAT  AAGGTTT  AG      AA  AACCCA      TTC  T  C
-CGAACCTCCAAAATTAAGTTTTGGAG-----AAGAACCCAT-----TTCGT-C
      *740      *750      *770

      *1540  *1550  *1560  *1570  *1580  *1590  *1600
ACATCGAATCAATAAAAAAATGCCG-TAGAATTTTATGTAATTTTATTCAACAATTTGCTTT

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5g)

CG3712:melanogaster (above), ananasae (below)
Martinez/Needleman-Wunsch DNA Alignment
Minimum Match: 9; Gap Penalty: 1.10; Gap Length Penalty: 0.33

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1180 1190 11200 11210 11220 11230 11240
GCCGCGTGTCTTCTCTCTGTAACAGTGTGTATGCAATTTT-GT--TGTTTCATGTCTAAAAGTGA
CGCCGCGTGTCT C T A A C T TGTGTATGCAATTTT GT TGTTTTCA G C TAAAAGTGA
GCCGCGTGTCTCTC-----CTGAGACATTTGTATGCAATTTTGTGTGTTCAGGCGCTAAAAGTGA
          110          120          130          140          150          160

11250 11260 11270 11280 11290 11300 11310
AGTTCACCTAGATAAGAGGAGTGAAGTCTGAGACTCCGACGTAATAATTTATCCGTTGGACCCCGTTTCGT
AGTT CCACTGATAAG G A T AC GAG CCGA GT T A C T GT TT G
AGTTTCCACTGATAACAG--ACTCCACAGAG---CCGAGGTTG--TCGAGCTTTCGT-----TTGGGA
          170          180          190          200          210          220

11320 11330 11340 11350 11360 11370 11380
GTGAGCCAGGCGAGAGGCGAGGCGTTTGGACAGCGCCCAACT--GAAACAGCCGTTCTGCATCTGCATCT
GTCA C AG GA AG CAGC G A CAGC C ACT GAAA GCC A T TT
GTCA--CAAGCGGAGAGAGCAGCA---GCAGCAGCAACAGACTGAAAAGCGCCAAAGAAAAGTTGGTT
          130          140          150          160          170          180

11390 11400 11410 11420 11430 11440
CCAAAGGCGGCCGACACA--TGGAGCGCAG--GGTCAAAGC--CGCGCCGAGAAAAC--CAAACCAAGATA
AAA G CG G A A TGGAG GCA G TCAAAG C C CCAGAAA C A CA GA
GGAAGATCGAGGAAAACCTGGAGGGCATAAGTTCAAAGAAACACTCCGAAACCTGACGCACACATGAAT
          190          200          210          220          230          240          250

          11450 11460 11470 11480 11490
G-----CACCCCGATGAGCGGGCATCGAGGAG-----TGGCGCGGAGGT-
  CA CC TG C G AT G G AG TGG CG GG
GATTTTGAAGGCATTTGATTCATCCCGTTTGTCTCAGAGATAGCCGCAATGCTGGTCCGCTGGGCA
          260          270          280          290          300          310          320

-----CTAACCTCAA-----GCACAAGCACAATCCG--CAGCATC
          1500          1510          1520
CTAACCTCAA GCACAA CAATCCG CA T
CCCAACTGGGCATCATTCGGGAGGCGCTCAACTCAAACCGAAGCGACAATCCAATCCGGCACAAGTG
          330          340          350          360          370          380          390

11530 11540 11550 11560 11570 11580
AGCACACAAAGTAACTCTG--CTAATC-----ACRCAATCCCTATCTCATTCGAGATTTTC--ACAG-
A CA AAGC A C TT C ATTC AC CCAATCCC CG TCCG A C A AG
ATATCA--AAGCAACGFTCCCAATTCCTCACTCACTCCATCCCGCCCTCCGCTCCGCCACCACTAAAGT
          400          410          420          430          440          450          460

11590 11600 11610 11620 11630 11640 11650
GATCCAAAG--CGTAGTATCATAGCCCGAGGATGCAAGCGGCTCATCGCGGCTCTTGGAGCAGCGGGGG
G TCCAAG G G GT A CA CG AGGATGACGGC C ATGCG GC CTTGGA CAG GG GGC
GTTCCAAAGTGAAGTGACCA-----CGAAGGATGACGGCCTATATGCCCCCACTGGACCAAGTGGTC
          470          480          490          500          510          520          530

11660 11670 11680 11690 11700 11710 11720
AGCCTGCTCCGCTTTTCGCGTTTCCACACCACAAAGGTGAGCCTAGCTAATTAAGTACCCAGAACTTC
GCCT CTGCCCTTTCCG T TCCACACCACCAAAAGGT GCCTAG TA AC CA A C T
GGCCTCTCGCCCTTTTCGATCTCCACACCACAAAGGTAGGCGCTAGATAG-----ACTCATATCCTAG
          540          550          560          570          580          590

11730 11740 11750 11760 11770 11780 11790
ACGAACACCTCCAAATCCCAAC---CAGTGTGTCTTCTCACTAGCCCGCGGCTGGCTTCAATGA
AC A C C CTC AA CCOC C CAGTGTG TCTCTC CT ACCGC GG FTGGCCCT ATG
ACCTAGC--CACTCTAATCCCCCTCTTTCAGGTTGTCTTCTCTCCGCTAACCCGCTGGAFTGGCCCTGATG
          600          610          620          630          640          650          660

11800 11810 11820 11830 11840 11850 11860
GCCTACTCTCCCGATTTCTGCGAGCTGCAAGCCACCGCGTCCGCTCTGTCGAGCCAGGAAGTACACGGG
GGT CTCTC CG TT CTGG CGTG AAGC CCGCTCC CC CG CG CCGAGGAAGT A C
GGCTGCTCTCGGCTTCTCTGCGCGTGGGAAGCCGCGCGTCCACCGCGCGGGCCAGGAATATACAGG

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          670          680          690          700          710          720          730

11870 11880 11890 11900 11910 11920 11930
TCGGCGCAACCGCAACAGCATGCGCAGTCCAAACGATCTAATCTCGATAGCCGGATCTAAGGCCCTGGCC
CG CGCA CCGCAACAGCATGCGCAGTCC AACGATCT AT TC ATAGCCGG TC AAGCCCTGGCC
ACGTGCAACCCGCAACAGCATGCGCAGTCCCAACGATCTGATATCCATAGCCGGTCCAAGGCCCTGGCC
          740          750          760          770          780          790          800

11940 11950 11960 11970 11980 11990 12000
AGATCGGGGAGTCTGTGGGCTCCACACTGGCCTACTCGGATCGCCTGTCCATGGCTCCGGCTCGATTG
AGATC GG AG CC GT GGCTCCAC T GCCT CTC GATCGCCTGTCCATGGCCTC GG TCGATTG
AGATCGGGCAGCCAGTCCGCTCCACGATAGCCTTCCGATCGCCTGTCCATGGCTCCGGTTCGATTG
          810          820          830          840          850          860          870

12010 12020 12030 12040 12050 12060 12070
CGGTTGGTGTATTGGGCGTACAAAATGCCGGTCTGGCAGCTCGGTAGTACACAACTGACGGCCCAACA
G G GGGT TG GT CA AATCG GG TGCA TC GT GT A CACTGAGGCCA CA
GAGCGGTGCTCTG---GTTCCAGATGCTGG---TGGCACGTCCTGGTGTATCCAATGACGGCCAGCA
          880          890          900          910          920          930

12080 12090 12100 12110 12120 12130 12140
GTTGGCATGATGGGCATGGAGGCACTGGACACAGTGAATCACTTCTGGGAGGATGCCCTGGCCGACAC
TGGC T ATGGGCATGGAGCACT GACAC GTGATCACTTCTGGGA GA GCCCTGGCGCACAC
ACTGGGCGTTATGGGCATGGAGGCACTGACACAGTGTATCACTTCTGGGAAGAGCCCTGGCGGACAC
          940          950          960          970          980          990          1000

12150 12160 12170 12180 12190 12200 12210
TACTGCCCGCGGTTTGGCCCGCTGTTGACACGGCGGAGGACTCCGAGTCTCTGTCGGAATCCAAA
TA TC CCGCGCG TGCCCGCCCTG TGACCAC GC GAGGACTC GAGTCTCT GCGCA ATCCA A
TATTCAACCGCGGAGTCCCGCCCTGCTGACCACTGCCGAGGACTGGAGTTTCCGCGGAAATCCAGA
          1010          1020          1030          1040          1050          1060          1070

12220 12230 12240 12250 12260 12270 12280
ACCTGCTGGAGATGGCCTACACCGCTGCAGGAGCAGAGCGAATGCTCTTCTGACCAACGATCGGTGCT
ACCTCTGGAGATGGCCTACACCGCTGCAGGAGGAGCGA CTGCT TTCTT GACACAGC TCGGTGCT
ACCTGCTGGAGATGGCCTACACCGCTGCAGGAGCAGAGCGAGTCTGCTTCTTCCGACCACTGCTGGTGT
          1080          1090          1100          1110          1120          1130          1140

12290 12300 12310 12320 12330 12340 12350
GTTCCGCGAGGAGCATTCATTGACGAGGCGGAGGAGGAGGCGGGCGAGGCGGATGACGATCGGGCGTCA
GTTCCGCGAGGAGCATTCATTGACGAGGCGGAGGAGGAGGCG G C A C GA GACGATCGGGCGTCA
GTTCCGCGAGGAGCATTCATTGACGAGGCGGAGGAGGAGGCGGCCAACACGAGCAGACGATCGGGCGTGG
          1150          1160          1170          1180          1190          1200          1210

12360 12370 12380 12390 12400 12410 12420
CGCAAACTGGCGAGCGTTCCTAGTCCGGTGGTTCCGATCCGAACCTTGAATCCGCGGAAAGCTTTGCTT
G AAATCGGCGAG GT T AG CG GCTGGTCCGAT AA AT GATTC GC GA AGCTT GC T
AGAAAATCGGCGAGTCTTGGCCGAGTGGTTCCGATCCAAATTTGATTCGCGCGAGAGCTTCGCTG
          1220          1230          1240          1250          1260          1270          1280

12430 12440 12450 12460 12470 12480 12490
CCGCTCTGACCAAGTGGCGGATCTGCGTGAAGTTCGATGGCTTTATTGAGACTCGTAGAAGAGATATCC
CCGC CT GACCAAGTGGC GATCTGCG GAGTTCGA GGCTT AT GAGAC TCGTAGCA GAGTATCC
CCGCTTGGACAGTGGCCGATCTGCGGAGTTCGAGGCTTCATGAGACTCGTAGAAGAGATATCC
          1290          1300          1310          1320          1330          1340          1350

12500 12510 12520 12530 12540 12550 12560
GCTATTCCAGATGCACTGAAGCATCAGATGATACACGGTCCGCTGCTGATCACTTCCGCGGAGTGG
GCT TTCCAGAG GC CT AAGCATCA GATGATACACGGTCCGCTG CG ACCAATCGGGCGA TTG
GCTCTTCCAGAGCCCTCAAGCATCATGATGATACACGGTCCGCTCCGCGCACCACTTCCGCGGAGCTTG
          1360          1370          1380          1390          1400          1410          1420

12570 12580 12590 12600 12610 12620 12630
ATGCACTGCAGCAGCAGTACCGAATACCTGGCCAGCTGCACTGCGTTCGGTTCGCTTTCAGTTCCTCT
ATGCACTGC CA GATAC GA TA CTGG AACGTGCATCCGCT CG TGGCCT CAFTT CT T
ATGCACTGCAGCAGCAGTACCGAATATCTGGCGAAGCTGCACTGCGTCCGACTGCGCTTCCAGTTCCTG
          1430          1440          1450          1460          1470          1480          1490

12640 12650 12660 12670 12680 12690 12700
TCAAGGATCCGCTGTGGCCAGTGGATCTGGATGCTGGTGGCGAGATTTCAACCGATCTGCTTTGCT
TCAAGG CCGCG GT GGCCAGTGGATTCGCGATGC GG GGA AT CTCAC GA CTGT T CT
TCAAGGACCCCGCTGGCCAGTGGATTCGCGATGCGGCGGCAAACTACTACGACCTGCTATGCT
          1500          1510          1520          1530          1540          1550          1560

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*2710 *2720 *2730 *2740 *2750 *2760 *2770
GGCGATAAGGATACCAAGGAGTTCTTGGGGTACGAGGACATGGTGAACATCTGCACGATAGCAAC
GGCGA AAGGA ACCAAGGAGTT CT GTGGGCTACGAGGACATGTGT AA TATCTGCACGA CAAC
CGCGCAAAGGACACCAAGGAGTTCTTGGGGTACGAGGACATGGTGAACATCTGCACGATCCAC
*1570 *1580 *1590 *1600 *1610 *1620 *1630

*2780 *2790 *2800 *2810 *2820 *2830 *2840
AACTGCCCTGCATCCAAATGGAGCTGGAGCAGCGCAATGTCAAGGCGATGACCTTCTAGCATATCTGTT
AACTGCCCTGCATCCA TGGAGCTGGAGCAGCGCAA GTCAAGGC ATGAC TTCTACGA ATCTGT
AACTGCCCTGCATCCAGCTGGAGCTGGAGCAGCGCAACGTCAAGGCGATGACCTTCTAGCATATCTGTT
*1640 *1650 *1660 *1670 *1680 *1690 *1700

*2850 *2860 *2870 *2880 *2890 *2900 *2910
TGGACTTCATTATCTCGATTCCGTTCAAGGATCTTGTATGCTCCGCGCTGCCAGCGTAAACAGCGGTTGTCCA
TGGACTT ATTATCTT GATTCGGTCAAGGATCT GATGCTCCGCG GCCAG GT AC GC GT CT CA
TGGACTTATTATCTCGATTCCGTTCAAGGATCTGATGCTCCGCGCGCAATCTTACGGCGTGTCCA
*1710 *1720 *1730 *1740 *1750 *1760 *1770

*2920 *2930 *2940 *2950 *2960
AAATCGCTGGCTATCCAACGGATTCAAAGAGACGGTAGTGG---TAAACT--TAG-CTTTAG-----G
AATCG TGGCT TCCAA GGATTCAA GAGACGGTAGT TA ACT TAG C T AG G
GAATCGATGGCTGCCAATGGATTCAAGGAGACGGTAGTCTTATAGACTTCTAGACCTCAGACTTGTG
*1780 *1790 *1800 *1810 *1820 *1830 *1840

*2970 *2980 *2990 *3000
TCTAGG---CAAATGTTAAG-----CCCTATGTT-----CTTTG-----
TC GG CAA TGT AA C CT TGGT CTTTGG
TCACGGTCGCCAGTTTGTATCAAATGTTGAACACCTGTCCCTCTCTGGTACTACTTTTGTATGAA
*1850 *1860 *1870 *1880 *1890 *1900 *1910

*3010 *3020 *3030
-----ATTCC-----AGGCATTAACAACAGCCGTGTGGTCGGTCT
ATTTC AGGC T AC AC GC GTGTGGTCGGT CT
ATTTATAATCTAACAGCTGATTGACTTTCATTCACATAGGCCCTGGACACCCCGGGTGGTGGTACT
*1920 *1930 *1940 *1950 *1960 *1970 *1980

*3040 *3050 *3060 *3070 *3080 *3090 *3100
GAAGCAAGAAACGGATGCTTAAGTTCCCAACGGGTTTCATCTCCACTTTTACGTGATATCGAGCAG
GAA GC AAGAA CGGATGT AAGTTCCCAACGG TCACTGTC CACTT TA GT ATATC GA GAC
GAAGCCAAAGAGCGGATGCTCAAGTTCCCAACGGGTTTCATCTCCACTTCTATGTAATATCGGACAG
*1990 *2000 *2010 *2020 *2030 *2040 *2050

*3110 *3120 *3130 *3140 *3150 *3160 *3170
ATATCACCCTAATGGCCTGGGCTTCTTTGGACCAACGAGAACTTCCGCGACATCTGCCACTACTTCC
ATATCACCCT ATGGCCTGGG TCTTTGGACC AACGAGAA TG G A AT TG CACTA TT
ATATCACCCTGATGGCCTGGGACTTCTTTGGACCAACGAGAACTTGAAGGATATATGTCACTATTTTA
*2060 *2070 *2080 *2090 *2100 *2110 *2120

*3180 *3190 *3200 *3210 *3220 *3230 *3240
GAGAGAGCTGTGCTGGCTTTCTGGGCGACATCTTTAGCTTCCAAAGAGCCGCTTCCAGACCATCGAGGA
G GAG A TGCT GCCTT CT GG GACAT TT AG TTCA AAGAGCCGCTTCC ACCATCGAGGA
GGAGCAATTTGCTGGCTTCTTGGGACATATTCAGTTTCCAGAAAGCCGCTTCCACCACATCGAGGA
*2130 *2140 *2150 *2160 *2170 *2180 *2190

*3250 *3260 *3270 *3280 *3290 *3300 *3310
ATTCTGCAAGGATGTGTCGAGCACATGACAGCGCGTCAACAACATTTGGCGTGAATTTAGCCA----
TTTCTC CAGGA GT CT CAGCACATGACAGCGG GTCAACA AATTGGCGT AAATTTAGCCA
GTTCTCCAGACCTCTCCAGCACATGACAGCGGTCAACAATTTGGCGTGAATTTAGCCAATAG
*2200 *2210 *2220 *2230 *2240 *2250 *2260

*3320 *3330 *3340 *3350 *3360
-----GTAC-----TGGCTTCACTT-----TAGCTAGCTCTATCCATAC--TTCTTGGAC
TAA T CG T ACT T CTAG C TC T AT TT TGG
AGTTTATAAATACTATATTTTACGATTACTACGATCCCTCCAGACATCCGTATATGTTTAAATGTT
*2270 *2280 *2290 *2300 *2310 *2320 *2330

*3370 *3380 *3390 *3400 *3410
TCCCTCTCATAT-----ATTTTTCACAAAA-----CAATTTGGTTCGGTAGTTCCCTAAGAA
T CC T C A T A TTTT CA A C ATTTG TT GAGTATTCCTCAAGA
TACATCCCAACTAACCCACTTTTGTCACTATTAGACTGTCTAATTTGATTTGGTATTTCCCTAAGAG
*2340 *2350 *2360 *2370 *2380 *2390 *2400

*3420 *3430 *3440 *3450 *3460 *3470 *3480
ATGTCCTCAAGTTGACTAATTTTAAAGCCACATACATCCAGCCACAGCTACACAAATCCAGCGATCGT
AT TCCACAAAGTTGACTAATT TAA CCA TACA CCA A CCA T T
ATCTCTCAAGTTGACTAATCTTAAATACCAATTACAC-----CCACAACACTCGTT--T
*2410 *2420 *2430 *2440 *2450 *2460

*3490 *3500 *3510 *3520 *3530
CATTTGT-ATGATAAGCTGCATTTAACTGACC-----AAAACTTTGTAATATAAAA
CATTTGT ATGA TAAGCTGCATTAAG C CC AAAAACTTTGTAATATAAAA
CATTTGTAATGATAAGCTGCATTTAAAGCCCAAAAAAGAAAAAAATGAAAAAATTTGTAATATAAAA
*2470 *2480 *2490 *2500 *2510 *2520 *2530

*3540 *3550 *3560 *3570 *3580 *3590 *3600
CTGTTTACCOCGCTCCGAGCGAGAATCCAGCTGAAATACCTCCGATTGCATGGTAAAGTGATCCAG
CTGTTTACCG CG TCCGA C A AATCCAGCTG
CTGTTTACCAGGATCCGATCTAAAATCAGCTG-----
*2540 *2550 *2560

*3610 *3620 *3630 *3640 *3650 *3660 *3670
GTGACAGACCGCTGCATACCCGTGTATACATGTTATTTCAGTGATACATTTAGTACACACACTCAAATA
CTA G ATT AGT G AT CT AAA
-----CTA-GAAATTTGAGTGGCA-AT-----CTGAAGC
*2570 *2580 *2590

*3680 *3690 *3700 *3710 *3720 *3730 *3740
ACCAGCACAACTATACTAAATTTGAGAGTACAGACTGAACTAGTATTTTATGACATTAAGACCATGTG
AATT G AGTC GAC T
-----AATGGGTAGTC-----GACGCATC
*2600 *2610

*3750 *3760 *3770 *3780 *3790 *3800 *3810
AAAGGAGTTGGCTGTTTTGTTGTTTAAATCTACTAAACTGTAAAATATATATAGTTTAAATATCTGA
AA A CCT CTA AC
AA-----ATACCTTCTATAC-----
*2620 *2630

*3820 *3830 *3840 *3850 *3860 *3870 *3880
GATTTATGATATGACATGTACTCTTAATGTTTCGATATTTTTCAAACGATAACAAAATATGACAGATA

*3890 *3900 *3910 *3920 *3930 *3940 *3950
GGGAATCAGTTAAATACCTTCA-----GTTTCCGACTAACGAC--CAATTTGTTTTTCCAGTGAAGTAA
AAATACTTCA G TTT AC AA AC CA TTTT A T T AAT
-----AAATACTTCAATGATTTAGTACAAAAACTACACAAGAAATTCAAATT--TTAATA
*2640 *2650 *2660 *2670 *2680

*3960 *3970 *3980 *3990 *4000 *4010
TAAAAATGGA-AGTAG-TATCCCCATAGAAATGATTTTTGTAAAAATTA-----TGAACTCTGAAATATG
T ATT A A T G TAT C CA A AT T TT G AAA T TGA A T ATTA
TTTCTAATTAATTTTATGATTTCTCAAATTTAT-TGTTCCGAAAAAGTTTTGCGTAAAAAATTCATTAAT
*2690 *2700 *2710 *2720 *2730 *2740 *2750

*4020 *4030 *4040 *4050 *4060 *4070
TGAATA---TAGTGGTCAGATGCTGAGTAAAAACGTCGCCGA-GTCCATTTATTAGC---TATATAGG
TGA TA T T T TG T A T AAA C T TA GT CA T C T C T AT G
GATTTATTTTATTTTTTTTTTTGTTCA-TGAATGCTTAAAAATGTCACAAAAAAGACATTTGATTTG
*2760 *2770 *2780 *2790 *2800 *2810 *2820

*4080 *4090 *4100 *4110 *4120 *4130 *4140
GTAGTATGGTAGAGCAAGAAGTGGGCTGCCACTGCAAG--TTAATCTTCCAGACCGCGAGTCTT
T GTA TA T AGC A AA T G TG A TG TT AT T A CA A GG A T
TTTGTAAACTATTTAGCGA-AAATAAGTTGAA-ATTGTTGCTTTTATGTAACAATAAGGAAATC
*2830 *2840 *2850 *2860 *2870 *2880 *2890

*4150 *4160 *4170 *4180 *4190 *4200
TGGCTTCGACTCGGTGGAGCACAATGTTG--AAGAGCCTGGGACTCGGTTGCGGCTACTTT---CTCT
AG A AATG AA A CTG GGT C T T T T CTCT
-----AAG-AAAAATAAATAAATCTGACCAATGTTACTTTTTTAAATGAACTCT
*2900 *2910 *2920 *2930 *2940

*4210 *4220 *4230 *4240 *4250 *4260 *4270

TGGC-GCCTTCGTGAGTTCCTAGCTTCTAGTTTCTATTCTCGCCAGCT-TAGTTTGTCCGCCATTGCA
GGC G C TGAGTT C CTT A T T TAT T A T TAG T G C A C
AGGCTGTAGACTTGAGTTTC---CTTGAATATATATATATATATATATATAGGTGATAATGACAAACCG
92950 92960 92970 92980 92990 93000 93010

C GC
GTGTACATGTACTTCATTGSCCTGACCACCGGAGTGGCGGTGGCCCTCTTCCTGAGCCACTCCTGCCACC
93770 93780 93790 93800 93810 93820 93830

14280 14290 14300 14310 14320 14330 14340
ACCCAAACACAG---ATCTCCCTGGTTTGGCGCTGCACACGCTCAACGAGAT-TATTGCACATCGAAGT
A A G A CCTG TG C C G A G T A CAGA TA CA A
AGTGGAGTTTGGAGTAATGCTGGCATGCCACCGTATAGGTT--ATCAGAGTAAACGAAATGGTT
93020 93030 93040 93050 93060 93070 93080

14830
-----CGACATGA-----A
AGCATCGCTCCAGGTGAGCGGTGACGAGTGGGTATCGCAATTTAGCGCGGATAATTTAAAAACGATA
93840 93850 93860 93870 93880 93890 93900

14350 14360 14370 14380 14390 14400 14410
GACCGCTCCGTTGACCTGACCATGCAATGGAGCCGCAAAAGATTTGGACGCTACCGTGGCCATGGACCC
AC C CCGT ACG A TG TGG GGC A GA GA G C G C TGG
AACTTCCCGCTCAACGACAGT-TGTTTCTGGCGGCTCAGTG-GAGCAAGATGGCAAGGCGCTGGG----

14840 14850 14860 14870
GACT-----AAGTACC-GA-ACCTCCATA-----TCAAGTTTTAAAGAA
G ACT AAG ACC GA A CTC TAA TC A TTAA
GCATTTTCCCAAGCGAAGGATATGCAAGGACCTGATAGCTCCCTAATTCCTTCCAAAATTTAAAT
93910 93920 93930 93940 93950 93960 93970

14420
-----TGAT-----CGT
TGA C T
CCTCAGCTGTGCAATCTTAGCACTCGGTGCCTTTGTGAGTAAGTCCGCCACCCATGGAGCCTAGATCTCT
93150 93160 93170 93180 93190 93200 93210

14880 14890 14900 14910
---CAAA-----AAAAAAAACC-----CAATCGATAT-ATGCMCTTCC-----
CAAA AAAAAAAAAC CAA C A AT A C TT C
CTTCAAATTTAAACCCCTATCTAAAAAAAACAATCTTCAACAAAATGAACCTAATACCAATTT
93980 93990 94000 94010 94020 94030 94040

14430 14440 14450
TGGCAATC-----CGGA-----TGCAGC-----GCAT-----CTTAGCG-----GC
TGGC A C C G A TGC C GCAT CTTA CC GC
TGGCTAACGAGTCTGTGACACACAGATAGCCTGCTTGGGGCCCTGCATCTCCTTAACAGATCGTGC
93220 93230 93240 93250 93260 93270 93280

14920 14930
-----TCCACA-----TCGAATCAATAAAAA-----
TC A A T AAT AT AAA A
ATTTCATAAAAAAGGTCATTAAGTAAATTTATCAAAATTAATTAATTTTATTTTGTATAT
94050 94060 94070 94080 94090 94100 94110

14460 14470 14480
AG--GAGTTATCGTA-TTT-----CGCTG---GACGG---T
AG GAG AT G A TTTG CGCTG GA GG T
AGTTGAGCGATGGCACTTTGAGGAATCACGAGACCCCTCCAAGGCGAGTGTGCTGTAAGAAGTCTCT
93290 93300 93310 93320 93330 93340 93350

14940 14950
-----AATGCG-----CTAGAATT---TTA
AATGC CT AATT TTA
CTATAGTTCCATTTTTAGATGAGACTAATTTTGATTTTATTTTAAATGCTAAAGTCTTAAATCAATTA
94120 94130 94140 94150 94160 94170 94180

14490
GGTGTTC-AC-----GCTGCTC-----
GG G TC AC G TC C
GGAGTGCACAGCAGGATGCCCTCATCTCAGCTGGCTGGAACGTATCATACGCTGGACAGTGTGCT
93360 93370 93380 93390 93400 93410 93420

TGTAAT-----
T TAAT
TATAATATAAAAAATAATAATTTCAAAAAATCAAAACTCCGAAATTCACACTCGGCCAATCTTAT
94190 94200 94210 94220 94230 94240 94250

14500 14510 14520 14530 14540 14550
-----TACTCCTTCGGGACACGCTCCTCATCCGGGCCAAGTACTTGGGCAATTTTGAGATTA
TACTCCTTCGC A GCTCCT T CGGCGAAGTACTTG CAAA TTTGAGAT A
TTCCGCTCGCTGTACTCCTTCGCGGTGATGCTCCTGCTTCGGGCCAAGTACTTGGCAACTTTGAGATCA
93430 93440 93450 93460 93470 93480 93490

14960
-----TGA-----
T
CGGATTTTAAAGTGTATACCTTCTGAACTCAGCTCCTCAGTACTAATTTCCCAATCAAAAATCTGAC
94260 94270 94280 94290 94300 94310 94320

14560 14570 14580 14590 14600 14610 14620
CGCTGGCCACTCCAATCGGTAGATGTTATGGATA-TGAAAGCAATTTACATACTAAAACTCCCTTTG
C TGGCCACCTCCA CGGT G GT TGGATA T AG T A T AA T TT
ACTTGGCCACTCCAACACGGTT--GTATTGGATATTTCTAGTGATAATTTGTGTCTAAGAGTGGGTTAT
93500 93510 93520 93530 93540 93550 93560

ACTGTAAAATTTGATCGATTTTTTCAAATTTTCAAAGGGGTAACATCAAAAAATGACAAAAAATTTGTT
94330 94340 94350 94360 94370 94380 94390

14630 14640 14650 14660 14670 14680 14690
CCAGATGATGCTGATGGATCCCTGCTATCGGTGCTTCGGTTATGGTACCCTTGCCTCCACAGCAT
AG TG T C AT CC T C TC T R G T T G AC T CT TC AT A C T
AAAG-TG-TACAATTACTCCCTTCCGTCCAAATCTATTGCTCT-GAAACTATCTATCTAT-ATCCT
93570 93580 93590 93600 93610 93620

AAAATTTTAAATTAACAATTTCCCAATATTTTGTACAGATCGAATGGGGATTAAGTACTGATTA
94400 94410 94420 94430 94440 94450 94460

14700 14710 14720 14730 14740 14750
GAACATTCCCGGATCTCGGGTGCAC-CAGTTGGTTGTC-TACCATTGTACTA-CATC-GCCCTGAC
A AT C A CT GT C C CAG TG T GT T TGT CT C C G CTG C
ATAATTC-----ACCTCGTSTCCCCACAGATGATGGTCTTGTGGCTTGTGGCGGCTCTGTT
93630 93640 93650 93660 93670 93680 93690

TTGGTATTCGTPTTCAAATGGATTGAGAAATGATCGAGATATAGTCTCAGAAAATTTGGATTTTCAGT
94470 94480 94490 94500 94510 94520 94530

14760 14770 14780 14790 14800 14810 14820
ACCGCATCTCAGTGGTGTCTCTCGTCCATTCATTCAGGAGCTGCTGTCGA-----TCGTTA-
C G CA CT GTG TG TC CC G A CC TTC G C CTG TGCA TC T TA
TCGGCA-CT--GTGATATCCACAGCGGGAG-CCGTCTGTGGCGCTGGTGAATGACTTCACTAC
93700 93710 93720 93730 93740 93750 93760

ATTTGAAAATTTTAAAAACATGCCATAATGCCGTCTTCCACTTGCATAACTCGGCTAATATTCGTC
94540 94550 94560 94570 94580 94590 94600

-----CAGC-----

CGATTGAGAAATGTTATACCTTCCGGATCTTAGATCTTCGAGTACTATAATTTCCCAATCAAAATCTGAGA
94610 94620 94630 94640 94650 94660 94670

ATGTAATAATTGACCCATTTTTGAAAATTTCAAGGGGFAACATCGCAAAAATTCACAAAATTGGA
94680 94690 94700 94710 94720 94730 94740

ACAAATTTTTTGCTCAAGTTTTAAATATCGTATGCAGATCGAAGGAGATTGGTTCCTGATTCCTTA
94750 94760 94770 94780 94790 94800 94810

ATGGTATCCGATCGCCAAACGGTCAAAAATAGCAGAGATATTTATAAAAACCATTTCAAAAACCGTA
94820 94830 94840 94850 94860 94870 94880

AATAAGACTTCTGATATTTAATATCAGTTTCAATAAATTTAATAAAAATAAAAATAGCAAAATGGA
94890 94900 94910 94920 94930 94940 94950

AAACTTACCGCCACTTAATTCAGTGTATTTTATACATACACTTTTACATCAATCTTTACATA
94960 94970 94980 94990 95000 95010 95020

TTTACATCAATCTTACATATTTACATCCATCTTTACATATTTACATCTTTACATATGTTATGGCTCG
95030 95040 95050 95060 95070 95080 95090

TTAACAAGTCAACGGTCTTTGTGTGGGAGCCGAAGTCTCTCCACACACACATCGGGGAATGGAGCA
95100 95110 95120 95130 95140 95150 95160

CCCTCTTGAATTTCCCAATATTTCAAGCTTTGTTTAACTTAGATATAGTTTTCATAGCCACAGCTT
95170 95180 95190 95200 95210 95220 95230

CGAGGATTAAGTTTTTTGAGCATTTTAACAATTTCTCAAAAGAAACACTATGTTGAGAGAGTTTTA
95240 95250 95260 95270 95280 95290 95300

AACTCAAAACACACGCACCTGCGCCCATTTATTTGTTTACATTTGCGAAGCCATTTTCTCTTTTT
95310 95320 95330 95340 95350 95360 95370

GCACAATTTCTTTTGCTTTTAAGCAGAATTTATAGTTAGAAGACCTTTTTAATATATATTTAACAAA
95380 95390 95400 95410 95420 95430 95440

AAAGTGAATTTAAATCACAGCTTTGCCACAACAGGATGAGAGAAGATCACGAAACCAAGGATCACA

95450 95460 95470 95480 95490 95500 95510

AAAGCGAAGAACAAAGTGTGAGAGAGAAGCTAAAGTTACATTTGCCCCGTTTACCAACACAGGTGTTT
95520 95530 95540 95550 95560 95570 95580

CCCCAACACTCCTTAGTTTGGCGCGAAAAGGCAGAGAGCTTTGAATTTCTACTCTTTCCCCCTTTTAAAT
95590 95600 95610 95620 95630 95640 95650

-----TTTATTCAAAACAATTTGCTTTTCATTGGTGGTGGTTTT

-----TTTTATTCAAAACAAT CTTTCATT TT GTG TT

TAAAAATGCAAAATTTTCAATACTTTGGTTTATTCAAAACAATC--CTTTCATT--TTTGTGGTT-

95660 95670 95680 95690 95700 95710

95010 95020 95030 95040 95050 95060 95070

CCTTTTTTCTTTCTCATTTTGGTTGGTTGTCGCTTATTTGAGTGTGACTGCAGTTCCAGAAAAGGC--

TTTT TT TTT AT T TTTG T TTTGAG TT ACTGCAGTTCAGG AAGC

-TTTTATGTTTT--ATGGTTTTTGT-----TACTTTGAGTTTTAACTGCAGTTCCAGGGAAGGCAG

95720 95730 95740 95750 95760 95770

-----ATTTTTA-----ACGTTCCCTC-----GAACTAGTGGTAAACGTAAACTAAAATACAT-

-----ATTTTT A GT TC GAACTAG G C TAAAC TAAACTAAAATACAT-

TTGCAAGTTATTTTTTTTTTGAAGTTTTCATTTGAAACTAGGGACTAAACTTTAACTAAAATACATA

95780 95790 95800 95810 95820 95830 95840

95130 95140 95150 95160 95170

-CAATGAGTTC-PTTCGTGT--GTATTTGTGTTGTTGGTGGTTTTTT-----TTTGATA--

CAATGAGTT TTT TGTG G ATT GT F T T T T TTT TTT GAT

TCAAATGAGTTGTTTTTGTGTAGCATTGGTAAATTTTCTCTCTTTTCCGATCAGGTTCCGATTTTC

95850 95860 95870 95880 95890 95900 95910

95180 95190 95200 95210 95220

-----AATATTG-AAAGACAAACGACGCTCGT-----GCTTGAAA--TCGCCAGTTCCTGGTTTTT

AA A TG AA GA A GA TC T GC GAAA T G CA TT TGG T TT

GCCCCAAAACGTAAATGAGATTTGAAA--TCTTTTATTTTTCAGCCCGAAAGTAGGCAATTTGGGATGTT

95920 95930 95940 95950 95960 95970 95980

95230 95240 95250 95260 95270 95280

T-----TTTTCAAAACTGACGTT-TTCAAAAACCGCACAGTTTTCGCTCGAG----ATGTGAAGCTGC

T T T C A C A G T T T A A A A T T T G A A G T G A G T C

TGACCTGTCCGATCCATAAGTAATGCTTGATATATAATA-TTATATAGAATAGTACGTGAAGATGC

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95290 95300 95310 95320 95330 95340

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GGCAAAACAAT CTCAAAACCA AC TC TC TT T A C ATT AT

GGCAAAACAATTCAAAATTTCAAAACCGA-----ACCTC--TCATTARA--CTATT-----ATG

96060 96070 96080 96090 96100

95350 95360 95370 95380 95390 95400 95410

CATATATCCCTCTTTGTGTATATAAACAATTTTAGTTCCTTTTTTTTTTTTTTCTTAGCGTTTGTCTT

ATATATCCCT TATA CTA C

TATATATCCCT-----TATAGCTAGC-----

96110 96120

95420 95430 95440 95450 95460 95470 95480

GCAACTTATGTACTAGAATGATTTCCAGGGATTAGGGGAAAACATAAAATCTTACTGGATATACGTGT

AAATCTTA G TATA

-----AAATCTTATCGTGATAA-----

96130 96140

95490 95500 95510 95520 95530 95540 95550

TTTGTAGCCAGTTTAGTTGGTAAATGATTTATCATACGATAGATAGTTTACTAATTACTCCGA---

-----GTTAGCC TTTAGTTGGTAAATGATTTATCATAC AT ATA GTT CTAATTA TCCGA

---GTTAGCCA---TTTAGTTGGTAAATGATTTATCATACTAGTATATAGTTTCTAATTAATCCGATTCA

96150 96160 96170 96180 96190 96200

¶5560 ¶5570 ¶5580 ¶5590 ¶5600
-TTACTCGCCCTATTATGGA-CTTTTTCTTGAGACTCG--CCCTCGCGA-ATA-----
TT CT G C TATT TG A C TTT CTT AG C CG CCCT C A ATA
CTTCCTAGACTTATTTTGTATCTTTCCCTTACAGCCCCGCCCTAACTATATATATTTTATTTTATT
¶6210 ¶6220 ¶6230 ¶6240 ¶6250 ¶6260 ¶6270

¶5610 ¶5620 ¶5630
-----ATCATTTGATT-----ACCACCATGGAGAT---AATGG----
AT TTT TT A ATGGA AT AATGG
TATTTTATTTTCTGGCTCTTGTATTTTTTTTTTTTTCTGAGGCGGATGGATATATAGAAATGGAGGGG
¶6280 ¶6290 ¶6300 ¶6310 ¶6320 ¶6330 ¶6340

¶5640 ¶5650
-----TCGAG-----GGC-----TAGCACATT
TGGATT TCGAG GGC TAGCACAT
AAGATGATTGATTGATTGATTGATCGATCAATCGAGTGATTGAGGCTGGGAGGGGATAGTAGCACATA
¶6350 ¶6360 ¶6370 ¶6380 ¶6390 ¶6400 ¶6410

¶5660 ¶5670 ¶5680 ¶5690 ¶5700 ¶5710 ¶5720
TTGGTAAGGTAATTTTCATCTGCTTTTCGTACTTGGATGCGGTACCTTGAAGGTCGCTCTGGCCTGACT
TTGGTAAGGTAATTTTCAT TGCTTTTCGT TT A GC A CTGG G TC C GAC
TTGGTAAGGTAATTTTCATTTGCTTTTCGT--TTTAGGCC--AACTG--GCTCTAC-----GACC
¶6420 ¶6430 ¶6440 ¶6450 ¶6460 ¶6470

¶5730 ¶5740 ¶5750 ¶5760 ¶5770 ¶5780 ¶5790
TGATCCCGCTAGCAAACGTAGTCTTCACTTAGGACTAATAAATAAATGTTCTTGGTTTATTTTCC
T TC GCT TC TA T CTTA AT TAATAAATAAATGTTTCTTG TTT A TT
CAATTCGGCT-----TCCTAAG--TTGCTTA--ATTTAATAAATAAATGTTTCTTG-TTTCAGATTTA
¶6480 ¶6490 ¶6500 ¶6510 ¶6520 ¶6530

¶5800 ¶5810 ¶5820 ¶5830 ¶5840 ¶5850 ¶5860
ATGGTTTGGCTTCTCTTTTTTTTTTGTGTTTCTTTTTTGTATGCTTGCTTTAAATGTTTATCCA
AIG TTG TTTTTTTTTTGT T TT TTCT
ATGTTTTG-----TTTTTTTTTTGTTTTTATTTCA-----
¶6540 ¶6550 ¶6560

¶5870 ¶5880 ¶5890 ¶5900 ¶5910 ¶5920 ¶5930
TCCGTTTTGTTCTCAGCTTAGTGCAGCTTACTCGCCCCATTTATCAGTTAATTTATTTATGTTTG
TT TTCTCAG T CC T TATCAGTTA TT TTAT AT TTG
-----TTCTTCTCAGAT-----CCATTCATCAGTTATTTTATATGATTTTTG
¶6570 ¶6580 ¶6590 ¶6600

¶5940 ¶5950 ¶5960 ¶5970 ¶5980 ¶5990 ¶6000
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TATATAAATAAATTTGGTATAATCGAGTCTTTACGGCAAAACAAAACAGAAATATGCTATTTGATTTCT
TATATAAATAAATTTGGTATAATCGAGTCTTTACGGCAAAACAAAACAGAAATATGCTATTTGATTTCT
¶6610 ¶6620 ¶6630 ¶6640 ¶6650 ¶6660 ¶6670

¶6010 ¶6020 ¶6030 ¶6040 ¶6050 ¶6060 ¶6070
TCAATTTGTTTTCTACTTAGTATATCATGATCTTGCATCAT-----TATCATTAAATCGTT-----TCATTG
TCAATTTGTTTT C TAGT T TC T TT T T TATCATT TC TT TCATT
TCAATTTGTTTT-CATAGTTTTTCTTTGTTTTTTTTTTTTTTTATATCATTTTTCATTTGTTCTCAT-
¶6680 ¶6690 ¶6700 ¶6710 ¶6720 ¶6730 ¶6740

¶6080 ¶6090 ¶6100 ¶6110 ¶6120
TTTCTATAAATACATAAATAATCAAAATATATCTGTATACTATATTA-TATTAAGT-----
TTT T TAAATACATAAATAATCAAAATATATCTGTATACTATATTA TATT AGT
TTTTTTTTTAAATACATAAATAATCAAAATATATCTGTATACTATATTAATATTAGTTTGTCTTTTT
¶6750 ¶6760 ¶6770 ¶6780 ¶6790 ¶6800 ¶6810

¶6130 ¶6140 ¶6150 ¶6160 ¶6170 ¶6180 ¶6190
-----TTTGTCTTTTCAAGTCTTGAACCAAACTATTTAGGCTTTTCGATCTATTTGTCGGT
TTTGTCTTTT AAAGTTC TGAACCAAACTATTTAGGCT TT TCTA
TTTTTGTCTTTTTTAAAGTTCGTAACCAAACTATTTAGGCTTT-----TCTA-----
¶6820 ¶6830 ¶6840 ¶6850 ¶6860 ¶6870

¶6200 ¶6210 ¶6220 ¶6230 ¶6240 ¶6250 ¶6260
GTCTCTCCGTTTTGTCGGCTTGTCCAGTTCTCCGCTCCGCTCTGTTAATTTGTTAATGTTAAT
T TC GCTTGT GT T TTCT T TT ATT TT TGTAAAT
-----TTTCTGCTTGTGGTATT-----TTCT-----TTTTTATT-TTGTGTTAAT
¶6880 ¶6890 ¶6900 ¶6910

¶6270 ¶6280 ¶6290 ¶6300
TGTGGTTCGCTTGTGTTGCTCTAACAAAAA
T T TT TGT TT TT TAACAAAAA
TTTTAAATTTATGTTTTTTTTT-----TAACAAAAA
¶6920 ¶6930 ¶6940 ¶6950

12210 12220 12230 12240 12250 12260 12270 12280 12290 12300
CCCCCCCCTTTTTTTTCAACATACTATCCATAAGTTCCTAGTGCCTTGCACTTTGGCTTAGGCTTCTGCTGCAATATGTGGCTCTTAGCACT

12310 12320 12330 12340 12350 12360 12370 12380 12390 12400
CGCTATCGTAACATACTCGTTTCGCTAAAATAAATAACATTAATCGTTTGATTGATTCATTCGCTCGAAATGGATAATAGAAGACCTTATTATTGTTAT

12410 12420 12430 12440 12450 12460 12470 12480 12490 12500
TATTTTATTTATGCGTCAAGACCATACATGATAATACATTGGTATTTTGGGAATAGGTTAATATACATTTCTTCGGCAAAATGATGCTTTCTCTATT

12510 12520 12530 12540 12550 12560 12570 12580 12590 12600
CCACTGTGATTACATCCAGGAGCGCATCGAATAACAGCCTATTACATTCCTTCTCAITTCAGGCAATCAGATCTTTCAGGTCCTTATATGCTCTTA
TCGAA

12610 12620 12630 12640 12650 12660 12670 12680 12690 12700
GGCTCGGACACATCTTAAAGTATTCTTCTCGGACTCTGAAGACTCGCAACCTTCTCTCTCTGGTGGACGATTCACTTGGCTGCTCAGGAT
CCTCG

12710 12720 12730 12740 12750 12760 12770 12780 12790 12800
CTCGTCACTGTTGTTGTTTATAGTGCCTTCGCAATCCGCGTTCGACTTCTCTGCCATTTCTAAATTCAGTTGAGCTCTGGATATTGTTTCTTAGGCAA

12810 12820 12830 12840 12850 12860 12870 12880 12890 12900
TTGGTGGAGACGAAAGTGAATTTATTTTCAGTCGCAAGCAATTCATGTTACAGTCTCAGCGACATGCCAACTTGATCGAAATTCAGTGGATTTTCA

12910 12920 12930 12940 12950 12960 12970 12980 12990 13000
ATGGTTCCTTTGAAATAGGAATGCTCGAATATACAAAGTTTGAAGAAATTTGCCATATATATATCATTTGAGCAATATATCCAATCTCGAACTTGCT

13010 13020 13030 13040 13050 13060 13070 13080 13090 13100
CTCACCTTAAAGACGGATTATTTATTTATATAGACAAAGATGATTATTTGTTGTTTATAGTATATAGAATGTGCTAATTAACGACCACTTAAGT

13110 13120 13130 13140 13150 13160 13170 13180 13190 13200
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13210 13220 13230 13240 13250 13260 13270 13280 13290 13300
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13310 13320 13330 13340 13350 13360 13370 13380 13390 13400
TCATCATACATAGACGCTAGGAACGCTTCTGCTCTTCTGGCCAGGATCTTGGTAAATATGTTGTGCGCTTAACTACGCTACGCCACCGTATTACTGAGAA

13410 13420 13430 13440 13450 13460 13470 13480 13490 13500
ACCGTTTCAGGAATCTTCAATTCATCGCGTCTGTGTTGATGGTGGATCTCAACTGCAGCTTCAACTTCAAGATGTCAGGAAGCTTTGAGACAGATGGTT

13510 13520 13530 13540 13550 13560 13570 13580 13590 13600
CCTCAGTAAATACATTTCAATGGGATCTGGAACGCTTAACCTACGCAATAGCTCCAATATTATGAAAGCCAGCGCTTCTGCGATTGACACCCCTTCC

13610 13620 13630 13640 13650 13660 13670 13680 13690 13700
ACCTGGAACATAACCCAAAACCTTATGCTCGCGGACCCAGAGTTTCGTAGTCTTCAACGCATTGATTTACTGATGGGCGCCAGTCCAGTCTCTTCTAGC

13710 13720 13730 13740 13750 13760 13770 13780 13790 13800
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13810 13820 13830 13840 13850 13860 13870 13880 13890 13900
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13910 13920 13930 13940 13950 13960 13970 13980 13990 14000
CATCCAGATGGCTTCGTGAGTATATGTTAACTGGAGATGCTTTCATTGGATTCAAGTACCGCAACCAATATTCGACCGAAGAAATCATAAAGCAGAA

14010 14020 14030 14040 14050 14060 14070 14080 14090 14100
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14110 14120 14130 14140 14150 14160 14170 14180 14190 14200
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14210 14220 14230 14240 14250 14260 14270 14280 14290 14300
TCTGCAATCTTAAAGCAATTCATGATATGATAGCGAAATATTAGAATTTTTTCTAAGCACTCCACCAGCTGAGAAAAGGATCTTTTATCGTACT

14310 14320 14330 14340 14350 14360 14370 14380 14390 14400
TATTCGTTTCCAGCGTCTCTCTCTTTTCTTAATGAAACATCAGAGATCTCAATTTCAACTGCTGAAAAATAAATTCATGATAGGAAAGCGCT

14410 14420 14430 14440 14450 14460 14470 14480 14490 14500
TCCCTTCGCTGTTACATACTTTTCAAGCAATCTAGCACTTATAGTTTACAAAATTAATCGCTTGTCAAATCGAATTCACGTCGAATCCACTTTGGCAAC

14510 14520 14530 14540 14550 14560 14570 14580
CACCACCTAATCGATATTATATAAGTAA--ATTAATAGTAGCAG-----TATTATATAACAGTATA--TAACATAATCATATTATTATGT

ATATTATATAA GTAA AT AG GCAG TATTAT T A A TAT TA TAATCA AT ATATTGT
-----ATATTATATAAAGTAAATCCATGCAAGCTGAGCTCAATCAAATGTTATTATGAGAAATATTGTTATGTAATCAATAATATTATGT
*2050 *2060 *2070 *2080 *2090 *2100 *2110 *2120 *2130 *2140 *2150 *2160 *2170 *2180 *2190

*2040

14590 14600 14610 14620 14630 14640 14650 14660
 AACATTTAATATGTAATATTTG-----TCA-----ATACATACGCCAAATTAATTTGAGTAGCTAATTTATACCTAATTTCCGG
 A A TATT TTATGTAATATTTG T A A ACAT GCAA T ATTGT GT AAT CTAATTA TAC T ATTT CG
 GAGAATATTTGTTATGTAATATTTGCTGCAGCTGATATATGTACCAACACACATGGGCAATTCGATTTGCGTAAACTAACTAACTACTTCATTGGCA
 14670 14680 14690 14700 14710 14720 14730 14740
 GCACCAACTATCAAGGATATTTTCACTCGCGCCCTCCCTTTCC-----ACCTC-----CAGTACAGAGTGGAAATTTTATTAATCTTTG
 GC CCAACT TCAAGGATATTTTCACTCGC GCCTCCCT CC A CTC CAG AGCAGTG AATTTTAAATTAATCTTTG
 GCGCCAATCTCAAGGATATTTTCACTCGCGCCCTCCCTCCCTCCCTTCGCGCTTTAATAATCTACAGCTCAGCAGCAGTGGAAATTTTATTAATCTTTG
 14750 14760
 CCACTTTTGGCGGCTGACTTT-----
 CCACTTTTGGCGGCTGACTTT
 CCACTTTTGGCGGCTGACTTTGCGGGTACGCTGCTNN
 14770 14780 14790 14800
 GCGGTAGCTGCTTAAATATCGCTCGCGGATCAAAGCC
 GCGGTAGCTGCTTAAATATCGCTCGCGGATCAAAGCC
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 14810 14820 14830 14840 14850 14860 14870
 CATTTTGCTCAGGCCACCGAAGCAATCACTCACTTGCAGGCACAAGCAGCTCACACGGACGCACACAGA-----
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 14880 14890 14900 14910 14920 14930 14940 14950 14960 14970
 -CAGCAAAACCAAGTCCCGCAGAGTATGCCACACTTATTTGCAATAACTCTTTGCGGAAACCGAAGTAAAGCGGCTGGGAAACTCCCACTGCCACTCCAT
 CA GCAAAACCAAGTCCCGCAGAGTATGC ACA TTAATTTGCAATAACTCTTTGCGGCA G GAAGT AGCGGCTGGGAAACTCCCA CGCACTCCAT
 ACAGGCAAAACCAAGTCCCGCAGAGTATGCACATTTATTTGCAATAACTCTTTGCGGAGCTGAAGTGAAGCGGCTGGGAAACTCCCAACGCACCTCCAT
 14980 14990 15000 15010 15020 15030 15040 15050 15060
 CATCGCAATTACTATACCGCGATGTAGCAAAATATTTGCCCACTCAGCTCACATCCACAGTGGCCACACACACACACAC-----AAACAT
 CATCGCAATTACTATACCGCGATGTAGCAAAATATTTGCCCACTCAGCTCACATCCACAGTGGCCACACACACACAC A ACAT
 CATCGCAATTACTATACCGCGATGTAGCAAAATATTTGCCCACTCAGCTCACATCCACACAT--CTGACACACACACACAGCAACACACACACAT
 15070 15080 15090 15100 15110 15120 15130 15140 15150 15160
 GGGATTGCGAATGCCAAACAGGACCAAAACAGTGCCTGCTTTGCTGCTTTGGAAAGATACCGATACTTTAATGCCGGCTGTGTAGCACATCAAATTA
 GGGATTGCGAATGCCAAACAG T GTCCTGCTT GGAAGATACCGAT C TTAATGCCGGCTGTGTAGCACATCAAATTA
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 15170 15180 15190 15200 15210 15220 15230
 GCGCTCCCTGCTGCCGACAACAATTTGTTTGTCCAACACTCTCTTTT-----TCGGATCAGAATCAGAGTCAAG-----
 GCGCT CCCT C GCGCAACAACAATTTGTTTGTCC ACACCTCTCTTT TCG A CAGA TCGAGA TCAAG
 GCGCTGCCCTTCGCGCCACAACAATTTGTTTGTCCGACACTCTCTTTTCACTTTTTCGTAGCAGACTCGAGACTCAAGCAGTGGCCATTTCCCATTTT
 15240
 AAG
 A G
 GCTGGACTTGGCGAGCTGAGTTGGCCAAATGGAGCCAAAGAGGGCTCAGG
 15250 15260 15270 15280 15290 15300 15310 15320 15330 15340 15350 15360 15370 15380 15390 15400 15410 15420 15430 15440 15450 15460 15470 15480 15490 15500 15510 15520 15530 15540 15550 15560 15570 15580 15590 15600 15610 15620 15630 15640 15650 15660 15670 15680 15690 15700 15710 15720 15730 15740 15750 15760 15770 15780 15790 15800 15810 15820 15830 15840 15850 15860 15870 15880 15890 15900 15910 15920 15930 15940 15950 15960 15970 15980 15990 16000 16010 16020 16030 16040 16050 16060 16070 16080 16090 16100 16110 16120 16130 16140 16150 16160 16170 16180 16190 16200 16210 16220 16230 16240 16250 16260 16270 16280 16290 16300 16310 16320 16330 16340 16350 16360 16370 16380 16390 16400 16410 16420 16430 16440 16450 16460 16470 16480 16490 16500 16510 16520 16530 16540 16550 16560 16570 16580 16590 16600 16610 16620 16630 16640 16650 16660 16670 16680 16690 16700 16710 16720 16730 16740 16750 16760 16770 16780 16790 16800 16810 16820 16830 16840 16850 16860 16870 16880 16890 16900 16910 16920 16930 16940 16950 16960 16970 16980 16990 17000 17010 17020 17030 17040 17050 17060 17070 17080 17090 17100 17110 17120 17130 17140 17150 17160 17170 17180 17190 17200 17210 17220 17230 17240 17250 17260 17270 17280 17290 17300 17310 17320 17330 17340 17350 17360 17370 17380 17390 17400 17410 17420 17430 17440 17450 17460 17470 17480 17490 17500 17510 17520 17530 17540 17550 17560 17570 17580 17590 17600 17610 17620 17630 17640 17650 17660 17670 17680 17690 17700 17710 17720 17730 17740 17750 17760 17770 17780 17790 17800 17810 17820 17830 17840 17850 17860 17870 17880 17890 17900 17910 17920 17930 17940 17950 17960 17970 17980 17990 18000 18010 18020 18030 18040 18050 18060 18070 18080 18090 18100 18110 18120 18130 18140 18150 18160 18170 18180 18190 18200 18210 18220 18230 18240 18250 18260 18270 18280 18290 18300 18310 18320 18330 18340 18350 18360 18370 18380 18390 18400 18410 18420 18430 18440 18450 18460 18470 18480 18490 18500 18510 18520 18530 18540 18550 18560 18570 18580 18590 18600 18610 18620 18630 18640 18650 18660 18670 18680 18690 18700 18710 18720 18730 18740 18750 18760 18770 18780 18790 18800 18810 18820 18830 18840 18850 18860 18870 18880 18890 18900 18910 18920 18930 18940 18950 18960 18970 18980 18990 19000 19010 19020 19030 19040 19050 19060 19070 19080 19090 19100 19110 19120 19130 19140 19150 19160 19170 19180 19190 19200 19210 19220 19230 19240 19250 19260 19270 19280 19290 19300 19310 19320 19330 19340 19350 19360 19370 19380 19390 19400 19410 19420 19430 19440 19450 19460 19470 19480 19490 19500 19510 19520 19530 19540 19550 19560 19570 19580 19590 19600 19610 19620 19630 19640 19650 19660 19670 19680 19690 19700 19710 19720 19730 19740 19750 19760 19770 19780 19790 19800 19810 19820 19830 19840 19850 19860 19870 19880 19890 19900 19910 19920 19930 19940 19950 19960 19970 19980 19990 20000

5i)

CG15323:melanogaster (above), erecta (below)
 Martinez/Needleman-Wunsch DNA Alignment
 Minimum Match: 9; Gap Penalty: 1.10; Gap Length Penalty: 0.33

1260 1270 1280 1290 1300 1310 1320
 GCTCTTTAAGTGAAGACAGTACAGATAAACACAAATAGCATACCAGACCCGGGACACCCCAAAATTTT
 GCTCTTTAAGTGAAGACAGTACAGATAAACACAAATAGCATACCAGACCCGGGACACCCCAAAATTTT
 GCTCTTTAAGTGAAGACAGTACAGATAAACACAAATAGCATACCAGACCCGGGACACCCCAAAATTTT
 1330 1340 1350 1360 1370 1380 1390
 CAAACAGCCCACTTTTCGCATCGTGAACAACTTGTGGGTGTATTATTGATCCATCCTCGTAAGTGAAA
 CAAACAGCCCA T TTC CATCGTAA TGTGGGTGTA TTATGATCCATCCTCGTAA TG AA
 CAAACAGCCCACTATTCCTATCGTGAACCTGATGTGGGTGTATTATTGATCCATCCTCGTAAATGGAA
 1400 1410 1420 1430 1440 1450 1460
 ATTTCGTTTCCGAGTTGCTGACAGCAATATGAGTGTGGTGCCTACAGTCAATTCAGTTAGTCTAA
 ATTTCGTTTCCGAG TTCTGACAGCAATATGAGTGTGGTGCCTACAGTCAATTCAGTTAGTCT A
 ATTTCGTTTCCGAGTTGCTGACAGCAATATGAGTGTGGTGCCTACAGTCAATTCAGTTAGTCTGCA
 1470 1480 1490 1500 1510 1520
 GTTTTCAGATAGCTTCCACGAATGAATAGCTGGTATTTCCTCCCGCA-----
 GTTTTCAGAT GCT TCCACGAATGAATAGCTGG TATTTCCTCC G A
 GTTTTCAGATTTGCTATCCACGAATGAATAGCTGGTATTTCCTCCCGCAAGACAGGACAGAACAGGAA
 1520 1530 1540 1550 1560
 -----AAACCGAACAGAAACAGATACAGAACTGAAACTGAACTGAATCAAAGCCTGTA
 AAACCGAACAA GAACTGAATCAAAGCCTG A
 AGAACAGAAACAGAAACAGAACTGAAACTGAAACTGAACTGAATCAAAGCCTGCA
 1570 1580 1590 1600 1610 1620 1630
 GTTTTTGTGCTTTTGGTTTCTAGTTTCCAGCTCGGCACCTAAAGTGGAAATATCGTGCAGTCAAAG
 TTTTGTG T GTTCT G TT CAGCT GGCCTAAA GG A GCA CG G AGTCAAAG
 CTTTTTGTGCTTTTGGTTTCTAGTTTCCAGCTCGGCACCTAAAGTGGAAATATCGTGCAGTCAAAG
 1640 1650 1660 1670 1680 1690 1700
 TGAGGTCAGTACTCGCACTAATCTGCAACTCTGCTTTGTAAGTACATACATATATGTATACATAT
 GAGGTCAG ACTCGACTA CTGCAACT TC CTTG AAGT A ATAT
 GAGGTCAGGCACTCGCACTAGCTCTGCAACTTCTTCTTGAAGCT-----ATATAT
 1710 1720 1730 1740 1750 1760 1770
 TTCTAAATAG-TTTTGAAGATGAAAATCATATAAGCAATGGGAGTCAATTCGCTTGGCTCACAG
 TTCTAAATAG TTTTGAAGATGAAAATCATATAAGCAATGGGAGTCAATTCGCTTGGCTCACAG
 TTCTAAATAGTTTTTGAAGATGAAAATCATATAAGCAATGGGAGTCAATTCGCTTGGCTCACAG
 1780 1790 1800 1810 1820 1830 1840
 CTGGCTCCAGCAGTATTACTAAGCAAACTAATACGATTAGACGGCCCAAGTACACTCAGGA
 CTGGCTCCAGC GCTGATTACTAAGCAAACTAATACGAT TAGACGCCCC A G TACACT GGA
 CTGGCTCCAGCAGTATTACTAAGCAAACTAATACGATAGACGCCCC-ACGGGTACACTCAGGA
 1850 1860 1870 1880 1890 1900 1910
 CATCTAGATGGCGTTTTGCAATCTCGAAAGATTAGCTTTGTAAGTCCCAATTTCTTAATCAATTT
 ATCTAGATGGCGCT TT G CTGGA C TC ATTT CT A CA
 AATCTAGATGGCGCTATT-----GGCTTGACATCTTC-ATTTGCTGACCA-----
 1920 1930 1940 1950 1960 1970 1980
 GTTTCGTTTACACCGTTTCTGCTTAAAGGAAATGGTTGCAAAAAGATATATATGATGATTTAGT
 ATTTAGT
 -----ATTTAGT

12530 12540 12550 12560 12570 12580 12590
AGGAGGCGATCGAATAACAGCCTATTACATTCCCTCTCATTAGGCGAATCAGATCTTTCAGGTCCTTTA

12600 12610 12620 12630 12640 12650 12660
TGTCCTTATCGAAGCGCTCGGACACATTTCTAAAGTATTTCTCCCTCGGACTCTGAAGACTGCGAACCCTT

12670 12680 12690 12700 12710 12720 12730
CTCCTCTCGGGTGGACGATTCACTTGGCTGCTCAGGATCCCGCTCGCATGTACTTGTGTTTTAGAT

12740 12750 12760 12770 12780 12790 12800
GCCTTCGCATCCCGCTTCGACTTCTCTGCCATTTCTAAATTCAGTTGAGCTCTGGATATTGTTTCCTAGG

12810 12820 12830 12840 12850 12860 12870
CAATTTGGTGAGCGAAAGTGAACTTTATTTTTCAGTCGCAACGAAACTTCATGTTACAGTGTCCAGCGACAT

12880 12890 12900 12910 12920 12930 12940
GCCAACTTGATCGAAATTCAAATGTGGATTTCAATGGTTCCTTTGAAATTAGGAATGCTCGAATATACAA

12950 12960 12970 12980 12990 13000 13010
AGTTTGAATAATTTTGGCATAATATATATCATTTGAGCAATATATCCAATTCGAACCTTGTCTCTCACTT

13020 13030 13040 13050 13060 13070 13080
AAAAGACGGATTATTTATCTATATTTAGACAAGATGATTATTTTGTGTTTTATAGTATATAGAAATGT

13090 13100 13110 13120 13130 13140 13150
GCTAATTAACGAACCATTTAAGTAAATGCCATAATATTAATTTATGCGTTAACACTAAGTCCATTGATA

13160 13170 13180 13190 13200 13210 13220
ACATAGTGTGACCATAAATGCAATGGTATTTTGGTATATTTGATATCAGGACTGGTATCAACGAGGGTGTGC

13230 13240 13250 13260 13270 13280 13290
AACTCTTTCGAATTTAAGCACCAAAATTTGGCCTCGCCTTCACCACATGAAAGATCACAGCCTGGAGAAAC

13300 13310 13320 13330 13340 13350 13360
GTTTAACTTGACTCATCATACCATAGACGCTAGGAACGCTCTTCGCTCTTCTTGCCAGGATCTTGTA

13370 13380 13390 13400 13410 13420 13430

AATATGTTGTGGCCCTTAATCACTGCCACCGTATTACTGAGAAACCGTTTCAGGAATCTTCATTTTCATGCC

13440 13450 13460 13470 13480 13490 13500
GTGCTCTGTTTGTATGGTGGATCTCAACTGCGAGCTTCAACTTCAAGATGTCAGGAAGCTTTGAGACAGATG

13510 13520 13530 13540 13550 13560 13570
GTTCCGTCAGTAAATACATTTCAATGCGATCTGGAACGCTTAACACTGCAATAGCCTCAATATATTGA
AGTAAATAC AATG ACTACT
-AGTAAATACT--AATG--ACTACT--
11810 11820

13580 13590 13600 13610 13620 13630 13640
AAGCCAGCCGTGCTTCTGCATTGACACCCCTTGCACTGGAACATAACCCAAAACCTTATGCTCGCGGACC

13650 13660 13670 13680 13690 13700 13710
CAGAGTTTCGTAGTCTCAACGCATTGATTTACTGATGGCGCCAGTGCAGTCTCTTCTACGAACGTCT
CGCC AACCTG
-CGCC--AACCTG--
11830

13720 13730 13740 13750 13760 13770 13780
GTGCGTGGTCAAGTCAAGCTTCTGTCCGGTTTGGCCGTAATGCAACGGACTCAGTATGCTGGATTGTT

13790 13800 13810 13820 13830 13840 13850
TCTGGATCTTGCAGTCCCGCAGATGTCACGGACTCCATAGCTACTGGTCCACTACAACATAAATCTTAGA

13860 13870 13880 13890 13900 13910 13920
AGAACTCAAGGATCAGGACAGTCTAGCAGCCTAGCTCACGTGCCTCGCTTGCATCCAGATGGCCTTCG

13930 13940 13950 13960 13970 13980 13990
TCGAGTATATGGTAACTGGAGATGCTTTCATTTGGATTGAGTACCGCAACCAAACTTATCGACCGAAGAA

14000 14010 14020 14030 14040 14050 14060
TCATAAAGCAGAATCATAAAGCAGAATCGACGAGCGAGAGTGAGTCCCGCCCTTAAAGATTTCTGTG

14070 14080 14090 14100 14110 14120 14130
AAAATCTTCTTTTCATTGCTAATCTTACGCCGACAATCCGCCCTTAAGCCGTACAACCTTTACAACCTTTT

14140 14150 14160 14170 14180 14190 14200
AATTTTCATGCATCATGATGCTAAAAGTATTTTGACAATGGCGACCAACCAAAAAAAAAAAACGAAAC

14210 14220 14230 14240 14250 14260 14270
CCGCTCGCAATCTTAAAACATTCATTCGATATGATAGCGAAATATTAGAAATTTTTTCTAAGCACTCC

*4280 *4290 *4300 *4310 *4320 *4330 *4340
ACCAGCTGAGAAAAGGGTATCTTTTAATCGATTTATTCGTTTCACAGGTTCTCTCCTTTTTCCTAAATTGA

*4350 *4360 *4370 *4380 *4390 *4400 *4410
AACATCAGAGTCTCATTTCTAACGACTGAAAAATAAAATTCATGTAGGGAACGCTTCCTTCT

*4420 *4430 *4440 *4450 *4460 *4470 *4480
GCCTGTACATACTTTTCAACGAATCTAGCAACTTATAGTTACAAAATTAATCGCTTGTCAAATCGAAT

*4490 *4500 *4510 *4520 *4530 *4540 *4550
TCACGTCGAATCCACTTGGCAACCACCACCTAATCGATATTATATAATAGTAAATTAATAGTAGCAGTAT

*4560 *4570 *4580 *4590 *4600 *4610 *4620
TATATAACAGTATATAACTAATCATATATATTATGTAACATTAATATATGTAATATTGTCAATACATAC

*4630 *4640 *4650 *4660 *4670 *4680 *4690
GCAAAATTAATGTAGTGAATGCTAATTAATTAATTTTCGGGCACCACTATCAAGGATATTTTCACC
-----TCAAGGATATTTTCACC
*1840

*4700 *4710 *4720 *4730 *4740
TGCTGCCCTCCCTTTCCACCTC-----CAGTAGCAGTGGAAATTTAATTACTTTGCCAC
TG T C CCC TC CCTC CAG AGCAGTG AAATTT TAATTACTTTGCCAC
TGTTTTCACCCCTCGCCCTCAATAATATCTCAGCTCAGCAGCAGTGAATAATGTAATTACTTTGCCAC
*1850 *1860 *1870 *1880 *1890 *1900 *1910

*4750 *4760 *4770 *4780 *4790 *4800 *4810
TTTTGGCGGCTGACTTTGGCGTTAGCTGCTTAATAATCGCTCGCGATTCAAAGCCATTGTCTCAGGCC
TTTTGGCGGCTG CTTTGGCGTT GCTGCTTAATAATCGCTCGCGATTCAAAGCCATTGTCTCAGGCC
TTTTGGCGGCTGCCTTTGGCGTTGGCTGCTTAATAATCGCTCGCGATTCAAAGCCATTGTCTCAGGCC
*1920 *1930 *1940 *1950 *1960 *1970 *1980

*4820 *4830 *4840 *4850 *4860 *4870 *4880
ACCGAAGCAATCACTCACTTTGCAGGCACACACAGCTCACACGGACGCCACACAGCAAGCAACACACAA
CCGAAGCAATCACTCACAC AGGCACAAGCAGC CACACGGACGCCACACAGACA GCAA CCACAA
GCCGAAGCAATCACTCACAC----AGGCACAAGCAGGCCACACGGACGCCACACAGACATGCAAGCCACAA
*1990 *2000 *2010 *2020 *2030 *2040 *2050

*4890 *4900 *4910 *4920 *4930 *4940 *4950
GTGCCGCAGAGTATGCCACACTTATTGCAATAACTCTTTGGGAAACCGAAGTAAGCGGCTGGGAAACT
GTGCCGCAGAGTATGC ACACTTATTGCAATAACTCTTTGGGGA C GAAGTAAGCGGC GGGAAACT
GTGCCGCAGAGTATGCTACACTTATTGCAATAACTCTTTGGGAGCTGAAGTAAGCGGCTGGGAAACT
*2060 *2070 *2080 *2090 *2100 *2110 *2120

*4960 *4970 *4980 *4990 *5000 *5010 *5020
CCCATCGCACTCCATCATCGCAATTAATCTATACGCCGCAATGACCAAAATTTGCCCACTCACGCTCACAC
CCC TCGCAATTAATCAATACGCCGCAATGACCAAAATTTGCC ACTCACGCTCACAC
CCCG-----TCGCAATTAATCAATACGCCGCAATGACCAAAATTTGCCCACTCACGCTCACAC
*2130 *2140 *2150 *2160 *2170 *2180

*5030 *5040 *5050 *5060 *5070 *5080 *5090
TCCACAGTTGCCACACACACACACACAAACATGGGATTTGGGAATGCCAAACAGGACCACAAACAGCTC
TCCACA T C CACACACACACA TGGG ACAACAGCTC

TCCACATT-----CGCACACACACACA----TGGG-----ACAAACAGTC
*2190 *2200 *2210

*5100 *5110 *5120 *5130 *5140 *5150 *5160
GTCCTGCTTTGCTGCTTTGGAAAGATACCGATACTTTAATGCCGGCTGTGTAGCACATCAAAATTAGCGCT
GTCCTGCTT G AAAGATACCGATACTTTAATGCC TCAAAATTAGCGC
GTCCTGCTT-----GAAAAGATACCGATACTTTAATGCC-----TCAAAATTAGCGC
*2220 *2230 *2240 *2250 *2260

*5170 *5180 *5190 *5200 *5210 *5220 *5230
CCCCCTGCTGCCGACAAACAATTTGTTGTCCAACTCTCTTTTTCGGATCAGAATCGAGA
CCCT CTGCCGACAAACAATTT CTCTCTTTTTCGGA CAGA TCGAGA
-----CCCT-CTGCCGACAAACAATTT-----CTCTCTTTTTCGGAGCAGACTCGAGA
*2270 *2280 *2290 *2300 *2310

5j)

CG15323:melanogaster (above), ananasae (below)
Martinez/Needleman-Runsch DNA Alignment
Minimum Match: 9; Gap Penalty: 1.10; Gap Length Penalty: 0.33

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      110      120      130      140      150      160      170      180      190      100
CTTAAACAACAATTTCCTCCATTGSCAATAAATAACGCTTTAAATTTTTGGTGGCTTTTGTGCTTTTGGCTTTCTGTGCGCCATTTACACCAACAAGT
CTTAAACAACA   CCATT   AAAT  CGCTTTAAATTTTTGTT  G  TTTTTG  TTT  CTTTC  TT
CTTAAACAACA---CCATT-----AAATGCGCTTTAAATTTTTGTT--GTTTTTGGCTTTTAACTTTTCACTT-----
      910      920      930      940      950      960

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      110      120      130      140      150      160      170      180      190      100
TGCATGTGTGCTGCT-----GTTGCC-----TGCCCCATTTTGGTATGCAATAAAT
TGTGTGCTGT   GTTGCC   TGCCCC  TTATGTATGCAATAAAT
---TGTGTGCTGTTTTTTCTCTTTTTTTCAGCAAGAGTTGCACGTTGCACGTTGCCGCGCATTTGGTGGTTGCCCCCATTTTGGTATGCAATAAAT
      970      980      990      100      110      120      130      140      150      160

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      150      160      170      180      190      200      210
TGCGCCACTTGAGCAAAAGTAAATAAAGTACAATAAGTTTAAATATTTTACAGTTTTTTGGC-----TTGGCCAA
TGCGCCACTTGAGCAAAAGTAAATAAAGTACAATAAGTTTAAATATTTTACAGTTTTTTGGC-----TTGGCCAA
      170      180      190      200      210      220      230      240      250      260

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      120      130      140      150      160      170      180      190      200      210
CAATTTGTGCAACGCTATT--CAGTTCATTGT--AGTTTGGCCACAGTTTGGCCGTTTGGCGGTTGTGCTGCGCAATTCGTACGTGACATGGCCAAC
CAATTTGTGCAACGCT  TT  CAGTTCATTGT  AGTT  CC  CAGT  GTTG  G  GCC  TGT  T  GTTGCTTACGTGACATGGCCAAC
CAATTTGTGCAACGCTGTTCCAGTTCATTGTGTAGTTGCCCGCAGTGGTTGCAG--GCCA-TGTTTT--GTTGCTTACGTGACATGGCCAAC
      9270      9280      9290      9300      9310      9320      9330      9340      9350

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      130      140      150      160      170      180      190      200
AAGCCGCGAGTGGCGGAT-CGT---TGAGGGGAATGTGAAAGTGGATGTGGAC--GTGGAAGTGAAGCCCAAGCGCTGTGGTCTACCGCGCACAGGA
AAGCCGCGAGT  CG  GGA  CG  T  GG  A  G  G  AG  A  G  G  C  G  G  GG  AG  G  G  C  A  TTT  AG  A  AG  T
AAGCCGCGAGTCCGGGAGGGCGCCACCTCCCGCCA-GAGCGAGGGCAGGCAGCCCTGGGGAGGCGGGGAGGGCAGCGTGCATGGAATGTGGCAACGG
      9360      9370      9380      9390      9400      9410      9420      9430      9440

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      140      150      160      170      180      190      200
TATACCCCTTCAG---AGGGCCATTACGGACTTAAACCCTGACTTTTCCCAATACAAT---TTGTGCTCTCAACAAGCGTTTGAAGCAATAGCTT
AT  TTTGAG  A  CCA  A  A  AAA  C  T  G  C  A  A  AA  T  T  TG  TC  A  TTT  AG  A  AG  T
ATTC---TTTCAGCCAAAACCAGCAAAAGCAGGGCAAGAGCAACATCCACACGAAAGTTCATCTGTTCCCTTTTATTCCTTTAAGGATAAAGG-T
      9450      9460      9470      9480      9490      9500      9510      9520      9530      9540

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      150      160      170      180      190      200
TGAGGAGGCAC--ACATCCTTTCAGCCAAAGTAAACGCTATAGAAATCGGTTTAAATTTTAAAT--TTCAATTTTAA
T  A  C  G  A  ACA  TTTCA  G  AT  T  A  G  TA  GTTT  TTA  TTTAAAT  T  CA
TAACTCTGAAAAGCCAGCAG--TTTCATGACATTTTATGTTA-----GTTTTTAG--TTTAAATCCAGACACTCTGTTCTCTTAAAGTTTTTTAA
      9550      9560      9570      9580      9590      9600      9610      9620      9630

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-----ACTC
A  TC
AATAAAGAAAAGGTTATAAAAATATTTCTTAAAGGATTCCTAAGATTCATAACCGGGACTTCCCTCTTATATATTTGATAAGTTTTTTATAAATAATTC
      9640      9650      9660      9670      9680      9690      9700      9710      9720      9730

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-----TACAATGATT
TA  AA  T  ATT
TAGTATAGTATGCTAGTAATCTAGTATAGTACAATAAAAATAAACTACTCTCTTTTATTAATAAATTTAAAAACGGGTAATTTAAATTAAGTTCGA
      9740      9750      9760      9770      9780      9790      9800      9810      9820      9830

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-----A-----TCTAAATACTG-AAGC--TCTGA
A
AATTTAAGAATTTAGCTGTAGCGACTACAGGCCCTTAAGCTAGTTATATACATCTTAATTAATACTAAGGATAAATCTAATAACTTCTCAATCAATCTT-
      9840      9850      9860      9870      9880      9890      9900      9910      9920      9930

```

```

      160      170      180      190      200
TTAAATTTGCGA-ATGCTTTGGGAGCCATTTAAGTCTGTGAGTTCGATTAAGTA--ATCTCAAAATTTAGTAAT--CCCACTCGCAACTCGAGC
TT  A  AT  G  A  T  T  A  G  C  T  T  A  G  TAG  T  AAAGT  AT  TACA  AA  TA  A  T  C  A  T  A  ACTC  A
TTCATATAGTACACATATTTAATAGACTCTTTGAAA---TAGAATATAAAAAGTTATATTTACAAAGATATTAATTAATTTAATTAAGACTCTAT-
      9940      9950      9960      9970      9980      9990      10000      1010      1020

```

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1710 1720 1730 1740 1750 1760 1770 1780 1790 1800
AAAATCTCATAACGCCACTCAAAGCAACAACACT-----ACAACAAGACAACAAATTTGAGCTGCAAAATGAATTTAGCTGTTTC-ATTAGAGCTAAGAAT
A  A  T  T  T  C  TCAA  AA  AA  CT  A  AA  ACA  AA  TT  A  T  A  ATT  A  T  C  A  A  A  T  G  AT
ATATTTGTTTTTTTGTCTTGTCAACTAAAGAACCTTGTATGATGTTAAAACATAAAATTTATATTTACATATTTAGTCCAAATCTAGGATAATTTGGAT
      91030      91040      91050      91060      91070      91080      91090      91100      91110      91120

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      1810      1820      1830      1840
TAAGTGGGGAG--TGCATCAGATGT--GATTTTAAATTTCAA-----
TAA  T  A  T  T  A  G  T  GA  AT  A  T  T  A
TAAATAGACATTTATAGCTTACAGTTCGGAATGAGCT-TTAGAAAAATTTAAAAAATTCGATATGAATATTCATCTAATCCTCCCTAGCTTAACC
      91130      91140      91150      91160      91170      91180      91190      91200      91210      91220

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CACCAGGATACCCTGTAGCTGGAGCCTGCATTCGGGGCGCATACAAAAGCCCTACTGCGCACTGAGGCGAGCTGCTGTTCGAGCCAACTTAAAGT
      91230      91240      91250      91260      91270      91280      91290      91300      91310      91320
-----
CGTAAACAATTTCTTGGACAAGTGCATGCTCCGACACCCTCCGACATAGGCCACTACAGACATCTTGTATATATTTGAAATATACAGGATGAATA
      91330      91340      91350      91360      91370      91380      91390      91400      91410      91420

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      1850      1860      1870      1880      1890      1900      1910      1920
-----CGCCACTGAGCTATGCTTGTAGCTAGCTATAATTTAAATTTAGCTTTCAAATTAATATTTATATATTTTTCGATGGCC
CGCCACTGT
TATATATCTGGAATTTGATGGCCACTTGA-----
      91430      91440      91450

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      1930      1940      1950      1960      1970      1980      1990      1000      1010      1020
AGTGCAACGGAGTGGCAACTTACGCCAGTTCGATGGAGAACAACAACAGTATTTGCGCATATGTTATCCCTTGTGGAGCGAACTCAAAAAGCGTAGG
AGC  TCCCTTG  G  C  AAA  T  AAA  CG  AGG
AGC-----TCCCTTGTGAGGCCAAAAT-AAAATCCG-AGG
      91460      91470      91480      91490

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      1030      1040      1050      1060      1070      1080      1090      1100      1110
GAATTTCTTGCACAATTTGCCATTTGCCCTTGGGGCCAGGAAGCCCTGCGAGAGGCTCTTACCCCTTTTATGACAGAC--CCCCCCCCCTGGAAA
T  TTCT  C  GGC  C  GG  CAG  A  AGAG  C  T  A  C  T  T  GACAG  C
---TGTTCG---CTGGGCTC---GACAGAA-----AGAGTCC--TGA--CATAATTAGACAGAAACCG-----
      91500      91510      91520      91530      91540

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11120 11130 11140 11150 11160 11170 11180 11190 11200 11210
GGCTAAAATTAAGTTTTCAGTGTCTCATTTCGGAAGGAGGAGGATGAGCCAGGAGGAGGAGGAGGATGTAGTGGAGATGTCAGTGGCCCAAGGA

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11220 11230 11240 11250 11260 11270 11280 11290
ATTCCGTAANTAGCCAGAAACATCAATTTCCATATGGCCAGAGCTTTTAAATAGTCTTTTCCATAACCAACATCAAAAGC-----GA-----
CATTCCATATGG  CAG  G  T  TT  A  T  GTC  T  C  ACATCAAAAGC  GA
-----ATTTCCATATGGTCAGGGGCTTAAAGTGGTGCCT-----CCACATCAAAAGCCTCTCGGCCAGACACACAC
      91580      91590      91600      91610

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11300 11310 11320 11330 11340 11350 11360 11370 11380 11390
-----GTAATTTATGCTGCTCCTGAAACGGCCAAATCCCAACTCTCTTGGAGAAGGGTAGCTCACT--GATTTCCAGGGTGGATCACTCT
GCTAATTTATG  CCTCTG  A  CG  C  CC  AA  T  AGAA  GG  AGCT  AC  T  G  CCGA  G  T  A  T  AC  CT
ATCTGCTAATTTATG--CCTCTG-ACCSCA-----CACAAAATAAAAAAGGAAGCTAATCTCGGGCGAGCCCAAGTTTAAAT-ACCCT
      91620      91640      91650      91660      91670      91680      91690      91700

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11400 11410 11420 11430 11440 11450 11460 11470
T-----TTAAACTGTATTAG-TACATTTAAATG-CACATATAAAAATTTAGAGGCTCTGAGTTACCTGATT-TTGGACATACCTTCTC-----TAGAGAG
T  TTA  G  A  T  G  T  A  C  ATC  TA  A  ATTAG  T  G  T  GC  AT  T  G  C  C  T  CAAT  T  G  A
TGCAGTTAAGTCAGCTCCGTATAGTGGGGCCACCACCTTATATTTATAGATATATAGCCGATCCGATATCTGAGCTCGCCGATTCATGAATTTGGCAA
      91710      91720      91730      91740      91750      91760      91770      91780      91790      91800

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11490 11500 11510 11520 11530 11540 11550 11560 11570
AGAGAACGATTTTGAAAACCGAGGCGTAATGCTTACTGCAATC-TGAATATGCGCGATGCGCTTTTAAAGTGAAGAGACAGTA--GA-CG----ATAACAC
A  AA  TTTTG  A  A  G  T  C  A  T  C  ATC  T  A  T  A  C  A  C  AAGT  A  G  CA  T  GA  CG  AT  ACA
ATCAAAATTTCTTTGGCAAATAGAATCTGTACAAAATCCCATCTTCTTAACTTTAAAAACACCA--AAGTT-ATGCCAATTCGATCGTCTATGACAG
      91810      91820      91830      91840      91850      91860      91870      91880      91890

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CTTTGCACTTT TT G A CAAT TT AC CGG T A CGG GG A
CTTTGCACTTT---GTT-----GAAAAACAAT---TTAACCCGGT---ACCGG-----GGTATC
94030 94040 94050 94060 94070

13170 13180 13190 13200 13210 13220 13230 13240 13250 13260
GCAGGCTCTTTATCGTACTTGCA--TTGTTGAGAGCAATCTTTGGCGAAATTAATAAATCGGCAACGGAAATTCGCAAGCCGTAAGAAGCAAGCGATG
C C C T TCG A TTGC TTG GC TTC CAAGG A TTC G CA GC ATG
TCCCCACAGGATTTGCG--ATTTGCTCTTC-----GCTTTC-----CAACCACTTC-----GCACGCAATG
94080 94090 94100 94110 94120

13270 13280 13290 13300 13310 13320 13330 13340 13350 13360
CATAAGCTGTATAAAGCATATAAAGTATCCGAGGCTAAAATCCAGTACAGTCAATTTTTCATTAAGATCACACAACAATCCATTAATGCGATCATAT
A T AT AGCA TGAT A G A A ACA CA T CA
---AAATTAATTCAGCA---TGATGGTAAGACACAC---ACACACA---TACACAC---
94130 94140 94150 94160 94170

13370 13380 13390 13400 13410 13420 13430 13440 13450 13460
GGTCATGCTTATCTGTAGAGGCAATTCACGTAAGGCACCAACAATTTGCAAACTGTCAACTTTGAAGACGCGATTCACCTGTGGCGCAATACGCTGT

13470 13480 13490 13500 13510 13520 13530 13540 13550 13560
GCAGCATGTATTTCAATTAAGCTACCCCGCCCCCCCCCTTTTTTTTTTCAACATACTATCCTAATAGTTTCTCTAGTGGTTGGCACTTTTGGCTTAGCGTT

13570 13580 13590 13600 13610 13620 13630 13640 13650 13660
CTGCTCTGCAATTTATGTGGCTCCTTAGCACTCGCTATCGTAACAATACTCGTTTCGTAATAAATAAACAATT--AATCGTTTGAATTTG--ATTCAATG-C
ATAAATAACA AA C A A CA CA G C
-----ATAAATAACACCCGAAACCCCAACCCCAACCCACACCCGAC
94180 94190 94200 94210

13670 13680 13690 13700 13710 13720 13730 13740 13750
TCGAATGGATAA--TAGAAG--AGCTTATTTATTTGTTATT--ATTTATTTATTCGCTCAAGACCATAACA--TGATAATPACATTTGGTATTTTGGGAATGGTTA
AAAT ATA T G G AG TAT A G ATT AT TA T TG G AG A CA T A ACA G AT TT
ATAAATAAATAGCCCTTGTTCAGGTGATCAACGAAATTAATGATAAATCTGAGGACAGGGAACAATTCAGCAAAACCGCCGGAACGAAATCCCTTT
94220 94230 94240 94250 94260 94270 94280 94290 94300 94310

13760 13770 13780 13790 13800 13810 13820 13830 13840
ATATATC--TATTCTTCGGCAAAATGAGCTTTTC--TCTATTCCACTC--TGATTACATCCAGGAGCGCA--TCG--AATAACAGCCTATTACATTCCTTC
T T T TT TTC GCAA TAG T TTC T AT T A T TGA T T G CGA TCG AATAA A TAT CA TTC
TTCCTGGGTTTTATTTCCGAAA--TAGTGTTCATGGGATATGGATTTATGAAATGGTTTTT--GCCATTTCGCAATAA--TATGGCACATATTC
94320 94330 94340 94350 94360 94370 94380 94390 94400

13850 13860 13870 13880 13890 13900
-TCATTCAGGGCAATCAGATCTTTTCAGGTCTTTATGTCTC-----TATCGAAGCGCTCGGA-----
T ATT AG G A CAGGT TTT C TATC G GCT GGA
TTTTATTAAGTGAA-----CAGGTTTTTGGCTGGCATCGAAGCATCATTTTTTGTCAATTAATTCCTACCGGAGCTGGGAGAAGCCTTAAT
94410 94420 94430 94440 94450 94460 94470 94480 94490

13910 13920 13930 13940 13950 13960 13970 13980 13990
-----CACATTTAAAGTATCTTCCCGGACTTGAAGACTCGGACCCCTTCCTCTCTGGGAGGACTTCACTTGGCTCTCAGAGTCTC
C CA T CTTAAAGTATT TC TCG C T TCT CC TGT TCC
TCTCTGATCCAGTCCATAAAGTATTTGTC-----ACCTGCTC-----TTTCTCTTCCCG--CATCTACTC
94500 94510 94520 94530 94540 94550

14000 14010 14020 14030 14040 14050 14060 14070 14080 14090
GCCTGCAATGATCTTGTGTTTTAGATGCCCTCGCATCCGGCTTCGACTTCTGCCATTCTAAATTCAGTTGAGCTTGGATATTTGTTTCCCTAGGCA
GCTC C TCG C T TCT CC TGT TCC
GCTCTACGGC-----TCGCCCTGTCCCC-----TGCTCCCG-----
94560 94570 94580

14100 14110 14120 14130 14140 14150 14160 14170 14180 14190
ATTGGTGAGACGAAAGTGAACTTTATTTTCAGTCGCAACGAAACTTCATGTTACAGTGTACGCGACATCCCACTTGTATCGAAATTCATGTGGATTTTC
CAG GCAA GA
-----CAGCGCAATGA-----
94600

14200 14210 14220 14230 14240 14250 14260 14270 14280 14290
AATGGTTCCTTTGAAATAGGAATGCTCGAATATACAAGTTTGAATAATTTGCCATATATATATCATTTGAGCAATATATCCAATCTCGAACTTGTG

14300 14310 14320 14330 14340 14350 14360 14370 14380 14390
TCTCACTTAAAAGACGGATTATTTATTTCTATATTAGACAAGATGATTATTTTGTGTTGTTTATAGTATATAGAATGTGCTAATTAACGAACCAATTAAG

14400 14410 14420 14430 14440 14450 14460 14470 14480 14490
TAATGCCATAATTAATTTATGCGTTAACAAGTCCATTCGATAAATAGTGTGACCAATAATGCTATGTTTGGTATATTTGATATTTGATCAGGACTGG

14500 14510 14520 14530 14540 14550 14560 14570 14580 14590
TTATCAACGGAGGTGTCAACTCTTTCGAATTTAAGCACCACAATTTGGCCTCGCCTCCACCACATGAAGATCACAGCTGGGAACGCTTTAATCTGTA

14600 14610 14620 14630 14640 14650 14660 14670 14680 14690
CTCATATCACATAGACGCTAGGAACGCTTCTGCTCTTCTTGGCCAGGATCTTGGTAAATATGTTGTGGCCCTTAATCACTGCCACCGTATTACTGAGA

14700 14710 14720 14730 14740 14750 14760 14770 14780 14790
AACCGTTCAGGAATCTTCAATTCATGCGCTCTCTGTTGATGGTGGATCTCACTGCAGCTTCAACTTCAAGATGTCAGGAAGCTTTGAGACAGATGGT

14800 14810 14820 14830 14840 14850 14860 14870 14880 14890
TCGTGATTAATACATTTCAATGCGATCTGGAAGCTCACTACTGCAATAGCCTCCATATTTATGAAAGCCAGCGGCTCTTGCATGACACCCCTG

14900 14910 14920 14930 14940 14950 14960 14970 14980 14990
CACCTGGACATAACCCAAAACCTTATGCTCGCGGACCCAGAGTTTCGTAGTCTCAACGCAATTTGATTTACTGATGGCGCCAGTCCGACTCTCTTCTAC

15000 15010 15020 15030 15040 15050 15060 15070 15080 15090
GAACTGCTGCGCTCGTCAAGTCAAGCTCTGCTGGGTTGCCGCTAATGCAACGGACTCAGTTAGGCTGGATTGTTTCTGGATCTGCACTGCCACG

15100 15110 15120 15130 15140 15150 15160 15170 15180 15190
ATGTCACGGACTCCATAGCTACTGGGCTACCTACAACATAAATAGAGAACAACACTCAGGATCAGGACGCTACGAGCTAGCTACGCTGCTCGCTT

15200 15210 15220 15230 15240 15250 15260 15270 15280 15290
GCATCCAGATGGCTTCTGCTGAGTATATGTTAACTGGAGATGCTTCTATTGGATTGAGTACGACCGAAACCAATTTATCGACCGAAGATATAAAGCAGA

15300 15310 15320 15330 15340 15350 15360 15370 15380 15390
ATCATAAAGCAGAAATCGACAGGCGAGGTGAGCTGCCCTTTAAGAAATTCGTGTGAAAATCTTCTTTTCAATGCTAATCTTACGCCGCAACATCCGCC

15400 15410 15420 15430 15440 15450 15460 15470 15480 15490
TTAAGCGTCAACAATTTCAACAATTTTAAATTTTTCATGCATCATGATGCTAAAAGTATTTTGACAATGGCGACCAACCAAAAAAAAAAAAAAGAACCC

 ¶5500 ¶5510 ¶5520 ¶5530 ¶5540 ¶5550 ¶5560 ¶5570 ¶5580 ¶5590
GTCTGCAATCTTAAAAACATTCTATCGATATGATAGCGAAATATTAGAATTTTTTCTAAGCACTCCACCAGCTGAGAAAAGGGTATCTTTTAATCGAT

 ¶5600 ¶5610 ¶5620 ¶5630 ¶5640 ¶5650 ¶5660 ¶5670 ¶5680 ¶5690
TTATTTCGTTTCCACGCTTCTCCCTTTTCCCTAATTGAAACATPCACAGATCTCATTTCAATTTCTAAGCACTGAAAAATAAATTCATGTAGGAAAACGC

 ¶5700 ¶5710 ¶5720 ¶5730 ¶5740 ¶5750 ¶5760 ¶5770 ¶5780 ¶5790
TTCCCTTCGCGTGTTCATACTTTTCAACGAATCTAGCAACTTATAGTTTACAAAATTAATCGCTGTCAAATCGAATTCACGTCGAATCCACTTGGCAA

 ¶5800 ¶5810 ¶5820 ¶5830 ¶5840 ¶5850 ¶5860 ¶5870 ¶5880 ¶5890
CCACCACCTAATCGATATTATATAATAGTAAATAATAGTAGCAGTATTATATAACAGTATATAAATAAATAATCATATTATATGTAACATTATTATTATGTA

 ¶5900 ¶5910 ¶5920 ¶5930 ¶5940 ¶5950 ¶5960 ¶5970 ¶5980 ¶5990
ATATTTGTCATACATACGCAAATTAATTTAGTGTGAATGCTAATTAATTTACCTAATTTTCGGGCACCACTATCAAGGATATTTTCCACTGCTGCCCTCCC

 ¶6000 ¶6010 ¶6020 ¶6030 ¶6040 ¶6050 ¶6060 ¶6070 ¶6080 ¶6090
TTTCCACTCCAGTAGCAGTGGAAATTTAATTAATTTGTCACCTTTTGGCGGCTGACTTTGCGGTTAGCTGCTTAATAATCGCTCGGATTCAAAGCCCA
 AAATTTAATTAATTTGTCACCTTTTGGCGGCTGACTTTGCGGTTAGCTGCTTAATAATCGCTC CGA TCAAAAGC CA

 AAATTTAATTAATTTGTCACCTTTTGGCGGCTGACTTTGCGGTTAGCTGCTTAATAATCGCTCAGCATCAAAGCTCA
 ¶4610 ¶4620 ¶4630 ¶4640 ¶4650 ¶4660 ¶4670 ¶4680

 ¶6100 ¶6110 ¶6120 ¶6130 ¶6140 ¶6150 ¶6160 ¶6170
TTTTGTTCTCAGGCCACGAAAGCAATCACTCACACTTGCAGGCACA---AGCAGCTCACACGGACGCACACAGACAAGCA-----AACCCAAG
TTTTGTTCTCAGG ACCG AGC CTC CA T CA ACA A CT ACAC GA CACACA ACA CA AACCCAAA
TTTTGTTCTCAGGAAACCGCAGCGCTTCTCCAAATACATATACAAAATACGGACTAACACAGATACACACACACACACACACATACCGCTAACCCAAAA
 ¶4690 ¶4700 ¶4710 ¶4720 ¶4730 ¶4740 ¶4750 ¶4760 ¶4770 ¶4780

 ¶6180 ¶6190 ¶6200 ¶6210 ¶6220 ¶6230 ¶6240 ¶6250
TGCAGCAGAGATATGCCACACTTATTGCAATAACTCTTTGGCGGAACCGAAGTAAGCGGCTGGGG---AAACTCCCATC-----
 GCGCAG GTATGC ACACTT TTGCAATAACTCTTT CGG AC AA AGCG C G GG AAA TCC T
CGCCGACGGGTATGCTACACTTGTGCAATAACTCTTTACGGGACACAAAATAGCCCGGAGGAAAAGTCTGTGAAAAAGAAAAAGAAAAGGC
 ¶4790 ¶4800 ¶4810 ¶4820 ¶4830 ¶4840 ¶4850 ¶4860 ¶4870 ¶4880

 ¶6260 ¶6270 ¶6280 ¶6290 ¶6300 ¶6310 ¶6320 ¶6330 ¶6340
-----GCATCCATCATCGCATTAATCATACCGCGCATGTGACCAAATATTTCGCCACTCAGCTCACATCCACAGTTGCGCCACACACACACA
 GCATCCATCATCGCATTAATCATACCGCGCATGTGACCAAATATTTCGCCACTCAGCTC
AGAAAGAGAGAGGCACTCATCATCGCATTAATCATACCGCGCATGTGACCAAATATTTCGCTCACTCACGCG-----
 ¶4890 ¶4900 ¶4910 ¶4920 ¶4930 ¶4940 ¶4950

 ¶6350 ¶6360 ¶6370 ¶6380 ¶6390 ¶6400 ¶6410
CACACAACA-----TGGGAT-TGCGAATGC-----CAACAGGACCACAACAAGTC-GTCCGTCTTTGCTGCTTTGGAAGATACC--
CACACAACA GG A TG A GC CAAACA CC CA A A C GC GC TGCTG T GAAAGATAC
CACACAACAACAACAACACACGACACACAGCCACATGGCACGGCCCTCACAAACACATCCGCGATACACAGGCGGGC--TGCTGTATGCAAGATACTTT
 ¶4960 ¶4970 ¶4980 ¶4990 ¶5000 ¶5010 ¶5020 ¶5030 ¶5040 ¶5050

 ¶6420 ¶6430 ¶6440 ¶6450 ¶6460 ¶6470 ¶6480 ¶6490 ¶6500
--GATACTTAAATGCGCGCTGTGTAGCACATCAAATAGCCGCTCCGCCCTGTGCCGACAACAACAAAT--TGTGTTGTC--AACACTCTCTT-----
 GATACTT TGTG AGCACATCAAATAGCGC CC C TGCC AAAC ATT TGTGTT CC AACACTC CTT
CGGATACTT-----TGTGAAGCACATCAAATAGCGC--CTTCCAATGCCAAAACCAATCTGTGTTGGCCAACAAAACACTCACTTCTCACTT
 ¶5060 ¶5070 ¶5080 ¶5090 ¶5100 ¶5110 ¶5120 ¶5130 ¶5140

 ¶6510 ¶6520 ¶6530 ¶6540
-----TTTCGGATCAGAAAT--CGAGAGTCAAG--AGATTT--CCATCT-----GCCATC-
 T TC AG CAA AA TT CC GC C
TTCCAGGCTCGTGGTCCGATTTTACCTGGCTCTGCTCCATTCGAATGGCTGCAGCCAAATCCCTAACCTTTGACCCTCAAACAGAGCGAGCAAAAGGGG

 ¶5150 ¶5160 ¶5170 ¶5180 ¶5190 ¶5200 ¶5210 ¶5220 ¶5230 ¶5240
 ¶6550 ¶6560 ¶6570 ¶6580 ¶6590 ¶6600 ¶6610 ¶6620
TTCTGGACTTGCC---AGC-----TGC---AGTTAGA--CCAATGGCTCAGGATACGATGCTCAGCCAAAAGGCAACAATAACAATCCTATTG
 T GG C G C AGC TGC AG AGA CAA C G ACGA CTCAGCCAAAAGGCAACAATAACAATCCTATTG
 TGAGGGGCAAGGCAAAAAGCAAAGCCAGTCCAGAGCCAGGCCAAGCCCACTGCCAACGACACTCAGCCAAAAGGCAACAATAACAATCCTATTG
 ¶5250 ¶5260 ¶5270 ¶5280 ¶5290 ¶5300 ¶5310 ¶5320 ¶5330 ¶5340

 ¶6630 ¶6640
ATTGTTGGCAACTATTG
ATTGTTGGCAA TATTG
ATTGTTGGCAAGTATTG
 ¶5350

5k)

CG32690:melanogaster (above), yakuba (below)
Martinez/Needleman-Wunsch DNA Alignment
Minimum Match: 9; Gap Penalty: 1.10; Gap Length Penalty: 0.33

110 120 130 140 150 160
ATGTTTGGTGGTGAATATTCGTATCCCAAAA-----AAAAGGACAAAGCAATGTGGCC
ATGTTGGTGGTGG G G TTCGATCCCAAAA AAAAGGACAAAGCAATGG GG C
ATGTTTGGTGGTGGTGGTTCGTATCCCAAAAAGAAAAGAAAAGAAAAGGACAAAGTGGG--C
110 120 130 140 150 160 170
CCTCATTTCAGTTGGTGGGCGTGTGACAGATACAGTCATTTCAGCTATACAATCTCTTCAAATAAATGACCCAG
CC CCT T CAGTTGGTGGGCGTGTGACAG TACAG CATTTCAGCT TACAATCTCTTCAAATAAATGACCCAG
CGCCCTTCAGTTGGTGGGCGTGTGACAGTTCAGCCATTTCAGCTTACAATCTCTTCAAATAAATGACCCAG
180 190 200 210 220 230 240 250
1150 1160 1170 1180 1190 1200 1210
TCAGAATTGGTTGAGGGAA---AAAAAATGAAGTTTTCAGTGGAGCAGGAGCGAGGTTTCCCGTACTGGCTGTCTTC
TCAGAATTGGTTGAGGGAA AAAAATGAAGT TCAC GGAG AGGTTTCCC T GCCTGC TC
TCAGAATTGGTTGAGGGAAACAAAATAATGAAGTTCAC-----GGAAGGTTTCCCTATGATGGCTGTCTTC
260 270 280 290 300 310 320 330
1220 1230 1240 1250 1260 1270 1280 1290
CTG-----TTACATGTCAA---TTTCTTCCCTTTCGAGCGAAAATAAAGGAAACGACATAAAGGATTAGTGA-GCATTCTT
CTG T ACATGTCAA TTCTTCCCTTTCGAG G AA AAGGAAACG ATAAGGATTAGT GCATT TT
CTGCTCCCTACATGTCAATTTCTTCCCTTTCGAGTGGAAAATAAAGGAAACGGAATAAAGGATTAGTGGCGCATTTT
340 350 360 370 380 390 400 410
ATGCCCTCAATGGCTAGCATTGAATGCAATGAACATTGTGACTGGCGTCTTCTTTA--CGCAGTCATGCC---AAT
AA AT CCCTC AATGCAATGAAC TTGTGAC GGCG CT CT TA CGCAGT AT C AAT
ATACCTC-----AATGCAATGAACGTTGTGACAGCGCCCTCTATAATCGCAGTATTTCATAAATAA
420 430 440 450 460 470
1370 1380 1390 1400 1410 1420 1430
AACATGGTGGTTGGG---TGACTACTTAA--AC-CTAAATGTAATCAATTTCAAAGTGACTAGATGAATTCACG
AA AT T T T T TA AC CT ATGTA ATCCATT CAAAGTGTACTAGTAA
AAAATAAATCCCAACTATATTTGTTAGTACTCTTCATGTAATATCAATTTGCAAAGTGTACTAGATGAA-----
480 490 500 510 520 530 540 550
1440 1450 1460 1470 1480 1490 1500 1510
AAAAAAAACCCCAATATGAAAACACTACATCTAGTTGGCCGAGAAATAACTGTCAATTTTCTTTGGAACAAAAGT
AA A CCGG AAT TGAARAAAC ACATC AGTTGGCCGAGAA TT CTGTCAAT TT TTT G A C A AA
-----AATAGCCCAAAATCTGAAAACGACATCAAGTTGGCCGAGAACTTGGTGCATTAATTTTTTTCGACCAAAAAC
560 570 580 590 600 610 620
1520 1530 1540 1550 1560 1570 1580 1590
TGATTTTGGACTTTAGGCTAGAGAAATTTTCATTTGCCCTCGACTCGAGCTACAAGCTA-GTGCATTTCTCGAACAAGT
TGTA TTGA CT AG CTA AGAAATTTCAAT GCCTTCGAC CG C ACAAGCT GTC ATTT GAACAAGT
TGTAATTTGAGCTACAGTCTACAGAAATTTTCATTTGCCCTCGACAGGCAACAAGCTGGGTCATATTTTGGAAACAAGT
630 640 650 660 670 680 690 700
1600 1610 1620 1630 1640 1650 1660 1670
TCAGAAA-TGATCAAAAATTTTTGATTTAAAAGCTGACTAAACTAAAAGCTAAATAAAAGAACTACAGTCACTCCCTCA
TACA AA TG ATC AATTT T GT AAAAAGTGAAGT T AAA TA A T A ANGTACA TCACC CAA
TACAANAATGTAATCTAATTTCTCAATGTGAAAAGAACTGAGT---TGAANAATCAAT---AGAATACAAATCACCAAA
710 720 730 740 750 760 770
1680 1690 1700 1710 1720 1730 1740 1750
AGCGCGTACACATCGTTACAGTACATTTCCCGACGAAATGTGGCCAGAAAGCTTGGTTCCTCGCCGAAATCCCGAGGAATC
A GC TACAC TCGTTACAG TACA TG
AAAGCATACCTCGTTACAGATACATGG-----
780 790 800
1760 1770 1780 1790 1800 1810 1820 1830

CAAACCGAGAAACAACGTTGATAATGATCGACAAAATCTACTACTCAATGAACACGATGCTCCATAACTGCGCGGACGA

1840 1850 1860 1870 1880 1890 1900 1910
GCACCAATCGGGCAGCCAGTTCGCGAGGATCATCAAGCTGCAAAAACCCATGCACCTAGACTGTAAAAGTACACATGTGTTA
A
-----A-----
9810
1920 1930 1940 1950 1960 1970 1980 1990
CAGCAGCATGCACAAAGCTTGAATTCCTCGCCGAAATCCGAGGAATCTAAGCCAGGAACCGCT--TGATCATGATTC
CTTGATTCCTCGCC AATC GA GAATC AAGCCA AA A G T TGA A G TC
-----CTTGATTCCTCGCCAAATCGGAAGAATCGAAGCCATCAATTCATGCTGTGACAGGCGTC
9820 9830 9840 9850 9860 9870
1000 1010 1020 1030 1040 1050
G-----CCAGCTGGGAC-TAG-ATTTTCTACTCCTA-----TGAACAGATGCTT-----TCITATATACGAC
G CCACG GGA TA AT T A AC A TG CGA G TT TC A CG C C
GATTTCTCCAGGAGCGGAGATATCATATGAAACACTCATGGCTCGCCGCGACGTTTAAACGATGACACCAGCGCCCC
9880 9890 9900 9910 9920 9930 9940 9950
1060 1070 1080 1090 1100 1110
-----TGAATGG-----TAAACAGCTGGTAAACA-CGAATTTGATCTG-----CGTGAATTTGG-----ATCGTTGACAGACT--
TGG GG TA C AT CA C A TG A TG C T T TGG ATCGTT AA A GT
AGTTTGGGGGCCATACATCCATCCATCCAGCTGCAATGAACACATCACTATGACTATCGTTCAA-ATGGTGC
9960 9970 9980 9990 1000 1010 1020 1030
1120 1130 1140 1150
TA-CATAGCT--TACATTTTGCAGCT-----TTCT-AT-TGCCA-----
TA CA A G T A T GCAC T TT CT AT TGC
TACCACAAGAGTGAAGTAGCACCTCAACAGCTTGTGATATGCT--GCATACTGCGTACACACACACACACACAC
1040 1050 1060 1070 1080 1090 1100 1110 1120 1130 1140 1150
-----TTTAC
TTTAC
ACACACAACTTTAACAACGGCGTAATCGGCTGCCCAATTTGATTTGCTCGCATTAGACGCTTTTGTAAATGCGGTTTAC
1120 1130 1140 1150 1160 1170 1180 1190
1160 1170 1180 1190 1200 1210 1220 1230
AATTAGTTTGGCAGTTCACACA-ATCTCTTTGATTATTGTAAGCCAATTAATCACTCTTACAGTGAACAATAAATAA
AATTAGT TGCA TT ACACA AT TCCCT ATTATT T A C A AC A TTA AAT C A AAT
AATTAGTACTGCCAATTTACACAAATTTCTT--ATTATTTTATCGT---AAACAATTA-----AATCAATAAT
1200 1210 1220 1230 1240 1250
1240 1250 1260 1270 1280 1290 1300 1310
ACAGCTGTGATGAAGTGGACAATACAAAAC--CATACACTACAATAAACAACAAATCAGAATTTGAAGTGG
CAG TGTA A ACA T CACA AAC CA CTA A AC A A CAGAATTTGAA TG
GCAGAAATGACTACTC---ACACT--CACACAACAGAGCTAAT---ATACCTTATTGATGAGCAATTTGAATTTGA
1260 1270 1280 1290 1300 1310 1320
1320 1330 1340 1350 1360
AC-----TGAAGTAACTTA-----TTACAC-----AGACACGAATGTTAATAAATAAATAAATAAATAA
A T G GTA CTTA T ACAC A ACACGAATGTT TA CAATAACTCAAGTAA
ATTTAACAACATCGGCTACTCTTATATCATTTCTTAACTGAAAACACGAATGTTGTAGCAAAATACAGTAATATC
1330 1340 1350 1360 1370 1380 1390 1400
1370 1380 1390 1400 1410 1420
-AAC-----ACACAATAAATATTGTATAGCTCATCCC-AAAGAATAAATAAATAAATAAATAAATAA
AAC ACACAATAAATAA A G CATCCC AAAGAA AAAA ATC TTA TTGA
CACTCATTTCCCAATATGTACATACCAAATAAATAAAGGG---AGGCGATCCCAAAAGACAAAATAAATAAATAA
1410 1420 1430 1440 1450 1460 1470 1480
1430 1440 1450 1460 1470 1480 1490 1500
GCTAAAATCGGCTTATTTGAATCTTGAATTTGAGATT--TAAATACATCTTAATCGGCTGCATCGGGTTCATGTCGCTG
CTAAAATAAGCGCTTATTTGAATCTTGAATTTGAGATT TTAATACATCTTAATCGGCTGCATG TCGTGT
GCTAAAATAAGCGCTTATTTGAATCTTGAATTTGAGATTGATTAATACATCTTAATCGGCTGCATG-----TCGCTG
1490 1500 1510 1520 1530 1540 1550
1510 1520 1530 1540 1550 1560 1570 1580
ACTGT--TTGATGATGTTTGAATTTGTA--GTTTTTGTATTTTGTTTTTTTTTTTTTTAAATGAAAGGTGGTCTC

ACTG TTTGGATGTTT ATGTTTGA G TTTTGTATT TTTT TTTTAAATGAAAGGTGGTCTC
ACTGTAATTTGGATGTTTAAATGTTTGTATGATTTTGTATTTC-----TTTCTTTTAAATGAAAGGTGGTCTC
 *1560 *1570 *1580 *1590 *1600 *1610 *1620

 *1590 *1600 *1610 *1620 *1630 *1640
GTTTTA---TGTATTTATGCAAGTATGTATAGTGGCATGATGATGTAATAACTAACATCAAGT-----
GTTTA TGTAT TATGCAAGTATGTATAGTGGCATGATGTAATAACTAACATCAAGT
GTTTGTAGTATGTAAGTATGTAAGTATGTATAGTGGCATGATGTAATAACTAACATCAAGTGGTTCGTTTTGTGA
*1630 *1640 *1650 *1660 *1670 *1680 *1690 *1700

 *1650 *1660 *1670 *1680 *1690 *1700 *1710
--AA--CG-TTTTCAAAAATTTGTGTTTCG-TTCATGGTGCATCACATGCATGGAGTACATAGTCAATGCTAAATGGT
AA CG TTTTCAAAAATTTGTGTTTCG TCATGTTGCATCACATGCATGGAGTACA TAGTCAATGCTAAATGGT
TGAATTCGTTTTTCAAAAATTTGTGTTTCGTTTCATGGTGCATCACATGCATGGAGTACAGTACATGCTAAATGGT
*1710 *1720 *1730 *1740 *1750 *1760 *1770 *1780

 *1720 *1730 *1740 *1750 *1760 *1770 *1780 *1790
CGACAAGCTCAAAGCTTTGACAAAAGCTGGTTATATGTTGAAGATATATATACATATATATATATATATATATATAT
CGACAAGCTCAAAGCTTTGACAAAAGCTTTGACAAAAGCTGGTTATATGTTGAAGATATATATATATATATATATATAT
CGACAAGCTCAAAGCTTTGATAAAAGTGGTTTAAAGTTGAA-----ATATATA
*1790 *1800 *1810 *1820 *1830 *1840

 *1800 *1810 *1820 *1830 *1840 *1850 *1860
TATATATACATATATATA-----GATCGGGCTTAAGTACGGCCAATTTGCTTAAGAAGATGAAAATTAAGGAC
TATATATACATATATATA GA G G TTAAGTACGGCCAAT GCTTAA GATGAAT AGGAC
TATATATACATATATATATATAGAGAGAGAGAGAGATTAAGTACGGCCAATAGCTTAAATGGATGAATGCAGGAC
 *1850 *1860 *1870 *1880 *1890 *1900 *1910 *1920

 *1870 *1880 *1890 *1900 *1910 *1920 *1930 *1940
ACAATAAGT-TTACGGATTTCAATGTACTCGTTTTCGAAAAGGAAATTTGATTTCT-GAAATTTGTTTTATGAATTC
ACAATAAGT TT ACC ATTTCAATGTACTCGTTTT GAA GAAATTTGATTTCT GAA TTG TTTATGAA TCT
ACAATAAGTATTTCAAGCAATTTCAATGTACTCGTTTTGAAAGGAAATTTGATTTCTGAAATTTGTTTTATGAATTC
 *1930 *1940 *1950 *1960 *1970 *1980 *1990 *2000

 *1950 *1960 *1970 *1980 *1990 *2000 *2010
G----TTGTATTCGGTTTCTGTTTCTCCTTAAATAGTATGTTTAAATGCTAACCAAAAATATATCTCCAGATACA
TT TATTC GTTT CTGTTCTC TTTTA T TAGTAA TTTTAAATGCTAACCAAAAATATATCTCCAGATACA
GCTTTTATATCTGTTACTGTTTCTCCTTTTATTTAAGTAAATTTTAAATGCTAACCAAAAATATATCTCCAGATACA
*2010 *2020 *2030 *2040 *2050 *2060 *2070 *2080

 *2020 *2030 *2040 *2050 *2060 *2070 *2080 *2090
TTAATATACTACTTAGAGAACATCAATTAACCTAAATAGTCTTGGCAGTATTTTTGTCATATTATATTTTCATAATC
TT ATAACTACTTAGAGAACATCAATTAACCTAAATAGTCTTGGCAGTATTTTTGTCATATT ATAT TCATAATC
TTTTAATTACTACTTAGAGAACATCAATTAACCTAAATAGTCTTGGCAGTATTTTTGTCATATTCAATATACATAATC
*2090 *2100 *2110 *2120 *2130 *2140 *2150 *2160

 *2100 *2110 *2120 *2130 *2140 *2150 *2160
CG10T *2110 *2120 *2130 *2140 *2150 *2160 *2170
GTTTTGCTTTAAAATAATGCTCTTTTCTTTTTCGCGCGCTATACATATATTTTCTGGCTAGCTCAAGTCTTCC
CGTTC GCTTTAAAATAATGCTCTT CTTTTCC CG TATACATATATTTATTT TTGCTAGCT CA TTT
GTTTTGCTTTAAAATAATGCTCTT---CTTTTTCCATCGTTATACATATATTTATTTTTTGGCTAGCTCAAGTCTTCT
*2170 *2180 *2190 *2200 *2210 *2220 *2230

 *2180 *2190 *2200 *2210 *2220 *2230 *2240
TTCGATTTGATATATACAGATATTTTTCGCATTAATACGCAATTTCTCCTATGATAAATATACATA-----
TTCGATTTGATATATACAGATATTTTTCGCATTAATACGCAATTTCTCCTTA ATAATATACATA
TTCGATTTGATATATACAGATATTTTTCGCATTAATACGCAATTTCTCCTTACATAAATATACATATATACATATA
*2240 *2250 *2260 *2270 *2280 *2290 *2300 *2310

 *2250 *2260 *2270 *2280 *2290 *2300 *2310 *2320
--TATATATATATATGATATATATATATATATAGTATATTTATATTCATTTATTAAGTTAGGCATGTCATATC---TTGT
TATATATATATATG TATATATAGTATATTTATATTC TT TAAAGTTAGGCAT TCATATGC TTGT
CTTATATATATATATG-----TATATATAGTATATTTATATTC---TTTTAAAGTTAGGCATATCATATGCTTTTGT
*2320 *2330 *2340 *2350 *2360 *2370 *2380 *2390

 *2330 *2340 *2350 *2360
ATTTCAATATAATTTCTTTCAATTTCCCAACCCCTTTTCCACCGC-----
ATTTCAATATAATTTCTTTCAATTTCCCA CCCC TTTTCC CGC
ATTTCAATATAATTTCTTTCAATTTCCCA---CCCCCTTTCCCGCGCACTTCGGTGCATCATTTCCCGAGTGCATCAAGTGGCATC
*2400 *2410 *2420 *2430 *2440 *2450 *2460 *2470

 *2370
-----ACA
 AC
ACCTGAACGCCACCTTGGCGGGGACACGCACCTTGGCGCTTCATATTTGGTGTGTTCTTACG

51)

CG32690:melanogaster (above), erecta (below)
Martinez/Needleman-Wunsch DNA Alignment
Minimum Match: 9; Gap Penalty: 1.10; Gap Length Penalty: 0.33

 *110 *120 *130 *140 *150 *160 *170
ATGTTTCTGCTGGTGAATATCGTATCC-----AAAAAAAAAGGACAGACAAATGTTGGCCCGCCCTATTCAAGT
ATGTTTCTGCTGGG GA ATCG ATCC AAAAAAAAAAGGACAGACAAAG CCCT CT T CAGT
ATGTTTCTGCTGGGCA--ATCGCATCCCAAAAAAAAAAAAAAAAAAGGACAGACAAATGGGG--CCCTACTTCCAGT
 *180 *190 *200 *210 *220 *230 *240 *250
TGGTGGGCGGTGACAGTACAGTCATTTCAGCTATACAATCTCTCAAATAAATTAAGCCACGTCAGAATTTGGTTGA
TGTTGGGCGGTGACAG TACG CATTTCAGC T CAATCTTCAAATAAATTAAGCCACGTCAGAATTTGGTTGA
TGGTGGGCGGTGACAGTTACAGCAATTCAGCATTCGAATCTCTCAAATAAATTAAGCCACGTCAGAATTTGGTTGA
 *180 *190 *200 *210 *220 *230 *240 *250

 *160 *170 *180 *190 *200 *210 *220
GGGGAIAAAATAAAGGATTTCACTGGAGCAGGAGCAGGATTTCC--CGTACTGGCTGCTTCCCG---TTACATGT
GGGGAIAAAAA TGAAGGT TCAC GGAGCAGGATT TCCC CGTA GGCTGTC TCCGT T ACATGT
GGGGAIAAAAA--TGAAGGTTCCAC----GGAGCAGGTTCTCCCTACGTA--GGCTGCTCTCCGCTCCACATGT
*260 *270 *280 *290 *300 *310 *320

 *240 *250 *260 *270 *280 *290 *300
CAATTTCTTCCCTTTGCGCGAAATAAAGGAAACACATAAAGGATTAGTGA-GCATTCTTAAGCCCTCAATGGCTAG
CAATTTCTTCCCTTTGCGCGAAATAAAGGAAACACATAAAGGATTAGTGA GCATT T AT CCCTCAAT CCT G
CAATTTCTTCCCTTTGCGCGAAATAAAGGAAACACATAAAGGATTAGTGGGCAATTTCAATCCCTCAATAGCTTG
 *330 *340 *350 *360 *370 *380 *390 *400

 *310 *320 *330 *340 *350 *360 *370 *380
CATTGAATGCAATAAAGAACATTTGAGTGGGCTCTTCTTTACGAGCTCATGCGCAATAACATGGGTTTGGGTTGCTA
CATTGAATGCAATA GAAC TTG T CTTT CGCAT AT C A A A A
CATTGAATGCAATGAGAACGTT-----TCCTTTCCGAGTTATTTCAATCAAAA-----TATGC
*410 *420 *430 *440 *450 *460

 *390 *400 *410 *420 *430 *440 *450 *460
TAAACTAAATGTAATCCATTTCAAAGTACTAGATGAAATTCACGAAAAAAACCAGCAATATGAATAACTAC
A A CTAATGT AA ATCCATTTCAAAGTACTAGATGAAATTT AC AAAAA AACCC AAT TGA AAA TAC
CACA-CTAAATGCAATATCCATTTCAAAGTACTAGATGAAATTTAAC--AAAAATAACCCCAATCTGATAAATC
*470 *480 *490 *500 *510 *520 *530 *540

 *470 *480 *490 *500 *510 *520 *530 *540
ATCTAGTTGGCGGAGAAATTAACGTGATTTTTCTTTTGGAAACAAAAGTATTGTTGACCTTTAGGCTAGAGAAATTT
ATC GTGGCGGAGAA TTA CTGTCATT TTT TTTGGAAACAAA TTGTA TT GACCT AGGC A AAAAA
ATCAGGTTGGCGGAGAAATTAACGTGATTTTTCTTTTGGAAACAAAATTTGATTTAGGCTTACAGGCACGCAAAATTT
*550 *560 *570 *580 *590 *600 *610 *620

 *550 *560 *570 *580 *590 *600 *610 *620
CATTGCTTCGACTGAGCTACAGTACTAGTGCATTTCTCGCAACAGTTACAGAAATGATCAAAATTTTTTCAGTAA
CATTGCTTCGAC G GC ACAA C GTGC ATTTCT GAA AGTTCAA TCAAAATTTT GT AA
CATTGCTTCGATGAGCAACAAACCGGTGATTTCTGGAATAAGTTACAAAAAAATTTCAAATTTTTTCACTGTGAA
*620 *630 *640 *650 *660 *670 *680 *690

 *630 *640 *650 *660 *670 *680 *690 *700
AAAAGTACTGAACTAAAGTAACTAAAAAAAGTACAGTCACTCAAGGCGGCTACACATGTTACAGCTACATTCGCGG
AAAAGTGAGTA T AA TA AC AAAAGTACAGTCAAC AA G GTAC C TCGTTACAGC TACA TGC G
AAAAGTGAGTA---TGAATAACACC---AAAAGTACAGTCAACAAATGGGGGTAGCCTGTTACAGCTACAGTGTG
*700 *710 *720 *730 *740 *750 *760 *770

 *710 *720 *730 *740 *750 *760 *770 *780
ACGAAATGTCGGCAAGGCTTGGTTCCTCGCCGGAATCCGAGGAATCCAAACAGGAAACACGTTGATATGATCGAC
AC AAATGTCGGCAC GCTTTC TCTCCT CCC AATCCGAGGAATC AA CCAG A AC A GTTG AAG G C G
ACAAAATGTCGGCAAGGCTTGGTTCCTCCACCAAATCCGAGGAATCAAGGAGCAAGCATGTTG---AAGCGGGT
*780 *790 *800 *810 *820 *830 *840 *850

 *790 *800 *810 *820 *830 *840 *850 *860
AAAATTTACTACTACTCAT-GAACAGATGTCCATAACTCGCGGAGGAGCAACCAATCGGCGACCCAGTTCGGAGGATC
A TC C CT AT GA CA GAT C C A AACT C G A CA CAAT GG C AG T

5m)

CG32690:melanogaster (above), ananassae (below)
Martinez/Needleman-Wunsch DNA Alignment
Minimum Match: 9; Gap Penalty: 1.10; Gap Length Penalty: 0.33

Genomic alignment for CG32690 showing coordinates from 970 to 1150. The alignment includes reference sequence lines and corresponding alignment lines with gap markers (---) and match markers (|). Key features include a 5' UTR, a start codon (ATG), and a 3' UTR.

Genomic alignment for CG32690 showing coordinates from 9710 to 11510. This section continues the alignment from the previous block, showing the continuation of the reference sequence and alignment lines with match and gap markers.

*2570

CCCGTACT
C G TACT

CCACCCAGACCCCTGGCATTTCGCTACTGCTCCTTCTTCCATTCTCGCAGAAAGGCAATCAGAGTAATGG
*1450 *1460 *1470 *1480 *1490 *1500 *1510 *1520

CTTTAATGGACACTGATTGTCTGGCTGGGAGGCGACTCCAATTGGAATAGTTCAGCACCTGTCACTTTAATAACTGAGT
*1530 *1540 *1550 *1560 *1570 *1580 *1590 *1600

TTTTGCCACTCTCGAAATGATCAAGTTGGCAGGCGCCAGCCTAGGAGCCTAGGGAGTTCGAGGAAAAGTTTCAAAAT
*1610 *1620 *1630 *1640 *1650 *1660 *1670 *1680

CGTAGTAGGCAGCCCTCCCTACAAGCTATAAAATCGGAGCGCCGCTGAGAGCTTCATTTCGCTCCGGACAGGC
*1690 *1700 *1710 *1720 *1730 *1740 *1750 *1760

CAGTTCGGACGGCAATCAGGAAAATAAATCTATAATCAAAATCAAAAAGTCTCGAAAACCTCGTAAGATTCAAAA
*1770 *1780 *1790 *1800 *1810 *1820 *1830 *1840

GCAAAAAAAAAAGTAAAGCTAGGAAGTGAATTCGAAATTTGATGAAAAATTTGTCAAGTTATATTTCCCGCAGTGGCG
*1850 *1860 *1870 *1880 *1890 *1900 *1910 *1920

CGCGCCAAAGATGTCTGCACCTCGGATGCTCCCGGTGCAAGACCGATGCATCTGGACTCTAGCGTGTGATGGTCTCG
*1930 *1940 *1950 *1960 *1970 *1980 *1990 *2000

GCTTCGCCAGCGGCGACCGAGCCCGGATAATGAGCGGGACCGCGAGGTGGTCCGGCTACGGCATCAACGAGCCCGCCATC
*2010 *2020 *2030 *2040 *2050 *2060 *2070 *2080

TACTTCGACAGCCAGGACTGCCCTTTCGGCCATCCGCTTCGGGGAGCTCACCCGGAGGTCTGGGCCATCCGGCGAGAA
*2090 *2100 *2110 *2120 *2130 *2140 *2150 *2160

GGAGCTGGGCGACTGGAAGAAGCTGTCTGCTGTGCGAGAAGAAGATGCTGTACCGGCATAGCTTCTGCCAGACCTACGCAG
*2170 *2180 *2190 *2200 *2210 *2220 *2230 *2240

AGTTCGAAGTTTCAACCCGGACTGGAAGCTCGTCTTGGGCCTCGGATTGTGGTCACTGGCGATCGGCTGCCCATCACC
*2250 *2260 *2270 *2280 *2290 *2300 *2310 *2320

GTGATAAGCAAGCTGAACCTTGTACAACGATCCGCCGAGAGCGTTCGAGGAGGACCGCGCTCTGCCAGCTGGCCGGAAT
*2330 *2340 *2350 *2360 *2370 *2380 *2390 *2400

*2580 *2590 *2600 *2610 *2620

GGCTGTCTTCCCTGTACATGTCAAATTTTCCCTTTCGAGGAAATAAAA
GGCTGTCTTCC AA T T T CGAGCG AA A
CATTTCAGTGCAAATGAACCCGATCACCGGGCTGTCTTCC-----AAGTGGTGC---TACGAGCCCAACCGAT
*2410 *2420 *2430 *2440 *2450 *2460

*2630 *2640 *2650 *2660 *2670 *2680 *2690 *2700

GGAAACGACATAAAGATTAGTGAGCAATCTTATGCCCTCAATGGCTAGCATTGAATGCAATA-AGAA-CATTGAGACTG
GGA A A GG AGTG G A TC A GCC T C GCA ATGC A A A AA CATT AC
GGA-----AGTAGGG---AGTG-GGAGTCGGAAGCCCG---TTCACGCGAC---ATGCCAGACACAGGATTTCCAAACA
*2470 *2480 *2490 *2500 *2510 *2520 *2530

*2710 *2720 *2730 *2740 *2750 *2760 *2770 *2780

GCGTCTCTTTTACGCACTCATGCCAATAACATGGTGTGGGTGGTACTCTAAACCTAAATGTAATTCATTTTCAAA
C TACG AG A G CAATA TG TG T G GG T A CCTA T AA T C TTTC
CA--CAGGATACG-AGCGAGGACAATATGCTGATGATCCGAGGA--TGATAGCCTAT---TGAATGCGGTTTCG--
*2540 *2550 *2560 *2570 *2580 *2590 *2600

*2790 *2800 *2810 *2820 *2830 *2840 *2850 *2860

GGTGACTAGATGAATTTACGAAAAAAGCCCAATATGAAAACTACATCTAGTTGGCCGAGAAATTAACGTGTCAT
TTTC TAT A AA TACA

TTTCG-----TATTGACAAGTACA-----
*2610 *2620

*2870 *2880 *2890 *2900 *2910 *2920 *2930 *2940

TTTTTCTTTTGGAAACAAAAGTTGTATTTTGACCTTTAGGCTAGAGAAATTTTCATTTGCTTCGACTCGAGCTACAGACTA

*2950 *2960 *2970 *2980 *2990 *3000 *3010 *3020

GTCCGATTTCTCGAACAGTTACAGAAATGTATCAAAATTTTTTCAGTTAAAAAAGTGAATAACTAAAGTAAACTAAA

*3030 *3040 *3050 *3060 *3070 *3080 *3090 *3100

AAAAGTACAGTCACTCAAAGCCGCTACACATCGTTACAGCTACATTCGCCAGCAAAATGTCGGCACAGGGTTGGTTCTCT

*3110 *3120 *3130 *3140 *3150 *3160 *3170 *3180

CGCCCGAATCCGAGGAATCCAAACCGAGAAACAACGTTGATAATGATCGACAAAATTACTCACTACTCAATGAACAGATG

*3190 *3200 *3210 *3220 *3230 *3240 *3250 *3260

CTCCATAACTGCCGCGAGCACCAATCGCGGACCCAGTTCGCGGAGGATCATCAAGCTGCAAAAACCCATGACACTAGACT
CAAGCTGCAA CC T T G A

CAAGCTGCAA-----CCGTTGTTTCGAT-----
*2630 *2640

*3270 *3280 *3290 *3300 *3310 *3320 *3330 *3340

GTAAAAGTACACATTTGTTACAGCAGCAGTGCACAAAGCTTGTATTCCTCGCCGGAATCCGAGGAATCAAGCCAGGAAAC
AA A CA T C CA CA GC AA T A C CGA T C A G ATC G C
---AACCCATCACTATCCCGCCATCAA--GCTAAACTATCAACAGCATATTCGATTTGCCAAGGATCGTTATATGTT--CT
*2650 *2660 *2670 *2680 *2690 *2710 *2720 *2730 *2740 *2750 *2760 *2770 *2780 *2790 *2800 *2810 *2820 *2830 *2840 *2850 *2860 *2870 *2880 *2890 *2900 *2910 *2920 *2930 *2940 *2950 *2960 *2970 *2980 *2990 *3000 *3010 *3020 *3030 *3040 *3050 *3060 *3070 *3080 *3090 *3100 *3110 *3120 *3130 *3140 *3150 *3160 *3170 *3180 *3190 *3200 *3210 *3220 *3230 *3240 *3250 *3260 *3270 *3280 *3290 *3300 *3310 *3320 *3330 *3340 *3350 *3360 *3370 *3380 *3390 *3400 *3410 *3420 *3430 *3440 *3450 *3460 *3470 *3480 *3490 *3500 *3510 *3520 *3530 *3540 *3550 *3560 *3570 *3580 *3590 *3600 *3610 *3620 *3630 *3640 *3650 *3660 *3670 *3680 *3690 *3700 *3710 *3720 *3730 *3740 *3750 *3760 *3770 *3780 *3790 *3800 *3810 *3820 *3830 *3840 *3850 *3860 *3870 *3880 *3890 *3900 *3910 *3920 *3930 *3940 *3950 *3960 *3970 *3980 *3990 *4000

*3350 *3360 *3370 *3380 *3390 *3400 *3410 *3420

ACGTTTGTATGATGATTCGCCAGCTGTGGGAC--TAGATTTTTCACCTACCTATGAACACAGATGCTTCTTTATACGACACT
A SFT AT A T CAC TGT AC FA A TTT CACT CC AC CGA G CT ATAGC A
ATGTTCAATGTACACTGTACAC-TGTAC-ACCTTACACTTTACACTGGCCCCACAC-CGAGGACACTACATACGCTATG
*2730 *2740 *2750 *2760 *2770 *2780 *2790

*3430 *3440 *3450 *3460 *3470 *3480 *3490

GGATGGTA-----ACACGATGGTAACA--CGAATTGAT-ACTCGGTTGATTGGATCGTTGAACACAGCT--TACATAC
GGA A ACAC TG A CA C A TGA ACTG TG T C T AACA A T T A C
GGACACCACATGCAACTCTGTAAACCGCCAGCTGAGGACTGAC-TGCTCACAGCCCAATAAACAATTTGTTTACTC
*2800 *2810 *2820 *2830 *2840 *2850 *2860 *2870

*3500 *3510 *3520 *3530 *3540 *3550 *3560 *3570

GTTCACATTTGCGCGTTTCTCATTTGCGGATTTACAATAGTTTTGCCAGTTCACACAATCTCCCTTTGATATTGTAAGCCA

TTACA T T C C A TG T AC A TT C CAC CA C TG TA A GCCA
ATTACATTTGCGCCAAACAATG----TAACACCGCCCTTACA----CACCCAGGACACCCGCGTACACATGCCA
*2880 *2890 *2900 *2910 *2920 *2930 *2940

ATTAATACACTTACAGTGACAATACT-AAAATACAGCTGTGTA--TGAAAGTGGACAATACACAAAACCATACACTACA

TAA AC T CA A AATA T AA ATA A CT A T A T ACAATA ACA A CATA AC CA
CGTAAGAC-ATTGGCCACGAGAATATTGAATATAATACTCGACACATTCAGTCTCTACAATAGACACATGCATATACCTCA
*2950 *2960 *2970 *2980 *2990 *3000 *3010 *3020

*3650 *3660 *3670 *3680 *3690 *3700 *3710 *3720
ACTAAAACA--AAACAAATCAGAATTTGAAAGTGGACTAGAATAACACTTTATACACAGACAGCGAAATTTATA-AC
ACA A C A CA TT AA GGAC GAA T C T ACACA CACC A T A C A
CTCCGACACAGTACGCCCAACATGTTTATAACCGGACATGAATTTGGCATCCACACACTCACCACACTTCGCACAC
*3030 *3040 *3050 *3060 *3070 *3080 *3090 *3100

*3730 *3740 *3750 *3760 *3770
AAATACACTGAAACACACAATA--AAA-TATTGTATACG-----TCATCCCAA-----
TAC C A A AA TA A TA T A C TCAT CAA
TCTTACGCAATTTGTAATAATTAGGATAAATAACGACACTCGTACAACTCATCAAACTGTCTACTGTCACTGCACACTG
*3110 *3120 *3130 *3140 *3150 *3160 *3170 *3180

-----AGATAAA-----
-----AGATAAA-----
TCACTGTCACTCGCAGGCAATTCGGTTCCTTCTCTGGATTTGAAGAAGCGTGAACCTGTGTCGGAATAAAGGGCAT
*3190 *3200 *3210 *3220 *3230 *3240 *3250 *3260

*3780 *3790
-----AAACATCGATT-----
AA ATCGA T
TATAAGATCGAATAAAGTGCCCTTACTTTGTATCTTATACTTTGATCTTTATGTGTATATACACCCCTCCCGAAAGAA
*3270 *3280 *3290 *3300 *3310 *3320 *3330 *3340

*3800 *3810 *3820 *3830 *3840
-----AATGAGCTAAAAGCGCTTTATGCAACTTGAATGAGATTT--TAATAC-----
AA TGAGCTAAAAGCGCTTTATGCAACTTGAATGAGATTT TAATAC
CTCCCGCCAGAAAGTGAGCTAAAAGTGCCTTTATGCAACTTTGAATGAGATTTGTTAATACATAGAATGCATGTAC
*3350 *3360 *3370 *3380 *3390 *3400 *3410 *3420

*3850 *3860 *3870 *3880
-----ATCT-----TAATCGGCTGCATGCGGT--TCATGTGCG-----TGACTG-----TTTTGGATGTG
AT T TAA T A C AT C T T AT TC TGACTG T T T GGATGTG
GATGTACGATCTGTGTGTATACAATAAATATCAATATCAATATAATCTTCTGAGTGACTGTACTTGTCCGGATGTG
*3430 *3440 *3450 *3460 *3470 *3480 *3490 *3500

*3890 *3900 *3910 *3920 *3930 *3940 *3950
TTTTGATTTTGTAGTTTTTGTATTTTGTTTTTTTTTTTTTTAATGAAAGGTGGTCTCGTTT-----T
TTTTG ATGTAAGGTGGTCTCGTT T
TTTTG-----ATGTAAGGTGGTCTCGTTCTAGGATGTAACAT
*3510 *3520 *3530 *3540

*3960 *3970 *3980 *3990 *4000
ATGTATTT--TATGC-----AAGTATGTATAGT-----GCCATGTATGTATGTAATAC
ATGTAT TATGC AAGTATGTATAGT GG ATGTATGTATGTAATAC
ATGTATGTGTATGCGCATGAAAGTATGTATAGTATGACACATCGTGTGAAGTACATATGCGGTATGTATGTATGTAATAC
*3550 *3560 *3570 *3580 *3590 *3600 *3610 *3620

*4010 *4020 *4030
TAACTACAGTTAACCGT-----TTTTCAAATTTTG
TAACTAT GTT C TTTCAAATTTTG
TAACTACCGTTCCGTTCAATATTTTTGTATGAATTCCTTCGTTTGGCTCTCGTTTGGTGGTTTGGTTTCAAATTTTG
*3630 *3640 *3650 *3660 *3670 *3680 *3690 *3700

*4040 *4050 *4060 *4070 *4080 *4090 *4100
T-----GTTTCGTTCAAGTGCATACATGCATGGAGTACATTAAGTCAATGCCAATGGTGAACAAAGCTCAAAGCT
T GTTTCGTT TGGTGCATACATGCATGGAGTACA TAGTCAATGCCAATG TCGAACAAGCTCAAAGCT
TTTTCTTGTTCGTTCTGGTGCATACATGCATGGAGTACATTAAGTCAATGCCAATGGTGAACAAAGCTCAAAGCT
*3710 *3720 *3730 *3740 *3750 *3760 *3770 *3780

*4110 *4120 *4130 *4140 *4150 *4160 *4170 *4180
TGTACAAACTGGGTTA--TATGTTGAATGATATATACATATATAATATCTATATATATATATATATATACATATATAT

T CAAAC G T TA GT GGAA A ATACA A T T TC A T T C T T
TCTCCAAAACACAGCTCTTAGTGGCGAA-----AGATACAGAG--TGTGTCGAG-TGT-----CGAGGTGCG
*3790 *3800 *3810 *3820 *3830 *3840

*4190 *4200 *4210 *4220 *4230 *4240
AGATCGGGCTTAAAGTACGCCCAATGCTTANGA-----AGAT-----GAAATTAAG-----GACACAATAAGTTTTAG
AG TTAGATCGGCCAATG T AGA AGAT GAR TAAG G CAC A AA T AG
AG-----TTAGTACGCCCAATGATAGAGATACTAGATACGAAACTGACACTGTACTGCACTGAAACTGAAG
*3850 *3860 *3870 *3880 *3890 *3900 *3910

*4250 *4260 *4270 *4280 *4290 *4300 *4310
CGATTTCAATGTT-----ACTCGTTTTGAAAGGGATTTGATTT-----CTGAAATGTTTTATGAAATTC
C ATTT A T T T ACCTG TTIC A G TT TTT CT A T G TTTTATGAA TC
CTATTTTACTATGTACTCCATAACTCGATTTCAATTATGTTATTTTTTAGCTTCGGGCTTATCGGCTTTATGAACTG
*3920 *3930 *3940 *3950 *3960 *3970 *3980 *3990

*4320 *4330 *4340 *4350 *4360 *4370 *4380
TGTGTATTCGGTTTTCTTG--TTTCTCGTTTTAATCTAG--TTAGTTTAAATGCTACACAAAATAATCTCCAGATAC
TGTTG ATTC T CTG T CT G TTA T T G TT TTTAATGCTACACAAAATAATCTCCAGATAC
TGTTG-ATTCG--TACTTGTCTCGTGT--TTAGTTTCTGATTTAATTTAATGCTACACAAAATAATCTCCAGATAC
*4000 *4010 *4020 *4030 *4040 *4050 *4060 *4070

*4390 *4400 *4410 *4420 *4430 *4440 *4450 *4460
ATTAATATACTACTTAGAGAACATCAATTAACCTTAAATGTTCTTGGCAGTATTTTTTGCATATTTATATTTTCATAT
ATTA ATACTACTTAGAGAACATCAATTAACCTT AATAGTCTTGGCAGTATTTTTTGCAT T AT TTTCAATAT
ATTAC-ATACTACTTAGAGAACATCAATTAACCTTGTAGTGTCTTGGCAGTATTTTTTGCATATTTACTAT-TTTCAATAT
*4080 *4090 *4100 *4110 *4120 *4130 *4140 *4150

*4470 *4480 *4490 *4500 *4510 *4520 *4530 *4540
CGGTTTTGCTTTAAAATAATGCTCTTTCTTTCCCGC--CGTATACATATATTTTTCT----TGCTTAGCTTCA
CGGTTT GCITTTAAAAT CTC T T TCCGC C T C T A T CT T CT T
CGGTTT--GCTTTAAAATAATGCTCTCGTCTCGCTCGCTACTCGCTCTGTTAGGAGTCCCTAAGACTTTCCCGCCG
*4160 *4170 *4180 *4190 *4200 *4210 *4220 *4230

*4550 *4560 *4570 *4580 *4590 *4600 *4610
AGCT-ATCC-----TTGATTTGATTAATGCTACATATTTGGCACAATAATAGCATTCTCTCTAGATAAATATACA
CT TTCC TT GATTTGATTA STACGATA TTTGGCACAATAATAGCAT TTC C TA ATAAATATA
TCCCTCTCAATGATTAGATTGGATTAACGTACGATA-TTTGGCACAATAATAGCATTCTCTCAATATAAATATACA
*4240 *4250 *4260 *4270 *4280 *4290 *4300

*4620 *4630 *4640 *4650 *4660 *4670 *4680
TATATA-----TATATATA-TGTATATATATATAGTGTATATTTATTTCAATTTAAAGTTAGGCATGTCTATGTC
TATATA TA ATATA TGT T T T TATATA T T T TAT TT T T TAAAGTT GCA TC TGC
TATATACTGTGATACATACATGCGT-TTTTGATATAAATCTTGGATTTTATTTCTTAAAGTTC--GCACCTGAGTGC
*4310 *4320 *4330 *4340 *4350 *4360 *4370 *4380

*4690 *4700 *4710 *4720 *4730 *4740 *4750 *4760
TGTATTTCAATAAATTTCTTTCATTCCCAACCCCTT-TTTCCACCGCACACCGGTGCATCATTTTTGAGTGTATG
TGTATTT TATAATTTCTTTCAT TCCC CC CT T TCC CC C CCGG C CA GAG G G
TGTATTTT-TATAATTTCTTCATATCCCGCCCGCTCATATCCCGCTCGT-----GAGGCGAGCG
*4390 *4400 *4410 *4420 *4430 *4440 *4450 *4460

*4770 *4780 *4790 *4800 *4810 *4820 *4830 *4840
T-CATTGGGATATACCTGAAGCCACCTGGCGGTGAGAGCGGCACCTTCCGCCCTTATTTTTTCTGCTTCTTATC
CA T GGA C CC A C C G CGGT A G CC G C G C T TAT TTC GCT C T C
ACCAGTGGAGCAGGCC--AGACTTTGGTGTGCTCATCGGGCCGAGAGCTCTTATTTGTCAGCTCCGCCAT--C
*4470 *4480 *4490 *4500 *4510 *4520 *4530

*4850 *4860 *4870 *4880 *4890 *4900 *4910 *4920
GTTTGCAGTGCACAAATTTTGTAGTTTAAAGTTTATATCGCTTTTTCGTTGTGTT-TTTTGTTGTTTCAAGCAAAATG
G ACATT A AA TTTGT TT AAGTTTAT TC CTTT CC G TG TTTGTTT TTTCAAG A G
GACA--ACATT-AGAA--TTTGTATTAAGGTTATCTCTCTTTCCGGGCTTGTGTTTGTCTTCAAGCTACCCAG
*4540 *4550 *4560 *4570 *4580 *4590 *4600 *4610

*4930 *4940 *4950 *4960 *4970 *4980 *4990 *5000
CATTAATAATTAATTTAATAATTTTAAATAATAATCTACTACTAGTTAATAAAGTTTGAAGTGTATGTTGTTGAT
CATTAATAATTAATTTTAAAT AT TATTAA ATA CTACTAC T A G T G GGTG GT TG G
CATTAATAATTAATTTAATAATATAGATTAA--ATACTACTACAGTGAAGTGGTGTGGGGTGGAGTGGGGTG
*4620 *4630 *4640 *4650 *4660 *4670 *4680 *4690

*5010 *5020 *5030 *5040 *5050 *5060 *5070 *5080
ATCGGAGAGTGTATCAATTTGT--TTCCGATTTTTGATTTCCGATGCTTCAATATGGTCTGCTGTTGCTGCTAT--
T GGTG GTG TA AAT GT T T GC T TG T G TGTGTTTC T G C TGC TG AT

TGCTTTTAGTCTGAACTTTGGTCAAATTCATAGAAAATCGATACTGATCTTGAACAGTATTTTCTGTTTTCTGTTTTCT
*6620 *6630 *6640 *6650 *6660 *6670 *6680 *6690

*6360 *6370 *6380 *6390 *6400
-----GCCAATTAATATATACTAATAATGTAATGTTAATGTTTAATGTTGG
GCCAATTAAT G GA G T G G G
AGTTGCCGAACAAGTTTTTCGATTATTTTGACGCCAATTAAT-----GCGA--GCTA-----GCCGA
*6700 *6710 *6720 *6730 *6740 *6750

*6410 *6420 *6430 *6440 *6450 *6460 *6470 *6480
GTTTGGAAGAAATGTTTTATATACATACATATAGATAGTATTGTCAGTGTGATTGAAGCGGTTACTAGTGTTTACTCCTTAC
G T GA T G T C TAC TAT AT G G CA CTTAC
GTTTGACC--TCCGGCTCTGCTTACTTATTATTTAGG--GCCA-----CTTAC
*6760 *6770 *6780 *6790

*6490 *6500 *6510 *6520 *6530 *6540 *6550 *6560
CTTTGTGACGACGACCACAACTAAATCTTTCAGTTTCGGTTGCTTTGGGGCTTTGTTAACTGTGCACTTTGGCTTTATCCG
CT TGACCAGGACCACA C A TC TC T ACT C CT CG
CT--TGACCAGGACCACAGCGGAGTCTGCTCC-----TCCACTCCTCCCTCG-----CG
*6800 *6810 *6820 *6830 *6840

*6570 *6580 *6590 *6600 *6610 *6620 *6630 *6640
AGGCATATGGGGTCCTCTTGGGGGCGGATTCGGAAGGGCGGTGACACAGCAGCAGATGCACTAGCAGCAACCGTAAATAACT
G C TGGGTC TCT G A GG G GCCT CGT A ACT
CGCC--TGGGTC--TCTCTGTTCTGTTAACTGGGGGCGGCT-----CGTGAAGACT
*6850 *6860 *6870 *6880 *6890

*6650 *6660 *6670 *6680 *6690 *6700 *6710 *6720
GCCGCACTGCTGTCAATGAACAATGATTTCTGCGTTTAAAGTCACTTGCCTCGCGGATTTTGTATCCGAATATATG
G C CG CTGCTGTCAATGA AT ATT CTGCG AA TCA T G CTC C TCG TATA G
GGCTCGGCTGCTGTCAATGAGTATAATGCTCCG--AATTCAGTGACTC--CTC-----TCCGGCTATA--G
*6900 *6910 *6920 *6930 *6940 *6950

*6730 *6740 *6750 *6760 *6770 *6780 *6790 *6800
ATTTTAATTCGTTTCCAAATTCGATTTCCAATCCCGATTCGATCCCGGCTATATCTGAATCCA----GCCAAGAATA
A TC TCTGATCCC GATTC GATCCCCGGTATATC GA TTCCA GCCAAGAA
AA-----TCTGGTCTGATCCC--GATTCGATCCCGGCTATATCAGATTTCCAGGCTGCCAAGAA--
*6960 *6970 *6980 *6990 *7000 *7010

*6810 *6820 *6830 *6840 *6850 *6860 *6870 *6880
ACTGCAAGTGGAAAACAAAGGGCGAAATTAATAATGCAATGTGTTTGTGTTTGTGTTTGTGTTTATATCTGTATGCAAAA
ACTGCAAGTGG AAACAAAGGGCGAA TTA TAATGCAATG G A TCTGTTATGCAAAA
ACTGCAAGTGG-AAACAAAGGGCGAA-TTATAATGCAATGG-----AGTCTGTATGCAAAA
*7020 *7030 *7040 *7050 *7060 *7070

*6890 *6900 *6910 *6920 *6930 *6940 *6950 *6960
AAGCTGAATTCGACCAAGAAAACGAGAGCAGAGCAGAGCAGGCGACGAAGAGCAGAGAAAACAACAAACAGAACACA
GAATTCGAGCCAAAGAAA CAG GC GC G CG AGAG
CGAGGAATTCGACCAAGAAAACAGTGCC--GCT-----GGGGCGAGAG-----
*7080 *7090 *7100 *7110

*6970 *6980 *6990 *7000 *7010 *7020 *7030 *7040
ACAAAGTAAAGAGATGGGCCATAAATATAGGCTATATGGCTTTGGCTATGGCTAGCAGATATGGCAGGGGCTTTCCATT
G GT G G G GG A AA GCT AGATATGGC GGC TTCCATT
---GGTG--GGTGGGGTGGAAAA--GCT-----AGATATGGCC--GGGCAATTCATT
*7120 *7130 *7140 *7150 *7160

*7050 *7060 *7070 *7080 *7090 *7100 *7110
ATTGATTTCCATTTGCAATCTCTTGGCTCCGGCCGCTGTAATTCAGTGGCAACC--CACACACACA
ATTGATTTCCATTTGCAATCT TC G CG TGGTAAATTCAGT GGCAACC CACACA ACA
ATTGATTTCCATTTGCAATCTT-----TCTGCGTGGTAAATCCAGTGGCAACCAGCACAGACA
*7170 *7180 *7190 *7200 *7210 *7220

5n)

CG31909:melanogaster(above), yakuba (below)
Martinez/Needleman-Wunsch DNA Alignment
Minimum Match: 9; Gap Penalty: 1.10; Gap Length Penalty: 0.33

*110 *120 *130 *140 *150 *160 *170 *180
GTCCATCATCTCGAGGAGACAGCTTCGATGCCGACCTGAAAAGAAAGTTTAATTAACACAGGATTCCTATAAAATATCT
GTCCATCATCTCGAGGAGACAGCTTCGATGCCGACCTG AA GAAAGTT A TT AG TA CTATAAAATATCT
GTCCATCATCTCGAGGAGACAGCTTCGATGCCGACCTGCAAGGAAAGTTAAGT-----AGTTA--CTATAAAATATCT
*1110 *1120 *1130 *1140 *1150 *1160 *1170 *1180

*990 *1000 *1100 *1120 *1130 *1140 *1150
CCTTCTGCT--CCTAAAATATATCT---CCTTACTCTGAGTCAATGTCCGAAATATCTCGCGACCTCGTCAACATCA
CCTTCT CTT A TTA T C TACTCTGAGTCAATGTCCG A TACTCCGTCACCTCGTC CCACTC
CCTTCTTAACTCTTCTTAAAGTAGACAATCTCTGAGTCAATGTCTAGTATCTCGCGACCTCGTCCCATCTCCG
*1810 *1900 *2000 *2100 *2200 *2300 *2400 *2500

*1160 *1170 *1180 *1190 *1200 *1210 *1220 *1230
CCGCGCAAGTCAGGAAGCTGCGTGTACACCGCTTGCCTGCTTCAGATTGTCATTGACAGCCGCCCACTGGAAGTCTCTG
CGCGCAAGTCAGGAAGCTGCGTGTACACCGCTTGCCTGCTTCAGATTGTCATTGACAGCCGCCCACTGGAAGTCTCTG
CGCGCAAGTCAGGAAGCTGCGTGTACACCGCTTGCCTGCTTCAGATTGTCATTGACAGCCGCCCACTGGAAGTCTCTG
*2600 *2700 *2800 *2900 *3000 *3100 *3200 *3300

*1240 *1250 *1260 *1270 *1280 *1290 *1300 *1310
CGCTCCCTGTTTGTGCTTTTTTGGCCCGCAGCTGCACCTTGGTCATAGCTCCCTCGCCACAGGCCCCTGGTATCGATGGGG
CGCTCCCTGTTTGTGCT TT GG CGCAGCTGCACCTTGGTCACT CG CCTCGCCACAGGCCCCTGGTATCGATGGGG
CGCTCCCTGTTTGTGCTTTTGGTCCGCACTGCACCTTGGTCACTCGCCCTCGCCACAGGCCCCTGGTATCGATGGGG
*1340 *1350 *1360 *1370 *1380 *1390 *1400 *1410

*1320 *1330 *1340 *1350 *1360 *1370 *1380 *1390
TCATGGGGCCGCTGTGAGCGCGTGGACGAAGCACTGCTCCTTTGAGAGCTTCTGAAGATGTTCCCGCTTTCCGGCGGCTC
TCATGGGG GC GTGGCCCGTGGAGCAAGGC GTCTCCTTGAAGATGTTCCCGCTTTCCGGCGGCTC
TCATGGGGCCGCTGTGAGCGCGTGGACGAAGCCCTCTCCTTTGAGAGCTTCTGAAGATGTTCCCGCTTTCCGGCGGCTC
*1420 *1430 *1440 *1450 *1460 *1470 *1480 *1490

*1400 *1410 *1420 *1430 *1440 *1450 *1460 *1470
TCGATCGACGAGTTCAGCGGCTGTAGCGGAACTGTTCTTCGCAATGGTGTGGCCAGAGCCGGGCTCGTAAAGGT
TCGATCGACGAGTTCAGCGGCTGTAGCGGAACTG TCTTCGCAATGGTGTGGCCAG CGCGCGGCTCGTAAAGGT
TCGATCGACGAGTTCAGCGGCTGTAGCGGAACTGCTTCGCAATGGTGTGGCCAGAGCCGGGCTCGTAAAGGT
*1500 *1510 *1520 *1530 *1540 *1550 *1560 *1570

*1480 *1490 *1500 *1510 *1520 *1530 *1540 *1550
TCCCGCAATCCCGTCTCCTTGGCACTGGTGGTTCGACCGCGTGGCAGGCAATCTGCAAGGCTCCACCACT
TCCCGCA TCCCGTCTTTCG CACTGGTGTCTG CGCGCGTGGC GGCATGATCTGCAAGGCTCCAC ACTT
TCCCGCACTCCCGTCTCCTTGGCGCACTGGTGGTTCGTCGCGCGTGGCAGGCAATCTGCAAGGCTCCACCACT
*1580 *1590 *1600 *1610 *1620 *1630 *1640 *1650

*1560 *1570 *1580 *1590 *1600 *1610 *1620 *1630
GGCCCTCGGAAGTGAACACCGCCATCACCGTGTGCTCCGAAATGAAGTGTTCGCTGAGACATAAAGTATTCGAAATTT
GGCCCTCGGAAGTGAACACCGCCATCACCGTGTGCTCCGAAAT GAAGTGTTCGCT AG CAT AAGTATTCGAAAT
GGCCCTCGGAAGTGAACACCGCCATCACCGTGTGCTCCGAAATAAGTGTTCGCTGAGACATCAAGTATTCGAAATA
*1660 *1670 *1680 *1690 *1700 *1710 *1720 *1730

*1640 *1650 *1660 *1670 *1680 *1690 *1700 *1710
TTCATAGAAAAGTAAAGTATCTTAAAAGTCTTTTGTAGAGCTATACCACAAATAAATACGTTTTTATTATATAAAA
TTCATAGAAA G
TTCATAGAAAAGC
*1740

*1720 *1730 *1740 *1750 *1760 *1770 *1780 *1790
AGAGAGAATCTATAGTCCGAACTCCCGACTATTAGAAAGCCCTTACTCAGTGTGGGAACGGAAATCTTTCTAATC

*1800 *1810 *1820 *1830 *1840 *1850 *1860 *1870
TAGTAGTCACCTTTTACTCTACAGTAAGGGAAAATTCGAACGGAGGAGGAGTGTGAAGTGTCAAGTCCAAATAGAC

50)

CG31909:melanogaster(above), erecta (below)
Martinez/Needleman-Wunsch DNA Alignment
Minimum Match: 9; Gap Penalty: 1.10; Gap Length Penalty: 0.33

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      110   120   130   140   150   160   170   180
GTCCATCATCTCGGAGGACAGCTTCGATGCCGACCTGAAAAGAAATTTAATTAGCACAGGTATCTTATAAAATATCT
GTCCATCATCTCGGAGGACAGCTTCGATGCCGACCTGAAAAGAAATTTAATTAGCACAGGTATCTTATAAAATATCT
GTCCATCATCTCGGAGGACAGCTTCGATGCCGACCTGAAAAGAAATTTAATTAGCACAGGTATCTTATAAAATATCT
      90    100    110    120    130    140    150    160
CCTTCTGCTCCTTAAAATATATCTTCTTACCTCTGAGTCATGTCGCAATATCTCGTGACCTCGTCACCATACCACCCG
CCTTCT C CT   A T C TTACCTC GAGTCATGTCGCAATATCTCGTGACCTCGTC CC TC CC CCGC
CCTTCTACATCTCCTCCCACTTAGC--TTACCTCCGAGTCATGTCGCAATATCTCGTGACCTCGTCCCGCTCCGCGCC
      90    980    990    1000    1100    1200    1300    1400
GCAAGTCCAGGAAGCTGCGTGTACACCGCTTGCCTGCTTCAGATTGTCATTCGACGCCGCCACTGGAAGTCTCTGGCC
GCA GTCACGAAAGCTGCG GTCACACCGCTTGCCTCTTCAGATTGTC GTCACGCCGCCACTGGAAGTCTCTGGCC
GCAGGTCACGAAAGCTGCGGCTACCCGCTTGCCTGCTTCAGATTGTC GTCACGCCGCCACTGGAAGTCTCTGGCC
      150    160    170    180    190    200    210    220
TCCTGTGTGGCTTTTTGGCCGCGAGCTGCACCTTGGTCATACGTCCTCGGCACAGGCCCTGGCTATGAGTGGTTCAT
TCCTGTGTGGCT TT GGCCGCGAGCTGCACCTTGGTCAT CG CCCTGGCACAGGCCCTGGCTATGAGTGGTTCAT
TCCTGTGTGGCTTCTTGGCCGCGAGCTGCACCTTGGTCATCGGCCCTCGGCACAGGCCCTGGCTATGAGTGGTTCAT
      230    240    250    260    270    280    290    300
GGCGCCGCGTGTAGCGCGTGGACGAAGCAGCTTCTCTGTAGAGCTTCTTGAAGATGTTCCGCTTCCGCGCGTCTCGA
GGCGCCGCG GTGAGCGCGTGGACGAAGC GTCCTCTGTAGAGCTTCTTGAAGATGTTCCGCTTCCGCGCGTCTCGA
GGCGCCGCGCGTGTAGCGCGTGGACGAAGCAGCTTCTCTGTAGAGCTTCTTGAAGATGTTCCGCTTCCGCGCGTCTCGA
      310    320    330    340    350    360    370    380
TCGACAGTTCACAGCGTCTGTAGCGGAACTGTCTCTCGCAGTGGTGGCCAGACGGCGGCCCTCGCTAAGGTTCCCT
TCGACAGTTCACAGCGTCTGTAGCGGAACTGTCTCTCGCAGTGG TGGTGGCCAG CGGCGGC TCCT AG GTTCCT
TCGACAGTTCACAGCGTCTGTAGCGGAACTGTCTCTCGCAGTGGTGGCCAGGCGCGGCTCTGTAGGTTCCCT
      390    400    410    420    430    440    450    460
GGCAATCCCGTCTCTTCGCGACACTGGTGGTTCGACGCGCGTGGCAGGCATGTATCTGCAGGTTCCACCACTTGGCC
GGCA TCCCGTCTCTTCG CACTGGTGGTTCG CGCCGCGTGG GGCATGTATCTGCAGGTTCCACCACTTGGCC
GGCAGTCCCGTCTCTTCGCGCACTGGTGGTTCGTGCGCGCTGGCCGCATGTATCTGCAGGTTCCACCACTTGGCC
      470    480    490    500    510    520    530    540
CTGCGAAGTGAACACCGCACTACCCTGTGCTCCGAAATGAAGTTCCTGGCAGACATAAAGTATTGGAATTTTTCA
CTGCGA GTAACACCGCACTAC GTGTGCTCCGAAATGAAGT TCGCTGG AGACATA AGT TTG CA A TTC
CTGCGAGTGAACACCGCACTACTGTGTGCTCCGAAATGAAGTTCCTGGCAGACATAGAGTTTTGCGAAGGATTC-
      550    560    570    580    590    600    610    620
TAGAAGAAAGTAAAGGATTTCTTAAAGTCCCTTTTTAGAGCTATACCACAAATAAATACGTTTTTATATAAAAGAAAG
-----
      730   740   750   760   770   780   790   800
AGAATTCATAGTCGAACTCCCGACTATTAGAAAGCCCTTACTCAGCTAGTGGGAACGCAAAATCTTCTTAATCTAGT
-----
      810   820   830   840   850   860   870   880
ATGCACTTTTACTCTACGACTAAGGAAATTTTCGACGGAGGACGATGTTGTTAACTGTCAAGTCAATAGACCCCTA
AT   TA GG AAAAT   CA TT TGTT T T TC T AG C CTA
AT-----TATGAAAATA-----CAATTTGTTTT--TCTGCTTC--TGG--CTA
      960    970    980    990
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      1890   1900   1910   1920   1930   1940   1950   1960
CAGTCAGAAAACCTTATATAGTCGCGGTGAGTGAGGTGAGTGAGAAAAGTGGGTTTCGATCTTAACATAAAAAAATATTTTTC
CA T      TTA      AA GT GG T      AAT TTT C
CACT-----TTA-----AATGTTGGCT-----AATTTTGGC
      9700      9710      9720

      1970   1980   1990   1000   1010   1020   1030   1040
TGATTTTAAACAAATAGATTTCTTGGTACGTATGAACACAGAATGAACGACCATTTGTTATATCTAAGCTCATATAATT
TG TTA C AT A TCT
TGA--TTAGGCCCATCTAATCTC-----
      9730   9740

      1050   1060   1070   1080   1090   1100   1110   1120
GCCAGACACAAGGTGCTGTCCACCATCACCACAAAAAATGGAACCTCGTTTTCCAATACTAACAATCGGAACCTTC
-----

      1130   1140   1150   1160   1170   1180   1190   1200
AAGAACCACTACGAGTAGAGAGGCTCTGCAAGATAAATATTTAAAGAAATTTCTTCAATGGCGGATGAGCTAAATCAC
-----

      1210   1220   1230   1240   1250   1260   1270   1280
TTAATGTAGGCACTACTCCGACCATATGAGACTTATGAATATTTGGACACTGTCTGACACTGAAAGCGGCTGTTCTCT
-----

      1290   1300   1310   1320   1330   1340   1350   1360
CGAAGAAGAGAAAAGTTAACTAACTTTTCTATAAATTGAAGGCGGATCTACAGAAATATATAGAGAAATCGTAGAGA
-----

      1370   1380   1390   1400   1410   1420   1430   1440
ACCCAAAATATTTAAACGAAATCAGGATTCAACTATTTAAGGACAAATATAGATTACTGGATGAAGTAGACGCTTTT
-----

      1450   1460   1470   1480   1490   1500   1510   1520
GAAGGTTCGATGAATGCTTTGACGGACAGGTGGGATTTGAAAAATGTAAAAAATTCGGGTGTACTTTATTTTTTAT
-----

      1530   1540   1550   1560   1570   1580   1590   1600
GTTTAAAAAATAAATAAAGAAACAGGTAACCGGTTATTTCTTTACTCTACAGTATACAGGTATATTTGGATTCCGATTTT
-----

      1610   1620   1630   1640   1650   1660   1670
TATTAAGCGCACCTATCTTGGCTTGGAGA-----TGATTTTACACAGATTTTCAGCGCCGAGTGGCCACTCT
GCTTCGAGA TGA TTTTACACA A TTC GCGCCCA GGCACACT
-----GCTTCGAGAACTCTACATGAGTTTACACA--AATCTCGCCCAAGCCCACT
      9750   9760   9770   9780   9790   9800

      1680   1690   1700   1710   1720
AGCAGAACTTGATGAAGCTTTGTGTGGAGC--AATCGGTAAAAATACCGTTTCAAAAGAAATTTAAATTTTGTGGCCCT
AGC GA CT G TGAAGC GT CGAG AATCGGTAAAAATACCGTTTCA GAGAATT AAA TTG GCGCC
ACGGGATCTCGGTGGAAGC----GTCCGAGTTAATCGGTAAAAATACCGTTTCAACCGGAAATTCAAACCTTGGCCGCC
      9810   9820   9830   9840   9850   9860   9870

      1750   1760   1770   1780   1790   1800
ACTT---AGTTAAACAATA---TGCATTGACACTTAATAAATAATAATAAATAAAT---AAATTTAAATTT---
CTT A TAAA A A TGT T T AAC C AAT A TT A T AT TT A T TT
TCTTTACATTTAAATTTAGAACAGTGTCTGTAACCTCGGAATGCCGATTTGAAATTTTCAATGTTGGACTCTCGAATTTCT
      9880   9890   9900   9910   9920   9930   9940   9950
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AAATAGACCCACAGTCAGAAAACCTTATATAGTCGGTGAGTGAAGTGAGAAAGTGAAGTTCGATCTTAAACATAAA
TAAA
-----TAAA

¶950 ¶960 ¶970
AAATATT-----TTTCTGATTTAAAC-----AAAATA-----A
AAATAT TTTCTGATTT AA AA ATA
AAATATATATAGAAAATGGATAATATGTTTTAATTTATGATTTCTGATTTCCAAATTTGAAGATAGAAAAGCTTGA
¶9610 ¶9620 ¶9630 ¶9640 ¶9650 ¶9660 ¶9670 ¶9680

¶980 ¶990 ¶1000 ¶1010 ¶1020 ¶1030
GATTC-----TGGTACGTATG-----AACACAGAATGAA-CTGACCAT-----TGTATAT--CTAAGCTCAT
GATTC T GT TATG A C GAAT AA CTGAC AT T TT TAT C AA C T
GATTCATTAATAGTTTTTATGTTTTTTTATCTACGAATAAATCTGACAATTTGAAAATATTTTATGGCGAAAACCTT
¶9690 ¶9700 ¶9710 ¶9720 ¶9730 ¶9740 ¶9750 ¶9760

¶1040 ¶1050 ¶1060 ¶1070 ¶1080 ¶1090 ¶1100
-ATAATTGCC-AGACAACAAGT-----GCTGTACCATCACCAACAAA-AAAAATGAACCCCTGTTTCCA-----AT
A AA TG A ACA AA G G T T AC A CA A AAA AA AA ACCCT T CA AT
CAGAAATGAGAAAACATAAAAGCCCATAGTTTTTACAACCAATGATAAACAACAACACCCCTGATAGCAACCTTTAT
¶9770 ¶9780 ¶9790 ¶9800 ¶9810 ¶9820 ¶9830 ¶9840

¶1110 ¶1120 ¶1130 ¶1140 ¶1150 ¶1160
ACTAACAAATCGGAATTCAGAACCACTACGA--GTAGAGAGACTCTGCAAGAT--AAATATT-----
A TA AT G AAC CA A C A TA A GTA CCT CAA T AA T T
ATTACTTTATTCCACACCATATCAGAAATCAGAGTATGCTTTCTTATCAATTTCCAACCTGTGTGGCTTCGAGGAA
¶9850 ¶9860 ¶9870 ¶9880 ¶9890 ¶9900 ¶9910 ¶9920

¶1170 ¶1180 ¶1190 ¶1200 ¶1210 ¶1220 ¶1230
-----AAAAAATTTCTTCAATGGCCGATGAGCTAAATCACTTAATGATGGCACTACCCAGCATAATGAGACTTA
AAAAAATTT CCA
TCAGAAAAGAATTT-----CCA-----
¶9930 ¶9940

¶1240 ¶1250 ¶1260 ¶1270 ¶1280 ¶1290 ¶1300 ¶1310
TGAATTTGGCACTGTGACACTGAAAGCGGTCTTCTCGAAGAAGAGAAAAGTTAACTAACTTTTTCTATAAAT

¶1320 ¶1330 ¶1340 ¶1350 ¶1360 ¶1370 ¶1380 ¶1390
TGAAGGCGATCTACAGAAATATATAGAGAAATCGTAGAGAACCCAAAATATTTAAACGAAATCAGGATTCACAACTT

¶1400 ¶1410 ¶1420 ¶1430 ¶1440 ¶1450 ¶1460 ¶1470
ATAAGGCAATATAGATTTACTGGATGAAGTAGACCTTTGAAGGTTGATGAATGCTTTGACGGACAGTGGGAT

¶1480 ¶1490 ¶1500 ¶1510 ¶1520 ¶1530 ¶1540 ¶1550
TGTAAAATGTAAAAAATTCGGGTGTACTTTATTTTTATGGTTAAAAAATAAATAAGAAACAGGTACCCGTTATTC

¶1560 ¶1570 ¶1580 ¶1590 ¶1600 ¶1610 ¶1620 ¶1630
TTTACTCTACAAGTATAACAGGTATATGGATTTCGATTTCTATTAAGCGACACCTATCTTTGGCTGACAGATGATT

¶1640 ¶1650 ¶1660 ¶1670 ¶1680 ¶1690 ¶1700 ¶1710
TTACACAGATTTACGCCCACTGCGCCATCTAGCAACCTGTATGAAGCTTTGTGTGGCAACATCGTAAAAATACC

¶1720 ¶1730 ¶1740 ¶1750 ¶1760 ¶1770 ¶1780 ¶1790

GTTTCAAAGAGAATTTAAATTTTGTGGCGCTACTTTAGTTAAACCAATATGTCAATTTGAACACTTAAATAATTAATTAATA

¶1800 ¶1810 ¶1820 ¶1830 ¶1840 ¶1850 ¶1860 ¶1870
TAATAATTAATTAATTTAAATTTAAATTTAATTTAATTTAGCACACCCCAACCTTAGAGATGCAACATCGAAATTTCTGAACTAC

¶1880 ¶1890 ¶1900 ¶1910 ¶1920 ¶1930 ¶1940 ¶1950
AAAGTTTTTACTGCTAATAATAAACCGGCACATGAGAACTTTTATTGATTTATCAAAAGTTACAACACACATGCTAGT

¶1960 ¶1970 ¶1980 ¶1990 ¶2000 ¶2010 ¶2020 ¶2030
ATGGCCTTCTCTTATCAGTTTTCTAGAAAATAGCAGAAGGAATTCCTTGAATTTGGTTTTCT--CCATGCCATATCTGTTTT
TGAATTTGGTT C C ATG TA GTT C
-----TGAATTTGGTTCCCTCTATGCTTAAAGTTAC
¶950 ¶960 ¶970

¶2040 ¶2050 ¶2060 ¶2070 ¶2080 ¶2090 ¶2100
CAGTTATTTCGAAG--CTTATTGTGAGAAATGCAAGTATCTTTGAATTTATCAAAAAGGAAAGCCGCGC-----
CAGTATT ARG CTT TGC G C ATT T AA AACCCCGC
CAGTTATTGAAGCTTT-----TGCC-GCCCC-----ATTTGGTAAG-----AACGCCGCGCGCCGACGATG
¶980 ¶990 ¶1000 ¶1010 ¶1020 ¶1030

¶2110 ¶2120 ¶2130 ¶2140 ¶2150 ¶2160
CTG-----CACCTACCCGCTTCTGGCCAGCGTC-----GGTTATCATTTTGGGACCCACCTCCGCGCGGGGACT
CTG CACT A CC TTCTG CCAGC TC GGTATCATTTTGGGACCCACT CC C
CTGCAGAGTTCACCTCAGCCATTTCTGCTCCAGCTTGGTGGGTTATCATTTTGGGACCCACTCTCCCTCT-----
¶1040 ¶1050 ¶1060 ¶1070 ¶1080 ¶1090 ¶1100 ¶1110

¶2170 ¶2180 ¶2190 ¶2200 ¶2210 ¶2220 ¶2230 ¶2240
GTTGAGATGCTGATTTGCAGGAAATCTTAAATTTCTATAAACTTAAGTGCATGTAATTTGGCGTATGATTAACGAG
AGTATCTGATTTGCAGGAAATCTTAAATTTCTATAAAA TTAAGTGCATGTAATTTGGCGTATGATTAACGAG
-----AGTATCTGATTTGCAGGAAATCTTAAATTTCTATAAAATTTAAGTGCATGTAATTTGGCGTATGATTAACGAG
¶1120 ¶1130 ¶1140 ¶1150 ¶1160 ¶1170 ¶1180

¶2250 ¶2260 ¶2270 ¶2280 ¶2290 ¶2300
CTCAGCATATC--TGCGGCTATCGGGCTATCT-----GGCTATCCGACTATTTCCGCTCCCGCT
CTCAGCAAT T G TATC GGC AACT G CTATC GATATTTCCGCTCCGT T
CTCAGCATATATATGTATATCTGGCCATCTGAATCTGAATCTGAATCCCGCACTATCTGACTATTTCCGCTCCCGTTT
¶1190 ¶1200 ¶1210 ¶1220 ¶1230 ¶1240 ¶1250 ¶1260

¶2310 ¶2320 ¶2330 ¶2340 ¶2350 ¶2360
GGCCCTCGAGGACCGATTTCCCCACATTT-----CCCTTTT-----TTTCTCGATTCATTTGC
CGC TCGAGCA GATTTT CC CATT C CC TC TTCTCCG TTAT TGC
TCGCTTCGAGCAAGATTTTT--CTCATTTAAAAATTTTTTTTAAATGGCGGCCCTCTAAAATTTCTCCGGTTCTACTCG
¶1270 ¶1280 ¶1290 ¶1300 ¶1310 ¶1320 ¶1330 ¶1340

¶2370 ¶2380 ¶2390 ¶2400
CC-----CAACAGAC-----CCCCCCCATAATTTGATCAAACTTCGCGCACT-----CA
CA A C CCCC CC AAT ATC AACTTTGCCACT CA
TTTTCTGCTTTTAAATCAGAATTCATGAATTTCTGGTTTTCCCTCCGAAATCTATCTCAACTTCGCGCACTGAGCAACA
¶1350 ¶1360 ¶1370 ¶1380 ¶1390 ¶1400 ¶1410 ¶1420

¶2410 ¶2420 ¶2430 ¶2440
AAGTCTGTGATAATATTC--ATTGAGATTTGTCT-----TCA-----
AAGTCTGT ATAAATTC ATG GATTTGTCT TCA
AAGTCTGTATAAATTTCCATTCG--GATTTGTCTAGATTTGCTCCCGAAAGATCGGCATCGCTAGCTAGCTGCCA
¶1430 ¶1440 ¶1450 ¶1460 ¶1470 ¶1480 ¶1490 ¶1500

¶2450 ¶2460 ¶2470 ¶2480 ¶2490
-----TTTTCG-----TTT-----CTCATTTTTATGGAAATTAATTTGCCACATTTTC
C T CCG T TG CTC CTTTTATG GAAATTAATTTGCCAATTTTC
AGGTGCTGTCCCGCTGCTGTGCCGCTGCTGGAGCTGCTCTGCTTTTTTATGTGAATTAATTTGCCAATTTTC
¶1510 ¶1520 ¶1530 ¶1540 ¶1550 ¶1560 ¶1570 ¶1580

¶2500 ¶2510 ¶2520 ¶2530
GCAATTAATTAATTAATTTGAATTTTGAATTTTCAAGTAGTT

GCAATTAATTAATTAATTGAATGTTTGAAATGTTTACAAGT GTT
GCAATTAATTAATTAATTGAATGTTTGAAATGTTTACAAGTTGTT