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| logo RD-Biotech | **Sequencing of the plasmid:**  **838.6** |
| **Date** | **2020/07/24** |
| **Customer** | **Institut de la Vision** |
| **Author** | **Justine Grisez** |
| **Quotation** | **Amendement 200617 Midix5.jg.ml** |
| **Batch** | **200911VB\_838.6** |
| **Report release** | **Justine Grisez** |

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| --- |
| **Insert 838.6 (theoretical sequence)** |

**atgccggggttttacgagattgtgattaaggtccccagcgaccttgacgagcatctgcccggcatttctgacagctttgtgaactgggtggccgagaaggaatgggagttgccgccagattctgacatggatctgaatctgattgagcaggcacccctgaccgtggccgagaagctgcagcgcgactttctgacggaatggcgccgtgtgagtaaggccccggaggctcttttctttgtgcaatttgagaagggagagagctacttccacatgcacgtgctcgtggaaaccaccggggtgaaatccatggttttgggacgtttcctgagtcagattcgcgaaaaactgattcagagaatttaccgcgggatcgagccgactttgccaaactggttcgcggtcacaaagaccagaaatggcgccggaggcgggaacaaggtggtggatgagtgctacatccccaattacttgctccccaaaacccagcctgagctccagtgggcgtggactaatatggaacagtatttaagcgcctgtttgaatctcacggagcgtaaacggttggtggcgcagcatctgacgcacgtgtcgcagacgcaggagcagaacaaagagaatcagaatcccaattctgatgcgccggtgatcagatcaaaaacttcagccaggtacatggagctggtcgggtggctcgtggacaaggggattacctcggagaagcagtggatccaggaggaccaggcctcatacatctccttcaatgcggcctccaactcgcggtcccaaatcaaggctgccttggacaatgcgggaaagattatgagcctgactaaaaccgcccccgactacctggtgggccagcagcccgtggaggacatttccagcaatcggatttataaaattttggaactaaacgggtacgatccccaatatgcggcttccgtctttctgggatgggccacgaaaaagttcggcaagaggaacaccatctggctgtttgggcctgcaactaccgggaagaccaacatcgcggaggccatagcccacactgtgcccttctacgggtgcgtaaactggaccaatgagaactttcccttcaacgactgtgtcgacaagatggtgatctggtgggaggaggggaagatgaccgccaaggtcgtggagtcggccaaagccattctcggaggaagcaaggtgcgcgtggaccagaaatgcaagtcctcggcccagatagacccgactcccgtgatcgtcacctccaacaccaacatgtgcgccgtgattgacgggaactcaacgaccttcgaacaccagcagccgttgcaagaccggatgttcaaatttgaactcacccgccgtctggatcatgactttgggaaggtcaccaagcaggaagtcaaagactttttccggtgggcaaaggatcacgtggttgaggtggagcatgaattctacgtcaaaaagggtggagccaagaaaagacccgcccccagtgacgcagatataagtgagcccaaacgggtgcgcgagtcagttgcgcagccatcgacgtcagacgcggaagcttcgatcaactacgcagacaggtaccaaaacaaatgttctcgtcacgtgggcatgaatctgatgctgtttccctgcagacaatgcgagagaatgaatcagaattcaaatatctgcttcactcacggacagaaagactgtttagagtgctttcccgtgtcagaatctcaacccgtttctgtcgtcaaaaaggcgtatcagaaactgtgctacattcatcatatcatgggaaaggtgccagacgcttgcactgcctgcgatctggtcaatgtggatttggatgactgcatctttgaacaataaatgatttaaatcaggtatggctgccgatggttatcttccagattggctcgaggacactctctctgaaggaataagacagtggtggaagctcaaacctggcccaccaccaccaaagcccgcagagcggcataaggacgacagcaggggtcttgtgcttcctgggtacaagtacctcggacccttcaacggactcgacaagggagagccggtcaacgaggcagacgccgcggccctcgagcacgacaaagcctacgaccggcagctcgacagcggagacaacccgtacctcaagtacaaccacgccgacgcggagtttcaggagcgccttaaagaagatacgtcttttgggggcaacctcggacgagcagtcttccaggcgaaaaagagggttcttgaacctctgggcctggttgaggaacctgttaagacggctccgggaaaaaagaggccggtagagcactctcctgtggagccagactcctcctcgggaaccggaaaggcgggccagcagcctgcaagaaaaagattgaattttggtcagactggagacgcagactcagtacctgacccccagcctctcggacagccaccagcagccccctctggtctgggaactaatacgatggctacaggcagtggcgcaccaatggcagacaataacgagggcgccgacggagtgggtaattcctcgggaaattggcattgcgattccacatggatgggcgacagagtcatcaccaccagcacccgaacctgggccctgcccacctacaacaaccacctctacaaacaaatttccagccaatcaggagcctcgaacgacaatcactactttggctacagcaccccttgggggtattttgacttcaacagattccactgccacttttcaccacgtgactggcaaagactcatcaacaacaactggggattccgacccaagagactcaacttcaagctctttaacattcaagtcaaagaggtcacgcagaatgacggtacgacgacgattgccaataaccttaccagcacggttcaggtgtttactgactcggagtaccagctcccgtacgtcctcggctcggcgcatcaaggatgcctcccgccgttcccagcagacgtcttcatggtgccacagtatggatacctcaccctgaacaacgggagtcaggcagtaggacgctcttcattttactgcctggagtactttccttctcagatgctgcgtaccggaaacaactttaccttcagctacacttttgaggacgttcctttccacagcagctacgctcacagccagagtctggaccgtctcatgaatcctctcatcgaccagtacctgtattacttgagcagaacaaacactccaagtggaaccaccacgcagtcaaggcttcagttttctcaggccggagcgagtgacattcgggaccagtctaggaactggcttcctggaccctgttaccgccagcagcgagtatcaaagacatctgcggataacaacaacagtgaatactcgtggactggagctaccaagtaccacctcaatggcagagactctctggtgaatccgggcccggccatggcaagccacaaggacgatgaagaaaagttttttcctcagagcggggttctcatctttgggaagcaaggctcagagaaaacaaatgtggacattgaaaaggtcatgattacagacgaagaggaaatcaggacaaccaatcccgtggctacggagcagtatggttctgtatctaccaacctccagagaggcaacgcggcaaaaaatgaaaatgaaaacaaggcgcgccaagcagctaccgcagatgtcaacacacaaggcgttcttccaggcatggtctggcaggacagagatgtgtaccttcaggggcccatctgggcaaagattccacacacggacggacattttcacccctctcccctcatgggtggattcggacttaaacaccctcctccacagattctcatcaagaacaccccggtacctgcgaatccttcgaccaccttcagtgcggcaaagtttgcttccttcatcacacagtactccacgggacaggtcagcgtggagatcgagtgggagctgcagaaggaaaacagcaaacgctggaatcccgaaattcagtacacttccaactacaacaagtctgttaatgtggactttactgtggacactaatggcgtgtattcagagcctcgccccattggcaccagatacctgactcgtaatctgtaattgcggccgcttgttaatcaataaaccgtttaa**

**AAV2 rep Cap2**

Primer Rep2\_Fw1 atctgcttcactcacgg

1730 1740 1750 1760 1770 1780

838 ATCTCAACCCGTTTCTGTCGTCAAAAAGGCGTATCAGAAACTGTGCTACATTCATCATAT

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Rep2Fw ATCTCA-CCCGTTTCTGTCGTCAAAAAGGCGTATCAGAAACTGTGCTACATTCATCATAT

10 20 30 40 50

1790 1800 1810 1820 1830 1840

838 CATGGGAAAGGTGCCAGACGCTTGCACTGCCTGCGATCTGGTCAATGTGGATTTGGATGA

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Rep2Fw CATGGGAAAGGTGCCAGACGCTTGCACTGCCTGCGATCTGGTCAATGTGGATTTGGATGA

60 70 80 90 100 110

1850 1860 1870 1880 1890 1900

838 CTGCATCTTTGAACAATAAATGATTTAAATCAGGTATGGCTGCCGATGGTTATCTTCCAG

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Rep2Fw CTGCATCTTTGAACAATAAATGATTTAAATCAGGTATGGCTGCCGATGGTTATCTTCCAG

120 130 140 150 160 170

1910 1920 1930 1940 1950 1960

838 ATTGGCTCGAGGACACTCTCTCTGAAGGAATAAGACAGTGGTGGAAGCTCAAACCTGGCC

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Rep2Fw ATTGGCTCGAGGACACTCTCTCTGAAGGAATAAGACAGTGGTGGAAGCTCAAACCTGGCC

180 190 200 210 220 230

1970 1980 1990 2000 2010 2020

838 CACCACCACCAAAGCCCGCAGAGCGGCATAAGGACGACAGCAGGGGTCTTGTGCTTCCTG

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Rep2Fw CACCACCACCAAAGCCCGCAGAGCGGCATAAGGACGACAGCAGGGGTCTTGTGCTTCCTG

240 250 260 270 280 290

2030 2040 2050 2060 2070 2080

838 GGTACAAGTACCTCGGACCCTTCAACGGACTCGACAAGGGAGAGCCGGTCAACGAGGCAG

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Rep2Fw GGTACAAGTACCTCGGACCCTTCAACGGACTCGACAAGGGAGAGCCGGTCAACGAGGCAG

300 310 320 330 340 350

2090 2100 2110 2120 2130 2140

838 ACGCCGCGGCCCTCGAGCACGACAAAGCCTACGACCGGCAGCTCGACAGCGGAGACAACC

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Rep2Fw ACGCCGCGGCCCTCGAGCACGACAAAGCCTACGACCGGCAGCTCGACAGCGGAGACAACC

360 370 380 390 400 410

2150 2160 2170 2180 2190 2200

838 CGTACCTCAAGTACAACCACGCCGACGCGGAGTTTCAGGAGCGCCTTAAAGAAGATACGT

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Rep2Fw CGTACCTCAAGTACAACCACGCCGACGCGGAGTTTCAGGAGCGCCTTAAAGAAGATACGT

420 430 440 450 460 470

2210 2220 2230 2240 2250 2260

838 CTTTTGGGGGCAACCTCGGACGAGCAGTCTTCCAGGCGAAAAAGAGGGTTCTTGAACCTC

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Rep2Fw CTTTTGGGGGCAACCTCGGACGAGCAGTCTTCCAGGCGAAAAAGAGGGTTCTTGAACCTC

480 490 500 510 520 530

2270 2280 2290 2300 2310 2320

838 TGGGCCTGGTTGAGGAACCTGTTAAGACGGCTCCGGGAAAAAAGAGGCCGGTAGAGCACT

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Rep2Fw TGGGCCTGGTTGAGGAACCTGTTAAGACGGCTCCGGGAAAAAAGAGGCCGGTAGAGCACT

540 550 560 570 580 590

2330 2340 2350 2360 2370 2380

838 CTCCTGTGGAGCCAGACTCCTCCTCGGGAACCGGAAAGGCGGGCCAGCAGCCTGCAAGAA

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Rep2Fw CTCCTGTGGAGCCAGACTCCTCCTCGGGAACCGGAAAGGCGGGCCAGCAGCCTGCAAGAA

600 610 620 630 640 650

2390 2400 2410 2420 2430 2440

838 AAAGATTGAATTTTGGTCAGACTGGAGACGCAGACTCAGTACCTGACCCCCAGCCTCTCG

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Rep2Fw AAAGATTGAATTTTGGTCAGACTGGAGACGCAGACTCAGTACCTGACCCCCAGCCTCTCG

660 670 680 690 700 710

2450 2460 2470 2480 2490 2500

838 GACAGCCACCAGCAGCCCCCTCTGGTCTGGGAACTAATACGATGGCTACAGGCAGTGGCG

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Rep2Fw GACAGCCACCAGCAGCCCCCTCTGGTCTGGGAACTAATACGATGGCTACAGGCAGTGGCG

720 730 740 750 760 770

2510 2520 2530 2540 2550 2560

838 CACCAATGGCAGACAATAACGAGGGCGCCGACGGAGTGGGTAATTCCTCGGGAAATTGGC

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Rep2Fw CACCAATGGCAGACAATAACGAGGGCGCCGACGGAGTGGGTAATTCCTCGGGAAATTGGC

780 790 800 810 820 830

2570 2580 2590 2600 2610 2620

838 ATTGCGATTCCACATGGATGGGCGACAGAGTCATCACCACCAGCACCCGAACCTGGGCCC

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Rep2Fw ATTGCGATTCCACATGGATGGGCGACAGAGTCATCACCACCAGCACCCGAACCTGGGCCC

840 850 860 870 880 890

2630 2640 2650 2660 2670 2680

838 TGCCCACCTACAACAACCACCTCTACAAACAAATTTCCAGCCAATCAGGAGCCTCGAACG

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Rep2Fw TGCCCACCTACAACAACCACCTCTACAAACAAATTTCCAGCCAATCAGGAGCCTCGAACG

900 910 920 930 940 950

2690 2700 2710 2720 2730 2740

838 ACAATCACTACTTTGGCTACAGCACCCCTTGGGGGTATTTTGACTTCAACAGATTCCACT

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Rep2Fw ACAATCACTACTTTGGCTACAGCACCCCTTGGGGGTATTTTGACTTCAACAGATTCCACT

960 970 980 990 1000 1010

2750 2760 2770 2780 2790 2800

838 GCCACTTTTCACCACGTGACTGGCAAAGACTCATCAACAACAACTGGGGATTCCGACCCA

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Rep2Fw GCCACTTTTCACCACGTGACTGGCAAAGACTCATCAACAACAACTGGGGATTCCGACCCA

1020 1030 1040 1050 1060 1070

2810 2820 2830 2840 2850 2860

838 AGAGACTCAACTTCAAGCTCTTTAACATTCAAGTCAAAGAGGTCACGCAGAATGACGGTA

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Rep2Fw AGAGACTCAACTTCAAGCTCTTTAACATTCAAGTCAAAGAGGTCMCGCAAAATGACGGTA

1080 1090 1100 1110 1120 1130

Primer Rep2\_Fw2 gcagactcagtacctgac

838 CCCCTCTGGTCTGGGAACTAATACGATGGCTACAGGCAGTGGCGCACCAATGGCAGACAA

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Rep2Fw CCNCTCTGGTCTGGGAACTAATACGATGGCTACAGGCAGTGGCGCACCAATGGCAGACAA

10 20 30 40 50 60

2530 2540 2550 2560 2570 2580

838 TAACGAGGGCGCCGACGGAGTGGGTAATTCCTCGGGAAATTGGCATTGCGATTCCACATG

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Rep2Fw TAACGAGGGCGCCGACGGAGTGGGTAATTCCTCGGGAAATTGGCATTGCGATTCCACATG

70 80 90 100 110 120

2590 2600 2610 2620 2630 2640

838 GATGGGCGACAGAGTCATCACCACCAGCACCCGAACCTGGGCCCTGCCCACCTACAACAA

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Rep2Fw GATGGGCGACAGAGTCATCACCACCAGCACCCGAACCTGGGCCCTGCCCACCTACAACAA

130 140 150 160 170 180

2650 2660 2670 2680 2690 2700

838 CCACCTCTACAAACAAATTTCCAGCCAATCAGGAGCCTCGAACGACAATCACTACTTTGG

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Rep2Fw CCACCTCTACAAACAAATTTCCAGCCAATCAGGAGCCTCGAACGACAATCACTACTTTGG

190 200 210 220 230 240

2710 2720 2730 2740 2750 2760

838 CTACAGCACCCCTTGGGGGTATTTTGACTTCAACAGATTCCACTGCCACTTTTCACCACG

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Rep2Fw CTACAGCACCCCTTGGGGGTATTTTGACTTCAACAGATTCCACTGCCACTTTTCACCACG

250 260 270 280 290 300

2770 2780 2790 2800 2810 2820

838 TGACTGGCAAAGACTCATCAACAACAACTGGGGATTCCGACCCAAGAGACTCAACTTCAA

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Rep2Fw TGACTGGCAAAGACTCATCAACAACAACTGGGGATTCCGACCCAAGAGACTCAACTTCAA

310 320 330 340 350 360

2830 2840 2850 2860 2870 2880

838 GCTCTTTAACATTCAAGTCAAAGAGGTCACGCAGAATGACGGTACGACGACGATTGCCAA

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Rep2Fw GCTCTTTAACATTCAAGTCAAAGAGGTCACGCAGAATGACGGTACGACGACGATTGCCAA

370 380 390 400 410 420

2890 2900 2910 2920 2930 2940

838 TAACCTTACCAGCACGGTTCAGGTGTTTACTGACTCGGAGTACCAGCTCCCGTACGTCCT

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Rep2Fw TAACCTTACCAGCACGGTTCAGGTGTTTACTGACTCGGAGTACCAGCTCCCGTACGTCCT

430 440 450 460 470 480

2950 2960 2970 2980 2990 3000

838 CGGCTCGGCGCATCAAGGATGCCTCCCGCCGTTCCCAGCAGACGTCTTCATGGTGCCACA

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Rep2Fw CGGCTCGGCGCATCAAGGATGCCTCCCGCCGTTCCCAGCAGACGTCTTCATGGTGCCACA

490 500 510 520 530 540

3010 3020 3030 3040 3050 3060

838 GTATGGATACCTCACCCTGAACAACGGGAGTCAGGCAGTAGGACGCTCTTCATTTTACTG

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Rep2Fw GTATGGATACCTCACCCTGAACAACGGGAGTCAGGCAGTAGGACGCTCTTCATTTTACTG

550 560 570 580 590 600

3070 3080 3090 3100 3110 3120

838 CCTGGAGTACTTTCCTTCTCAGATGCTGCGTACCGGAAACAACTTTACCTTCAGCTACAC

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Rep2Fw CCTGGAGTACTTTCCTTCTCAGATGCTGCGTACCGGAAACAACTTTACCTTCAGCTACAC

610 620 630 640 650 660

3130 3140 3150 3160 3170 3180

838 TTTTGAGGACGTTCCTTTCCACAGCAGCTACGCTCACAGCCAGAGTCTGGACCGTCTCAT

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Rep2Fw TTTTGAGGACGTTCCTTTCCACAGCAGCTACGCTCACAGCCAGAGTCTGGACCGTCTCAT

670 680 690 700 710 720

3190 3200 3210 3220 3230 3240

838 GAATCCTCTCATCGACCAGTACCTGTATTACTTGAGCAGAACAAACACTCCAAGTGGAAC

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Rep2Fw GAATCCTCTCATCGACCAGTACCTGTATTACTTGAGCAGAACAAACACTCCAAGTGGAAC

730 740 750 760 770 780

3250 3260 3270 3280 3290 3300

838 CACCACGCAGTCAAGGCTTCAGTTTTCTCAGGCCGGAGCGAGTGACATTCGGGACCAGTC

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Rep2Fw CACCACGCAGTCAAGGCTTCAGTTTTCTCAGGCCGGAGCGAGTGACATTCGGGACCAGTC

790 800 810 820 830 840

3310 3320 3330 3340 3350 3360

838 TAGGAACTGGCTTCCTGGACCCTGTTACCGCCAGCAGCGAGTATCAAAGACATCTGCGGA

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Rep2Fw TAGGAACTGGCTTCCTGGACCCTGTTACCGCCAGCAGCGAGTATCAAAGACATCTGCGGA

850 860 870 880 890 900

3370 3380 3390 3400 3410 3420

838 TAACAACAACAGTGAATACTCGTGGACTGGAGCTACCAAGTACCACCTCAATGGCAGAGA

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Rep2Fw TAACAACAACAGTGAATACTCGTGGACTGGAGCTACCAAGTACCACCTCAATGGCAGAGA

910 920 930 940 950 960

3430 3440 3450 3460 3470 3480

838 CTCTCTGGTGAATCCGGGCCCGGCCATGGCAAGCCACAAGGACGATGAAGAAAAGTTTTT

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Rep2Fw CTCTCTGGTGAATCCGGGCCCGGCCATGGCAAGCCACAAGGACGATGAAGAAAAGTTTTT

970 980 990 1000 1010 1020

3490 3500 3510 3520 3530 3540

838 TCCTCAGAGCGGGGTTCTCATCTTTGGGAAGCAAGGCTCAGAGAAAACAAATGTGGACAT

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Rep2Fw TCCTCAGAGCGGGGTTCTCATCTTTGGGAAGCAAGGCTCAGAGAAAACAAATGTGGACAT

1030 1040 1050 1060 1070 1080

3550 3560 3570 3580 3590 3600

838 TGAAAAGGTCATGATTACAGACGAAGAGGAAATCAGGACAACCAATCCCGTGGCTACGGA

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Rep2Fw TGAAAAGGTCATGATTACCGACGAAGAGGAAATCAGGACAACCAATCCCGTGGCTACGGA

1090 1100 1110 1120 1130 1140

Primer Rep2\_Fw3 gcagtaggacgctcttc

3090 3100 3110 3120 3130 3140

838 TGCTGCGTACCGGAAACAACTTTACCTTCAGCTACACTTTTGAGGACGTTCCTTTCCACA

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Rep2Fw TGCTGCGTACCGGAA-CAACTTTACCTTCAGCTACACTTTTGAGGACGTTCCTTTCCACA

10 20 30 40 50

3150 3160 3170 3180 3190 3200

838 GCAGCTACGCTCACAGCCAGAGTCTGGACCGTCTCATGAATCCTCTCATCGACCAGTACC

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Rep2Fw GCAGCTACGCTCACAGCCAGAGTCTGGACCGTCTCATGAATCCTCTCATCGACCAGTACC

60 70 80 90 100 110

3210 3220 3230 3240 3250 3260

838 TGTATTACTTGAGCAGAACAAACACTCCAAGTGGAACCACCACGCAGTCAAGGCTTCAGT

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Rep2Fw TGTATTACTTGAGCAGAACAAACACTCCAAGTGGAACCACCACGCAGTCAAGGCTTCAGT

120 130 140 150 160 170

3270 3280 3290 3300 3310 3320

838 TTTCTCAGGCCGGAGCGAGTGACATTCGGGACCAGTCTAGGAACTGGCTTCCTGGACCCT

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Rep2Fw TTTCTCAGGCCGGAGCGAGTGACATTCGGGACCAGTCTAGGAACTGGCTTCCTGGACCCT

180 190 200 210 220 230

3330 3340 3350 3360 3370 3380

838 GTTACCGCCAGCAGCGAGTATCAAAGACATCTGCGGATAACAACAACAGTGAATACTCGT

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Rep2Fw GTTACCGCCAGCAGCGAGTATCAAAGACATCTGCGGATAACAACAACAGTGAATACTCGT

240 250 260 270 280 290

3390 3400 3410 3420 3430 3440

838 GGACTGGAGCTACCAAGTACCACCTCAATGGCAGAGACTCTCTGGTGAATCCGGGCCCGG

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Rep2Fw GGACTGGAGCTACCAAGTACCACCTCAATGGCAGAGACTCTCTGGTGAATCCGGGCCCGG

300 310 320 330 340 350

3450 3460 3470 3480 3490 3500

838 CCATGGCAAGCCACAAGGACGATGAAGAAAAGTTTTTTCCTCAGAGCGGGGTTCTCATCT

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Rep2Fw CCATGGCAAGCCACAAGGACGATGAAGAAAAGTTTTTTCCTCAGAGCGGGGTTCTCATCT

360 370 380 390 400 410

3510 3520 3530 3540 3550 3560

838 TTGGGAAGCAAGGCTCAGAGAAAACAAATGTGGACATTGAAAAGGTCATGATTACAGACG

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Rep2Fw TTGGGAAGCAAGGCTCAGAGAAAACAAATGTGGACATTGAAAAGGTCATGATTACAGACG

420 430 440 450 460 470

3570 3580 3590 3600 3610 3620

838 AAGAGGAAATCAGGACAACCAATCCCGTGGCTACGGAGCAGTATGGTTCTGTATCTACCA

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Rep2Fw AAGAGGAAATCAGGACAACCAATCCCGTGGCTACGGAGCAGTATGGTTCTGTATCTACCA

480 490 500 510 520 530

3630 3640 3650 3660 3670 3680

838 ACCTCCAGAGAGGCAACGCGGCAAAAAATGAAAATGAAAACAAGGCGCGCCAAGCAGCTA

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Rep2Fw ACCTCCAGAGAGGCAACGCGGCAAAAAATGAAAATGAAAACAAGGCGCGCCAAGCAGCTA

540 550 560 570 580 590

3690 3700 3710 3720 3730 3740

838 CCGCAGATGTCAACACACAAGGCGTTCTTCCAGGCATGGTCTGGCAGGACAGAGATGTGT

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Rep2Fw CCGCAGATGTCAACACACAAGGCGTTCTTCCAGGCATGGTCTGGCAGGACAGAGATGTGT

600 610 620 630 640 650

3750 3760 3770 3780 3790 3800

838 ACCTTCAGGGGCCCATCTGGGCAAAGATTCCACACACGGACGGACATTTTCACCCCTCTC

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Rep2Fw ACCTTCAGGGGCCCATCTGGGCAAAGATTCCACACACGGACGGACATTTTCACCCCTCTC

660 670 680 690 700 710

3810 3820 3830 3840 3850 3860

838 CCCTCATGGGTGGATTCGGACTTAAACACCCTCCTCCACAGATTCTCATCAAGAACACCC

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Rep2Fw CCCTCATGGGTGGATTCGGACTTAAACACCCTCCTCCACAGATTCTCATCAAGAACACCC

720 730 740 750 760 770

3870 3880 3890 3900 3910 3920

838 CGGTACCTGCGAATCCTTCGACCACCTTCAGTGCGGCAAAGTTTGCTTCCTTCATCACAC

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Rep2Fw CGGTACCTGCGAATCCTTCGACCACCTTCAGTGCGGCAAAGTTTGCTTCCTTCATCACAC

780 790 800 810 820 830

3930 3940 3950 3960 3970 3980

838 AGTACTCCACGGGACAGGTCAGCGTGGAGATCGAGTGGGAGCTGCAGAAGGAAAACAGCA

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Rep2Fw AGTACTCCACGGGACAGGTCAGCGTGGAGATCGAGTGGGAGCTGCAGAAGGAAAACAGCA

840 850 860 870 880 890

3990 4000 4010 4020 4030 4040

838 AACGCTGGAATCCCGAAATTCAGTACACTTCCAACTACAACAAGTCTGTTAATGTGGACT

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Rep2Fw AACGCTGGAATCCCGAAATTCAGTACACTTCCAACTACAACAAGTCTGTTAATGTGGACT

900 910 920 930 940 950

4050 4060 4070 4080 4090 4100

838 TTACTGTGGACACTAATGGCGTGTATTCAGAGCCTCGCCCCATTGGCACCAGATACCTGA

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Rep2Fw TTACTGTGGACACTAATGGCGTGTATTCAGAGCCTCGCCCCATTGGCACCAGATACCTGA

960 970 980 990 1000 1010

4110 4120 4130 4140 4150

838 CTCGTAATCTGTAATTGCGGCCGCTTGTTAATCAATAAACCGTTTAA

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Rep2Fw CTCGTAATCTGTAATTGCGGCCGCTTGTTAATCAATAAACCGTTTAA

1020 1030 1040 1050 1060

Primer Rev5 CACAGTTTCTGATACGCC

590 600 610 620 630 640

838 TCGCAGACGCAGGAGCAGAACAAAGAGAATCAGAATCCCAATTCTGATGCGCCGGTGATC

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rev5 TCGCAGACGCAGGAGCAGAACAAAGAGAATCAGAATCCCAATTCTGATGCGCCGGTGATC

10 20 30 40 50 60

650 660 670 680 690 700

838 AGATCAAAAACTTCAGCCAGGTACATGGAGCTGGTCGGGTGGCTCGTGGACAAGGGGATT

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rev5 AGATCAAAAACTTCAGCCAGGTACATGGAGCTGGTCGGGTGGCTCGTGGACAAGGGGATT

70 80 90 100 110 120

710 720 730 740 750 760

838 ACCTCGGAGAAGCAGTGGATCCAGGAGGACCAGGCCTCATACATCTCCTTCAATGCGGCC

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rev5 ACCTCGGAGAAGCAGTGGATCCAGGAGGACCAGGCCTCATACATCTCCTTCAATGCGGCC

130 140 150 160 170 180

770 780 790 800 810 820

838 TCCAACTCGCGGTCCCAAATCAAGGCTGCCTTGGACAATGCGGGAAAGATTATGAGCCTG

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rev5 TCCAACTCGCGGTCCCAAATCAAGGCTGCCTTGGACAATGCGGGAAAGATTATGAGCCTG

190 200 210 220 230 240

830 840 850 860 870 880

838 ACTAAAACCGCCCCCGACTACCTGGTGGGCCAGCAGCCCGTGGAGGACATTTCCAGCAAT

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rev5 ACTAAAACCGCCCCCGACTACCTGGTGGGCCAGCAGCCCGTGGAGGACATTTCCAGCAAT

250 260 270 280 290 300

890 900 910 920 930 940

838 CGGATTTATAAAATTTTGGAACTAAACGGGTACGATCCCCAATATGCGGCTTCCGTCTTT

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rev5 CGGATTTATAAAATTTTGGAACTAAACGGGTACGATCCCCAATATGCGGCTTCCGTCTTT

310 320 330 340 350 360

950 960 970 980 990 1000

838 CTGGGATGGGCCACGAAAAAGTTCGGCAAGAGGAACACCATCTGGCTGTTTGGGCCTGCA

::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::

rev5 CTGGGATGGGCCACGAAAAAGTTCGGCAAGAGGAACACCATCTGGCTGTTTGGGCCTGCA

370 380 390 400 410 420

1010 1020 1030 1040 1050 1060

838 ACTACCGGGAAGACCAACATCGCGGAGGCCATAGCCCACACTGTGCCCTTCTACGGGTGC

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rev5 ACTACCGGGAAGACCAACATCGCGGAGGCCATAGCCCACACTGTGCCCTTCTACGGGTGC

430 440 450 460 470 480

1070 1080 1090 1100 1110 1120

838 GTAAACTGGACCAATGAGAACTTTCCCTTCAACGACTGTGTCGACAAGATGGTGATCTGG

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rev5 GTAAACTGGACCAATGAGAACTTTCCCTTCAACGACTGTGTCGACAAGATGGTGATCTGG

490 500 510 520 530 540

1130 1140 1150 1160 1170 1180

838 TGGGAGGAGGGGAAGATGACCGCCAAGGTCGTGGAGTCGGCCAAAGCCATTCTCGGAGGA

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rev5 TGGGAGGAGGGGAAGATGACCGCCAAGGTCGTGGAGTCGGCCAAAGCCATTCTCGGAGGA

550 560 570 580 590 600

1190 1200 1210 1220 1230 1240

838 AGCAAGGTGCGCGTGGACCAGAAATGCAAGTCCTCGGCCCAGATAGACCCGACTCCCGTG

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rev5 AGCAAGGTGCGCGTGGACCAGAAATGCAAGTCCTCGGCCCAGATAGACCCGACTCCCGTG

610 620 630 640 650 660

1250 1260 1270 1280 1290 1300

838 ATCGTCACCTCCAACACCAACATGTGCGCCGTGATTGACGGGAACTCAACGACCTTCGAA

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rev5 ATCGTCACCTCCAACACCAACATGTGCGCCGTGATTGACGGGAACTCAACGACCTTCGAA

670 680 690 700 710 720

1310 1320 1330 1340 1350 1360

838 CACCAGCAGCCGTTGCAAGACCGGATGTTCAAATTTGAACTCACCCGCCGTCTGGATCAT

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rev5 CACCAGCAGCCGTTGCAAGACCGGATGTTCAAATTTGAACTCACCCGCCGTCTGGATCAT

730 740 750 760 770 780

1370 1380 1390 1400 1410 1420

838 GACTTTGGGAAGGTCACCAAGCAGGAAGTCAAAGACTTTTTCCGGTGGGCAAAGGATCAC

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rev5 GACTTTGGGAAGGTCACCAAGCAGGAAGTCAAAGACTTTTTCCGGTGGGCAAAGGATCAC

790 800 810 820 830 840

1430 1440 1450 1460 1470 1480

838 GTGGTTGAGGTGGAGCATGAATTCTACGTCAAAAAGGGTGGAGCCAAGAAAAGACCCGCC

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rev5 GTGGTTGAGGTGGAGCATGAATTCTACGTCAAAAAGGGTGGAGCCAAGAAAAGACCCGCC

850 860 870 880 890 900

1490 1500 1510 1520 1530 1540

838 CCCAGTGACGCAGATATAAGTGAGCCCAAACGGGTGCGCGAGTCAGTTGCGCAGCCATCG

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rev5 CCCAGTGACGCAGATATAAGTGAGCCCAAACGGGTGCGCGAGTCAGTTGCGCAGCCATCG

910 920 930 940 950 960

1550 1560 1570 1580 1590 1600

838 ACGTCAGACGCGGAAGCTTCGATCAACTACGCAGACAGGTACCAAAACAAATGTTCTCGT

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rev5 ACGTCAGACGCGGAAGCTTCGATCAACTACGCAGACAGGTACCAAAACAAATGTTCTCGT

970 980 990 1000 1010 1020

1610 1620 1630 1640 1650 1660

838 CACGTGGGCATGAATCTGATGCTGTTTCCCTGCAGACAATGCGAGAGAATGAATCAGAAT

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rev5 CACGTGGGCATGAATCTGATGCTGTTTCCCTGCAAACAATGCGAGAGAATGAATCAGAAT

1030 1040 1050 1060 1070 1080

Primer Rev6 TCCCACCAGATCACCATC

10 20 30 40 50 60

838 ATGCCGGGGTTTTACGAGATTGTGATTAAGGTCCCCAGCGACCTTGACGAGCATCTGCCC

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rev6 ATGCCGGGGTTTTACGAGATTGKGATTAAGGTCCCCAGCGACCTTGACGAGCATCTGCCC

80 90 100 110 120 130

70 80 90 100 110 120

838 GGCATTTCTGACAGCTTTGTGAACTGGGTGGCCGAGAAGGAATGGGAGTTGCCGCCAGAT

::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::

rev6 GGCATTTCTGACAGCTTTGTGAACTGGGTGGCCGAGAAGGAATGGGAGTTGCCGCCAGAT

140 150 160 170 180 190

130 140 150 160 170 180

838 TCTGACATGGATCTGAATCTGATTGAGCAGGCACCCCTGACCGTGGCCGAGAAGCTGCAG

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rev6 TCTGACATGGATCTGAATCTGATTGAGCAGGCACCCCTGACCGTGGCCGAGAAGCTGCAG

200 210 220 230 240 250

190 200 210 220 230 240

838 CGCGACTTTCTGACGGAATGGCGCCGTGTGAGTAAGGCCCCGGAGGCTCTTTTCTTTGTG

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rev6 CGCGACTTTCTGACGGAATGGCGCCGTGTGAGTAAGGCCCCGGAGGCCCTTTTCTTTGTG

260 270 280 290 300 310

250 260 270 280 290 300

838 CAATTTGAGAAGGGAGAGAGCTACTTCCACATGCACGTGCTCGTGGAAACCACCGGGGTG

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rev6 CAATTTGAGAAGGGAGAGAGCTACTTCCACATGCACGTGCTCGTGGAAACCACCGGGGTG

320 330 340 350 360 370

310 320 330 340 350 360

838 AAATCCATGGTTTTGGGACGTTTCCTGAGTCAGATTCGCGAAAAACTGATTCAGAGAATT

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rev6 AAATCCATGGTTTTGGGACGTTTCCTGAGTCAGATTCGCGAAAAACTGATTCAGAGAATT

380 390 400 410 420 430

370 380 390 400 410 420

838 TACCGCGGGATCGAGCCGACTTTGCCAAACTGGTTCGCGGTCACAAAGACCAGAAATGGC

::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::

rev6 TACCGCGGGATCGAGCCGACTTTGCCAAACTGGTTCGCGGTCACAAAGACCAGAAATGGC

440 450 460 470 480 490

430 440 450 460 470 480

838 GCCGGAGGCGGGAACAAGGTGGTGGATGAGTGCTACATCCCCAATTACTTGCTCCCCAAA

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rev6 GCCGGAGGCGGGAACAAGGTGGTGGATGAGTGCTACATCCCCAATTACTTGCTCCCCAAA

500 510 520 530 540 550

490 500 510 520 530 540

838 ACCCAGCCTGAGCTCCAGTGGGCGTGGACTAATATGGAACAGTATTTAAGCGCCTGTTTG

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rev6 ACCCAGCCTGAGCTCCAGTGGGCGTGGACTAATATGGAACAGTATTTAAGCGCCTGTTTG

560 570 580 590 600 610

550 560 570 580 590 600

838 AATCTCACGGAGCGTAAACGGTTGGTGGCGCAGCATCTGACGCACGTGTCGCAGACGCAG

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rev6 AATCTCACGGAGCGTAAACGGTTGGTGGCGCAGCATCTGACGCACGTGTCGCAGACGCAG

620 630 640 650 660 670

610 620 630 640 650 660

838 GAGCAGAACAAAGAGAATCAGAATCCCAATTCTGATGCGCCGGTGATCAGATCAAAAACT

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rev6 GAGCAGAACAAAGAGAATCAGAATCCCAATTCTGATGCGCCGGTGATCAGATCAAAAACT

680 690 700 710 720 730

670 680 690 700 710 720

838 TCAGCCAGGTACATGGAGCTGGTCGGGTGGCTCGTGGACAAGGGGATTACCTCGGAGAAG

::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::

rev6 TCAGCCAGGTACATGGAGCTGGTCGGGTGGCTCGTGGACAAGGGGATTACCTCGGAGAAG

740 750 760 770 780 790

730 740 750 760 770 780

838 CAGTGGATCCAGGAGGACCAGGCCTCATACATCTCCTTCAATGCGGCCTCCAACTCGCGG

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rev6 CAGTGGATCCAGGAGGACCAGGCCTCATACATCTCCTTCAATGCGGCCTCCAACTCGCGG

800 810 820 830 840 850

790 800 810 820 830 840

838 TCCCAAATCAAGGCTGCCTTGGACAATGCGGGAAAGATTATGAGCCTGACTAAAACCGCC

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rev6 TCCCAAATCAAGGCTGCCTTGGACAATGCGGGAAAGATTATGAGCCTGACTAAAACCGCC

860 870 880 890 900 910

850 860 870 880 890 900

838 CCCGACTACCTGGTGGGCCAGCAGCCCGTGGAGGACATTTCCAGCAATCGGATTTATAAA

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rev6 CCCGACTACCTGGTGGGCCAGCAGCCCGTGGAGGACATTTCCAGCAATCGGATTTATAAA

920 930 940 950 960 970

910 920 930 940 950 960

838 ATTTTGGAACTAAACGGGTACGATCCCCAATATGCGGCTTCCGTCTTTCTGGGATGGGCC

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rev6 ATTTTGGAACTAAACGGGTACGATCCCCAATATGCGGCTTCCGTCTTTCTGGGATGGGCC

980 990 1000 1010 1020 1030

970 980 990 1000 1010 1020

838 ACGAAAAAGTTCGGCAAGAGGAACACCATCTGGCTGTTTGGGCCTGCAACTACCGGGAAG

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rev6 ACGAAAAAGTTCGGCAAGAGGAACACCATCTGGCTGTTTGGGCCTGCAACTACCGGGAAG

1040 1050 1060 1070 1080 1090

1030 1040 1050 1060 1070 1080

838 ACCAACATCGCGGAGGCCATAGCCCACACTGTGCCCTTCTACGGGTGCGTAAACTGGACC

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rev6 ACCAACATCGCGGAGGCCATAGCCCACACTGTGCCCTTCTACGGGTGCGTAAACTGGACC

1100 1110 1120 1130 1140 1150

838 AA

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rev6 AA

Primer 839\_rev1 gtaggctttgtcgtgc

950 960 970 980 990 1000

838 TCTTTCTGGGATGGGCCACGAAAAAGTTCGGCAAGAGGAACACCATCTGGCTGTTTGGGC

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rev1 TCTTTCTGGGATGGGCCACGAAAAAGTTCGGCAAGAGGAACACCATCTGGCTGTTTGGGC

70 80 90 100 110 120

1010 1020 1030 1040 1050 1060

838 CTGCAACTACCGGGAAGACCAACATCGCGGAGGCCATAGCCCACACTGTGCCCTTCTACG

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rev1 CTGCAACTACCGGGAAGACCAACATCGCGGAGGCCATAGCCCACACTGTGCCCTTCTACG

130 140 150 160 170 180

1070 1080 1090 1100 1110 1120

838 GGTGCGTAAACTGGACCAATGAGAACTTTCCCTTCAACGACTGTGTCGACAAGATGGTGA

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rev1 GGTGCGTAAACTGGACCAATGAGAACTTTCCCTTCAACGACTGTGTCGACAAGATGGTGA

190 200 210 220 230 240

1130 1140 1150 1160 1170 1180

838 TCTGGTGGGAGGAGGGGAAGATGACCGCCAAGGTCGTGGAGTCGGCCAAAGCCATTCTCG

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rev1 TCTGGTGGGAGGAGGGGAAGATGACCGCCAAGGTCGTGGAGTCGGCCAAAGCCATTCTCG

250 260 270 280 290 300

1190 1200 1210 1220 1230 1240

838 GAGGAAGCAAGGTGCGCGTGGACCAGAAATGCAAGTCCTCGGCCCAGATAGACCCGACTC

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rev1 GAGGAAGCAAGGTGCGCGTGGACCAGAAATGCAAGTCCTCGGCCCAGATAGACCCGACTC

310 320 330 340 350 360

1250 1260 1270 1280 1290 1300

838 CCGTGATCGTCACCTCCAACACCAACATGTGCGCCGTGATTGACGGGAACTCAACGACCT

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rev1 CCGTGATCGTCACCTCCAACACCAACATGTGCGCCGTGATTGACGGGAACTCAACGACCT

370 380 390 400 410 420

1310 1320 1330 1340 1350 1360

838 TCGAACACCAGCAGCCGTTGCAAGACCGGATGTTCAAATTTGAACTCACCCGCCGTCTGG

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rev1 TCGAACACCAGCAGCCGTTGCAAGACCGGATGTTCAAATTTGAACTCACCCGCCGTCTGG

430 440 450 460 470 480

1370 1380 1390 1400 1410 1420

838 ATCATGACTTTGGGAAGGTCACCAAGCAGGAAGTCAAAGACTTTTTCCGGTGGGCAAAGG

::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::

rev1 ATCATGACTTTGGGAAGGTCACCAAGCAGGAAGTCAAAGACTTTTTCCGGTGGGCAAAGG

490 500 510 520 530 540

1430 1440 1450 1460 1470 1480

838 ATCACGTGGTTGAGGTGGAGCATGAATTCTACGTCAAAAAGGGTGGAGCCAAGAAAAGAC

::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::

rev1 ATCACGTGGTTGAGGTGGAGCATGAATTCTACGTCAAAAAGGGTGGAGCCAAGAAAAGAC

550 560 570 580 590 600

1490 1500 1510 1520 1530 1540

838 CCGCCCCCAGTGACGCAGATATAAGTGAGCCCAAACGGGTGCGCGAGTCAGTTGCGCAGC

::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::

rev1 CCGCCCCCAGTGACGCAGATATAAGTGAGCCCAAACGGGTGCGCGAGTCAGTTGCGCAGC

610 620 630 640 650 660

1550 1560 1570 1580 1590 1600

838 CATCGACGTCAGACGCGGAAGCTTCGATCAACTACGCAGACAGGTACCAAAACAAATGTT

::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::

rev1 CATCGACGTCAGACGCGGAAGCTTCGATCAACTACGCAGACAGGTACCAAAACAAATGTT

670 680 690 700 710 720

1610 1620 1630 1640 1650 1660

838 CTCGTCACGTGGGCATGAATCTGATGCTGTTTCCCTGCAGACAATGCGAGAGAATGAATC

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rev1 CTCGTCACGTGGGCATGAATCTGATGCTGTTTCCCTGCAAACAATGCGAGAGAATGAATC

730 740 750 760 770 780

1670 1680 1690 1700 1710 1720

838 AGAATTCAAATATCTGCTTCACTCACGGACAGAAAGACTGTTTAGAGTGCTTTCCCGTGT

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rev1 AGAATTCAAATATCTGCTTCACTCACGGACAGAAAGACTGTTTAGAGTGCTTTCCCGTGT

790 800 810 820 830 840

1730 1740 1750 1760 1770 1780

838 CAGAATCTCAACCCGTTTCTGTCGTCAAAAAGGCGTATCAGAAACTGTGCTACATTCATC

::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::

rev1 CAGAATCTCAACCCGTTTCTGTCGTCAAAAAGGCGTATCAGAAACTGTGCTACATTCATC

850 860 870 880 890 900

1790 1800 1810 1820 1830 1840

838 ATATCATGGGAAAGGTGCCAGACGCTTGCACTGCCTGCGATCTGGTCAATGTGGATTTGG

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rev1 ATATCATGGGAAAGGTGCCAGACGCTTGCACTGCCTGCGATCTGGTCAATGTGGATTTGG

910 920 930 940 950 960

1850 1860 1870 1880 1890 1900

838 ATGACTGCATCTTTGAACAATAAATGATTTAAATCAGGTATGGCTGCCGATGGTTATCTT

::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::

rev1 ATGACTGCATCTTTGAACAATAAATGATTTAAATCAGGTATGGCTGCCGATGGTTATCTT

970 980 990 1000 1010 1020

1910 1920 1930 1940 1950 1960

838 CCAGATTGGCTCGAGGACACTCTCTCTGAAGGAATAAGACAGTGGTGGAAGCTCAAACCT

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rev1 CCAGATTGGCTCGAGGACACTCTCTCTGAAGGAATAAGACAGTGGTGGAAGCTCAAACCT

1030 1040 1050 1060 1070 1080

1970 1980 1990 2000 2010 2020

838 GGCCCACCACCACCAAAGCCCGCAGAGCGGCATAAGGACGACAGCAGGGGTCTTGTGCTT

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rev1 GGCCCACCACCACCAAAGCCCGCAGAGCGGCATAAGGACGACAGCAGGGGTCTTGTGCTT

1090 1100 1110 1120 1130 1140

2030 2040 2050 2060 2070

838 CCTGGGTACAAGTACCTCGGACCCTTCAACGGACTCGACAAGGGAGAGCCG

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rev1 CCTGGGTACAAGTACCTCGGACCCTTCAACGGACTCGACAAGG-AGAGCCG

1150 1160 1170 1180 1190

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| --- |
| **Final alignment** |

**atgccggggttttacgagattgtgattaaggtccccagcgaccttgacgagcatctgcccggcatttctgacagctttgtgaactgggtggccgagaaggaatgggagttgccgccagattctgacatggatctgaatctgattgagcaggcacccctgaccgtggccgagaagctgcagcgcgactttctgacggaatggcgccgtgtgagtaaggccccggaggctcttttctttgtgcaatttgagaagggagagagctacttccacatgcacgtgctcgtggaaaccaccggggtgaaatccatggttttgggacgtttcctgagtcagattcgcgaaaaactgattcagagaatttaccgcgggatcgagccgactttgccaaactggttcgcggtcacaaagaccagaaatggcgccggaggcgggaacaaggtggtggatgagtgctacatccccaattacttgctccccaaaacccagcctgagctccagtgggcgtggactaatatggaacagtatttaagcgcctgtttgaatctcacggagcgtaaacggttggtggcgcagcatctgacgcacgtgtcgcagacgcaggagcagaacaaagagaatcagaatcccaattctgatgcgccggtgatcagatcaaaaacttcagccaggtacatggagctggtcgggtggctcgtggacaaggggattacctcggagaagcagtggatccaggaggaccaggcctcatacatctccttcaatgcggcctccaactcgcggtcccaaatcaaggctgccttggacaatgcgggaaagattatgagcctgactaaaaccgcccccgactacctggtgggccagcagcccgtggaggacatttccagcaatcggatttataaaattttggaactaaacgggtacgatccccaatatgcggcttccgtctttctgggatgggccacgaaaaagttcggcaagaggaacaccatctggctgtttgggcctgcaactaccgggaagaccaacatcgcggaggccatagcccacactgtgcccttctacgggtgcgtaaactggaccaatgagaactttcccttcaacgactgtgtcgacaagatggtgatctggtgggaggaggggaagatgaccgccaaggtcgtggagtcggccaaagccattctcggaggaagcaaggtgcgcgtggaccagaaatgcaagtcctcggcccagatagacccgactcccgtgatcgtcacctccaacaccaacatgtgcgccgtgattgacgggaactcaacgaccttcgaacaccagcagccgttgcaagaccggatgttcaaatttgaactcacccgccgtctggatcatgactttgggaaggtcaccaagcaggaagtcaaagactttttccggtgggcaaaggatcacgtggttgaggtggagcatgaattctacgtcaaaaagggtggagccaagaaaagacccgcccccagtgacgcagatataagtgagcccaaacgggtgcgcgagtcagttgcgcagccatcgacgtcagacgcggaagcttcgatcaactacgcagacaggtaccaaaacaaatgttctcgtcacgtgggcatgaatctgatgctgtttccctgcagacaatgcgagagaatgaatcagaattcaaatatctgcttcactcacggacagaaagactgtttagagtgctttcccgtgtcagaatctcaacccgtttctgtcgtcaaaaaggcgtatcagaaactgtgctacattcatcatatcatgggaaaggtgccagacgcttgcactgcctgcgatctggtcaatgtggatttggatgactgcatctttgaacaataaatgatttaaatcaggtatggctgccgatggttatcttccagattggctcgaggacactctctctgaaggaataagacagtggtggaagctcaaacctggcccaccaccaccaaagcccgcagagcggcataaggacgacagcaggggtcttgtgcttcctgggtacaagtacctcggacccttcaacggactcgacaagggagagccggtcaacgaggcagacgccgcggccctcgagcacgacaaagcctacgaccggcagctcgacagcggagacaacccgtacctcaagtacaaccacgccgacgcggagtttcaggagcgccttaaagaagatacgtcttttgggggcaacctcggacgagcagtcttccaggcgaaaaagagggttcttgaacctctgggcctggttgaggaacctgttaagacggctccgggaaaaaagaggccggtagagcactctcctgtggagccagactcctcctcgggaaccggaaaggcgggccagcagcctgcaagaaaaagattgaattttggtcagactggagacgcagactcagtacctgacccccagcctctcggacagccaccagcagccccctctggtctgggaactaatacgatggctacaggcagtggcgcaccaatggcagacaataacgagggcgccgacggagtgggtaattcctcgggaaattggcattgcgattccacatggatgggcgacagagtcatcaccaccagcacccgaacctgggccctgcccacctacaacaaccacctctacaaacaaatttccagccaatcaggagcctcgaacgacaatcactactttggctacagcaccccttgggggtattttgacttcaacagattccactgccacttttcaccacgtgactggcaaagactcatcaacaacaactggggattccgacccaagagactcaacttcaagctctttaacattcaagtcaaagaggtcacgcagaatgacggtacgacgacgattgccaataaccttaccagcacggttcaggtgtttactgactcggagtaccagctcccgtacgtcctcggctcggcgcatcaaggatgcctcccgccgttcccagcagacgtcttcatggtgccacagtatggatacctcaccctgaacaacgggagtcaggcagtaggacgctcttcattttactgcctggagtactttccttctcagatgctgcgtaccggaaacaactttaccttcagctacacttttgaggacgttcctttccacagcagctacgctcacagccagagtctggaccgtctcatgaatcctctcatcgaccagtacctgtattacttgagcagaacaaacactccaagtggaaccaccacgcagtcaaggcttcagttttctcaggccggagcgagtgacattcgggaccagtctaggaactggcttcctggaccctgttaccgccagcagcgagtatcaaagacatctgcggataacaacaacagtgaatactcgtggactggagctaccaagtaccacctcaatggcagagactctctggtgaatccgggcccggccatggcaagccacaaggacgatgaagaaaagttttttcctcagagcggggttctcatctttgggaagcaaggctcagagaaaacaaatgtggacattgaaaaggtcatgattacagacgaagaggaaatcaggacaaccaatcccgtggctacggagcagtatggttctgtatctaccaacctccagagaggcaacgcggcaaaaaatgaaaatgaaaacaaggcgcgccaagcagctaccgcagatgtcaacacacaaggcgttcttccaggcatggtctggcaggacagagatgtgtaccttcaggggcccatctgggcaaagattccacacacggacggacattttcacccctctcccctcatgggtggattcggacttaaacaccctcctccacagattctcatcaagaacaccccggtacctgcgaatccttcgaccaccttcagtgcggcaaagtttgcttccttcatcacacagtactccacgggacaggtcagcgtggagatcgagtgggagctgcagaaggaaaacagcaaacgctggaatcccgaaattcagtacacttccaactacaacaagtctgttaatgtggactttactgtggacactaatggcgtgtattcagagcctcgccccattggcaccagatacctgactcgtaatctgtaattgcggccgcttgttaatcaataaaccgtttaa**

The sequence obtained differs from the theoretical sequence (295 T>C and 1710 G>A).