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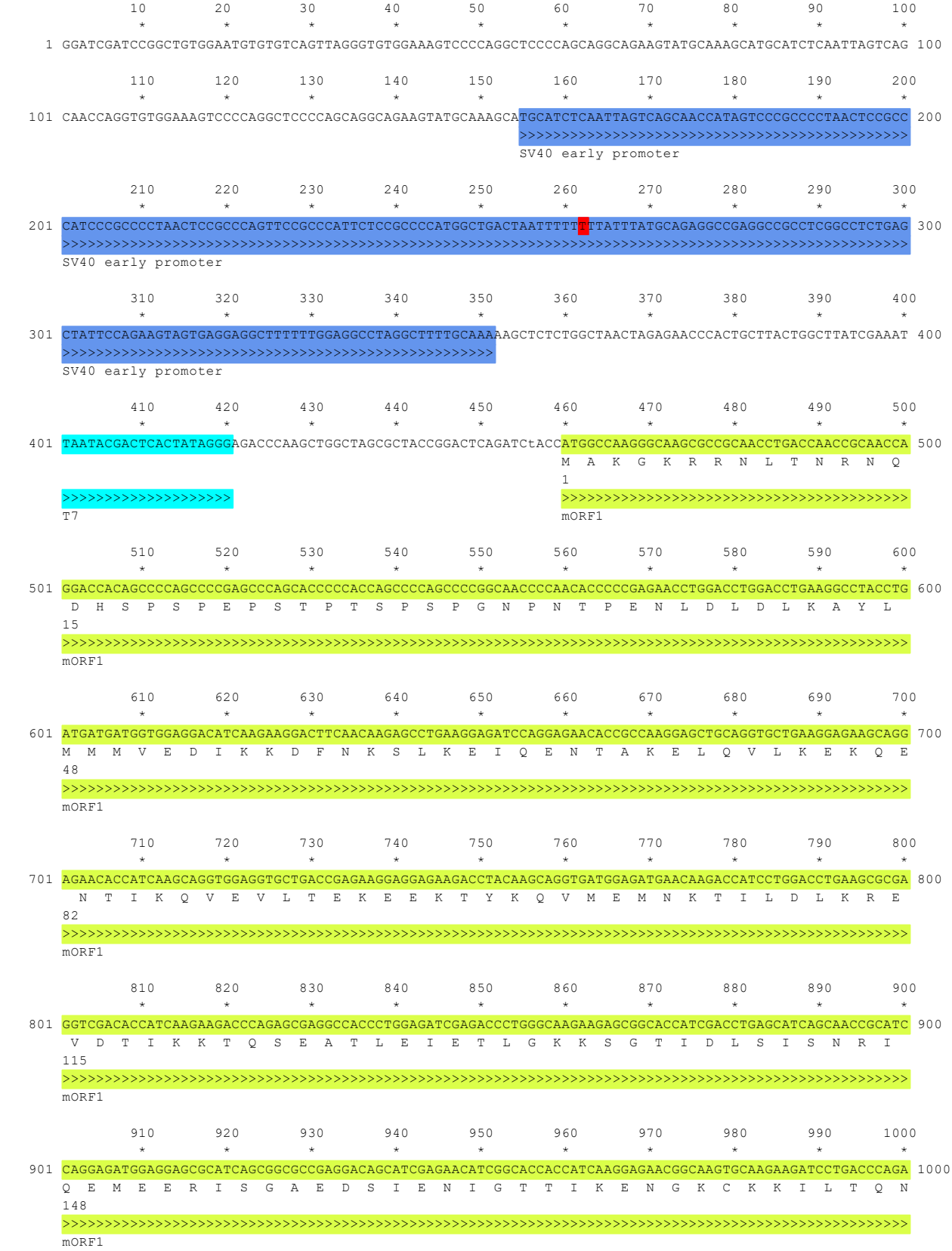

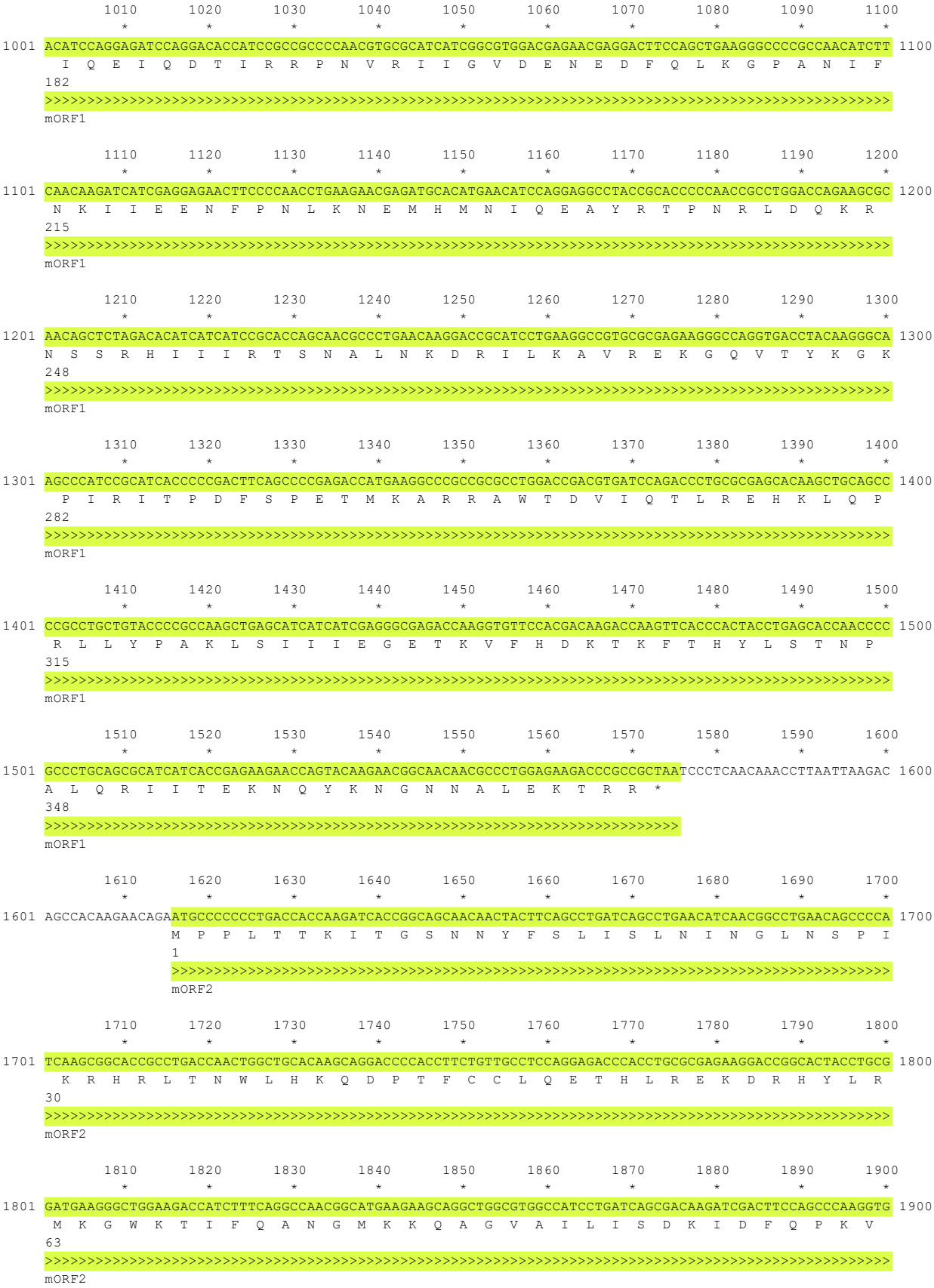
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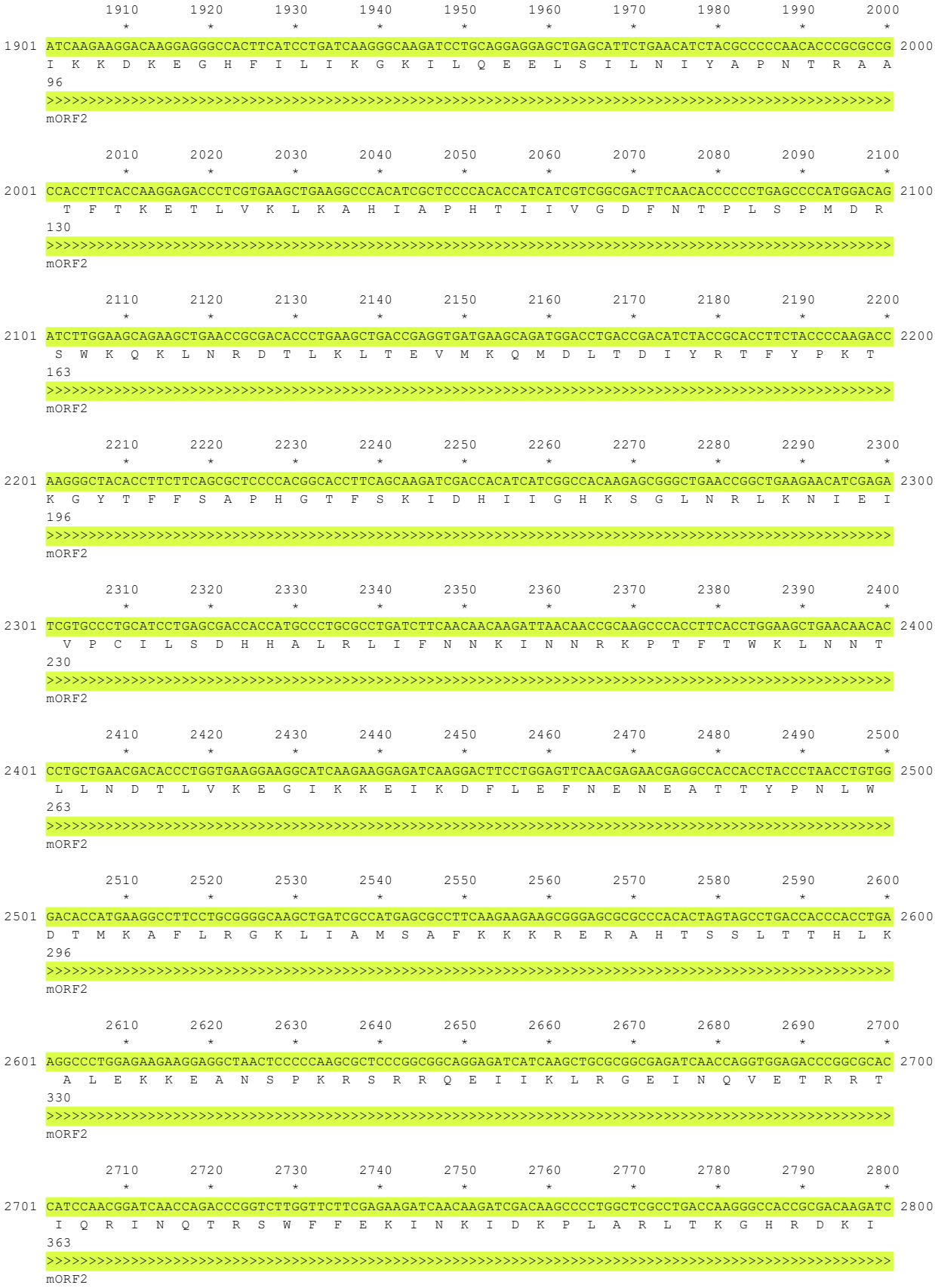
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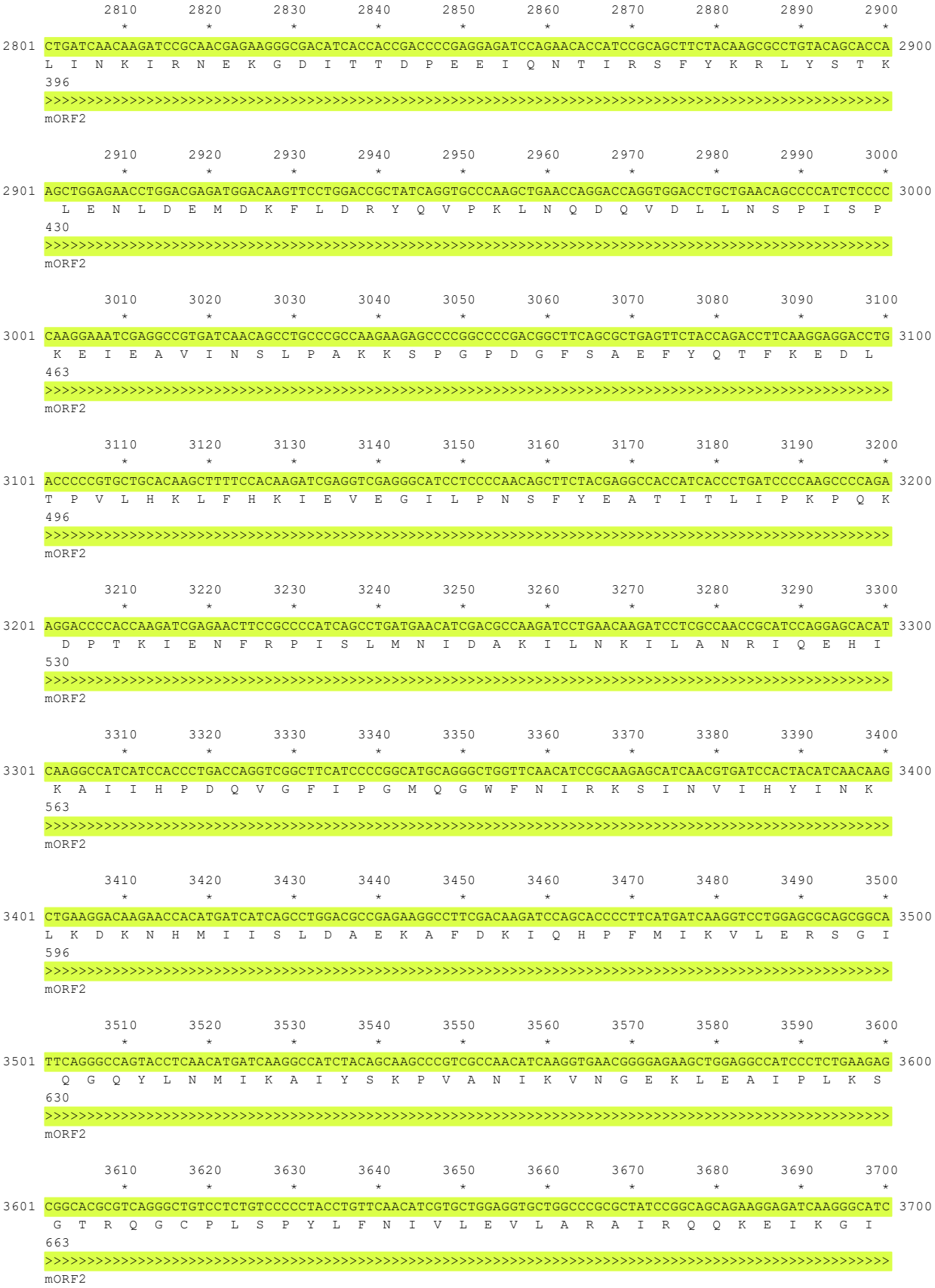
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596
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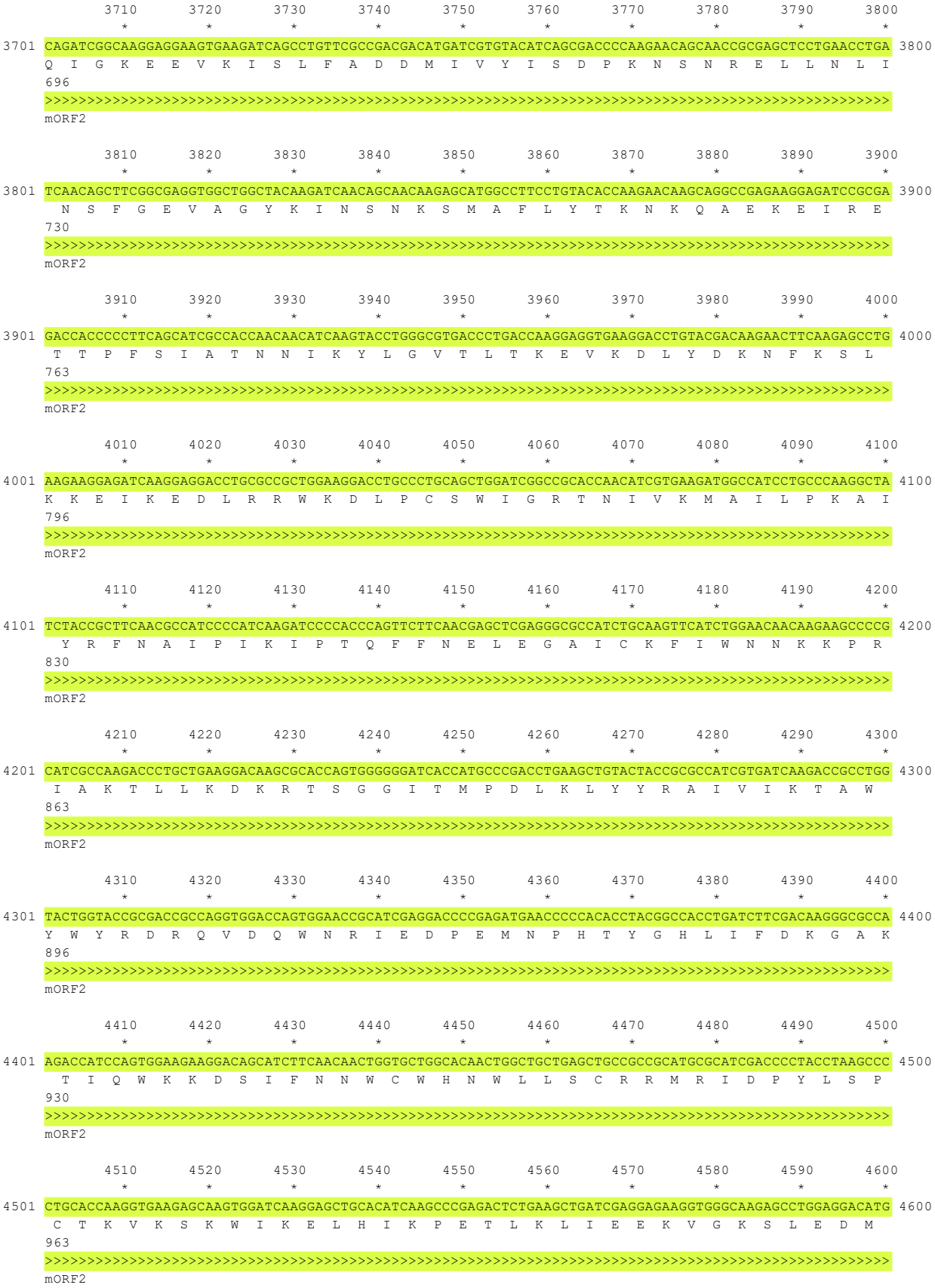
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963
mORF2

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     996
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     1030
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     mORF2

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     1063
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     mORF2

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     mORF2

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      S  V  W  R  F  L  R  K  L  D  I  V  L  P  E  D  P  A  I  P  L  L  G  I  Y  P  E  E  A  P  T  G  K
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     mORF2

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                *         *         *         *         *         *         *         *         *         *
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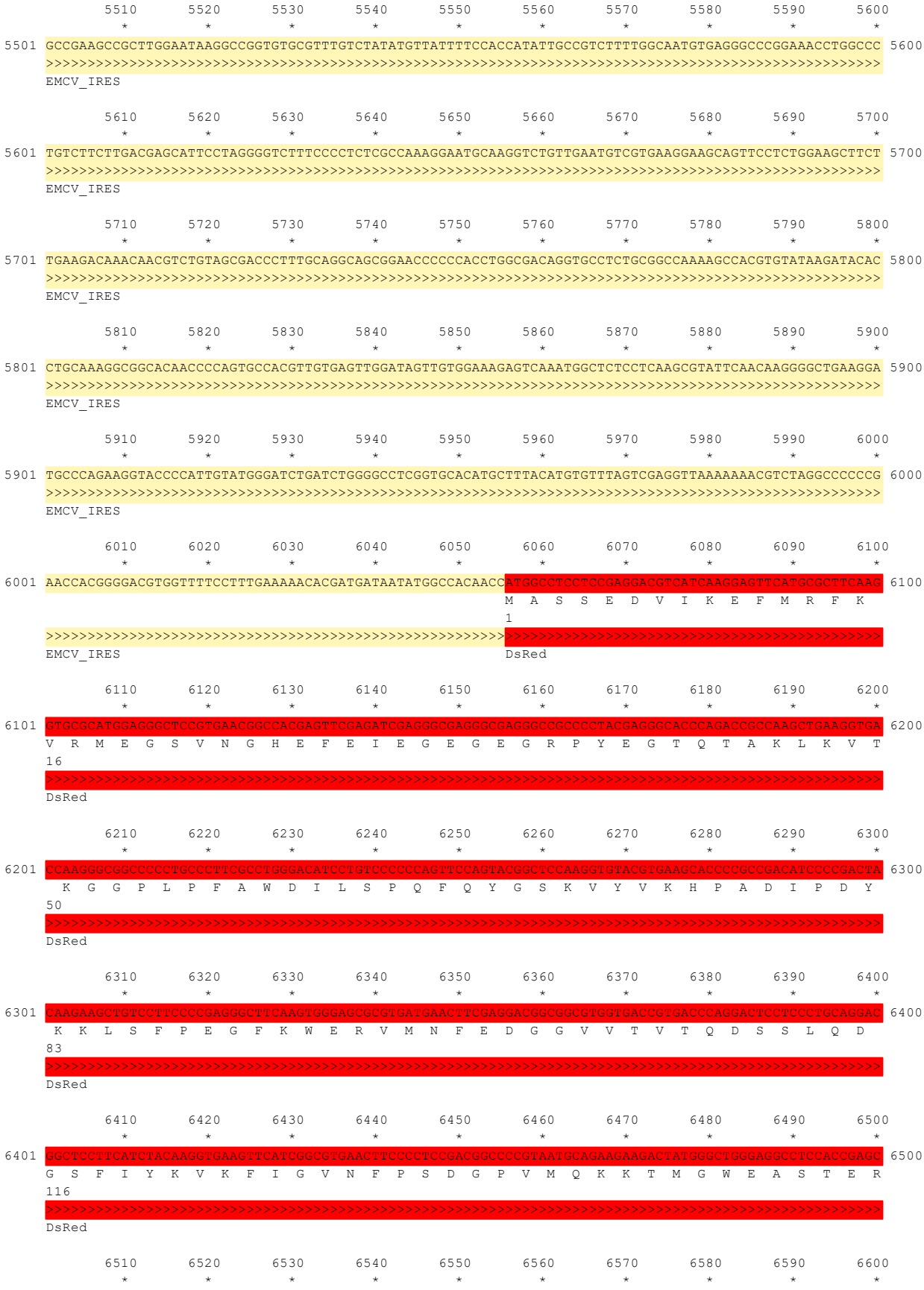
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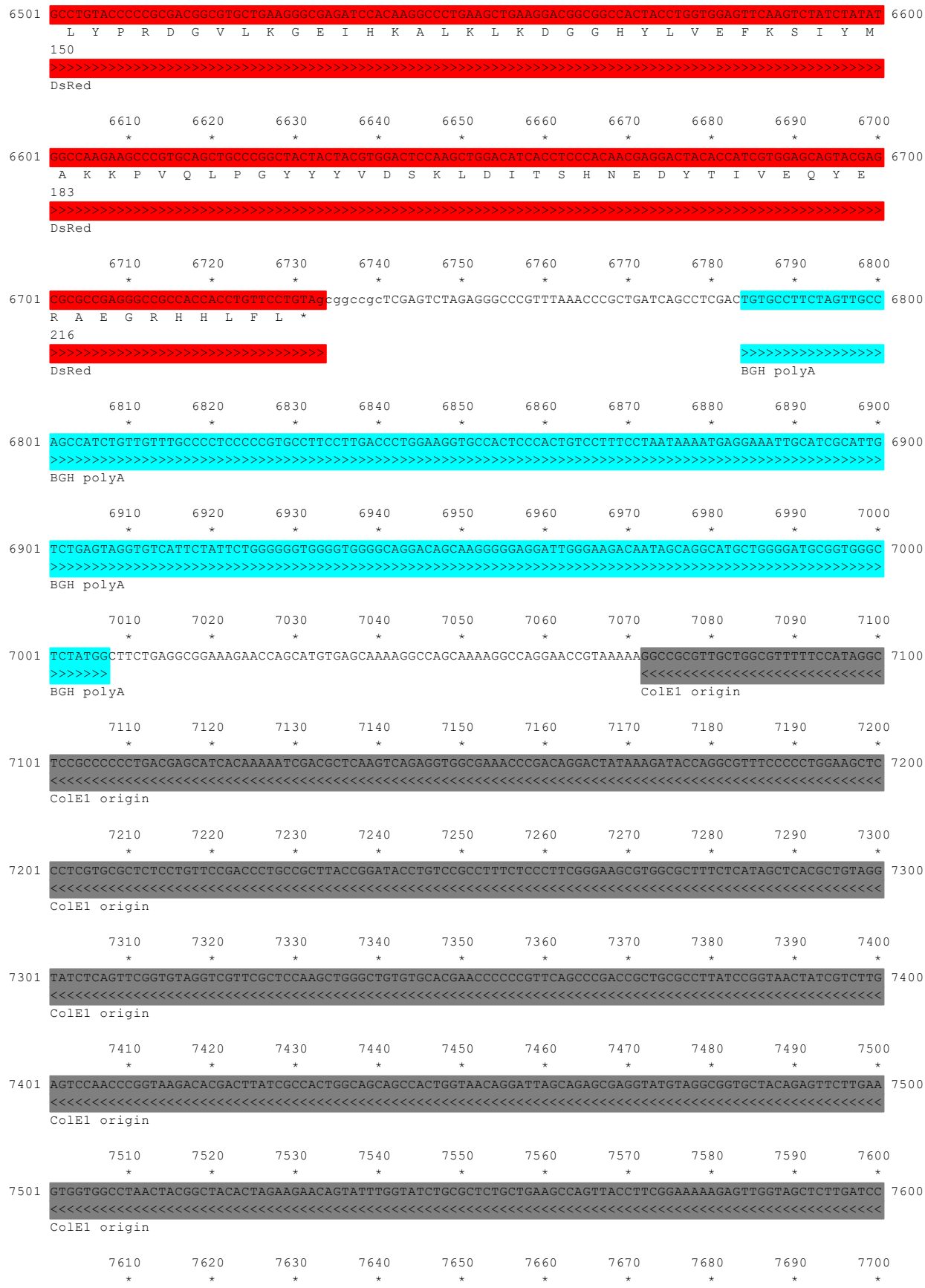
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DsRed
6610 6620 6630 6640 6650 6660 6670 6680 6690 6700
6601 GGCCAAGAAGCCCGTGCAGCTGCCCGGCTACTACTACGTGGACTCCAAGCTGGACATCACCTCCCACAACGAGGACTACACCATCGTGGAGCAGTACGAG 6700
A K K P V Q L P G Y Y Y V D S K L D I T S H N E D Y T I V E Q Y E
183
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DsRed
6710 6720 6730 6740 6750 6760 6770 6780 6790 6800
6701 CGCGCCGAGGGCCGCCACCACCTGTTCCTGTAgcggccgcTCGAGTCTAGAGGGCCCGTTTAAACCCGCTGATCAGCCTCGACTGTGCCTTCTAGTTGCC 6800
R A E G R H H L F L *
216
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DsRed
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BGH polyA
6810 6820 6830 6840 6850 6860 6870 6880 6890 6900
6801 AGCCATCTGTTGTTTGCCCCTCCCCCGTGCCTTCCTTGACCCTGGAAGGTGCCACTCCCACTGTCCTTTCCTAATAAAATGAGGAAATTGCATCGCATTG 6900
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BGH polyA
6910 6920 6930 6940 6950 6960 6970 6980 6990 7000
6901 TCTGAGTAGGTGTCATTCTATTCTGGGGGGTGGGGTGGGGCAGGACAGCAAGGGGGAGGATTGGGAAGACAATAGCAGGCATGCTGGGGATGCGGTGGGC 7000
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BGH polyA
7010 7020 7030 7040 7050 7060 7070 7080 7090 7100
7001 TCTATGGCTTCTGAGGCGGAAAGAACCAGCATGTGAGCAAAAGGCCAGCAAAAGGCCAGGAACCGTAAAAAGGCCGCGTTGCTGGCGTTTTTCCATAGGC 7100
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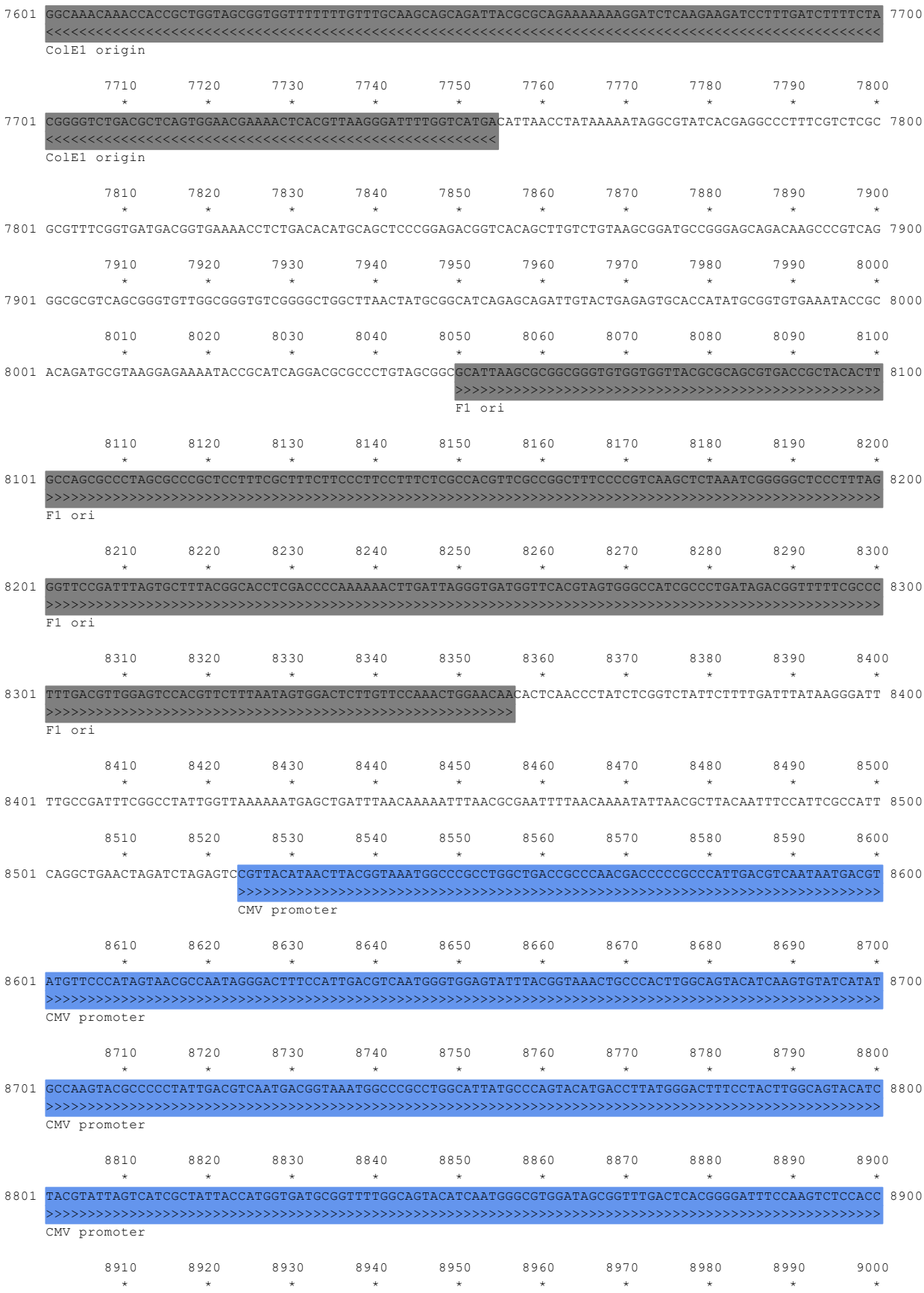
<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<
BGH polyA
ColE1 origin
7110 7120 7130 7140 7150 7160 7170 7180 7190 7200
7101 TCCGCCCCCCTGACGAGCATCACAAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGATACCAGGCGTTTCCCCCTGGAAGCTC 7200
<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<
ColE1 origin
7210 7220 7230 7240 7250 7260 7270 7280 7290 7300
7201 CCTCGTGCGCTCTCCTGTTCCGACCCTGCCGCTTACCGGATACCTGTCCGCCTTTCTCCCTTCGGGAAGCGTGGCGCTTTCTCATAGCTCACGCTGTAGG 7300
<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<
ColE1 origin
7310 7320 7330 7340 7350 7360 7370 7380 7390 7400
7301 TATCTCAGTTCGGTGTAGGTCGTTCGCTCCAAGCTGGGCTGTGTGCACGAACCCCCCGTTCAGCCCGACCGCTGCGCCTTATCCGGTAACTATCGTCTTG 7400
<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<
ColE1 origin
7410 7420 7430 7440 7450 7460 7470 7480 7490 7500
7401 AGTCCAACCCGGTAAGACACGACTTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGGCGGTGCTACAGAGTTCTTGAA 7500
<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<
ColE1 origin
7510 7520 7530 7540 7550 7560 7570 7580 7590 7600
7501 GTGGTGGCCTAACTACGGCTACACTAGAAGAACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAGAGTTGGTAGCTCTTGATCC 7600
<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<
ColE1 origin
7610 7620 7630 7640 7650 7660 7670 7680 7690 7700


7601 GGCAAACAAACCACCGCTGGTAGCGGTGGTTTTTTTGTTTGCAAGCAGCAGATTACGCGCAGAAAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTCTA 7700
ColE1 origin
7710 7720 7730 7740 7750 7760 7770 7780 7790 7800
7701 CGGGGTCTGACGCTCAGTGGAACGAAAACTCACGTTAAGGGATTTTGGTCATGACATTAACCTATAAAAATAGGCGTATCACGAGGCCCTTTCGTCTCGC 7800
ColE1 origin
7810 7820 7830 7840 7850 7860 7870 7880 7890 7900
7801 GCGTTTCGGTGATGACGGTGAAAACCTCTGACACATGCAGCTCCCGGAGACGGTCACAGCTTGTCTGTAAGCGGATGCCGGGAGCAGACAAGCCCGTCAG 7900
7910 7920 7930 7940 7950 7960 7970 7980 7990 8000
7901 GGCGCGTCAGCGGGTGTTGGCGGGTGTCGGGGCTGGCTTAACTATGCGGCATCAGAGCAGATTGTACTGAGAGTGCACCATATGCGGTGTGAAATACCGC 8000
8010 8020 8030 8040 8050 8060 8070 8080 8090 8100
8001 ACAGATGCGTAAGGAGAAAATACCGCATCAGGACGCGCCCTGTAGCGGCGCATTAAGCGCGGCGGGTGTGGTGGTTACGCGCAGCGTGACCGCTACACTT 8100
F1 ori
8110 8120 8130 8140 8150 8160 8170 8180 8190 8200
8101 GCCAGCGCCCTAGCGCCCGCTCCTTTCGCTTTCTTCCCTTCCTTTCTCGCCACGTTCGCCGGCTTTCCCCGTCAAGCTCTAAATCGGGGGCTCCCTTTAG 8200
F1 ori
8210 8220 8230 8240 8250 8260 8270 8280 8290 8300
8201 GGTTCCGATTTAGTGCTTTACGGCACCTCGACCCCAAAAAACTTGATTAGGGTGATGGTTCACGTAGTGGGCCATCGCCCTGATAGACGGTTTTTCGCCC 8300
F1 ori
8310 8320 8330 8340 8350 8360 8370 8380 8390 8400
8301 TTTGACGTTGGAGTCCACGTTCTTTAATAGTGGACTCTTGTTCCAAACTGGAACAACACTCAACCCTATCTCGGTCTATTCTTTTGATTTATAAGGGATT 8400
F1 ori
8410 8420 8430 8440 8450 8460 8470 8480 8490 8500
8401 TTGCCGATTTCGGCCTATTGGTTAAAAAATGAGCTGATTTAACAAAAATTTAACGCGAATTTTAACAAAATATTAACGCTTACAATTTCCATTCGCCATT 8500
8510 8520 8530 8540 8550 8560 8570 8580 8590 8600
8501 CAGGCTGAACTAGATCTAGAGTCCGTTACATAACTTACGGTAAATGGCCCGCCTGGCTGACCGCCCAACGACCCCCGCCCATTGACGTCAATAATGACGT 8600
CMV promoter
8610 8620 8630 8640 8650 8660 8670 8680 8690 8700
8601 ATGTTCCCATAGTAACGCCAATAGGGACTTTCCATTGACGTCAATGGGTGGAGTATTTACGGTAAACTGCCCACTTGGCAGTACATCAAGTGTATCATAT 8700
CMV promoter
8710 8720 8730 8740 8750 8760 8770 8780 8790 8800
8701 GCCAAGTACGCCCCCTATTGACGTCAATGACGGTAAATGGCCCGCCTGGCATTATGCCCAGTACATGACCTTATGGGACTTTCCTACTTGGCAGTACATC 8800
CMV promoter
8810 8820 8830 8840 8850 8860 8870 8880 8890 8900
8801 TACGTATTAGTCATCGCTATTACCATGGTGATGCGGTTTTGGCAGTACATCAATGGGCGTGGATAGCGGTTTGACTCACGGGGATTTCCAAGTCTCCACC 8900
CMV promoter
8910 8920 8930 8940 8950 8960 8970 8980 8990 9000

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8901 CCATTGACGTCAATGGGAGTTTGTTTTGGCACCAAAATCAACGGGACTTTCCAAAATGTCGTAACAACTCCGCCCCATTGACGCAAATGGGCGGTAGGCG 9000
     >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
     CMV promoter

            9010       9020       9030       9040       9050       9060       9070       9080       9090       9100
              *          *          *          *          *          *          *          *          *          *
9001 TGTACGGTGGGAGGTCTATATAAGCAGAGCTCGTTTAGTGAACCGTCAGATCGCCTGGAGACGCCATCCACGCTGTTTTGACCTCCATAGAAGACACCGG 9100
     >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
     CMV promoter

            9110       9120       9130       9140       9150       9160       9170       9180       9190       9200
              *          *          *          *          *          *          *          *          *          *
9101 GACCGATCCAGCCTCCGCGGCCGGGAACGGTGCATTGGAACGGACCGTGTTGACAATTAATCATCGGCATAGTATATCGGCATAGTATAATACGACAAGG 9200

            9210       9220       9230       9240       9250       9260       9270       9280       9290       9300
              *          *          *          *          *          *          *          *          *          *
9201 TGAGGAACTAAACCATGGCCAAGTTGACCAGTGCCGTTCCGGTGCTCACCGCGCGCGACGTCGCCGGAGCGGTCGAGTTCTGGACCGACCGGCTCGGGTT 9300
                   M  A  K  L  T  S  A  V  P  V  L  T  A  R  D  V  A  G  A  V  E  F  W  T  D  R  L  G  F
                   1
                   >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
                   ZeoR

            9310       9320       9330       9340       9350       9360       9370       9380       9390       9400
              *          *          *          *          *          *          *          *          *          *
9301 CTCCCGGGACTTCGTGGAGGACGACTTCGCCGGTGTGGTCCGGGACGACGTGACCCTGTTCATCAGCGCGGTCCAGGACCAGGTGGTGCCGGACAACACC 9400
      S  R  D  F  V  E  D  D  F  A  G  V  V  R  D  D  V  T  L  F  I  S  A  V  Q  D  Q  V  V  P  D  N  T
     30
     >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
     ZeoR

            9410       9420       9430       9440       9450       9460       9470       9480       9490       9500
              *          *          *          *          *          *          *          *          *          *
9401 CTGGCCTGGGTGTGGGTGCGCGGCCTGGACGAGCTGTACGCCGAGTGGTCGGAGGTCGTGTCCACGAACTTCCGGGACGCCTCCGGGCCGGCCATGACCG 9500
     L  A  W  V  W  V  R  G  L  D  E  L  Y  A  E  W  S  E  V  V  S  T  N  F  R  D  A  S  G  P  A  M  T  E
     63
     >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
     ZeoR

            9510       9520       9530       9540       9550       9560       9570       9580       9590       9600
              *          *          *          *          *          *          *          *          *          *
9501 AGATCGGCGAGCAGCCGTGGGGGCGGGAGTTCGCCCTGCGCGACCCGGCCGGCAACTGCGTGCACTTCGTGGCCGAGGAGCAGGACTGACACTCGACCTC 9600
       I  G  E  Q  P  W  G  R  E  F  A  L  R  D  P  A  G  N  C  V  H  F  V  A  E  E  Q  D  *
     97
     >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
     ZeoR

            9610       9620       9630       9640       9650       9660       9670       9680       9690       9700
              *          *          *          *          *          *          *          *          *          *
9601 GAAACTTGTTTATTGCAGCTTATAATGGTTACAAATAAAGCAATAGCATCACAAATTTCACAAATAAAGCATTTTTTTCACTGCATTCTAGTTGTGGTTT 9700

            9710       9720       9730
              *          *          *
9701 GTCCAAACTCATCAATGTATCTTATCATGTCT 9732
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